International Journal of Science and Technology Research Archive

ISSN: 0799-6632 (Online)

Journal homepage: https://sciresjournals.com/ijstra/

(REVIEW ARTICLE)

Check for updates

Mitigating credit risk during macroeconomic volatility: Strategies for resilience in emerging and developed markets

Lawrence Damilare Oyeniyi [1, *], Abbey Ngochindo Igwe [2], Olajumoke Bolatito Ajani [3], Chikezie Paul-Mikki Ewim [4] and Titilope Tosin Adewale [5]

[1] *Independent Researcher, UK.*
[2] *Independent Researcher, Port Harcourt Nigeria.*
[3] *Newcross Exploration and Production Limited, Nigeria.*
[4] *Independent Researcher, Lagos, Nigeria.*
[5] *Independent Researcher, Canada.*

International Journal of Science and Technology Research Archive, 2022, 03(01), 225-231

Publication history: Received on 14 June 2022; revised on 20 July 2022; accepted on 25 July 2022

Article DOI: https://doi.org/10.53771/ijstra.2022.3.1.0064

Abstract

Macroeconomic volatility poses significant challenges to financial systems, amplifying credit risk and exposing vulnerabilities in both emerging and developed markets. This paper explores the dynamics of credit risk during economic instability, emphasizing the distinct challenges faced by diverse market categories. It highlights critical strategies for mitigating risk, including robust credit assessments, regulatory interventions, and technology-driven solutions for real-time monitoring. The analysis underscores the importance of building resilience through enhanced institutional capabilities, diversification, and contingency planning. Drawing on cross-market insights, the paper provides actionable recommendations to strengthen financial systems, foster global collaboration, and ensure long-term stability. By integrating innovative practices and leveraging international cooperation, stakeholders can navigate complex risk landscapes and contribute to sustainable economic growth.

Keywords: Credit Risk; Macroeconomic Volatility; Financial Resilience; Emerging Markets; Risk Mitigation Strategies; Global Financial Stability

1. Introduction

Credit risk represents a fundamental challenge to financial stability, particularly during periods of macroeconomic volatility (Mileris, 2015). Credit risk refers to a lender's potential loss when a borrower fails to meet their financial obligations (Banks, 2016). This risk intensifies in uncertain economic environments, where fluctuations in key indicators such as interest rates, inflation, and foreign exchange rates undermine the ability of borrowers to service their debts (Afriyie, Yusheng, Kaodui, Caesar, & Owusu-Akomeah, 2018). The interconnectedness of global financial systems means that credit risk in one region can have far-reaching effects, cascading across markets and sectors. Thus, understanding its dynamics during volatile periods is critical for policymakers, financial institutions, and stakeholders aiming to sustain economic growth and stability (Arner, Avgouleas, Busch, & Schwarcz, 2019).

Periods of macroeconomic volatility, such as global financial crises, geopolitical conflicts, or pandemics, often exacerbate credit risks in both emerging and developed markets. For emerging markets, vulnerabilities such as high dependency on foreign capital, less diversified economies, and weaker financial systems make them particularly susceptible to external shocks (Karanasos, Yfanti, & Hunter, 2022). Conversely, developed markets may have stronger financial buffers but are not immune to systemic risks, as demonstrated during events like the 2008 financial crisis.

* Corresponding author: Lawrence Damilare Oyeniyi

These differences underscore the need for tailored resilience strategies that address each market category's unique challenges while leveraging their strengths (Elkhishin & Mohieldin, 2021).

Resilience strategies are essential for mitigating the adverse effects of credit risk during such periods. For emerging markets, resilience involves strengthening institutional frameworks, enhancing credit assessment processes, and reducing reliance on external debt (Abiad, Bluedorn, Guajardo, & Topalova, 2015). Developed markets, on the other hand, benefit from strategies that focus on innovation, such as leveraging data-driven technologies to predict and manage risks proactively. In both cases, resilience depends on a proactive approach to risk management that integrates robust policies, adaptive practices, and stakeholder collaboration (Onyiriuba, 2015).

The objectives of this paper are threefold: to analyze the interplay between macroeconomic volatility and credit risk, to explore effective strategies for mitigating these risks, and to propose actionable recommendations for building financial resilience. It focuses on identifying practical solutions that are relevant to both emerging and developed markets, considering their respective economic contexts and structural differences. The paper aims to provide insights that contribute to more stable and sustainable financial ecosystems by addressing these goals. This exploration is particularly pertinent in today's dynamic global landscape, where challenges such as climate change, technological disruption, and evolving geopolitical tensions add layers of complexity to credit risk management. As financial systems continue to evolve, integrating innovative approaches and adaptive strategies will be key to ensuring resilience.

2. Macroeconomic Volatility and Credit Risk Dynamics

2.1. Factors Contributing to Credit Risk During Volatile Periods

Several factors contribute to heightened credit risk during periods of economic instability. Fluctuations in interest rates are among the most prominent drivers. When rates rise sharply, borrowing costs increase, leading to higher debt-servicing burdens for borrowers. This situation often results in elevated default rates, especially among corporations and individuals with high leverage. Similarly, inflationary pressures erode purchasing power, diminishing the ability of borrowers to meet financial commitments (Naili & Lahrichi, 2022).

Another key factor is currency depreciation, which particularly affects economies reliant on foreign-denominated debt. Sharp declines in currency value can drastically increase repayment costs for borrowers with obligations in foreign currencies, leading to a higher probability of default. This dynamic is especially pronounced in emerging markets, where foreign-denominated debt is more prevalent (Dept., 2019).

Political instability and geopolitical tensions further exacerbate credit risk. Prolonged periods of uncertainty can lead to trade, investment, and overall economic activity disruptions. These disruptions reduce income streams for businesses and individuals, increasing the likelihood of credit defaults. Additionally, declining consumer confidence during uncertain times leads to reduced spending and investment, further damaging borrowers' financial health (Khan, Su, Tao, & Umar, 2021).

2.2. Comparative Discussion of Emerging and Developed Markets

The dynamics of credit risk and macroeconomic volatility manifest differently in emerging and developed markets due to structural and systemic variations. Emerging markets are often more vulnerable to external shocks due to their reliance on foreign investment and commodities and less mature financial systems. High levels of sovereign debt and weaker institutional frameworks further compound these vulnerabilities. For instance, during the COVID-19 pandemic, many emerging economies faced downgrades in their credit ratings due to dwindling foreign reserves and surging debt levels (Kang, Wang, & Xiao, 2018).

In contrast, developed markets typically have more robust financial systems, greater access to diversified funding sources, and stronger regulatory frameworks. However, they are not immune to systemic risks, particularly those arising from global interconnectedness. For example, the 2008 financial crisis, which originated in the United States, had cascading effects on global markets, illustrating the susceptibility of advanced economies to credit risk during periods of macroeconomic volatility (Van Loo, 2018).

Developed markets also face unique challenges in mitigating credit risk, such as dealing with aging populations and the growing reliance on technology-driven financial systems. These issues introduce new dimensions of risk, such as potential cybersecurity threats or disruptions in traditional lending practices. Meanwhile, emerging markets must

contend with limited fiscal space and dependency on commodity exports, exposing them to global price shocks (Varma, Nijjer, Sood, Grima, & Rupeika-Apoga, 2022).

2.3. Recent Economic Trends Affecting Credit Risk

Several recent trends illustrate the evolving relationship between macroeconomic volatility and credit risk. The global pandemic significantly disrupted economic activity, leading to widespread loan defaults and increasing the burden on financial institutions. Governments and central banks implemented extensive fiscal and monetary stimulus measures to mitigate these effects, which helped stabilize markets but also introduced long-term risks such as rising inflation and increased public debt (Utz, Feyen, Vazquez Ahued, Nie, & Moon, 2020).

The ongoing shift towards tighter monetary policies in many regions, aimed at controlling inflation, has also impacted credit risk dynamics. For instance, the Federal Reserve's interest rate hikes have raised borrowing costs, placing additional strain on debt-laden entities. The effects have been particularly acute in sectors such as real estate, where higher rates have reduced affordability and increased the likelihood of defaults (Gross & Semmler, 2019).

Geopolitical tensions, including the conflict in Ukraine, have introduced further volatility, particularly in energy and commodity markets. Supply chain disruptions, surging prices, and reduced economic activity in affected regions have heightened credit risk, especially for businesses reliant on stable trade flows. These disruptions highlight the interconnected nature of global markets and the spillover effects of regional instabilities (Galani, 2022).

Climate change has also emerged as a significant factor influencing credit risk. Extreme weather events and the transition to greener energy systems have disrupted traditional industries and created new uncertainties for lenders. Industries such as fossil fuels and manufacturing face heightened risks as governments and investors push for sustainable practices, potentially leading to stranded assets and increased defaults in these sectors (Battiston, Dafermos, & Monasterolo, 2021).

In conclusion, macroeconomic volatility and credit risk dynamics are shaped by many factors, including interest rate fluctuations, currency movements, and geopolitical events. While emerging markets grapple with structural vulnerabilities, developed economies face challenges arising from systemic interconnectedness and technological advancements. Recent global trends, such as the pandemic and climate change, further underscore the importance of understanding and addressing these dynamics.

3. Strategies for Risk Mitigation

3.1. Approaches to Identifying and Managing Credit Exposures

Identifying and managing credit exposures is the cornerstone of any risk mitigation strategy. Accurate identification begins with thorough credit assessments, which evaluate a borrower’s capacity and willingness to meet financial obligations. These assessments incorporate financial metrics such as debt-to-income ratios, liquidity profiles, and historical repayment patterns. Stress testing, which evaluates how borrowers perform under adverse economic scenarios, has also become a critical tool in assessing creditworthiness during periods of volatility (Bouteille & Coogan-Pushner, 2021).

Portfolio diversification is another key strategy for managing credit exposures. Financial institutions mitigate risk by spreading lending activities across different sectors, geographies, and asset classes, reducing reliance on any single segment. This approach ensures that losses in one area do not disproportionately impact the overall portfolio. For example, during the pandemic, institutions with diversified loan portfolios were better positioned to weather sector-specific downturns compared to those heavily concentrated in hospitality or retail (Xiaoli & Nong, 2021).

Additionally, dynamic credit monitoring allows lenders to track changes in borrower conditions over time. By proactively identifying early signs of financial distress—such as missed payments or declining revenue—lenders can intervene with restructuring options or other measures to prevent defaults. Implementing risk-adjusted pricing models, which align interest rates with borrower risk profiles, further enhances management strategies by adequately compensating lenders for higher exposure levels (Tung, 2020).

3.2. Role of Regulatory Frameworks and Financial Policies

Robust regulatory frameworks and financial policies are essential for reducing credit risk and promoting resilience in financial systems. Governments and regulatory authorities are critical in establishing guidelines that ensure

transparency, accountability, and prudence in lending practices. For instance, capital adequacy requirements, which mandate that financial institutions maintain a minimum level of reserves to cover potential losses, are a cornerstone of credit risk management. These requirements protect individual institutions and enhance systemic stability by reducing the risk of contagion during economic downturns.

In addition, macroprudential policies, such as loan-to-value caps and debt-service ratios, aim to curb excessive risk-taking by borrowers and lenders. These measures help prevent asset bubbles and reduce vulnerabilities that could lead to widespread defaults. Central banks also play a crucial role in mitigating credit risk through monetary policies that influence borrowing costs. While accommodative policies can support economic growth during downturns, they must be carefully calibrated to avoid encouraging excessive leverage, which can increase systemic risk (Triggs, Kacaribu, & Wang, 2019).

Collaboration between national and international regulatory bodies is vital in today's interconnected financial landscape. Frameworks such as Basel III, which set global standards for capital requirements, liquidity management, and stress testing, ensure a consistent approach to risk mitigation across jurisdictions. These regulations, developed in response to past financial crises, have strengthened the ability of institutions to absorb shocks while maintaining credit flows to the economy (Duffie, 2018).

3.3. Integration of Technology-Driven Solutions for Risk Monitoring

Technology has revolutionized credit risk management by enhancing risk identification and monitoring accuracy and efficiency. The integration of data analytics, artificial intelligence (AI), and machine learning (ML) enables financial institutions to process vast amounts of information and uncover patterns that traditional methods might overlook. For example, AI-powered credit scoring models can analyze non-traditional data sources, such as transaction histories and social media activity, to assess borrower behavior and predict potential defaults (FAHEEM, 2021).

Real-time monitoring tools powered by technology provide lenders with up-to-date insights into borrower conditions and market dynamics. These tools enable proactive interventions, allowing institutions to restructure loans, adjust credit limits, or take other preventive measures before issues escalate. Blockchain technology has also emerged as a valuable tool for risk management, providing secure and transparent records of financial transactions, reducing fraud risks, and enhancing the integrity of credit data (Nuthalapati, 2022).

Additionally, technology-driven innovations in early warning systems have effectively identified emerging risks. These systems use predictive analytics to flag potential vulnerabilities, such as deteriorating economic indicators or sudden shifts in borrower creditworthiness. For instance, during the pandemic, some institutions utilized ML algorithms to model the impact of lockdown measures on borrowers' ability to repay loans, enabling timely interventions. However, the adoption of technology in risk mitigation comes with challenges. Cybersecurity threats, implementation costs, and the need for skilled personnel to manage advanced systems are significant concerns. Financial institutions must balance leveraging technological advancements and addressing associated risks to maximize the benefits of innovation (Bisht et al., 2022).

4. Building Resilience in Financial Systems

Resilience in financial systems is critical to mitigating the adverse effects of macroeconomic volatility and credit risk. Financial systems can better withstand economic shocks and sustain long-term stability by strengthening institutional capabilities, fostering diversification, and adopting contingency planning. Insights derived from different markets provide valuable lessons for fostering resilience, ensuring financial health in both emerging and developed economies.

4.1. Enhancing Institutional Capabilities to Withstand Economic Shocks

One of the cornerstones of financial resilience is the ability of institutions to absorb and recover from economic shocks. This requires a focus on capital adequacy, liquidity management, and operational flexibility. Institutions with sufficient capital buffers are better equipped to endure periods of stress, as these reserves provide a cushion against unexpected losses. Regulatory frameworks such as Basel III, which set stringent capital requirements, have enhanced the ability of institutions to withstand shocks. However, achieving compliance with these standards remains challenging for institutions in less developed financial systems (Obrenovic et al., 2020).

Liquidity management is equally critical. During periods of volatility, maintaining access to liquid assets ensures that institutions can meet short-term obligations and prevent disruptions to their operations. Tools such as liquidity coverage ratios and stress testing enable institutions to anticipate potential liquidity shortages and proactively develop

strategies to address them. Additionally, operational flexibility, including adapting business models and resource allocation, ensures that institutions remain agile in the face of changing economic conditions (Majcher, 2015).

Strengthening governance and risk management practices is also essential. Institutions must implement robust internal controls, transparent decision-making processes, and a culture of accountability. Effective risk management frameworks that integrate credit, market, and operational risks provide a holistic approach to resilience, reducing the likelihood of systemic disruptions (Alam, Said, & Abd Aziz, 2019).

4.2. Importance of Diversification and Contingency Planning

Diversification plays a pivotal role in building financial resilience. By spreading risks across various sectors, geographies, and asset classes, financial institutions can minimize the impact of adverse events in any single area. For instance, banks that lend across diverse industries are less exposed to sector-specific downturns, such as those experienced in tourism and hospitality during the pandemic. Similarly, geographic diversification mitigates risks associated with regional economic or political instability (Packard et al., 2019).

In addition to diversification, contingency planning is an indispensable component of resilience. Financial institutions must develop and regularly update comprehensive contingency plans to address potential disruptions. These plans should include measures for managing liquidity crises, operational disruptions, and cybersecurity threats. For example, during the global financial crisis, institutions with well-defined recovery plans were able to respond more effectively to market turbulence, safeguarding their solvency and reputation (Matthews, 2021).

Stress testing and scenario analysis are vital tools in contingency planning. By simulating adverse economic scenarios, institutions can identify vulnerabilities and develop strategies to mitigate them. For instance, stress tests conducted after the 2008 crisis revealed weaknesses in certain banking systems, prompting reforms to enhance their resilience. Moreover, institutions must establish robust communication protocols to ensure timely and coordinated responses during crises, reducing the risk of panic and systemic contagion (Hassani & Hassani, 2016).

4.3. Cross-Market Insights for Sustaining Long-Term Financial Health

Cross-market insights offer valuable lessons for fostering financial resilience, as different regions and economies face unique challenges and opportunities. Emerging markets, for example, provide examples of innovation and adaptability in the face of resource constraints. Countries in these markets have increasingly adopted mobile banking and digital financial services to expand access to credit and reduce dependency on traditional banking systems. These innovations enhance resilience by increasing financial inclusion and broadening the borrower base.

Developed markets, on the other hand, demonstrate the importance of sophisticated financial infrastructure and regulatory frameworks. Advanced economies often benefit from robust institutions, comprehensive risk assessment methodologies, and well-capitalized financial systems. However, they also face challenges, such as addressing systemic risks arising from complex financial instruments and interconnected markets. For instance, lessons learned from the European debt crisis underscore the importance of maintaining fiscal discipline and addressing structural imbalances to sustain long-term financial health.

Collaboration between markets can further enhance resilience. Knowledge-sharing initiatives, joint research, and coordinated policy efforts enable countries to address common challenges and leverage collective expertise. For example, international organizations like the International Monetary Fund provide technical assistance and policy advice to help countries strengthen their financial systems. Such collaborations contribute to global financial stability and foster sustainable growth (Agarwala et al., 2021).

Sustaining long-term financial health also requires a forward-looking approach that considers emerging risks and opportunities. Climate change, technological disruption, and evolving demographic trends are reshaping the financial landscape, creating new challenges and demands for resilience. Institutions must adopt adaptive strategies that address these dynamics, such as incorporating environmental risk assessments into lending decisions or investing in digital transformation to enhance operational efficiency (Birindelli, Palea, Trussoni, & Verachi, 2020).

5. Conclusion and Recommendations

Periods of economic instability exacerbate credit risk, driven by factors such as interest rate fluctuations, inflationary pressures, and geopolitical tensions. While developed markets benefit from stronger institutional frameworks and diversified financial systems, they remain exposed to systemic risks and interconnected global markets. Conversely,

emerging markets face unique challenges, including dependency on foreign-denominated debt, limited fiscal space, and weaker governance structures, making them more susceptible to external shocks.

Diversification and contingency planning emerged as critical tools for managing risk, enabling institutions to spread exposures and prepare for potential disruptions. The role of technology in risk identification and monitoring has also proven transformative, with tools such as artificial intelligence and real-time analytics enhancing the ability of institutions to respond proactively to emerging risks. Finally, cross-market insights reveal the importance of leveraging innovative practices from both advanced and developing economies to address shared challenges.

To mitigate credit risk effectively, stakeholders across all markets must adopt comprehensive and forward-thinking strategies. Policymakers, financial institutions, and international organizations should collaborate to strengthen regulatory frameworks and ensure consistency across jurisdictions. Emerging markets, in particular, should focus on building robust financial infrastructure and improving governance to attract investment and enhance resilience to external shocks.

For financial institutions, adopting dynamic risk management practices is crucial. This includes implementing stress tests and scenario analysis to identify vulnerabilities, investing in advanced technology to enhance monitoring capabilities, and maintaining adequate capital and liquidity buffers to absorb potential losses. Institutions should also prioritize training programs to equip personnel with the skills necessary to navigate an evolving risk landscape.

Stakeholders in developed markets must address the challenges posed by interconnected global financial systems by fostering collaboration and transparency. This includes sharing best practices and coordinating responses to systemic risks. Meanwhile, emerging economies can benefit from diversifying funding sources, reducing reliance on foreign debt, and expanding access to domestic capital markets. Finally, international cooperation is vital to fostering resilience. Global financial stability depends on coordinated efforts to address shared risks, promote sustainable economic growth, and ensure that financial systems remain robust in the face of future challenges. By implementing these recommendations, stakeholders can strengthen resilience and contribute to a more stable and inclusive global economy.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

References

[1] Abiad, A., Bluedorn, J., Guajardo, J., & Topalova, P. (2015). The rising resilience of emerging market and developing economies. *World Development, 72*, 1-26.

[2] Afriyie, S. O., Yusheng, K., Kaodui, L., Caesar, A. E., & Owusu-Akomeah, M. (2018). Credit risk management system of commercial banks: an analysis of the process.

[3] Agarwala, M., Burke, M., Klusak, P., Mohaddes, K., Volz, U., & Zenghelis, D. (2021). Climate change and fiscal sustainability: Risks and opportunities. *National Institute Economic Review, 258*, 28-46.

[4] Alam, M. M., Said, J., & Abd Aziz, M. A. (2019). Role of integrity system, internal control system and leadership practices on the accountability practices in the public sectors of Malaysia. *Social Responsibility Journal, 15*(7), 955-976.

[5] Arner, D. W., Avgouleas, E., Busch, D., & Schwarcz, S. L. (2019). *Systemic risk in the financial sector: Ten years after the great crash*: McGill-Queen's Press-MQUP.

[6] Banks, E. (2016). *The credit risk of financial instruments*: Springer.

[7] Battiston, S., Dafermos, Y., & Monasterolo, I. (2021). Climate risks and financial stability. In (Vol. 54, pp. 100867): Elsevier.

[8] Birindelli, G., Palea, V., Trussoni, L., & Verachi, F. (2020). Climate Change: EU taxonomy and forward looking analysis in the context of emerging climate related and environmental risks. *Risk Management Magazine, 15*(3), 48-64.

[9] Bisht, D., Singh, R., Gehlot, A., Akram, S. V., Singh, A., Montero, E. C., . . . Twala, B. (2022). Imperative role of integrating digitalization in the firms finance: A technological perspective. *Electronics, 11*(19), 3252.

[10] Bouteille, S., & Coogan-Pushner, D. (2021). *The handbook of credit risk management: originating, assessing, and managing credit exposures*: John Wiley & Sons.

[11] Dept., F. S. (2019). *Global Financial Stability Report, April 2019: Vulnerabilities in a Maturing Credit Cycle*: International Monetary Fund.

[12] Duffie, D. (2018). Financial regulatory reform after the crisis: An assessment. *Management Science, 64*(10), 4835-4857.

[13] Elkhishin, S., & Mohieldin, M. (2021). External debt vulnerability in emerging markets and developing economies during the COVID-19 shock. *Review of Economics and Political Science, 6*(1), 24-47.

[14] FAHEEM, M. A. (2021). AI-Driven Risk Assessment Models: Revolutionizing Credit Scoring and Default Prediction.

[15] Galani, E. (2022). *Consequences of war on supply chain and relative disruptions.* Πανεπιστήμιο Πειραιώς,

[16] Gross, M., & Semmler, W. (2019). Inflation targeting, credit flows, and financial stability in a regime change model. *Macroeconomic Dynamics, 23*(S1), 59-89.

[17] Hassani, B., & Hassani, B. K. (2016). *Scenario analysis in risk management*: Springer.

[18] Kang, M., Wang, W., & Xiao, Y. (2018). Market imperfections, macroeconomic conditions, and capital structure dynamics: A cross-country study. *Emerging Markets Finance and Trade, 54*(1), 234-254.

[19] Karanasos, M., Yfanti, S., & Hunter, J. (2022). Emerging stock market volatility and economic fundamentals: the importance of US uncertainty spillovers, financial and health crises. *Annals of operations research, 313*(2), 1077-1116.

[20] Khan, K., Su, C.-W., Tao, R., & Umar, M. (2021). How do geopolitical risks affect oil prices and freight rates? *Ocean & Coastal Management, 215*, 105955.

[21] Majcher, P. (2015). Increased bank capital requirements: neither panacea nor poison. *Procedia Economics and Finance, 25*, 249-255.

[22] Matthews, A. (2021). *Contingency plan for ensuring food supply and food security.* Paper presented at the Workshop Report-JRC Conference, Luxemburgo.

[23] Mileris, R. (2015). The impact of macroeconomic environment on credit risk in commercial banks.

[24] Naili, M., & Lahrichi, Y. (2022). The determinants of banks' credit risk: Review of the literature and future research agenda. *International Journal of Finance & Economics, 27*(1), 334-360.

[25] Nuthalapati, A. (2022). Optimizing lending risk analysis & management with machine learning, big data, and cloud computing. *Remittances Review, 7*(2), 172-184.

[26] Obrenovic, B., Du, J., Godinic, D., Tsoy, D., Khan, M. A. S., & Jakhongirov, I. (2020). Sustaining enterprise operations and productivity during the COVID-19 pandemic:"Enterprise Effectiveness and Sustainability Model". *Sustainability, 12*(15), 5981.

[27] Onyiriuba, L. (2015). *Emerging market bank lending and credit risk control: Evolving strategies to mitigate credit risk, optimize lending portfolios, and check delinquent loans*: Academic Press.

[28] Packard, T., Gentilini, U., Grosh, M., O'Keefe, P., Palacios, R., Robalino, D., & Santos, I. (2019). *Protecting all: Risk sharing for a diverse and diversifying world of work*: World Bank Publications.

[29] Triggs, A., Kacaribu, F., & Wang, J. (2019). Risks, resilience, and reforms: Indonesia's financial system in 2019. *Bulletin of Indonesian Economic Studies, 55*(1), 1-27.

[30] Tung, F. (2020). Financing failure: bankruptcy lending, credit market conditions, and the financial crisis. *Yale J. on Reg., 37*, 651.

[31] Utz, R., Feyen, E., Vazquez Ahued, F., Nie, O., & Moon, J. (2020). Macro-Financial Implications of the COVID-19 Pandemic.

[32] Van Loo, R. (2018). Making innovation more competitive: The case of fintech. *UCLA l. Rev., 65*, 232.

[33] Varma, P., Nijjer, S., Sood, K., Grima, S., & Rupeika-Apoga, R. (2022). Thematic analysis of financial technology (Fintech) influence on the banking industry. *Risks, 10*(10), 186.

[34] Xiaoli, W., & Nong, N. B. (2021). Evaluating Big Data Strategies for Risk Management in Financial Institutions. *Journal of Computational Social Dynamics, 6*(3), 34-45.