Received: 20 November 2023; Revised: 15 December 2023; Accepted: 11 February 2024

DETERMINANTS OF RISK IN INDONESIAN ISLAMIC BANKING: AN EMPIRICAL INVESTIGATION

Sugeng Haryanto[1]
Retna Safriliana[2]
Siti Ridloah[3*]
Muhammad Umar Ariefudin[4]
Lidia Khusnul Khotimah[5]
[1,2,4,5]Universitas Merdeka Malang, Malang, Indonesia
[3]Universitas Negeri Semarang, Semarang, Indonesia
*[3]*Corresponding Email: siti.ridloah@mail.unnes.ac.id*

ABSTRACT - Islamic banking has witnessed significant growth globally, including in Indonesia, with expansions in both fund mobilization and financing activities. This study analyzes the determinants of risk in Indonesian Islamic banks from 2009 to 2022, focusing on the effects of financing-to-deposit ratio (FDR), financing growth, efficiency, company size, capital adequacy ratio (CAR), and third-party fund (DPK), on non-performing financing (NPF). Utilizing unbalanced panel data and multiple linear regression, the research finds that financing growth and efficiency have negligible effects on risk. In contrast, FDR, company size, CAR, and DPK significantly influence it. Higher FDR is linked to increased risk, while larger banks and higher CAR are associated with reduced risk. The results suggest that Islamic banks should balance financing and deposits to manage risk effectively and emphasize the importance of efficient operations and sustainable growth. This research is limited to the internal aspects of banks as determinants of FDR. Future research could examine external factors and alternative risk measures to deepen the understanding of risk in Islamic banking.
Keywords: Bank capital, Bank risk, Islamic Bank, and Non-performing financing

ABSTRAK – Determinan Risiko Perbankan Syariah di Indonesia: Suatu Kajian Empiris. *Perbankan syariah mengalami pertumbuhan yang signifikan secara global, termasuk di Indonesia, terutama dalam hal mobilisasi dana dan aktivitas pembiayaan. Studi ini menganalisis faktor-faktor penentu risiko pada perbankan syariah di Indonesia periode 2009 - 2022. Secara spesifik, kajian ini menguji pengaruh FDR, pertumbuhan pembiayaan, efisiensi, ukuran perusahaan, CAR dan Dana Pihak Ketiga (DPK) terhadap pembiayaan bermasalah. Dengan menggunakan data panel tidak seimbang (unbalance) dan regresi linier berganda, penelitian ini menemukan bahwa pertumbuhan pembiayaan dan efisiensi tidak memiliki pengaruh yang signifikan terhadap risiko. Sebaliknya, FDR, ukuran perusahaan, CAR, dan DPK memberikan pengaruh yang signifikan terhadapnya. FDR berkorelasi positif dengan peningkatan risiko, sementara ukuran perusahaan dan CAR berkorelasi negatif dengan pengurangan risiko. Kajian ini menyarankan agar bank-bank syariah menyeimbangkan antara pembiayaan dengan simpanan sehingga dapat mengelola risiko secara efektif dengan penekanan pada efisiensi operasional dan pertumbuhan berkelanjutan. Penelitian ini dibatasi pada aspek internal bank sebagai determinan FDR. Penelitian selanjutnya dapat mengkaji faktor-faktor eksternal dan ukuran risiko alternatif untuk memperdalam pemahaman tentang risiko dalam perbankan syariah.*
Kata Kunci: *Bank syariah, Modal bank, Risiko bank, dan Pembiayaan bermasalah.*

INTRODUCTION

Islamic banks have experienced significant growth in 2023. As of 2023, the market share of Islamic banks has reached 7.3% of the national banking industry (antaranews, 13 October 2023). This represents a substantial increase from 2019 when the market share of Islamic banks was around 5% (Haryanto, 2020). The rise in market share underscores the increasingly pivotal role of Islamic banks in the national economy. Islamic banks have become an integral part of the banking sector that supports MSMEs with their capital needs (Rosidi et al., 2021; Ertiyanto & Latifah, 2022; and Nihayah & Rifqi, 2022).

The development of Islamic banks has been evident in both fund-raising and financing activities. The growth of Third-Party Fund *(Dana Pihak Ketiga - DPK)* is largely attributed to the influx of low-cost funds, as demonstrated by Bank Syariah Indonesia (BSI). By September 2023, BSI's business savings, which constitute low-cost funds, had grown by 134.41% (Shadali, 2023). The expansion of DPK has prompted Islamic banks to increase their financing activities, aligning with their role as intermediary institutions. Rapid financing growth necessitates robust management to prevent problematic financing. Bank risk is known to affect bank performance (Haryanto, 2016; Majumder & Li, 2018; Scholtens & van't Klooster, 2019; Nguyen, 2019; Chen et al., 2021; and Hunjra et al., 2022), with higher risk potentially deteriorating bank performance.

As business entities, banks aim to optimize profits, which can be achieved by expanding fund distribution and reducing costs. Interest or profit-sharing remains the dominant component in enhancing bank profitability. Banks are expected to disburse funds expansively, but overly aggressive distribution can increase income at the cost of higher non-performing loans. Effective credit and financing management are crucial for both conventional and Islamic banks to mitigate risk.

Non-Performing Loans (NPL) or Non-Performing Financing (NPF) serve as indicators of the health of financing or loan portfolios. A higher NPL/NPF rate signifies increased credit (financing) risk for a bank (Iqbal, 2017; Putri et al., 2018; and Haryanto et al., 2021), which can impact the bank's profitability. Consequently, banks strive to maintain NPLs below the 5% maximum limit set by Bank Indonesia. NPL rates can fluctuate; some banks may exhibit high NPLs even in favorable economic conditions. However, during the Covid-19 pandemic, the economic downturn saw a relative decrease in bank NPLs, partly due to Bank Indonesia's policy of credit relaxation, which positively impacted non-performing loans. The fluctuations in bank NPLs have garnered interest from researchers.

A bank's NPL can be influenced by both internal and external factors. External factors, such as inflation and economic recessions (Firmansyah, 2015; Saputro et al., 2019; and Najiatun et al., 2020), are beyond the bank's control. Internal factors, however, can be managed by the bank's administration. Despite being controllable, non-performing loans can still occur, meaning that credit risk cannot be eliminated entirely but can be mitigated.

Banks with higher financing growth, as indicated by their DPK, demonstrate effective intermediation functions. Banks continually aim to boost their financing growth. However, while high financing growth can positively impact bank revenues, poor management of such growth can increase risk. Studies suggest that financing growth tends to elevate risk (Hanif, 2015; Saputro et al., 2019; Harizanto, 2020). The banking industry in Japan, for instance, showed that prior to the global crisis, credit growth positively affected credit risk, but this correlation turned negative post-crisis (Vithessonthi, 2016). Research by Fanani & Alvaribi (2013); Alihodžić & Ekşi (2018); Lestari & Sampurno (2022) indicates that credit growth negatively affects credit risk, while findings by Rokhim & Yanti (2014) and Pranata et al. (2021) suggest that credit growth does not impact credit risk.

The DPK is a crucial factor for banks to fulfill their intermediation role. Banks with substantial DPK are encouraged to channel larger funds, which increases the cost of funds and the potential for non-performing loans. Research by Firmansyah & Sam (2022) indicates that DPK negatively affects credit risk. Bank efficiency significantly influences competitiveness. More efficient banks can reduce lending rates, enhancing customers' ability to repay loans and thus reducing non-performing loans. Studies show that efficiency affects bank risk (Mosko & Bozdo, 2016; Wu et al., 2020), with research by Isnurhadi et al. (2021) indicating that higher efficiency can reduce bank risk. However, Terraza (2015) found that efficiency does not affect bank risk.

Larger banks, with more assets, are better positioned to leverage economies of scale and expand their business (Mailinda et al., 2018). However, if a bank cannot capitalize on economies of scale, it may incur higher costs. Research by

Demsetz & Strahan (1997), Kasman & Kasman (2016), and Liviawati et al. (2022) shows that larger company size can reduce bank risk, whereas findings by Hakenes & Schnabel (2011); Laeven et al. (2014); Laeven et al. (2016); and Chaibi (2016) indicate that larger assets can increase bank risk.

The Financing to Deposit Ratio (FDR) reflects the percentage of financing to DPK. A higher FDR suggests more aggressive financing efforts by banks, which can impact both performance and risk, including financing and liquidity risk. Studies have shown that LDR or FDR affects risk (NPL or NPF), with higher ratios tending to increase risk (Kamaludin et al., 2015; Tandiari, 2023). However, research by Sistiyarini & Poerwanti (2021) suggests that LDR does not affect credit risk.

This study addresses key gaps in financing risk research for Islamic banking in Indonesia. Existing literature presents conflicting results on credit growth's impact on risk, often neglecting the unique context of Indonesian Islamic banks, particularly pre-, during, and post-pandemic periods. Furthermore, while individual factors like FDR, financing growth, and efficiency have been explored, a comprehensive analysis of their combined influence on financing risk within the Islamic banking sector is lacking. This study aims to bridge these gaps by focusing on Indonesian Islamic banks and analyzing the interplay of these factors across different time periods.

It offers a unique perspective on financing risk in Islamic banks in Indonesia, considering their distinct characteristics compared to other banking systems. This study provides a temporal analysis, shedding light on the pandemic’s impact on the sector across different periods. Furthermore, by examining a comprehensive set of variables, it offers a nuanced understanding of the factors influencing financing risk in these banks.

This study is significant for policymakers and regulators as it informs strategies that ensure the stability and growth of Islamic banks in Indonesia. It also assists Islamic banks in developing effective risk management practices for long-term sustainability. Furthermore, the research contributes to academic knowledge by offering novel insights into the factors impacting financing risk in Islamic banks across diverse economic periods.

The structure of the article is as follows: It opens with an introduction that establishes the framework for the research. This is succeeded by a review of relevant literature, followed by a detailed account of the research methods employed. The next part presents the empirical results and explores their significance. The article wraps up with concluding remarks and suggestions.

LITERATURE REVIEW

Credit Risk and Bank Performance

Credit remains the predominant source of bank revenue, despite banks diversifying their income streams to enhance profitability. Banks are tasked with the ability to disburse substantial loans. The LDR, or FDR for Islamic banks, represents the proportion of loans granted to deposits. A higher LDR indicates a greater volume of DPK deployed by the bank in the form of credit. While banks with elevated lending levels tend to augment their revenue, the associated risk escalates correspondingly (Pertiwi et al., 2020, Nisak & Ibrahim, 2014). An unchecked increase in credit, absent robust credit management, can precipitate non-performing loans. Effective credit risk management is crucial for ensuring sustainable growth in a bank's operations (Aebi et al., 2012; Afriyie et al., 2018; Boateng, 2019; Munangi & Sibindi, 2020).

Credit risk, defined as the debtor's failure to fulfill repayment obligations as agreed upon, is the most significant risk facing banks (Putri et al., 2018; Natasha et al., 2019; Syamlan & Jannah, 2019; Budianto, 2023). Notably, financing risk accounts for the majority of Islamic bank failures (Muarif et al., 2021, Nadia et al., 2019). Credit risk also precipitates market and liquidity risks (Al-Wesabi & Ahmad, 2013), thereby substantially influencing bank performance (Ekinci & Poyraz, 2019; Li et al., 2019; Saleh & Abu Afifa, 2020).

Extensive research has been conducted to empirically investigate the determinants of bank risk, including that of Islamic banks. Given the bank's role as an intermediary, and lending as a primary income source, credit or financing risk is a focal point for researchers. This risk is often manifested in the form of non-performing loans and is commonly proxied by NPLs or NPFs. The Z-Score is also utilized by some researchers as a measure of risk. Determinants of bank risk may originate from within the bank (internal) or from the external environment (Purnamasari & Musdholifah, 2018; Syamlan & Jannah, 2019; Widowati et al., 2021; Soehaditama et al., 2023).

Berger & Udell (1990) found a positive correlation between collateral and various forms of risk, including borrower risk, loan risk, and bank risk. Haq &

Heaney (2012) examined the banking industry in Western Europe and discovered that bank capital and concentration levels have a negative impact on bank risk, while operating leverage and bank size have a positive impact. Conversely, GDP growth was found to have no significant effect on bank risk. Us (2017) investigated the impact of the global crisis on NPLs in Turkey's banking sector, revealing that the crisis significantly influenced NPL dynamics, with bank capital affecting credit risk differently across banks of varying sizes. Additionally, Srivastav & Hagendorff (2016) analyzed the influence of Good Corporate Governance (GCG) on bank risk.

Based on aforementioned literature, the hypotheses of this study are formulated as follows:

H_1 : FDR positively affects Non-Performing Financing.
H_2 : Financing growth has a positive effect on Non-Performing Financing.
H_3 : Efficiency negatively affects Non-Performing Financing.
H_4 : Company size negatively affects Non-Performing Financing.
H_5 : CAR negatively affects Non-Performing Financing.
H_6 : DPK has a positive effect on Non-Performing Financing.

METHODOLOGY

This study is of a quantitative descriptive nature, examining the impact of credit growth, DPK, efficiency, bank size, and LDR on NPF. The data employed in this research are derived from the annual reports of Islamic banks operating in Indonesia. The dataset is unbalanced, comprising annual report data from each Islamic bank. The sample consists of 10 Islamic banks, with the observation period extending from 2009 to 2022.

The dependent variable in this study is NPF, while the independent variables include FDR, financing growth, efficiency, company size, CAR, and DPK. Efficiency is proxied by the Operating Expenses to Operating Income *(Beban Operasional terhadap Pendapatan Operasional - BOPO)* ratio. The size of the company is represented by bank's total assets. The technique employed for data analysis is multiple linear regression.

The model formulated to assess the impact of FDR, financing growth, efficiency, company size, CAR, and DPK on the risk profile of Islamic banks is as follows:

$$NPF = \beta0 + \beta1FDR + \beta2Financing\ Growth + \beta3BOPO + \beta4Size + \beta5CAR + \beta6DPK + \varepsilon$$

Where:

NPF: Non-Performing Financing
FDR: Financing to Deposits Ratio
Financing Growth: Year-over-year increase in financing
BOPO: *Beban Operasional terhadap Pendapatan Operasional*, which is the Ratio of operating expenses to operating income
Size: Logarithm of the bank's total assets, representing company size
CAR: Capital Adequacy Ratio
DPK: *Dana Pihak Ketiga* is the Third-Party Fund or Depositors' Fund

RESULTS AND DISCUSSIONS

Research Results

This study focuses on Islamic banks in Indonesia. Table 1 presents a summary of the data based on the findings from the analysis conducted. The study reveals that the average NPF for Islamic banks in Indonesia from 2009 to 2022 stands at 2.29%, which is below the threshold for banking health regulations. Notably, Bukopin Bank's NPF exceeded 5% in 2016 and 2017, indicating elevated risk levels. High NPFs are influenced by both internal bank factors and external factors, such as economic downturns.

The FDR reflects the extent to which a bank utilizes its DPK for financing. Traditionally, a bank's income is heavily dependent on such funding. Islamic banks aim to boost financing distribution to increase profit-sharing income. However, an elevated FDR may adversely affect bank liquidity. The findings indicate that the average FDR for banks is 89.7%, suggesting the percentage of deposits are allocated to financing.

As intermediaries, the financing activities of Islamic banks demonstrate effective functioning of their intermediation role. The growth in financing distribution by Islamic banks is recorded at 2.82%. There is considerable variation in the growth rates of financing distribution among Islamic banks. A high growth rate in financing indicates a bank's capacity to capture a significant share of the investment market. This growth reflects the increasing ability of Islamic banks to capture a larger share of the national credit (financing) market.

Efficiency is a critical aspect of banking operations, and it can be assessed using the BOPO ratio. A higher BOPO ratio signifies lower efficiency. The average BOPO for Islamic banks is 84.69%, indicating that to generate 1 Rupiah in income, Islamic banks incur an expense of 0.84693 Rupiah. The asset size of a bank is indicative of its overall size. Theoretically, bank size is proxied by the logarithm of total assets. The results show an average value of 8.51%. A higher value suggests greater assets, which potentially enables the bank to access a larger market. Furthermore, banks with substantial assets can exploit economies of scale to reduce costs and diversify their product offerings.

CAR is an indicator of a bank's performance, reflecting the size of its capital base. A higher CAR indicates better capitalization and a healthier bank. The average CAR for Islamic banks is 31.86%, which is above the minimum regulatory requirement of 8%, signifying that the capitalization of Islamic banks is robust. The CAR is essential for absorbing potential losses.

Table 1. Data Description

Variable	Average	Highest	Lowest	Standard Deviation
NPF	2.29	7.85	0.10	2.10
FDR	89.70	100.62	77.90	6.55
Financing Growth	2.82	7.85	0.10	2.10
BOPO	84.69	109.62	58.07	14.18
Bank Size	8.51	9.96	6.41	0.88
CAR	31.86	76.40	11.10	16.81
DPK (in billions)	4,455.65	9,843.30	194.70	2,697.98

(Source: Data Processed, 2023)

The analysis of regression results in Table 2 indicates that financing growth and efficiency, as measured by BOPO, do not significantly impact NPF. Conversely, FDR, CAR, company size, and DPK do influence NPF. Specifically, FDR and DPK exhibit a positive relationship with NPF, while company size and CAR are inversely related to NPF.

Table 2. Regression Results

	Coefficients	Standard Error	t Stat	P-value
Intercept	12.739	11.449	1.113	0.281
FDR	0.173	0.054	3.206	0.005*
Financing Growth	-2.556	2.634	-0.970	0.346

	Coefficients	Standard Error	t Stat	P-value
BOPO	-0.007	0.027	-0.245	0.809
Company Size	-3.280	1.675	-1.959	0.066**
CAR	-0.049	0.024	-2.048	0.056**
DPK	0.002	0.001	2.095	0.051**
R^2	0.543			
R^2_{adj}	0.523			
Prob. $F_{Stat.}$	0.020			

Note: * significant at the 5% level, ** significant at the 10% level

Discussions

The Effect of FDR and Financing Growth on NPF

The study's results indicate that the FDR has a positive impact on NPF. FDR measures the extent to which deposits can be converted into financing for the community. A higher FDR suggests that a larger proportion of deposits is being utilized for financing. While this can potentially increase a bank's income, it may also elevate the risk of financing if not managed properly. The positive relationship between FDR and NPF found in this study suggests that an increase in FDR is likely to heighten financing risk, as evidenced by a rise in NPF. This uptick in NPF could be attributed to external factors beyond the bank's control, such as economic downturns or business issues faced by customers. These findings align with the research by Astrini et al. (2018) and Pradana (2018), but they do not corroborate the results of Destiana (2018), Prastiwi & Anik (2020), and Suprayitno & Hardiani (2021), where the Loan to Deposit Ratio (LDR) was found to have no effect on Non-Performing Loans (NPL). Contrarily, the findings are at odds with Rahmah & Armina (2020), who reported a negative effect of FDR on NPF.

The study also reveals that financing growth does not significantly influence NPF, suggesting that Islamic banks have managed their financing effectively. Despite the economic challenges posed by the Covid-19 pandemic, the financing risk remained relatively controlled, supported by Bank Indonesia's credit relaxation and restructuring policies. This finding is consistent with the research by Kusuma & Haryanto (2016) and Rosita & Musdholifah (2018), which found no significant effect of financing growth on NPF. However, this conclusion diverges from the findings of Maghfiroh (2017) and Saputro et al. (2019).

The Effect of BOPO on NPF

The study found that BOPO, a proxy for efficiency, does not significantly affect NPF. This could be because the efficiency gains within the bank do not directly translate to the profit-sharing proportion with customers. Islamic banks have predetermined profit-sharing ratios, and while bank efficiency may vary, these ratios remain constant. Additionally, financing risk often stems from the debtor's side, despite the bank's thorough assessment and monitoring processes. These results support the findings of Destiana (2018), where efficiency was not a significant factor in NPF, but they do not align with the findings of Suprayitno & Hardiani (2021).

The Effect of Company Size on NPF

The study indicates that larger company size, as measured by asset size, has a negative impact on NPF. This suggests that larger banks have a lower risk of encountering problematic financing. Larger banks can leverage economies of scale to reduce costs, which may positively influence profit-sharing terms and enhance customers' repayment capabilities. Furthermore, a larger bank typically has an extensive network, which can facilitate business development for both the bank and its customers. This finding is in agreement with the research by Prastiwi & Anik (2020). However, it contradicts the findings of Pradana (2018), which reported no significant effect of company size on NPF, and Purnamasari & Musdholifah (2018), which found a positive relationship between company size and NPF.

The Effect of CAR on NPF

The results demonstrate that CAR has a negative effect on NPF, indicating that a higher CAR is associated with a lower likelihood of problematic financing. CAR serves as a buffer for banks to cover potential risks. A robust CAR allows banks to support their financing activities, even in challenging times. These findings are consistent with the research by Kamaludin et al. (2015), which found that CAR negatively affects credit risk. However, they do not support the findings of Rahmah & Armina (2020), where CAR was found to have a positive effect on NPF, nor do they align with Purnamasari & Musdholifah (2018) and Suprayitno & Hardiani (2021), which reported no significant impact of CAR on NPF.

The Effect of DPK on NPF

The research shows that DPK positively influences NPF, suggesting that an increase in collected funds (DPK) correlates with a higher risk of financing distribution (NPF). As banks accumulate more deposits, they face higher fund costs, which necessitates efficient allocation of these funds into financing to avoid idle capital. Banks with substantial deposits may relax their financing analysis, driven by the need to deploy these funds. This finding is in line with the research by Gunawan & Sudaryanto (2016) and Khatimah et al. (2020), which found that DPK affects credit risk.

The implications of this research are significant for Islamic banking operations and risk management. The positive relationship between FDR and NPF highlights the necessity of a balanced approach to financing strategies, emphasizing both growth and risk mitigation. It advocates for the implementation of effective risk management practices and the maintenance of a robust CAR for enduring sustainability. For policymakers, the research accentuates the importance of judicious regulatory frameworks that promote sustainable growth while preventing excessive risk-taking in the Islamic banking sector. For researchers, these findings serve as a basis for further exploration into the specific mechanisms influencing NPF and the identification of effective risk management strategies pertinent to Islamic banking.

CONCLUSIONS

This study investigated the factors influencing NPF in Indonesian Islamic banks from 2009 to 2022. Key findings underscore the importance of a balanced approach to growth, risk management, and capital adequacy for sustainable banking practices. The FDR has a positive influence on NPF, indicating a higher risk with an increasing FDR and emphasizing the need for effective risk management strategies. Company size and CAR negatively impact NPF, with larger banks and a strong CAR mitigating risk. Financing growth and the BOPO ratio do not significantly affect NPF, suggesting that Islamic banks manage efficiently, despite BOPO's limitations as a sole measure of efficiency. DPK have a positive impact on NPF, raising concerns about the potential for loosened lending practices in the face of large deposit volumes, thus underlining the importance of prudent lending and robust risk management.

These findings significantly enhance our understanding of NPF in Islamic banking and provide guidance for policy interventions, risk management, and future research aimed at sustainable growth and financial stability in the Indonesian Islamic banking sector. A key limitation of this study is its exclusive focus on internal bank factors as determinants of NPF. Future research could be enriched by incorporating external factors such as economic conditions and industry trends to provide a more holistic perspective. Additionally, exploring a wider range of internal bank variables beyond those included in this study, alongside alternative risk measurement tools like the Z-Score, could offer deeper insights into the dynamics of NPF within Indonesian Islamic banking.

REFERENCES

Aebi, V., Sabato, G., & Schmid, M. (2012). Risk management, corporate governance, and bank performance in the financial crisis. *Journal of Banking and Finance*, *36*(12), 3213–3226.

Afriyie, S. O., Yusheng, K., Kaodui, L., Caesar, A. E., & Akomeah, M. O. (2018). Credit Risk Management System of Commercial Banks: an Analysis of the Process. *European Journal of Accounting, Auditing and Finance Research*, *6*(6), 1–11.

Alihodžić, A., & Ekşi, I. H. (2018). Credit growth and non-performing loans: Evidence from Turkey and some Balkan countries. *Eastern Journal of European Studies*, *9*(2), 229–249.

Al-Wesabi, H. A. H., & Ahmad, N. H. (2013). Credit Risk of Islamic Banks in GCC Countries. *International Journal of Banking and Finance*, *10*(2), 95-112.

Antaranews. (2013). https://www.antaranews.com/berita/3772113/ojk-pangsa-pasar-perbankan-syariah-indonesia-tumbuh-jadi-73-persen, 13 Oct 2013, retrieved 15 Oct 2023

Astrini, K. S., Suwendra, I. W., & Suwarna, I. K. (2018). Pengaruh CAR, LDR dan Bank Size Terhadap NPL pada Lembaga Perbankan yang Terdaftar di Bursa Efek Indonesia. *E-Journal Bisma Universitas Pendidikan Ganesha Jurusan Manajemen*, *4*(1), 34–41.

Berger, A. N., & Udell, G. F. (1990). Collateral, loan quality and bank risk. *Journal of Monetary Economics*, *25*(1), 21–42.

Boateng, K. (2019). Credit Risk Management and Performance of Banks in Ghana: the “Camels” Rating Model Approach. *International Journal of Business and Management Invention*, *8*(2), 41–48.

Budianto, E. W. H. (2023). Research Mapping on Credit Risk in Islamic and Conventional Banking. *AL-INFAQ: Jurnal Ekonomi Islam*, *14*(1), 73–86. https://www.jurnalfai-uikabogor.org/index.php/alinfaq/article/view/1862

Chaibi, H. (2016). Determinants of Problem Loans: Non-performing Loans vs. Loan Quality Deterioration. *International Business Research*, *9*(10), 86-93.

Chen, W. Da, Chen, Y., & Huang, S. C. (2021). Liquidity risk and bank performance during financial crises. *Journal of Financial Stability*, *56*(June), 1-23.

Demsetz, R. S., & Strahan, P. E. (1997). Diversification, Size, and Risk at Bank Holding Companies. *Journal of Money, Credit and Banking*, *29*(3), 300-313.

Destiana, R. (2018). Determinan Pembiayaan Bermasalah Pada Bank Syariah Di Indonesia. *Jurnal Riset Keuangan Dan Akuntansi*, *3*(2), 53–63.

Ekinci, R., & Poyraz, G. (2019). The Effect of Credit Risk on Financial Performance of Deposit Banks in Turkey. *Procedia Computer Science*, *158*, 979–987

Ertiyanto, W. F., & Latifah, F. N. (2022). Peran Bank Syariah Terhadap Pembiayaan Umkm Di Masa Pandemi Covid-19. *Jurnal Tabarru’: Islamic Banking and Finance*, *5*(1), 199–206.

Fanani, Z., & Alvaribi, M. N. Q. (2013). Faktor–Faktor Penentu Risiko Kredit. *Iqtishadia*, *6*(2), 293–317.

Firmansyah, F., & Sam, M. S. (2022). Faktor-Faktor Yang Mempengaruhi Non-Performing Loan Pada Bank BUMN di Indonesia Tahun 2010-2019. *Jurnal Sosial Ekonomi Dan Humaniora*, *8*(2), 193–199.

Firmansyah, I. (2015). Determinant of Non Performing Loan: the Case of Islamic Bank in Indonesia. *Buletin Ekonomi Moneter Dan Perbankan*, *17*(2), 241–258.

Gunawan, A., & Sudaryanto, B. (2016). Analisis Pengaruh Performing, Size, Inefisiensi, Capital, dan Dana Pihak Ketiga Terhadap Non Performing

Loan (Studi Pada Bank Umum Konvensional Go Public di Indonesia periode 2011-2015). *Diponegoro Journal Of Management*, *5*(3), 1–13.

Hakenes, H., & Schnabel, I. (2011). Bank size and risk-taking under Basel II. *Journal of Banking and Finance*, *35*(6), 1436–1449.

Hanif, R. A. (2015). Pengaruh Pertumbuhan Kredit, Net Interest Margin, Rasio Modal Dan Ukuran Perusahaan Terhadap Risiko Kredit Pa. *Pekbis Jurnal*, *7*(3), 163–173.

Haq, M., & Heaney, R. (2012). Factors determining European bank risk. *Journal of International Financial Markets, Institutions and Money*, *22*(4), 696–718.

Harizanto, H. (2020). Pengaruh Loan Loss Provision, Financing Growth, Biaya Operasional dan Return on Asset Terhadap Non Performing Financing di Perbankan Syariah Indonesia. *Journal of Finance and Islamic Banking*, *2*(2), 205–219.

Haryanto, S. (2016). Profitability Identification of National Banking Through Credit , Capital , Capital Structure , Efficiency , and Risk Kredit, Permodalan, Struktur Modal, Efisiensi Dan Tingkat. *Jurnal Dinamika Manajemen*, *7*(57), 11–21.

Haryanto, S. (2020). Efficiency, Risk and Profitability of Islamic Banks: Under Pressure in the Competition of the Banking Industry in Indonesia. *KnE Social Sciences*, *2020*, 474–482.

Haryanto, S., Aristanto, E., Assih, P., Aripin, Z., & Bachtiar, Y. (2021). Loan to Deposit Ratio , Risiko Kredit , Net Interest Margin dan Profitabilitas Bank. *AFRE Accounting and Financial Review*, *4*(1), 146–154.

Hunjra, A. I., Mehmood, A., Nguyen, H. P., & Tayachi, T. (2022). Do firm-specific risks affect bank performance? *International Journal of Emerging Markets*, *17*(3), 664–682.

Iqbal, M. (2017). Perbandingan Pengelolaan Risiko Kredit Perbankan Syariah dan Perbankan Konvensional. *Jurnal Keuangan Dan Perbankan*, *21*(3), 481-497.

Isnurhadi, I., Adam, M., Sulastri, S., Andriana, I., & Muizzuddin, M. (2021). Bank Capital, Efficiency and Risk: Evidence from Islamic Banks. *Journal of Asian Finance, Economics and Business*, *8*(1), 841–850.

Kamaludin, K., Darmansyah, D., & Usman, B. (2015). Determinan Non Performing Loan (NPL) pada Industri Perbankan (Bukti Empiris Perusahaan Go Publik di Bursa Efek Indonesia). *Jurnal Aplikasi Manajemen*, *13*(4), 547-556.

Kasman, A., & Kasman, S. (2016). Bank size, competition and risk in the Turkish banking industry. *Empirica*, *43*(3), 607–631.

Khatimah, H., Isnaeni, N., & Wijaya, R. (2020). Pengaruh BOPO (Biaya Operasional Per Pendapatan Operasional), DPK (Dana Pihak Ketiga) Dan CAR (Capital Adequacy Ratio) Terhadap NPF (Non Performing Financing) Pada PT. Bank Syariah Mandiri di Indonesia. *Najaha Iqtishod: Journal of Islamic Economic and Finance*, *1*(1), 20–32.

Kusuma, E. C., & Haryanto, A. M. (2016). Analisis Pengaruh Variabel Kinerja bank (CAR, ROA, BOPO dan LDR), Serta Pertumbuhan Kredit Dan Kualitas Kredit Terhadap Non Performing Loan (NPL). *Diponegoro Journal of Management*, *5*(2015), 1–13.

Laeven, L., Ratnovski, L., & Tong, H. (2014). *Bank Size and Systemic Risk. IMF Staff Discussion Note,* (4), 4.

Laeven, L., Ratnovski, L., & Tong, H. (2016). Bank size, capital, and systemic risk: Some international evidence. *Journal of Banking and Finance*, *69*(June), S25–S34.

Lestari, D. D., & Sampurno, R. D. (2022). Analisis Pengaruh Loan Growth, CAR, NFC dan Bank Size Terhadap NPL Pada Masa Pandemi Covid-19 (Studi pada Bank Umum Konvensiona yang Tercatat di Bursa Efek Indonesia Periode Q4 2019 – Q2 2021). *Diponegoro Journal of Management*, *11*(4), 1–15.

Li, K., Niskanen, J., & Niskanen, M. (2019). Capital structure and firm performance in European SMEs: Does credit risk make a difference? *Managerial Finance*, *45*(5), 582–601. https://doi.org/10.1108/MF-01-2017-0018

Liviawati, L., Putri, G. E., & Siregar, I. F. (2022). Analisis Pengaruh Faktor Internal Dan Eksternal Terhadap Non Performing Loan Pada Bank Pembangunan Daerah. *Jurnal Daya Saing*, *8*(1), 39–46.

Maghfiroh, S. (2017). Analisis Pengaruh Bank Specific Variables (BSV), Struktur Pembiayaan dan Struktur Kepemilikan Terhadap Risiko Pembiayaan Bank Umum Syariah di Indonesia. (Doctoral dissertation), UIN Sunan Kalijaga Yogyakarta.

Mailinda, R., Ibrahim, A., & Zainul, Z. R. (2018). Pengaruh Leverage, Likuiditas dan Ukuran Perusahaan terhadap Profitabilitas pada BNI Syariah di Indonesia Periode 2015-2017. *Jurnal Ilmiah Mahasiswa Ekonomi Manajemen, 3*(4).

Majumder, M. T. H., & Li, X. (2018). Bank risk and performance in an emerging market setting: the case of Bangladesh. *Journal of Economics, Finance and Administrative Science, 23*(46), 199–229.

Mosko, A., & Bozdo, A. (2016). Modeling the Relationship between Bank Efficiency, Capital and Risk in Albanian Banking System. *Procedia Economics and Finance, 39*(November 2015), 319–327.

Muarif, H., Ibrahim, A., & Amri, A. (2021). Likuiditas, Kecukupan Modal, Pembiayaan Bermasalah dan Pengaruhnya terhadap Profitabilitas Bank Umum Syariah di Indonesia Periode 2016-2018. *JIHBIZ: Global Journal of Islamic Banking and Finance., 3*(1), 36-55.

Munangi, E., & Sibindi, A. B. (2020). An empirical analysis of the impact of credit risk on the financial performance of South African banks. *Academy of Accounting and Financial Studies Journal*, *24*(3), 1–15.

Nadia, S., Ibrahim, A., & Jalilah, J. (2019). Analisis Hambatan Pertumbuhan Perbankan Syariah di Indonesia (Kajian Terhadap Perbankan Syariah Di Aceh). *JIHBIZ: Global Journal of Islamic Banking and Finance.*, *1*(2), 153-176.

Najiatun, N., Sanusi, M., Rahman, M., & Herianingrum, S. (2020). Analisis Variabel Makroekonomi Terhadap NPF Perbankan Syariah di Indonesia. *Jurnal Ekonomi*, *24*(3), 335-349.

Natasha, A., Prastyo, D. D., & Suhartono. (2019). Credit scoring to classify consumer loan using machine learning. *AIP Conference Proceedings*, *2194.*

Nguyen, K. N. (2019). Revenue Diversification, Risk and Bank Performance of Vietnamese Commercial Banks. *Journal of Risk and Financial Management*, *12*(3), 138-159.

Nihayah, A. Z., & Rifqi, L. H. (2022). Kontribusi Perbankan Syariah terhadap Permodalan UMKM Selama Pandemi Covid-19. *Jurnal Ecodemica: Jurnal Ekonomi, Manajemen Dan Bisnis*, *6*(2), 183–194.

Nisak, B., & Ibrahim, A. (2014). Analisis Manajemen Risiko Pembiayaan Musyarakah Pada Baitul Qiradh Bina Insan Mandiri Banda Aceh. *Share: Jurnal Ekonomi dan Keuangan Islam, 3*(1).

Pertiwi, R. E., Syaukat, Y., & Rachmina, D. (2020). Faktor Yang Memengaruhi Kredit Bermasalah Bank Konvensional Dan Syariah Di Indonesia. *Jurnal Aplikasi Bisnis Dan Manajemen*, *6*(1), 118–127.

Pradana, M. N. R. (2018). Pengaruh Likuiditas dan Variabel Eksternal Terhadap Non Performing Financing Pada Bank Syariah. *Eksis: Jurnal Riset Ekonomi Dan Bisnis*, *13*(2), 131–144.

Pranata, R. M., Nugraha, N., & Waspada, I. (2021). Bagaimana Risiko Kredit Pada Masa Awal Pandemic? *Buana Ilmu*, *6*(1), 36–48.

Prastiwi, I. E., & Anik, A. (2020). The Impact of Credit Diversification on Credit Risk and Performance of Indonesian Banks. *Global Review of Islamic Economics and Business*, *8*(1), 013-021.

Purnamasari, A. E., & Musdholifah, M. (2018). Analisis Faktor Eksternal dan Internal Bank terhadap Risiko Pembiayaan Bank Umum Syariah di Indonesia Periode 2012-2015. *BISMA (Bisnis Dan Manajemen)*, *9*(1), 13-25.

Putri, E. L., Haryanto, S., & Firdaus, R. M. (2018). Mampukah Good Corporate Governance dan Risiko Kredit Sebagai Prediktor Financial Distress? *AFRE (Accounting and Financial Review)*, *1*(1), 26–35.

Rahmah, A. Z., & Armina, S. H. (2020). Macro and micro determinants of the non-performing finance: The case of Indonesian Islamic bank. *Jurnal Ekonomi & Keuangan Islam*, *6*(1), 34–41.

Rokhim, R., & Yanti, M. I. S. M. (2014). Risiko NPL Kredit Bank Pembangunan Daerah sebagai Regional Champion. *Jurnal Keuangan Dan Perbankan*, *18*(1), 120–129.

Rosidi, A., Prastyo, H., & Zusrony, E. (2021). Peranan Perbankan Syariah Dalam Pemberdayaan UMKM Sebagai Upaya Peningkatan Kualitas Hidup Masyarakat Kota Salatiga. *Jurnal Ilmiah Ekonomi Islam*, *7*(2), 1068–1075.

Rosita, M., & Musdholifah, M. (2018). Pengaruh Makroekonomi, Capital Adequacy Ratio, Loan To Deposit Ratio dan Pertumbuhan Kredit terhadap Non Performing Loan pada Bank Asing di Indonesia Periode 2013-2014. *BISMA (Bisnis Dan Manajemen)*, *8*(2), 124-143.

Saleh, I., & Abu Afifa, M. (2020). The effect of credit risk, liquidity risk and bank capital on bank profitability: Evidence from an emerging market. *Cogent Economics and Finance, 8*(1), 1-13.

Saputro, A. R., Sarumpaet, S., & Prasetyo, T. J. (2019). Analisa Pengaruh Pertumbuhan Kredit, Jenis Kredit, Tingkat Bunga Pinjaman Bank Dan Inflasi Terhadap Kredit Bermasalah. *Ekspansi: Jurnal Ekonomi, Keuangan, Perbankan Dan Akuntansi*, *11*(1), 1-12.

Scholtens, B., & van't Klooster, S. (2019). Sustainability and bank risk. *Palgrave Communications, 5*(1), 1–8.

Shadali. (2023). https://www.rri.co.id/keuangan/424874/market-share-perbankan-syariah-terus-meningkat-laba-bsi-tumbuh-31. Retrieved 31 Oct 2023

Sistiyarini, E., & Poerwanti, R. (2021). Determinan Kredit Bermasalah Pada Bank Devisa Di Indonesia. *Eqien: Jurnal Ekonomi Dan Bisnis, 8*(2), 179-187.

Soehaditama, J. P., Machdar, N. M., & Manurung, A. H. (2023). Determinant Banking Credit Risk Management. *Indonesian Journal of Business Analytics*, *3*(4), 1105–1112.

Srivastav, A., & Hagendorff, J. (2016). Corporate Governance and Bank Risk-taking. *Corporate Governance: An International Review*, *24*(3), 334–345.

Suprayitno, E., & Hardiani, R. M. (2021). A spatial analysis of non-performance financing determinants in Islamic banks in Indonesia. *Jurnal Ekonomi & Keuangan Islam*, *7*(2), 189–205.

Syamlan, Y. T., & Jannah, W. (2019). the Determinant of Credit Risk in Indonesian Islamic Commercial Banks. *Share: Jurnal Ekonomi Dan Keuangan Islam, 8*(2), 181–206.

Tandiari, S. P. (2023). Determinan NPL Bank Umum Di Indonesia Era Pandemi Covid-19. *Contemporer Studies in Economic, Finance and Banking*, *2*(3), 392–407.

Terraza, V. (2015). The Effect of Bank Size on Risk Ratios: Implications of Banks' Performance. *Procedia Economics and Finance*, *30*(15), 903–909.

Us, V. (2017). Dynamics of non-performing loans in the Turkish banking sector by an ownership breakdown: The impact of the global crisis. *Finance Research Letters*, *20*, 109–117.

Vithessonthi, C. (2016). Deflation, bank credit growth, and non-performing loans: Evidence from Japan. *International Review of Financial Analysis*, *45*, 295–305.

Widowati, C., Ninggar, N. D., & Wibowo, R. A. (2021). Determinan Risiko Bank Di Indonesia. *Journal of Applied Managerial Accounting*, *5*(1), 32–49.

Wu, J., Chen, L., Chen, M., & Jeon, B. N. (2020). Diversification, efficiency and risk of banks: Evidence from emerging economies. *Emerging Markets Review*, *45*(July), 1-29.