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A Comparative Analysis between Islamic Banks and Conventional Banks in Indonesia Before and After Global Financial Crisis

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Abstract

The objective of this study is to elaborate the comparison and examine the stability level between Islamic and conventional banks operational in Indonesia during the period of before and after Global Financial Crisis (GFC). The impact of Global Financial Crisis on Islamic and conventional banks was analyzed using the tests of IRF (Impulse Response Function) and Variance Decomposition Analysis (VDA) which existed in the VAR (Vector Autoregressive) Method. The pre (GFC) period used in this study is between January 2003 and July 2007, whereas the post GFC is between August 2007 and December 2016. The results of this study are that Conventional and Islamic Banks are affected by macroeconomic conditions and macroeconomic turmoil in the period before and after the global financial crisis. The results of contrasting research are the responses and the effect of macroeconomic indicators on banks higher pre the GFC occurs than after the occurrence of GFC.

Keywords: GFC; financing; deposit; macroeconomic indicators

Abstrak

Tujuan dari penelitian ini adalah untuk menguraikan perbandingan dan menguji tingkat stabilitas antara operasional bank syariah dan konvensional di Indonesia selama periode sebelum dan sesudah Krisis Keuangan Global (KKG). Dampak Krisis Keuangan Global pada bank syariah dan konvensional dianalisis dengan menggunakan tes IRF (Impulse Response Function) dan Variance Decomposition Analysis (VDA) yang ada dalam Metode VAR (Vector Autoregressive). Periode pra (KKG) yang digunakan dalam penelitian ini adalah antara Januari 2003 dan Juli 2007, sedangkan pasca KKG adalah antara Agustus 2007 dan Desember 2016. Hasil penelitian ini adalah bahwa Bank Konvensional dan Islam dipengaruhi oleh kondisi ekonomi makro dan gejolak ekonomi makro di periode sebelum dan sesudah krisis keuangan global. Hasil dari penelitian yang bertolak belakang adalah respon dan pengaruh indikator ekonomi makro pada perbankan yang lebih tinggi sebelum KKG terjadi dibandingkan setelah terjadinya KKG.

Kata kunci: Krisis Keuangan Global (KKG); pembiayaan; dana pihak ketiga; indikator makroekonomi

JEL classifications: E43; E44; E6; G2; G3

1. Introduction

The Global Financial Crisis began in August 2007 when several high risk mortgage-backed securities (subprime mortgage) in The United States were frozen by BNP Paribas France. This was then worsen by the collapse of Lehman Brothers, the

first major investment bank, and the severe financial problems experienced by large scale financial institutions in The United States, Europe, and Japan (Bank Indonesia 2009).

During an economic crisis, banks as financial institutions take part in the happening of the crisis to a certain degree. It is known that one cause of the Global Financial Crisis was the failure of American banks in complying with financing regulations. According to Norgren (2010), violation of these reg-

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ulations is one of the crisis precipitating factors. Furthermore, various innovations of financial products, which become a picture of financial liberalism, are also another factor; financial and banking crises have been closely interconnected since the implementation of financial liberalism (Kaminsky & Reinhart 1999).

Global Financial Crisis has an impact on Indonesian economy. This can be seen from the fluctuation in capital market and money market by the occurrence of a decrease in capitalization value, stock trades volume, foreign ownership in stocks, government bonds and Bank Indonesia certificates, as well as in the Rupiah exchange rate against The United States Dollar. Other impacts of the crisis are transferred funds by foreign investors to lower risk investments and a slump in export commodity prices which bring negative effects to export business and trigger layoffs. This downfall in business activities results in economic and banking industry decline (Bank Indonesia 2009).

Islamic Banks operate under Islamic Islamic principles. According to a fatwa from National Shariah Board - Indonesian Council of Ulama No. 07/DSN-MUI/IV/2000 on *Mudarabah* Financing, Islamic principles are based on a holy order from Allah SWT in the Koran Surah An-Nisaa Ayah 29. According to An-Nisaa (4) Ayah 29, Islamic Banks are far different in operational system from conventional banks. The principles of Islamic Bank emphasize more that the relation between a bank and its customers is a business partnership where they share the business profit and loss, and run the business in accordance with the order from Allah SWT.

Islamic banks act as venture capital firms collecting wealth from the public and investing it. The profit generated is then distributed equitably among depositors. Islamic banks are technically investment partners providing capital to do business, becoming part owners of the business. The bank will only

recoup their original capital by selling their share of the business at the prevailing market price. Being real partners, Islamic banks would not object to owning real assets and are ready to share in the consequential risk. Clients, too, would be relieved with the fact that they will cease to be burdened by debts or cringe in fear of seizure of assets via repossession (Othman et al. 2012).

Operating a bank in Islamic Bank actually increases the stability of the banking system because it encourages banks to diversify their investments to minimize risk and increase profits. This procedure in turn tends to attract more investors and thereby helps banks operate more efficiently. The Shariah banking practices operate through four different business laws. The first is the principle of the lender and borrower sharing in the latter is profit and loss. The second is fix charges established beforehand. The third is assessing no interest, and the fourth is lender-borrower collaboration (Said 2012).

According to Ibrahim & Sufian (2014) Islamic banks have been able to show as a bank that has become an alternative for conventional banks in facing global financial problems in recent decades. This is evident in the fact that several countries have used their banking system to become full Islamic banks and some countries have implemented a dual banking system, some of which use the Islamic bank system and some use conventional banks. Islamic banking systems that prohibit interest prove that Islamic banks are more resistant to financial and monetary shocks.

The indicator of Islamic Banks stability in dealing with Global Financial Crisis, that is their profit, loss, and risk sharing-based operation, is also suggested by Othman et al. (2012) who states

“The global financial crises would not arise if the financial system had been implemented properly in compliance with the guidelines and limits laid out in the

Shari'ah. The issue of risk-sharing can demonstrate this point clearly. When commercial banks are required to share not only in the profits but also the losses of their clients, be it in business investments or mortgages, they would practice greater prudence in deciding which deals to finance. Their financial returns hinge on the performance of the projects."

According to Othman et al. (2012), even after every crisis in the past, the financial state of Islamic Banks develops just fine. This is shown by the global Islamic financial value which nearly reaches USD 1 trillion.

Islamic Banks and conventional banks in Indonesia are two banking systems with different operational principles which compete to grow their business. Islamic Banks in Indonesia which were established in 1992 face a challenge of competition with conventional banks which have existed for longer time and own more operational branches than Islamic public banks.

In terms of capital, Islamic Banks are considered inadequate. According to Islamic Banking Roadmap by Financial Services Authority (Indonesian Financial Authority Services/IFSA 2015), it becomes clear that out of 12 Islamic public banks, there are 10 banks with an amount of core capital less than Rp 2 trillion and none of them owns more than Rp 5 trillion. This indicates that with less than Rp 5 trillion as core capital, Islamic Banks face a challenge of tight competition with conventional banks which own more capital.

The threatening impacts of Global Financial Crisis on financial system stability in Indonesia have become a major concern for Republic of Indonesia government. On March 17, 2016 Republic of Indonesia government ratified the Law Number 9 year 2016 on Prevention and Administration of Financial System Crises. In order to support financial system

stability, the purpose of the constitution to assign preventive and administrative steps in the period of financial system crises, especially by creating coordination between the four institutions incorporated in Financial System Stability Committee (KSSK), namely the Minister of Finance as Coordinator, the Governor of Bank Indonesia and the Commissioner Council Chief of OJK as Members with voting rights, and also the Commissioner Council Chief of Indonesia Deposit Insurance Corporation (IDIC) as Member without voting rights (IFSA 2017a, 6).

The impacts of Global Financial Crisis in 2007 have been experienced by Islamic Banks and conventional banks. Islamic Banks and conventional banks work in the financial services sector (SJK) whose operations take form of public fund raising and distribution. The development of Islamic banks and conventional banks up to 2016 based on Indonesian Financial Authority Services (IFSA) data (2017b,28) which is the total assets of Islamic banks 254, 181 billion rupiahs and conventional banks 6.475 trillion rupiahs. And based on Indonesian Financial Authority Services (IFSA) data (2017b,37) which is the total number of banks in Islamic banks 13 and conventional banks 103.

Therefore, this study compares the impacts of Global Financial Crisis on Islamic Banks to the ones on conventional banks by performing a comparative analysis between Islamic Banks and conventional banks during the period of before and after the Global Financial Crisis. The purpose of this study is to assess the impacts of Global Financial Crisis on Islamic Banks when compares to conventional banks before and after the crisis.

Macroeconomic indicators such as inflation rate, overnight interest rate and real effective exchange rate are the variables most affected by the Financial Crisis. Therefore, this study measures how much influence the macroeconomic variables give Islamic and conventional banking and compares them us-

ing two comparisons, during the period of before and after Global Financial Crisis.

2. Literature Review

There are few studies which examine the comparison between Islamic banks and conventional banks during the Crisis. A study from Beck, Demirgüç-kunt & Merrouche (2010) compared Islamic banks to conventional banks in the period of Crisis and concluded that during the Crisis Islamic banks had owned a good amount of capital, better asset quality and lower disinter mediation function compared to conventional banks.

A study from Tlemsani & Al Suwaidi (2016) observed and analyzed the performance of Islamic and conventional banking systems in United Arab Emirates during the Financial Crisis. The study concluded that the Financial Crisis had affected global banking system worldwide. However, Islamic banking system showed better performance in terms of the market share, total asset and non-performing loans than conventional banking system, which could be seen from its competitive improved performance compared to conventional banking system during the period between 2007 and 2008.

A study from Kassim & Shabri Abd. Majid (2010) compared Islamic banks to conventional banks during the period of before and after the Crisis. The result of the study suggested that Total Loan and Total Third Party Fund of conventional banks tended to be negative during the Crisis and positive before the Crisis. Meanwhile, Total Financing and Total Third Party Fund of Islamic banks tended to be positive whether during or before the Crisis.

Furthermore, the test result of IRF (Impulse Response Function) which measured macroeconomic shock to Islamic banks and conventional banks implied that Total Financing of Islamic banks signifi-

cantly responded to macroeconomic shock before and during the 2007 crisis. Meanwhile, Total Third Party Fund of Islamic banks significantly responded to macroeconomic shock only during the 1997 crisis. Total Third Party Fund of conventional banks significantly responded to macroeconomic shock in 3 (three) different periods of research namely during 1997 crisis, before and during 2007 crisis. On the other hand, Total Loan of conventional banks did not significantly respond to macroeconomic shock in those 3 (three) periods of research (Kassim & Shabri Abd. Majid 2010).

3. Method

3.1. Data

In order to carry out a comparative analysis on the impact of Global Financial Crisis to Islamic Banks and to conventional banks, this study used Total Financing and Total Third Party Fund in Islamic Banks and conventional banks as the research object data as well as macroeconomic data in Indonesia during the period between January 2003 and December 2016. The type of data used in this study was secondary and monthly, so that there were 168 (one hundred and sixty eight) total data which were arranged based on time series. The method applied in collecting data was documentation study. Documentation study is a method in collecting data conducted by categorizing and classifying material evidence related to the study discussion. The source of data from Financial Services Authority, Central Bank of Indonesia, and Central Bureau of Statistics Indonesia.

The basis for determining variables used in this study is in compliance with a study from Kassim & Shabri Abd. Majid (2010) which appointed a few specific variables for Islamic Banks and conventional banks namely Total Financing/Total Loan

and Total Third Party Fund; whereas the macroeconomic variables were Overnight Interest Rate, Inflation Rate, Economic Performance measured by data of Industrial Production Index, and Rupiah Exchange Rate.

The basis for determining the period of Global Financial Crisis is in compliance with Bank Indonesia (2009) i.e. began in August 2007. Therefore, the research period of pre Global Financial Crisis was between January 2003 and July 2007 and the research period of post Global Financial Crisis was between August 2007 and December 2016.

3.2. Research Methodology

The research methodology applied in this comparative analysis of Global Financial Crisis impacts on Islamic Banks and conventional banks was VAR (Vector Autoregressive) model. According to Ibrahim & Sufian (2014) the goal of the VAR analysis is not to obtain parameter estimates, but to assess empirical regularities in the data or dynamic interactions among the variables. In the opinion of Amar, Hachicha & Saadallah (2015) the VAR model is derived from economic theory and equipped with data. Also, as the variance-covariance matrix of the residual innovations vectors of VAR models may have non-zero values elsewhere than on its main diagonal, important residual information will be contained in the vector of residual innovations. This means that many variables are subject to correlated impulses, even to same impulses, and that the effect of a specific shock on the endogenous variables cannot be isolated.

VAR method has one deep conceptual advantage in terms of implementing rational expectations on an equation model: that is by designing a model relation in the form of a reduced forecasting model which is fully explicit. This means there will be only one which is able to validate assumption probabilit-

ities in the form of reduction and give them a test using historical data which will result in a prediction based on the available data. The probability distribution model itself is applied to predict errors and comparable to error forecasting on the sample the distribution observes (Sims 1986).

According to Kassim & Shabri Abd. Majid (2010), lagged values are determined through VAR based on the Akaike Information Criteria (AIC). The time series variable data in this research were given a stationary test using unit root test from Phillips-Perron (PP). Furthermore, the unit root test in this study was complemented with Augmented Dickey-Fuller (ADF) test.

In accordance with VAR methodology, the research equation model is as follows:

$$x1 = \{ONR, EC, INF, REXCH, CBDEP\} \quad (1)$$

$$x2 = \{ONR, EC, INF, REXCH, IBDEP\} \quad (2)$$

$$x3 = \{ONR, EC, INF, REXCH, CBLOAN\} \quad (3)$$

$$x4 = \{ONR, EC, INF, REXCH, IBFIN\} \quad (4)$$

where ONR (Overnight Rate) is per night interest rate in banking money market (PUAB) transactions, EC (Economy) with the indicator of Industrial Production Index, REXCH (Real Exchange Rate) is Rupiah exchange rate against Dollar, CBDEP and CBLOAN are Total Third Party Fund and Total Loan (Credit) from conventional banks, and IBDEP and IBFIN are Total Third Party Fund and Total Financing from Islamic banks.

3.2.1. Impulse Response Function

Impulse Response Function (IRF) was applied to analyze the impacts of macroeconomic shock on Islamic Banks and conventional banks. According to Kassim & Shabri Abd. Majid (2010), IRF assesses the shock profile as well as predicts the values of

variables in a dynamic system. By using IRF, not only the shock impact of each variable could be seen, it could also be explored to find the meaning of change in the shock. IRF is an invariance to reorganize research variables in VAR method. IRF is unique and entirely considers the pattern in historic correlation between variables. The pattern is observed from different shocks between those variables (Pesaran and Shin 1998).

3.2.2. Variance Decomposition Analysis

Variance Decomposition Analysis (VDA) was applied to interpret the relation between variables used in this study. According to Kassim & Shabri Abd. Majid (2010), VDA is a causality test which indicates a dynamic system between variance partition from a forecast error on a particular variable and innovation (or shock) proportion on each variable in the system, including its own variable. In VDA, still according to Kassim & Shabri Abd. Majid (2010), each variable is optimally measured from its lagged values, which then will show all forecast error variance calculated from its own disruption. This is commonly observed under applied research, where is typical for variance to explain almost all forecast error variance in short term and a smaller proportion of it in long term.

Meanwhile, according to Zaidi, Karim & Kefeli (2005), VDA is applied to assess the magnitude of the inflicted impact. Therefore, by applying VDA the inflicted impact of Global Financial Crisis on Islamic Banks and conventional banks in Indonesia was possible to be calculated so that a comparison could be made to find out which of the two systems was more influenced by the Crisis.

4. Results

4.1. Descriptive statistics

During the period before the global financial crisis (GFC) volatility CBLOAN with standard deviation (SD) 149,638 showed more fluctuation than IBFIN with SD 3,380. While CBDEP volatility with standard deviation (SD) 437,189 showed more fluctuation than IBDEP with SD equal to 6,036.

During the period after the occurrence of the global financial crisis volatility of CBLOAN with standard deviation (SD) 1,085,669 showed more fluctuation than IBFIN with SD of 72,209. While the volatility of IBDEP with SD of 77,179 showed more fluctuation than CBDEP with standard deviation (SD) 35,813.

Comparison of CBLOAN volatility before and after GFC with SD of 149,638 and 1,085,669 showed a very high increase of fluctuation. While the volatility of CBDEP before and after GFC with SD of 437,189 and 35,813 showed a decrease of fluctuation that is not high.

Comparison of IBFIN volatility before and after GFC ie with SD 3,380 and 72,209 showed a very high increase of fluctuation. While the volatility of IBDEP before and after GFC with SD 6.036 and 77,179 showed a very high increase of fluctuation.

4.2. Results of unit root tests

4.3. Impulse Response Function (IRF)

4.3.1. Before Global Financial Crisis

Based on Figure 1 and 2, DLNCBLOAN and DLNIBFIN variables, both variables responded to the variable shocks of the DONR and DLNREXCH variables and responded negatively, and responded to the zero DLNEC variable shock approaching

Table 1: Summary Statistics Variable

Period	Variables	CBLOAN	CBDEP	IBFIN	IBDEP	ONR	EC	INF	REXCH
Before GFC	Mean	594,999	402,191	12,553	12,118	9,407	117,313	8,767	9,153
	Median	594,304	375,510	13,484	12,799	8,670	119,120	6,980	9,156
2003- July 2007	Maximum	871,987	502,842	23,687	22,712	14,150	131,890	18,380	10,362
	Minimum	363,498	359,504	3,380	3,010	5,310	100,400	4,600	8,320
	Std. Dev.	149,638	437,189	6,212	6,036	2,494	68,257	4,143	4,819
	Skewness	0,052	0,795	0,014	0,112	0,350	-0,307	1,273	0,446
	Kurtosis	1,719	2,232	1,726	1,929	1,823	2,508	2,993	3,067
	Jarque-Bera	3,787	7,153**	3,723	2,742	4,296	1,420	1,485***	1,838
Period	Variables	CBLOAN	CBDEP	IBFIN	IBDEP	ONR	EC	INF	REXCH
After GFC Period	Mean	2.469,675	10.404	12.108	12.578	5,941	117,948	5,956	10,723
	Median	2.317,209	10.287	10.912	11.652	5,860	120,160	5,900	9,768
August 2007 - December	Maximum	4.377,195	16.334	24.801	27.934	9,889	136,301	12,140	14,730
	Minimum	893,497	4.960	24.638	23.309	3,777	92,550	2,410	8,551
	Std. Dev.	1.085,669	35.813	72.209	77.179	1,404	11,590	2,316	1,767
	Skewness	0,189	0,086	0,107	0,219	0,758	-0,392	0,754	0,572
	Kurtosis	1,586	1,603	1,422	1,631	3,475	1,822	3,166	1,835
	Jarque-Bera	1,009***	9,333***	11,940***	9,724***	11,890***	9,426***	10,847***	12,560***

Notes : Significance at : *10, **5 and ***1 percent levels : before GFC Period : January 2003 - July 2007; after GFC Period : August 2007 - December 2016

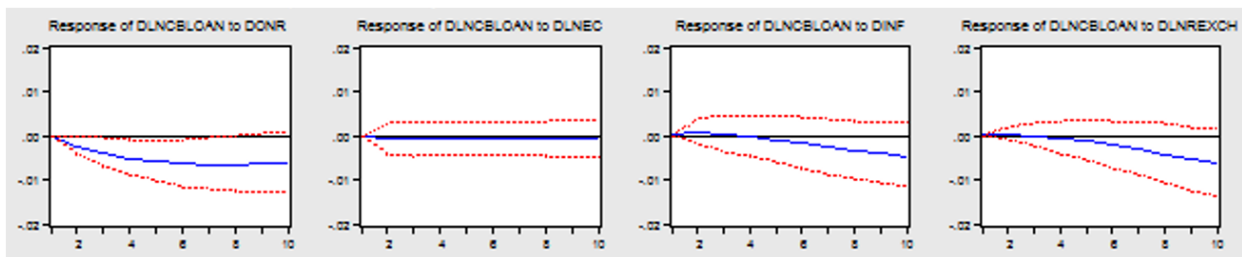


Figure 1: Response of CBLOAN to ONR, EC, INF and REXCH

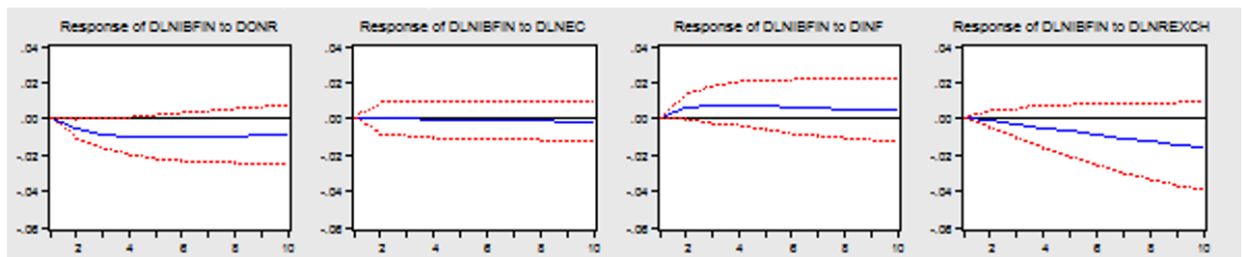


Figure 2: Response of IBFIN to ONR, EC, INF and REXCH

zero. There is a difference in the response of DLNCBLOAN and DLNIBFIN variables to the DINF variable, which DLNCBLOAN responds negatively

and DLNIBFIN responds positively.

Based on Figure 1 and 2, DLNCBLOAN and DLNIBFIN variables, both variables responded to the

Table 2: ADF dan PP Unit Root Tests use in Period Before GFC

No.	Variabel	Kode Variabel	ADF				PP			
			Level		1st Diference		Level		1st Diference	
			Lag	Intercept	Lag	Intercept	Intercept	Intercept	Intercept	
				Trend &		Trend & Intercept				Trend & Intercept
1	<i>Islamic Bank Deposit</i>	lnibdep	0	-2,845519*	0	-7,740631***	-3,421538**	-7,731076***		
			0	-1,148059	0	-8,787204***	-0,997108	-8,787204***		
2	<i>Islamic Bank Financing</i>	lnibfin	2	-2,242976	1	-3,214328**	-2,637945*	-7,166877***		
			2	-1,153687	1	-3,854293**	-0,765814	-7,828643***		
3	<i>Conventional Banking Deposit</i>	lncbdep	0	1,288824	0	-7,573940***	1,472993	-7,569834***		
			0	-1,133925	0	-8,196152***	-1,036697	-8,240445***		
4	<i>Conventional Banking Loan</i>	lncbloan	0	-0,998183	0	-6,849607***	-0,949304	-6,890250***		
			0	-1,459689	0	-6,845354***	-1,677140	-6,882312***		
5	<i>Rate Exchange</i>	lnrexch	0	-1,547383	0	-6,320042***	-1,711506	-6,293987***		
			0	-1,658820	0	-6,256411***	-1,878873	-6,227781***		
6	<i>Economic</i>	lnec	0	-4,941276***	0	-11,54903***	-4,905760***	-12,83614***		
			0	-5,275994***	0	-11,43688***	-5,282278***	-12,70214***		
7	<i>Inflasi</i>	inf	0	-1,506456	0	-6,365818***	-1,638113	-6,365818***		
			0	-1,455409	0	-6,333722***	-1,615504	-6,333722***		
8	<i>Overnight Rate</i>	onr	0	-1,672306	0	-8,669041***	-1,780810	-8,537719***		
			0	-1,656472	0	-8,584037***	-1,766841	-8,464312***		

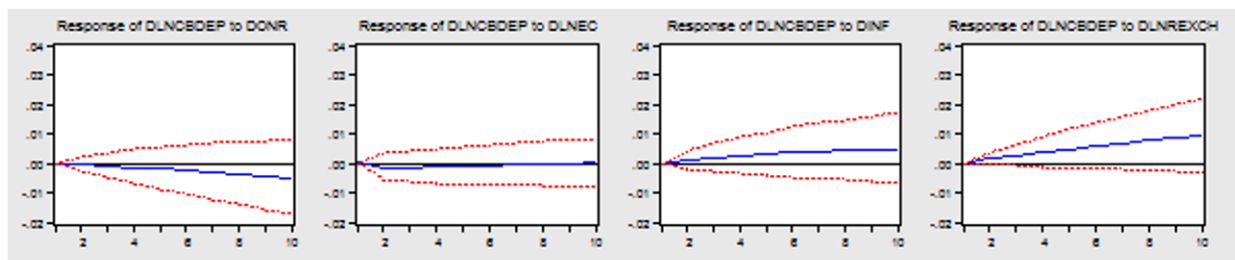


Figure 3: Response of CBDEP to ONR, EC, INF and REXCH

variable shocks of the DONR and DLNREXCH variables and responded negatively, and responded to the zero DLNEC variable shock approaching zero. There is a difference in the response of DLNLCBLOAN and DLNIBFIN variables to the DINF variable, which DLNLCBLOAN responds negatively

and DLNIBFIN responds positively.

DLNLCBDEP and DLNIBDEP variables, both variables responded to the presence of variable shock on DINF variable responded positively. There are differences in DLNLCBDEP and DLNIBDEP response variables to DLREXCH variables, where

Table 3: ADF dan PP Unit Root Tests use in Period After GFC

No.	Variabel	Kode Variabel	ADF				PP	
			Level		1st Diference		Level	1st Diference
			Lag	Intercept Trend & Intercept	Lag	Intercept Trend & Intercept	Intercept Trend & Intercept	Intercept Trend & Intercept
1	<i>Islamic Bank Deposit</i>	inibdep	0	-2,855084*	11	-1,192546	-2,973222**	-10,43196***
			0	-0,645517	0	-11,02717***	-0,599066	-11,03895***
2	<i>Islamic Bank Financing</i>	inibfin	3	-1,754907	2	-2,839851*	-2,527636	-8,863450***
			3	-1,032393	2	-3,253612*	-0,186799	-9,378574***
3	<i>Conventional Banking Deposit</i>	incbdep	0	-1,221303	1	-9,962277***	-2,544467	-17,73577***
			0	-3,230464*	1	-10,04575***	-2,950354	-30,71166***
4	<i>Conventional Banking Loan</i>	incbloan	0	-2,999606**	0	-9,216881***	-2,690403*	-9,406931***
			0	-0,693433	0	-9,790185***	-0,905890	-9,867885***
5	<i>Rate Exchange</i>	inrexch	0	-0,580999	0	-9,561024***	-0,714439	-9,556472***
			0	-1,715624	0	-9,532030***	-1,888515	-9,525421***
6	<i>Economic</i>	inec	0	-2,242181	0	-12,75853***	-1,978468	-12,95751***
			0	-2,389052	0	-12,80634***	-2,084620	-13,20340***
7	Inflasi	inf	1	-2,424713	0	-6,753954***	-2,142414	-6,838495***
			1	-2,676949	0	-6,731847***	-2,401977	-6,817751***
8	<i>Overnight Rate</i>	onr	3	-1,462738	2	-5,660311***	-1,806245	-13,52129***
			3	-1,987583	2	-5,640028***	-2,738914	-13,48722***

Note: Significance at : *10, **5 and ***1 percent levels.

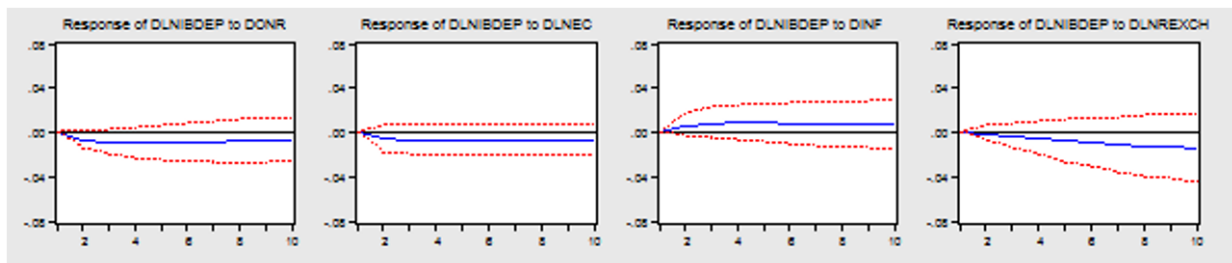


Figure 4: Response of IBDEP to ONR, EC, INF and REXCH

DLNCBDEP responds positively while DLNIBDEP responds negatively.

4.3.2. After Global Financial Crisis

Based on Figure 5 and 6, DLNCBLOAN and DLNIBFIN variables, both variables respond to variable shocks on the DONR variable and responded asymptotically, small and close to zero. DLNCBLOAN variable responds positively to DLNEC variable shock while DLNIFIN variable responds shock DLNEC variable in 1 to 3 period positively and after period 4 responds negatively.

There is a difference in the response of DLNCBLOAN and DLNIBFIN variables to the DINF variable, which by DLNCBLOAN is positively responded while DLNIBFIN responds negatively. DLNCBLOAN and DLNIBFIN variables, both variables respond to variable shocks on the DLNREEXCH variable and respond negatively.

Based on Figure 7 and 8, there are differences in response of DLNCBDEP and DLNIBDEP variables to the DONR variable, which by DLNCBDEP responded positively while DLNIBDEP responded asymptotically, small and close to zero. There are variations in response DLNCBDEP and DLNIBDEP variables to DLNEC variables, where DLNCBDEP responded positively while DLNIBDEP responded asymptotically, small and close to zero in period 1–7, after the 8th period responded negatively.

There is a difference in the response of DLNCBDEP and DLNIBDEP variables to the DINF variable, which by DLNCBDEP responded positively in period 1–4, after period 5 close to zero, while DLNIBDEP responded negatively. There is a difference of DLNCBDEP and DLNIBDEP variable responses to the DLNREEXCH variable, which by DLNCBDEP responded positively in the period 1–5, after period 6 close to zero, while DLNIBDEP responded negatively

4.4. Variance Decomposition Analysis

This study measures VDA on banking variables and macroeconomic indicators based on research from Kassim & Shabri Abd. Majid (2010). According to Kassim & Shabri Abd. Majid (2010) VDA is used to measure interactions among banking variables with macroeconomic indicators. VDA compares Conventional Banks and Sharia Commercial Banks.

Based on Tables 4 and 5, it shows that the CBLOAN, CBDEP, IBLOAN, IBFIN variables can be explained by the ONR, EC, INF and REXCH variables. The CBLOAN, CBDEP, IBFIN, IBDEP variables were able to explain their own variables up to the 10th month period in the period before the GFC where the lowest rates were 68%, 74%, 79%, and 67%. While the period after GFC Variables CBLOAN, CBDEP, IBFIN, IBDEP able to explain its own variables up to the 10th month period with the lowest level 86%, 97%, 85%, and 80%.

The macroeconomic indicator variables ONR, EC, INF and REXCH based on Tables 4 and 5 affect the CBLOAN, CBDEP, IBFIN, IBDEP banking variables averaging not exceeding 5% in the periods before and after the GFC. The REXCH variable gives the highest influence on the CBLOAN and IBFIN variables compared to other macroeconomic indicator variables. The effect of GFC on CBLOAN was 7% and IBFIN 9% in the period before GFC whereas in the period after GFC the effect on CBLOAN was 7% and IBFIN 8%.

The REXCH variable gives the highest influence on the CBDEP and IBDEP variables compared to other macroeconomic indicator variables. The effect of GFC on CBLOAN is 8% and IBFIN 5% in the period after GFC while in the period after GFC its effect on CBLOAN is 1% and IBFIN 2%.

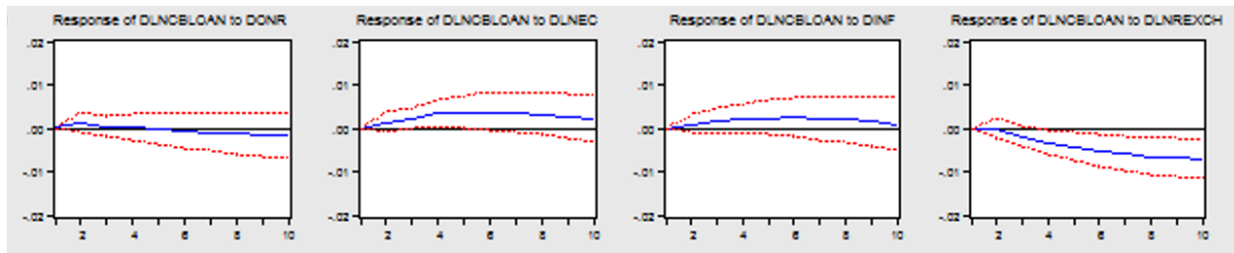


Figure 5: Response of CBLOAN to ONR, EC, INF and REXCH

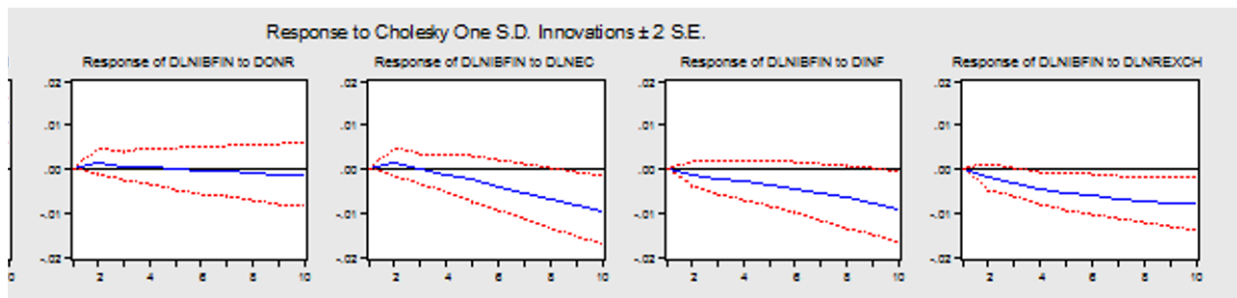


Figure 6: Response of IBFIN to ONR, EC, INF and REXCH

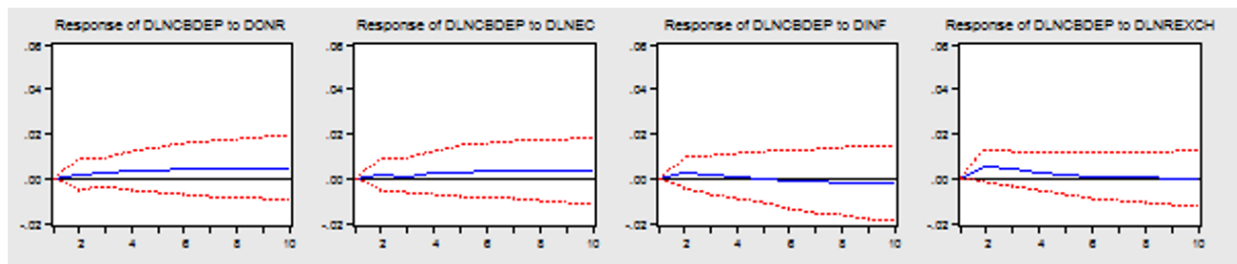


Figure 7: Response of CBDEP to ONR, EC, INF and REXCH

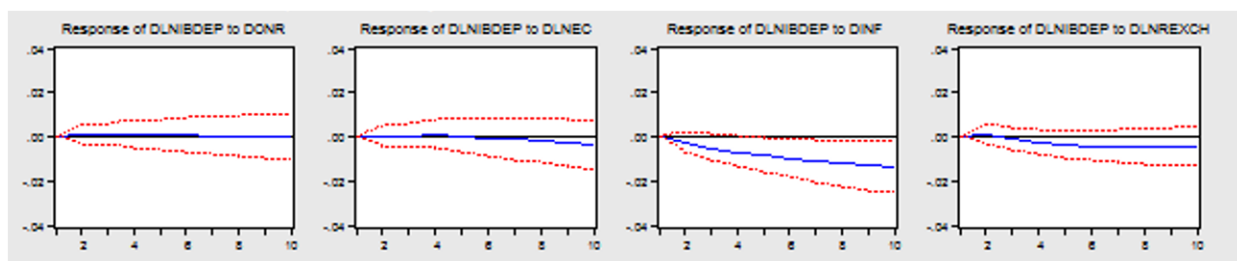


Figure 8: Response of IBDEP to ONR, EC, INF and REXCH

5. Conclusion

This study aims to analyze and compare the impact of macroeconomic turmoil on banks in In-

onesia, both conventional banks and Sharia Commercial Bank. Based on testing of the impact of macroeconomic turmoil, through indicators ONR (Overnight Rate), EC (Economic), INF (Inflation)

Table 4: Variance Decompositions of Loans (Financing)

		Percentages of Forecast variance explained by innovations in :									
Period		Conventional Loan					Islamic Financing				
Monthly		CBLOAN	ONR	EC	INF	REXCH	IBFIN	ONR	EC	INF	REXCH
Before GFC											
1		100.000	0.000	0.000	0.000	0.000	100.000	0.000	0.000	0.000	0.000
2		97.790	1.887	0.231	0.076	0.016	96.388	1.733	0.000	1.798	0.081
3		94.723	4.875	0.314	0.077	0.011	92.957	3.560	0.002	3.125	0.357
4		91.382	8.151	0.342	0.068	0.056	90.298	5.013	0.005	3.792	0.892
5		87.885	1.130	0.355	0.190	0.270	88.142	6.087	0.011	4.049	1.711
6		84.231	1.409	0.363	0.542	0.779	86.243	6.841	0.020	4.087	2.809
7		80.405	1.637	0.371	1.159	1.691	84.463	7.336	0.032	4.020	4.150
8		76.420	1.810	0.380	2.029	3.075	82.744	7.621	0.048	3.908	5.679
9		72.320	1.924	0.391	3.102	4.947	81.075	7.742	0.066	3.785	7.331
10		68.176	1.984	0.402	4.309	7.273	79.466	7.740	0.086	3.669	9.039
After GFC											
1		100.000	0.000	0.000	0.000	0.000	100.000	0.000	0.000	0.000	0.000
2		98.7054	0.4194	0.5370	0.3017	0.0365	97.804	0.500	0.443	0.362	0.891
3		95.9741	0.2791	1.6650	0.8612	1.2206	96.320	0.360	0.306	0.887	2.128
4		91.9133	0.2040	3.2288	1.4055	3.2484	94.039	0.280	0.377	1.533	3.771
5		88.0337	0.1781	4.3834	1.8466	5.5582	91.129	0.225	0.856	2.330	5.460
6		84.5416	0.1930	5.1723	2.1450	7.9481	87.514	0.196	1.817	3.340	7.133
7		81.5303	0.2553	5.5906	2.2950	1.0329	83.212	0.193	3.289	4.605	8.701
8		78.9275	0.3522	5.7266	2.3108	1.2683	78.306	0.210	5.232	6.148	1.010
9		76.6390	0.4796	5.6524	2.2224	1.5007	72.940	0.244	7.568	7.959	1.129
10		74.5629	0.6301	5.4384	2.0721	1.7297	67.299	0.288	1.019	1.000	1.223

and REXCH (Foreign Exchange Rate) by using the VAR method through IRF (Impulse Response Function). The IRF results show that Third Party Funds and Loans to Conventional Banks and Sharia Commercial Banks respond to macroeconomic indicators change volatility and have positive and negative effects.

Based on VDA testing the influence of macroeconomic indicators fluctuation on Third Party Funds and Loans at Conventional Banks and Sharia Com-

mercial Banks shows that all macroeconomic indicators are ONR (Overnight Rate), EC (Economic), INF (Inflation) and REXCH (Foreign Exchange Rate) using the VAR method through IRF (Impulse Response Function) effect on Third Party Funds and Loans at Conventional Banks and Sharia Commercial Banks. Where the REXCH variable has the highest influence compared to other macroeconomic indicator variables.

The results of research based on IRF (Impulse Re-

Table 5: Variance Decompositions of Deposit

Period	Percentages of Forecast variance explained by innovations in :									
	Conventional Loan					Islamic Financing				
Monthly	CBDEP	ONR	EC	INF	REXCH	IBDEP	ONR	EC	INF	REXCH
Before GFC										
1	100.000	0.000	0.000	0.000	0.000	100.000	0.000	0.000	0.000	0.000
2	99.090	0.067	0.364	0.122	0.356	96.980	1.170	0.914	0.898	0.039
3	97.963	0.171	0.465	0.402	1.000	94.223	2.308	1.400	1.836	0.233
4	96.604	0.312	0.453	0.766	1.864	92.146	3.105	1.687	2.445	0.617
5	95.051	0.495	0.405	1.157	2.891	90.539	3.602	1.892	2.787	1.180
6	93.366	0.724	0.350	1.541	4.019	89.207	3.880	2.057	2.968	1.887
7	91.616	1.001	0.297	1.895	5.191	88.036	4.006	2.199	3.062	2.697
8	89.858	1.323	0.252	2.210	6.358	86.970	4.028	2.323	3.113	3.567
9	88.138	1.686	0.214	2.479	7.483	85.986	3.981	2.434	3.145	4.454
10	86.493	2.083	0.184	2.702	8.538	85.079	3.891	2.532	3.173	5.325
After GFC										
1	100.000	0.000	0.000	0.000	0.000	100.000	0.000	0.000	0.000	0.000
2	98.329	0.077	0.096	0.227	1.271	99.090	0.053	0.002	0.788	0.068
3	98.139	0.211	0.095	0.221	1.333	97.468	0.073	0.008	2.284	0.167
4	98.040	0.394	0.193	0.184	1.189	95.176	0.094	0.022	4.203	0.505
5	97.948	0.569	0.308	0.150	1.025	92.640	0.096	0.019	6.318	0.927
6	97.832	0.730	0.420	0.134	0.884	90.088	0.090	0.023	8.474	1.326
7	97.706	0.870	0.514	0.137	0.773	87.608	0.079	0.063	1.060	1.651
8	97.581	0.993	0.586	0.153	0.687	85.220	0.069	0.162	1.265	1.897
9	97.464	1.099	0.639	0.179	0.619	82.923	0.060	0.327	1.462	2.071
10	97.358	1.192	0.677	0.209	0.564	80.715	0.054	0.556	1.649	2.186

response Function) and VDA (Variance Decomposition Analysis) show that both Sharia Commercial Banks and Conventional banks respond to macroeconomic shocks such as ONR (Overnight Rate), EC (Economic), INF (Inflation) and REXCH (Foreign Exchange Rate) with before and after Global periods Financial Crisis. The results of the study show that Sharia Commercial Bank responds to macroeconomic shocks in contrast to the opinion of the research by Ibrahim & Sufian (2014) and Othman et al. (2012), which states that Sharia Commercial Banks are more stable against macroeconomic shocks than conventional banks. The result of this research is that Conventional Banks and Sharia

Commercial Banks are affected by macroeconomic conditions and macroeconomic fluctuations. The results of this study can provide government information and banking regulator in providing a policy.

Some implications based on the results of this study can be input to banking policies, namely having to pay attention to macroeconomic conditions, especially on the variables, namely ONR (Overnight Rate), EC (Economic), INF (Inflation) and REXCH (Foreign Exchange Rate). Banks are expected to take their business decisions carefully and always carry out risk management and pay attention to the stability and soundness of the bank. Banks are expected to make their business decisions also

must comply with the rules of the Central Bank and the Financial Service Authority and specifically for Shariah Commercial Banks must also comply with the rules of Shariah Board. The results of this study are expected to be developed to be able to measure the risks faced by banks related to macroeconomics to avoid financial instability.

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