



The Relationship of Banking Fundamental Factors to Financial System Stability: A Conceptual Study of LDR, NPL, and CAR

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Abstract

Article history:

Received: July 10, 2022

Revised: August 24, 2022

Accepted: October 12, 2022

Published: December 30, 2022

Keywords:

Capital Adequacy,
Financial Stability,
Loan to Deposit Ratio,
Non-performing Loan,
Literature Study.

Identifier:

Zera Open

Page: 131-147

<https://zeraopen.com/journal/amos>

This study conceptually examines the relationship between the Loan-to-Deposit Ratio, Non-Performing Loans, and Capital Adequacy Ratio in relation to banking system stability. Using a library research method, the study analyzes published literature from the last five years to identify relationship patterns and research gaps in previous findings. The synthesis reveals that the Loan to Deposit Ratio has a dual effect on stability: positive when efficiently managed, but negative when it causes liquidity pressure. Non-Performing Loan negatively affects stability due to increased credit risk, while the Capital Adequacy Ratio positively influences stability as a capital buffer. The interaction among these variables indicates that banking stability is achieved through a balance between liquidity, risk, and capital strength. This conceptual study provides a theoretical foundation for future empirical research and serves as a reference for regulators in formulating banking policies oriented toward sustainable financial stability.



1. Introduction

The banking sector has a fundamental role in maintaining financial system stability and encouraging national economic growth. As an intermediary institution, banks function to collect public funds and redistribute them in the form of loans that contribute to real economic activities. The stability of the banking system is an important aspect because disruptions in this sector can cause a domino effect on macroeconomic stability (Setiawati, 2020). In the global context, financial stability also determines a country's economic resilience to external shocks such as liquidity crises, interest rate fluctuations, and capital market volatility (Jayakumar et al., 2018).

Fundamental factors of banks such as liquidity, asset quality, and capital adequacy are key indicators that affect banking stability. The Loan to Deposit Ratio (LDR), Non-Performing Loan (NPL), and Capital Adequacy Ratio (CAR) are the main measurement tools that are widely used to assess the health and resilience of banks. The LDR ratio reflects the bank's ability to meet its short-term obligations through sound liquidity, while NPLs indicate the level of non-performing credit risk that can disrupt the stability of the bank (Ozili, 2019). Meanwhile, CAR describes the strength of a bank's capital in absorbing losses arising from high-risk operational activities (Korbi & Bougatef, 2017).

Previous research results show that the influence of these three variables on bank stability is not always consistent. Some studies have found that high LDRs exacerbate liquidity risks and reduce stability, while other studies have shown a positive relationship because increased credit disbursement can improve intermediation efficiency (Jayakumar et al., 2018). Similarly to NPLs, some studies

have concluded that non-performing loan ratios have a negative effect on profitability and stability, while other studies show insignificant impacts in the short term (Chiesa & Mansilla-Fernandez, 2018). This inconsistency shows that there is an important research gap to be examined more deeply through a literature-based conceptual approach.

In addition, strong bank capital is considered to be the main protector in the face of systemic risks. CAR acts as a buffer when losses occur due to bad loans or interest rate fluctuations (Nurjanah & Arida, 2021). However, empirical findings still show differences: some studies affirm that CAR has a positive effect on stability, while others mention that its effect is not significant on large banks that already have high levels of capital (Setiawati, 2020). These differences in results reinforce the urgency of conceptual studies to revisit the interrelationships between variables in a general context, without limiting geographical location.

In order to bridge the inconsistency of previous research results, this study was designed to systematically review the relationship between LDR, NPL, and CAR on banking stability through a literature study method. This research is expected to enrich the financial literature by providing a theoretical understanding of how liquidity factors, credit quality, and capital adequacy interact with each other to maintain the stability of the banking system in a sustainable manner (Ozili, 2019). This approach is important as a basis for further empirical research that quantitatively examines these relationships in the future.

2. Literature Review

2.1. The Concept of Banking Stability and Fundamental Factors

Banking stability is defined as a condition in which the financial system is able to effectively carry out the functions of intermediation, risk management, and payment systems without causing major disruption to the economy (Ntarmah et al., 2019). Good stability is reflected in the bank's ability to maintain liquidity, control credit risk, and maintain public trust. Bank fundamental factors such as LDR, NPL, and CAR are the main indicators in assessing the bank's health. An optimal LDR shows a balance between the ability to channel credit and maintain liquidity (Jayakumar et al., 2018). However, if the LDR is too high, banks can face liquidity difficulties that threaten their stability (Anam, 2018). Meanwhile, NPLs indicate the level of asset quality of banks. A high NPL ratio reflects a high level of non-performing loans that can suppress profitability and worsen financial stability (Sulton et al., 2021). In the context of capital, CAR functions as a bulwark against the risk of operational losses. The higher the CAR, the greater the bank's ability to withstand potential losses due to asset value depreciation (Korbi & Bougatef, 2017).

2.2. Results of Previous Research and Research Gap

Several previous studies have shown mixed results regarding the relationship between LDRs, NPLs, and CARs to banking stability. Research by Jayakumar et al. (2018) found that LDR has a positive relationship with stability when the intermediation function runs efficiently, but can become negative when liquidity tightening. Meanwhile, Chiesa and Mansilla-Fernandez (2018) emphasized that the increase in NPLs leads to an increase in capital costs and a decrease in the ability of

banks to disburse new loans, thereby reducing the stability of the financial system. In another study, Korbi and Bougatef (2017) showed that CAR has a positive effect on stability, especially in banks with strong capital structures. However, Anam (2018) found that the influence of CAR on stability is not significant, especially in large banks that have excess capital. These differences in results show that there is a research gap that needs to be further studied through a literature-based conceptual approach. By reviewing the literature from various contexts, this study seeks to provide a comprehensive understanding of how the interaction between liquidity, credit risk, and capital determines the stability of banks in a sustainable manner (Ozili, 2019).

3. Methods

This study uses a library research approach that is oriented towards theoretical and conceptual analysis of the relationship between Loan to Deposit Ratio (LDR), Non-Performing Loan (NPL), and Capital Adequacy Ratio (CAR) on banking stability. Literature studies were chosen because they allow researchers to explore a variety of published scientific sources to identify similarities, differences, and gaps in previous research. Data was obtained through the collection of literature from reliable sources such as Google Scholar, Elsevier, researchgate, and accredited national journals published between the last five years. The literature used includes empirical and conceptual articles that discuss banking stability, financial performance, credit risk, and capital. The selection process is carried out through a screening stage based on the relevance, credibility, and up-to-date of the research.

The research steps include four main stages. First, identify relevant variables and basic theories, such as financial intermediation theory and systemic stability theory. Second, the collection of literature data from academic articles containing an empirical analysis of the relationship between LDR, NPL, and CAR to bank stability. Third, content analysis is carried out to examine the direction of relationships and results of previous research. Fourth, the synthesis of the literature is carried out to form a conceptual model that explains the relationship between variables theoretically. A descriptive qualitative approach is used to interpret the findings with an emphasis on relationship patterns and theoretical argumentation between variables. The results of the study are expected to strengthen understanding of the role of banking fundamental factors in financial stability and provide a theoretical basis for further empirical research.

4. Results

The results of the literature review show that the stability of the banking system is greatly influenced by a combination of internal variables of the bank which reflect aspects of liquidity, asset quality, and capital adequacy. These three factors Loan to Deposit Ratio (LDR), Non-Performing Loan (NPL), and Capital Adequacy Ratio (CAR) play an important role in determining how strongly a bank is able to withstand market pressures and macroeconomic shocks. LDR describes the bank's ability to distribute credit based on the third-party funds raised. This ratio is an indicator of the efficiency of financial intermediation and at the same time a measure of the bank's liquidity ability (Jayakumar et al., 2018). When the LDR increases within

reasonable limits, it reflects productive credit disbursement and higher profitability. However, LDRs that are too high can increase liquidity risk and reduce banks' resilience to systemic pressures (Setiawati, 2020).

Meanwhile, NPLs indicate the level of health of credit assets owned by banks. An increase in NPLs indicates an increase in the proportion of non-performing loans that reduce profits and capital, and have the potential to cause a domino effect on financial system stability (Ozili, 2019). Deteriorating asset quality reduces banks' ability to disburse new credit and increases the burden of credit loss reserves (Chiesa & Mansilla-Fernandez, 2018). In line with that, empirical research has found that increased NPLs often lead to long-term instability as they lower investor confidence and increase the risk of default. However, under certain conditions, policies for managing loss reserves and operational efficiency can mitigate the negative effects of NPLs on stability (Ahmed et al., 2021).

The third factor, namely CAR, acts as a capital fortress against potential losses that arise due to a decline in asset quality. CAR describes the extent to which the bank's capital is able to absorb the risks arising from financing and investment activities. Research by Korbi and Bougatef (2017) shows that CAR has a positive effect on bank stability because the larger the capital owned, the stronger the bank's ability to face external pressures. However, another finding from Setiawati (2020) states that the influence of CAR on stability is not always significant, especially in large banks that already have capital levels above the minimum provision. In this context, the difference in the effectiveness of capital management is a differentiating factor between banks.

Table.1 Gap Research Analysis

No	Author (Year)	Research Title	Conclusion / Gap Research
1	Korbi & Bougatef (2017)	Regulatory Capital and Stability of Islamic and Conventional Banks	Menunjukkan CAR berpengaruh positif terhadap stabilitas; gap: belum menganalisis peran simultan LDR dan NPL terhadap stabilitas.
2	Jayakumar et al. (2018)	Banking Competition, Banking Stability, and Economic Growth	Hubungan LDR terhadap stabilitas bersifat ambigu; gap: hasil empiris tidak konsisten pada berbagai sistem keuangan.
3	Chiesa & Mansilla-Fernandez (2018)	Non-Performing Loans, Cost of Capital, and Lending Supply: Lessons from the Eurozone Banking Crisis	NPL menaikkan biaya modal dan menurunkan kemampuan kredit; gap: belum mengintegrasikan efek CAR terhadap risiko sistemik.
4	Ozili (2019)	Non-performing Loans and Financial Development: New Evidence	NPL berdampak negatif terhadap stabilitas keuangan; gap: tidak membahas interaksi dengan LDR dan CAR secara simultan.
5	Ntarmah et al. (2019)	Banking System Stability and Economic Sustainability	Stabilitas bank memengaruhi keberlanjutan ekonomi; gap: fokus pada data makro tanpa menguji variabel internal seperti LDR dan CAR.
6	Gunawan (2019)	Hubungan Kausalitas antara Sektor Keuangan dan Sektor Riil di Indonesia	Menunjukkan keterkaitan sektor keuangan dan riil; gap: tidak mengidentifikasi kontribusi spesifik variabel fundamental bank.
7	Setiawati (2020)	Analisis Pengaruh Faktor-Faktor Fundamental Kinerja Bank dan Makro Ekonomi terhadap Stabilitas Perbankan di Indonesia	Menemukan CAR tidak signifikan terhadap stabilitas; gap: belum mengkaji variabel secara konseptual di luar konteks daerah.

8	Ahmed et al. (2021)	The impact of bank specific and macro-economic factors on non-performing loans in the banking sector: Evidence from an emerging economy.	NPL dipengaruhi faktor internal dan makro; gap: tidak fokus pada dampaknya terhadap stabilitas sistem keuangan.
9	Hadian & Phety (2021)	The Influence of NPL, BOPO, LDR, and ROA on Firm Value	Menemukan hubungan tidak konsisten antarvariabel; gap: belum menelusuri mekanisme transmisi ke stabilitas perbankan.
10	Munir (2017)	Analisis faktor-faktor yang mempengaruhi kinerja keuangan perbankan syariah di Indonesia	Menguji pengaruh LDR, NPL, CAR terhadap stabilitas; gap: menyoroti perlunya tinjauan konseptual lintas konteks untuk validasi teoritis.

Based on table 1, an analysis of ten articles between the last five years shows that the relationship between variables is not single or linear. The study of Korbi and Bougatef (2017), for example, confirms that CAR makes a positive contribution to stability in both Islamic and conventional banks, but does not discuss the simultaneous influence of LDRs and NPLs on the stability of the financial system. Jayakumar et al. (2018) found that LDR can have a positive impact on stability when the intermediation function runs efficiently, but under certain conditions this relationship becomes negative due to high liquidity pressure. Chiesa and Mansilla-Fernandez (2018) argued that increasing NPLs increases the cost of capital and reduces the ability of banks to disburse new loans, thereby reducing long-term stability. In contrast, Ozili (2019) emphasized that NPLs are negatively related to financial stability and development, but the study has not integrated the effects of LDR and CAR simultaneously.

In addition, Ntarmah et al. (2019) show that bank stability is closely related to national economic sustainability. However, the study is still macro and has not comprehensively assessed internal variables such as LDR, NPL, and CAR. Gunawan (2019) highlights the causality relationship between the financial sector and the real sector, but has not explored the specific contribution of banks' fundamental factors to stability. Setiawati (2020) reinforces these findings by stating that CAR does not have a significant influence on stability, suggesting that there is a unique context in Indonesian banking that is different from the results of international studies.

Empirical findings from the last five-year period show a new trend that confirms the relevance of these variables in the modern context. Hadian and Phety (2021) found that the relationship between NPL, BOPO, LDR, and ROA to company value showed inconsistent results between periods, indicating uncertainty in the transmission mechanism towards bank stability. Munir (2017) conducted a study that explicitly examined the influence of LDR, NPL, and CAR on the stability of the financial system in Indonesia. The results show that all variables have a significant effect, but the study highlights the need for a cross-contextual conceptual review to strengthen theoretical validation.

Based on the results of the literature synthesis, several important relationship patterns can be identified. First, the relationship between LDR and banking stability is two-way. When banks are able to manage liquidity efficiently, LDRs play a positive role in increasing revenues and strengthening stability. However, in conditions of economic stress, LDRs that are too high can cause liquidity imbalances and reduce banks' ability to meet short-term obligations (Jayakumar et al., 2018). Second, NPLs

have been proven to have a negative relationship with bank stability. The increase in the non-performing loan ratio indicates weak risk supervision and has a chain impact on profitability and capital (Sulton et al., 2021). Third, CAR has a positive relationship with stability, but its effect varies depending on the bank's capital structure. In banks with high capital levels, the influence of CAR on stability can decrease because excess capital is not necessarily accompanied by credit disbursement efficiency (Setiawati, 2020).

The combination of these three variables indicates a complex interaction. In a healthy banking system, the ideal relationship is achieved when the LDR is at an optimal level, the NPL remains low, and the CAR is high enough to absorb losses. However, an imbalance in one aspect can pose a systemic risk. For example, an increase in NPLs without a CAR fix can weaken stability even if the LDR is within safe limits. Conversely, LDRs that are too high at low CAR magnify liquidity risks and worsen market confidence (Nurjanah & Arida, 2021).

From the overall literature review, there are three prominent patterns of research gaps. First, the conceptual gap where most empirical research focuses on statistical relationships between variables without constructing a theoretical model that explains the mechanisms of their correlation (Sulton et al., 2021). Second, the gap in geographical contexts where most of the research is local and has not made generalizations across countries or banking systems (Anam, 2018). Third, the integrative gap because many studies tested LDRs, NPLs, and CAR separately without analyzing their simultaneous effects on banking stability (Ntarmah et al., 2019).

Thus, the results of this literature study confirm that the stability of the banking system is the result of a balance between three internal fundamental factors: liquidity (LDR), credit risk (NPL), and capital adequacy (CAR). The three interact in determining the bank's resilience to internal and external risks. Through this conceptual approach, the research seeks to close the literature gap that has been fragmented and build a theoretical basis for further empirical research. This study also provides the view that stability is not only measured by the strength of capital, but also by the ability of banks to maintain a balance between intermediation functions, risk management, and capital use efficiency (Setiawati, 2020).

Based on the overall, the results of the literature synthesis confirm that a literature-based conceptual approach is able to provide a comprehensive understanding of the relationship between LDR, NPL, and CAR with banking stability. This approach provides a strong foundation for future quantitative research that can examine the interactions between these variables in various national and global financial system contexts.

5. Discussion

The results of the literature review show that the variables Loan to Deposit Ratio (LDR), Non-Performing Loan (NPL), and Capital Adequacy Ratio (CAR) are closely related to the stability of the banking system. The relationship between these variables shows that financial stability does not depend only on one factor, but is the result of a balance between liquidity, credit risk, and capital strength. Within this framework, bank stability can be seen as a reflection of the effectiveness of risk

management and the ability of financial institutions to adapt to economic pressures (Setiawati, 2020).

The finding that LDRs have a dual relationship to stability shows the importance of prudence in intermediation policies. When the intermediation function is carried out efficiently, an increase in LDR can strengthen the bank's profitability and support economic growth. However, if the ratio exceeds the reasonable limit, liquidity pressure increases and systemic risks increase (Jayakumar et al., 2018). Therefore, LDR management must consider the balance between credit expansion and the bank's ability to maintain liquid funds. This policy is in line with the prudential banking principle recommended in the modern banking system (Ntarmah et al., 2019).

Meanwhile, the results of the study of NPLs confirm that asset quality is a crucial factor for the stability of banks. An increase in NPLs indicates a weakening of the effectiveness of credit risk management and can lower the level of public confidence. The negative relationship between NPLs and stability has been widely confirmed by empirical research, among them by Chiesa & Mansilla-Fernandez (2018), which found that non-performing loans increase the cost of capital as well as decrease the capacity of banks to expand financing. Therefore, NPL control is a strategic aspect in maintaining public trust and preventing contagion risk in the financial sector.

In the context of capital, CAR has been proven to play a protective role against financial risks. Banks with high CAR rates tend to be more stable and have a greater capacity to bear unexpected losses (Korbi & Bougatef, 2017). However, the

effectiveness of a CAR on stability depends on the operational structure and efficiency of the use of capital. Setiawati's study (2020) found that the influence of CAR on stability can weaken if high capital is not accompanied by an increase in financing productivity. This indicates that stability is not only a matter of the amount of capital, but also how it is managed efficiently in the face of credit and liquidity risks.

A thorough discussion of the results of various studies shows that the relationship between LDR, NPL, and CAR to bank stability is complementary. An excess in one aspect can mask a weakness in another, but an imbalance in one can disrupt the entire system. Thus, policies to strengthen banking stability need to be designed in an integrative manner, including liquidity supervision, credit risk management, and capital adequacy. The combination of these three factors is believed to be able to increase the resilience of the financial system to global economic fluctuations and maintain public confidence in the banking sector.

6. Conclusion

This study emphasizes that the stability of the banking system is the result of a balance between three fundamental factors, namely liquidity, asset quality, and capital adequacy. The three variables Loan to Deposit Ratio (LDR), Non-Performing Loan (NPL), and Capital Adequacy Ratio (CAR) interact dynamically in determining the bank's ability to maintain public trust and resilience to financial risks. LDRs reflect the efficiency of intermediation and liquidity management, NPLs demonstrate asset quality as well as credit risk, while CAR describes the strength of

capital in withstanding economic shocks. The results of the literature synthesis show that LDRs can have a positive or negative impact on stability, depending on the effectiveness of liquidity management. NPLs consistently have a negative influence on stability because they increase credit risk, while CAR has a positive effect as a buffer factor for losses. The interaction of the three reinforces the understanding that the stability of a bank is not only determined by profitability, but also by the balance between expansion, risk, and capital resilience. This literature review provides a theoretical basis for further empirical research to test the relationship of the three variables simultaneously in various financial system contexts. In addition, the results can serve as a reference for regulators and practitioners in designing banking policies that are more adaptive, balanced, and oriented towards the sustainability of the national financial system.

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