

LINKAGES BETWEEN BANK COMPETITION AND FINANCIAL STABILITY: A COMPARATIVE STUDY OF SHARIA VS CONVENTIONAL BANKING IN INDONESIA

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ABSTRACT

Banking is one of the most important sectors supporting a country's economy. In Indonesia, the development of banking has undergone significant changes, as evidenced by the shift from the conventional system to the dual banking and Sharia systems. The large number of commercial banks and bank offices suggests high competition in Indonesia. Consequently, banks must reduce costs and streamline their operational activities to remain competitive. This study aims to analyze the relationship between bank competition and financial stability in Indonesia for both conventional and Islamic banks, using the generalized method of moments. The results show a positive relationship between the level of banking industry competition and banking stability, indicating that an increase in bank competition will result in greater stability. These findings suggest that Islamic banking has the potential to expand its market share by improving its soundness and retaining customer loyalty. In addition, banking authorities should reevaluate their performance and regulations.

JEL: G21, G32, L10.

Keywords: *bank competition, financial stability, banking sector.*

1. INTRODUCTION

The banking sector plays a crucial role in supporting a country's economy by serving as an intermediary between overfunded individuals and those requiring funding. The development of banking in Indonesia has undergone significant changes, as demonstrated by the shift from the conventional system to the dual banking and Sharia systems (Fu, Lin, & Molyneux, 2014). Although conventional banking dominates the Indonesian market, sharia-based banking has begun to emerge. On November 1, 1991, Bank Muamalat Indonesia (BMI) was established as the first Sharia Bank in Indonesia.

According to data from Indonesian Banking Statistics (2022), as of December 2021, there are 110 commercial banks and 109 People's Credit Banks. Throughout 2019-2021, there are 110 commercial banks, consisting of 96 Conventional Commercial Banks and 14 Sharia Commercial Banks. The number of bank offices shows a significant increase, reaching 32,531 commercial bank offices, an increase of 4.3% compared to 2019. The relatively large number of commercial banks, followed by an increase in bank offices, indicates that the level of competition between banks in Indonesia is still relatively high. Consequently, this can force banks to reduce costs and streamline their operational activities (Adjei-Frimpong, Gan, & Hu, 2016). The relatively high level of competition between banks can have an impact on efficiency (Wilson, Casu, Girardone, & Molyneux, 2009), provide benefits for consumers as a result of decreasing costs (Weill, 2013), and bring about a level of banking health (Ijaz, Hassan, Tarazi, & Fraz, 2020).

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Table 1. Development of the Number of Commercial Banks in Indonesia, 2019-2021

Group Banks and Offices	Number of Banks and Bank Offices (Units)					
	Bank			Bank Offices		
	2019	2020	2021	2019	2020	2021
Conventional Commercial Bank - Bank Persero	4	4	4	17622	17307	18166
Conventional Commercial Bank - Regional Development Bank	24	25	25	4212	4226	5122
Conventional Commercial Bank - National Private Bank	60	58	58	7352	7144	7193
Conventional Commercial Bank - Foreign Bank Branch Office	8	8	8	36	36	27
Sharia Commercial Bank - Regional Development Bank	2	2	2	184	195	190
Sharia Commercial Bank - National Private Bank	12	12	10	1721	1825	1833
Number of Commercial Banks	110	109	107	31127	30733	32531
People's Credit/Financing Bank - Conventional BPR	1545	1506	1468	5943	5913	5871
People's Credit/Financing Bank - Sharia BPR	164	163	164	619	627	659
Number of Credit/People's Financing Banks	1709	1669	1632	6562	6540	6530

Source: Statistics Indonesia (2022); Otoritas Jasa Keuangan (2022)

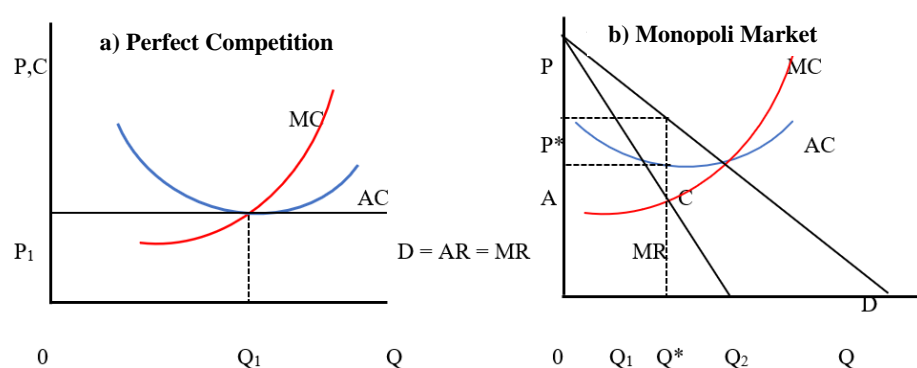
The relationship between competition in the banking industry and bank stability has become a classic debate. There are two views on the relationship between banking competition and stability. Both views are called “competition-fragility” and “competition-stability” (Yuan, Gu, Yuan, Lu, & Ni, 2022). The two hypotheses represent a theoretical gap. In the context of fragility, increasingly fierce competition increases bank risk and decreases banking stability (Leroy & Lucotte, 2017). This condition can occur because competition reduces banks’ power to gain profits and, vice versa, encourages banks to take greater risks to achieve higher profits. Some research results support the competition-fragility hypothesis (Ruiz-Porras, 2008; Berger, Klapper, & Turk-Ariss, 2009; Salas, Jimenez, & Lopez, 2007; Levine, Beck, & Dermiguc-Kunt, 2006; Titko, Kozlovskis, & Kaliyeva, 2015; Soedarmono, Machrouh, & Tarazi, 2013; Dwumfour, 2017; Kabir & Worthington, 2017; Kouki & Al-Nasser, 2017). Based on these two views and previous studies, the gap in this research is to identify whether competition encourages banks to become more stable or fragile.

The impact of bank competition on financial stability can also be explained using a competition-stability approach. Using this approach, a high level of competition increases banking stability. By contrast, a decrease in competition also reduces banking stability. The competition stability hypothesis is supported by the research conducted by Levine *et al.* (2006), Schaeck & Cihák (2014), Boyd & De Nicoló (2005), Uhde & Heimeshoff (2009), Yaldız-Hanedar & Bazzana (2010), Agoraki, Delis, & Pasiouras (2011), Kick & Prieto (2015), Schaeck, Cihak, & Wolfe (2009), Kasman & Carvalho (2014), Vardar (2015), and Davis & Karim (2008). The increasing number of banks resulted in a relatively high level of banking competition and had a different impact on financial stability, namely, financial fragility and financial stability. Therefore, referring to the fact that the rapid development of banking operationalization in Indonesia is characterized by an increase in the number of bank offices (penetration) of both the conventional and Sharia systems, this study aims to analyze the relationship between the level of competition and financial stability by comparing conventional and Sharia banks.

2. THEORETICAL FRAMEWORK AND EMPIRICAL STUDIES

2.1. Bank Competition

The theory of market structure can explain competition between banks. Market structure is defined as a market state that provides clues about the aspects that influence the behavior of business actors and market performance (Direktorat Utama Pembinaan dan Pengembangan Hukum Pemeriksaan Keuangan, 1999). These aspects include the number of buyers and sellers, barriers to market entry and exit, product diversity, distribution systems, and mastery of market share. In general, there are two types of market structure: monopoly and perfect competition. The monopoly and competition market curves are shown in Figure 1.



Source: Joesron & Fathorazzi (2012)

Figure 1. Monopoly Market Curve and Perfect Competition Market

From Figure 1(a), the equilibrium for individual companies within the market occurs when the marginal cost curve (MC) intersects the marginal acceptance curve (MR). In a perfectly competitive market, the MC curve intersects with the company's average production cost (AC) at its lowest point. These conditions indicate that each manufacturer produces at the lowest cost level (efficiently) to survive market competition. Additionally, producers must obtain normal profits in a perfectly competitive market. Thus, the selling price (P) equals the average production cost.

Figure 1(b) shows equilibrium in a monopolistic market. In a monopoly market, equilibrium occurs when the MC rises, falls, or is constant. The only condition that must be met is that $MC = MR$, and MC cuts the MR from the bottom. The maximum profit occurs at time $MR = MC$ with an output level of Q^* at a price as high as P^* . The total profit received by the monopolist is the amount of shaded field or profit per unit ($P^* - A$) multiplied by the amount of output sold (Q^*). The profit is not maximized if the resulting output is Q_1 because of $MR > MC$. Conversely, profit decreases if the output is in the Q_2 position because of $MR < MC$.

The market of perfect competition has several characteristics (Joesron & Fathorazzi, 2012), including a large number of sellers and buyers, the existence of freedom to open and close the company, products traded as homogeneous, sellers and buyers having perfect knowledge of the state of the market, and the mobility of economic sources that are quite perfect (without any obstacles). Meanwhile, the monopoly market has characteristics including only one seller, no other seller selling output that can properly replace monopolists' output, and obstacles for other companies to enter the market.

2.2. Banking Competition Level Measurement

The level of competition in banking is more accurately measured by banks' actual behavior (Claessens & Laeven, 2004). The Lerner Index model can be used to measure the level of competition. This index indicates the level of market strength that is strongly positioned to measure banking competition (Beck, Demirgüç-Kunt, & Merrouche, 2013; Berger *et al.*, 2009). It is a very powerful concept for measuring competition in economics, as it can explain how and why imperfect market competition deviates from competitive market benchmarks. It can measure competition directly because it focuses on the price power evident in the difference between the price and marginal cost (Berger *et al.*, 2009). The Lerner index is the only measure of competition at the bank level and is more accurate than other calculations (Berger *et al.*, 2009). It describes the capacity for price power by considering the difference between price and marginal cost divided by price.

2.3. Stability in the Banking Industry

Banking system stability plays an essential role in financial stability. Therefore, banking has always been the main focus of regulators when formulating policies related to financial system stability. A stable financial system will provide strength when facing adverse conditions and can have a broad scope. Additionally, the financial system must provide efficient financial services when operating under pressure (Freedman & Goodlet, 2007). An unstable banking system can cause financial instability and create credit, liquidity, and market risk.

In simple terms, bank stability can be interpreted as a condition under which a bank does not experience symptoms of bankruptcy or instability. In other words, a stable bank is healthy and free from financial distress. Therefore, it can be concluded that bank stability is a bank's ability to properly carry out its intermediation function and be free of financial difficulties. A stable bank can effectively assess and manage risks and efficiently allocate resources. Banks with good stability are resilient in maintaining business continuity in different economic environments, including sudden economic disruption. If this condition is maintained, money turnover and the mechanism of monetary policy transmission in the economy, mainly through the banking system, can run well. The stability of the banking system determines the effectiveness of the monetary policy implementation.

2.4. The Relationship of Competition to Banking Stability

Competition is the effort to fight between two individuals or groups in order to compete for the same object. The competition aims to increase the market share and obtain greater profits. Competition between banks affects banking stability. There are two different theories regarding the impact of competition on bank stability and theoretical gaps. First, Competition-Fragility or Concentration-Stability Theory. This theory states that market conditions become unstable when a market competes. Competition can encourage the banking system to be easily shaken (fragile), which can be explained in several aspects. The first is the franchise value hypothesis. Keeley (1990), supporting the competition-fragility relationship, found that the banking deregulation in the United States led to increased competition and financial instability because it negatively influenced the bank's franchise value. Franchise value is the level of profit that bank owners obtain from future operational activities. In other words, franchise value is the current value of the expected future profit flow, representing the opportunity cost of bankruptcy. The franchise value comes from profit resulting from market power in a concentrated banking system. The obtained

profit is used as a buffer in the face of shocks. The franchise value makes individual banks more conservative in protecting franchise value, reducing their desire to take greater risks. The second is bank regulation and supervision. A banking system increasingly concentrated in a few large banks is easier to supervise than a more competitive system with a larger number of banks. Consequently, a more concentrated banking system is likely to cause fewer banking crises, and the banking system's stability becomes more stable. The third aspect is portfolio diversification. Large banks typically diversify their portfolios. The higher the portfolio diversification carried out by large banks, the lower the risks that tend to cause them to fail. This encourages the banking system to stabilize (Levine *et al.*, 2006).

Then the second, Competition-Stability or Concentration-Fragility Theory. This theory contradicts the previous view. The competition-stability view states that when the level of competition increases and the concentration of the banking system decreases, market conditions become more stable. The risk of bank failure increases in less-competitive markets (De Nicolo, Jalal, & Boyd, 2006). The risk-shifting paradigm hypothesis and the "too big to fail" or "too important to fail" policies explain the relationship between competition stability and concentration fragility.

The risk-shifting paradigm hypothesis states that competition and bank stability have a positive relationship (Boyd & De Nicoló, 2005). This relationship can occur mainly in borrower behavior. A concentrated banking system with low competition can encourage banks to charge high loan interest rates. This causes borrowers to take on other businesses with higher risks of higher interest payments. A borrower's failure to pay interest can increase the number of non-performing loans in a bank. Thus, low bank competition can increase bank risk, eliminating the trade-off between competition and stability.

Meanwhile, the Too-Big or Too-Important-to-Fail policy refers to a concentrated banking system with a few large banks, compared to a competing banking system with many small banks. Large banks can potentially threaten the health and safety of the banking system (which also indicates a systemic risk to the financial system). Thus, the government will provide security guarantees to larger banks compared to smaller banks so that a crisis does not occur. However, the impact of these policies can cause problems for the safety and health of the banking market. The existence of too big to fail causes bigger banks to increase incentives by taking bigger risks. Thus, a concentrated banking system can lead to greater risk-taking and tends to be more fragile than a banking system dispersed with many small banks (Levine *et al.*, 2006; Schaeck *et al.*, 2009).

2.5. Market Competition Between Islamic Banks and Conventional Banks

High competition between banks can impact bank stability. Khattak, Ali, Hamid, & Islam (2021) reported that Islamic banks have lower stability than conventional banks, and competition negatively affects Islamic banks, whereas diversification has no impact. Ali, Haroon, Rizvi, & Azmi (2021) proved that growth and intense competition from Islamic banks significantly influence stability. These findings provide important policy implications for Islamic banks that can increase stability in the banking industry sector. On the other hand, Azmi, Ali, Arshad, & Rizvi (2019) found no differences in the impact of diversification and competition on the stability of Islamic and conventional banks. Kabir & Worthington (2017) suggested that the competition-fragility hypothesis applies to both banks. Meanwhile, other studies have concluded that Islamic banks are more stable, especially small Islamic banks, compared to both conventional and large

Islamic banks (Abedifar, Molyneux, & Tarazi, 2013; Beck *et al.*, 2013) and that the Sharia banking system is more stable than conventional banking (Zahra, Ascarya, & Huda, 2018), as evidenced by the Markov-switching results.

3. RESEARCH METHODS

This study used a quantitative approach to analyze the relationship between variables, calculate the level of competition, and analyze the effect of competition level on financial stability in Indonesia. The research period covers 2010 to 2021 because, according to data from the Indonesian Banking Statistics Data (Otoritas Jasa Keuangan, 2022), the development of Sharia Banking has improved since 2010, with a total of 184 entities, including Sharia Commercial Banks, Sharia Business Units, and *Bank Pembiayaan Rakyat Syariah*. Furthermore, more data can yield better results statistically (Li, 2019). The sample consisted of Conventional Commercial Banks and Islamic Commercial Banks in Indonesia. The banks selected were BRI, BCA, BNI, Muamalat, BSI, BCA Syariah, and Panin Dubai Syariah. Purposive sampling was used for sample selection. The data were sourced from the Indonesian Banking Statistics Data issued by Bank Indonesia (Otoritas Jasa Keuangan, 2011), providing a comprehensive macro-level measure for the variables analyzed. In addition, banking publication reports from the Financial Services Authority and data from the Statistics Indonesia were used. All the data used were in the form of secondary data downloaded from the official website of each institution.

Table 2. Research Variables

Variable	Proxied	Information	Source
Competition Level	Lerner Index	$Lerner_{i,t} = \frac{P_{TAit} - MC_{TAit}}{P_{TAit}}$	Balance Sheet and Bank Profit/Loss Statement
Financial Stability	Z-score ratio	$Z - score = \frac{ROA + Ekuitas}{\alpha ROA}$	Indonesian Banking Statistics
Control Variables:	Third-Party Funds (DPK)	Deposits	Indonesian Banking Statistics
Banking Penetration	Loans disbursed by Commercial Banks	Total Assets, Credit	
	Profitability	Profit	
	Net Interest Margin (NIM)	NIM	
	Return on Equity (ROE)	ROE	
	Bank Size (log of assets)	Bank Size	

Source: Processed by the Author

Referring to Goetz (2018), Berger *et al.* (2009), and Li (2019), the variable used to measure the level of competition is the Lerner Index, while to measure the level of financial stability using the Z-score obtained through the summation of the Return on Assets (ROA) and the ratio of equity to assets divided by sigma ROA. Meanwhile, the level of banking penetration as a control variable used third-party funds, total assets of commercial banks, loans disbursed by commercial banks, and profitability. Under the study's formulation and purpose, the variables used can be explained by the following definitions and measurements:

The model and test procedure referred to various studies related to measuring the impact of competition and penetration on financial stability, which were divided into two stages; stage 1:

Bank-level testing. In this bank-level test, the Lerner Index was used to measure the level of competition between banks. This provides insight into each bank's market level, stability, and underlying trends. Then, phase 2: National-level testing. This test was conducted to identify and analyze the impact of competition and penetration on financial stability. This stage enabled us to analyze the influence of competition and penetration on financial stability and draw relevant policy implications. The models used were as follows:

$$Z - Score\ ratio_{it} = \gamma_0 + \gamma_1 Z - Score\ ratio_{it-1} + \gamma_2 Lerner\ Index_{it} + \sum_{i=1}^n Penetrasi_{it} + e_{it}$$

Before estimating this equation, a descriptive statistical analysis was conducted to examine how data characteristics were utilized. Moreover, the model was estimated using the two-step System-GMM technique introduced by Blundell & Bond (1998) and Arellano & Bover (1995) to address the endogeneity issue in the model. This GMM model has several advantages, including; first, it can handle endogeneity and heteroskedasticity issues in data, resulting in more consistent and efficient parameter estimation (Arellano & Bover, 1995; Blundell & Bond, 1998); second, GMM has weaker assumptions than other estimation methods, such as OLS and IV, allowing its use in models with more complex structures (Hansen, 1982); third, GMM can overcome sample selection bias (Heckman, 1979) and simultaneous bias (Hansen, 1982), which often arise in cross-sectional and time-series data analyses; and fourth, GMM can also estimate more complex non-linear and non-parametric models than other models (Gallant & Tauchen, 1996).

However, this GMM model has several weaknesses; first, it requires a sufficiently large amount of data to produce accurate parameter estimates (Arellano & Bover, 1995); second, GMM has limitations in addressing heteroskedasticity issues when the correlation structure among observation units is very strong (Gouriéroux, Monfort, & Renault, 1996); third, GMM requires a proper model specification and good instrument selection to produce consistent and efficient parameter estimation (Newey & McFadden, 1994); and fourth, GMM requires sophisticated computer programming and computation time, especially for complex models (Arellano & Bover, 1995).

4. DATA ANALYSIS AND DISCUSSIONS

4.1. Lerner Index Calculation Results

The calculation of bank competition uses the Lerner Index, which, in principle, observes the behavior of banks in determining prices (proxied by the income received by banks) and managing operational costs. Banking competition in the Lerner Index approach indicates a markup of prices set by banks and charged to the customers. This markup is reflected in the ratio of the difference between the price (output price) and the marginal costs divided by the price. Price is calculated as the bank's total income on assets, whereas marginal cost is derived from the estimated function of the costs incurred to generate the bank's output. Because marginal costs cannot be observed directly, the calculation of marginal costs is carried out as a function of total costs through the expense or cost of capital, employees, and interest, which is then used to calculate the Lerner index.

The Lerner index has a value between zero and one. An index of zero means low competitiveness, and if the value of the index approaches one, it means that the competitiveness

of banks increases, along with an increase in market power banks. The following are the results of the Lerner Index calculation for Indonesia's conventional and Sharia banking industries.

Table 3. Lerner Index Calculation Results

BANK	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Self-sufficient	0.32	0.36	0.37	0.35	0.30	0.19	0.28	0.34	0.32	0.20	0.33
BRI	0.33	0.40	0.39	0.35	0.32	0.31	0.31	0.32	0.33	0.20	0.26
BCA	0.39	0.38	0.38	0.38	0.37	0.40	0.41	0.42	0.41	0.40	0.47
BNI	0.27	0.29	0.32	0.30	0.24	0.26	0.26	0.29	0.26	0.31	0.32
Muamalat	0.58	0.59	0.60	0.63	0.75	0.59	0.63	0.58	0.61	0.57	0.53
BSI	0.50	0.50	0.44	0.38	0.57	0.55	0.64	0.60	0.64	0.61	0.58
BCA Syariah	0.32	0.36	0.46	0.54	0.81	0.83	0.70	0.65	0.67	0.68	0.69
Panin Dubai Sharia	0.53	0.68	0.62	0.30	0.74	0.68	0.64	0.71	0.75	0.76	0.74

Source: Data processed, 2022

Based on this result, the competitiveness of the conventional banks (Mandiri, BRI, BCA, and BNI) was below 0.5. In other words, banks' competitiveness is declining. Meanwhile, the calculations for Islamic banks show different results. The average sample of Islamic banks (Muamalat, BSI, BCA Syariah, and Panin Dubai Syariah) was above 0.5 or close to 1. Thus, Islamic banks' market power level increases. This finding also indicates that conventional banks in Indonesia tend to be monopolistic. Each bank has a specific market segment. Meanwhile, Islamic banks in Indonesia are approaching an oligopolistic market. Larger banks with monopolistic power in concentrated banking systems can increase profits and decrease financial instability by providing greater "capital buffers" that safeguard these systems against external macroeconomic and liquidity shocks (Boyd & De Nicoló, 2005).

4.2. Descriptive Statistics Results

Before estimating the model, a descriptive statistical analysis was conducted to examine how the data characteristics were utilized. The results of descriptive statistics are presented in Table 4. below. The data show that the average bank stability (Z-score) was 4.66. The higher the Z-Score, the safer the company's condition and avoid potential bankruptcy. Meanwhile, the lower the Z-score, especially lower than 1.81, the more careful the company must be and immediately improve itself to avoid bankruptcy. Next, the average Lerner Index, which reflects the level of competition, was 0.46. A Lerner index value close to one indicates that bank competition tends to be high. Therefore, the market structure in this study is oligopolistic and not monopolistic. As is well known, oligopolies tend to collude, so competition is low.

The average DPK value was 298939.4. This shows that customer trust is still sufficiently high to maintain their funds in the bank. The bank's size was 392109.6. A larger bank size will have a major impact on financial system stability. The disbursed loans amounted to 244220.3. The larger the credit, the greater the velocity of money. Banks can channel credit to finance projects or businesses. The NIM value was 5.662159. Thus, a higher NIM indicates that a bank's profitability is improving. ROE was worth 16.00643. The higher the value, the greater the return from equity.

Table 4. Descriptive Statistics Results

	ZSCORE	LERNER	DPK	SIZE	CREDIT	NIM	ROE
Mean	4.661648	0.465894	298939.4	392109.6	244220.3	5.662159	16.00643
Median	4.080000	0.406350	209865.0	251547.5	97388.50	5.685000	15.19500
Maximum	9.800000	0.840263	1127847.	1572761.	943702.0	61.30000	94.01000
Minimum	2.190000	0.109744	250.0000	518.0000	113.0000	0.730000	0.010000
Std. Dev.	1.879925	0.172653	311947.3	417052.5	273735.4	3.557525	14.55992
Skewness	1.061925	0.326565	0.735364	0.775889	0.771239	10.86068	1.767140
Kurtosis	3.134117	1.854923	2.332140	2.404062	2.323636	171.2780	7.776721
Jarque-Bera	66.42129	25.48744	38.26647	40.52630	41.60499	422243.2	517.8536
Probability	0.000000	0.000003	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	1640.900	163.9947	1.05E+08	1.38E+08	85965559	1993.080	5634.265
Sum Sq. Dev.	1240.476	10.46295	3.42E+13	6.11E+13	2.63E+13	4442.250	74408.96
Observations	352	352	352	352	352	352	352

Source: Data processed, 2022

4.3. Generalized Method of Moment Results

Augmented Reality (AR) instruments were used in this study. The Generalized Method of Moments (GMM) examined the relationship between bank competition and financial stability. Here are the data processing results obtained using the generalized method of moments (GMM).

Table 5. GMM Results

Variable	Coefficient	Prob.	Information
Constant	2,111	0.000	Significant
Z-Score (-1)	0.480	0.000	Significant
Lerner	1,528	0.048	Significant
DPK	-1,07	0.000	Significant
Size	7,60	0.013	Significant
Credit	7,50	0.012	Significant
NIM	0,015	0.432	Insignificant
ROE	0,007	0.162	Insignificant
R-squared	0,613		

Source: Data processed, 2022

Based on the results of the GMM estimates, the following research model can be obtained:

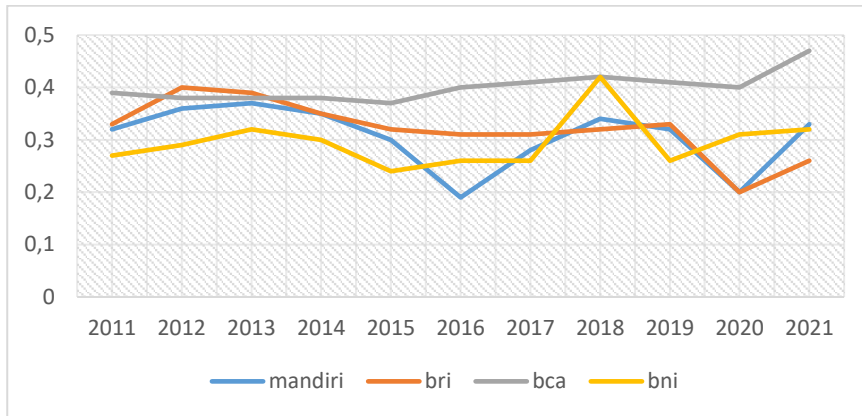
$$ZScore_t = 2,111 + 0,480ZScore_{t-1} + 1,528lerner_t - 1,07DPK_t + 7,60SIZE_t + 7,50credit_t + 0,015NIM_t + 0,007ROE_t$$

This result showed that a Z-score of 2.111 was expected when all the variables were 0. Additionally, the previous year's Z-score had a significant positive effect on the current year's Z-score, with a 0.480 increase in the Z-score in year t under ceteris paribus conditions when there was an increase in the previous year's Z-score. Moreover, the Lerner index had a significant positive effect on the Z-Score, with a 1.528 increase in bank stability (Z-Score) under ceteris paribus conditions when the level of competition (Lerner index) increased by 1.

The penetration variables were DPK, SIZE, CREDIT, NIM, and ROE. The NIM and ROE variables do not significantly affect bank stability (Z-score). However, the DPK, SIZE, and CREDIT variables affect bank stability (Z-score). Specifically, an increase in SIZE and CREDIT will increase the Z-Score by 7.60 and 7.50 under ceteris paribus conditions. Conversely, an increase in DPK will lower the Z-Score by 1.07 under ceteris paribus conditions.

4.4. Discussion

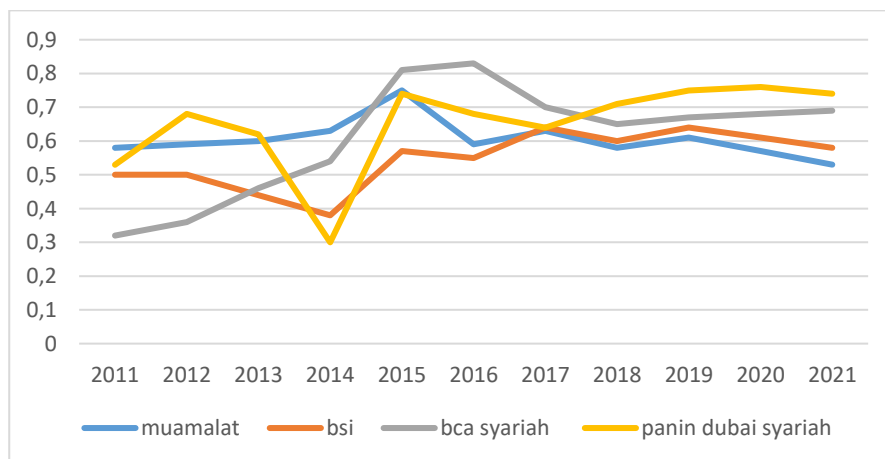
Competition can be measured using the Lerner index with a nonstructural approach. This approach emphasizes market power. The greater the market power, the lower the competition. The following is the average value of the Lerner index obtained from the estimates carried out by the researchers.



Source: Data processed, 2022

Figure 2. Lerner Index of Conventional Banks in Indonesia for the Period 2011-2021

Generally, the value of the conventional bank Lerner index, which shows competition, fluctuates from 2011 to 2021. On the other hand, the Lerner index also shows the amount of market power besides estimating competition (Arrawatia, Misra, & Dawar, 2015). For example, the Lerner index showed a positive trend from 2016 to 2018. This means that the market power of banks in Indonesia, represented by the Big Four banks, is strengthening in a monopolistic market structure. A monopolistic market has lower industrial competition than a perfect competition market because there are many homogeneous manufacturers and products in a perfect competition market. In contrast, a monopolistic market has more than one manufacturer and various products (Joesron & Fathorazzi, 2012).



Source: Data processed, 2022

Figure 3. Lerner Index of Sharia Banks in Indonesia for the Period 2011-2021

This finding is supported by the fact that banks in Indonesia have market segments. For example, the BRI consistently serves small communities, from providing credit to small

entrepreneurs to banking services at affordable costs. In addition, BRI has a superior product, namely Teras BRI and BRI's cash office in Wet Markets. Meanwhile, BCA is dominant in corporate financing. Bank Mandiri focuses on segmentation among millennials, especially home-ownership loan financing and other products supported by the latest technology. The Islamic banking sector shows different results, as Figure 3 shows. The results show that the Lerner index of Islamic banks in Indonesia tends to fluctuate from 2011 to 2021. Market control in Islamic banks is close to 1, which reflects that the level of market competition in Islamic banks in Indonesia tends to lead to oligopoly. This is also shown by the control of large market assets by two banks, Bank Muamalat and Bank Syariah, Indonesia.

Meanwhile, the test results show a positive relationship between the level of competition in the banking industry and banking stability. The higher the level of competition, the greater the impact of increasing banking stability. This is because a high level of competition also indicates increased interdependence between banks. Interdependence between banks also indicates the increasing role of government oversight in banking performance. The aim is not only to protect the banking industry but also to protect customer interests and trust in the banking industry. Ultimately, this condition creates stability in the banking industry. The level of public trust in the banking industry can be shown by increased banking third-party funds. High deposits have implications for more public funds (customer funds) that can be used to recapitalize troubled banks, reduce capital flights, and maintain stability in the banking industry. Recapitalization channels can stabilize the market (Capelle, 2021).

Vives (2016) studied the role of non-competitive advantage in increasing a bank's ability to pay depositors ex-post, similar to the so-called recapitalization channel. These results support the competition stability hypothesis and reject the competition fragility hypothesis. These two hypotheses explain the relationship between competition in the banking industry and banking stability. First, the competition fragility hypothesis states that the higher the level of competition between banks, the higher the banking fragility. This hypothesis is supported by De Nicolo, Honohan, & Ize (2003) and Berger *et al.* (2009). Banks take the initiative to take excessive risks in a highly competitive environment, emphasizing profitability (Beck, 2008). Therefore, the degree of fragility increases, compromising the stability.

Second, the competition stability hypothesis states that a concentrated banking industry generally has fewer banks. Thus, authorities should pay more attention to bank failures when there are few. However, the banking industry does not concentrate on certain bank groups. There are various types of banks in the banking industry, including conventional and Islamic banks. Additionally, mergers between banks add to the diversity of bank types. This merger aims to increase bank share in Indonesia, resulting in fewer banks.

5. CONCLUSION, SUGGESTION, AND LIMITATION

Several important conclusions can be drawn from this study; First, the competitiveness of conventional banks (Mandiri, BRI, BCA, and BNI) is below 0.5. In other words, bank competitiveness is decreasing. Meanwhile, calculations on Islamic banks show different results. The average sample of Islamic banks (Muamalat, BSI, BCA Syariah, and Panin Dubai Syariah) is above 0.5, or close to 1. Thus, Islamic banks' market power levels have increased. Second, The Lerner index values of conventional and Islamic banks in Indonesia show that competition

fluctuated from 2011 to 2021. Third, the test results reveal a positive relationship between the level of competition in the banking industry and bank stability. This means that in the context of the banking industry, which is incidentally a competitive industry (it also shows the level of competition), the more competitive the industry, the stronger the linkages between the banks within it, which will create stability.

The suggestions or policy recommendations that can be given include; First, Islamic banking has a great opportunity to expand market share if it can increase its health level, which is also followed by retention of loyalty from customers, and second, banking authorities need to reflect or reevaluate their performance and regulation in order to improve the health level of conventional banks. For further research, researchers can analyze the competition-stability and competition-fragility hypotheses before and after the merger carried out by Bank Indonesia as the banking and monetary authority in Indonesia. It is well known that mergers can affect market concentration and the two hypotheses. Future researchers could increase the sample of banks used as research objects. The limitation of this study is that bank samples are selected based on data availability. Therefore, the development of this research can be carried out by adding bank samples.

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