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The Global Economic Crisis and Its Impact on Bank Lending in Indonesia

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ABSTRACT

This study examined the impact of the crisis on bank lending in Indonesia. The crisis was also interacted with profitability and liquidity to see the impact of profitability and liquidity during the global economic crisis on bank lending in Indonesia. This study involves bank specific as control variable and macroeconomic variables. Using panel data, I constructed a panel of 1,372 bank-year observations for 98 banks in Indonesiain the period 2002-2015. The empirical results showed that the profitability proxyed from Return On Asset affected bank lending negatively, but this effect was relatively insigniûcant. The study also found a positive and significant impact between liquidity and bank lending in Indonesia. Meanwhile only GDP which had a significant impact on lending with a positive sign.

Kata Kunci:
Krisis; Profitabilitas; Likuiditas; Penyaluran Kredit; dan Perbankan

ABSTRAK

Penelitian ini bertujuan menguji dampak krisis terhadap penyaluran kredit bank di Indonesia.Variabel krisis juga diinteraksikan dengan profitabilitas dan likuiditas untuk melihat dampak profitabilitas dan likuiditas selama krisis ekonomi global terhadap penyaluran kredit bank di Indonesia. Penelitian ini juga melibatkan variabel kontrol seperti karakteristik bank dan variabel makroekonomi. Menggunakan data panel, saya menganalisis 1,372 observasi dari 98 bank di Indonesia dari tahun 2002-2015. Hasil kajian empiris menunjukan bahwa profitabilitas yang diproxikan dengan Return On Asset berdampak negatif namun dampaknya tidak signifikan. Penelitian ini juga menemukan adanya dampak positif dan signifikan antara likuiditas dan penyaluran kredit bank di Indonesia. Sementara itu, hanya variabel GDP yang memiliki dampak signifikan terhadap penyaluran kredit dengan arah positif.

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In 2008 and 2009 there has been a global financial crisis. The crisis has affected the world economy including East Asia. Raz et al. (2012) found the economic crisis had a significant impact on East Asian economic growth. The Asian financial crisis of 1997-1998 and the global financial crisis of 2008 made economic growth of East Asian countries experiencing a decline in economic growth. Although in 2008 and 2009, countries in East Asia looked more ready to encounter the global economic crisis than when the Asian financial crisis.

The global financial crisis did not only affect economic growth but also affected banking industry. The global financial crisis has impacted bank performance such as bank profitability (Notta & Vlachvei, 2014; Yudaruddin, 2017a), bank efficiency (Andrie' & Ursu, 2016), bank stability (Cernohorska, 2015), and bank lending (Pontines & Siregar, 2012; Silalahi, Wibowo, & Nurlian, 2012; Allen, Jackowicz, & Kowalewski, 2013; Cull & Pería, 2013; De Haas & Van Lelyveld, 2014; Yudaruddin, 2017b).

In Indonesia, the global economic crisis has an impact on the financial sector including the banking sector. Based on Indonesia Economic Outlook 2009-2012, one of the impacts of the global economic crisis on the banking industry in Indonesia is an increase in liquidity risk. This is an evident from the rise in the Financial Stability Index beyond the maximum limit with the highest value occurring in November 2008 (Bank Indonesia, 2009a). In addition, based on Banking Supervision Report of 2009, during the crisis, 2 things happened to the banking industry in Indonesia, especially related to credit growth. First, credit growth slowed due to the decline in foreign currency credit. Foreign currency loans experienced negative growth of -17.4 percent. This is due to the appreciation of the rupiah against the US dollar and the decline in export and import activities. Second, the growth of consumption credit and working capital has decreased. Distribution of credit especially for consumption activity has the lowest point in the last 3 years. The same thing also happened in the distribution of working capital credit which decreased from the previous 2 years growth reached 28 percent to 2.7 percent (Bank Indonesia, 2009b).

The empirical evidence suggests that there is indeed ambiguity as to the expected sign of this crisis on bank lending. On the one hand the crisis has a negative impact on lending, but on the other hand the crisis has a positive impact on lending. This means that the impact of the crisis can give different results, where during the crisis, the bank's behavior is to reduce lending, but there are banks that increase its lending. For those who behave to increase lending, this is because the affiliate offices of foreign banks in the host country can rely on their parent banks to get support during the crisis so that foreign banks become insensitive to the crisis. For banks that behave in reducing lending, this is because the nature and scale of sharpness of the global financial crisis leads to a reduction in capital support from the parent bank. This condition has an impact on the parent of a foreign bank so that the crisis affects less bank lending in home country and host country (Silalahi, Wibowo, & Nurlian, 2012; Choi, 2013; De Haas & Van Lelyveld, 2014).

The global financial crisis has a different impact, especially on state-owned banks and foreign banks. Allen, Jackowicz, & Kowalewski (2013) examined foreign and government-owned banks in Central and Eastern Europe found different reactions during the 2008 global financial crisis. The results found that foreign banks reduced lending during the crisis while state-owned banks increased lending. As a result, transmission risks increase from foreign banks, but state-owned banks can block it. While De Haas & Van Lelyveld (2014) specifically examined Domestic Banks in Central and Eastern Europe found different reactions to the business cycle and the impact of the crisis from the home country of the bank. The conditions of the host country are important for the growth of foreign banks because there is a significant and negative relationship between the economic growth of the home country and host country with the landing of the foreign bank. Fungáèová, Herrala, & Weill (2013) found during the crisis period only state-owned banks that had a significant negative effect on the decrease of lending while foreign banks had a negative effect was not significant. Pontines & Siregar (2012) specifically examined the ASEAN region in foreign banks and joint venture banks during the 2008 global economic crisis found that foreign banks tend to pull out of host countries during the crisis. As a result, during the crisis, lending of foreign banks to the host country declined.

The global financial crisis does not only affect bank lending but also bank characteristics such as profitability and liquidity. The study of these variables found that profitability and liquidity could reduce the impact of the crisis on lending. The high profitability of banks has influenced the weakening impact of the global economic crisis on loan growth. Such finding indicates that bank behavior is more likely to increase its lending. Allen, Jackowicz, & Kowalewski (2013) document that the interaction of profitability with the crisis shows a positive sign for credit growth which means that the increased profitability of banks will be able to weaken the impact of the crisis on bank lending. High bank profitability during the crisis will be able to maintain the quality of assets and profits, and increase credit growth. In contrast to Cull & Perían (2013) finding that bank profitability has a negative sign for lending. The study suggests that the high profitability of banks is not able to weaken the impact of the crisis on bank lending, so banks tend to reduce their lending.

Several studies that interacted with the liquidity crisis found that the higher liquidity of banks will reduce the impact of the global economic crisis on credit growth. Choi (2013) found that liquidity interaction has a positive effect on the relationship with the bank lending with crisis. This finding shows that the increased liquidity of banks before the crisis will make banks have a high supply of funds and do not make banks worried about the impact of the crisis. The high liquidity of banks before the crisis became the reference of banks to tend to increase their lending. However, different from De Haas & Van Lelyveld (2014) who found that liquidity showed negative results on the interaction of the crisis with the liquidity of banks to lending. This means that banks with high liquidity are not able to reduce the impact of the global crisis on bank lending, so banks are more likely to reduce bank lending.

This research involved control variables such as capital and bank size. It also involved macroeconomic variables such as gross domestic product (GDP) and inflation. The impact of capital and the size of banks on lending banks is expected to be positive. While GDP is expected to be positive and inflation is expected to be negative on lending banks (Bebczuk et al., 2011; Stepanyan & Guo, 2011; Pontines & Siregar, 2012; Silalahi, Wibowo, & Nurlian, 2012; Allen, Jackowicz, & Kowalewski, 2013; Cull & Pería, 2013; De Haas & Van Lelyveld, 2014).

The purpose of this study is to investigate the impact of the global economic crisis on bank lending in Indonesia. The research conducted by Haryati (2009) on lending banks did not specifically use the crisis variable in his research. In addition, the research period is limited to using only 5 years (2005-2009) so that the impact after the crisis (after 2009) is not identified. Second, examine the impact of profitability and liquidity on bank lending in Indonesia. Contribution in this study, first, this article examines the impact of the crisis on lending banks particularly to banks in Indonesia. Third, this study not only examines the conditions during the crisis, but also interacts the crisis with profitability and liquidity to figure out how profitability and liquidity reduce the impact of the crisis on bank lending in Indonesia.

METHODS

The model in this study is adapted research by Pontines & Siregar (2012), Allen, Jackowicz, & Kowalewski (2013), and Choi (2013). Pontines & Siregar (2012) examined the ASEAN region on foreign banks and joint ventures during the global economic crisis. Allen, Jackowicz, & Kowalewski (2013) investigated the impact of the global economic crisis on lending of foreign banks and state-owned banks in the European region. While Choi (2013) examines the impact of the global crisis on lending in Europe, West Asia, and Latin America. This study complements these 3 studies in particular to examine the impact of the global economic crisis of 2008 and 2009 on lending foreign banks, joint ventures bank, domestic banks, and state-owned banks during 2002-2015 in Indonesia. To test the relationship between lending bank and crisis, the bank speciûc, and macroeconomic determinants described earlier, this study estimate a linear regression model as follows:

$$GLOAN_{i,t} = \alpha + \beta_1 CRISIS_{i,t} + \beta_2 ROA_{i,t} + \beta_3 CRISIS*ROA_{i,t} + \beta_4 LIQ_{i,t} + \beta_5 KRISIS*LIQ_{i,t} + \beta_6 SOL_{i,t} + \beta_7 SIZE_{i,t} + \beta_8 PDB_t + \beta_9 INF_t + \varepsilon_{i,t}$$

The independent variable used in this research is lending bank which is proxied from credit growth (GLOAN) at bank i and t (all bank in Indonesia year 2002-2015). The global economic crisis is marked by the global economic crisis that occurred in 2008 and 2009 (CRISIS). We examined the ownership structure of all banks in our sample and constructed one crisis dummy variables for each bank in each year. For the dummy variable of crisis, we do interaction between crisis variable with profitability and bank liquidity. The purpose of variable interaction is to see the impact of profitability and liquidity during the global economic crisis (CRISIS*ROA and CRISIS*LIQ) on bank lending in Indonesia.

Table 1. Deûnition of Variables

Variables		Description	Source
Landing	$GLOAN_{i,t}$	Credit growth in bank i in year t	Bank Indonesia
The global economic crisis	$CRISIS_{i,t}$	CRISIS is a dummy variable that take a value of 1 for the global economic crisis are the years 2008 and 2009	
Profitability	$ROA_{i,t}$	The return on assets of the bank in year *t*	Bank Indonesia
Interaction between Crisis and Profitability	$CRISIS*ROA_{i,t}$		Bank Indonesia
Liquidity	$LIQ_{i,t}$	Loan to Deposit Ratio of the bank in year *t*	Bank Indonesia
Interaction between Crisis and Liquidity	$CRISIS*LIQ_{i,t}$		Bank Indonesia
Capital Strength	SOL_{it}	A measure of bank's capital strength in year t, calculated as equity/ total assets	Bank Indonesia
Bank Size	$SIZE_{it}$	The natural logarithm of the accounting value of the total assets of the bank in year *t*	Bank Indonesia
GDP growth	GDP_t	The yearly real gross domestik product (GDP) growth (in percent)	Badan Pusat Statistik (BPS-Statistics Indonesia)
Inflation	INF_t	The annual inflation rate (in percent)	BPS-Statistics Indonesia

This study constructed balanced panel dataset using both bank-level and macroeconomic data. The bank-level data are from Bank Indonesia. The macroeconomic dataare from BPS-Statistics Indonesia. The sample includedforeign banks, joint ventures bank, domestic banks and state-owned banks commercial banks that were operating in Indonesia in the period 2002-2015. Using these data, we constructed a panel of 1,372 bank-year observations for 98 banks in Indonesia. The sample included 4 banks for State Owned Banks, 25 banks for Foreign Exchange Commercial Banks, 23 banks for Non Foreign Exchange Commercial Banks, 26 banks for Regional Development Banks, 11 banks for Joint Venture Banks, and 9 banks for Foreign Banks.

Panel data regression was used for data analysis. PLS, Fixed Effects, and Random Effects were the modal alternatives used for data analysis. To select the best model this study used Chow test and Hausman test. PLS is used if in chow test, probability is not significant. Conversely, if the result is significant then Fixed Effect is better than PLS. Meanwhile, if the Hausman test shows significant result, the FE model is better compared with RE (Juanda & Junaidi, 2012).

RESULTS

The description of all variables can be seen in Table 2. If the mean value of the variable is smaller than the standard deviation, it indicates that the variable becomes the repersentation of each variable analyzed. Liquidity variable, bank size, capital, gross domestic product, and inflation can be representations of variables because the average value is smaller than the standard deviation.

Table 2. Summary Statistic of Dependent and Explanatory Variables

	Mean	Median	Maximum	Minimum	Std. Dev.	Obs.
GLOAN	29.64074	20.74654	1131.652	-97.4643	72.91578	1372
CRISIS	0.142857	0.000000	1.000000	0.000000	0.350055	1372
ROA	2.349168	2.330000	57.00000	-152.99	5.016803	1372
CRISIS*ROA	0.350707	0.000000	11.12000	-15.82	1.270343	1372
LIQ	84.90365	81.14000	620.2500	1.000000	48.72273	1372
CRISIS*LIQ	12.18040	0.000000	313.4500	0.000000	32.59571	1372
SIZE	15.36089	15.27654	20.55603	9.875242	1.853797	1372
SOL	0.143682	0.115890	2.999623	-0.03702	0.131852	1372
GDP	15.99936	14.05350	25.25501	9.227886	5.499438	1372
INF	14.97574	14.87920	20.49003	5.060000	1.915489	1372

Tabel 3. Correlation Matrix for the Explanatory Variables

	CRISIS	ROA	LIQ	SIZE	SOL	GDP	INF
CRISIS	1.000000	0.008611	0.003010	-0.005812	0.087223	0.242932	-0.008727
ROA		1.000000	0.009023	0.038437	0.029051	0.054733	0.030658
LIQ			1.000000	0.057979	0.200448	-0.135589	-0.034562
SIZE				1.000000	-0.324116	-0.188657	0.948307
SOL					1.000000	0.013800	-0.361673
GDP						1.000000	-0.170489
INF							1.000000

Table 3 provides information on the degree of correlation between the explanatory variables used in the panel regression analysis. The matrix shows thatin general the correlation between the explanatory variables is not strong, suggestingthat multicollinearity problem is not severe unless SIZE with Inflation shows a correlation of 0.94. To solve this problem, multicolinearity can be neglected and will still produce a blue best linear unbiased estimator (BLUE) estimator although multicolinearity will only cause difficulty in obtaining an estimator with a small error standard (Widarjono, 2013).

In the estimation of the impact of independent variables on bank lending in Indonesia using panel data regression testing to find the best model. The test is done by using chow test and hausman test so that it can be known the right regression model is PLS model, Fixed Effect, or Random Effect. Based on Chow and Hausman test results found showed in Table 4.

Based on Table 4, then result of Chow test result can be seen that value of F test and chi-square value significant that is equal to 0.0001 or smaller than 0.05. This Fixed Effect is better than PLS. Having obtained the result that Fixed Effect is better than PLS, then the next step, test to compare between Fixed Effect with Random Effect. Test conducted to test it is with Hausman test.

Based on Table 5, the Hausman test results show that p-value greater than 0.05 is 1.0000. Thus it can be concluded that Random Effect is better than Fixed Effect. The analysis result also shows that there is no autocorrelation and heteroskedasticity with Random Effect result as showed in Table 6.

Table 4. Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section F	1.691462	(97.1264)	0.0001
Cross-section Chi-square	167.322096	97	0.0000

Table 5. Method Test Results Using Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	9	1.0000

Table 6. Estimations Results of Panel Regression

Dependent Variable	Independent Variables	Coefficient	t-Statistic	Prob.	Sign	
GLOAN	Konstanta	62.98670	2.749380	0.0060	(+)	Sig.
	CRISIS	12.86719	0.863597	0.3880	(+)	No Sig.
	ROA	-1.135391	-1.464451	0.1433	(-)	No Sig.
	CRISIS*ROA	0.740813	0.335066	0.7376	(+)	No Sig.
	LIQ	0.105497	2.255607	0.0243	(+)	Sig.
	CRISIS*LIQ	-0.287676	-1.864241	0.0625	(-)	Sig.
	SOL	-8.367280	-0.491566	0.6231	(-)	No Sig.
	SIZE	-0.514033	-0.142540	0.8867	(-)	No Sig.
	PDB	0.642104	1.715292	0.0865	(+)	Sig.
	INF	-2.622477	-0.760321	0.4472	(-)	No Sig.
R -Square: 0.015299						
Adjust R -Square: 0.008787						
F -Statistik: 2.349418						
Prob(F-statistic): 0.012491			Durbin Watson: 1.704855			

Note: coefficients is significant at the 0.10 level

The result of regression analysis found that R Square value of 0.015299 which means variation of dependent variable which can be explained by independent variable equal to 1.5 percent. For the feasibility of the model in the show with the value of F found significant results which means feasible model. Partially, only liquidity variables, interaction between crisis and liquidity and GDP have a significant effect on bank lending in Indonesia. While other variables found the results are not significant.

DISCUSSION

This study examines the impact of the crisis on bank lending in Indonesia. The crisis was also interacted with profitability and liquidity to see the impact of profitability and liquidity during the global economic crisis on bank lending in Indonesia. In addition, capital variables, bank size, GDP, and inflation are also included, in examining their impact on bank lending in Indonesia.

This study found the crisis has a positive and insignificant sign. This means the crisis has no significant impact on lending. The results are different from previous studies that found significant negative impacts of the crisis on lending (Silalahi, Wibowo, & Nurlian, 2012; Allen, Jackowicz, & Kowalewski, 2013; Choi, 2013; De Haas & Van Lelyveld, 2014). These results indicate the overall banking industry in Indonesia during the global economic crisis that occurred in 2008-2009 did not affect the decline in bank lending in Indonesia.

The empirical results show that the profitability effect proxyed from ROA affects bank proûtability negatively, but this effect is relatively insigniûcant. Hence, this study ûnds no evidence to support the study by Cull & Pería (2013). Similarly, during the crisis period, the interaction between the crisis and profitability was found to have an insignificant impact on bank lending in Indonesia. This indicates that profitability is not a consideration for banks in bank lending in Indonesia.

All estimated equations show that the effect of liquidity on lending is not important. The results of the study found a positive and significant impact between liquidity and bank lending in Indonesia. This result is in line with the positive expectation. A positive sign that liquidity increases encourages banks to behave in improving bank lending in Indonesia. While the impact of liquidity on the lending of Indonesian banks during the global economic crisis found significant negative results. These results indicate that bank liquidity during the crisis has not been able to reduce the impact of the crisis on bank lending. This is in line with the results of De Haas & Van Lelyveld (2014) research which explains that liquidity shows negative results on the relationship of crisis with lending.

Turning to the other explanatory variables, particularly control variables, only GDP has a significant impact on lending with a positive sign. This result is in line with expectations that are positive. This indicates increased economic activity followed by an increase in bank lending in Indonesia. This means that in other words, banks tend to behave to increase lending due to the increase of economic activity. Positive and significant in line with research conducted by Bebczuk et al. (2011), Stepanyan & Guo (2011), Pontines & Siregar (2012), Silalahi, Wibowo, & Nurlian (2012), Allen, Jackowicz, & Kowalewski (2013), Cull & Pería (2013), and De Haas & Van Lelyveld (2014).

CONCLUSION AND SUGGESTIONS

Conclusion

The global economic crisis that occurred in 2008 and 2009 has had an impact on the banking industry in Indonesia. This study specifically investigates the impact of the crisis on bank lending in Indonesia. In addition, the crisis was interacted with profitability and liquidity to see the impact of profitability and liquidity on bank lending. The study found the crisis had no significant impact on lending. This indicates the global economic crisis of 2008-2009 does not become the determinant of banks in lending. While the impact of crisis interaction with profitability and liquidity, only the interaction of the crisis with liquidity that has a significant impact on bank lending with a negative sign. This means that during the crisis, the ability of liquidity from banks during the crisis has not been able to reduce the impact of the crisis on the decrease lending.

Suggestions

This findings in this study support the formulation of banking policies, paticularly regarding the bank's liquidity limits during the crisis. The goal is to reduce the impact of the crisis on lending.Further research is necessary to analyze how ownership has an impact on lending. Ownership consists of State Owned Banks, Foreign Exchange Commercial Banks, Non Foreign Exchange Commercial Banks, Regional Development Banks, Joint Venture Banks, and Foreign Banks. A particularly interesting issue is that ownership variables can be interacted with crises and bank-specific factors.

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