

The Effect of Credit Risk, Liquidity Risk, and Bank Capital on Bank Profitability During the COVID-19

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Abstract

This research aims to examine the impact of credit risk, liquidity risk, and bank capital on profitability banks in Indonesia and Malaysia during the global economic crisis of Covid-19 using panel regression analysis methods by E-views software. The research sample was 232 observational data for Indonesian banking and 64 observational data for Malaysian banking that were gained with purposive sampling method from 2020-2021 quarterly. The results of this study: are credit risk has a significant and negative impact on the profitability of Indonesian banks but has no effect on the profitability of Malaysian banks; liquidity risk has a significant and positive impact on the profitability of Indonesian banks but has no effect on the profitability of Malaysian banks; and bank capital does not affect the profitability of Indonesian and Malaysian banks.

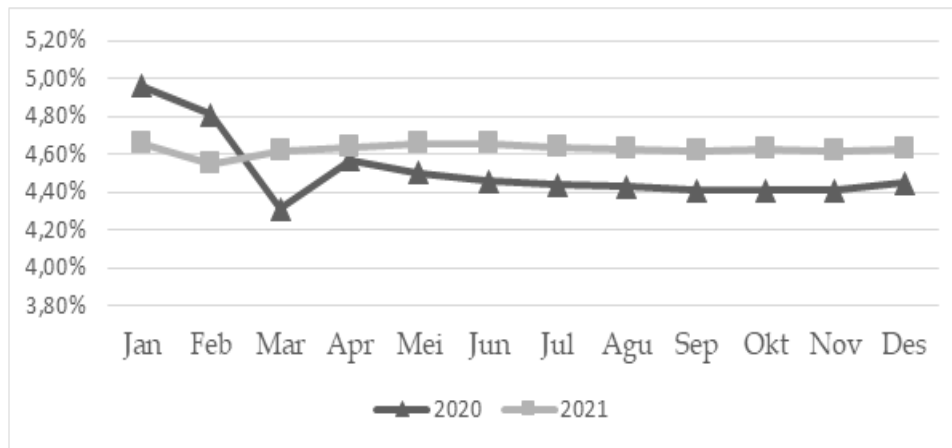
Keywords: banking profitability, bank capital, credit risk, covid-19, liquidity risk

INTRODUCTION

The Covid-19 pandemic has caused the economic crises and Indonesia has been listed as one of the countries infected by the Covid-19 pandemic since March 2020 (Fadli, 2021). The banking sector is one of the most vulnerable sectors because the majority of economic activity is linked directly or indirectly to the bank (Banna & Alam, 2021). An economic crisis produces chaos and potentially brings great losses to the banking system because the banking industry has a big risk of declining profitability, especially in profitability (Abdelaziz, *et al*, 2020; Banna and Alam, 2021).

The emergence of the pandemic Covid-19 brings decreased profitability growth in Indonesia. Based on Statistik Perbankan Indonesia 2021, the Net Interest Margin (NIM) ratio

of conventional banks in Indonesia was 4.8-4.9% in January and February 2020 (before the pandemic), but decreased to 4.3% since March 2020. During April 2020 until December 2021, the NIM ratio couldn't back to normal to be the same as that before the pandemic. The detailed fluctuation of the NIM ratio is presented in figure 1.



Source: Bank Indonesia, 2021

Figure 1. Net Interest Margin Ratio Fluctuation on Indonesian Conventional Banks

Several studies were conducted to examine the effect of credit risk, liquidity risk and bank capital on bank profitability especially during global economic crisis in 2018 (Adelopo, *et al.*, 2018; Rossi *et al.*, 2018; Abbas, *et al.*, 2019), but there are still lack of study in global economic crisis due to the Covid-19 pandemic. The existed research were focused on Mena region (Abdelaziz, *et al.*, 2020) and developing countries such as Uganda (Katusiime, 2021).

This study is conducted on commercial banks in ASEAN region as one of the largest economic regions in the world. It addresses commercial banks in especially Indonesia and Malaysia since there are similarities on the banking sector in the two countries such as geographical location, economic, socio-political aspects, and banking political economy (Prasetyo, Pantas, Ashar, & Pertiwi, 2020; Samryn, 2022). Both countries develop dual banking system: conventional bank and sharia bank. Several studies has been conducted to

examine the effects of profitability on Indonesian and Malaysian banks, but most of them focused on Islamic banks (S. Karim et al., 2021; Rahmi & Sumirat, 2021). Research about profitability determinants on Indonesian and Malaysian conventional banks has not been done much, especially in the context of global economic crisis due to the Covid-19 pandemic.

This research aims to examine the effects of credit risk, liquidity risk, and bank capital on profitability of Indonesian and Malaysian banks during the Covid-19 pandemics using panel data regression model. This study contributes to the current literature since it is conducted based on nations to examine whether all variable independent bring the same effect on Indonesia and Malaysia.

LITERATURE REVIEW

The Effects of Credit Risk on Bank Profitability

Most income of banks are obtained from interest income and this makes credit risk become one of the most critical risks for banking sector. Credit risk arises when the borrower cannot pay his financial obligations according to the agreement (Andrianto, *et al.*, 2019). Banks must apply the precautionary principle in lending to avoid non-performing loans (NPL). OJK Regulation No. 15/POJK.03/2017 defines non-performing loans (NPL) as loan that has bad quality with collectability of 3 (Poor), 4 (Doubtful) and 5 (Bad). This credit quality can be measured using NPL ratio.

Abnormal credit growth and economic crisis can increase loan loss provisions (LLPs) and NPL, thereby reduce bank profitability (Rossi et al., 2018). High unproductive loans also decrease the opportunity for banks to gain income from loans that ultimately reduce the bank profitability because some of the funds must be set aside as reserves for problem loans (Sari,

2022). Bank must maintain the NPL ratio below 5% of total credit otherwise the business continuity is considered in danger (OJK, 2017).

Pintor (2022) examined the impact of credit risk, bank capital, and bank liquidity on bank profitability with operational effectiveness as the moderating variable. The result shows that credit risks partially has a negative and significant effect on bank profitability. This findings was similar to the research of Abdelaziz *et al.*, (2020) and Saleh dan Afifa (2020).

Accodingly, the proposed hypotheses are as follow:

H₁ : Credit risk has a negative and significant impact on Indonesian banks profitability during Covid-19.

H₂ : Credit risk has a negative and significant impact on Malaysian banks profitability during Covid-19.

The Effects of Liquidity Risk on Bank Profitability

OJK states that banks must maintain adequate liquidity in order to anticipate crisis (OJK, 2015). Adequate liquidity makes banks to remain solvent and able to cope with various economic situations, to channel fund to debtors via credit, and to reserve fund for customers withdrawals (Ali & Dhiman, 2017; Pramitasari, 2020). Very high ratio indicates unavailability of liquidity for banks to cowl any unanticipated fund requirements. On the opposite, very low ratio suggests the bank does not have enough income (Karim, *et al.*, 2021).

Liquidity risk is one of the banks' problems during the economic crisis and arises when bank expeiences lack of liquid fund against the customers excessive withdrawals and this makes bank unable to cover short term obligations and unexpected cash outflow (Saleh and Afifa, 2020). As a result, capacity of the bank to channel fund via credit decreases and affect bank profitability negatively. According to the regulation of Bank Indonesia No. 12/12/PBI/2019, liquidity of banks must meet LDR ratio minimum 84% and maximum 94%. Some studies

concluded that liquidity risk has negative impact on bank profitability (Adelopo, *et al.*, 2018; Khalid & Hossain, 2019; Abdelaziz, *et al.*, 2020). Abdelaziz, *et al.* (2020) examining the interactional relationship of credit risk, liquidity risk, and bank profitability in MENA region concluded that there is negative relationship between liquidity risk and bank profitability. Thus, the hypotheses are proposed as follow:

H₃ : Liquidity risk has a negative and significant impact on Indonesian banks profitability during Covid-19.

H₄ : Liquidity risk has a negative and significant impact on Malaysian banks profitability during Covid-19.

The Effects of Bank Capital on Bank Profitability

Bank capital acts as risk protector and tools to improve bank performance and effectiveness (Mateev, *et al.*, 2021). Higher bank capital will increase public's trust on the bank (Abbas *et al.*, 2019). Based on OJK regulation No. 11/POJK.03/2016, the requirement for minimum capital adequacy is 8-14% depending on the level of bank's risk profile.

High capital will make the bank easier to offer services and to extend credit to the public and thus profitability increases. In addition, banks with higher capital are able to take higher risks as they can extend credit to potential debtors who may get benefit from their business operations (Laato, Islam, Farooq, & Dhir, 2020). Some studies found that bank capital has positive impact on bank profitability (Abbas, *et al.*, 2019; Saleh & Afifa, 2020; Pintor, 2022).

The hypotheses are thus proposed as follow:

H₅ : Bank capital has a positive and significant impact on Indonesian banks profitability during Covid-19.

H₆ : Bank capital has a positive and significant impact on Malaysian banks profitability during Covid-19.

METHODS

This research uses a quantitative approach and aims to analyze the impact of credit risk, liquidity risk, and bank capital on bank profitability using secondary data from financial statements published in the banks’ website. Population of this study are all conventional banks in Indonesia and Malaysia. The sample was determined using purposive sampling method that covers commercial banks that are still operating, listed on the stock exchange, not a sharia bank and digital bank, and publish financial report quarterly during 2020-2021 completely. The criteria resulted in 304 observation of Indonesian banks and 64 observations of Malaysian banks.

There are two regression models used in this study:

$$NIM_{Ind\ it} = \alpha_0 + \beta_1 NPL_{Ind\ it} + \beta_2 LDR_{Ind\ it} + \beta_3 CAR_{Ind\ it} + \epsilon_{it} \dots \dots \dots (1)$$

$$NIM_{My\ it} = \alpha_0 + \beta_1 NPL_{My\ it} + \beta_2 LDR_{My\ it} + \beta_3 CAR_{My\ it} + \epsilon_{it} \dots \dots \dots (2)$$

where NIM denotes the dependent variable i (bank profitability) at time, NPL represents credit risk i at time t, LDR represents liquidity risk i at time t, and CAR represents bank capital i at time t. Ind represents Indonesian banks and My represents Malaysian banks. *a* is constant, β is coefficients and ϵ is error term. Table 1 shows the detail of the independent and dependent variables of this study.

Table 1 Proxy and Measurement of the Variables

Variable	Proxy	Measurement
Dependent variable		
Bank profitability	Net interest margin (NIM)	$\frac{Net\ Interest\ Income}{Average\ assets} \times 100\%$
Independent variable		
Credit risk	Non-performing loan (NPL)	$\frac{Non\ performing\ loans}{Total\ loans} \times 100$
Liquidity risk	Loan to deposit (LDR)	$\frac{Total\ loans}{Total\ deposits} \times 100$
Bank Capital	Capital adequacy (CAR)	$\frac{Tier\ 1\ Capital + Tier\ 2\ Capital}{Risk\ weighted\ assets} \times 100$

The analysis will be conducted with panel regression method using E-Views 9. Standard estimation techniques for panel data using Chow test and Hausman test was used and the results indicated that random effect model is accepted to be used in the models for both Indonesian banks and Malaysian banks. The alpha (α) was 5% or 0.05.

As the normality test shows that the residual value of Indonesian banks model is not normally distributed, the outlier was excluded and the final sample of Indonesian banks become 232 observations.

RESULTS AND DISCUSSION

Results

Table 2 shows the descriptive statistics of the variables. The full data including the outliers was used for analyzing descriptive statistics to shows the condition of each variable in each country within the observation time.

Table 2 Descriptive Statistics of the Variables

	NIM_IND	NIM_MY	NPL_IND	NPL_MY	LDR_IND	LDR_MY	CAR_IND	CAR_MY
Mean	3.89	2.13	3.92	1.89	84.41	90.58	26.77	18.31
Max	7.77	2.66	22.27	3.60	241.97	101.30	201.57	23.64
Min	-0.95	1.44	0.08	0.26	29.67	83.50	8.02	14.50
Std Dev.	1.68	0.24	2.97	1.05	30.07	4.09	17.24	2.32

During the observation period, Indonesian banks were able to produce higher profitability than Malaysian banks as indicated by higher average NIM of Indonesian banks (3.89) than that of Malaysian banks (2.13). However, the profitability of Malaysian banks is more stable than Indonesian banks as indicated by low standard deviation of Malaysian banks (0.24). In addition, all Malaysian banks were able to make profits during the observation period, while some Indonesian banks had negative NIM. The average credit risk of Indonesian

and Malaysian banks was still within the standard range of 5 set by OJK. Even it appears that there were numbers of Indonesian banks that have NPLs exceeding the standard set by the OJK, while all the Malaysian banks still can maintain the NPLs below 5. This shows that Malaysian banks have the ability to maintain the NPLs fluctuation during the economic crisis due to Covid-19.

The liquidity risk of Indonesian banks is lower than Malaysian banks as indicated by lower average LDR ratio but still quite in line with 84-94 standard set by Bank Indonesia. Nevertheless, there are several banks that were not able to maintain the LDR ratio according to the health standards set by Bank Indonesia. It is apparent that the LDR ratio of Indonesian and Malaysian banks has minimum LDR value that is < 84 and maximum value that is > 94 . This indicates that the global economic shock in the form of the Covid-19 pandemic has caused some banks unable to maintain their adequacy liquidity. Indonesian banks had better bank capital than Malaysians that is indicated by higher average CAR. The CAR of Indonesian and Malaysian banks are however still in line with the standard of Bank Indonesia.

Panel Regression – Random Effect

Table 3 presents the results of panel regression on both research models. The coefficients of credit risk of Indonesian banks (NPL_IND) is negative with the p-value of 0.03 that is less than the alpha (α). Thus, H_1 is accepted meaning that credit risk has partially a negative and significant effect on profitability of the Indonesian banks. Meanwhile, the coefficient of credit risk of Malaysian banks (NPL_MY) is negative with the p-value 0.56 that is higher than the alpha (α) and thus H_2 is rejected indicating that partially credit risk has no effect on profitability of the Malaysian banks.

Table 3. The Results of Regression on Indonesian and Malaysian Banks

Variables	Expected Signs	Coefficients	t-stat	p-value
Indonesian Banks¹				
NPL_IND	-	-0.04	-2.25	0.03
LDR_IND	-	0.01	6.36	0.00
CAR_IND	+	-0.00	-1.81	0.07
Malaysian Banks²				
NPL_MY	-	-0.04	-0.59	0.56
LDR_MY	-	0.00	0.48	0.63
CAR_MY	+	-0.02	-0.97	0.34

¹ Dependent Variable : NIM_IND

² Dependent Variable : NIM_MY

The coefficients of liquidity risk of Indonesian banks (LDR_IND) is positive with the p-value of 0.00. H₃ is thus rejected indicating that partially liquidity risk has a positive and significant effect on profitability of Indonesian banks. Similarly, the coefficients of liquidity risk of Malaysian banks (LDR_MY) is positive with the p-value of 0.63. Thus, H₄ is rejected which means that partially liquidity risk does not affect profitability of Malaysian banks.

The coefficients of bank capital of Indonesian banks (CAR_IND) is negative and the p-value of 0.07. This results H₅ is rejected which means that partially bank capital does not affect profitability of Indonesian banks. Similar result is attained for the case of Malaysian banks. With the coefficients of bank capital of Malaysian banks (CAR_MY) is negative and the p-value of 0.34, H₆ is rejected meaning that partially bank capital does not affect profitability of Malaysian banks.

Discussion

The results of panel regression shows that credit risk has a negative relationship with bank profitability and this is similar with the results of the research conducted by Adelopo, *et al.* (2018), Khalid & Hossain (2019); Abdelaziz, *et al.*, (2022). This findings are also in line with the opinions of Rossi *et al.* (2018) and Sari (2022) stating that economic crisis can increase LLPs and NPLs which then decrease fund of the banks channeled into that possibly

makes profitability to decline. Cross country analysis on Indonesian and Malaysian banks shows that credit risk affects negatively and significantly only on Indonesian banks. This result shows that Malaysian banks can compile a good credit portfolio so they can maintain stable NPLs during the Covid-19 pandemic as indicated by low standard deviation of NPLs. According to Samryn (2022), there are differences in the characteristics of Indonesian and Malaysian banks in which Indonesian banks rely more on domestic operations that make them are very vulnerable to domestic macroeconomic shocks. Meanwhile, Malaysian banks are focused more on expanding foreign investment to take advantage of global economic stability so that a shock in one country has no impact on their performance.

The results of panel regression show that liquidity risk has a positive relationship with bank profitability. This finding is different from the research conducted by Adelopo, *et al.* (2018), Khalid & Hossain (2019), Abdelaziz, *et al.*, (2020), but is aligned with the results of Abbas *et al* (2019), Pintor (2022), Saleh & Afifa (2020). The Covid-19 pandemic prompted the government to provide stimulus policies to support the banking sector by for example providing a stimulus to reduce the interest rates (Susilawati, *et al.*, 2020; Xin, 2020). This lower rate can be utilized by banks that have a good level of liquidity to increase their volume of lending to those who are considerably capable in fulfilling their obligations. In turn, banks may experience increase in their interest income that then lead to higher profitability. Cross country analysis on Indonesian and Malaysian banks shows that liquidity risk affects positively and significantly only on Indonesian banks. Banks with liquidity risk that is close to the upper limit set by the central bank are likely to maintain their level of liquidity for them to be able to meet short-term obligations and avoid penalties from the central bank (Sayadi & Sari, 2021).

The results of panel regression shows that bank capital does not affect bank profitability on both Indonesian banks and Malaysian banks. This finding is different from the result of the research conducted by Abbas, *et al.* (2019), Saleh and Afifa (2020), Pintor (2022), but is aligned with the results of Pinasti and Mustikawati (2018) and Madugu *et al.* (2020). Laeven and Valencia (2021) defined an economic crisis as a phenomenon that causes chaos and great losses to the banking system. The Covid-19 pandemic has been experienced by all Indonesian and Malaysian banks with both large and small capital and thus the amount of bank capital cannot boost bank profitability.

CONCLUSIONS AND IMPLICATIONS

Conclusion

The results of this study indicates that during the Covid-19 pandemic, credit risk has a negative impact on bank profitability, liquidity risk has a positive impact on bank profitability, while bank capital does not have impact on bank profitability. Banks with good credit portfolio that can maintain stable NPLs in every economic situation will be able to generate a good profitability. Banks also needs to maintain their level of liquidity risk because high ratio indicates unavailability of liquidity to cowl any unanticipated fund requirements. On the opposite, low ratio suggests that the bank does not have enough income (Karim, *et al.*, 2021). The interesting finding of this study is that bank capital does not have effect on bank profitability and the effect of each variable on Indonesian and Malaysian banks were different although Indonesia and Malaysia have similarity in geographic location, economics, socio-politics, and banking system.

Implications

This study was conducted in the context of the Covid-19 pandemic and thus the study experience lack of yearly observation data since the Covid-19 pandemic emerged since 2020. The statistics data of this study was thus taken from quarterly reports of the banks in 2020-2021 that imply that secondary information can be the alternative.

Future research may examine the effect of the Covid-19 pandemic further by the timeline before, during and after the pandemic and explore the determinants of Malaysian banks profitability.

REFERENCES

- Abbas, F., Iqbal, S., & Aziz, B. (2019). The Impact Of Bank Capital, Bank Liquidity And Credit Risk On Profitability In Postcrisis Period: A Comparative Study of US and Asia. *Cogent Economics and Finance*, 7(1). <https://doi.org/10.1080/23322039.2019.1605683>
- Abdelaziz, H., Rim, B., & Helmi, H. (2022). The Interactional Relationships Between Credit Risk, Liquidity Risk and Bank Profitability in MENA Region. *Global Business Review*, 23(3), 561–583. <https://doi.org/10.1177/0972150919879304>
- Adelopo, I., Lloydking, R., & Tauringana, V. (2018). Determinants of bank profitability before, during, and after the financial crisis. *International Journal of Managerial Finance*, 14(4), 378–398. <https://doi.org/10.1108/IJMF-07-2017-0148>
- Ali, L., & Dhiman, S. (2017). The Impact of Credit Risk Management on Profitability of Public Sector Commercial Banks in India. *Journal of Commerce and Accounting Research*, 8(2), 86–92.
- Andrianto, Fatihudin, D; Frimansyah., M. A. (2019). *Manajemen Bank*. (January), 1–456. Retrieved from <http://www.qiaramediapartner.blogspot.com> accessed on 27-01-2023.
- Banna, H., & Alam, M. (2021). *Impact of digital financial inclusion on ASEAN banking stability: implications for the post-Covid-19 era*. *Studies in Economics and Finance*. 38(2), 504–523. Retrieved from <http://www.imf.org/external/datamapper/NGDPDPC@WEO/MEQ/MENA/EGY/SDN/YEM/LBY/TUN/WEO/World> accessed on 27-01-2023.
- Fadli, R. (2021). Begini Kronologi Lengkap Virus Corona Masuk Indonesia. Retrieved May 28, 2022, from <https://www.halodoc.com/artikel/kronologi-lengkap-virus-corona-masuk-indonesia> accessed on 27-01-2023.
- Karim, M. R., Shetu, S. A., & Razia, S. (2021). COVID-19, liquidity And Financial Health:

- Empirical Evidence From South Asian Economy. *Asian Journal of Economics and Banking*, 5(3), 307–323. <https://doi.org/10.1108/ajeb-03-2021-0033>
- Karim, S., Akhtar, M. U., Tashfeen, R., Raza Rabbani, M., Rahman, A. A. A., & AlAbbas, A. (2021). Sustainable banking regulations pre and during coronavirus outbreak: the moderating role of financial stability. *Economic Research-Ekonomska Istrazivanja*, 1–18. <https://doi.org/10.1080/1331677X.2021.1993951>
- Katusiime, L. (2021). COVID 19 and Bank Profitability in Low Income Countries: The Case of Uganda. *Journal of Risk and Financial Management*, 14(12), 588. <https://doi.org/10.3390/jrfm14120588>
- Khalid, M. S., & Hossain, A. (2019). The Impact of Liquidity Risk on Banking Performance : Evidence From Emerging Market. *Global Journal of Management and Business Research*, 19(4), 47–52. Retrieved from https://www.researchgate.net/publication/333508888_The_Impact_of_Liquidity_Risk_on_Banking_Performance_Evidence_from_the_Emerging_Market accessed on 27-01-2023.
- Laato, S., Islam, A. K. M. N., Farooq, A., & Dhir, A. (2020). Unusual purchasing behavior during the early stages of the COVID-19 pandemic: The stimulus-organism-response approach. *Journal of Retailing and Consumer Services*, 57(March), 102224. <https://doi.org/10.1016/j.jretconser.2020.102224>
- Laeven, L. A., & Valencia, F. V. (2021). Systemic Banking Crises Database: An Update. In *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2169708>
- Madugu, A. H., Ibrahim, M., & Amoah, J. O. (2020). Differential Effects Of Credit Risk And Capital Adequacy Ratio On Profitability Of The Domestic Banking Sector In Ghana. *Transnational Corporations Review*, 12(1), 37–52. <https://doi.org/10.1080/19186444.2019.1704582>
- Mateev, M., Tariq, M. U., & Sahyouni, A. (2021). Competition, capital growth and risk-taking in emerging markets: Policy implications for banking sector stability during COVID-19 pandemic. In *PLoS ONE* (Vol. 16). <https://doi.org/10.1371/journal.pone.0253803>
- Peraturan OJK Nomor15/POJK.03/2017 Tentang Status Dan Tindak Lanjut Pengawasan Bank Umum.
- Peraturan OJK Nomor 42 /POJK.03/2015 tentang Kewajiban Pemenuhan Rasio Kecukupan Likuiditas (Liquidity Coverage Ratio) bagi Bank Umum.
- Pinasti, W. F., & Mustikawati, R. I. (2018). Pengaruh Car, Bopo, Npl, Nim Dan Ldr Terhadap Profitabilitas Bank Umum Periode 2011-2015. *Nominal, Barometer Riset Akuntansi Dan Manajemen*, 7(1). <https://doi.org/10.21831/nominal.v7i1.19365>
- Pintor, S. (2022). *The Effect of Financial Risk , Capital Structure , Banking Liquidity on Profitability : Operational Efficiency as Intervening Variables in Persero Bank and Private Commercial Banks*. 5(1), 226–234.
- Pramitasari, T. (2020). *Comparative Analysis Of The Biggest Banking Performance In Indonesia*. <https://doi.org/10.4108/eai.5-8-2020.2301098>

- Prasetyo, P. P., Pantas, P. E., Ashar, N. J., & Pertiwi, F. R. (2020). Performance Comparison of Islamic Banking in Indonesia and Malaysia Islamicity Performance Index Approach. *Journal of Islamic Economics Perspectives*, 2(1), 92–103. <https://doi.org/10.35719/jiep.v2i1.30>
- Rahmi, Y., & Sumirat, E. (2021). A study of the impact of alma to profitability during the covid-19 pandemic. *International Journal of Business Economics and Law*, 24(3), 54–65. Retrieved from <https://www.ijbel.com/wp-content/uploads/2021/04/IJBEL24-036.pdf>
- Rossi, S., Borroni, M., Lippi, A., & Piva, M. (2018). Determinants of Bank Profitability in the Euro Area: What Has Changed During the Recent Financial Crisis? *International Business Research*, 11(5), 18. <https://doi.org/10.5539/ibr.v11n5p18>
- 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). <https://doi.org/10.1080/23322039.2020.1814509>
- Samryn. (2022). Perbandingan Pengaruh Arus Kas dari Aktivitas Investasi terhadap Rasio Kecukupan Modal Bank Umum Indonesia dan Malaysia. 27(1), 57–71.
- Sari, S. P. (2022). Impact of Credit Risk, Distribution of Interest Rate, and Liquidity on Bank Profitability. *Li Falah: Jurnal Studi Ekonomi Dan Bisnis Islam*, 6(2), 97. <https://doi.org/10.31332/lifalah.v6i2.1945>
- Sayadi, M. H., & Sari, R. (2021). The Capital Market Performance Analysis in 5 ASEAN Countries during The COVID-19 Pandemic. *Ijisrt.Com*, 6(5). Retrieved from <https://ijisrt.com/assets/upload/files/IJISRT21MAY622.pdf>
- Susilawati, S., Falefi, R., & Purwoko, A. (2020). Impact of COVID-19's Pandemic on the Economy of Indonesia. *Budapest International Research and Critics Institute (BIRCI-Journal): Humanities and Social Sciences*, 3(2), 1147–1156. <https://doi.org/10.33258/birci.v3i2.954>
- Xin, L. (2020). Rising from the pandemic. In *Physics World* (Vol. 33). <https://doi.org/10.1088/2058-7058/33/8/16>