BANK CONCENTRATION AND BANKING STABILITY: EVIDENCE FROM EAGLE GROUP

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Abstract: The study was conducted to assess the impact of the banking sector's concentration on the banking system's stability in Emerging and growth-leading economies (EAGLEs). In addition, the study also analyzed the role of macroeconomic factors in bank stability. By applying Bayesian multivariate linear regression, the posterior probability results show that money supply growth and credit growth erode the soundness of the banking system. On the other hand, economic growth helps to improve banking stability, but this effect is not obvious; surprisingly, inflation also increases the banking stability of the Emerging and growth-leading economies. Finally, the study shows that the equity ratio to total assets has a reverse relationship with bank stability. Due to data limitations, this study has not yet examined the role of macroprudential policy instruments in maintaining banking stability. Hence, in future studies, besides the factors considered in this study, we should focus on analyzing the impact of macroprudential policy instruments on banking stability.

Keywords: Bank Concentration, Banking Stability, EAGLEs

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In recent decades, financial instability has become the primary concern of policymakers and researchers worldwide. Since the 2008 global financial crisis, both developed and developing countries have implemented drastic reforms to their financial systems, focusing on the banking system. Banking operations have undergone significant structural, regulatory changes in a competitive and often volatile environment. The trend of mergers

and acquisitions of weak banks has taken place regularly in many countries such as Vietnam; banks have decreased sharply in number but significantly increased in assets to improve the soundness of the banking system.

The idea of this process emphasizes the importance of banking centralization and the creation of stronger banks for stronger banks and a more resilient financial system. Accordingly, large credit institutions can collect information, screen and monitor borrowers, and antes and foster long-term relationships between borrowers and lenders, thereby reducing the problems associated with moral hazard and adverse selection. Contemporaneously, banking centralization could prevent financial instability caused by excessive competition. Market en-



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try of new players could lead to a decrease in the market share of the financial institutions and, therefore, lower profits; this prompts banks to increase risk assets to create more profit aiming to cover losses (Allen and Gale, 2000; Hellmann et al., 2000). In addition, banks with large assets would be better able to withstand shocks, and thus the whole financial system becomes more stable. There are many researchers, however, not a consensus on this judgment. Stigler (2010) stated that banking concentration manifests oligopoly and oligopoly in the banking sector, which is not conducive to financial development. Ioannou et al. (2019) point out that banks with monopoly power tend to lend excessively in the belief that they are "too big to fail"; These behaviors raise the moral hazard problem and thus reduce the bank's performance. In addition, lower competition leads to increased lending rates; therefore, borrowers tend to shift to riskier projects (Leroy and Lucotte, 2016), which will exacerbate risk ethics and make banks less efficient. Anginer et al. (2014) argue that banks tend to diversify their investments in the face of higher competition, thereby reducing the financial fragility of the banking system.

In summary, the relationship between bank concentration and the financial system's stability has received much attention because financial stability is the foundation for sustainable economic growth. However, research results about the relation of bank concentration and financial stability are much different, Berger (1995); Matutes and Vives (2000); Yeyati and Micco (2007); Bahri and Hamza (2018) supported the idea that bank concentration will promote financial stability. Meanwhile, many other authors oppose this idea, such as Mishkin (1999), Beck, Demirguc-Kunt, and Levine (2006) or Ashraf et al. (2016). Besides, there is no research has been conducted on Emerging and growth-leading economies (EAGLEs). That is a group of countries with very high growth characteristics fast, and this growth is highly dependent on the financial system. Although a country's financial system includes the financial market and the financial institutions, however, according to the data of the World Bank (2020), the average stock trading volume of the group of EAGLEs in 2018 was only 25 0.74% GDP, some of them with meager stock trading volume, such as Iran 5.78% GDP, Egypt 5.8% GDP, Bangladesh 5.89% GDP, Mexico 7.67% GDP, Philippines 8.42% GDP, Russia 8.80% GDP, Pakistan 9.88% GDP, Indonesia is 10.04% GDP while this figure in developed countries such as OECD countries group is 114.03%, even in Hong Kong this figure is 626.74% of GDP in 2018 which shows that the financial market in EAGLEs has not really developed, so the banking system holds a critical position in the financial system of the group of countries EAGLEs. The banking system's stability is a vital factor for the stability of the whole financial system, creating a macro foundation for the sustainable economic growth of these countries. Therefore, research on the impact of bank concentration on financial stability is necessary for the group of EAGLEs.

LITERATURE REVIEW Market Power Theory

When it comes to the relationship between bank concentration and bank stability, many different theories make different forecasts: the Market Power theory. According to the OECD (2002), The theory of market power refers to a firm (or group of firms) that is not subject to significant competitive pressure and thus can maintain prices above competitive levels or reduce quality or output falls below the competitive level and still makes a profit. Currently, there are two opposing approaches when it comes to market power theory: Structure - Conduct - Performance (SCP) theory and the theory of relative market power (RMP) (Chortareas et al., 2011).

The SCP theory, initiated by Chamberlin (1933) and later developed by Bain (1951), determines the correlation between industry structure and firm performance. Enterprises try to differentiate themselves from the competition, but ultimately the industry structure determines the profitability of businesses. This theory implies that the excessive concentration of firms will reduce competition because there is an incentive for cooperation between firms to manipulate the market (Chortareas et al., 2011). Mishkin (1999) states that banks in a highly concentrated market often enjoy public confidence, leading to moral hazard problems and banks tend to increase risk-taking. Caminal and Matutes (2002) suggest that banks tend to exercise lower credit rationing and expand lending in less competitive markets, leading to a fall in bank failure.

Beck et al. (2006), with a dataset of 69 countries for the period 1980–1997, found evidence that economies with lower levels of market concentration are less prone to crisis. Van Hoose (2010) asserts that a high level of industry concentration will enable banks to manipulate the market by imposing low deposit rates and high lending rates. Rising interest rates negatively affect borrowers, which can increase default rates and lead to a crisis (Allen and Douglas, 2000; Illing, 2007; Goodhart et al., 2009). Soedarmono et al. (2011, 2013), with a sample of Asian countries, also found that in countries with a higher degree of market power associated with a higher capital ratio, there is a variation in bank profitability, and the risk of insolvency is higher. Fu et al. (2014) found a trade-off between financial stability and competition in 14 Asia Pacific countries from 2003 to 2010. The results show that higher concentration increases the financial fragility of banks. Through a sample of 543 banks operating in 13 Central and Eastern European (CEE) countries during the period 1998-2005, Agoraki et al. (2011) found that capital requirements generally reduce the risk of the banking system. Still, this effect is significantly weaker for banks with "higher market power" and may even be reversed. Similarly, through a sample of 125 financial firms from Middle Eastern economies for the period 2000-2011, Ashraf et al. (2016) assert, the higher the industry concentration, the greater the risk of defaulting loans.

However, some other studies have refuted this hypothesis through the relative market power (RMP) hypothesis. This theory implies that the larger the bank, the more monopoly it becomes and the more profitable it will be in the market. Large market share and diversified income streams have resulted in greater returns for individual banks (Berger, 1995), and income diversification also reduces the risk for banks. Berger (1995) also argues that market concentration is not a random event but an efficient process. This hypothesis assumes that firms' efficiency increases with size and market share, their ability to generate higher profits leads to a higher degree of market concentration. Stronger banks will improve their ability to collect information, screen and monitor borrowers, thereby reducing non-performing loans. In addition, large banks can offer a wide range of services that build long-term relationships between borrowers and lenders, thereby reducing problems related to moral hazards and adverse selection.

Matutes and Vives (2000) find evidence that higher market power reduces the probability of bank default through Dynamic Models of Imperfect Competition. Based on the moral hazard dynamic model, Hellmann et al. (2000) assert that banking competition harms the prudential decision-making of banks' risky investments. The results of studies by Yeyati and Micco (2007) in 8 Latin American countries, Berger et al. (2009) in 23 developed economies, Turk-Ariss (2010) in 60 developing countries all support assume that banks with higher market power are less risky. Bahri and Hamza (2019) confirm that there is consensus is that market power created by industry concentration is the source of the prudent behavior of banks.

Many recent studies have analyzed important factors in the relationship between loan market structure and banking sector performance, reinforcing the positive relationship between industry concentration and stability bank. One of them is to study the impact of adverse selection and moral hazard on market fragility. Broecker (1990) and Nakamura (1993) suggest that the high level of competition could exacerbate adverse selection problems when borrowers are turned down at a bank that can borrow at other banks, which will cause banks in a competitive market to charge higher interest rates than monopolistic banks.

Too Big To Fail Theory

This theory states that significant corporations, especially financial institutions, are so large and interconnected that their failure would be catastrophic for the economic system; hence they must be supported by the government when they encounter potential loss. According to Ioannou et al. (2019), a

financial institution becomes 'too big to fail' when it grows too large due to its failure threatening the financial system's integrity and that country's economy. Because of its systemic importance, any threat of a bank failure compels the government to avert despite the economy's cost. That leads to fear that too much industry concentration will lead to financial groups that are too large and have an incredibly profound influence on the economy; Its collapse will have a spillover effect catastrophic transmission to the entire economy.

By empirical studies, Koehn and Santomero (1980) have found that a higher capital ratio increases the volatility of total risk in the banking sector. Blum (1999) adopts a dynamic analysis framework also that increasing capital will eventually lead to increased risk. This author explains that if raising capital to meet future standards is too costly, the most reasonable solution for banks is to increase the risk of their portfolios with the expectation of a high return now to meet the minimum capital requirements in the future. Similarly, Iannotta et al. (2007) found a positive correlation between capital and loan losses when analyzing the relationship between capital size and risk of large European banks from 1999 to 2004.

METHOD

Research Models

To measure the financial stability of the banking sector, in this study, the author proposes the Zscore of the banking sector collected and calculated by the World Bank. According to the World Bank's website, the Z-score helps estimate the financial cushion of a country's banking system through the ratio of banks' equity capital and profitability to fluctuations in banks' profitability. Therefore, this index measures the risk of failure of a country's banking system.

The Z-score is calculated through the formula:

$$Z - score_{t} = \frac{ROA_{t} + \frac{E}{A_{t}}}{\delta(ROA)_{t}}$$

where Z-score, : Z-score in year t;

 ROA_t : Return on total assets of banks in year t

 $\frac{E}{A_t}$: Equity to total assets of the bank in year t

The Z-score of the national banking system will be adjusted for the total assets of each bank in that country's banking system. The standard deviation of ROA reflects the volatility of earnings with a bank's risk tolerance calculated as the standard deviation of the bank's return on total assets over three years (Abuzayed et al., 2018). The ratio of average equity to total assets shows the level of financial leverage of the bank. Therefore, the more significant the Z-score, the lower the banking system risk.

To measure industry concentration, in this study, the author employs the Herfindahl-Hirschman Index (HHI), which is a popular measure to calculate the concentration of the market.

This index is determined through the formula:

$$HHI = \sum_{i=1}^{n} S_i^2$$

where S_i is the market share of bank i; n is the number of banks in the system

The HHI has a value of 1/n to 1, the lowest value when all banks in the market are the same size and equal to 1 in the case of a monopoly.

Besides considering the impact of industry concentration, this study also considers the impact of other macroeconomics factors, including:

First, money supply growth. According to Cecchetti et al. (2006), through its tools, the central bank will affect the money supply level of the economy and thereby affect interest rates in the economy to achieve macroeconomic goals. According to Mishkin (2012), when the central bank expands the money supply in the economy, commercial banks are one of the main transmission channels. Commercial banks could lower loan standards to stimulate production, business, and consumption activities to release capital from the central bank into the economy, thereby reducing loan quality and increasing risks to the financial system.

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Second, credit growth. Expanded credit growth will create a driving force for economic growth, but credit growth can also accumulate potential risks, causing asset bubbles and undermining financial stability. In addition, when the lending policy is expanded, it will push banks to lower their borrowing standards, increase riskier investments in pursuit of profits (Adrian and Shin, 2012), resulting in reduced financial system stability.

Third, economic growth. Economic growth will increase the disposable income of individuals and households, helping to improve the borrower's ability to fulfill financial obligations. Furthermore, when income increases, economic actors also tend to consume more, which positively impacts the business results of enterprises, thereby improving the financial capacity of these businesses. Thus, economic growth reduces the non-performing loan ratio of banks (Kjosevski et al., 2019).

Fourth, inflation reduces the real income of individuals and households, which causes the economic subject to reduce spending, leading to stagnation of goods of enterprises, reduced profits, or rising losses of enterprises resulting in increasing the non-performing loan of the banking system. Many empirical studies confirm that inflation increases banks' non-performing loans (see Kastrati, 2011; Diaconu and Oanea, 2014; Abuzayed et al., 2018).

In addition to macroeconomic factors, the author also considers the impact of internal factors in the bank; based on data availability, the author chooses the ratio of Equity to Total Assets. For the capital factor, the theory often mentioned when analyzing credit institutions' risk is the "regulatory hypothesis," according to this theory, credit institutions with low equity ratios face regulations forcing them to increase equity ratio by reducing dividends to shareholders. Anginer and Demirgüç-Kunt (2014) explain that credit institutions increase equity ratio to improve resistance to income shocks, ensure financial capacity, meet withdrawals of deposits and other arrangements with customers. They also believe that higher capital buffers help credit institution owners be more cautious in making investment decisions. However, according to the too-big-to-fall analysis framework presented in section 2, a higher equity ratio can also increase the bank's operational risk (Koehn and Santomero, 1980; Blum, 1999; Iannotta et al., 2007).

Based on the above analysis, the author proposes the following research model:

$$LnZscore_{i,t} = \beta_1 HHI_t + \beta_2 M 2G_t + \beta_3 CRE_t + \beta_4 GDP_t + \beta_5 INF_{i,t} + \beta_6 CAP_{i,t} + \varepsilon_{i,t}$$

 $i = 1, 2, \dots N; t = 1, 2, \dots T$ where i is the country and t is the time

Notation Variables		Expectation sign	Source
Biên phu thuốc			
LnZscore	Natural logarithm of the Z-score		WB
Biên dôc lâp	-		
HHI	Herfindahl-Hirschman index	+/-	WB
M2G	Money supply growth	-	WB
CRE	Credit growth	-	WB
GDP	Economic growth	+	WB
INF	Inflation	-	WB
CAP	Equity to Total Assets	+/-	WB

Table 1. Variables In The Model

Research Data

The study was conducted to assess the impact of industry concentration on banking sector stability for EAGLE countries in the period 2007-2017. The EAGLE country group includes 15 countries, but due to inaccessibility to data for Iran, this country is excluded from the sample. Hence the sample has 14 countries, including Bangladesh, Brazil, China, India, Egypt, Indonesia, Malaysia, Mexico, Nigeria, Pakistan, Philippines, Russia, Turkey, and Vietnam.

RESULTS

Results of Determining The Prior Distribution

According to the author's review, previous research studies were performed using the frequentist approach; thus, prior information is unavailable. However, with a sample of 14 countries, the study period of 11 years, the number of observations is relatively large, so preliminary information does not affect the posterior distribution too much. In this case, Block et al. (2011); propose determining the standard Gaussian distributions with different prior information and conducting Bayesian factor analysis to select the simulation with the best prior information.

The simulations in Table 2 show decreasing prior information levels, with simulation 1 having the strongest prior information and simulation 5 having the weakest prior information.

In the next step, the author conducts regression of the above five simulations, then analysis the Bayesian factor and posterior Bayes test to select the simulation with the most appropriate prior information.

Table 2. Simulation of a Prior Information

Likelihood function	LnZscore ~ $N(\mu, \sigma)$		
Prior distribution			
Simulation 1	$\beta_1 \sim N(0; 1)$ $\sigma^2 \sim \text{Invgamma}(0,01; 0,01)$		
Simulation 2	$\beta_1 \sim N(0; 10)$ $\sigma^2 \sim \text{Invgamma}(0,01; 0,01)$		
Simulation 3	$\beta_1 \sim N(0; 100)$ $\sigma^2 \sim \text{Invgamma}(0,01; 0,01)$		
Simulation 4	$\beta_1 \sim N(0; 1000)$ $\sigma^2 \sim \text{Invgamma}(0,01; 0,01)$		
Simulation 5	$\beta_{i} \sim N(0; 10000)$ $\sigma^{2} \sim \text{Invgamma}(0,01; 0,01)$		
i = 1, 2, 3, 4, 5, 6, 7			

The simulation selected in the Bayesian factor analysis is the simulation with the largest mean Log BF, most significant Log ML, and minimum DIC mean. Thus, the results of Bayesian factor analysis in Table 3 show that simulation 1 has the most advantage. Moreover, Table 3 also indicates that simulation 1 has superior posterior probability than other simulations; therefore, simulation 1 has the most relevant prior information.

Besides, to ensure that the Bayesian inference is valid, the author conducts convergence analysis of MCMC chains through convergence diagnostics by the graph.

Table 3. Results of a Bayesian Factor Test and a Bayes Model Test

	Chains	Avg DIC	Avg log(ML)	log(BF)	P(M y)
Simulation 1	3	322,6173	-172,6647	1	0,6234
Simulation 2	3	323,1632	-173,1698	-0,5052	0,3762
Simulation 3	3	324,3593	-179,9728	-7,3081	0.0004
Simulation 4	3	324,5672	-187,7994	-15,1347	0
Simulation 5	3	324,6638	-195,9518	-23,2871	0

Source: Author's calculations

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Figure 1. Visual Tests for MCMC Convergence

The results in Figure 1 show that the graphs of the parameters in the model are reasonable, the trace plots fluctuate around the mean value, and the histogram shows low autocorrelation; the density histogram has a uniform and normally distributed shape. In addition, the graphs show a good mix. The autocorrelation graph fluctuates around the level of less than 0,02. It proves to be consistent with the distribution simulation density and reflects the lags in the range of effective terms.

Model Estimation Results

The results of Table 5 show that the model acceptance rate reaches 1, the Avg efficiency min is



0,91, higher than the minimum level to be accepted 0,01; Max Gelman-Rubin Rc is 1, the acceptable level is less than 1,2. In addition to the standard error (Std. Dev.), the regression results table also provides the Monte-Carlo standard error (Monte-Carlo Standard Error - MCSE); this value indicates the stability of the MCMC chains. According to Flegal et al. (2008), the closer the MCSE is to zero, the more valid the MCMC chains, these authors also claimed that MCSE values less than 6,5% of the Std. Dev. are acceptable, and a smaller 5% standard deviation is optimal. Thus, the values in Table 5 meet the convergence requirements.

	Mean	Std. Dev.	MCSE	Median	Equal	-tailed
				-	[95% Cred. Interval]	
HHI	1,1279	0,4313	0,0025	1,1302	0,2867	1,9723
CAP	-1,0859	0,7887	0,0046	-1,0939	-2,6267	0,4739
CRE	-0,1542	0,3376	0,0019	-0,1548	-0,8231	0,5047
GDP	0,0745	0,9150	0,0053	0,0726	-1,7077	1,8692
INF	0,4953	0,8351	0,0048	0,4928	-1,1473	2,1350
M2	-0,4281	0,5844	0,0034	-0,4304	-1,5584	0,7305
_cons	2,6167	0,1548	0,0009	2,6175	2,3125	2,9213
var	0,5433	0,0669	0,0004	0,5384	0,4275	0,6887
Avg acceptance rate	1,0000					
Avg efficiency min	0,9147					
Max Gelman-Rubin Rc	1,0000					

Table 5. Bay	es Regressior	Results
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Source: Author's calculations

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LnZScore	Mean	Std. Dev.	MCSE	
Probability (LnZscore:HHI) > 0	0,9954	0,0674	0,0004	
Probability (LnZscore:CAP) < 0	0,9110	0,2847	0,0017	
Probability (LnZscore:CRE) < 0	0,6827	0,4654	0,0027	
Probability (LnZscore:GDP) > 0	0,5323	0,4990	0,0029	
Probability (LnZscore:INF) > 0	0,7256	0,4462	0,0026	
Probability (LnZscore:M2) < 0	0,7641	0,4245	0,0025	

Table 6. An Interval Test

Source: Author's calculations

The results of Table 5 show the sign of the regression coefficients, according to which the values of HHI, GDP, INF have a positive impact on the variable LnZscore. In contrast, the remaining values harm LnZscore. However, to determine the magnitude of the impact, it is necessary to calculate the probability of these effects.

The results in Table 6 show that industry concentration supports banking stability when the probability of this effect is almost 100%. Meanwhile, the variable CAP reduces the banking system's stability with a probability of up to 91%. The research results also show that credit growth and money supply growth erode the soundness of the banking systems of EAGLEs with the probability of 68% and 76%, respectively. In addition, the posterior probability table also shows that economic growth has a positive impact on bank stability, but this effect is relatively faint when the posterior probability is only 53%. Surprisingly, inflation is also a factor that improves bank stability with a probability of 73%.

DISCUSSION

The results in Table 6 confirmed the critical role of bank concentration in maintaining banking stability in the EAGLEs group. This result is similar to that of Allen and Gale (2000), Hellmann et al. (2000), Stigler (2010). In markets with a high level of industry concentration, it facilitates the creation of credit institutions with large assets. Accordingly, large credit institutions can collect information, screen and monitor borrowers, and establish longterm relationships between borrowers and lenders, reducing the problems associated with moral haz-

ards and adverse selection. Moreover, banks with large assets are better able to withstand shocks, and thus the whole financial system will become safer. That is quite suitable for countries with emerging economies such as Vietnam. Before 2011, the number of Vietnamese commercial banks expanded rapidly, with a wave of new banks was established, especially the trend of transforming rural banks into urban banking models. Because of this wave of transformation, the number of commercial banks has increased rapidly, which has led to banks joining a race in deposit and lending due to the not solid financial foundation. The weakness and irresponsibility of governance of small and newly established banks have caused the non-performing loan of the commercial banking system to skyrocket and degrade the banking system's stability.

Another important finding is that the equity/total assets ratio reduces the stability of the banking system of the EAGLEs group countries. In countries with emerging economies, these countries need a great deal of support from the banking system to achieve high growth, which has created favorable conditions for banks in these countries' rapid increase in assets. In order to meet the minimum capital requirements compared to total assets, banks are subject to high capital mobilization costs; hence banks tend to invest in high-risk projects with a higher return to cover this cost. This result is consistent with the study of Blum (1999); Iannotta et al. (2007).

As expected, money supply growth and credit growth erode banking stability. As explained, when the central bank expands the money supply, commercial banks are the primary subject to absorb this

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amount of money; to release this capital, they tend to lower loan standards, causing bad debt ratio in the banking system to increase. Besides, high credit growth can also accumulate potential risks, cause asset bubbles, and harm financial stability. This result is also similar to the study of Mishkin (2012); and Adrian and Shin (2012).

For economic growth, we do not have enough evidence to confirm the effect of this factor on banking stability. Meanwhile, different from the study of Kastrati (2011), Diaconu and Oanea (2014), Abuzayed et al. (2018), inflation gives a surprising result as it improves banking stability. That is explained as inflation in EAGLE countries increases when they loosen their monetary policy, lowering interest rates in the economy, thus increasing the debt repayment capacity of entities in the economy, leading to increased bank stability. If in the long term, however, inflation continues to be high, central banks will tighten monetary policy, interest rates will increase, which could increase the risk of bad debt and erode the banking system's stability. Studies by Allen and Douglas, 2000; Illing, 2007; Goodhart et al., 2009 also confirmed the negative consequences of rising interest rates on the financial system's stability.

CONCLUSIONS

The study was conducted to assess the level of industry concentration on banking stability. Research results show that a high level of industry concentration improves the banking system's stability very clearly, with the probability of reaching 100%. A high concentration in the bank sector means low competition, so banks are less likely to get caught up in the cycle of racing for deposit interest rates, forcing them to increase lending rates. This increases the debt burden for borrowers and can also force banks to lower their lending standards or invest in portfolios with high returns. High risks and consequences are to reduce the stability of the banking system. The research results also show that the equity/total assets ratio has a reverse relationship with bank stability. When the growth rate of total assets is too fast, commercial banks are forced to increase their equity to meet the requirements of minimum capital adequacy, which increases the cost of raising banks' equity, forcing them to look for the investment that has a high return. Still, the risk is also significant, leading to these banks' high volatility, a consequence decrease in the banking system's stability. Besides the level of industry concentration, the results also find evidence that increasing money supply and high credit growth will erode the soundness of the financial system. In addition, the paper also shows that macroeconomic factors such as economic growth and inflation both support the stability of the banking system. However, in the long term, inflation may harm the stability of the banking system and erode the macroeconomic fundamentals.

IMPLICATIONS

From the Research Results, The Author Proposes Some Policy Implications As Follows

Firstly, reform and restructuring of banks and mergers of weak banks are the right ways to make the banking system sound. Countries should keep on restructuring and classifying banks to decentralize and assess the capacity of banks; on that basis, take specific measures possible for each group of banks. Reduce the number of banks, increase the banking system's quality, improve the soundness of the financial system, and lay the foundation for sustainable economic growth.

Secondly, the increase of the bank's capital should be carried out systematically, avoiding putting too much pressure on the banking system as this may undermine the soundness of the banking system.

Finally, central banks should enforce these policies cautiously when s expanding the money supply and credit growth to promote economic growth. It reduces the risk of the non-performing loan in the banking system and maintains stable inflation, ensuring macroeconomic stability and sustainable economic development growth.

LIMITATIONS

The study evaluated the impact of bank concentration and other factors such as money supply growth, credit growth, macroeconomic factors such

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as economic growth, inflation, and the bank-specific factor is the ratio of equity to total assets to banking stability. However, this study has not yet evaluated the role of macroprudential policy on banking stability. According to Freixas et al. (2016), before 2000, there were only 631 searches for the term "macroprudential policy" on Google while, after the global financial crisis in 2007, the number of searches for this term on Google has skyrocketed to 500,000 turns; this shows the critical role of this policy for financial stability. Still, due to data limitations, this study has not yet examined the role of macroprudential policy instruments in maintaining banking stability.

RECOMMENDATIONS

As mentioned, after the global financial crisis in 2007, macroprudential policy received a lot of attention from researchers. Freixas et al. (2016) assert that traditional policies such as fiscal policy and monetary policy are not enough to control the risks that can destroy financial stability with adverse effects on the real economy. Still, there must be management and supervision of the financial system as a whole and its relevance to the whole economy through the implementation of macroprudential policy. Therefore, in subsequent studies, in addition to the factors analyzed in this study, we should consider the role of macroprudential policy instruments to enhance the banking system's stability, creating a foundation for sustainable economic growth.

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