Does Loan-to-Value Support Financial Stability in Indonesia?

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Abstract

To reduce risk exposures in Indonesia, the central bank employs macroprudential devices, one of which is loan to value (LTV). The implementation helps to improve financial stability. Our study analyses the impact of LTV on banking financial stability. We employ panel GMM-System to reduce the bias of analysis for eighteen commercial banks from 2004 to 2019. The result shows that the LTV instrument confirms an improvement effect on the financial stability index. It implies that the more tighten policy on mortgage and vehicle loan, the more stable financial system especially in banking sector in Indonesia.

Keywords: loan-to-value, financial stability, macroprudential policy

1. Introduction

Financial stability has emerged as a critical component of worldwide economic growth during the economic meltdown of 2007–2008, and monetary policy that prioritizes low and stable inflation has proven ineffective for preserving financial stability (Hughes Hallett, Libich, and Stehlík 2011; Y. Jiang et al. 2019). Furthermore, Morgan (2013) emphasised that since policymakers concentrated mostly on individual banks and regulators globally, measures based on the microprudential method of financial supervision are insufficient. Therefore, a policy framework is prepared to overcome financial system instability, namely the macroprudential policy.

Macroprudential tool implementation presents a problem, particularly in developing market nations where financial innovation seems to be occurring as a consequence of their banking industry's rapid expansion of activity (Gadanecz and Jayaram 2015). Tovar, Garcia-Escribano, and Martin (2012) and Bank for International Settlements (2012) argued that developing countries use more macroprudential instruments than developed countries. The usage of variable tools is dependent on the pace of development and growth, the currency value regulation, and the resilience of the monetary system to disturbances (Ramos-Francia 2018).

The implementation of macroprudential policy in another country has effectively affected to the financial stability. Bruno, Shim, and Shin (2017) argue that in comparison to a set of comparator nations, macroprudential policies in Korea that prioritize quasi deposits have lessened the vulnerability of bank lending to external variables. Indonesia has implementing macroprudential policy instruments in order to mitigate and prevent the future financial shock. More stringent lending terms backed by borrowers could help control this scenario by lowering credit growth. Additionally, by taking out loans from customers who fulfil stricter conditions, it can help banks' financial standing and hence boost stability.

Knowing the traits of financial cycles is essential to measuring the emergence of unstable situations, which may then be identified to preserve financial health (González-Páramo and Bank für Internationalen Zahlungsausgleich 2012; Gadanecz and Jayaram 2015). Most of previous studies provide the impact of macroprudential instruments implementation. The Countercyclical Capital Buffer (CCB) is regarded as a very effective effective macroprudential

measure in Spain and aids in calming bank lending booms (Jiménez et al. 2017). Bruno, Shim, and Shin (2017) argue that in comparison to a set of benchmark nations, macroprudential policies in Korea that prioritize non-core loans have lessened the susceptibility of bank lending to external variables. As noted in Jiang et al. (2019), increase in macroprudential policy indicator will be responded by an improvement in China's financial institutions' financial health.

However, they do not focus on the implementation of loan to value for giving a robust contribution on strengthening financial stability. Thus, we try to fill the gap by analysing the effect of loan-to-value implementation on financial stability in Indonesia. Our study contributes to three extended factors. First, we compare the effect of different bank characteristics on financial stability. Second, we reveal the major macroeconomic phenomena in a specific emerging economy, Indonesia. Third, we focused on the implementation of loan-to-value in strengthening financial stability in Indonesia. This cross information will help provide practical policy recommendations for issues in the age of financial stability.

2.   Related Empirical Studies

Through the application of the system of generalized method of moments (Systems-GMM), Jiang et al. (2019) analysed the stability and sustainability of China's macroprudential regulation and quantitative easing. They employed 88 commercial banks and macroeconomic data from 2003 to 2017. The result shows that macroprudential indicator has negative and significant effect to the bank risk-taking which means that, oppositely an increase in macroprudential policy indicator will be responded by an increase the financial stability.

H. Jiang, Zhang, and Sun (2019) examined the impact of statutory reserve buffers on Chinese banks' willingness to take risks. They used quantile regression analysis of OLS and System-GMM for robustness check in order to estimates 135 Chinese banks and macroeconomic data from 2004-2017. They follow Shim (2013) that used the ratio of non-profitable funding and financial stability index using Z-score which times it with -1 as measure the bank risk taking. The calculation of bank capital buffer as main independent variable follow the study of X. Huang and Xiong (2015). The findings demonstrate that statutory reserve buffers have a detrimental impact on bank financial speculation.

Noman, Gee, and Isa (2017) X examined how rivalry within the banking industry influenced the financial health of 188 commercial banks across five Southeast Asian nations. They used generalized method of moments (GMM) with some instrumental variables. They employed Z-score represents financial stability as dependent variable and H-statistic represents competition from Panzar-Rosse method. The outcome demonstrates that financial health is positively and significantly impacted by rivalry, size of the bank, and Economic growth.

Avdjiev, Hale, and Federal Reserve Bank of San Francisco (2018) During 2000 until 2014, X examined the impact of LTV caps and exchange rate margin requirements for 16 banking systems and 53 counterparties nations. They came to the conclusion that a rise in global bank loans by foreign-headquartered banks to debtors in the countries that enacted the relevant policy is correlated with restriction of both LTV restrictions and exchange rates margin requirements.

3.   Method

This study will use yearly data which contains two types of data set, bank scope level and macroeconomic level from 2004 to 2019. The entire data was mostly gathered from the World Bank, the Financial Services Authority of Indonesia, and the Central Bank of Indonesia (BI) websites. This study will analyse the stability of 18 conventional commercial banks in Indonesia. Generally, banks in Indonesia are categorized into six groups. We used top three size of banks of each group.

The impact of LTV on Indonesia's financial stability was the main topic of this investigation. Thus, the following is how we utilize the generic estimation technique:

$$FSI_{it} = \alpha + \beta Bank\ Control_{it} + \vartheta LTV_{it} + \emptyset Macroeconomic\ Control_{it} + \varepsilon_{it} \qquad (1)$$

Where i = 1 to N and t = 1 to T, N means the total of individual banks, T denotes as period, and $\alpha, \beta, \vartheta, \emptyset$ are estimated parameters. $Stability_{it}$ implies financial stability index for bank i at time t. We employ Z-score as proxy of the financial stability index. $Bank\ Control_{it}$ represents bank characteristic for bank i at time t. Multiple bank aspects would be incorporated in the study: asset composition, size, and operational effectiveness. LTV_{it} indicates effectiveness of implementation of loan-to-value (LTV). $Macroeconomic\ Control_{it}$ indicates effect of macroeconomic condition which is included the yearly GDP growth rate and inflation rate. ε_{it} represents error term.

This investigation will make use of a dynamic panel model to examine the efficiency of macroprudential policy tools and the factors that affect financial stability. Follwoing that it accurately represents the nature of monetary stability and possible confounding issues in parameter estimations. We apply instrumental variable technique to eliminate the correlation bias between error term and lag dependent variable, the Generalized Method of Moments (GMM).

Particularly, this study applies two-step System-GMM estimation which found by Arellano and Bond (1991) and Blundell and Bond (1998) to produce perfect estimators. Moreover, System-GMM has better estimation that can estimate the coefficient of the explanatory variables. Furthermore, this estimator has unchangeable time of the instrument variables. The transformed econometric model by the System-GMM is presented in the following equation:

$$FSI_{it} = \alpha + \beta Bank\ Control_{it} + \vartheta LTV_{it} + \emptyset Macroeconomic\ Control_{it} + \gamma_t + \gamma_i + \varepsilon_{it} \qquad (2)$$

Where γ_t indicates time effect which has i = 1 to T and γ_i indicates bank effect which has t = 1 to N, and $\alpha, \beta, \vartheta, \emptyset$ are estimated parameters. ε_{it} is error term of model estimates.

4. Result and Discussion

The descriptive statistics of the data that were utilized to approximate the equation (2) serve as the basis for the analysis. For both the dependent and independent variables, we typically employed the identical quantity of data. Because the distribution of the data across the many parameters varies, some of the parameters are transformed into logarithm forms. The summary statistic of each variable is revealed in Table 1 as follows:

Table 1. Statistics Descriptive

Variable	Mean	Median	Max.	Min.	s.d.
FSI	3.607606	3.633736	7.362738	-2.73454	1.167299
Asset Composition	0.557846	0.559678	0.818855	0.270976	0.123322
Bank Size	2.883473	2.887867	3.04539	2.569538	0.084203
Operational Efficiency	0.873256	0.795862	2.954928	-1.51759	0.710955
LTV	38.4375	35	85	0	38.66441
Inflation	1.663496	1.657457	2.839663	1.000632	0.531675
GDP Growth	1.703996	1.675741	1.870263	1.532557	0.102734

Abbreviation of *s.d.* is the standard deviation (Source: Author's Computation).

Various forms of commercial banks' total assets, which serve as a measure of a bank's size, range greatly from one another. Compared to other types of banks, government financial institutions get a greater investment portfolio. Z-score as proxy of financial stability has mean value 3.607606 which mean stability in the Indonesian commercial bank's regulation is relatively high with standard deviation of 1.167299. The high of z-score caused by the rapid growth of economy, good systemic risk management by the central bank, and other policy implemented in Indonesia.

The LTV is important variable in this study as one of macroprudential policy instrument. The maximum average of LTV is 85% with minimum is 0% when the LTV policy was not implemented yet. The amount of maximum mean 85% of LTV is tighter that was first implemented in 2015 than the previous period.

The empirical analysis of this study is mainly focused on the impact of a macroprudential policy tool that was implemented on the financial stability in Indonesia, LTV. Table 2 shows the result of System Generalized Method of Moment (SYS-GMM). The result displays the individual impact of LTV on financial stability.

Overall, the bank characteristic variables have an affirmative impact on bank financial stability, except the variable of operational efficiency. The size of the bank has a favorable and significant influence on the financial health of the bank industry. It reveals that the increased size of banks improves the stability score of the banking sector. The ratio of credit amount over total assets builds the variable of asset composition It represents the composition credit that a bank gave to the third counterpart.

Table 2 Estimation Result of System Generalized Method of Moment (SYS-GMM)

Variable	Coefficient	Standard Deviation
c	-1.39924	2.719125
Bank Size	1.800726**	0.87265
Asset Composition	0.398395	0.258806
Operational Efficiency	0.063944**	0.025742
LTV	0.039019**	0.019076
Inflation	-0.01632	0.128035
GDP Growth	-0.17163	0.665329
Instrument Rank	10	
J-statistic	261.0000***	

Significant levels at 1%, 5%, and 10% are indicated by the symbols *, **, and ***, correspondingly (Source: Author's Computation).

LTV increase financial stability as it has positive and significant coefficient of 0.039019 on financial stability index as it is showed in column 1. It reveals that a one-point increase in the loan to value as the effect of increasing income or decreasing price of property, will improve financial stability around 3.9 percent. The variable of macroeconomic control includes the inflation rate and GDP growth in Indonesia. The estimation result of macroeconomic control variables shows an insignificant effect on z-score than other control variables. The index of the financial resilience of the banking industry reacts to an unit rise in inflation by lowering by about 1.632 percent, according to the coefficient value of -0.01632. Similar to this, at a 10% level, Indonesia's banks industry's financial health is significantly impacted by economic growth. The coefficient value of 0.17163 indicates that when business cycle and other economic activity expand along with cconomic growth, the financial stability of Indonesia's commercial banks grows by 1.7163 percent.

5. Conclusion

Overall, a strengthening of the macroprudential policy implemented by Bank Indonesia worsens the risk-taking banks and improves the banks financial stability condition. According to our data, LTV significantly and favourably affects the financial stability index. An increase in loan to value as the more tightening policy increases the stability of the banks industry in Indonesia. We recommend developing the banking system in Indonesia for the growth of commercial banks and increase a conducive banking environment by effectively maintaining LTV for providing sustainable financial stability.

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