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Safeguarding Stability and Enhancing Profitability: The Case of Islamic Banking in Indonesia

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Abstract

This study examines the impact of crises, non-performing financing variables, exchange rates, inflation, and interest rates on Islamic banks' short-term and long-term profitability in Indonesia. Profitability (ROA) fluctuations are also assessed in consideration of exogenous shocks. This analysis uses the Vector Error Correction Model (VECM) to examine monthly data from 2007 to 2023. The results suggest that non-performing financing (NPF), exchange rates (BIRTE), and inflation (IFLS) have a substantial impact on the long term. While the crisis variable exhibits a relatively less substantial influence, interest rates reveal distinct short-term and long-term impacts. The Impulse Response Function data indicate that NPF, KURS, and IFLS have a negligible effect on ROA. NPF primarily influences ROA variation, as determined by the Forecast Error Variance Decomposition; KURS follows suit. Islamic Banks' management must diligently oversee non-performing loans, exchange rates, and inflation and astutely devise interest rate strategies. The factors impacting the profitability of Islamic banks in Indonesia are thoroughly examined in this study.

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I. Introduction

The Islamic banking sector has experienced significant growth after the 2008 global financial crisis. According to Cevik and Charap (2015), the combined assets of Islamic banks in 2010 amounted to USD 939 billion. Nevertheless, in 2013, this amount skyrocketed to USD 1.2 trillion, indicating an annual expansion rate of around 10% to 15% (Ernst & Young, 2016). The rise in lending operations can be ascribed to the strong profit-sharing framework inherent in Islamic banking. The significant rise of Islamic banking assets offers a promising new field to study, as most previous studies have focused on different parts of traditional banking systems (Caporale et al., 2018; Pacicco et al., 2019).s

In addition, an increasing number of empirical data highlights the significance of diverse economic factors in shaping fundamental macroeconomic indicators, including inflation rates and economic growth (Sinyakov & Yudaeva, 2016; Tan, 2016). The efficacy of policy characteristics exhibits disparities across periods of economic expansion and recession (Coibion et al., 2020; Us, 2017). Central banks exert a more substantial influence in addressing economic recessions than periods of economic growth (Omer, 2019; Rahman et al., 2018; Werner, 2016). Hence, it is probable that the authorities in charge of economic policies will react in distinct ways to the economic conditions throughout periods of expansion and recession (El Alaoui et al., 2019; Saeed et al., 2021). Islamic banks have been found to have poorer cost efficiency, but they show better intermediation ratios, improved asset quality, and stronger capitalization levels compared to other banks (Beck et al., 2013).

Currently, empirical research is scarce concerning the influence of economic policy on Islamic banking, mainly because of the distinctive features inherent in Islamic banking procedures. The distinctive characteristics of this approach involve prohibiting predetermined interest rates and focusing on providing loans just for projects that generate productivity (Chong & Liu, 2009). Islamic principles also prohibit financing speculative ventures, as they result in price increases without providing tangible benefits to the economy, social fairness, and economic efficiency (Caporale et al., 2020).

Multiple investigations have been carried out to comprehend the influence of economic policies on the performance of Islamic banking. The Vector Autoregression (VAR) model examination found that loans in Islamic banks in Malaysia are more responsive to changes in interest rates, which could impact the level of instability (Kassim et al., 2009). Subsequently, a panel VAR methodology was employed to scrutinize deposit and loan data for the purpose of contrasting Islamic and conventional banks in Turkey. The findings corroborated that variations in interest rates influence both loan and deposit levels (Aysan et al., 2018).

Caporale et al. (2018) investigated the influence of Islamic banking on the interplay between credit and gross domestic product. Hamza and Saadaoui (2018) explored the transmission mechanism inherent in the debt funding channel of Islamic banks. Meanwhile, Akhatova et al. (2016) scrutinized the credit channel within the broader transmission mechanism of Islamic banks, particularly in response to economic fluctuations.

Avdjiev and Zeng (2014) delved into the intricate nexus among credit market conditions, economic determinants, and economic activity, with a specific focus on their nonlinear interactions. Ergeç and Arslan (2013) explored the repercussions of interest rate shocks on the levels of deposits and loans within Islamic banks in their research. Beck et al. (2013) scrutinized the role of Islamic banks in alleviating crises. Çatık and Martin (2012) conducted an investigation into alterations in the macroeconomic transmission mechanism in Turkey following a substantial

policy overhaul. Sukmana and Kassim (2010) conducted an analysis highlighting the significance of Islamic bank financing and deposits in illustrating the impact of overall economic conditions on the real economic sector.

The majority of prior research has primarily concentrated on examining the impact of economic variables on the operational outcomes of Islamic banking across diverse nations. Nevertheless, there is a discernible gap that necessitates further scholarly inquiry into comprehending the stability and profitability dynamics of Islamic banking, particularly within the context of Indonesia. Examining this element in Indonesia is considered more appropriate, considering each country's varied economic characteristics, legal frameworks, and market conditions. Moreover, a thorough investigation is necessary to understand the factors that influence the stability of Islamic banking, which encompasses the ability to withstand financial crises, efficient management of risks, and the procedures that protect deposits based on Shariah principles.

Similarly, it is necessary to have a more thorough understanding of the factors that affect the profitability of Islamic banking in Indonesia, including aspects such as managing assets, operational efficiency, and identifying the most profitable Islamic banking products and services. Moreover, it is crucial to clarify the relationship between the stability and profitability of Islamic banking in Indonesia, explaining how their interaction affects the overall performance of Islamic banking. By solving this research vacuum, performing more comprehensive investigations into Islamic banking in Indonesia can provide more comprehensive and relevant insights, thereby helping advance the Islamic banking sector in the country.

The findings of this study have the potential to make significant contributions in various domains. This study aims to enhance comprehension of the stability and profitability of Islamic banking in Indonesia, offering profound insights for regulators, Islamic banks, and market participants to enhance their sector management. Furthermore, the study's emphasis on Indonesia will enhance the relevance and contextualization of the research findings, facilitating the formulation of policies that align with the unique characteristics of the Indonesian economy and financial markets.

Furthermore, by gaining a deeper understanding of the factors that affect the stability of Islamic banking, this study is positioned to significantly improve risk management in the industry and mitigate the potential negative consequences of financial crises. This study aims to assist Islamic banks in improving their operational efficiency by examining the elements that affect their profitability. By doing so, it is expected to favor economic growth and financial services in Indonesia. The anticipated outcomes of the research are poised to offer valuable insights that can inform the formulation of governmental and regulatory policies. Moreover, these insights may contribute to fostering the expansion of Islamic banking, aligning with the principles of sustainability and facilitating economic prosperity within the framework of Islamic principles.

The objective of this research is to augment comprehension regarding the enduring and immediate associations among variables influencing the stability and profitability of Islamic banking within the Indonesian context. Moreover, it determines the presence of a long-run equilibrium between these factors and examines how adjustments to such disparities can impact overall stability and profitability. The study's findings can shed light on the elements impacting Islamic banking in Indonesia's performance by examining the dynamics of these variables; furthermore, they can support policy recommendations to preserve stability and enhance profitability.

II. Literature Review

Theoretical Background

Islamic banks differentiate themselves from traditional financial intermediaries by adhering to Islamic principles drawn from the Quran, hadith, and Islamic jurisprudence but having similar qualities. Islamic banks differ from traditional banks by substituting the pre-established interest rate with the ex-post Profit and Loss Sharing (PLS) rate (Chong & Liu, 2009). Rejecting traditional ex-ante interest rates is essential for promoting social equity and economic effectiveness. Islamic banking, characterized as an ethical financial model, carries substantial economic implications for the systemic stability and dispersion of credit risk. Islamic banking differs from conventional banking by basing credit allocation on project productivity rather than the creditworthiness of borrowers.

Islamic banks strictly adhere to Islamic rules and are prohibited from engaging in speculative transactions, including derivatives, toxic assets, and gambling (Beck et al., 2013). Providing funds for such endeavours contributes to financial crises and usually results in an inflationary effect rather than promoting real economic activities. Conventional banks typically employ a strategy of "risk-transferring" by engaging in speculative ventures, whereas Islamic banks follow a "risk-sharing" model (Hasan & Dridi, 2011). Islamic banks prioritize financing constructive initiatives rather than speculative ventures (Ahmed, 2010; Rizvi & Arshad, 2016). In Islamic banking, every financial transaction is linked to an actual or potential tangible asset, setting it apart from conventional banks that provide credit without such limitations (Kabir et al., 2015; Lassoued, 2018). Furthermore, Islamic banks are precluded from deriving profit solely through unadulterated financing. Instead, they engage in investment or sale transactions, wherein they jointly partake in both the returns and associated risks of the contractual agreements (Baele et al., 2014).

Previous studies

Prior research has significantly advanced our comprehension of the economic transmission mechanism, the reaction of Islamic financial institutions to economic conditions, and their influence on the economy. The literature research has made substantial contributions to comprehending these elements. The outcomes of prior studies have significant significance for the research conducted in this study. Hence, this study is pertinent and crucial in determining the variables that impact the stability and profitability of Islamic banking institutions in Indonesia.

Mubarok and Rusdianto (2023) examine both the immediate and enduring relationships between monetary policy and Mudharabah contract finance. The research also explores the disruptions caused by changes in monetary policy, elucidating the specific contributions of each variable during instances of shocks. Hamza and Saadaoui (2018) investigate the economic transmission mechanism by focusing on the avenue of debt financing within Islamic institutions. The recognition of the influence of interest rates on the funding of Islamic banks underscores the significance of comprehending how Islamic banks react to fluctuations in interest rates. The profitability of Islamic banks can be affected by such responses, as interest rates significantly impact their profit margins. Additionally, the growth of profit-sharing investments might help mitigate the negative impact of interest rates, which could contribute to the stability and profitability of Islamic banks in Indonesia. Islamic institutions can preserve some of their revenue through profit-sharing investments when interest rates increase.

Aysan et al., (2018) discovered that Islamic banks demonstrate unique responses regarding their sensitivity to interest rates for deposits and loans, unlike conventional banks. The increased sensitivity to interest rates could make Islamic banks more vulnerable to changes in economic transmission. This susceptibility may be evident in changes to the composition of assets and liabilities and their profit margins. The findings highlight the importance of understanding how Islamic banks in Indonesia respond to changes in economic transmission and the effects on their stability and profitability.

The significant impact of Islamic banks on domestic economic expansion, which could improve the stability and profitability of Islamic banks in Indonesia, is highlighted in a study by Caporale et al., (2018). Nevertheless, the research carried out by Akhatova et al., (2016) suggests that Islamic banks may respond differently to economic transmission shocks, raising issues over preserving stability within the Islamic banking sector. The study conducted by Avdjiev & Zeng (2014) underscore the intricate interplay among credit market conditions, economic determinants, and economic activity. This interrelation can influence the stability and profitability of Islamic banks in Indonesia across various stages of the business cycle.

Moreover, a study conducted by Ergeç and Arslan (2013) demonstrates that variations in interest rates can affect Islamic banks, even though theoretically, this should not occur. Understanding the reaction of Islamic banks in Indonesia to changes in interest rates is crucial, as it can directly impact their stability and profitability. Beck et al., (2013) examined the internal variables that differentiate Islamic and conventional banks. Their study focuses on capital, asset quality, and resistance to crises, which all contribute to the stability and profitability of Islamic banks. The research conducted by Çatık and Martin (2012) emphasized changes in the macroeconomic transmission mechanism after economic transmission reform in Turkey. Understanding shifts in Indonesia's economic transmission mechanism can help maintain the stability and profitability of Islamic banking.

III. Methodology

Data

This study utilizes monthly data obtained from reliable sources such as the Central Statistics Agency (BPS), the Financial Services Authority (OJK), and Bank Indonesia (BI). These datasets contain a range of crucial variables relevant to the investigation. This research utilize data pertaining to the return on assets (ROA) of both Islamic Commercial Banks (BUS) and Islamic Business Units (UUS) to conduct a comprehensive evaluation of the financial performance within the Islamic banking sector. Moreover, the exchange rate conditions of the economy (KURS) are shown by data on the value of the Rupiah compared to the United States Dollar (USD). The inflation rate (IFLS) data records price changes that affect overall economic stability. The BI Rate (BIRTE) data represents the standard interest rate used in economic transmission. A binary variable indicates the economic condition during crises (CRS), with 0 representing normal conditions and 1 representing crisis conditions. The dataset used in this study is a monthly time series, indicating the consistent gathering and recording of data at monthly intervals. The inquiry covers the period from 2007 to 2023, which extends for more than ten years. The prolonged length allows for a thorough examination of long-term trends and shifts in the behavioural characteristics of the observed variables.

Development of the Model

The suggested framework for improving stability and profitability in Islamic banking is based on the core principles of Islamic banking, as elucidated in the Quran, hadith, and Islamic law (Chong & Liu, 2009). Islamic banking is fundamentally based on ethical finance, which aims to promote social justice and economic efficiency by forbidding the conventional ex-ante interest rate (Berg et al., 2016; Berg & Kim, 2014). Islamic banks differentiate themselves from conventional banks by adopting a distinctive risk-sharing approach, which stems from their ethical principles, instead of engaging in risk-transferring activities commonly practiced by regular banks (Hasan & Dridi, 2011).

In addition, Islamic banks prioritize real asset-backed transactions, guaranteeing openness and accountability in financial transactions (Beck et al., 2013). Enforcing a ban on speculative transactions, such as derivatives and toxic assets, enhances financial stability and helps prevent crises. Islamic banks prioritize the provision of credit for productive investment, in contrast to conventional banks, which may partake in speculative operations. Islamic banks focus on productive investment per the principles of profit and risk-sharing contracts in Islamic banking. Instead of solely generating profit from financing, Islamic banks participate in contracts such as Mudarabah and Musharakah, which promote a fair distribution of returns and risks (Baele et al., 2014). Thus, the suggested model combines these key concepts to establish a comprehensive framework for Islamic banking that improves stability and profitability. The distinctive characteristics of Islamic banking, such as its ethical principles, risk-sharing approach, and reliance on asset-backed transactions, set these institutions apart in the financial industry. These features not only contribute to the overall stability of the system but also encourage real economic activity.

Method

The Vector Error Correction Model (VECM) was chosen as the analytical approach for this study, particularly to answer the research topic. It is very helpful to use the VECM model to find nonlinearities in how economic variables respond to shocks in economic transmission (Ascarya & Indra, 2020; Billah, 2022). The equation is represented as:

$$\Delta Y_t = \alpha + \beta_1 \Delta Y_{t-1} + \beta_2 \Delta Y_{t-2} + \cdots + \beta_p \Delta Y_{t-p} + \Gamma D_t + \varepsilon_t$$

Where ΔY_t represents a vector of k-dimensional variables at time t, α denotes a vector of constants, β_1, β_2,…, β_p represents a matrix of autoregression coefficients that model the relationship between variables, Γ signifies a matrix of cointegrating coefficients that link cointegrating variables, D_t represents a vector of cointegrating errors at time t, and ε_t denotes a vector of errors at time t.

The cointegrating coefficients represent a set of variables that exhibit cointegration. The significance of this non-linear response resides in its capacity to consider fluctuations in the influence of economic transmission, which may vary based on the prevailing economic circumstances. Furthermore, the VECM considers the variables as endogenous, enabling the detection of temporal variations caused by structural shocks. Customizing the impulse response function of the VECM allows for accounting for the magnitude, direction, and prevailing economic conditions of shocks, thereby enhancing its flexibility and informativeness as an analytical tool.

IV.   Results and Discussions

Descriptive Statistics

Return on Assets (ROA), Non-Performing Financing (NPF), Exchange Rate (KURS), Inflation Rate (IFLS), Interest Rate (BIRTE), and Crisis (CRS) are the six numerical variables that comprise the data summary. The observed period shows an average Return on Assets (ROA) of around 0.0154, indicating the average level of profitability of the bank's assets in this dataset. The median return on assets (ROA), which provides a more precise representation of the middle number, is approximately 0.0175. The dataset displays the range of Return on Assets (ROA) values, with the maximum recorded at 0.0252 and the minimum at 0.0008. The ROA data has a rather low level of fluctuation, as indicated by the standard deviation of roughly 0.0054.

Table 1. Descriptive Statistics

	ROA	NPF	KURS	IFLS	BIRTE	CRS
Mean	0.015404	0.037976	12007.16	0.048445	0.060774	0.385787
Median	0.017500	0.036600	12935.10	0.043500	0.060000	0.000000
Maximum	0.025200	0.065800	15731.60	0.121400	0.095000	1.000000
Minimum	0.000800	0.022200	8522.800	0.013200	0.035000	0.000000
Std. Dev.	0.005351	0.010028	2307.853	0.023662	0.015866	0.488021
Skewness	-0.739496	0.545077	-0.168661	0.882757	0.086810	0.469259
Kurtosis	2.617766	2.609275	1.408001	3.628315	2.187074	1.220204
Observations	197	197	197	197	197	197

Regarding NPF, the data indicates that the average rate of unpaid debts over the period is approximately 0.038, with a median value of roughly 0.0366. The maximum value of NPF is 0.0658, and the minimum value is 0.0222. The NPF rate exhibits a relatively modest variance, as evidenced by the standard deviation of approximately 0.0100. The exchange rate (KURS) averages approximately 12007.16, with a middle value of 12935.10. The maximum exchange rate is 15731.60, while the minimum is 8522.80. The exchange rate has substantial volatility, as evidenced by the standard deviation of approximately 2307.85.

The average inflation rate (IFLS) is approximately 0.0484, while the median is around 0.0435. The maximum inflation rate is 0.1214, and the minimum is 0.0132. The inflation rate exhibits a substantial variance, as evidenced by the standard deviation of approximately 0.0237. The average interest rate is approximately 0.0608, while the median is 0.0600. The maximum interest rate is 0.0950, while the minimum is 0.0350. The interest rate has a relatively modest level of volatility, as evidenced by the standard deviation of approximately 0.0159.

The final variable, crisis (CRS), is a binary variable that signifies the existence or non-existence of an economic or financial crisis. The average is approximately 0.386, suggesting that crises are present in most observations. Nevertheless, the median value of this variable is 0.000, suggesting that a significant number of observations remain unaffected by the crisis. High kurtosis and positive skewness in variables such as inflation and interest rates suggest that the data distribution is inclined toward extreme values. In contrast, negative skewness in the ROA and exchange rate variables suggests that the distribution is inclined towards lower values.

Test for stationarity

Table 2 displays the outcomes of the stationarity tests conducted through two widely employed methods, namely the Phillips-Perron (PP) and Augmented Dickey-Fuller (ADF) tests, applied to both the initial dataset and the differenced dataset. The p-values linked with each test are used as indications to determine the stationarity of the variables. The results reveal that all variables (ROA, NPF, BIRTE, INFL, KURS, CRIS) at the given level have p-values more than the usually accepted significance level of 0.05, indicating that the variables do not exhibit stationarity at the given level.

Table 2. Stationarity Test Results

Component	ADF (Level)	ADF (Diff)	ADF (Level)	ADF (Diff)
ROA	0.0220	0.0000	0.0624	0.0000
NPF	0.2283	0.0000	0.1507	0.0000
BIRTE	0.1944	0.0000	0.1734	0.0000
INFL	0.0928	0.0000	0.1208	0.0000
KURS	0.7927	0.0000	0.7392	0.0000
CRIS	0.1369	0.0000	0.1181	0.0000

Nevertheless, following the differencing process, the p-values for all variables reached a value of 0.0000. Through the differencing process, the variables exhibit stationarity by performing one-time differencing. Stationarity is a crucial requirement in time series analysis since it is necessary to apply numerous models and approaches that rely on assumptions about the statistical features of the data. This outcome will influence the selection of the model and the understanding of the analysis conducted on the data.

The results of the stationarity test indicated that the level variables, including ROA, NPF, BIRTE, INFL, KURS, and CRIS, were not stationary. Once the variables are differentiable, they become stationary, allowing us to analyze their long-term and short-term relationships using VECM. In simple terms, the fact that the differencing findings are stationary supports modeling using VECM. VECM enables the examination of the long-term equilibrium (cointegrating relationship) and the short-term response to the temporary imbalance between the variables.

Optimal Lag Selection

Optimal lag selection is crucial in constructing an accurate model in time series analysis. Table 3 employs the Schwarz criterion (SC) to assess models with varying lag levels. The lag value that yields the lowest SC (Schwarz criterion) is 1, indicating the optimal result.

Table 3. Optimal Lag

Lag	LogL	LR	FPE	AIC	SC	HQ
0	2483.193	NA	1.66e-19	-26.21368	-26.11077	-26.17199
1	3868.279	2667.573	1.05e-25	-40.48972	-39.76933*	-40.19788
2	3936.376	126.8257	7.48e-26	-40.82937	-39.49151	-40.28737*
3	3975.157	69.76489	7.28e-26*	-40.85880*	-38.90346	-40.06665
4	3997.939	39.53842	8.42e-26	-40.71894	-38.14612	-39.67663
5	4016.730	31.41669	1.02e-25	-40.53682	-37.34653	-39.24436
6	4042.477	41.41412	1.15e-25	-40.42833	-36.62057	-38.88571
7	4079.031	56.47356*	1.16e-25	-40.43419	-36.00894	-38.64141
8	4098.429	28.73919	1.42e-25	-40.25851	-35.21580	-38.21559

A model incorporating two lag variables achieves the optimal trade-off between accuracy and model complexity. The lag selection in this context involves a compromise between the precision of the model and its intricacy. Simply put, a model with a single lag outperforms models with more or fewer lags in performance and accuracy.

Cointegration

As shown in Table 4, results from the cointegration test shed light on the existence of a persistent relationship between the variables under investigation. Regarding the trace test, the results indicate the presence of at least one statistically significant cointegrating relationship with a confidence level of 0.05 and indicate a consistent linear combination of the variables over an extended period. In econometric analysis, identifying a cointegrating relationship indicates that the variables cannot evolve independently over a long period of time. Instead, an equilibrium connection binds the variables (Enders, 2014).

Table 4. Cointegration Test Results

Hypothesized	Eigenvalue	Trace	Critical Value	Prob.**
None *	0.195515	128.7450	117.7082	0.0083
At most 1	0.147821	86.32217	88.80380	0.0745
At most 2	0.121771	55.13014	63.87610	0.2180
At most 3	0.064078	29.80981	42.91525	0.5135
At most 4	0.048488	16.89625	25.87211	0.4228
At most 5	0.036271	7.204214	12.51798	0.3237

*1 cointegrating equation

Rejecting the null hypothesis in this study indicates the existence of at least one cointegrating equation, which signifies a long-term equilibrium among the variables. Therefore, the practical interpretation implies a mutual impact that maintains the connection between the variables for a long time, providing useful insights for economic analysis and prediction.

Short-Term and Long-Term Linkages

This research examines the influence of internal and external factors on the profitability of Islamic banks, considering both long-term and short-term perspectives. The findings suggest that a rise in Non-Performing Financing (NPF) has a substantial negative effect on the long-term profitability of Islamic banks. Moreover, this suggests that higher levels of unproductive financing are associated with lower profitability. The data reveals a consistent negative correlation between NPF and ROA, with an observed trend of ROA decreasing as NPF increases over multiple months. For instance, in January 2016, the Non-Performing Assets (NPF) experienced a rise compared to the previous month, resulting in a decrease in the Return on Assets (ROA) from 0.0101 to 0.0081. An analogous trend is observable throughout multiple months spanning from 2016 to 2022. An elevation in non-performing loans (NPF) might indicate an augmented level of credit risk, resulting in additional financial losses and a decrease in banks' profitability, as evidenced by a reduced return on assets (ROA). While the immediate effects may be less significant compared to the long-term, they nonetheless negatively impact profitability, thus highlighting the idea that better financial management and a decrease in non-performing financing can favor Islamic banks' profitability.

The fluctuating Exchange Rate (KURS) has discernible impacts on the long-term and short-term profitability of Islamic Banks. The long-term appreciation of foreign currency against the Rupiah substantially affects the profitability of Islamic Banks. Consequently, maintaining a stable

currency rate can enhance the long-term profitability of Islamic Banks. Conversely, in the short term, fluctuations in currency exchange rates exert a minimal impact on the profitability of Islamic Banks. Therefore, a managerial emphasis on ensuring stability in exchange rates in the long term can promote the increased profitability of Islamic Banks (Hossain, 2016; Mubarok & Rusdianto, 2023).

Table 5. Short-term and Long-term Linkages

Variable	Long-term	Short-term
NPF	-15.77309	-0.041692
	(7.87581)	(0.04501)
	[-2.00273]*	[-0.92626]
KURS	1.468157	-0.014347
	(0.83468)	(0.00777)
	[1.75895]*	[-1.84714]
IFLS	16.66983	-0.016551
	(-3.63371)	(0.03161)
	[4.58755]*	[-0.52364]
BIRTE	-9.666171	0.124319
	(6.98822)	(0.0976)
	[-1.38321]	[1.27372]
CRS	-0.074726	0.000385
	(0.09452)	(0.00113)
	[-0.79057]	[0.33993]
C	-13.03407	7.06E-05

*Significant at 5%

Inflation exerts a noteworthy and favorable influence on the enduring profitability of Islamic Banks. An increase in the inflation rate greatly enhances Islamic Banks' profitability, indicating that they can take advantage of a higher inflation environment to improve their long-term profitability. The correlation between inflation and Return on Assets (ROA) demonstrates complex dynamics. During certain time intervals, a direct relationship existed between inflation and return on assets (ROA), whereby an escalation in ROA coincided with a rise in the inflation rate. Between 2019 and 2022, there has been a correlation between inflation and return on assets (ROA), with an increase in inflation corresponding to an increase in ROA, leading to an interpretation of a favorable reaction of the Islamic banking industry to economic circumstances resulting from certain fiscal or monetary policies. In contrast, fluctuations in inflation have minimal effect on the profitability of Islamic Banks in the immediate term. Hence, implementing a management approach that considers the inflation rate and has a long-term outlook could be key to enhancing the profitability of Islamic Banks (Rashid et al., 2017; Trad et al., 2017; Zarrouk et al., 2016).

Bank Indonesia (BI) sets the benchmark interest rate, known as the variable interest rate (BIRTE), which has discernible long-term and short-term impacts but is considered negligible. Over the extended period, a rise in the interest rate negatively impacts the profitability of Islamic Banks. On the other hand, in the immediate period, fluctuations in the interest rate favorably impact profitability. The data indicates a pattern where an increase in the BI Rate is often followed by a subsequent fall in ROA. During the early 2016 period, there was an increase in the BI Rate from 0.0475 to 0.0725, which resulted in a decrease in the ROA from 0.0101 to 0.0081. Multiple periods in 2018 and 2019 exhibited a similar pattern, in which increases in the BI Rate were frequently followed by decreases in ROA. The decline in Return on Assets (ROA)

resulting from an increase in the BI Rate is attributed to the heightened interest expenses incurred by banks in acquiring funds. Increased interest rates can lead to increased operational expenses for banks in acquiring funds or capital, reducing profit margins and impacting the return on assets (ROA).

Consequently, a high benchmark interest rate can reduce the profitability of Islamic Banks in the long run (Asbeig & Kassim, 2015; Cevik & Charap, 2015). The variable of Crisis (CRS) has a comparatively less significant impact on Islamic banks' long-term and short-term profitability. Despite a negative trajectory of a crisis in the long term, its influence on the profitability of Islamic banks is marginal. This implies that fluctuations in crises have a minimal impact on the profitability of Islamic banks, especially in the short term. Islamic banks exhibit more resilience to fluctuations during times of crisis, although they must also consider other aspects that impact their profitability (Alexakis et al., 2019; Ibrahim & Rizvi, 2018). ROA has a propensity to decline. There is an inverse association between crisis and return on assets (ROA) during a crisis. Various economic and financial elements, such as banks, have the potential to impact corporate performance during a crisis. A crisis can lead to economic strain, a decrease in earnings, heightened credit vulnerability, and market instability. Furthermore, this can negatively impact the bank's financial performance, resulting in a decline in Return on Assets (ROA). Financial institutions require assistance in effectively managing their assets to maximize income during periods of crisis.

Impulse Response Function

Figure 1 illustrates how various economic factors influence the Return on Assets (ROA) across the studied time length. The ROA response indicates the degree to which variations in these variables impact the profitability of bank assets, as measured by ROA. The data can explain several important discoveries. The NPF variable exhibits a limited response regarding Return on Assets (ROA). Negative values near zero suggest that bad debts have a negligible effect on the return on assets (ROA).
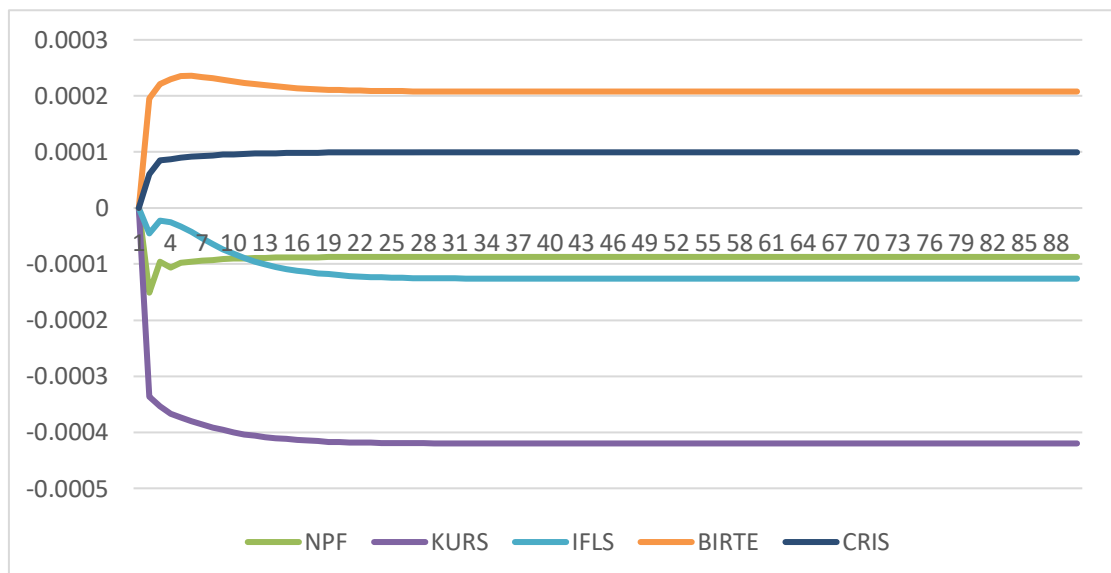

Figure 1. Reaction of ROA

Secondly, the reaction of Return on Assets (ROA) to Exchange Rate (KURS) is similarly constrained. The marginal negative values suggest that variations in currency exchange rates

have a negligible effect on the return on assets (ROA). Exchange rate fluctuations have a minimal impact on banks' profitability in this scenario. Thirdly, the variable Inflation Rate (IFLS) barely impacts ROA. Values approaching zero imply that the inflation rate minimizes bank profitability in this measure. Fourthly, the variable Interest Rate (BIRTE) exerts a more significant influence than the other factors. A positive score signifies that an escalation in the interest rate benefits the return on assets (ROA). Within the scope of this analysis, it is evident that a rise in the interest rate can lead to a subsequent increase in bank profitability over some time. Ultimately, the variable CRIS (Economic Crisis) has little impact on ROA, as its values are nearly negligible. Therefore, economic or financial crises do not substantially impact banks' profitability. Overall, the evidence indicates that the economic variables have a minimal or insignificant effect on ROA.

Decomposition of Variance in Forecast Errors

The outcomes of the Forecast Error Variance Decomposition (FEVD) on the Return on Assets (ROA) data provide a thorough examination of the proportional effects of the independent variables on the fluctuations in Return on Assets (ROA) throughout the observed period. The results indicate that the Non-Performing Loan (NPF) variable considerably impacts variations in Return on Assets (ROA), particularly at the start of the period, with fluctuations in NPF leading to approximately 23.75% of the variation in ROA. Nevertheless, the influence of NPF gradually diminishes as time progresses, ultimately stabilizing at approximately 19.32% by the conclusion of the specified timeframe. In addition to NPF, the Exchange Rate (KURS) also significantly impacts ROA variations, albeit with a lesser magnitude than NPF. Changes in the KURS initially account for approximately 5.85% of the variation in ROA. This contribution gradually rises and reaches approximately 7.84% by the conclusion of the period.

Conversely, the Inflation variable (IFLS), which quantifies the inflation rate, has a comparatively minor impact on the swings of Return on Assets (ROA), contributing approximately 0.32% at the start and end of the period. The variable Interest Rate (BIRTE) has a notable effect at the start of the period, accounting for approximately 7.84% of the variation in ROA. Nevertheless, its contribution gradually diminishes to around 5.78% by the conclusion of the time frame. Finally, the variable representing the Economic Crisis (CRIS) consistently and insignificantly contributes to the variability of Return on Assets (ROA), explaining around 0.31% of the variability at the start and end of the period. Examining the elements influencing variations in ROA level offers valuable insights into the key drivers of these variations. This information can aid Islamic banks in effectively managing and comprehending shifts in their profitability, as well as pinpointing specific areas that require focused attention to enhance their financial performance. The results of the FEVD analysis, which identifies the factors influencing changes in Return on Assets (ROA), can offer significant information for managing Islamic banks in real-world scenarios. Effective risk management solutions are crucial, especially considering the substantial role of Non-Performing financing (NPF). Management should rigorously monitor the quality of assets, enforce prudent lending criteria, and develop proactive ways to tackle potential non-performing loans.
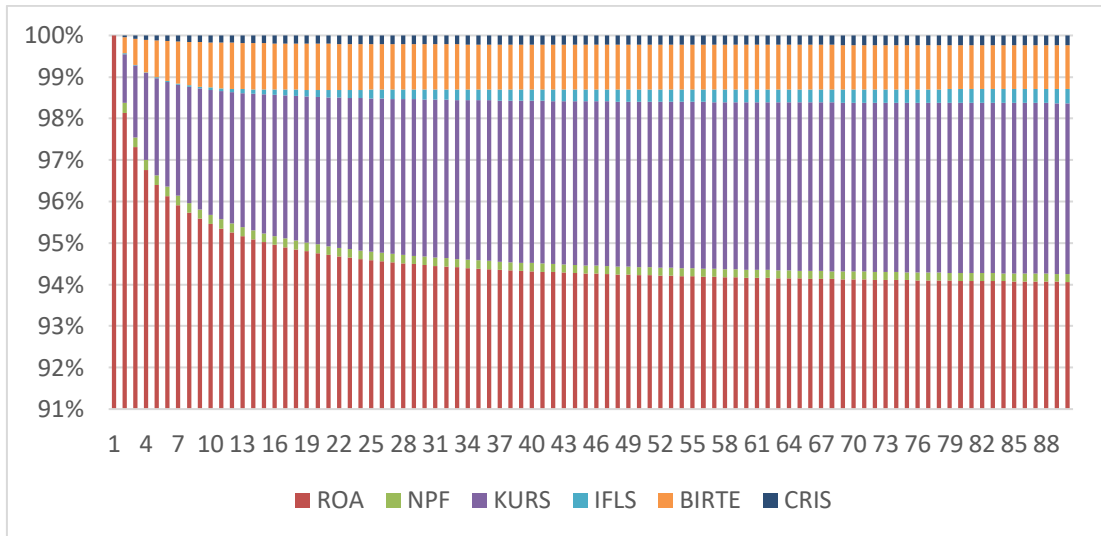
Figure 2. Decomposition of ROA

Furthermore, considering the substantial influence of the Exchange Rate (KURS), Islamic banks must formulate a meticulous foreign exchange management strategy that entails a comprehensive comprehension of the consequences of fluctuations in exchange rates on assets and liabilities denominated in foreign currencies, as well as the execution of hedging mechanisms to alleviate the risk associated with foreign exchange. Islamic banks should adapt their investment and funding strategies to fluctuations in interest rates, given the diminishing impact of the Interest Rate (BIRTE) on Return on Assets (ROA). In order to mitigate the adverse effects of interest rate fluctuations on profitability, it may be imperative to diversify investment portfolios or modify funding strategies (Ahmad et al., 2020; Cevik & Charap, 2015; Zarrouk et al., 2016). Despite the relatively minor impact of the Economic Crisis Variable (CRIS), Islamic banks require tailored risk management strategies to navigate challenging economic circumstances. It encompasses spreading investments over different assets, evaluating the impact of various stressful situations, and being prepared to promptly adapt to market fluctuations (Izzeldin et al., 2021; Mensi et al., 2019). Despite its minimal impact, the monitoring of inflation (IFLS) remains crucial. Islamic financial institutions must comprehend the consequences of inflation on prices and expenses and use cautious pricing tactics to effectively handle the influence of inflation on their profit margins and overall profitability. Islamic banks can enhance their ability to withstand economic fluctuations and enhance their financial performance by incorporating this knowledge into their everyday business operations while adhering to Islamic banking principles (Afonso et al., 2016; Bahloul et al., 2017).

V. Conclusion and Recommendation

Conclusion

The results of this research suggest that the variables NPF, KURS, and IFLS have a significant effect on the enduring profitability of Islamic Banks. An increase in non-performing loans (NPF) and inflation has a beneficial effect on long-term profitability. In contrast, the strengthening of foreign currencies has a favourable impact on long-term profitability. Nevertheless, the variable BI Rate (BIRTE) demonstrates contrasting impacts in the long term as opposed to the short term since an escalation in the BI Rate adversely influences long-term profitability. Conversely, the variable CRS (Crisis) has a comparatively minor effect on profitability.

Recommendation

The report suggests implementing more rigorous monitoring and control measures for non-performing loans (NPF), ensuring stability in foreign currency rates, effectively managing inflation, and adopting an appropriate interest rate policy (BI Rate). It is crucial to have a comprehensive awareness of the potential consequences of the economic crisis. By incorporating this comprehension, the administration of Islamic banks can enhance their stability and profitability in the long term. Additionally, it is advisable to enhance collaboration between Bank Indonesia (BI) and regulatory bodies overseeing Islamic banking to develop policies that promote the expansion and sustainability of the Islamic banking industry. Enhanced collaboration among regulators, Islamic banks, and academics can bolster comprehension of the variables influencing profitability, enhancing the efficacy and durability of resultant regulations.

Moreover, enhancing the level of transparency in the financial reporting of Islamic banking, particularly concerning the management of Non-Performing Financing (NPF), is deemed an essential measure. Investors and clients can have more faith in the stability of the Islamic banking sector and a better understanding of the risks that Islamic banks confront when there is a high level of transparency. Additional research suggestions entail investigating the influence of financial technology (fintech) innovation on the profitability of Islamic banks. With the growing prominence of fintech in the banking industry, it is crucial to have a deeper understanding of how fintech can impact the profitability of Islamic banks. This knowledge can provide significant insights for policymakers and practitioners. Moreover, to enhance the applicability of the results, it is advisable to broaden the scope of the sample and take into account supplementary factors that could impact the profitability of Islamic banks. Expanding the scope of the sample and considering supplementary factors that could impact the profitability of Islamic banks is expected to provide a more comprehensive and accurate understanding of the aspects that Islamic banks need to consider to maintain stability and improve profitability.

References

Afonso, J. R., Araújo, E. C., & Fajardo, B. G. (2016). The Role of Fiscal and Monetary Policies in the Brazilian Economy: Understanding Recent Institutional Reforms and Economic Changes. *Quarterly Review of Economics and Finance*, *62*, 41–55. https://doi.org/10.1016/j.qref.2016.07.005

Ahmad, S., Lensink, R., & Mueller, A. (2020). The Double Bottom Line of Microfinance: A Global Comparison between Conventional and Islamic Microfinance. *World Development*, *136*, 1–26. https://doi.org/10.1016/j.worlddev.2020.105130

Ahmed, A. (2010). Global Financial Crisis: an Islamic Finance Perspective. *International Journal of Islamic and Middle Eastern Finance and Management*, *3*(4), 306–320. https://doi.org/10.1108/17538391011093252

Akhatova, M., Zainal, M. P., & Ibrahim, M. H. (2016). Banking Models and Monetary Transmission Mechanisms in Malaysia: Are Islamic Banks Different? *Economic Papers*, *35*(2), 169–183. https://doi.org/10.1111/1759-3441.12131

Alexakis, C., Izzeldin, M., Johnes, J., & Pappas, V. (2019). Performance and Productivity in Islamic and Conventional Banks: Evidence from the Global Financial Crisis. *Economic Modelling*, *79*, 1–14. https://doi.org/10.1016/j.econmod.2018.09.030

Asbeig, H. I., & Kassim, S. H. (2015). Monetary Transmission During Low Interest Rate Environment in a Dual Banking System: Evidence from Malaysia. *Macroeconomics and Finance in Emerging Market Economies*, *8*(3), 275–285. https://doi.org/10.1080/17520843.2015.1060248

Ascarya, & Indra. (2020). Standard Methodology for Research in Islamic Economics and Finance. In *Teaching and Research Methods for Islamic Economics and Finance* (pp. 255–281). Routledge.

Avdjiev, S., & Zeng, Z. (2014). Credit Growth, Monetary Policy and Economic Activity in a Three-regime TVAR Model. *Applied Economics*, *46*(24), 2936–2951. https://doi.org/10.1080/00036846.2014.916391

Aysan, A. F., Disli, M., & Ozturk, H. (2018). Bank Lending Channel in a Dual Banking System: Why are Islamic Banks so Responsive? *World Economy*, *41*(3), 674–698. https://doi.org/10.1111/twec.12507

Baele, L., Farooq, M., & Ongena, S. (2014). Of Religion and Redemption: Evidence from Default on Islamic Loans. *Journal of Banking and Finance*, *44*(1), 141–159. https://doi.org/10.1016/j.jbankfin.2014.03.005

Bahloul, S., Mroua, M., & Naifar, N. (2017). The Impact of Macroeconomic and Conventional Stock Market Variables on Islamic Index Returns under Regime Switching. *Borsa Istanbul Review*, *17*(1), 62–74. https://doi.org/10.1016/j.bir.2016.09.003

Beck, T., Demirgüç-Kunt, A., & Merrouche, O. (2013). Islamic vs. Conventional Banking: Business Model, Efficiency and Stability. *Journal of Banking and Finance*, *37*(2), 433–447. https://doi.org/10.1016/j.jbankfin.2012.09.016

Berg, N., El-Komi, M., & Kim, J. Y. (2016). Market Segmentation and Non-uniform Shariah

Standards in Islamic Finance. *Journal of Economic Behavior and Organization*, *132*, 39–49. https://doi.org/10.1016/j.jebo.2016.03.019

Berg, N., & Kim, J. Y. (2014). Prohibition of Riba and Gharar: A Signaling and Screening Explanation? *Journal of Economic Behavior and Organization*, *103*, 1–14. https://doi.org/10.1016/j.jebo.2014.02.016

Billah, M. M. (Ed). (2022). *Teaching and Research Methods for Islamic Economics and Finance (1st ed)*. Routledge.

Caporale, G. M., Çatık, A. N., Helmi, M. H., Menla Ali, F., & Tajik, M. (2020). The Bank Lending Channel in the Malaysian Islamic and Conventional Banking System. *Global Finance Journal*, *45*, 1–26. https://doi.org/10.1016/j.gfj.2019.100478

Caporale, G. M., Helmi, M. H., Çatık, A. N., Ali, F. M., & Akdeniz, C. (2018). Monetary Policy Rules in Emerging Countries : Is there an Augmented Nonlinear Taylor rule? *Economic Modelling*, *72*, 306–319. https://doi.org/10.1016/j.econmod.2018.02.006

Çatık, A. N., & Martin, C. (2012). Macroeconomic Transitions and the Transmission Mechanism: Evidence from Turkey. *Economic Modelling*, *29*(4), 1440–1449.

Cevik, S., & Charap, J. (2015). The Behavior of Conventional and Islamic Bank Deposit Returns in Malaysia and Turkey. *International Journal of Economics and Financial Issues*, *5*(1), 111–124. https://doi.org/10.5089/9781455293704.001

Chong, S., & Liu, M. (2009). Islamic Banking: Interest-free or Interest-based? *Pacific-Basin Finance Journal*, *17*(1), 125–144. https://doi.org/10.1016/j.pacfin.2007.12.003

Coibion, O., Gorodnichenko, Y., Kumar, S., & Pedemonte, M. (2020). Inflation Expectations as a Policy Tool? *Journal of International Economics*, *124*, 1–27. https://doi.org/10.1016/j.jinteco.2020.103297

El Alaoui, A. O., Jusoh, H. Bin, Yussof, S. A., & Hanifa, M. H. (2019). Evaluation of Monetary Policy: Evidence of the Role of Money from Malaysia. *Quarterly Review of Economics and Finance*, *74*, 119–128. https://doi.org/10.1016/j.qref.2019.04.005

Enders, W. (2014). *Applied Econometric Time Series*. Wiley.

Ergeç, E. H., & Arslan, B. G. (2013). Impact of Interest Rates on Islamic and Conventional Banks: the Case of Turkey. *Applied Economics*, *45*(17), 2381–2388.

Ernst, & Young. (2016). *World Islamic Banking Competitiveness Report: New realities, New Opportunities*.

Hamza, H., & Saadaoui, Z. (2018). Monetary Transmission Through the Debt Financing Channel of Islamic Banks: Does PSIA Play a Role? *Research in International Business and Finance*, *45*(3), 557–570. https://doi.org/10.1016/j.ribaf.2017.09.004

Hasan, M., & Dridi, J. (2011). the Effects of the Global Crisis on Islamic and Conventional Banks: a Comparative Study. *Journal of International Commerce, Economics and Policy*, *2*(2), 163–200. https://doi.org/10.1142/s1793993311000270

Hossain, A. A. (2016). Inflationary Shocks and Real Output Growth in Nine Muslim-majority

Countries: Implications for Islamic Banking and Finance. *Journal of Asian Economics*, *45*, 56–73. https://doi.org/10.1016/j.asieco.2016.06.004

Ibrahim, M. H., & Rizvi, S. A. R. (2018). Bank Lending, Deposits and Risk-taking in Times of Crisis: A Panel Analysis of Islamic and Conventional Banks. *Emerging Markets Review*, *35*, 31–47. https://doi.org/10.1016/j.ememar.2017.12.003

Izzeldin, M., Johnes, J., Ongena, S., Pappas, V., & Tsionas, M. (2021). Efficiency Convergence in Islamic and Conventional Banks. *Journal of International Financial Markets, Institutions and Money*, *70*, 1–24. https://doi.org/10.1016/j.intfin.2020.101279

Kabir, M. N., Worthington, A., & Gupta, R. (2015). Comparative Credit Risk in Islamic and Conventional Bank. *Pacific Basin Finance Journal*, *34*, 327–353. https://doi.org/10.1016/j.pacfin.2015.06.001

Kassim, S. H., Shabri, M., Majid, A., & Yusof, R. M. (2009). Impact of Monetary Policy Shocks on the Conventional and Islamic Banks in a Dual Banking System: Evidence from Malaysia. *Journal of Economic Cooperation and Development*, *30*(1), 41–58.

Lassoued, M. (2018). Comparative Study on Credit Risk in Islamic Banking Institutions: The Case of Malaysia. *Quarterly Review of Economics and Finance*, *70*, 267–278. https://doi.org/10.1016/j.qref.2018.05.009

Mensi, W., Hammoudeh, S., Al-Jarrah, I. M. W., Al-Yahyaee, K. H., & Kang, S. H. (2019). Risk Spillovers and Hedging Effectiveness between Major Commodities, and Islamic and Conventional GCC Banks. *Journal of International Financial Markets, Institutions and Money*, *60*, 68–88. https://doi.org/10.1016/j.intfin.2018.12.011

Mubarok, F., & Rusdianto. (2023). The Distribution of Profits and Losses, As Well As Monetary Policy, in Islamic Banks Indonesia. *Journal of Islamic Economics and Business*, *9*(1), 172–189. https://doi.org/10.20473/jebis.v9i1.42507

Omer, M. (2019). Monetary Policy Pass-Through, Excess Liquidity and Price Spillover: a Comparative Study of Conventional and Islamic Banks of Pakistan. *Journal of Islamic Monetary Economics and Finance*, *5*(2), 287–320. https://doi.org/10.21098/jimf.v5i2.1064

Pacicco, F., Vena, L., & Venegoni, A. (2019). Market Reactions to ECB Policy Innovations: A Cross-country Analysis. *Journal of International Money and Finance*, *91*, 126–137. https://doi.org/10.1016/j.jimonfin.2018.11.006

Rahman, M. M., Zheng, C., Ashraf, B. N., & Rahman, M. M. (2018). Capital Requirements, The Cost of Financial Intermediation and Bank Risk-taking : Empirical Evidence from Bangladesh. *Research in International Business and Finance*, *44*, 488–503. https://doi.org/10.1016/j.ribaf.2017.07.119

Rashid, A., Yousaf, S., & Khaleequzzaman, M. (2017). Does Islamic Banking Really Strengthen Financial Stability? Empirical Evidence from Pakistan. *International Journal of Islamic and Middle Eastern Finance and Management*, *10*(2), 130–148. https://doi.org/10.1108/IMEFM-11-2015-0137

Rizvi, S. A., & Arshad, S. (2016). How Does Crisis Affect Efficiency? An Empirical Study of East Asian Markets. *Borsa Istanbul Review*, *16*(1), 1–8.

https://doi.org/10.1016/j.bir.2015.12.003

Saeed, S. M., Abdeljawad, I., Hassan, M. K., & Rashid, M. (2021). Dependency of Islamic Bank Rates on Conventional Rates in a Dual Banking System: A Trade-off between Religious and Economic Fundamentals. *International Review of Economics and Finance*, *11*, 1–19. https://doi.org/10.1016/j.iref.2021.09.013

Sinyakov, A., & Yudaeva, K. (2016). Central Bank Policy Under Significant Balance-of-payment Shocks and Structural Shifts. *Russian Journal of Economics*, *2*(3), 246–278. https://doi.org/10.1016/j.ruje.2016.09.001

Sukmana, R., & Kassim, S. H. (2010). Roles of the Islamic Banks in the Monetary Transmission Process in Malaysia. *International Journal of Islamic and Middle Eastern Finance*, *3*(1), 7–19. https://doi.org/10.1108/17538391011033834

Tan, Y. (2016). The Impacts of Risk and Competition on Bank Profitability in China. *Journal of International Financial Markets, Institutions and Money*, *40*, 85–110. https://doi.org/10.1016/j.intfin.2015.09.003

Trad, N., Trabelsi, M. A., & Goux, J. F. (2017). Risk and Profitability of Islamic Banks: A Religious Deception or an Alternative Solution? *European Research on Management and Business Economics*, *23*(1), 40–45. https://doi.org/10.1016/j.iedeen.2016.09.001

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. https://doi.org/10.1016/j.frl.2016.09.016

Werner, R. (2016). A Lost Century in Economics: Three Theories of Banking and the Conclusive Evidence. *International Review of Financial Analysis*, *46*, 361–379. https://doi.org/10.1016/j.irfa.2015.08.014

Zarrouk, H., Ben Jedidia, K., & Moualhi, M. (2016). Is Islamic Bank Profitability Driven by Same Forces as Conventional Banks? *International Journal of Islamic and Middle Eastern Finance and Management*, *9*(1), 46–66. https://doi.org/10.1108/IMEFM-12-2014-0120