



Financial Linkage, Systemic Risk, and Financial Stability: A Conceptual Study on Commercial Banks

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Abstract

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This study aims to analyze the relationship between financial linkage, systemic risk, and financial stability in commercial banks through a literature review approach. This study integrates macroprudential theory and the results of recent empirical research to explain how interbank linkages can improve liquidity efficiency while magnifying the potential for systemic risk in the modern financial system. Based on the results of a literature review, systemic risk has been proven to play a role as a mediating variable that links financial linkage with financial stability. The higher the level of interconnectedness between financial institutions, the greater the likelihood of risk transmission that can threaten overall financial stability. Therefore, this study confirms the importance of comprehensive and adaptive macroprudential policies to maintain a balance between interconnection efficiency and financial system resilience. These findings make a conceptual contribution to the development of subsequent empirical models that focus on the analysis of financial linkages and systemic risks in the general banking sector.

1. Introduction

The banking sector is a major pillar in the global financial system, functioning as an intermediary institution that distributes funds from the surplus to the deficit party, while maintaining monetary stability and supporting economic growth. However, the interconnection between financial institutions makes commercial banks vulnerable to systemic turmoil that can spread throughout the financial system. In the modern context, systemic risk arises when the failure of one institution has the potential to cause a domino effect on other institutions, especially due to increasingly complex financial linkage (Karimalis et al., 2018).

In the last decade, the level of interbank connectivity has increased significantly in line with the integration of financial markets and the digitalization of banking. This condition increases the potential for risk transmission and weakens the resilience of the financial system. Study by Aray et al. (2017) shows that macro-financial interconnectedness through interbank lending networks can be the main channel of systemic risk transmission when external shocks occur. In line with that, Cai et al. (2018) affirm that cross-exposure through loan syndication increases the vulnerability of the financial system, especially in the commercial banking sector.

Financial linkage acts as a dual mechanism: on the one hand it supports interbank liquidity, but on the other hand increases its vulnerability to external shocks. When one bank experiences distress, its negative impact can spread through the financing network and cause a systemic crisis. Empirical studies in Sub-Saharan Africa have found that macro-financial relationships have a direct effect on banking

stability (Mjojo, 2021). Meanwhile, Parendra et al. (2020) highlight that bank size and low capital levels magnify systemic risks, thereby weakening financial stability.

Financial stability itself is defined as the ability of the financial system to withstand shocks without losing its intermediation function (Sarma & Roy, 2021). Disrupted stability causes monetary policy transmission to become ineffective and lowers public confidence in banking. Abedifar et al. (2017) emphasized that in the dual banking system (conventional and sharia), the relationship between financial institutions significantly determines the amount of contribution of systemic risk to macroeconomic stability.

Previous research shows that there is still an empirical gap between measuring financial linkage and systemic risk in explaining financial system stability, especially in the commercial banking sector. Most of the research focuses on credit, liquidity, and operational risk, while the dimensions of interbank linkages have not been extensively studied. In addition, an institutional-oriented (micro-prudential) approach to risk measurement often ignores systemic aggregate risks.

A study by Nabella et al. (2020) on Islamic banking in Indonesia has confirmed that systemic risk is not only determined by the size of the bank's assets, but also by the level of financial linkages between institutions. However, the research has not been applied to conventional commercial banks, which have a dominant role in maintaining national financial stability. Therefore, this study is important to investigate the relationship between financial linkage, systemic risk, and financial stability in the context of commercial banks, in order to provide an empirical

understanding of how interconnection between banks can affect the resilience of the financial system as a whole.

Thus, the main objective of this study is to analyze the influence of financial linkage on systemic risk and its impact on financial stability. This research is also expected to enrich the literature on financial system stability through an integrative approach based on the CoVaR model and macroprudential supervision framework that focuses on the systemic resilience of the banking sector.

2. Literature Review

2.1 Financial Linkage and Financial System Interconnection

Financial linkage describes relationships between financial institutions through loan networks, asset ownership, and interbank market transactions. This relationship allows banks to maintain short-term liquidity and supports money market efficiency. However, high intensity of linkage can increase the vulnerability of the system to the contagion effect when external shocks occur (Aray et al., 2017).

In the context of commercial banks, interbank linkages often act as a transmission channel for liquidity risk and market risk. Cai et al. (2018) suggest that increased interbank lending and involvement in the derivatives market can strengthen the connectivity of the financial system, which at the same time magnifies the potential for systemic risks. The higher the exposure between banks, the greater the likelihood of disruption spreading through cross-institutional financial relationships.

According to Mjojo (2021), a banking system that has strong macro-financial linkages can improve short-term efficiency, but in the long term reduces banking stability because the accumulation of risks is not well diversified. Therefore, macroprudential supervision is important to minimize the negative effects of these interconnections. Within the framework of this study, financial linkage is positioned as a variable that has the potential to influence the emergence of systemic risks, which ultimately impacts the stability of the financial system as a whole.

2.2 Systemic Risk in the Banking Sector

Systemic risk refers to the potential failure of the financial system caused by interdependence between financial institutions. When one bank experiences distress, the pressure can spread to other institutions and threaten the stability of the entire system (Karimalis et al., 2018). These risks are often triggered by market exposure, interbank lending, and short-term liquidity imbalances.

A study by Parendra et al. (2020) shows that bank size, capital ratio, and asset diversification are the main factors that determine the level of a bank's contribution to systemic risk. Large banks with high interconnections usually have a greater influence on the stability of the system. In addition, the financial relationship network accelerates risk transmission through the interbank contagion mechanism.

According to Abedifar et al. (2017), systemic risk does not only come from internal factors of banks, but is also influenced by interactions between financial institutions and external factors such as global market volatility. Therefore, systemic risk analysis needs to use a network approach that considers interbank relationships,

not just individual performance. In the context of this study, systemic risk is a mediating variable that bridges the influence of financial linkage on financial stability.

2.3 Financial Stability as a Macroprudential Outcome

Financial stability describes a condition in which the financial system functions efficiently and is able to withstand shocks without disrupting real economic activities. When stability is disrupted, public confidence in financial institutions declines, intermediation functions weaken, and the risk of crisis increases. According to Sarma and Roy (2021), good financial stability reflects the effectiveness of macroprudential policies in controlling systemic risks and keeping monetary transmissions running.

Fang et al. (2018) emphasized that the stability of the financial system is greatly influenced by the risk network between financial institutions. In a high-connectivity system, a small shock can develop into a major crisis due to the effects of transmission. Therefore, stability policies need to consider financial interconnection factors and banking structural resilience.

The study by Nabella et al. (2020) adds that financial stability is not only a result of strong capital or profitability, but also from the system's ability to manage financial relationships between institutions. In the context of commercial banks, financial stability can be seen as the final indicator of the balance between interconnection efficiency and effective systemic risk mitigation.

3. Methods

This study uses a library research approach to examine the relationship between financial linkage, systemic risk, and financial stability in commercial banks. This approach is carried out by analyzing empirical and theoretical literature published between the last five years, both in the form of international journals, reports of financial institutions, and relevant results of previous research. The data used in this study is sourced from academic articles indexed by Google Scholar, Researchgate, and Elsevier, as well as scientific documents such as Systemic Risk Analysis and Financial Linkages by Nabella et al. (2020) as a basic reference for methodological and empirical contexts in the banking sector.

The analysis is carried out with systematic measures. First, the identification of research variables based on theory and previous research is carried out. The independent variable in this study is financial linkage, which describes the linkage between financial institutions through interbank loan networks, money market transactions, and joint asset ownership. The mediation variable is systemic risk, which is the potential for financial system failure due to interdependence between banks. Meanwhile, the dependent variable is financial stability, which reflects the ability of the financial system to remain stable in the face of shocks.

Second, a literature analysis was carried out by examining the results of previous research related to the relationship between variables. Studies such as Cai et al. (2018) are used to understand the mechanism of systemic risk linkages between banks, while Parendra et al. (2020) provide an empirical basis regarding financial stability as a macroprudential outcome. Third, the literature is analyzed

comparatively to identify research gaps and conceptualize causal relationships between variables.

Fourth, thematic synthesis is carried out to formulate a conceptual model of research. This model is the result of the integration of financial network theory, systemic risk theory, and macroprudential stability framework approach. Thus, the results of this study not only shed light on the theoretical relationship, but also provided an empirical direction for further research related to the stability of the general banking financial system.

The following is a conceptual model resulting from this literature study:

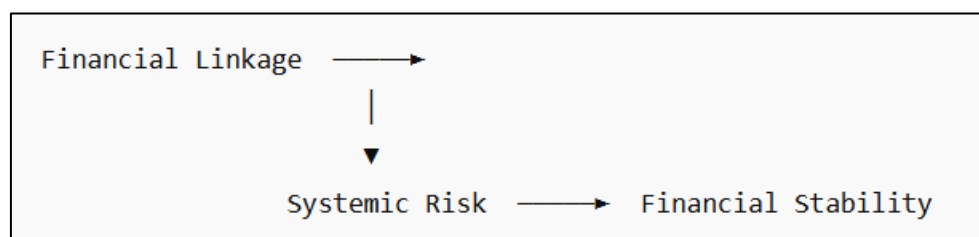


Figure.1 Conceptual Model Framework of Research

Figure 1 explains the relationship between variables in this study showing interrelated causal patterns. Stronger financial linkage between banks has the potential to increase systemic risk in the banking system, because high interconnection increases the chance of risk transmission when there is a shock in one financial institution. Furthermore, the increase in systemic risk has a negative impact on financial stability, because high systemic risks weaken the ability of the financial system to maintain its intermediation function effectively. Thus, financial

linkage also affects financial stability indirectly through the role of systemic risk mediation, which is the main transmission line between financial linkage and the stability of the financial system as a whole.

4. Results

The results of this study were obtained through a comprehensive literature review of the empirical and theoretical literature related to the relationship between financial linkage, systemic risk, and financial stability in commercial banks during the period 2017–2021. Based on the results of the literature analysis, it was found that increasing financial linkages between commercial financial institutions has a double effect on the financial system: on the one hand it increases the efficiency of liquidity flows, but on the other hand increases vulnerability to systemic risks that have implications for decreased financial stability. These findings are in line with the views of Karimalis et al. (2018) which states that in the modern banking system, systemic risk does not only come from individual bank failures, but also from the high correlation between asset portfolios and financing relationships between interdependent financial institutions.

In a study by Cai et al. (2018), it was explained that increased interbank lending activities and participation in the securities market increase financial interconnectedness, which then plays an important role in transmitting liquidity pressures and interbank credit risks. When one bank faces liquidity difficulties, the pressure quickly spreads through interbank lending channels leading to increased systemic risks across the network. This phenomenon suggests that financial linkage

can act as a major transmission channel of financial risk, especially in systems with high market exposure.

Furthermore, Parendra et al. (2020) found that bank size and capital ratio have a significant relationship with the level of contribution to systemic risk. Large banks with large assets tend to have higher exposure to global financial markets, so if they are under pressure, the effects will be wider than those of small banks. However, Abedifar et al. (2017) added that the magnitude of systemic risk is not always linear to the size of the bank. In some cases, medium-sized banks can actually become a source of systemic risk due to their dependence on short-term financing from the interbank market.

In addition, Aray et al. (2017) uses the Financial Social Accounting Matrix (FSAM) approach to analyze macro-financial relationships in the context of the global financial system. Their results suggest that small changes in financial relationships between institutions can create a large multiplier effect on the stability of the financial system as a whole. This confirms that financial systems with high interconnections have a high sensitivity to external shocks.

In the context of financial stability, Sarma and Roy (2021) explain that financial stability is the result of the effectiveness of macroprudential policies that are able to control systemic pressures. However, when regulations are unable to balance interconnection efficiency and risk mitigation, financial stability will decline. Similar results were found by Mjojo (2021) who examined the relationship between macro-financial linkages and banking stability in Sub-Saharan Africa. It found that

increased financial interconnection significantly lowers the banking stability index in the long run, although in the short term it improves efficiency.

Literature analysis shows that the relationship between financial linkage and financial stability is indirect, with systemic risk acting as a mediating variable. Nabella et al. (2020) in their research on Islamic banks in Indonesia found that although some banks have small individual risks, their financial interconnectedness can lead to a high contribution of systemic risk to the banking system as a whole. These findings indicate that systemic risk is not only a function of the size of assets, but also of the interbank connectivity structure.

The research of Fang et al. (2018) adds that the modern financial system forms a complex risk network, where the relationships between financial institutions resemble interconnected graph structures. Shocks to one node in the network can be transmitted through credit exposure and funding linkage, thereby accelerating the spread of risk throughout the system. This structure makes financial system supervision must focus on a network approach, not just supervision of individual institutions.

From the results of the analysis of several studies, it was found that another factor that strengthens the relationship between financial linkage and systemic risk is the liquidity imbalance between banks. According to Anam (2018), banks that have a large proportion of interbank loans are more vulnerable to sudden liquidity pressures, especially when external shocks occur such as the COVID-19 pandemic. This worsens financial stability as it causes market uncertainty and increases spillover volatility.

Veronica and Andrew (2017) emphasize the importance of understanding contagion dynamics in the banking system. They found that very close interbank relationships create a high dependence on the financial condition of counterparties, so when one bank fails, the effects can spread quickly. This strengthens the argument that financial linkage plays a determining factor in shaping systemic vulnerability.

A study by Ngoc Nguyen (2019) in Vietnam found that financial risk variables have a significant impact on bank performance and financial system stability. When market risk increases, banks that have high interconnections tend to experience decreased profitability and increased default probability. These findings support the hypothesis that systemic risk serves as the main transmission line between financial interconnection and systemic stability.

From the results of the synthesis, it can be concluded that the relationship between the three main variables of this study is causal and dynamic. First, financial linkage has a positive influence on systemic risk, meaning that the stronger the interbank linkage, the greater the potential for systemic risks to arise. Second, systemic risk has a negative influence on financial stability, because the increase in systemic risk reduces the ability of the financial system to maintain its intermediation function. Third, financial linkage also has a negative effect on financial stability through systemic risk mediation.

In addition to these causal relationships, the literature also highlights the importance of macroprudential policies in controlling systemic risks. Parendra et al. (2020) emphasized that strengthening capital, diversifying portfolios, and interbank market supervision are key steps to strengthen financial system stability. Without

adaptive policies, the multiplier effect of financial linkage can lead to a widespread systemic crisis.

Based on the overall, the results show that the sustainability of the banking system depends on the balance between the efficiency of financial connectivity and the structural resilience of the system to shocks. A well-managed financial linkage can strengthen monetary transmission and improve the efficiency of the money market, but if left unchecked, it can become a major source of financial instability. Thus, these findings underscore the importance of policy design that takes into account interbank linkages and risk transmission mechanisms in the modern financial system.

5. Discussion

The results of this study confirm that financial linkage has an important role in the formation of systemic risk and ultimately affects financial stability. This relationship confirms the theory of financial interconnection put forward by Karimalis et al. (2018), which states that the higher the level of interconnectedness between financial institutions, the greater the potential for risk transmission in the banking system. In the context of commercial banks, this relationship reflects a modern financial paradox: connectivity that supports efficiency also has the potential to be a source of instability if not balanced with adequate macroprudential supervision.

Theoretically, these results are in line with the findings of Cai et al. (2018) who showed that interbank interactions in the form of syndicated lending and

money markets create a strong risk transmission channel. When external shocks occur, such as a decline in global liquidity or changes in the benchmark interest rate, risk transmission occurs rapidly through interbank loan networks and asset portfolios. Therefore, financial linkages play a dual role: facilitating the flow of funds while increasing the vulnerability of the system to external shocks.

The negative relationship between systemic risk and financial stability also strengthens the empirical finding by Parendra et al. (2020) that banks with low capital and high market exposure have a significant contribution to systemic risk. This condition shows that capital resilience and asset diversification are key factors in maintaining financial stability. Furthermore, Sarma and Roy (2021) highlight that the effectiveness of macroprudential policies greatly determines the ability of the financial system to withstand shocks without causing widespread disruption.

From a risk management perspective, these results suggest that systemic risk cannot be managed with a microprudential approach that focuses on the individual performance of banks. Instead, a network-based systemic approach is needed that monitors interbank relationships and the level of financial interdependence. Veronica and Andrew (2017) assert that the vulnerability of the modern financial system is determined more by its connectivity structure than by the individual weaknesses of institutions. Therefore, the formulation of financial stability policies must take into account the intensity of interbank linkages and the speed of risk transmission.

Overall, the discussion underlined that the balance between interconnection efficiency and risk mitigation is key to the sustainability of the financial system.

Financial linkages that are too strong without control can exacerbate systemic risks and threaten financial stability, but if managed through macroprudential instruments such as countercyclical capital buffers and liquidity coverage ratios, these linkages can actually strengthen the resilience of the financial system. Thus, an adaptive integrated supervisory policy is a must in maintaining the stability of the modern banking system.

6. Conclusion

This study concludes that financial linkage has a strategic role as well as a significant risk in determining financial stability in commercial banks. Strong interconnection between financial institutions can accelerate the transmission of funds and improve market efficiency, but it also opens up more space for the spread of systemic risk that has the potential to disrupt overall banking stability. The results of the literature review show that systemic risk functions as a mediating variable that bridges the relationship between financial linkage and financial stability. The higher the level of interbank linkage, the greater the potential for increased systemic risk, and ultimately negative impact on financial system stability. Thus, the balance between interconnection efficiency and system resilience is a key element in maintaining the long-term stability of the banking sector.

The study also emphasizes the importance of comprehensive and integrated macroprudential policies, particularly in the supervision of interbank relations and systemic risk mitigation. Capital strengthening, asset diversification, and increased transparency between financial institutions need to be carried out to ensure

sustainable financial system stability. With this understanding, further research is expected to develop an empirical model that measures the intensity of financial linkages and their impact on systemic risk more quantitatively.

References

- Abedifar, P., Giudici, P., & Hashem, S. Q. (2017). Heterogeneous market structure and systemic risk: Evidence from dual banking systems. *Journal of Financial Stability*, 33, 96-119.
- Aray, H., Pedauga, L., & Velázquez, A. (2017). Financial Social Accounting Matrix: a useful tool for understanding the macro-financial linkages of an economy. *Economic Systems Research*, 29(4), 486-508.
- Cai, J., Eidam, F., Saunders, A., & Steffen, S. (2018). Syndication, interconnectedness, and systemic risk. *Journal of Financial Stability*, 34, 105-120.
- Fang, L., Sun, B., Li, H., & Yu, H. (2018). Systemic risk network of Chinese financial institutions. *Emerging Markets Review*, 35, 190-206.
- Karimalis, E. N., & Nomikos, N. K. (2018). Measuring systemic risk in the European banking sector: a copula CoVaR approach. *The European Journal of Finance*, 24(11), 944-975.
- Mjojo, A. (2021). *Macro-financial linkages and banking stability in sub-Saharan Africa*. Loughborough University. *African Journal of Economic Review*, 9(2), 85–103.
- Nabella, R. S., Maski, G., & Wahyudi, S. T. (2020). Analisis risiko sistemik dan keterkaitan keuangan: Studi pada Bank Umum Syariah di Indonesia. *Perbanas Journal of Business and Banking*, 10(1), 19-31.

- Ngoc Nguyen, K. (2019). Revenue diversification, risk and bank performance of Vietnamese commercial banks. *Journal of Risk and Financial Management*, 12(3), 138.
- Parendra, A., Firmansyah, A., & Prakosa, D. K. (2020). Ukuran perusahaan, leverage, risiko saham di perusahaan perbankan. *Dinamika Akuntansi Keuangan Dan Perbankan*, 9(2), 119-132.
- Sarma, P., & Roy, A. (2021). A Scientometric analysis of literature on Green Banking (1995-March 2019). *Journal of Sustainable Finance & Investment*, 11(2), 143-162.
- Veronica, R., & Andrew, V. (2017). Keterkaitan Kompetisi dan Stabilitas Perbankan. *Editor: Mariska Ardilla Faza*, 2.