Determinants of Financial Inclusion for MSMEs: Evidence from Indonesia

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A B S T R A C T

Enhancing the financial sector is paramount, as it can bolster public trust in financial institutions and consequently expand financial inclusion, particularly within the MSMEs sectors. This study employs the ARCH Maximum Likelihood Model to examine the impact of the banking industry's financial soundness and macroeconomic conditions on the financial inclusion of MSMEs. The financial soundness of banks is gauged through pertinent financial metrics, including capital adequacy, profitability, credit risk, and liquidity. Moreover, the financial inclusion metric employs the count of account credits per 1,000 adults. The findings reveal that capital, credit risk, and liquidity exert a significant influence on financial inclusion, while profitability and inflation exhibit no significant impact. Furthermore, capital, credit risk, liquidity, and inflation affect MSMEs' credit, with profitability showing no significant impact. The practical implications derived from these findings underscore the critical importance of upholding the soundness of the banking sector to foster greater financial inclusion in Indonesia. Indonesia should strategically target its efforts toward enhancing the availability of diverse financial products and services tailored to the needs of its MSMEs. By expanding the array of financial products and services for MSMEs, banks stand to access reliable sources of funds for their lending activities.

A B S T R A K

Penguatan sektor keuangan merupakan hal yang sangat penting karena berpotensi meningkatkan kepercayaan masyarakat terhadap lembaga keuangan dan memperluas inklusi keuangan, khususnya pada sektor UMKM. Studi ini menggunakan ARCH Maximum Likelihood Model untuk menguji dampak kesehatan keuangan industri perbankan dan kondisi makroekonomi terhadap inklusi keuangan UMKM. Kesehatan keuangan bank diukur melalui metrik keuangan seperti kecukupan permodalan. profitabilitas, risiko kredit, dan likuiditas. Selain itu, metrik inklusi keuangan menggunakan hitungan kredit rekening per 1.000 orang dewasa. Hasil penelitian menunjukkan bahwa permodalan, kredit bermasalah, dan likuditas berpengaruh signifikan terhadap inklusi keuangan, sedangkan likuiditas dan inflasi tidak berpengaruh signifikan. Selanjutnya permodalan, kredit bermasalah, likuditas, dan inflasi berpengaruh terhadap kredit UMKM, sedangkan profitabilitas tidak berpengaruh signifikan. Implikasi praktis yang diperoleh dari temuan ini menggarisbawahi pentingnya menjaga kesehatan sektor perbankan untuk mendorong inklusi keuangan yang lebih baik di Indonesia. Indonesia harus secara strategis menargetkan upayanya untuk meningkatkan ketersediaan beragam produk dan layanan keuangan yang disesuaikan dengan kebutuhan UMKM. Dengan memperluas rangkaian produk dan layanan keuangan untuk UMKM, bank dapat mengakses sumber dana yang dapat diandalkan untuk kegiatan pinjaman mereka.

1. INTRODUCTION

The global financial crisis in 2007-2008 became the starting point for some developing countries to endorse the objective of financial inclusion to establish economic prosperity and growth. Globalization is associated with financial inclusion (Cahyadin, 2020), and numerous multilateral organizations have pledged their ded-

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ication to promoting the significance of financial inclusion. A noteworthy example is the G20, which established the 'Global Partnership for Financial Inclusion' during the 2010 Seoul Summit with the primary aim of advancing financial inclusion, particularly in developing countries. The World Bank has recognized financial inclusion as crucial in achieving the visions outlined in the United Nations' Sustainable Development Goals (SDGs).

The awareness of financial inclusion made it the prior pillar of development policy. Financial inclusion is associated with financial system stability (Le et al., 2019; Malik et al., 2022; Vo et al., 2021) and becomes a critical aspect of reducing extreme poverty, minimizing the prosperity gap, and eventually promoting sustainable, inclusive economic growth and development. Furthermore, inclusive financial systems open access for poor people to save and get a loan, build their assets, invest in ventures, and ultimately improve their livelihoods. Moreover, individuals with limited financial means can stabilize their consumption patterns and safeguard themselves against socio-economic risks. While developed economies have made substantial progress in improving the accessibility and availability of high-quality and enduring formal financial services, including credit, savings, payment systems, insurance, and pension options, a significant portion of the adult population in many developing economies continues to face a lack of access to fundamental financial services.

As a key element for development, financial inclusion becomes a policy priority and is firmly placed on the government's agenda. Financial inclusion encompasses more than just providing access to financial services; it encompasses crucial aspects such as assisting individuals in better resource management and endeavors to enhance society's overall financial capabilities. Financial inclusion encourages economic growth (Cui et al., 2022; Iqbal & Sami, 2017), thereby reducing poverty and inequality, especially in low- and lower-middle-income countries (Aracil et al., 2022; Erlando et al., 2020; Geng & He, 2021; Gutiérrez-Romero & Ahamed, 2021).

Furthermore, in the business sector, financial inclusion supports enterprises and individuals in accessing financial products and services at a sustainable and reasonable cost. The digitization of financial inclusion has several benefits (Ozili, 2018) and allows the majority of enterprises and people to access financial products and services, including mobile payments, online loans, and others. The rapid development of communication technology supports digital financial inclusion and leads to financial development being extensively applied in some countries. Digital financial inclusion has been proven to reduce per capita energy consumption and improve the GDP per capita (Zheng & Li, 2022).

The threat of the global crisis after the Covid-19 pandemic and the heating up of geopolitics due to the war in Ukraine causes the strengthening of the financial system to become urgent. The endurance of the financial system can increase public trust in financial institutions and ultimately accelerate financial inclusion. However, formal financial institutions, due to their status as trusted entities, operate under stringent regulatory frameworks. As a result, access to the financial services offered is typically limited to a specific subset of individuals or business entities. Meanwhile, other community groups and businesses that may require capital support are unable to access these institutional services, creating a gap in financial access and opportunities for those excluded from the formal financial sector. These community groups are called exclusive financials and are opposed to financial inclusion, and this group is commonly related to Small and Medium Enterprises (MSMEs). The smaller size of businesses compared to big corporations causes the MSMEs to face difficulty accessing financial institutions. As a sector that has been proven to solve the unemployment problem effectively, the growth and vibrancy of MSMEs are also crucial to broader economic growth. The awareness of the large influence of MSMEs on the economy attracts policymakers not only at the national level but also globally. The prominent role of MSMEs in the economy is the reason why it is essential to provide a greater focus on the financial inclusion of MSMEs. The accessible financial institutions for MSMEs will contribute to their development and eventually will positively affect their economic growth. Financial institutions are a big source of funding for MSMEs; therefore, MSMEs and the banking industry must be linked to each other.

As an intermediary institution, the banking industry plays a substantial role in the global economy, mainly by providing financial services to individual households and corporations. Therefore, the banking industry's performance will affect the economy, and through their intermediary function, banking stability promotes financial inclusion. However, increased financial inclusion can also be a threat to banking stability through asymmetric information, adverse selection, and moral hazard (Shalihin & Safuan, 2021).

The profound repercussions of the COVID-19 pandemic on the worldwide economy have prompted nations across the globe to pursue economic recovery and sustainable development actively. In this context, a comprehensive reevaluation of global financial inclusion strategies has become imperative to facilitate more effective promotion of inclusive growth. As the leading financial inclusion factor, financial soundness is a vital requirement for endorsing the health of a country's financial system as well. Their financial inclusion is strongly correlated with bank quality (Ahamed et al., 2021). The lack of banking sector soundness became one of the main reasons that caused the crisis, also affecting their market values (ŞİT, 2022). Furthermore, the Financial Soundness Indicators (FSI) can be successfully used for accurate macro-financial surveillance for early detection of financial sector distress.

The bank's soundness can maintain continuity and reach profitability targets easily and eventually significantly contribute to the development of the country's economy. Bank profitability is one of the factors of bank soundness, where the increase in the soundness of banks causes an increase in profits and vice versa (ŞİT, 2022). Banks increase their profitability by extending more loans, which is the bank's main activity, and by collecting more deposits. In addition, to maximize profitability, banks undertake an accurate investment analysis so they can minimize business risk. In addition, the optimal decisions of the bank regarding financing, investment, and distribution decisions can increase the bank's market value and finally result in the bank's soundness.

Previous research is limited to the influence of financial soundness on bank profitability (Albulescu, 2015; Sedera et al., 2022) or the financial inclusion–financial stability relationship (Almahadin et al., 2020; Pietrzak & Espinosa-Vega, 2021; ŞİT, 2022). Furthermore, the analysis of financial inclusion is only limited to its determinants (Datta & Singh, 2019; Susilowati & Leonnard, 2019; Zins & Weill, 2016), the relationship between financial inclusion and the economy (Fauzan et al., 2020; Geng & He, 2021; Iqbal & Sami, 2017), financial inclusion and stability (Le et al., 2019; Malik et al., 2022; Shalihin & Safuan, 2021; Vo et al., 2021).

Existing studies on the determinants of financial inclusion have primarily concentrated on micro-level determinants and individual characteristics (Bashiru et al., 2023). Hence, this study addresses a research gap in the realm of financial inclusion by conducting a comprehensive analysis of macro-level indicators and bank-level factors influencing financial inclusion and MSMEs in Indonesia. By employing an ARCH Maximum Likelihood Model approach, this study aims to provide valuable empirical insights that can inform policy initiatives and foster financial inclusion in Indonesia, ultimately contributing to the broader discourse on inclusive economic development.

2. THEORETICAL FRAMEWORK AND PROPOSITION

The initial study about financial inclusion was started by McKinnon (1973) and Shaw (1973), who consider financial liberalization as a mainstay of economic reforms in developing countries. Both stated that involving the establishment of higher interest rates, the demand and the supply of savings will lead to an increase in savings. They believed that leveling up the financial intermediation represented a substitute for the curb market, and the shift to organized finance eventually became more beneficial because of the greater efficiency associated. The earlier theoretical literature that emphasized financial liberalization also determined the interest rates involved in interest rate ceilings, restrictions on competition of financial institutions, and market inefficiencies. Those were more conducive to a higher growth path as opposed to financial repression.

Then, during the 1980s and 1990s, financial reforms were enacted in the majority of economies, with the overarching goal of enhancing financial depth and expanding access to formal financial services. These services encompassed loans, savings mechanisms, payment services, and various other related financial offerings (Arun & Kamath, 2015). Literature in the field of financial inclusion often employs various indicators to assess and analyze the extent of financial inclusion. Some of these key indicators include the availability of financial products, the rate of adoption of these products within a population, the frequency of use of financial products, and the significance or impact of these products on the financial well-being of individuals and communities. Collectively, these indicators provide insights into the overall state of financial inclusion within a given context or region (Susilowati & Leonnard, 2019). The availability of financial products assesses the presence of institutions, financial offerings, and services, particularly within the realm of banking for the community. This indicator pertains to the supply side. On the other hand, product adoption gauges the ownership of bank accounts by individuals and companies and falls under the demand side of financial analysis (Datta & Singh, 2019). The value of a financial index is established based on three core dimensions, namely accessibility, which evaluates how individuals with limited financial means can reach the formal financial sector; availability, which considers the extent to which financial services are distributed across all communities; and usability, which assesses the capacity of individuals with lower income levels to effectively utilize formal financial services (Erlando et al., 2020).

Financial inclusion measurement predominantly relies on individual financial surveys or global financial surveys, such as those conducted by esteemed institutions like the World Bank and the IMF. The World Bank's Global Financial Inclusion database, boasting over 850 indicators from 151 economies, primarily focuses on the demand side of financial services. However, this database's limitation lies in its periodicity, as it only provides annual data and occasionally lags in updates, restricting its utility for comparative cross-country analysis over time. An alternative data source is the Financial Access Survey administered by the IMF, which offers the most extensive global supply-side annual dataset on financial inclusion. This survey provides access and utilization of financial services by both households and firms and ensures comparability across countries across various timeframes (Gutiérrez-Romero & Ahamed, 2021). Additionally, Gutiérrez-Romero & Ahamed (2021) divided into three categories of empirical literature on financial inclusion. The first category uses randomized control experiments to ensure the influences of financial services or enhancing engagement with individuals, households, and businesses. Furthermore, they used quasi-experiments and case studies, and lastly, they evaluated financial inclusion impacts for cross-country aggregate analysis.

In the last decade, recognition within the global policy community of the significance of financial inclusion as a crucial objective for both the financial industry and economic progress has been growing. The G-20 forum endorsed the pursuit of financial inclusion in 2008, and in 2010, it formally initiated the Global Partnership for Financial Inclusion to advance this agenda. Additionally, the Alliance for Financial Inclusion (AFI) was established in 2008 as a platform for developing countries' authorities to engage in peer-to-peer exchanges. The Maya Declaration by AFI, as the first global and measurable set of commitments for policymakers, has been used in emerging and developing countries to unlock the economic and social. As a result of these global economic movements, financial inclusion strategies were established by several governments around the world (Arun & Kamath, 2015).

Moreover, the current literature found an ambiguous correlation between financial inclusion and bank industry performance. The higher level of financial inclusion brings an unbanked group of people with no access to bank services, firms, and consumers into the formal banking system. It enhances the financial institutions in diversifying the loan portfolio and depositor base. Diversification potentially supports financial institutions in being resilient and withstanding a financial crisis. The more extensive financial sector will support the unbanked in accessing financial instruments and eventually reduce asymmetries in information and problems between lenders and borrowers. As inclusive banking provides sufficient chances for the customer to deposit funding, it reduces the return volatility of banks operating in such markets by expanding branches to the unbanked, especially in remote areas. However, inclusive finance potentially leads to increased agency problems because of the need for a wide range of products and organizational structures. This is because offering financial services to people from various income groups requires banks to maintain product lines that cater to different customer categories.

The adoption of financial inclusion policies in certain economies has offered vital assistance to low-income individuals in accessing financial services. These policies have the potential to narrow income disparities, ultimately leading to a more prosperous economy and heightened economic growth. Furthermore, financial inclusion serves as an effective tool for mitigating the adverse effects of macroeconomic shocks on households and MSMEs. By facilitating increased household savings, financial inclusion encourages entrepreneurs to invest in expanding production, thereby fostering economic growth. Additionally, financial products play a direct role in stimulating economic growth, making financial inclusion a valuable instrument for promoting inclusive economic development.

There is a direct and positive relationship between the stability and health of financial institutions and the level of financial inclusion in a particular economy (Ha & Quyen, 2018; Hadi et al., 2021; Morgan, 2014; Oanh et al., 2023; Siddik & Kabiraj, 2018). Sound and well-capitalized banks are more likely to inspire trust and confidence among potential customers, particularly among marginalized or unbanked populations. When people trust that their deposits are secure, they are more inclined to use formal banking services. Additionally, financially robust banks are better equipped to provide a broader range of financial products, including accessible and affordable ones, to underserved individuals and communities, especially MSMEs. Thus, bank soundness is a critical factor that can facilitate and promote financial inclusion by ensuring the stability and accessibility of formal financial services.

3. RESEARCH METHOD

This study aims to examine the role of banking soundness in Indonesia's financial inclusion. To achieve the objective of the research, a functional model as follows is suggested:

Financial inclusion = f (financial soundness) ………………………………………………….… (1)

The above model expresses that financial inclusion serves as a function of banking soundness. It demonstrates that the concept of financial inclusion primarily revolves around assessing banking stability indicators. Accordingly, the functional model of Equation (1) should be rearranged as the following econometric model:

$LAC = \alpha + \beta_1 CAR + + \beta_2 ROA ++ \beta_3 NPL ++ \beta_4 LDR ++ \beta_5 INF + \varepsilon$………………………………… (2)

$MSME = \alpha + \beta_1 CAR + + \beta_2 ROA ++ \beta_3 NPL ++ \beta_4 LDR ++ \beta_5 INF + \varepsilon$……………………………… (3)

Here, the exogenous variables are the capital adequacy ratio, CAR; the return on asset, ROA; the non-performing loan, NPL; loan to deposit ratio, LDR; and the inflation rate of the economy, *INF*.Inflation is a macroeconomic variable used to explore the role of economic fluctuation in financial inclusion, presumed as one of the essential elements that affect financial inclusion. In this analysis, loan account (LAC) is the proxy of financial inclusion measured by the fraction of the account credit number per 1,000 adults. Furthermore, the MSME is the proxy for financial inclusion for MSMEs that is measured by the total credit disbursed to MSMEs (debtor group) to GDP at the current price. The ratio of capital, profitability, credit risk, and liquidity risk is the measurement of financial soundness (Salina et al., 2020).

Econometrically, this study adopts the Maximum Likelihood Autoregressive Conditional Heteroscedasticity (ML-ARCH) to estimate the model suggested in equations (2) and (3). All of the variables are aggregate metrics collected for the banking industry as a whole during the period of t, which refers to the time series data of each variable spanning from 2012 to 2022. The β's (β1 to β5) are the model coefficients to be estimated, where the α is the constant term, and ε is the error term. The data description and sources of all variables are summarized in Table 1. The abbreviations of all variables are also explained here. The table shows the list of dependent and independent variables used in the analysis. The symbols of the variables, their measurement, and data sources are presented. These symbols have been used throughout the analysis. Bank-based systems dominate the financial systems of developing economies like Indonesia. It indicates that the banking sector has a crucial role in emerging economies, which has an impact on the stability of both the financial system and the economic growth of a particular country (Almahadin et al., 2020). In developing economies, the well-functional and healthy banking sectors are considered among the main issues in maintaining relatively stable financial systems.

Table 1. Variable Description and Data Sources

Variables	Symbols	Measurement	Data Sources
Dependent Variables			
Loan Account	LAC	Number of Account Credits per 1.000 Adults	Bank Indonesia (2022)
MSMEs Credit	MSMEs	MSMEs Credit to Total Credit	Bank Indonesia (2022)
Independent Variables			
Capital Asset Ratio	CAR	Total regulatory capital to Risk-weighted assets	Bank Indonesia (2022)
Return on Asset	ROA	Net income before taxes to total asset	Bank Indonesia (2022)
Non-Performing Loan	NPL	Non-Performing Loans to Total Gross Loans	Bank Indonesia (2022)
Loan to Deposit Ratio	LDR	Customer Deposits to Total (Non-Interbank) Loans	Bank Indonesia (2022)
Inflation Rate	INF	The monthly rate of inflation	Indonesian Statistics (2022)

The well-functional means the bank's facility can be accessed easily by society since the main function of the bank is as the intermediary media. Hence, the theoretical foundation presents sufficient reasoning to use the number of loan accounts and the MSMEs' credit as a proxy of financial inclusion. This approach allows for empirical investigation into the impact of banking stability on financial inclusion, particularly within emerging economies.

Robust CAR regulations in the banking sector can have a positive impact on the level of financial inclusion in an economy. A strong CAR, by enhancing the stability and trustworthiness of financial institutions, can boost public confidence in the formal banking system, encouraging unbanked and underbanked individuals and small businesses to engage with formal financial services (Koomson et al., 2023). Furthermore, higher ROA levels in financial institutions may correlate with improved financial inclusion. As a key indicator of a bank's profitability, a strong ROA can reflect a more efficient and sustainable operation. Financially healthier institutions are often better positioned to invest in expanding their services, improving outreach to underserved populations, and offering innovative products and channels for financial inclusion, especially for MSMEs. Moreover, a balanced and well-managed LDR within financial institutions can positively affect financial inclusion efforts. An optimal LDR signifies that banks are effectively utilizing their deposits for lending, which can potentially result in increased availability of credit for a broader spectrum of customers, including MSMEs.

On the other hand, in terms of NPL, the lower ratio within the banking sector is likely to have a positive impact on financial inclusion. Reduced NPL levels typically reflect a healthier and more efficient lending environment, signaling that financial institutions are effectively managing credit risks. In such an environment, banks may be more willing and able to extend credit to a broader range of customers, including those with limited collateral or credit histories, such as MSMEs, thus increasing access to financial services for underserved populations. Similarly with inflation, high and volatile inflation can hinder financial inclusion efforts. Inflation erodes the purchasing power of money over time, making it more difficult for individuals to save and accumulate wealth through traditional financial instruments like savings accounts. Therefore, effective control of inflation is essential for creating a conducive environment for financial inclusion, as it encourages savings and promotes the use of formal financial services.

4. DATA ANALYSIS AND DISCUSSION

The initial stage in the model formulation is to test the classical assumptions to ensure that the model is feasible and becomes valid as an estimator. The Maximum Likelihood Auregresive Conditional Heteroscedasticity approach is used to solve the problem of autocorrelation and heteroscedasticity. The result of the statistical test is shown in Table 2. The t-test shows that CAR, NPL, LDR, and LAC (-1) significantly influence financial inclusion, while ROA and inflation were found to be insignificant. Furthermore, CAR, NPL, LDR, and inflation influence the MSMEs' credit, while the ROA is insignificant.

Table 2. The Results of Model Testing

Variable	Coefficient	Std. Error	z-Statistic	Prob.
Loan Account				
C	-399.4792	28.75652	-13.89178	0.0000
CAR	5.991967	1.175425	5.097702	0.0000
ROA	2.836769	6.659679	0.425962	0.6701
NPL	-19.34934	6.134272	-3.154300	0.0016
LDR	2.116629	0.084968	24.91077	0.0000
INF*NPL	1.027392	0.550893	1.864957	0.0622
LAC(-1)	1.445799	0.082109	17.60826	0.0000
MSMEs				
C	14.32152	0.751596	19.05480	0.0000
CAR	0.109064	0.026342	4.140375	0.0000
ROA	0.044113	0.086960	0.507276	0.6120
NPL	-0.739066	0.139258	-5.307171	0.0000
LDR	0.045789	0.006814	6.720187	0.0000
INF(-1)	0.046526	0.022159	2.099590	0.0358

Source: Author Calculation

The coefficient determination shows that the adjusted R^2 values for both equations are 0,96 and 0,18, which means the independent variable can explain the variation of loan account by 96% and 18% for MSMEs credit. The obtained model is based on the statistical test as follows:

LACC = -399.47+5.99*CAR + 2.83*ROA - 19.34*NPL + 2.11*LDR + 1.02*INF*NPL + 1.44*LACC(-1)…… (4)

MSME = 14.32 + 0.10*CAR + 0.04*ROA - 0.73*NPL +0.45*LDR+0.046*INF(1)………………...…… ……… (5)

Generally, the result of this study indicates that bank soundness affects both financial inclusion and MSMEs in Indonesia. The soundness of banks, as measured by factors such as capital adequacy, liquidity, and asset quality, significantly influences financial inclusion. It is posited that as banks exhibit greater financial stability and health, the availability and utilization of formal financial services by marginalized or excluded demographics will markedly increase. The bank's soundness instills confidence in the financial sector, fostering an environment where financial institutions are more inclined and better equipped to extend their services to underserved populations, thus promoting financial inclusion to MSMEs. This finding is supported by previous research that shows that bank soundness has an essential role in maintaining a stable financial system and can also serve as a good indicator of financial stability (Almahadin et al., 2020). Furthermore, financial soundness has a high accuracy compared to other macro-financial variables to predict financial sector distress (Pietrzak & Espinosa-Vega, 2021)**.** The higher the financial inclusion, the lower the poverty level since the financial sector can contribute to reducing poverty by providing capital. Erlando et al. (2020) found that financial inclusion has a significant positive impact on economic growth and a negative relationship between inequality and poverty. Otherwise, lack of access to financial institutions generates inequality in the developing world (Úbeda et al., 2022).

The findings establish that CAR has a positive influence on financial inclusion. Specifically, as CAR levels increase among financial institutions, there will be a corresponding rise in the accessibility and utilization of formal financial services by previously underserved or excluded individuals and businesses. CAR holds significance for financial inclusion by fostering stability and trust in the financial sector, thereby encouraging greater participation in formal financial services (Koomson et al., 2023). Additionally, a robust CAR mitigates the risk of insolvency during economic crises, enhancing the willingness of financial institutions to serve underserved populations and promote financial inclusion.

This study finds that NPL has a negative effect on financial inclusion. As NPL ratios decrease, indicative of improved asset quality and risk management among financial institutions, there will be a concurrent increase in the accessibility and utilization of formal financial services by previously underserved or excluded segments of the Indonesian population. Furthermore, diminished NPL levels not only contribute to a stable and reliable financial ecosystem but also incentivize financial institutions to proactively extend their services to all business sectors, including MSMEs, thus fostering greater financial inclusion within the Indonesian context. Analysis by Almahadin et al. (2020) indicated that the rise of NPL will treat the stability of the financial system.

The finding shows that LDR exerts a positive effect on financial inclusion. As the LDR increases, indicating a higher level of loan disbursement relative to deposits in the banking sector, there will be a corresponding enhancement in the accessibility and utilization of formal financial services throughout the Indonesian population. Thus, a higher LDR reflects a greater willingness among financial institutions to extend credit and financial products to MSMEs, thereby promoting financial inclusion and fostering economic growth in Indonesia.

In terms of inflation, the result shows that inflation has a positive influence on financial inclusion. Within the Indonesian context, the inflation level during the research period was 4.07 on average, which means that it was moderate inflation. When inflation rates remain within a moderate range, there will be a corresponding increase in the accessibility and utilization of formal financial services by the Indonesian population. It is grounded in the belief that moderate inflation can stimulate economic activity, incentivizing individuals and businesses to participate more actively in the formal financial sector, thus contributing to greater financial inclusion in Indonesia. Although financial inclusion has an essential role in the economy, case in Indonesia, access to financial institutions is low compared to other ASEAN countries (Fauzan et al., 2020; Susilowati & Leonnard, 2019). The main factor that prevents individuals from accessing financial services is a lack of money. The capital limitation is commonly related to MSMEs. Sometimes, MSMEs have difficulty accessing bank facilities because they do not have enough funds to save, or it is not feasible to apply for a bank loan. Furthermore, the interaction of financial inclusion is an essential factor for banking stability in developing countries and all countries worldwide; therefore, the authorities need to synchronize each policy on financial inclusion and financial openness (Shalihin & Safuan, 2021). MSMEs play an important role in the economy and social development because they can deal with the goods and services shortage and make MSMEs become new business solutions (Fraymovich et al., 2021). Since the financial crisis in 2008, MSMEs have made a significant contribution to employment growth, which is why it is essential to focus on financial inclusion for MSMEs. MSMEs are challenged to adapt to digitalization since it can increase productivity, reduce costs, and innovate through new business models (Viswanathan & Telukdarie, 2021).

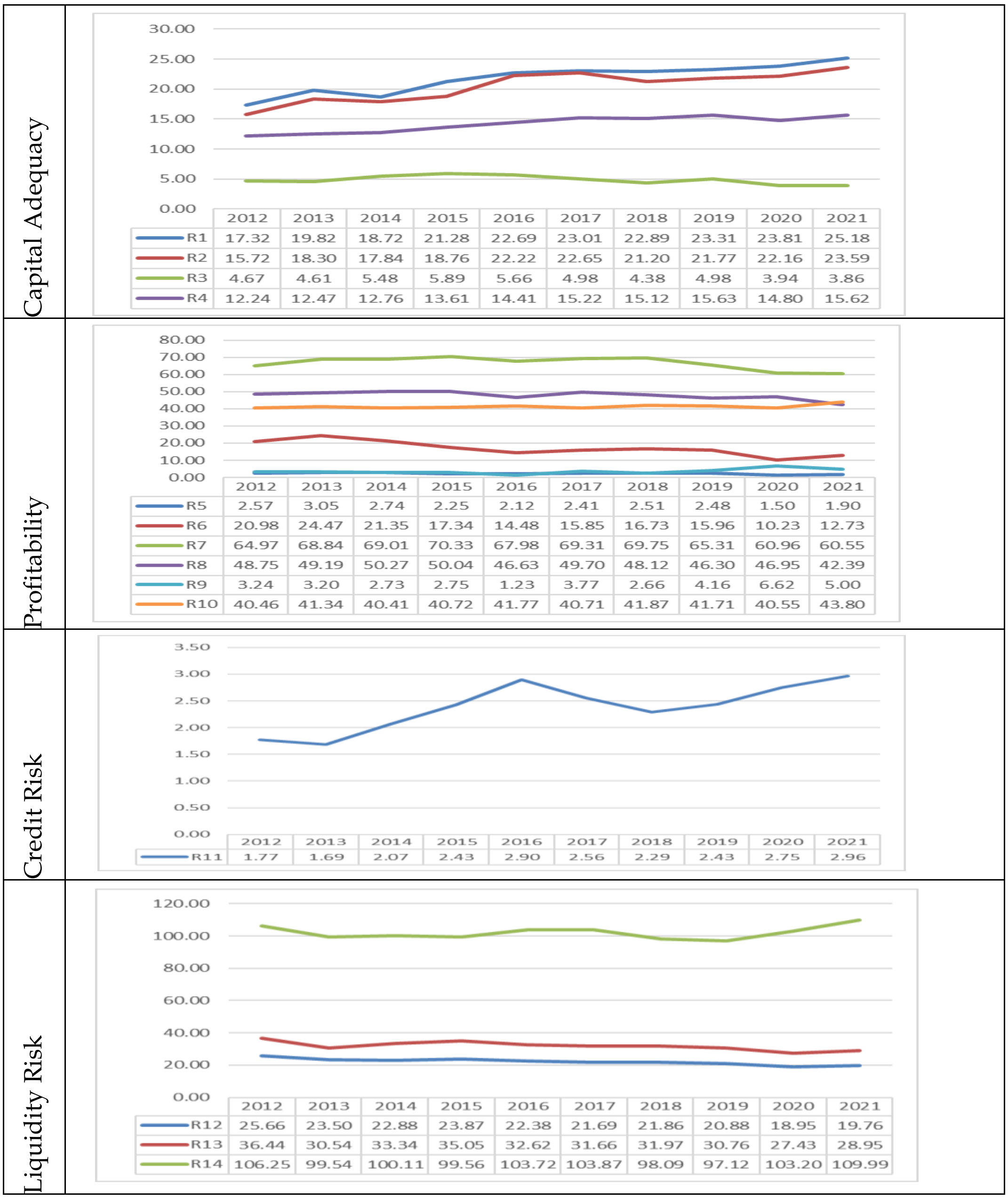

Figure 1. Development of Financial Soundness Indicator in Indonesia (continued)

Figure 1 shows the development of the financial soundness of Indonesia's banking industry. The ratios of capital adequacy for the banking industry in Indonesia are getting better year by year. There is a rising trend for the ratio of total regulatory capital to risk-weighted assets, R1; regulatory tier 1 capital to risk-weighted assets, R2; non-performing loans net of provisions to capital, R3; and capital to assets, R4. Capital adequacy indicates the ability of banks to provide funds that are used to overcome the possible risk of loss. This ratio is important because keeping the ratio at a safe limit also means protecting customers and the stability of the financial system as a whole. The greater the value of the ratio, the better the ability of banks to deal with the possible risk of loss. The slight change accrues for profitability and liquidity risk. The profitability is shown by the ratio of return on assets, R5; return on equity, R6; interest margin to gross income, R7; non-interest expenses to gross income, R8; trading income to gross income, R9; personnel expenses to non-interest expenses, R10. The liquidity risk is shown by the ratio of liquid assets (core) to total assets, R12; liquid assets (core) to short-term liabilities, R13; customer deposits to total (non-interbank) loans, R14. On the other hand, credit risk and market risk have different trends. There is a rising trend of credit risk, as shown by the ratio of non-performing loans to total gross loans, R11. On the other hand, the downtrend happened in market risk, as shown by the net open position in foreign exchange to capital, R15.

5. CONCLUSION

Financial inclusion becomes a key element for development since financial inclusion encourages people to manage their resources in a better way and attempt to build society's financial capabilities. Financial inclusion and MSME encourage economic growth, thereby reducing poverty and inequality, especially in developing countries. Using the ARCH Maximum Likelihood Model, this study examines the effect of the financial soundness of the banking industry and macroeconomic conditions on financial inclusion and MSMEs during 2012-2022. The results show that CAR, NPL, LDR, and LAC (-1) significantly influence financial inclusion, while ROA and inflation were found to be insignificant. Furthermore, CAR, NPL, LDR, and inflation partially influence the MSMEs' credit, while the ROA is insignificant.

This study provides several implications for policymakers. First, the effort to extend financial inclusion by maintaining bank soundness seems to be appropriate for improving stability in Indonesia's banking sector. As it is one of the emerging economies in the world, under-served segments of business, such as MSMEs, should be targeted to ensure the availability of sufficient financial products and services. Second, banks will obtain a great opportunity to avail themselves of steady sources of funds for lending activities by expanding financial products and services for MSMEs. Financial inclusion for MSMEs will result in dual objectives for the banking sector, i.e., the improved stability of operations in the entire sector and increased profits.

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