"Bank stability and fintech impact on MSMES' credit performance and credit accessibility"

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BANK STABILITY AND FINTECH IMPACT ON MSMEs' CREDIT PERFORMANCE AND CREDIT ACCESSIBILITY

Abstract

The growth of financial technology (fintech) brings happiness to micro, small, and medium enterprises (MSMEs) that banks have denied access to credit. However, this condition has the potential to create a climate of intensified competition in the credit market and threaten banking stability. Therefore, this study examines the impact of banking stability and fintech on credit performance and credit access of MSMEs. This study uses a sample of 46 public commercial banks of the Republic of Indonesia and uses quarterly data from 2010 to 2022. The number of observations used for bank stability variables was 2,392, and for the fintech variables, 921 observations. This research analysis uses the fixed effect model method with robust standard errors. The results show that bank stability and fintech effect MSMEs' credit performance and their access to credit. This finding encourages the competition-fragility theory. Bank stability reduces nonperforming loans and MSMEs' access to credit. This indicates that stable banks encourage better MSME loan performance and thus restrict their lending to MSMEs. The existence of fintech is proven to improve MSMEs' non-performing loans and their access to credit. Fintech that facilitates easy credit causes MSMEs` credit performance at banks to fall, which in turn opens the gate for MSME credit. The implication is that the financial services authority (OJK) needs to tighten further the online lending of fintech companies that have put more burden on MSMEs with high capital costs that can affect the ability of MSMEs to pay bank loan installments.

Keywords	access to credit, non-performing loans, competition, fragility, bank stability, financial technology, lending, credit market
JEL Classification	G21, G23

INTRODUCTION

A well-functioning banking system is widely recognized as crucial for economic growth (Ijaz et al., 2020; Jayakumar et al., 2018). However, the significant growth of financial technology (fintech) startups in the past decade presents a threat to banking stability. On the flip side, it brings joy to Micro, Small, and Medium Enterprises (MSMEs), which are often sidelined in bank credit due to the stigma of being unbankable (Dong & Men, 2014; Fanta, 2016). This condition has the potential to create a stronger competitive climate in the credit market and destabilize the banking financial system (Albaity et al., 2019; Beck et al., 2013; S. Kasman & A. Kasman, 2015; Keeley, 1990; Sarpong-Kumankoma et al., 2021). Therefore, fintech is an interesting discussion to research its relationship with banks in the perspective of MSME credit.

Although the relationship between banks and MSMEs increased significantly after the People's Business Credit service was launched in Indonesia (Nugraha et al., 2022), it provides a confusing decision for banks as lenders. This is because banks potentially face greater default

risk (DeYoung et al., 2008; Nitani & Legendre, 2021). Recently, Nitani and Legendre (2021) mentioned that bank loans tend to have a higher default risk than co-operatives. Much empirical literature discusses stability, fintech, bank performance, and credit accessibility. However, there is no consensus on the stability of banks and the effect of fintech on performance and credit accessibility. The competition-fragility theory can explain the logic of this research. The competition-fragility perspective of Keeley (1990) asserts that bank competition reduces market power, lowers bank performance, and encourages banks to take greater financial risks. Keeley's (1990) view has been supported by several subsequent studies, such as Albaity et al. (2019), Beck et al. (2013), S. Kasman and A. Kasman (2015), and Sarpong-Kumankoma et al. (2021). This theory is considered suitable for the scope of the study, focusing on the credit market and strengthening the research assumptions.

1. LITERATURE REVIEW

Two opposing views presented in the literature explore the relationship between bank stability and competition. First, the competition-fragility theory of Keeley (1990), which states that competitive banking systems are more fragile than less concentrated banking systems. This theory explains that competition decreases banks' market power, leads to lower profit margins, and causes banks to take more risks (Albaity et al., 2019; Sarpong-Kumankoma et al., 2021). Banks' monopoly or market power results in increased stability, as it allows them to offer more loans and higher profits. It also puts them in a stronger position to withstand shocks to the supply-demand balance. Several recent literatures investigate this hypothesis and show support for it, such as Albaity et al. (2019), Beck et al. (2013), S. Kasman and A. Kasman (2015), and Sarpong-Kumankoma et al. (2021).

Contrary to Keeley's (1990) theory, the principles outlined by Boyd and Prescott (1986), De Haan and Poghosyan (2012), and other studies, large banks tend to have a more concentrated banking system (lower competition) and can utilize economies of scale and scope, and portfolio diversification more effectively. Lower competition in the market allows interbank relationships to be more long-lasting (Beck, 2016). Therefore, the concentration of the banking industry can help improve its performance and reduce the risk of liability. Jiménez et al. (2013) noted that a competitive environment lowers the information that banks collect from their customers, which could lead to them not properly screening potential borrowers.

An alternative competition theory states that a more concentrated and competitive banking system is more stable. De Nicolo and Boyd (2002) noted that lower competition could lead to larger lending and reduced loan screening, which could increase the likelihood of a bank failure. However, Martinez-Miera and Repullo (2010) questioned this claim. They noted that the reduction in loan interest rates caused by increased competition could help reduce the risk of loan delinquency. They concluded that a U-shape relationship exists between the risk of failure and competition. Similarly, Jiménez et al. (2013) obtained results that align with the findings of Martinez-Miera and Repullo (2010). Several studies on competition and bank stability in developing countries, such as S. Kasman and A. Kasman (2015), Albaity et al. (2019) and Sarpong-Kumankoma et al. (2021), indicate that competition has a negative impact on bank stability.

Adopting the competition-fragility theory and previous literature debates, this study aims to test and analyze the impact of bank stability and fintech presence on MSMEs` credit performance and access to credit. To pursue this objective, research hypotheses are developed and empirically tested. Overall, the logic of this study initiates from the intense competitive atmosphere due to the presence of fintechs in the credit market. Banks are usually beholden to regulations to maintain risk-based financial soundness. As such, banks implement strict selection to ensure the commitment of small and medium-sized enterprises to their credit obligations (Erdogan, 2018). Meanwhile, banks cannot deny that competition in technology-based money markets leads them toward declining performance trends (Nguyen et al., 2021), which forces them to take higher risks (Jiménez et al., 2013) by lowering credit standards while increasing risk. This may disrupt the financial stability of banks

due to the high number of failed loans they handle. Consequently, credit performance indicates a less healthy condition and accessibility to credit for SMEs may decrease to maintain stability and enhance performance.

Over the past two decades, financial institutions' credit growth increased significantly (e.g., Fahlenbrach et al., 2018; Foos et al., 2010). This growth is attributed to the process of financial market deregulation (Zarutskie, 2013) and the development of information technology in the banking industry that led to an increase in financial intermediation (Jakšič & Marinč, 2019). However, previous literature has suggested banks adjust to new information-technology-based preferences (Ho & Mallick, 2010; Jakšič & Marinč, 2019), especially on the advantages and better risk evaluation of both inner competitive (banking industry) and outer competitive (technology-based startups). Banking risks that lead to the financial fragility of banks come from credit defaults (Jiménez et al., 2013; Martinez-Miera & Repullo, 2010). The possibility of default can occur due to inappropriate risk-taking decisions and lax borrower screening. Indeed, each bank is responsible for the performance of loans managed by its offices.

The literature has shown that the factors that contribute to high NPL ratios are related to the bank's environment and characteristics (Abid et al., 2014; Betz et al., 2020; Louzis et al., 2012). However, Pop et al. (2018) noted that the lack of risk-seeking intermediation could threaten the financial stability of the country. According to Rajan (1994), the relationship between herd behavior and credit growth can be explained by the competition among banks. This is because they are more likely to expand their lending activities to maintain their profitability. This increase in risk can also be caused by the liberalization of credit policies. Despite having the necessary information, banks tend to interpret it in a biased manner, which can reinforce their existing biases about the market and the borrowers. Jiménez et al. (2013) noted that this behavior could lead to various behavioral and financial issues. One of these risks is the extension of credit lines. The screening process for borrowers and the stability of the financial institution are two factors that affect the lending performance of banks. Therefore, this study formulates the hypothesis

that bank stability affects the performance and accessibility of MSME credits.

The rise of fintech can affect various aspects of the financial services industry, such as the operations of banks and credit unions. It can also affect the traditional banks and financial institutions by introducing new technologies (Cheng & Qu, 2020). In many countries, digital lending has been a trend over the past decade. This type of financing is commonly referred to as an alternative source of funding (Claessens et al., 2018). According to Cornelli et al. (2020), the credit model of fintech was developed through a decentralized platform that enables lenders to choose their borrowers. Through these platforms, various problems related to information asymmetry can be solved. They can also reveal the loan risk and borrower characteristics.

Despite the various studies that have examined the effects of market power and bank competition on the availability of credit for small and medium-sized enterprises, the exact impact of these factors on the lending capacity of these businesses is still not known. For instance, Canales and Nanda (2012) found that the relationship between the access of SMEs to banks and the power of the market in Mexico is supported by information-based theories (Petersen & Rajan, 1995). When banks are faced with competition, they tend to expand their credit lines but also limit their lending to certain customers. Love and Pería (2015) noted that this relationship is similar to the one found in their study. Another study by Wang et al. (2020) looked into the effects of market concentration and power on the access to banks for SMEs. The researchers found that bank market power negatively affects the access to bank finance for SMEs in 19 countries. They also found that the concentration of the banking industry leads to an increase in credit supply to small and medium enterprises.

The relationship between banks and MSMEs can also play a role in the availability of loans. Through regular interactions with the borrowers, the banks can gather valuable information about them (Boot & Thakor, 2000). This allows to provide them with better access to finance. Unfortunately, for companies that have information problems, it can be difficult to get bank financing. Fanta (2016) and

DeYoung et al. (2008) noted that factors such as mutual trust and concentration are important when it comes to assessing the relationship between banks and SMEs. In the USA, studies have shown that longer bank relationships can improve the access to loans for small and medium-sized enterprises, but they can also lead to higher costs. According to a literature review, competitors, such as fintech firms and bank stability, can affect the accessibility of credit to micro, small, and medium-sized enterprises.

Thus, this study formulates the hypothesis that fintech can affect the performance and accessibility of MSMEs` credits.

2. METHODOLOGY

The research data are sourced from banks' quarterly reports for the research variables of credit performance, MSME credit accessibility, stability, and bank specification control variables. Meanwhile, for fintech variables, data are taken from information on the amount of financing disbursed by fintech lenders in the Indonesian Fintech Lending Statistics database. The database is openly accessed on the official website of the Financial Services Authority of the Republic of Indonesia. Data on macroeconomic control variables comes from the publicly accessible database of Indonesia's Central Bureau of Statistics (BPS). This study also used the IDX Factbook to determine the research sample. Since this study focuses on MSME credit performance and credit accessibility for MSMEs, public banks listed on the Indonesia Stock Exchange (IDX) from 2010 to 2022 were sampled. The sample was taken by saturation, where all banks were listed within the study period. The total sample is 46 public, commercial banks, and 2,392 data observations are using quarterly data.

The data of this study were analyzed by panel data regression to test the research hypotheses. We conducted several estimations to examine the effect of the explanatory variables. Equation 1 examines the effect of Z-score and fintech on MSME NPLs by including all control variables. Equation 2 examines the effect of Z-score and fintech on MSME financial access by including all control variables.

$$NPL_{it} = \beta_0 + \beta_1 ZSCORE_{it} + \\ + \beta_2 FINTECH_t + \delta BANK_{it} + \\ + \gamma MAKRO_t + \varepsilon_{it}, \tag{1}$$

$$ACCESS_{it} = \beta_0 + \beta_1 ZSCORE_{it} + \\ + \beta_2 FINTECH_t + \delta BANK_{it} + \\ + \gamma MAKRO_t + \varepsilon_{it}, \tag{2}$$

where i is the bank, t denotes the time subscript, β_0 is the intercept, β_1, β_2, and β_3 are the coefficients of each explanatory variable, $\delta \cdot BANK$ is the vector of bank specification control variables ($SIZE$, CAP, CTI, LLP, and FC), $\gamma \cdot MAKRO$ is the vector of macroeconomic control variables (INF and GDP), and ε is the standard error.

The dependent variables are credit performance and credit accessibility of MSMEs. This study uses the definition of Clair (1992), Sorge (2004), and Inegbedion et al. (2020) for credit performance, which is an evaluation to determine the quality of a bank's credit, whether it fails or not. The measure used is the non-performance loan (NPL) ratio, which is the ratio between the number of non-performing loans and the total bank loans. The other dependent variable, MSME credit accessibility, is the number of loans banks provide to MSMEs (Aysan & Disli, 2019; Beck & Demirguc-Kunt, 2006; Erdogan, 2018). This study adopts Aysan and Disli's (2019) measure for the MSME credit accessibility variable by calculating the natural logarithm of the amount of bank loans to MSMEs.

The main explanatory variables of this study include bank stability and fintech. Bank stability indicates a bank's financial condition. Balance sheet information is used to measure bank stability. Assuming bank profits are normally distributed, bank financial condition can be measured by Z-score. Several previous studies that tested the competition-stability hypothesis also used the Z-score indicator to assess bank stability (e.g., Albaity et al., 2019; De Nicolo & Boyd, 2002; S. Kasman & A. Kasman, 2015; Nguyen et al., 2021). The Z-score is calculated by dividing the sum of the return on assets (ROA) and capital to assets (CA) ratios by the standard deviation of the return on assets ratio. The Z-score

Table 1. Variable description and measurement

Variable	Description	Proxy
Credit performance (NPL)	Evaluation to determine the bank's credit quality	The non-performance loan (NPL) ratio is the ratio between the number of bad loans and the bank's total loans
Credit accessibility of MSMEs (ACCESS)	A mount of loans provided by banks for MSMEs	Natural logarithm of the number of bank loans to MSMEs
Bank stability (ZSCORE)	A bank's financial condition	Z-score is the ratio of the sum of the return on assets (ROA) and capital to assets (CA) ratios to the standard deviation of the return on assets ratio
Fintech lending (FINTECH)	Fintech lenders channel financing growth to MSMEs	The difference between fintech lending financing current year (t) and previous year (t−1)
Bank size (SIZE)	Value of bank assets	Natural logarithm of total bank assets
Capital Bank (CAP)	The proportion of capital to total assets owned by the bank	The ratio of total equity to the bank's total assets
Operating cost (CTI)	Implies bank efficiency	The ratio of operating expenses to total bank income
Loan loss provision (LLP)	Reserve to cover potential loan defaults	Comparison of allowance for loan losses and total interest income
Fund cost (FC)	A risk that the bank accepts from deposits	Interest expense to total deposits ratio
Inflation (Inf)	Quarterly inflation rate	Quarterly inflation rate
GDP Growth (GDP)	Annualized real GDP growth rate	Comparison of the difference between GDP of the current year (t) and GDP of the previous year (t − 1)

value can be interpreted as the number of standard deviations of earnings that can fall before a bank becomes insolvent (Goetz, 2018; Laeven & Levine, 2009).

The second major variable in the study is fintech. It refers to the growth in the amount of financing that financial technology companies provide to micro, small and medium-sized enterprises (MSMEs). The calculation of this variable considers the difference between the previous year's (t – 1) and current year's (t) total financing by fintech companies (Balyuk et al., 2020; Hodula, 2022; Nguyen et al., 2021). The projected evaluation of research variables assumes the incorporation of relevant literature and empirical findings presented in Table 1.

3. RESULTS

Table 2 summarizes the statistics pertaining to the different instruments utilized in the research model. In addition, it presents information about the number of observations made on different banking and fintech variables since the start of financial technology in Indonesia in 2017. MSME NPLs show a fairly high figure of 10.2 percent. While macroeconomic factors measured by inflation and economic growth show that inflation in Indonesia has an average of 4.31 percent in the period 2010 to 2022. Meanwhile, Indonesia's economic growth over the same period averaged 4.71 percent.

Table 3 illustrates the degree of movement between the different research variables to determine their

Table 2. Descriptive statistics of each industry

Variable	N	Min	Max	Mean	Std. dev.
NPL MSME (Billion Rp)	2,392	1,593	28,562	10,209	4,477
Access MSME (Billion Rp)	2,392	30,244	824,580	282,497	115,142
Z-Score	2,392	−7.0995	10.8098	2.0528	2.2896
Fintech (Billion Rp)	921	10,926.14	224,042.09	55,986.64	49,288.09
Size (Billion Rp)	2,392	63.637	1,750,995	112,263	236,576
LnSize	2,392	11.0609	21.2834	16.8702	1.9952
Capital (CAP)	2,392	0.0105	2.2830	0.1782	0.1379
Operating Cost (CTI)	2,392	0.0094	24.6755	0.4996	0.7518
Loan losses provision (LLP)	2,392	0.0007	25.9496	0.4949	1.1012
Fund cost (FC)	2,392	0.000002	248.6471	0.1469	5.1103
Inflation (Inf)	2,392	1.33	8.40	4.31	1.89
GDP Growth (GDP)	2,392	-5.32	7.08	4.71	2.36

Table 3. Correlation matrix between variables

Variable	NPL MSME	Z-score	Fintech	Lnsize	CAP	CTI	LLP	FC	Inf	GDP
NPL MSME	1.000	–	–	–	–	–	–	–	–	–
Z-score	0.237	1.000	–	–	–	–	–	–	–	–
Fintech	0.176	−0.009	1.000	–	–	–	–	–	–	–
Lnsize	0.278	0.559	0.076	1.000	–	–	–	–	–	–
CAP	−0.118	−0.105	0.031	−0.450	1.000	–	–	–	–	–
CTI	−0.125	−0.210	0.092	−0.208	0.416	1.000	–	–	–	–
LLP	0.032	−0.024	0.035	0.093	0.088	0.317	1.000	–	–	–
FC	−0.074	−0.047	0.020	−0.076	0.155	0.099	−0.013	1.000	–	–
Inf	−0.046	0.073	0.288	0.022	0.044	0.029	−0.026	0.007	1.000	–
GDP	−0.010	0.039	0.275	0.003	0.006	0.003	−0.039	0.021	0.374	1.000
Variable	**Access MSME**	**Z-score**	**Fintech**	**Lnsize**	**CAP**	**CTI**	**LLP**	**FC**	**Inf**	**GDP**
Access MSME	1.0000	–	–	–	–	–	–	–	–	–
Z-score	0.2966	1.0000	–	–	–	–	–	–	–	–
Fintech	0.1236	−0.0093	1.0000	–	–	–	–	–	–	–
Lnsize	0.3439	0.5586	0.0757	1.0000	–	–	–	–	–	–
CAP	−0.1133	−0.1047	0.0306	−0.4502	1.0000	–	–	–	–	–
CTI	−0.1048	−0.2095	0.0921	−0.2077	0.4156	1.0000	–	–	–	–
LLP	0.0090	−0.0243	0.0353	0.0928	0.0877	0.3173	1.0000	–	–	–
FC	−0.0673	−0.0473	0.0196	−0.0757	0.1551	0.0989	−0.0129	1.0000	–	–
Inf	0.0753	0.0731	0.2883	0.0219	0.0443	0.0288	−0.0264	0.0073	1.0000	–
GDP	0.0220	0.0387	0.2749	0.0034	0.0060	0.0029	−0.0386	0.0207	0.3739	1.0000

correlation matrix value. The value of each variable indicates that it has no correlation.

Table 4 provides evidence that the hypotheses of this study are accepted. Firstly, the regression results show a positive relationship between bank stability and MSME credit performance. This is indicated through the negative coefficient of the Z-score variable on nonperforming loans. Stable banks tend to encourage lower nonperforming loan ratios, hence higher loan performance. This result is consistent across the three modes tested (Models 1, 3, and 5). Second, the regression results indicate a negative relationship between fintech and MSME credit performance. This relationship is indicated by the positive coefficient of the fintech variable on non-performing loans. The existence of fintech can improve the non-performing performance of MSMEs, which is lower credit performance. Fintech that facilitates easy credit causes MSME credit performance in banks to decline. This result is consistent across the three models tested (Models 2, 4, and 5).

The subsequent analysis examines the effect of bank stability and fintech on MSME credit accessibility. Table 5 presents the fixed effects results of this study. Overall, the results support the hypotheses formulated and again encourage the competition-fragili-

ty theory. The study evidences a negative relationship between bank stability and MSME access to credit. This indicates that stable banks tend to restrict their credit to MSMEs as stable banks have higher concentration. This result is consistent in all three models tested (Models 1, 3, and 5). Fintech was found to have a positive and significant effect on MSME credit accessibility. When MSME credit performance declines and competition is intense due to fintech, banks will lower MSME credit qualification standards to increase credit to MSMEs despite taking more risks. This result is consistent in all three models tested (Models 2, 4, and 5).

Models 3 and 5 provide additional findings that bank and macroeconomic specifications are noted to impact MSME loan performance. This study finds that larger banks, larger capitalization, and higher operating costs reduce MSME credit performance and increase MSME accessibility to credit. Meanwhile, declining macroeconomic conditions allow for lower MSME credit performance and higher access to credit. However, when all variables are included in Model 5, MSME credit performance decreases and MSME access to bank credit increases in banks with larger size, higher operating costs, and lower funding costs. Thus, these results support the formulated hypotheses and the competition-fragility assumption.

Table 4. The effect of bank stability and fintech on non-performing loans of MSMEs (FEM robust)

Variable	(1)	(2)	(3)	(4)	(5)
Z-score	−3.689***	−	−1.426***	−	−0.358
	(−5.38)	−	(−2.82)	−	(−0.59)
Fintech	−	124.3***	−	86.00***	85.29***
	−	(9.44)	−	(5.49)	(5.48)
LnSize	−	−	6.511***	7.225***	7.193***
	−	−	(7.05)	(7.15)	(7.20)
CAP	−	−	1.368***	−0.0649	−0.00427
	−	−	(4.52)	(−0.20)	(−0.01)
CTI	−	−	0.501*	0.326	0.274
	−	−	(1.83)	(1.27)	(0.98)
LLP	−	−	0.707**	0.825***	0.778***
	−	−	(2.27)	(3.55)	(3.38)
FC	−	−	−0.230	−0.602***	−0.644***
	−	−	(−0.93)	(−2.95)	(−3.18)
Inf	−	−	−452.2***	−309.0***	−297.9***
	−	−	(−7.49)	(−4.68)	(−4.65)
GDP	−	−	−42.61***	−7.646	−7.455
	−	−	(−5.30)	(−1.52)	(−1.47)
_cons	14614.4***	12285.1***	4353.6**	3154.4**	3653.0**
	(17.84)	(81.23)	(2.11)	(2.15)	(2.37)
N	2392	921	2392	921	921
F	28.96	89.20	62.43	44.35	42.14
Prob. > F	0.0000	0.0000	0.0000	0.0000	0.0000
R-squared	0.0010	0.0269	0.2139	0.0436	0.0419

Note: ***, **, and * denote statistically significant variables at 1%, 5%, and 10% levels, respectively; t statistics in parentheses.

Table 5. The effect of bank stability and fintech on MSME Access credit (FEM robust)

Variable	(1)	(2)	(3)	(4)	(5)
Z-score	−49.56***	−	−22.69**	−	−9.902
	(−3.60)	−	(2.07)	−	(−0.90)
Fintech	−	2811.2***	−	1645.1***	1625.4***
	−	(8.02)	−	(4.99)	(4.99)
LnSize	−	−	95.96***	111.3***	110.4***
	−	−	(6.55)	(5.40)	(5.45)
Capital	−	−	22.53***	−1.377	0.300
	−	−	(3.32)	(−0.20)	(0.04)
CTI	−	−	12.37*	5.558	4.122
	−	−	(1.89)	(1.40)	(0.98)
LLP	−	−	9.697	3.922	2.610
	−	−	(1.19)	(0.89)	(0.56)
FC	−	−	1.833	−10.88***	−12.03***
	−	−	(0.31)	(−2.85)	(−2.93)
Inf	−	−	−4733.1***	5257.3***	5565.8***
	−	−	(−3.26)	(5.45)	(5.95)
GDP	−	−	−144.1	−246.1	−240.8
	−	−	(−0.50)	(−0.81)	(−0.79)
_cons	341591.2***	305784.2***	165678.1***	159491.2***	173286.3***
	(20.75)	(75.93)	(4.03)	(4.91)	(5.04)
N	2392	921	2392	921	921
F	12.94	64.31	30.84	40.20	38.26
Prob. > F	0.0008	0.0000	0.0000	0.0000	0.0000
R-squared	0.0142	0.0147	0.0534	0.0636	0.0580

Note: ***, **, and * denote statistically significant variables at 1%, 5%, and 10% levels, respectively; t statistics in parentheses.

4. DISCUSSION

The results show that bank stability measured using Z-score significantly negatively affects MSME NPLs. Stable banks are more likely to have small NPLs, this also happens to MSME loans in banks in Indonesia. When a bank has good stability, this can improve the bank's ability to select or select borrowers to reduce the number of NPLs, so that MSMEs selected as borrowing customers are healthy MSMEs and can pay their obligations. Conversely, bank instability can decrease trust from customers and investors, affecting the flow of capital to the bank. As a result, banks may be limited in providing new loans or even have to reduce their existing loan portfolio. This could increase NPL rates, as borrowers may struggle to meet their repayment obligations (Erdogan, 2018).

Column five shows that when tested with fintech, bank stability shows different results. Where bank stability has no effect on MSME NPLs at banks. Fintech has put pressure on customers with high-interest rates, so when the bank is stable without fintech, it can reduce MSME NPLs. Still, when there is fintech with various conveniences, it has encouraged an increase in MSME NPLs so that both stable and unstable banks cannot control the behavior of their customers. According to the competition-fragility theory, stable banks with high market power have lower overall risk exposure (Albaity et al., 2019). This is because their strong market position allows them to control their borrowers and reduce the risk of non-performing loans.

The control variables in this study also show that firm size positively impacts MSMEs' loan performance. This shows that large banks, especially state-owned ones, which must implement government policies to channel credit to MSMEs with easy conditions (Wibowo & Aumeboonsuke, 2020), have impacted increasing MSME credit NPLs. The same results also occur in the capital variable as measured by the ratio of total equity to total bank assets. Banks with larger capital can provide loans to industry and MSMEs in large amounts. When a bank is stable, loans given to MSMEs have increased the number of NPLs on MSME loans. The CTI variable also has a positive influence on NPLs. A large CTI indicates that banks are less efficient in earning interest, thus encouraging more lending to increase revenue and

credit risk, especially in the MSME sector. LLP also produces the same result, where banks that set aside higher loan losses will potentially increase NPLs. Meanwhile, macro variables show that economic conditions and growth can reduce MSME NPLs. This shows that MSMEs can develop and pay bank loans on time when economic conditions are good.

The hypothesis test results in Table 4 also show that fintech positively affects non-performing loans in all models. The increase in fintech in Indonesia, as measured by the number of loans channeled through non-bank online loans, has impacted increasing NPLs in banks. The ease with which the MSME community can access online loans has put quite high pressure due to the high cost of borrowing. When MSMEs have online loans and loans in banks, it can put pressure on the ability to pay credit in banks with little personal risk compared to online loans. This is different from fintech banking which can provide convenience to MSMEs and reduce MSME NPLs in banks, as explored by Sanga and Aziakpono (2022). This finding supports the competition-stability theory, which states that market power will increase the loan portfolio's risk (Albaity et al., 2019). Fintech lending is an additional market force that threatens the banking market with various facilities provided, and the high cost of capital will be an additional risk for customers and banks. This has led to an increase in bad debts in banks, especially in MSME loans, which are the target market for online loans from fintech companies.

Table 5 shows that bank stability has a negative impact on MSME credit access in Indonesia. Banks with high stability will usually provide loans with strict selection, so MSMEs that apply for loans must meet the criteria set by these banks. Stable banks prioritize borrowers with a strong ability to pay, while MSMEs are still seen as unbankable, so MSME credit access to stable banks is decreasing. Competition-fragility theory suggests that banks with higher levels of market power have less overall risk exposure (Albaity et al., 2019). Stable banks with greater market power will be able to select borrowers according to strict criteria to reduce bad debts, so that MSMEs that do not meet the requirements will find it very difficult to access loans provided by these banks, especially in Indonesia, large private banks that do not have an obligation to implement government policies in channeling large amounts of people's business loans.

Table 5 also shows that fintech lending positively affects MSME credit access. Fintech has increased access to financial services across all functions of the economy, especially noticeable in areas with underbanked populations. Mobile phone users can access fintech companies' online loans to obtain credit and make purchases. However, the ease of access to fintech companies' online loans has increased risks to customers and banks. According to competition-stability theory, market forces will increase the risk of loan portfolios (Albaity et al., 2019). Although fintech lending has provided additional risk to banks, banks should also distribute people's business credit, which is a government policy (Wibowo & Aumeboonsuke, 2020), so access to MSMEs is still high. Sanga and Aziakpono (2022) also show that fintech improves bank intermediation in Africa, where most people do not have bank accounts. This is done by offering diverse financial services and products, expanding the availability of financing through new delivery channels, expanding the customer base through mobile accounts, improving bank-customer relationships, and increasing financing of entrepreneurs and MSMEs.

CONCLUSION

This study analyzes the impact of bank stability and fintech lending on MSMEs' credit performance and MSME credit access in Indonesia. The findings show that bank stability can reduce MSMEs' non-performing loans. Likewise, the impact of bank stability on MSME loan access reduces MSME credit access. When tested with fintech lending, bank stability shows no impact on bad debts or credit access. Fintech lending has become a strong competitor to banks to increase credit access even though it has increased MSME credit risk. This study implies that the Financial Services Authority (OJK) needs to tighten further the online lending of fintech companies that have put more burden on MSMEs with high capital costs that can affect the ability of MSMEs to pay bank credit installments. This is in accordance with the competition-stability theory, which states that market forces will increase the risk of a loan portfolio.

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