Is Islamic Monetary System Possible in Indonesia? Interrelation Study Between BI 7 Days Reverse Repo Rate and Nisbah Rate

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ABSTRACT

The purpose of this study is to investigate the interrelationship between Bank Indonesia 7 Days Reverse Repo Rate (BI 7 DRRR) and Profit-Loss Sharing Rate (Nisbah Rate) in Islamic Sharia Banks (Bank Syariah Indonesia). Indonesia had been establishing conventional monetary system ever since and have yet to introduce Islamic approach to its monetary system. Now, in Islamic monetary perspective, interest rate doesn't exist. Therefore, this research aimed to discover the possibility of Islamic approach in Indonesia's monetary system, using Nisbah Rate launched by Islamic Sharia Banks as a substitution. The research was conducted using VAR (Vector Autoregression) to study the interrelationship between BI 7 Days Reverse Repo Rate and Nisbah Rate, using data obtained from Islamic Banking Statistics through Indonesia's Financial Service Authority (OJK) monthly during 2021-2023. The result showed that both BI 7 Days Reverse Repo Rate and Nisbah Rate did cause impact on one another, and thus the possibility of establishing Islamic monetary system is not completely disregarded. This investigation contributes to the ongoing discourse surrounding the integration of Islamic financial principles into conventional monetary frameworks. By highlighting the reciprocal influence between conventional monetary policies and Islamic financial instruments, this study underscores the potential for a hybrid monetary system that accommodates Islamic principles within the Indonesian financial landscape.

1. Introduction

Indonesia as we know of, was not an Islamic country [1]. Therefore, its monetary system wasn't steering near Islamic sharia rules at all [2]. Studies had been conducted about Islamic approach in

monetary policy in Indonesia, although they were focused mostly in banking sectors [3]. Researches had found that Islamic banking is very different from the conventional bank system [4]. Whereas in monetary system it was not only banking system that was being regulated upon, but also the whole monetary sector in the country. As for the dual banking system in Indonesia, it was run since 1998, initiated by the launch of The Act of Banking in 1998 which then continued until 1999, which then became the foundation for Bank Indonesia (the central bank of Indonesia) to officially conduct dual banking system (not to be confused with dual monetary system): conventional and sharia (Islamic) [5].

Since then, the development of Islamic banking in Indonesia grew steadily [6] as understood, interest rate doesn't exist in Islamic banking system [4]. Therefore, it was required for the banking system to (not replace, per se) figure out alternative for investor's incentives suppose banks wanted to grow as fast as the conventional in term of the third-party funds [7]. The non-existence of interest rate system did not disrupt the Islamic banking world because there were other instruments existed such as: profit loss sharing, margin, and fee for every product in Islamic banking system [8], [9]. Since interest rate was considered as *Riba* (haram/forbidden) thus could not be considered to be opted in the monetary transmission mechanism [10], [11]. Profit loss sharing system was considered more justifiable than interest rate system, in term of risk. Running businesses was never guaranteed profitable at all times, thus creating profit in the existence of interest rate would be implausible. Thus, by using profit loss sharing system, whether the business would make profit or lose, it would be divided along to the agreed ratio/*nisbah* rate [4], [5], [6], [12].

Nisbah Rate, in Islamic banking system, was equivalent with interest rate in conventional banking system [13], [14]. Nisbah Rate is an agreed rate of profit loss sharing between banks [15] and its costumers/clients (we tend not to use "creditors" term here). While benchmark interest rate ultimately determined the interest rates of deposits and loans in a country with a conventional monetary system, it would still be a question whether it would also determine the Nisbah Rate in a dual banking system such as Indonesia, as a country without yet an Islamic monetary system in its running policies [16], [17]. That was the reason why this research would focus particularly in the interrelationship between Bank Indonesia's 7 Days Reverse Repo Rate and Nisbah Rate from BSI (Bank Syariah Indonesia). The fluctuations of Nisbah Rate are shown in Fig. 1.
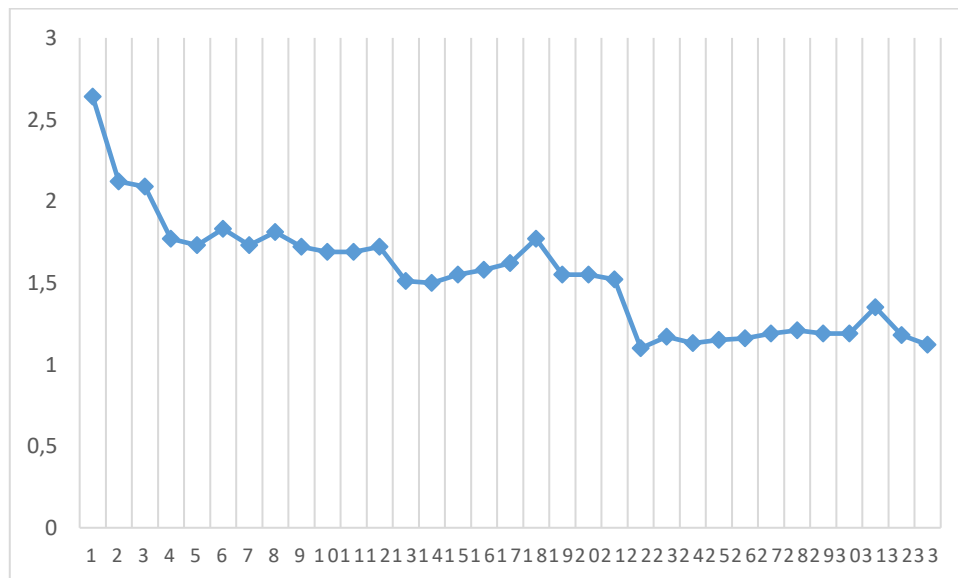

Fig. 1. The Nisbah Rate During 2021-2023 [18]

Previous research tends to indulge especially in the determinants of profit loss sharing rate in Islamic Banks in Indonesia [19], [20] or profit loss sharing rate's influence in other financial variables in Islamic banking [21], [22]. Others would prefer to analyze the interest rate-free system in banking sector [23], [24], [25] as it would provide better outlook in the banking sector as a whole, rather than

just focusing in financial variables. The monetary policy that was commonly used which was conventional monetary policy, was accommodating to the presence of Islamic banking system, which would further encourage some researchers to analyze about the probability of establishing dual monetary system, or rather just adding Islamic monetary system in the country's policies [26], [27], [28], [29].

The contribution of this research is to provide further findings in the interrelationship between Bank Indonesia's 7 Days Reverse Repo Rate as the benchmark interest rate in the country, and its Nisbah Rate as a proxy of interest rate-equivalent in Islamic banking sector in the respective country. The findings that this research provided could be used in a further research about Islamic monetary system in Indonesia, as fundamental data particularly in such topic as Islamic monetary instruments versus conventional monetary instruments, as well as try to better provide answer to questions such as the possibility of Islamic monetary system through its Nisbah Rate as central bank's benchmark nisbah rate for Islamic banking sector.

2. Method

2.1. The Variables

It was investigated in this research about interrelationships (reciprocal relationship) between Bank Indonesia's 7 Days Reverse Repo Rate, which was established as a benchmark rate from central bank of Indonesia, as a proxy for conventional monetary system, with Nisbah Rate from BSI (Bank Syariah Indonesia) which was a profit loss sharing/agreed rate consisted of three big Islamic Banks in Indonesia, which were BNI Syariah, Mandiri Syariah, and BRI Syariah, gathered together through Bank Syariah Indonesia from 2021 to 2023, monthly. The data used in this research were obtained through OJK (Otoritas Jasa Keuangan/Financial Service Authority of Indonesia) from Islamic Banking Statistics monthly during 2021-2023, because the merger of 3 Islamic Banks happened during 2021.

2.2. Proposed Method

The Vector Autoregressive (VAR) Model is a valuable analytical tool for understanding the reciprocal relationships between economic and internal variables in a structured economy. The process of constructing the VAR model involves several stages, including testing for stationarity, determining the optimal lag length, conducting causality tests, and finally forming the VAR model. In the stationarity test for VAR, the Augmented Dickey Fuller Test (ADF Test) is used to test for unit roots. The optimal lag length is determined by examining the Akaike Information Criteria (AIC) value and selecting the minimum. The causality test is then performed using the number of lags obtained from the minimum AIC value.

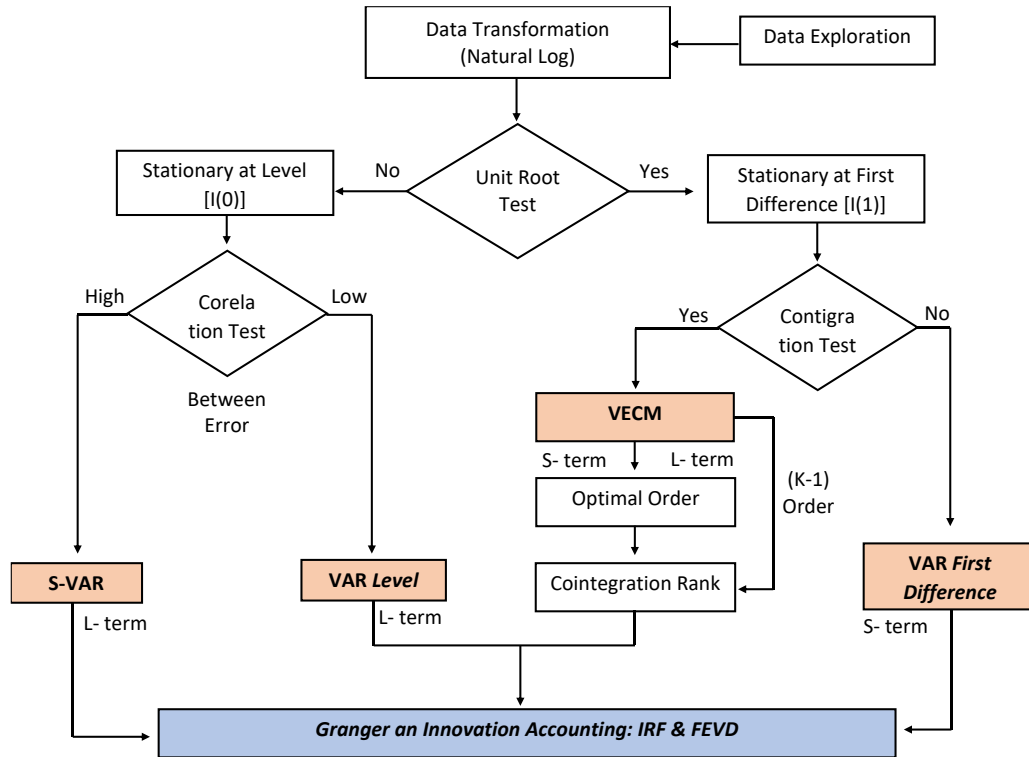The proposed method is shown in Fig. 2.

Fig. 2. The proposed method using VAR, modified by author [29]

The estimation steps are as follows:

1. Stationary Test
2. Optimal lag

Next, hypothesis testing will be carried out with the following 4 steps:

1. Granger Causality Test
2. Cointegration test using the Johansen Cointegration Test
3. Historical Variance Decomposition

The VAR test is conducted through a series of stages. Initially, a Granger causality test is performed to examine the presence of reciprocal relationships among the variables in the model [30]. Subsequently, a cointegration test, specifically the Johansen Cointegration Test, is conducted to determine whether the variables in the model are integrated or not. Following this, an Impulse Response analysis is carried out to observe the graphical representation of variable responses to shocks resulting from changes in other variables. Lastly, a VECM (Vector Error Correction Model) test is executed to estimate the short-term effects between variables and the long-term effects derived from time series data [31], [32].

2.3. Abbreviations and Acronyms

Abbreviations that are used in this paper are as follow:

- BI   = Bank of Indonesia (the central bank of Indonesia)
- BI 7 DRRR   = Bank of Indonesia's 7 Days Reverse Repo Rate (central bank's benchmark interest rate)
- VAR   = Vector Auto Regression
- VECM   = Vector Error Correction Model

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- OJK   = Otoritas Jasa Keuangan (Financial Service Authority of Indonesia)
- BSI   = Syariah of Indonesia (consisted of 3 Islamic banks in Indonesia, such

                           as: Mandiri Syariah Bank, BNI Syariah Bank, and BRI Syariah Bank)

3. Results and Discussion

3.1. Stationary Test

Table 1. Augmented Dickey Fuller Test

Variabel	ADF Statistics (level)	ADF Statistics (first difference)	ADF Statistics (second difference)
BI 7DRRR	0.7757	0.2671	0.0004*
Nisbah Rate	0.1425	0.0000*	-

Based on Table 1, it can be concluded that variable BI7DRRR are stationary at second difference, while variable Nisbah Rate is stationary at first difference. Stationary data meant that the data used in this research were distributed normally, and without any data only focused specifically in some limited locations. Augmented Dicky Fuller could be used in determining the stationarity of data before running VAR and VECM, to make sure first the data used in this research would not need to be fixed because of any sign of abnormality in data distribution. It could be seen in Table 1 that variable BI 7DRRR are stationary at 0.0004 and Nisbah Rate are stationary at 0.0000, both at different level of stationarity.

3.2. Optimal Lag

Prior to conducting a Granger causality test to examine the connections between variables in the model, it is essential to perform an optimal lag test. This test helps determine the most suitable lag length for conducting the test, specifically the lag length that yields a significant impact or response. Based on the findings presented in Table 2, it is evident that Lag 1 is the optimal lag length. Determining the optimal lag is a crucial step in the VAR model as it provides insights into the lag of influence of each variable on the others.

Table 2. Lag Optimal Criteria

VAR Lag Order Selection Criteria
Endogenous variables: LNNISBAH_RATE
Exogenous variables: CLNBI_7DRRR
Date: 12/19/23 Time: 16:31
Sample: 2021M01 2023M12
Included observations: 30

Lag	LogL	LR	FPE	AIC	SC	HQ
0	38.17477	NA*	0.005251	-2.411651	-2.318238*	-2.381767*
1	39.29306	2.012933	0.005212*	-2.419538*	-2.279418	-2.374712
2	39.31349	0.035404	0.005569	-2.354233	-2.167406	-2.294465
3	39.33787	0.040637	0.005953	-2.289191	-2.055658	-2.214482

* Indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

3.3. Granger Causality Test

The Granger causality test is intended to determine causal relationships the effect of each independent variable on the dependent variable. It was shown in Table 3 that the Granger causality test discovered that both the Nisbah Rate and BI 7DRRR's F Statistics are greater than F-Table, thus

H0 was rejected and H1 was accepted, which BI 7DRRR did cause an influence to Nisbah Rate, and Nisbah Rate also did cause an influence to BI 7DRRR as well. The hypothesis were as follow:

H0: The dependent variable is not significantly influenced by independent variable.

H1: The dependent variable is significantly influenced by the independent variable.

Table 3. Granger Causality Test (Reciprocal Relationships Between Variables in The Model)

Pairwise Granger Causality Tests
Date: 12/19/23 Time: 16:42
Sample: 2021M01 2023M12

Lags: 2

Null Hypothesis	Obs	F-Statistic	Prob.
LNNISBAH_RATE does not Granger Cause LNBI_7DRRR	31	2.52582	0.0994
LNBI_7DRRR does not Granger Cause LNNISBAH_RATE		13.0142	0.0001*

3.4. Cointegration test using the Johansen Cointegration Test

Table 4. Johansen Cointegration Test

Series: LNBI_7DRRR LNNISBAH_RATE
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.502482	22.90519	15.49471	0.0032*
At most 1	0.039934	1.263345	3.841466	0.2610

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

The third test stage of VECM estimation is cointegration testing. Cointegration testing is intended to determine the relationship in the term length of each variable. The conditions in the VECM estimation are that they exist cointegration relationship in it. If there is no relationship integration, then the VECM estimation cannot be used, but must using the VAR (Vector Auto Regression) model. The cointegration test was carried out to see whether there was a long-term balance relationship between the variables in the model. If the variables were cointegrated, it can be said that there is a stable relationship in the long term between the variables. In Table 4 it can be seen that the variables in the model were cointegrated, which means that the variables of the Nisbah Rate and BI7DRRR had an equilibrium relationship in the long term.

3.5. Historical Variance Decomposition

It was shown in Fig. 3 that the historical variance decomposition graph discovered the distribution of shock in variable Nisbah Rate, during period 2021 until 2023 (using monthly data). The biggest wave of impact from shock specifically came around late 2022, nearing the end of the year.
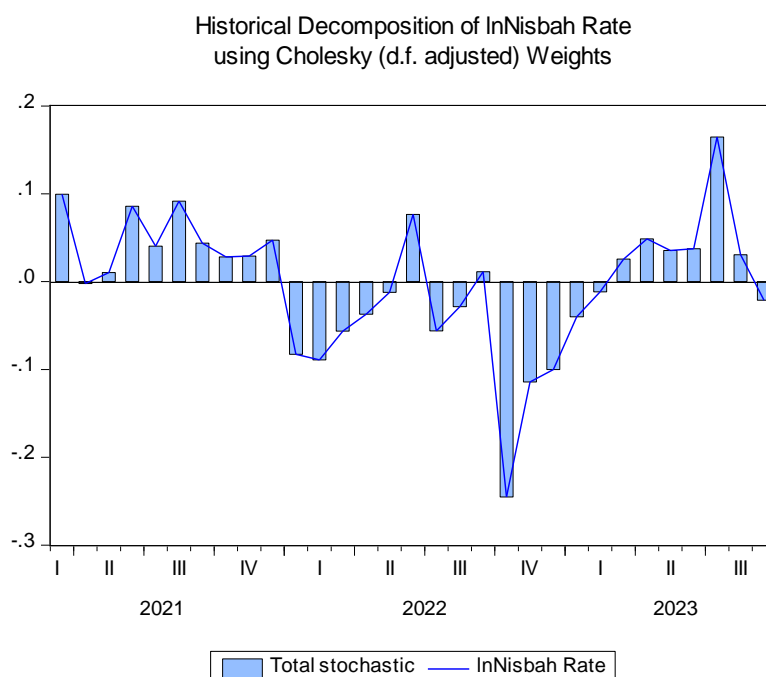
Historical Decomposition of lnNisbah Rate
using Cholesky (d.f. adjusted) Weights

Fig. 3. Historical Variance Decomposition

4. Conclusion

From the results it can be discovered that both Nisbah Rate and BI 7 Days Reverse Repo Rate did impact one another, with the variables of the Nisbah Rate and BI 7 Days Reverse Repo Rate had an equilibrium relationship in the long term. While it was discovered that both variables influenced each other, it was determined from the result that BI 7 Days Reverse Repo Rate in fact, particularly cause the changes in Nisbah Rate as predicted. Because even though it came from conventional monetary framework, BI 7 Days Reverse Repo Rate was still a benchmark interest rate for central bank in Indonesia, thus it set clear rules for banking sector in Indonesia, whether conventional or Islamic. The question whether or not Islamic monetary system is possible to be adapted in Indonesia, along with conventional monetary system, was yet to be answered fully in this paper. Although from the result we can still conclude that because Nisbah Rate also had influence in BI 7 Days Reverse Repo Rate, the possibility of establishing Islamic monetary system is not completely disregarded.

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