Original Article

Market Power and Financial Stability: An Empirical Study of the Banking Industry in Selected ASEAN Countries

[1]Ciplis Gema Qori'ah, [2]Adhitya Wardhono, [3]Misbahol Yaqin, [4]M. Abd. Nasir
[1,2,3,4]Faculty of Economics and Business, University of Jember, Indonesia.

Abstract: The banking industry has experienced rapid development in the last decade. This has implications for banking competition, which will affect financial stability. Therefore, this study tested the impact of market power in the digital era on financial stability in selected ASEAN countries. Empirically, this study uses panel data from 2000 to 2014 with sections from 4 countries, namely Indonesia, Malaysia, Thailand, and the Philippines. The method used in this research is Panel Vector Autoregressive (PVAR). The Impulse Response Function results from the PVAR analysis indicate that high market power tends to reduce financial stability in the Selected ASEAN Countries. These results explain that the banking industry, which has a level of market power, tends to increase interest rates so that the risk of bad loans by banks will be even higher. These conditions imply that it is necessary to strengthen the monetary authorities' tight supervision to maintain a competitive climate in the banking industry and minimize risks that impact financial stability.

Keywords: Banking Competition; Financial Stability; Market Power; ASEAN.

I. INTRODUCTION

The banking industry plays an important role in a country's economy (Amidu & Wolfe, 2013).Banking functions as an intermediary that brings together excess and underfunded parties (Allen & Gale, 2004; Berger et al., 2009). The financial intermediary function of banks can encourage the mobilization of funds from households as savings to be invested in potential company projects that can support economic development (Cihak et al., 2012). Mobilization of funds from households to firms not only plays an important role in the real economy but also promotes financial efficiency and stability (Kasman & Carvallo, 2014).

The role of technology has increased significantly in the last decade, making banking grow rapidly. Its development is indicated by an increase in the number of existing banks and innovation in providing their services. In other words, the existence of technology changes the structure of the banking industry. Changes in the technological structure, driven by an increase in the number of banks and changes in banking service patterns, affect the level of banking competition (Qori'ah et al., 2016). Competition in the banking industry has the potential to affect financial system stability (Labidi & Mensi, 2015; Saif-Alyousfi et al., 2020).

Theoretically, banking competition affects financial system stability, which can be viewed from the concept of the competition-stability hypothesis. The concept of the competition-stability hypothesis explains that the level of competition between banks can increase financial stability. In other words, market power resulting from market concentration is a source of banking instability (Ijaz et al., 2020; Kasman & Carvallo, 2014). The banking industry, with intense competition,, allows for efficiency in both costs and prices for consumers. Market conditions that are not competitive or exhibit high market power are described by the Quiet-Life Hypothesis, which aligns with the Competition-stability Hypothesis. The QLH concept holds that high market power enables company managers to capture a share of monopoly rents in the form of discretionary costs or reductions in company effort, resulting in inefficiency and instability (Andrieş & Căpraru, 2014; Rhoades & Rutz, 1982). In a different direction, the concept of the competition-fragility hypothesis describes a negative relationship between competition and financial stability. The concept relates to the empirical finding that there is no tradeoff between a competitive market and stability in the banking industry (Mulyaningsih et al., 2016; Schaeck & Cihák, 2014). The explanation is that with great competition, it is possible for banking to collapse due to the inability to compete. Furthermore, intense competition also reduces bank profitability so it will be vulnerable and disrupt financial stability (Safuan et al., 2021; Wardhono & Nasir, 2022).

The relationship between market power and financial stability has also generated empirical debate. The debate resulted from differences in the results of previous studies. Several studies found a negative relationship between market power and financial stability Căpraru & Andrieş (2015); Miah et al. (2020); Minh et al. (2020); Mulyaningsih et al., 2016; Soedarmono et al. (2011). Meanwhile, studies that found a positive relationship between market power and financial stability are Ariss (2010);

Beck et al. (2013); Kabir & Worthington (2017); Saif-Alyousfi et al. (2020). Even a study from Labidi & Mensi (2015) found no significant relationship between market power and financial stability in the MENA Region. Labidi & Mensi (2015) explained that competitive banking does not guarantee financial stability, because it depends on the banking management and regulations of each country. Therefore, it is necessary to examine further the relationship between market power and financial stability, one of which is in the ASEAN region.

The 1998 monetary crisis and the 2008 global financial crisis, which impacted ASEAN, provided important lessons, especially for monetary authorities to focus more on maintaining financial stability. In addition, the trend of banking consolidation in ASEAN after the two crises that occurred has become an important concern among policymakers. This is because banking consolidation will change the level of competition or market power of the banking industry, especially in ASEAN (Soedarmono et al., 2011). Data from Global Financial Development at the World Bank show that the banking industry in ASEAN has different levels of market power before and after the crisis,, asindicated bym the Lerner index. Lerner index data in ASEAN in the period 1998 – 2014 tends to increase. This indicates that a higher Lerner index value indicates a higher level of market power and lower competition (Řepkova & Stavarek, 2013). Moreover, the rapidly developing digital era has had an impact on the transformation to digital banks in ASEAN countries, which has an impact on the level of competition in the banking industry. On the other hand, data from the Global Financial Index shows that financial stability has tended to be stable in the last two decades after the 1998 monetary crisis.

Furthermore, financial system stability is one of the important goals to be achieved by Central Banks in ASEAN. This is also supported by the MEA (ASEAN Economic Community) Blueprint, which includes the goal of creating an integrated regional financial system, especially in the digital era. It is therefore important to look further into the important factors that contribute to financial system stability in ASEAN. One of them is the impact of market power because this is an important variable in shaping financial stability (Beck et al., 2013; Saif-Alyousfi et al., 2020). So far, no one has discussed further the relationship between market power and financial stability in ASEAN in this digital era. Several previous studies have only focused on the country or the Asian level. Therefore, the purpose of this study is to examine the influence between market power on financial stability in the Selected ASEAN Countries. Market power in this study will be seen from the Lerner index, and financial stability from the Z-score. In addition, the relationship between market power and financial stability will be tested using the VAR Panel method.

II. LITERATURE REVIEW

Theoretical work on the relationship between market power and financial stability remains inconclusive. This is due to several different views of the underlying theory. One theory that explains market power and financial stability is the competition stability hypothesis. The concept states that banking competition has a positive impact on financial system stability. Boyd et al. (2006) explained that a concentrated banking system will encourage banks to increase interest rates and will further increase the vulnerability of banks. Concentration in the lending market results in higher borrowing costs for customers, thereby lowering investment success rates and causing borrowers to default on bonds. The next reason is that this condition will increase customer moral hazard due to higher interest rates, and, of course, it will disrupt financial stability. Furthermore, the existence of high competition, which results in low market power, will increase the efficiency and performance of the company. Costs that can be reduced and prices that can also be minimized. With low market power, interest tends to fall and minimize bad loans so that financial stability can be maintained.

The concept of the competition-stability hypothesis is also in line with the Quiet Life Hypothesis (QLH). The quiet life hypothesis (QLH) states that banks with greater market power will achieve high profitability quietly, even though this can lead to inefficiencies. In the long run, this could turn high profitability into lower future profitability, causing financial stability to suffer. Another alternative view that associates greater market power with lower financial stability uses the effect argument that higher interest rates (associated with market power) on investment projects reach banks (Boyd et al., 2006). When financing costs are high, borrowers take on riskier projects with a greater probability of failure. In this case, the bank's bad credit level will be higher and increase the probability of bank failure.

In a different direction, the concept of the competition failure hypothesis explains that there is a negative relationship between competition and financial stability. This indicates that low market power (high competition) may have a fairly good effect on efficiency, but quite a bad one on financial stability. In a situation of high competition, it will lead to narrow banking margins, so that banks must take on riskier projects to increase their profits, which in turn increases the vulnerability of banks. The second justification for the negative impact of competition on financial stability is through the franchise value (market value) of a bank. If competition increases, profits fall, leading to a decrease in the value of the franchise. In this case, banks have incentives to engage in riskier activities, capture less capital, and so on, thereby increasing financial volatility.

Empirical studies on the relationship between market power and financial stability are interesting to look at further. The reason for this is because of the debate that has arisen from differences in previous empirical studies. Soedarmono et al. (2011) in their study examined the relationship between market power and financial stability in Asia. By using a sample of commercial banks from 12 Asian countries during the period 2001-2007, the empirical finding is that greater market power in the banking market results in higher volatility. Even though banks are better capitalized in less competitive markets, their default risk remains high. Research on the relationship between market power and financial stability was also carried out by Căpraru & Andrieş (2015) by investigating 923 commercial banks from 27 European Union member countries during the 2001-2009 period. This study examines the implications of competition for financial stability during the crisis period and before it. The results of valid studies on the two concepts (competition-stability and competition-fragility) depend on the group of countries in the period before or during the crisis. In the case of CR5, it is statistically relevant, i.e., increased concentration can have a negative impact on financial stability. These results confirm the concept of the competitive stability hypothesis. Meanwhile, the Herfindahl-Hirschman Index (HHI) shows that high market power can increase financial stability, a finding that is statistically significant only in countries outside the eurozone and in new members of the European Union, and this supports the competition fragility hypothesis. Furthermore, Mulyaningsih et al. (2016) analyzed the relationship between banking competition and banking stability in Indonesia. The results of his study show that banking competition will increase economic stability. Under a competitive industry, banks must increase their efficiency, increase their lending, diversify their business, increase their assets, and increase their capitalization.

In a different direction, Ariss (2010) investigates how different levels of market power affect the efficiency and stability of banks in the context of developing economies. Using bank-level data from 1995 – 2005, this study shows that an increase in the degree of market power leads to greater bank stability and increased profit efficiency, despite significant cost efficiency losses. These findings provide empirical justification for the competition-inability hypothesis that increased competition can undermine bank stability and have significant implications for depressed banking systems in developing countries. In line with (2010), Beck et al. (2013) also found that low market power (high competition) disrupts financial stability in countries with stricter activity restrictions, lower systemic vulnerabilities, more developed stock exchanges, and more effective credit information-sharing systems. Likewise, Saif-Alyousfi et al. (2020) analyzed the impact of competition on the fragility of banks in the GCC banking market before and after the financial crisis. Using banking-level data from 1998–2016, the study shows that a higher level of bank competition and a greater degree of concentration add to financial fragility. The study by Saif-Alyousfi et al. (2020) also confirms that countries with greater capital tightness, greater supervisory powers, greater market discipline, and private monitoring, with explicit deposit insurance schemes, higher shareholder protection, and greater legal efficiency, reduce bank risk-taking and increase stability.

Furthermore, a study by Labidi & Mensi (2015) analyzed the tradeoff between banking market power and financial stability among 157 commercial banks selected from 18 countries in the MENA region between 2000 and 2008. The results of this study indicate that although banks operate in a competitive environment, they experience financial difficulties. The results also reveal a non-significant negative relationship between a rather low level of market power and financial instability. In other words, financial instability is not affected by competition in the banking market in the MENA region. Labidi & Mensi (2015) explained that competitive banking does not guarantee financial stability because it depends on the banking management and regulations of each country.

III. METHOD

A) Data

The ASEAN region is one of the most dynamic economic regions in the world. The experience of the 1998 financial crisis and the 2008 global financial crisis proved how the economies of ASEAN countries and other regions are interrelated. The disruption of financial and macroeconomic stability because of these two crises makes it clear how important it is to pay attention to the risks posed. Countries in ASEAN, such as Indonesia, Malaysia, Thailand, and the Philippines, are some examples of countries in ASEAN that felt the effects of the two previous financial crises. Moreover, the digital era is growing rapidly in ASEAN, which has implications for the transformation toward digital banking. And of course, it will have an impact on the structure of the banking industry. Therefore, the object of this research focuses on selected ASEAN countries consisting of Indonesia, Malaysia, Thailand, and the Philippines to analyse the effect of market power on financial stability.

This study uses banking-level data and macroeconomic-level data. The data used is in the form of annual panel data from 2000 to 2014. The choice of this timeframe was based on the 2008 global financial crisis, which provided important lessons in maintaining financial system stability, especially in ASEAN. This study uses the Z-score variable as a proxy for financial stability as the dependent variable. The higher the Z-score, the lower the probability of default experienced by banks. In addition, the Lerner Index is a proxy for market power as an independent variable. Several control variables were included in the model to control for the significant contribution of these variables to financial stability during the study period. Referring to previous studies, the control variables included in the empirical estimation are LDR, GDP, and inflation.

B) Empirical Estimation Method

Model specifications in this study to analyse the relationship between market power and financial stability were adopted from several previous studies by Agoraki et al. (2009); Boyd et al. (2006); and Soedarmono et al. (2011). Some of these studies look at how market power influences financial stability with different study objects. The study from Soedarmono et al. (2011) tested these two variables with panel data with study objects in Asia. Therefore, the specifications of the model in this study are as follows:

$$Z - SCORE = F\left(ILERNER, SDR, GDP, INF\right)$$

From this model, it is derived into an econometric model is derived using the VAR Panel method used in this study.

$$Z - SCORE_{i,t} = \alpha_{i,t} + \alpha_{11}Z - SCORE_{i,t-1} + \alpha_{12}ILERNER_{i,t-1} + \alpha_{13}LDR_{i,t-1} + \alpha_{14}GDP_{i,t-1} + \alpha_{15}INF_{i,t-1} + \varepsilon_{i,t}$$

In the above equation, i is the country. t describes the period. α is the coefficient. Z-SCORE is the dependent variable as a proxy for financial stability, and ILERNER is a variable that describes banking market power or the level of banking competition. Furthermore, LDR is the loan-to-deposit ratio, and GDP, INF is still gross domestic product, and inflation is proxied using the consumer price index, respectively. Meanwhile, ε error terms.

IV. RESULTS AND DISCUSSION

A) Estimation of Market Power and Financial Stability in Selected ASEAN Countries

PVAR analysis looks at the behaviour of market power relations and financial stability in the Selected ASEAN Countries. There are several important tests in PVAR estimation, including the stationarity test, cointegration test, optimum lag test, and Impulse Response Function (IRF). The data stationarity test in this study used the Levin, Liu & Chu t* test. In the data test, it is said to be stationary if the probability value is below the value α (alpha). The stationarity test aims to obtain a stable average value and a random error equal to zero so that the estimation results are not spurious regression. The results of the data stationarity test are shown in Table 1.

Table 1: Unit Root Test

Variable		Level	1st *Difference*
Z-SCORE	Statistic (Prob)	-1.40928 (0.0794)**	-5.81975 (0.0000)***
ILERNER	Statistic (Prob)	27.776 (0.0001)***	-3.28822 (0.0005)***
LDR	Statistic (Prob)	-0.81245 (0.2083)	-2.27603 (0.0028)***
GDP	Statistic (Prob)	-2.76504 (0.0028)***	-3.11043 (0.0009)***
INF	Statistic (Prob)	-2.365512 (0.0090)	-5.71605 (0.0000)

*Note: ***significant 1%, 5% and 10%*
Source: *Processed Data by Author*

The results of the data stationarity test using the Levin, Liu & Chu t* test at the level indicate that one variable is declared non-stationary: the loan-to-deposit ratio (LDR), as the probability value is above alpha. Meanwhile, the Z-SCORE, ILERNER, GDP, and INF variables were found to be stationary at the level. Because not all variables are stationary at the level, the stationarity test is continued at the first different level. In the results of the Levin Test, Liu & Chu t* at the first different level shows that all variables are stationary because they have a probability value below the specified alpha. The next test is cointegration. Cointegration testing was carried out to determine the long-term relationship between the variables formed in this study. Cointegration testing was carried out using the Johansen Cointegration Test. The cointegration test results in this study are presented in Table 2.

Table 2: Pedroni Residual Cointegration Test

Method	Statistic	Probability	Explanation
Panel v-Statistic	-1.1617	0.8773	Not Cointegrated
Panel rho-Statistic	1.2792	0.8996	Not Cointegrated
Panel PP-Statistic	0.5874	0.7216	Not Cointegrated
Panel ADF-Statistic	2.6968	0.9965	Not Cointegrated

Note: Cointegration alpha 5%
Source: *Processed Data by Author*

The results of the Pedroni Residual Cointegration Test show that there is no long-term relationship between variables. The probability of the v-Statistics Panel and the rho-Statistics Panel having a value greater than 5% alpha. Therefore, the data analysis tool used in this study is the Autoregressive Panel (PVAR)

The optimum lag test is used to determine the period of the influence of a variable on other variables, which will later give optimal results. This is because changes in the movement of a variable are not directly responded to by changes in other variables, but there is still a certain time lag. The test results of the optimum lag are shown in Table 3.

Table 3: Optimum Lag Test

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-458.3963	NA	966.9240	21.06347	21.26621	21.13866
1	-295.9031	280.6701*	1.883136*	14.81378*	16.03027*	15.26491*
2	-275.8075	30.14331	2.463169	15.03671	17.26694	15.86379
3	-248.9115	34.23127	2.548425	14.95052	18.19451	16.15355
4	-226.7254	23.19464	3.709058	15.07843	19.33615	16.65739

Source: *Processed Data by Author*

The optimum lag test used in this study is seen from the minimum AIC value. The results of the optimum lag test described in Table 4 above show that the optimum lag is at lag 1 with an AIC value of 14.81378.

The next step in estimating the PVAR model is the impulse response function (IRF) test. IRF estimation is used to see how the effect of shocks from endogenous variables is on other endogenous variables. In this study, IRF will explain the interrelated effects of FDI variables, exchange rate volatility, GDP, inflation, interest rates, and trade. The results of the IRF test in this study are shown in Figure 1.

In Figure 1, it can be seen how the shocks that occur in ILERNER as a proxy for market power are responded to by the Z-score, which describes financial stability. The IFR results in Figure 1 show that the shock that occurs in the ILERNER is responded to negatively by the Z-SCORE. This shows that the greater the market power in the banking industry, the worse financial stability is in ASEAN countries. Furthermore, the figure can also be seen that the response given by financial stability due to the shock that occurred in market power was greatest in period 3. This indicates that in period 3, it is necessary to implement policies to stabilize financial conditions to avoid an impact on economic conditions. The IRF results in Figure 1 above also provide an important signal that it will take more than 10 periods to achieve convergence in financial stability due to the shock to market power.
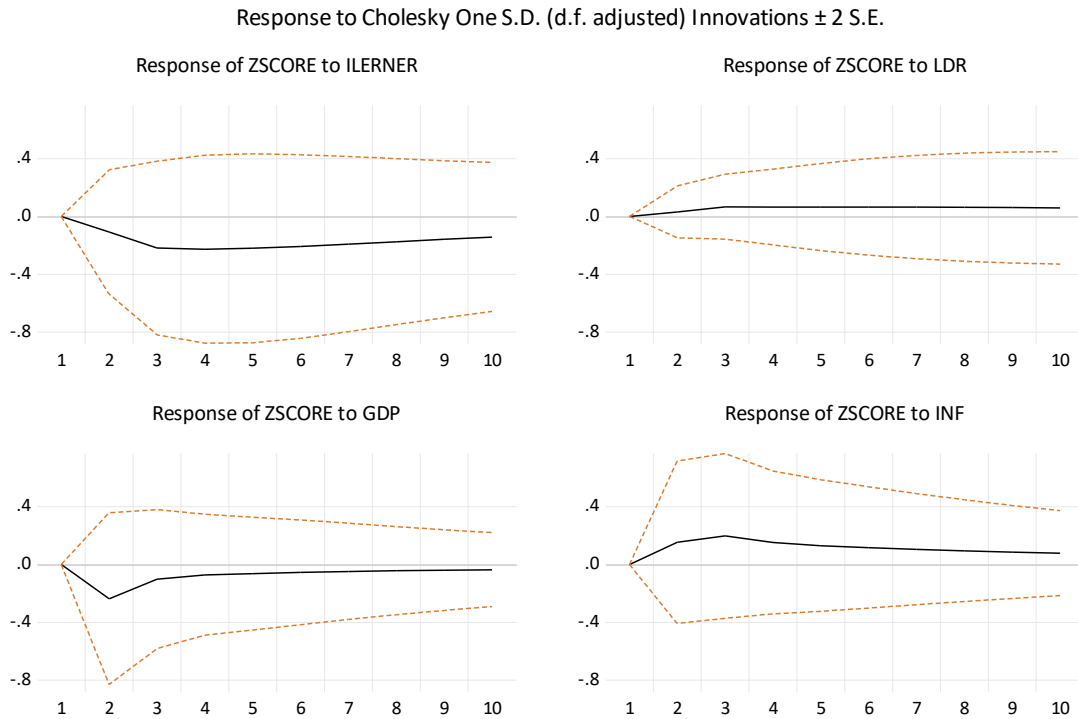
Response to Cholesky One S.D. (d.f. adjusted) Innovations ± 2 S.E.

Figure 1. Impulse Response Function

B) Discussion

As explained in the previous sub-chapter, the results of this study found that there is a negative relationship between market power and financial stability in the Selected ASEAN Countries. These results show that the greater the market power or the lower the level of competition in banking, the worse financial stability will be in ASEAN 4. The results of this study follow the concept of the competition-stability hypothesis. The concept of the competition-stability hypothesis states that market power resulting from market concentration is a source of banking instability. Market forces can enable banks to charge customers higher interest rates. High-interest rates can further increase the risk of problem loans (Boyd et al., 2006). Caminal & Matutes (2002) also found empirical results that market power contributes to an increase in bankruptcy risk. Market power is also considered a driving force for banks to carry out higher risk-taking activities (Mulyaningsih et al., 2016). This is supported by the study by Soedarmono et al. (2011), which found that high market power is associated with greater risk-taking and capital. Thus, it can be said that the lack of competition makes the banking system more vulnerable because low market discipline can have an impact on reducing bank efficiency. On the other hand, the results of this study contradict the concept of the competition failure hypothesis. The hypothesis posits that greater competition among banks can increase fragility in the banking system. This means that this low market will cause financial system instability. The reason is that there are more banks, this allows more banks to collapse due to default and will eventually disrupt financial stability in the Selected ASEAN Countries. Market conditions with a low level of market power indicate greater pressure to gain profits, which will encourage banks to take higher risks and increase the vulnerability of banks (Beck et al., 2013; Miah et al., 2020). Therefore, this indicates that greater market power will make banks less competitive for reasons such as taking large profits by charging high interest rates to customers. So that this condition will lead to financial stability risk vulnerability in ASEAN due to default. An important point from the results of this study is that the central bank needs to properly regulate, especially macroprudential policies, to always make banking competitive and ultimately promote financial stability.

The results of this study support several previous studies, such as and Soedarmono et al. (2011), which found that high market power reduces financial stability. High competition will make financial markets more cost- and price-competitive. Thus, the competitiveness created will prevent financial market consumers from defaulting. In a different direction, these results are also inconsistent with Ariss (2010) and Kabir & Worthington (2017), who found a positive and significant relationship between market power and financial stability. The study shows that high market power is associated with greater financial stability by reducing potential risks. According to the study of Ariss (2010), this study is also not in line with previous studies such as Beck et al. (2013) and Saif-Alyousfi et al. (2020), who found that low market power will increase financial stability. Even a study from Labidi & Mensi (2015) found no significant relationship between market power and financial stability in the MENA Region. Labidi & Mensi (2015) explained that competitive banking does not guarantee financial stability because it depends on the banking management and regulations of each country. However, based on a comparison of several empirical studies, market power in ASEAN needs to be controlled to ensure financial stability. Under these conditions, the central bank or financial authority needs to maintain it by implementing regulations to avoid market power.

Financial system stability is one of the important goals to be achieved by Central Banks in ASEAN, especially the Selected ASEAN Countries (Indonesia, Malaysia, Thailand, and the Philippines). In addition, the Blueprint for the establishment of the ASEAN Economic Community (AEC) includes the goal of realizing a well-integrated and gradual regional financial system through capital liberalization, establishing interconnected financial markets, and strengthening policy coordination among ASEAN member countries. The Central Bank Governors of each ASEAN country adopted a financial integration framework (ASEAN Financial Integration Framework/AFIF) in 2011 to achieve the goals listed in the AEC blueprint. The existence of this study underscores the need to pay attention to market power in the banking industry, so it can be managed properly and not weaken financial stability. The policy that needs attention is to emphasize maintaining a competitive banking climate.

Macroprudential policies implemented by central banks in ASEAN, as well as macroprudential policies, are important steps in maintaining financial stability in ASEAN. The macroprudential policy covers the regulation and supervision of financial service institutions from a macro perspective and focuses on managing systemic risk to maintain financial system stability. This policy is directed at minimizing the risk of procyclicality from the macro-financial linkages of the financial system (time dimension) as well as systemic risk accumulation that can arise from interconnections and networks of financial institutions, markets, and infrastructure, including the payment system (cross-section dimension) (Wardhono et al., 2019).

Furthermore, what the Central Bank must pay attention to in maintaining financial stability is banking risk, whether the market power in the banking industry structure is strong or not. Bank Indonesia (2020) explains that there are at least 3 banking indicators, namely credit risk, liquidity risk, and market risk. Credit risk describes the potential for failure of the debtor to repay its obligations to the bank following the agreement (Indrawati et al., 2020; Wardhono et al., 2016). Some indicators for monitoring credit risk are NPL, which measures the percentage of problem loans in a bank's portfolio (Kauko 2012). The

liquidity ratio describes a condition in which liquidity can dry up both in the market and among data collectors. The indicators are LCR (liquidity coverage ratio) and NCO (Net cash inflow). To ensure liquidity resilience, banks are required to establish an LCR of at least 100% on an ongoing basis. Furthermore, market risk describes the potential losses that may arise in administrative positions and accounts because of changes in market prices. Indicators of market risk are Value at Risk (VaR) and Expected Shortfall (ES), which measure the potential for extreme losses by calculating the average of all potential losses. Therefore, the Central Bank needs to pay attention to the three banking risk indicators to create financial stability.

V. CONCLUSION

This study shows that greater market power in the banking sector tends to negatively affect financial stability in selected ASEAN countries. Banks with significant market power can set higher interest rates, which increases the risk of non-performing loans (NPLs). As a result, the overall stability of the financial system is compromised, as higher interest rates strain borrowers and increase the likelihood of defaults. This creates an environment where the banking sector becomes more prone to instability, particularly in economies where the banking sector is concentrated and market power is concentrated in the hands of a few dominant players. The findings suggest that market power, when unchecked, can lead to adverse effects on financial stability, reinforcing the need for regulatory interventions to ensure a more balanced and competitive banking environment.

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