How Market Power Affects Potential Bankruptcy Post and During COVID-19: Does Sharia Rural Bank Soundness Matter?

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Abstract

The COVID-19 pandemic has forced banks to participate in increasing their capacity to accommodate consumers and producers so that there are no prolonged shocks. Sharia rural bank is a type of community bank that can directly contribute to the village level. For this reason, this study aims to analyze the effect of market power on the potential bankruptcy for banking before and after the COVID-19 pandemic by involving banking indicators. The data used in this study is a panel of 113 sharia rural banks throughout Indonesia during 2013-2021. The results show that market forces have a positive effect on banking stability. Meanwhile, equities and economic growth are alleged to be part of the decline in bank risk. When COVID-19 hit, banks found a prolonged crowding out effect due to the absence of financing absorption by consumers. So that it has the opportunity to increase financing for banks that are above the profitability standard.

Keywords: bankruptcy, banking Stability, market strength,

Introduction

Technology distruction and the COVID-19 pandemic can lead to instability and slowdown in the performance of banks. Banking instability is established through the amount of credit risk that increases every period. On the other hand, the slowdown in banking performance is evidenced by a decrease in financing growth, a decrease in the size of banking through asset capacity, and profitability(LaBelle & Santacreu, 2022; Spiegel, 2022) . This instability and slowdown in banking performance was caused by stagnation through the impact of economic downturn since 2014 and the implementation of large-scale social

restrictions in various regions. Indonesia as one of the countries that implements a dualistic banking system where conventional and Islamic banks coexist in every operational activity does not escape the scouring of both(FSA, 2019) .

Sharia People's Financing Bank is a type of Islamic-based community bank that is also projected to have the same fate where the decline in performance is followed by a lack of market share. This decline in market share is mostly due to technological distruction and the speed with which competitors respond to consumer needs. On the other hand, BPRS also has to compete with banks with much more mature capital adequacy, making it more squeezed over various things. However, this decline in market share apparently needs to be watched out for, especially the potential for banking which is projected to chasten BPRS. Based on the OJK, (2021) the portion of banking asset control is currently still dominated by commercial banks which reach 96.2%. Meanwhile, the rest leads to other banks including regional development banks, foreign banks, and community banks (BPR-BPRS). This also illustrates that the banks that have the lowest assets have the potential to increase the risk of default.

Financing growth is also an inseparable part of the existence of rural banks and rural banks. If disaggregated one by one, financing growth is currently fluctuating every year. Based on the OJK, at least the growth of (2020)BPRS financing has improved where in the 2020 period, positive financing growth increased at the level of 14.53%, an increase from the previous period of 1.45%. Meanwhile, in 2021 financing growth actually experienced a significant decrease of 9.04% from the previous period. This indicates that the slowdown in disbursement of funds occurred due to the COVID-19 distruction. This conjecture arises over time because the potential decline will increase in the next period. On the other hand, deposit growth seems to have the same performance, namely an increase in the 2020 period of 53.44% compared to the previous period and a decrease in the 2021 period of 16.17%. This condition suggests that the accumulation of third-party funds in BPRS will create crowding out so that it has the potential to increase production costs where banks will routinely pay interest expenses on these third-party funds(Gilchrist et al., 2014; Whitaker, 1999) . Furthermore, banks may experience quite massive losses because financing growth is much lower than the growth of third-party funds.

The relatively low growth of financing compared to the previous period also provided a treasure for the development of *non-performing financing*. Until now 2021, NPF has reached a range above 6% per year so that it has the potential to cause an increased risk of default to be higher. Not only that, the aftermath of a massive economic slowdown has also exacerbated the purchasing power and production of businesses, creating great potential. Not only that, this increased risk of default is also projected to hamper banking stability in the long run. This indicates that the existence of banking is highly dependent on the amount of financing channeled(Cubillas & González, 2014; Ivashina & Scharfstein, 2010). Moreover, BPRS is a bank that does not use the proportion of interest in determining the size of its financing channel. Thus, the potential to make a profit is much less compared to other banks.

Such behavior indicates that competition between banks is a benchmark in itself against the potential for unilateral banking failure. Some of the earlier literature suggests that an

increase in market power has the potential for an increase in defaults, which has implications for banking stability(Fu et al., 2014; Ivashina & Scharfstein, 2010; Mishkin, 2007) . However, for banks, an increase in market strength can also result in improved banking stability so that the potential for failure can be minimized. This condition suggests that the relationship of market forces to banking banks has two different directions. The discrepancy is largely due to ownership patterns, banking indicators, and macroeconomics. Where banks that have relative market power result from high banking indicators and vice versa(Climb up & Ogane, 2020) .

Some of the previous studies have more often discussed the impact of competition on banking risk and banking stability. Meanwhile, the objects of study used mostly involve commercial banks and cross-border commercial banks. On the other hand, the topic of bpr and rural banks studies mostly still leads to the assessment of banking performance and indicators alone regardless of the relationship with stability and even the potential for banking. Not only that, the temporal aspect does not seem to have been raised much, for example the impact of multidimensional crises and pandemics. This also creates its own treasures, so that it can cause a fairly visible research gap where the object of study of BPRS has never been linked to the measurement of market strength and the potential for resilience and temporal aspects are not raised much. Thus, this study will be aimed at reviewing the impact of market forces on the potential of BPRS banking during and before the COVID-19 pandemic. This study aims to review the extent of the effect of market forces due to agglomeration and banking competition in the midst of a pandemic and previously on the potential for consequential BPRS banking.

This research contributes to the measurement of the agglomeration rate of market forces and its efforts to minimize the potential for banking problems in the future. Through the analysis of this research competition, it is useful for mapping savings margin policies and *financing mudharobah, murabahah,* and *ijaroh wa istima* so as not to create banking stability in the midst of increasingly fierce competition. This study seeks to accommodate various BPRS banks in Indonesia in a concrete manner and review aspects of their transitivity with equivalent banks, namely BPR.

Literature Review

Previous research on market forces has often been linked to banking behavior in accommodating deposits and depositor banks' competition with each other. This paradigm was first researched for the study of competitive markets (Keeley, 1990) and their relation to banking vulnerabilities (Salas & Saurina, 2003). This research is an embryo for the traditional view of market forces in which banks seek to generate as much third-party funds as possible in the hope of increasing their financing capacity later.

Subsequent research began to develop in which aspects of market power would be combined with banking stability that indirectly linked fragility. For this reason, his study focused on two things, namely *competition-fragility* and *competition-stability.*

More Competition-Fragility

Research on *competition-fragility* supports the opinion that the more competitive the more competitive the banks are and vice versa. Back et al. (2013) found that the   positive relationship was insignificant between the competition variables (lerner and HHI) and banking stability around the world and the Philippines (Islam et al., 2020a). On the other hand, Kabir & Worthington (2017) found significant positive relationships in sixteen developing countries, dual banking in the world after the 2008 global financial crisis (Risfandy et al., 2020), Middle East-North Africa (Albaity et al., 2019), emerging market countries (Amidu & Wolfe, 2013), single banking in the European Union region before Brexit (Leroy & Lucotte, 2017), and the United Kingdom(Zhanbolatova et al., 2018). Berger et. al (2009a) confirms that under the traditional view competition-fragillity is often causedby a lot of bank competition or changes in banking structure that lead to net financing so that it erodes market forces, lowers profit margins, and results in a reduction in the value of waralaba. This condition then has implications for increasing banking risks and can directly reduce banking stability. Hellmann et al (2000) point out the same information that the liberation of the banking sector in the United States and Japan is actually driving stronger competition. However, this is realized by each bank if indeed in the future there will be a decrease in the value of profits. Not only that the higher the competition, the higher the bank suffers from risk. Thus, banks should adjust and generalize information forecasts through information costs related to long-term loans. In addition, the bank did not decide on such loans in the near future (Besanko & Thankor, 1993).

Less Market Power-Stability

Other findings point to competition-stability where there is an inverse relationship between market forces and banking stability. This relationship also applies to credit risk where positive attributes may occur between weak market forces to risk (NPLs). Clark et al (2018a) found weak market forces negatively associated with banking stability in the case of single banking of CIS commonwealth countries, similar findings prevailed in the United States (Goetz, 2018), East Asia-4 (Liu Et Al., 2012), Southeast Asia (Noman Et Al., 2018), Asia-11 (Soedarmono Et Al., 2013), China (Hussain & Bashir, 2020), the Arabian peninsula region (Saif-Alyousfi Et Al., 2020), and dual banking Malaysia (Ibrahim Et Al., 2019a). Berger et. al., (2009b) confirming that greater market forces in deposits can result in higher bank risk and vice versa. Banks that have market power sometimes take advantage of high interest rates to create profits. In addition, the transfer of risk occurs because the borrowing public cannot return the funds because the interest rate is too high. Thus, non-performing loans are getting higher in the banking portfolio and disrupting stability. In this model, the higher the interest rate, the less intense the competition in the loan market so that people will be moved to choose high-risk projects without paying attention to *moral hazard* and *adverse selection* (Boyd & De Nicoló, 2005). Projects that are at risk of leading to high *default* rates as well as mixed *adverse selections* lead to high *non-performing loans* that indicate bank failure.

Research Method

BPRS Market Power Modeling

Based on previous research, market strength is measured using competition power in the form of the Lerner Index(Lipczynski Et Al., 2016a, 2016b). In the process, the Lerner Index is calculated through the ratio of markup pricing to market prices. The Lerner Index ranges from zero to one, where the higher the value of the Lerner Index, the more market forces increase and show the monopoly market structure. Conversely, if the value is equal to or close to zero, it is referred to as a perfect competition market(Demirgüç-kunt & Detragiache, 2002; Demirgüç-kunt & Huizinga, 2004).

The modeling is as follows:

$$L_{it} = \frac{P_{it} - MC_{it}}{P_{it}}; P_{it} \neq 0 \qquad [1]$$

Where P is the market price calculated through the amount of income divided by the number of assets. Meanwhile, MC it is a marginal cost that is calculated using changes in production costs to assets. The elaboration process is calculated through the regression of the pan el static *pooled least square* as follows:

$$\ln TC_{it} = a_0 + a_1 \ln Q_{it} + \frac{a_2}{2}(\ln Q)^2_{it} + \sum_{j=1}^{3} \delta_i \ln w_{jit} + \frac{1}{2}\sum_{j=1}^{3}\sum_{k=1}^{3} \delta_{jk} \ln w_{jit} \ln w_{kit} \qquad [2]$$

$$+ \sum_{j=1}^{3} \theta_j \ln Q_{it} \ln w_{jit} + \beta_1 trend + \frac{\beta_2}{2} trend^2 + \beta_3 trend \ln Q_{it} + \sum_{j=1}^{3} \theta_j \, trend \ln w_{jit} + \varepsilon_{it}$$

Where TC is the cost of banking production, Q is the output measured by total assets, w_j (j=1,2,3) is the input price j, and trend is the time that can affect technical changes in the cost function. Meanwhile, the three inputs in question include labor, funds, and physical capital.

The process is then transformed into the marginal cost estimation function as follows:

$$MC_{it} = \frac{TC_{it}}{Q_{it}}\left[a_1 + a_2 \ln Q_{it} + \sum_{j=1}^{3} \theta_{jit} \ln w_{jit} + \beta_3 trend\right] \qquad [3]$$

Banking Banks

Banking volatility is calculated using the Z-Score Return on Assets and Return on Equity. The lower the Z-Score, the higher the possibility of banking and vice versa (Brei Et Al., 2020;

Fang Et Al., 2014). Based on previous research, this Z-Score functions as a means of reviewing banking performance from the aspect of stability (stability), so that when banks are said to be stable, the potential for default is relatively low and vice versa. The Z-Score reflects the total standard deviation at which the return on assets must fall below average in order to reduce equity in banking. This condition suggests that profitability will be normally distributed. In addition, the z-score value is certainly a measurement priority where the measurement aspect has a very culminative meaning (Beck Et Al., 2013). If the numerator coefficient tests negative then the projection is that the bank goes out of business and vice versa.

As for the modeling, it can be stated as follows:

$$Z_{score_{it}} = \frac{ROA_{it} + \left(\frac{A}{E}\right)_{it}}{\sigma ROA_{it}} \qquad [4]$$

Where is a non-asset return, is ROA a comparison of assets to equity, $\frac{A}{E}$ is the standard deviation of non-asset returns, and σROA each BPRS and year. i t

In absolute terms, the z-score is a weigher of banking stability but reciprocally it can also be used as a means of calculating credit risk in the form of Non-Performing Loans. However, Non-Performing Loans are synonymous with partial measurements, so the pattern of banking tendency to be centralized is much more uneven.

The Effect of Market Forces on The Potential of Banking: The Bank Soundness Effect

Based on the review literature, that the influence of market forces on the potential of banking can be expressed as follows:

$$\ln Z_{score_{it}} = \alpha_0 + \alpha_1 \ln Z_{score_{it-1}} + \alpha_2 L_{it} + \beta_1 P + \beta_2 P \times T + \gamma Bank_{it} + \theta Macro_{it} \qquad [5]$$
$$+ u_{it}$$

$$Z_{score_{it}} = \alpha_0 + \alpha_1 Z_{score_{it}} + \alpha_2 L_{it} + \beta_1 P + \beta_2 P \times T + \alpha_3 Size_{it} + \alpha_4 Eqa_{it} \qquad [6]$$
$$+ \alpha_5 Loans_{it} + \alpha_6 NIR_{it} + \alpha_7 EcGrowth + u_{it}$$

Where is the $\ln Z_{score_{it-1}}$ logarithm of probability of banking, is a L_{it} market force, is a p_{it} time dimension, the T_{it}: capacity of disbursement of funds is highest, is a $Bank_{it}$ banking indicator, is $Macro_{it}$ a macroeconomic indicator, and is u_{it} an error factor. Furthermore, the model is specified based on banking indicators, namely $size_{it}$ a banking measure measured through an asset logarithm, is the Eqa_{it} ratio of equity to assets, is $Loans_{it}$ a logarithm of loans, is NIR_{it} the ratio of non-interest income to income, and $ecgrowth$ is economic growth.

The results of the estimation were carried out using an impact panel regression in the form of difference in difference where in the process it will review the impact of COVID-19 on the existence and potential of banking than BPRS. By using the principle of majority banking, the minimum threshold value of financing will then be used so that the potential can be reviewed accurately.

The size of the bank describes the capacity of controlling the assets of a bank over a certain period of time. The equity ratio reflects the adequacy of capital held by banks. The loans disbursed reflect the amount of sales received by banks. Diversified earnings reflect other revenues beyond the profit-sharing margin. Macroeconomics reflects the condition of the region over a period of time. Based on previous research bank size and diversified income have a significant positive effect on banking stability in Malaysia (Ibrahim et al., 2019b), East Asia (Phan et al., 2019), and CIS countries (Clark et al., 2018b). On the other hand, positive income also occurred in the ratio of loans and the ratio of working capital to banking stability in Malaysia (Ibrahim et al., 2019b), the United States and 134 non-OECD countries (Boyd et al., 2006), not only that there was also a positive relationship between macroeconomic variables (economic growth) to banking risks(Ibrahim et al., 2019b) and the 5 major ASEAN countries(Islam et al., 2020b).

Data and Variables

This study used panel data of 113 BPRS throughout Indonesia during 2013-2021. The use of this period interval, among others, wants to confirm the suitability of microprudential stakeholders by the OJK after its establishment and accommodate various things during and before the COVID-19 pandemic occurs. The use of the amount of BPRS has gone through various *screening* processes in the form of transformations and searches for data labels that are not available so that certain banks are not included in the estimation process.

The variables used in estimating this study include the probability of banking, market strength, time dimension (time dimension, $p = $ during, and 1: before), treatment in the form of banking fund disbursement capacity, banking size, equity ratio, liability ratio, non-interest income ratio, and macroeconomics. 0:

Table 1. Definition of Research Variables

	Variable	Definition	Unit	Source
1.	Z-Score	Probability of Banking/Stability Score	Percent	Estimation
2.	Lerner	Banking Competition	Index	Estimation
3.	Banking Size	Logarithm of Banking Assets	Percent	FSA
4.	Equity	Equity to Asset Ratio	Percent	FSA
5.	Loans	Pinajaman channeled	Percent	FSA
6.	Non-Interest Income	Ratio of Non-Interest Income to Income	Percent	FSA

Economic Growth	Annual Nominal GDP Change	Percent	BPS

Analysis

This section of the analysis includes preliminary, estimation result, and dicussion.

Preliminary & Estimation Result

The following Table 2 presents descriptive statistics that contain information in the form of centering measures, spread sizes, and location sizes.

Table 2. Descriptive Statistics

Variables	Obs	Mean	Std. Dev.	Min	Max
zscore	1010	2.095	6.447	-17.507	143.758
Npl	913	0.118	0.145	0	1
l	916	0.107	0.786	-12.342	0.991
size	1010	17.347	1.218	11.08	21.061
eqa	1010	0.21	0.69	-.291	15.637
Loans	1010	16.89	1.267	10.458	20.765
Nir	1010	0.079	0.096	0	0.853
ecgrowth	1017	4.833	0.974	2.19	5.78

If broken down one by one, the probability of BPRS banking is relatively high with a maximum potential loss of 3%, the average credit risk reaches 11.8%, market strength is relatively weak and classified as a lower-level monopolistic competition market, banking size is still below the standard of 30%, the equity ratio is relatively low compared to assets so that the potential to accommodate losses is very good, loans disbursed reach 16.8% per year, non-margin revenue sharing is relatively low because BPRS does not take much profit.

The following Table 3 presents the results of estimating the effect of market forces on potential volatility using regression of difference in difference impact panels divided into four clusters, namely: (1) DID Pooled Least Square Model; (2) DID Fixed Effect Model; (3) DID Random Effect Model ; and (4) Generalized Least Square Globality Model.

Table 3. Estimation Results

	(1) -PLS	(2) -FEM	(3) -BRAKE	(4) -GLS
	lnzscore	lnzscore	lnzscore	lnzscore
1.treated	-0.037	-0.089*	-0.079*	-0.037
	(0.059)	(0.049)	(0.047)	(0.059)
1.post	-0.003	-0.019	-0.023	-0.003
	(0.077)	(0.058)	(0.057)	(0.076)
1.treated#1.post	0.143	0.184**	0.182**	0.143

	(0.105)	(0.08)	(0.079)	(0.104)
l	0.456***	0.386***	0.394***	0.456***
	(0.053)	(0.044)	(0.043)	(0.052)
size	-0.109	-0.115	-0.105	-0.109
	(0.074)	(0.071)	(0.067)	(0.074)
eqa	0.41***	0.35***	0.36***	0.41***
	(0.027)	(0.022)	(0.022)	(0.027)
Loans	0.007	-0.018	-0.01	0.007
	(0.071)	(0.066)	(0.063)	(0.07)
Nir	-0.323	-0.231	-0.242	-0.323
	(0.244)	(0.201)	(0.196)	(0.243)
ecgrowth	0.026	0.029*	0.028*	0.026
	(0.024)	(0.017)	(0.017)	(0.024)
_Cons	1.981***	2.547***	2.229***	1.981***
	(0.358)	(0.631)	(0.486)	(0.356)
Observations	884	884	884	884
Pseudo R²	-	-	-	-

Standard errors are in parentheses *** p<.01, ** p<.05, * p<.1

Based on the results of the estimates above, it shows that banks that have financing below the profitability figure have the potential to be banked by 0.08. Meanwhile, COVID-19 does not have the potential to reduce banking stability by 0.2 but is not technically significant. During the pandemic, it is alleged that it can affect the aggressiveness of banks with low financing because funds that are not directly channeled can reduce the potential risk of default. On the other hand, the increase in market power has a significant positive effect on reducing the potential for banking. The increase in equity ratio and economic growth each had a significant positive effect on reducing the potential for banking.
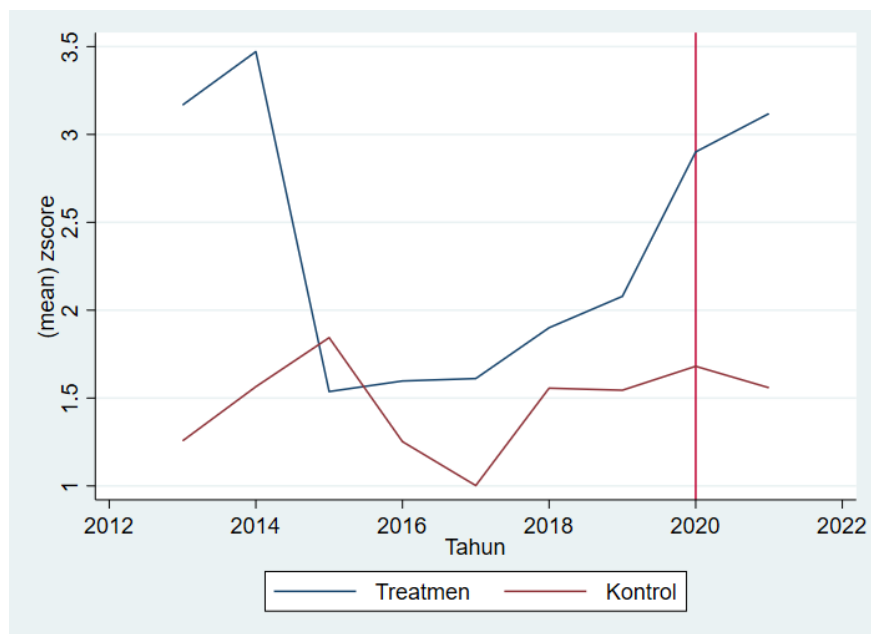

Figure 1. Transplot Difference in Difference

Figure 1 shows that the trend of banking stability has increased for the treatment model where the adequacy of financing also provides an illustration for the success of rural banks in surviving amid the COVID-19 shock. Meanwhile, banks that have a lower level of financing than profitability have experienced a fairly massive decline during COVID-19.

Discussion

Based on the results of consistent estimates, it is confirmed that a bank with strong resilience as evidenced by high market strength will create stability compared to other banks. Such behavior is synonymous with the *competition-fragility* hypothesis in which an increasingly competitive bank (its market structure leads to a perfectly competitive market) will result in higher fragility. Carletti & Hartmann (2002) informs that when there is too much competition, it has implications for bank failure in general meaning that banking stability is not achieved. For this reason, banks then turn to the competition for deposits within a certain period of time. This decision-making understanding is used to incentivize customers to experience turmoil in an increasingly competitive market structure, including information about the competition for deposits. Nevertheless, the majority of banks persist in the competition for loans provided to the public. In this case, the bank focuses more on the liabilities side of the banking balance sheet (deposits). In addition, the bank only explores the franchise value impact of risk-taking behavior by each bank. However, if the franchise value is high, the bank will respond by limiting risk-taking behavior by reducing incentives to each of its customers (Marquez, 2002). Marcus (1984) found that deregulation of banking and deposit insurance systems can facilitate business competition between banks and encourage a decline in profits. In addition, to protect the franchise value of this banking activity, the bank actually responded by strategizing so that the bank experienced a collapse. Hellmann et al (2000b) shows the same information that the liberation of the banking sector in the United States and Japan is actually driving stronger competition. However, this is realized by each bank if indeed in the future there will be a decrease in the value of profits. Not only that the higher the competition, the higher the bank suffers from the risk of (Koskela & Stenbacka, 2000). Thus, banks should adjust and generalize information forecasts through information costs related to long-term loans.

In the case of BPRS, several banks have to compete fiercely together with BPRs whose position patterns are both in the regency/city area. This condition will certainly aggravate the pace of financing disbursed if BPRS then faces the issue of long-term latent shock. The COVID-19 pandemic is a challenge for BPRS to strive for various resources owned as a means to actualize profit sharing margins in the future. Meanwhile, the potential for control of the sharia rural banking market is alleged to be its own aggressiveness because products that are relatively differentiated compared to its competitors, namely BPRS, actually make this level of market strength prevent unilateral fragility. Regardless, an indispensable pointer is the cosmology of BPRS as one of the most powerful should be followed by sufficient equity so that the potential for failure is much lower.

Table 4. BPRS Roadmap to avoid the effects of prolonged pandemic

Short-term	Long-term	Achievements
Effectiveness of Profit Sharing Margins	Profit Sharing Margin Determination	Constant reception
Accurate Product Development	Digital Product Diversification	Diversification of Banking Products
Increased equity capacity	Consistent ROE and ROA development	Banking Stability
Penetration between regions	-	Market Forces

Not only banking indicators have an impact on banking success, but economic growth is also alleged to have helped the existence of the banking industry in general. This is due to the relatively good economic fundamentals and activities that will create valuations of consumption and other productive activities, thus creating the potential for absorption of banking financing. Thus, banks will be much more resilient than without positive economic growth.

Conclusions

Based on the discussion, it can be concluded that market forces during the pandemic have a significant positive effect on banking stability. The market strength of BPRS shows a score in the form of a monopolistic competition market. Meanwhile, the potential for financing is also relatively high followed by high financing risks, meanwhile, the impact of the pandemic is alleged to have caused an increase in the potential for bilama banks which is not followed by an increase in capital capacity and positive economic growth. In addition, banks that have financing less than their profitability are also alleged to have the potential to be banked within a certain period of time.

The study recommends that financial services authorities should consolidate profit-sharing margins including the potential to unilaterally increase profit sharing margins. It is possible that this can cause potential losses to competing banks within the scope of BPRS so that in aggregate it can interfere with financial system stability. Not only that, capital adequacy is needed in order to accommodate comprehensive financing considering that BPRS still relies on production costs in the form of third party funds which are quite high. So that if there is an accumulation of party funds when what happens, the *crowding out effect* will increase rapidly.

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About The Authors

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