FINANCIAL STABILITY AND MONETARY POLICY SHOCKS: EVIDENCE OF ISLAMIC BANKING IN INDONESIA

Aula Ahmad Hafidh Saiful Fikri, Universitas Negeri Yogyakarta
Sharifah Faigah Syed Alwi, Arshad Ayub Graduate Business School, Universiti Teknologi MARA
Ruhaini Muda, Accounting Research Institute, Universiti Teknologi MARA

ABSTRACT

This paper investigates the interdependent relationship of inflation, monetary policy and Islamic banking variables in Indonesia using the Structural Model of Vector Autoregression (SVAR). The study makes use of inductive and econometrical methods to analyze Islamic Banking variables in influencing the economic activity and monetary policy. The study utilizes time series monthly data for the period of 2001M01 until 2019M12. The empirical results of Structural VAR illustrate that policy shocks have a negative impact on all variables in Islamic banking except the equivalent deposit interest rate (RDEP). The impact of both conventional Bank Indonesia rate/7days Repo Rate (7DRR) and Bank Indonesia certificates sharia (SBIS) policies have a similar pattern, while the transmission of sharia monetary variables as a policy operational target in influencing inflation is positive. In addition, the Forecasting Error Decomposition Variation (FEDV) clearly reveals that the variation in the sharia financial sector is relatively large in monetary policy shocks and has significant roles in influencing prices. The study aims to contribute to formulating the Islamic economic theory, through the utilization of various Islamic banking instruments to influence economic activity and its efficacy on the monetary policy. The study is a contribution to formulate the methodological framework for a paradigm of Islamic economics, where it investigates the role of the transmission mechanism of sharia banking on the money market and monetary policy, by the econometrical methods used in the conventional economy. Also, the study illustrates the importance of further studies that examine the methodological framework for Islamic Economics. It concludes that the central bank can control the monetary policy, economic activity and Islamic economy.

Keywords: Financial Stability, Forecasting Error, Monetary Policy

INTRODUCTION

The monetary policy transmission mechanism basically describes how the monetary policy adopted by the central bank influences various economic and financial activities so that it can eventually reach the final goal set (Bernanke & Gertler, 1995). Monetarists perceive money as important in influencing output, whilst Keynesian says there are other variables that also affect output, such as government spending.

In the Indonesian context, the question of how the monetary policy transmission mechanism is adopted by the central bank is also interesting to study. In accordance with Law of the Republic of Indonesia Number 23 of 1999 which has been amended by Law of the Republic of Indonesia Number 3 of 2004, the objective of Bank Indonesia which is the central bank of Indonesia is to achieve and maintain stability in the rupiah, namely price stability (inflation) and the exchange rate. In reality, the transmission mechanism of monetary policy is a complex process, and therefore in monetary economic theory it is often referred to as "black box".

Since the issuance of the Banking Act in 1998, Indonesia has de jure implemented a dual banking system, whereby conventional banks with an Interest Rate System and Islamic banks using Profit and Lost Sharing System or interest-free system operate side by side. In 2018, the

sharia banking operation has shown more resilience as reflected in the increase in the Capital Adequacy (CAR) ratio of Sharia Commercial Banks by 248 bps (yoy) to 20.39%. Meanwhile, the sharia banking intermediary function for Sharia banking assets showed positive growth, despite having slow progress as compared to the previous year.

In the last three years, the growth of sharia banking assets has been maintained in double digits, with the asset share reaching 5.96% of the national banks, an increase compared to the previous year which was 5.78%. Islamic Commercial Bank (ICB), Islamic Business Unit (IBU) and Islamic Rural Bank (IRB) showed positive growth with 29 out of 34 Islamic banks (14 ICB and 20 IBU) having a Conventional Commercial Bank parent. Since the establishment of Bank Muamalat Indonesia (BMI), the share and capitalization of Islamic banking and financial assets and markets are still low. Although its growth and acceptance by the community are prominent, it is still marginal relative to conventional banks (Syafrida & Aminah, 2015).

Research, in the realm of monetary policy, have been conducted using Indonesian samples. Ascarya (2012, 2014); Herianingrum & Syapriatama (2016); Kazemian et al., 2021; Setiawan & Karsinah (2016); Widodo (2017); Fikri (2018); Said, Alam, Karim, & Johari, (2018) investigated the transmission process through both conventional and Islamic banking. Zulkhibri & Sukmana (2017); Octaviani & Arif (2018) examined the transmission process through Islamic banks, specifically by passing through Islamic banks financing. (Zulkhibri & Sukmana, 2017) employed panel regression analysis. Another research has been done by (Ozkan & Erden, 2015) on comprehensive study using the combining of Dynamic Conditional Correlation and Generalized Autoregressive Conditional Hetero skedasticity (DCC-GARCH) and panel threshold regression analyses to assess time-varying exchange rate pass-through and macroeconomic determinants of the degree. The study covered a sample of 88 countries composed of 19 less developed, 41 developing and 28 advanced countries and found low Exchange Rate Pass-Through (ERPT) over the past 30 years, especially a dramatic decline since mid-90s. Furthermore, the study had evidently shown a positive relationship between ERPT and average inflation but a negative response of inflation rate volatility to exchange rate volatility, the degree of openness, and the output gap. (Helmy, Fayed & Hussien, 2018) adopted the Structural Model of Vector Auto Regression (SVAR), impulse response function and variance decomposition to demonstrate pass-through effects in Egypt.

Through a comprehensive review of the empirical literature, it is found that several known scholars have confirmed the Monetary Policy Transmission Mechanism (MPTM) through both the bank lending and the balance sheet channels for different economies (Bernanke, 1993; Bernanke et al., 1995; Cecchetti, 1999; Hamza & Saadaoui, 2018; Kashyap & Stein, 1994; Halim, Said, & Yusuf, 2012). However, these researchers have also reported the effect of monetary policy shocks on banks' lending ability that differs considerably across bank size and banks liquidity positions. Similarly, (Anwar & Ngyend, 2018; Auclert, 2017; Aysun & Hepp, 2013; Erdogdu, 2017; Evans, Fisher, Gourio & Kran, 2015; Jermann, 2020) have found the significance of Central Banks in MPTM.

What makes Islamic banking is the fact that financial stability is enhanced by the existence of risk sharing activities (Yungucu & Saiti, 2016; Miah & Uddin, 2017; Setapa et al., 2020). Whenever there are shocks to the financial system, Islamic banks can absorb these shocks and transmit them. Shocks will mostly affect the assets-side of banks' balance sheet. However, due to their risk sharing nature, these shocks will be transmitted to the liabilities side. This capability will render the Islamic bank capable of withstanding the uncertainty in the economy (Rashid, Yousaf & Khaleequzzaman, 2017; Shuhidan, Said, Mokri, & Kazemian, 2016). This study will try to identify the process of monetary transmission through sharia macro monetary variables, followed by how the Islamic monetary variables play a role in the ultimate goal of monetary policy, namely price stability which is proxied by inflation. The problem is identifying how the process carried out in the transmission (black box) affects the real sector or inflation target, what variables are influential in the process and how do the roles and lags of time (operator lag) affect the process. This paper differs from above intellectuals as this paper uses time-series econometrics, *i.e.,* Structural VAR.

THEORETICAL AND EMPIRICAL LITERATURE

The mechanism of monetary policy transmission is an intricate phenomenon, because transmission to the macro-economy takes place through multiple channels. The channel categories identified in the literature include the interest rate, exchange rate, credit and asset price (Cecchetti, 1995; Taylor, 1995; Wirama, Wiksuana, Mohd-Sanusi & Kazemian, 2017). The impact of each channel is determined by country-specific factors such as economic structure, statutory guidelines, market formation and financial configurations. The key element for an efficient monetary policy is identification of the relative significance of these channels related to a specific country.

In the Islamic economic, the banking sector does not recognize interest rate instrument. The Islamic financial system implements Profit-Loss Sharing (PLS) based transaction and trend-based transaction. The distribution proportions of profits are obtained based on business activities (investment) and the provision of funds to the real sector. This means that the Islamic monetary system (monetary policy) has a dependency on the real sector. Nevertheless, there are no specific Islamic principles discussing the monetary transmission mechanism regarding credit and financing channels. The central bank uses monetary policy in order to encourage economic growth by maintaining a smooth circulation of money in the medium and long term, within the framework of stable prices and other socioeconomic targets (Chapra, 2000).

Previous research on the mechanism of monetary transmission, especially bank lending channels and economic growth in Indonesia, has been carried out, such as the research conducted by (Ascarya, 2012; Wulandari, 2012; Yarasevika, Tongato & Muthia, 2015; Amaluddin, 2007). In addition, other studies such as (Agha et al., 2005; Simpasa, Nandwa & Nabassaga, 2015; Montes & Monteiro, 2014; Azofra et al., 2017; Kazemian et al., 2020), stating that the credit channel is extremely effective and is used in monetary transmission mechanisms that affect economic growth in developing countries. However, research on the mechanism of Islamic monetary transmission, especially the new bank financing channel is still very limited. A strand of studies on bank financing channels by (Amaluddin, 2007; Ascarya, 2012; Hamza & Saadaoui, 2018; Shuhidan et al., 2018; Said, Ghani, Zawawi, & Yusof, 2012) found that although the influence of the Islamic monetary system is still relatively small compared to the conventional system in transmitting monetary policy to the real sector, the Islamic system can reduce the adverse impact of interest rates, so it will not cause inflation and increase economic growth. (Ascarya, 2012) made use of the time series analysis and asserted that conventional systems provide the expected results, except that the increase in interest rate increase inflation. In addition, (Ayuniyyah, Beik & Arsyianti, 2013) found significant impact of Islamic monetary transmission mechanism on real output growth, but not on inflation. As a result, all the Sharia variables have significant effect towards the growth of the real sector without having any variables which affect the inflation except for the instruments of Bank Indonesia certificates sharia (SBIS). However, SBIS is not able to push for economic growth and can only be used as an instrument to absorb funds which are not being allocated to the real sector of an economy. SBIS is a monetary instrument complementing Bank Indonesia certificates (SBI) used by conventional banks. The studies on the dual system indicate some inconclusive results.

A stream of literature has revealed the role of Islamic banking in the monetary transmission process in the Islamic world (Aysan, Disli & Ozturk, 2018; Majid & Hasin, 2014; Sukmana & Kaseem, 2010; Yungucu & Saiti, 2016). The earlier notable study by (Agha, Ahmed, Mubarik & Shah, 2005) explained that along with the traditional exchange rate channel, the banking channel is also a significant source of monetary transmission in Pakistan. Similar research by (Mohsin, 2011) determined the impact of monetary policy on lending and deposit rates in Pakistan. Janjua, Rashid & Ain (2014) found a negative relationship between monetary policy and bank loan supply. In addition, they showed that contracting monetary policy is adversely associated with smaller banks as compared with larger banks.

As a conclusion, even though the Islamic monetary transmission through Islamic banking is relatively small as compared to conventional banking, it can still reduce the adverse impacts of interest rates and avoid inflation while simultaneously boosting the growth of the economy.

METHODOLOGY AND DATA

There are still little studies in small-open economies which examines the effect of the monetary policy shocks by using an open SVAR approach. For example, the most recent SVAR studies of a small-open economy were conducted by (Cushman & Zha, 1997; Brischetto & Voss, 1999; Dungey & Pagan, 2000; Parrado, 2001; Buckle et al., 2007; Aziz, Said, & Alam, 2015). Most of the studies have used block exogeneity restrictions in modelling the international economic linkages to the small-open economy.

This study uses SVAR method as an extension of Vector Auto Regression (VAR). In the VAR method, a theoretical restriction is not made based on economic theory relevant to the variables used in the analysis as in Equation (1). Whereas for SVAR method in equation (2) a restriction is made based on a strong theoretical relationship to the scheme in the form of the variables used in the VAR system. The fundamental difference between the VAR and SVAR models lies in the emphasis of restriction. That is, the critical phase of the SVAR model lies in the identification of elements in the matrix. The VAR (1) and SVAR (2) models are denoted as follows:

$$Yt = A1yt + A2yt-1+.....+Apyp-2+D+vt \quad (1)$$

$$A0y1 = c0 + A1yt-1+A2yt-2+...+Apyp-2+D+vt \quad (2)$$

Where:

1. y_t: (nx1) endogenous variable vector representation
2. c_0: (nx1) representation of constant vector
3. A_i: (nxn) matrix (i=0, ..., p) of structural parameters,
4. D: (nx1) vector of exogenous variables and
5. v_t: (nx1) structural innovation, assumed to be orthogonal and not correlated.

The basic specification model of VAR that will be used is a dynamic model, reduced form VAR namely:

$$xt = D(L)Xt-1+ut \quad (3)$$

Where:

1. Xt: vector endogenous variable
2. D (L): autoregressive lag polynomial
3. ut: vector reduced form innovations

Reduced form innovations can be an instrument that describes the movement shock of variables in VAR with certain restrictions according to economic theory so that the SVAR model is produced. In accordance with the standard literature in SVAR, the correlation between reduced form innovations and structural shocks is represented in the following equation known as the AB model:

$$Aut = Bvt \quad (4)$$

A and B are n x n matrices that explain the instant relationship between variables and the linear relationship between reduced forms innovations with structural shocks. These structural shocks are assumed to be independent and are identically distributed so that they do not contain zero cross correlation. The VAR structural form can be generated by multiplying equation (1) with A and using the relationship in equation (2) so that it becomes the following equation:

$$AX_t = AD(L)X_{t-I} + Aut = AD(L)X_{t-I} + B_{vt} \quad (5)$$

Equation (5) can be solved to find Xt so as to produce the SVAR specification as follows:

$$Xt = [ID(L)L] - IA - IBvt \quad (6)$$

The SVAR equation for the above model can be summarized according to Zivot (2000) into the following equation:

$$IBvt = \gamma^0 + \Gamma Iyt - I + et \quad (7)$$

The main purpose of SVAR estimation is to obtain a non-recursive orthogonalization error term for the analysis of impulse response, while the alternative recursive orthogonalization from Cholesky requires including sufficient restrictions to identify the components orthogonal error term. B is an 8 x 8 matrix containing structural parameters of endogenous variables, yt is an endogenous variable vector at k dimensions at time t, γ^0 is an intercept, yt-1 is a vector of endogenous inaction variables at k dimension, et is a structural innovation vector k dimension, where $\sim (0, \Sigma e), \gamma$ is a constant in the vector, k- dimensional ΓI is a matrix of polynomials (finite order matrix) with a lag of one operator at k × a structural coefficient k.

The relationship between reduced form and structural model can be stated as below:

$$\Sigma = (B-10)\,D(B-10)' \quad (8)$$

Exact identification requires parameters in B0 and D, totalling 2k2 - k, which can only be obtained from the reduced form equation. Since Σ has a parameter $\frac{K(K+1)}{2}$, there is a need for $2K2 - K\frac{K(K+1)}{2}$ restrictions on B0 and D. That is the standard in the SVAR literature for D its shape diagonal, wearing a restriction k(k −1), also restriction $\frac{K(K+1)}{2}$ on the matrix B0. For example, the matrix B0 lower triangular, called standard recursive or Wold causal ordering is often used in SVAR studies.

SVAR Model, Restriction and Identification

Based on the relationship between variables as formulated next, an analysis of influence and the SVAR basic model of the transmission mechanism of sharia monetary policy in Indonesia is identified. Table 1 presents the definition of variables used in the study. That is, the external economy (for example, the United States) is not affected by fluctuations in the Indonesian economy for both contemporary and lagged. Therefore, the basic model SVAR monetary economy of sharia Indonesia is represented by a vector Xt:

$$Xt = (EFFR*, 7DRR, SBIS, RDEP, RFIN, DEP, FIN, P) \quad (9)$$

Table 1
DEFINITION OF VARIABLES

Notation	Definition of variables	Explanation
EFFR	Effective Federal Funds Rate	The Fed's interest rate as a proxy for the world interest rate
7DRR	Bank Indonesia rate/7days repo rate	Official interest rate for 3 months
SBIS	Outstanding placement on sharia SBI/ Bank Indonesia certificates sharia	Outstanding placement on sharia SBI
RDEP	Equivalent rate of return of sharia deposits	Interest rates 1-month deposits
RFIN	Equivalent rate of return sharia financing	Average level of profit-sharing ratio for banks
DEP	Total shariah banking deposits	Deposits Total deposits successfully collected Islamic banks
FIN	Financing	Total financing provided by Islamic banks
P	Inflation	Monthly nominal inflation rate

The main purpose of the use of SVAR model is to obtain a non-recursive orthogonal on the error term for analysis of impulse the response. Therefore, the SVAR model includes a number of restrictions to identify structural or orthogonal components of the error term. For this reason, $\frac{K(K+1)}{2}$ must be included for short-term restrictions (contemporaneous restrictions/K-models).

Recursive relationship notation is not sufficient to identify the relationship simultaneous contemporaneous between policy instruments and sharia macro monetary variables. To determine the dynamic shock of structural monetary policy and mitigate its impact, a non-recursive SVAR is used, which allows the imposition of restriction assumptions into the model. The non-recursive structure provides an explanation of the simultaneous contemporaneous interactions between variables. Non-recursive SVAR models in this study have restrictions as written in the matrix (Table 2).

Table 2
MATRIX RESTRICTIONS OF NON-RECURSIVE SVAR MODELS

1	$-\theta_1$	$-\theta_2$	$-\theta_3$	$-\theta_4$	$-\theta_5$	$-\theta_6$	$-\theta_7$	$EFFR_{1t}$		α_{10}		1	0	0	0	0	0	0	0	$EFFR_{1t}$		u_{1t}
$-\theta_8$	1	$-\theta_9$	$-\theta_{10}$	$-\theta_{11}$	$-\theta_{12}$	$-\theta_{13}$	$-\theta_{14}$	$SBIS_{2t}$		α_{20}		0	1	0	0	0	0	0	0	$SBIS_{2t}$		u_{2t}
$-\theta_{15}$	$-\theta_{16}$	1	$-\theta_{17}$	$-\theta_{18}$	$-\theta_{19}$	$-\theta_{20}$	$-\theta_{20}$	$7DRR_{3t}$		α_{30}		α_{31}	0	1	0	0	0	α_{37}	α_{38}	$7DRR_{3t}$		u_{3t}
$-\theta_{21}$	$-\theta_{21}$	$-\theta_{22}$	1	$-\theta_{23}$	$-\theta_{24}$	$-\theta_{25}$	$-\theta_{26}$	$RDEP_{4t}$	=	α_{40}	+	0	α_{42}	α_{43}	1	0	0	0	0	$RDEP_{4t}$	+	u_{4t}
$-\theta_{27}$	$-\theta_{28}$	$-\theta_{29}$	$-\theta_{30}$	1	$-\theta_{31}$	$-\theta_{32}$	$-\theta_{33}$	$RFIN_{5t}$		α_{50}		0	α_{52}	α_{53}	0	1	0	0	α_{58}	$RFIN_{5t}$		u_{5t}
$-\theta_{34}$	$-\theta_{35}$	$-\theta_{36}$	$-\theta_{37}$	$-\theta_{38}$	1	$-\theta_{39}$	$-\theta_{40}$	DEP_{6t}		α_{60}		0	0	0	α_{64}	0	1	0	0	DEP_{6t}		u_{6t}
$-\theta_{41}$	$-\theta_{42}$	$-\theta_{43}$	$-\theta_{44}$	$-\theta_{45}$	$-\theta_{46}$	1	$-\theta_{47}$	FIN_{7t}		α_{70}		0	α_{72}	α_{73}	0	0	0	1	α_{78}	FIN_{7t}		u_{7t}
$-\theta_{48}$	$-\theta_{49}$	$-\theta_{50}$	$-\theta_{51}$	$-\theta_{52}$	$-\theta_{53}$	$-\theta_{54}$	1	P_{8t}		α_{80}		0	0	0	α_{84}	0	α_{86}	0	1	P_{8t}		u_{8t}

Structural variance covariance matrix is D assumed to be diagonal, so the model is over-identified because there are 4 more restrictions. To compile the equation notation in the matrix form above explicitly, it can be seen in its partial equation. For example, the price equation (inflation) as follows:

$$Pt = \alpha 8 + \alpha 84RDEP + \alpha 86DEP + BIxt - I...Bpxt - p + u8t \quad (10)$$

This is similar for the other equations. An explanation of the restrictions imposed is as follows: the first two variables effective federal funds rate (EFFR) fund and SBIS are considered as external variables that are not affected by the temporary shock of the domestic variables in the system. The EFFR and SBIS variables are only influenced by themselves. The 7DRR variable is influenced by the EFFR, because the benchmark interest rate in a small open economy will inevitably be influenced by the world interest rate represented by the Fed's interest rate. In addition, the determination of 7DRR is also influenced by the variable financing (FIN) and inflation (P), the amount of financing will affect the determination of the amount of 7DRR because it is used to stimulate it, and likewise inflation will be adjusted to the development of the reference interest rate. The study utilizes time series monthly data for the period of 2001M01 until 2019M12.

RESULTS AND DISCUSSION

Stationarity Test and Optimum Lag

The test method used to carry out stationary tests is the ADF test with a maximum lag of 4. If the t-ADF value is smaller than the critical value of MacKinnon, it can be concluded that the data we use do not contain unit roots. Using 5 per cent McKinnon critical value, there are only two variables that are stationary at level, namely EFFR and Islamic financing rate of return (FIN). However, all variables are stationary at first difference as shown in Table 3.

Table 3
DATA STATIONARY TESTS

Variables	ADF (Level)					
	Intercept		Trend and intercept		None	
EFFR	-3.087726	0.03	-2.640526	0.2634	-1.875	0.0581
7DRR	-1.889878	0.3362	-2.03206	0.5781	-1.094	0.2474
SBIS	-1.8551	0.3526	-4.336614	0.0038	-0.349	0.5575
RDEP	-2.14062	0.2293	-3.877632	0.0157	-1.262	0.1897
RFIN	-3.582687	0.0074	-4.250311	0.0051	-1.638	0.0956
DEP	1.777262	0.9997	-1.505312	0.823	4.0662	1
FIN	0.387406	0.9817	-2.410421	0.3724	1.737	0.9799
P	-0.400697	0.9046	-1.660287	0.7631	6.7584	1
Test Critical Values						
1% level	-3.483312		-4.031309		-2.583153	
5% level	-2.884665		-3.445308		-1.943344	
10% level	-2.57918		-3.147545		-1.615062	

The estimated optimal lag length selections used are as follows; SC (Schwarz information criterion) and HQ (Hannan-Quinn information criterion) recommended lag 1 and 2. While FPE (Final prediction error), LR (Sequential modified LR test statistic at 5%) and AIC (Akaike information criterion) recommended 4 as optimal lag length. The use of optimal lag is

very important in the VAR approach because lag from endogenous variables in the equation system will be used as exogenous variables.

The optimal lag determination criteria were determined based on the shortest lag and the smallest Akaike Information Criterion (AIC) standard. As suggested by (Liew & Terence, 2005; Ivanov & Kilian, 2007), AIC is the strongest criterion for monthly observational data, thus the lag 4 was used as optimal lag as seen in Table 4.

Table 4
LAG LENGTH CRITERIA

Lag	LogL**	LR	FPE	AIC	SC	HQ
0	-4963.47	NA	9.21e+24	80.18499	80.36695	80.25891
1	-3666.773	2405.163	2.14e+16	60.30279	61.94037*	60.96801
2	-3562.818	179.4056	1.14e+16	59.65836	62.75157	60.91489*
3	-3489.125	117.6710	1.00e+16	59.50202	64.05086	61.34987
4	-3415.372	108.2505*	9.10e+15*	59.34471*	65.34918	61.78387
5	-3371.372	58.90321	1.39e+16	59.66729	67.12739	62.69776

Structural Vector Autoregression Estimation

Table 5 shows the results of an estimation of SVAR with established restrictions. Out of the 14 parameters produced, most are significant, with particular focus on 3 coefficients that have significance value greater than 5 percent, namely c(1) in the BI reference interest rate equation (7DRR), c(3) and c(13) in the RFIN equation. In general, these results reflect good estimation results because, the core of SVAR analysis is the analysis of impulse responses and the decomposition of variations. The EFFR coefficient apparently has no effect on the 7DRR, it is certainly an unexpected result, theoretically with a small open economy, changes in the interest rates of the US Fed will affect almost all the central bank's benchmark interest rates in the world and have equivalent returns on deposits in Islamic banks (RDEP) directly. This could happen because in the research period, the reference was stable for both the 7DRR and the EFFR itself, so that there was no shock reading from the EFFR. Furthermore, SBIS has no effect on the equivalence of financing interest rates (RFIN), meaning that the determination of profit-sharing ratio as a proxy for financing interest is not influenced by the level of SBI returns and funds deposited on the instrument. Likewise, inflation (P) does not affect the interest rate on Islamic bank financing. The other parameters are in line with expectations; hence the results are sufficient for an analysis of the shock response of a policy.

Table 5
ESTIMATION RESULTS OF STRUCTURAL-VAR MODEL

Model: Ae=Bu where E[uu']=I							
A =							
1	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0
0	0	1	0	0	0	0	0
0	0	0	1	0	0	0	0
0	0	0	0	1	0	0	0
0	0	0	0	0	1	0	0
0	0	0	0	0	0	1	0
0	0	0	0	0	0	0	1
B =							
1	0	0	0	0	0	0	0

0	1	0	0	0	0	0	0
C(1)	0	1	0	0	0	C(11)	C(12)
0	C(2)	C(5)	1	0	0	0	0
0	C(3)	C(6)	0	1	0	0	C(13)
0	0	0	C(8)	0	1	0	0
0	C(4)	C(7)	0	0	0	1	C(14)
0	0	0	C(9)	0	C(10)	0	1
	Coefficient	Std. Error	z-Statistic	Prob.			
C(1)	-0.530249	0.543811	-0.975062	0.3295			
C(2)	0.000160	6.18E-05	2.587708	0.0097			
C(3)	-0.000113	7.68E-05	-1.475042	0.1402			
C(4)	-0.701491	0.139003	-5.046594	0.0000			
C(5)	-1.98469	0.210174	-9.443102	0.0000			
C(6)	0.704547	0.337120	2.089900	0.0366			
C(7)	4073.147	794.9185	5.123980	0.0000			
C(8)	-5579.318	429.2529	-12.99774	0.0000			
C(9)	0.773974	0.112549	6.876755	0.0000			
C(10)	0.576216	0.043377	13.28387	0.0000			
C(11)	0.301660	0.030562	9.870305	0.0000			
C(12)	0.668969	0.093173	7.179892	0.0000			
C(13)	0.316221	0.250082	1.264469	0.2061			
C(14)	5463.762	620.5110	8.805262	0.0000			
Log likelihood	-89608292						
LR test for over-identification:							
ChiSquare(22)	1.79E+08						
Probability	0.0000						

Stability Test

Based on the SVAR stability test in Figure 1, Islamic monetary transmission showed the modulus value of the model entering the circle. Based on these results, it can be concluded that the SVAR model was stable so that a test can be performed for impulse response and variance decomposition on this model. All modulus values were less than one and there were no explosive variables, so the model was stable.

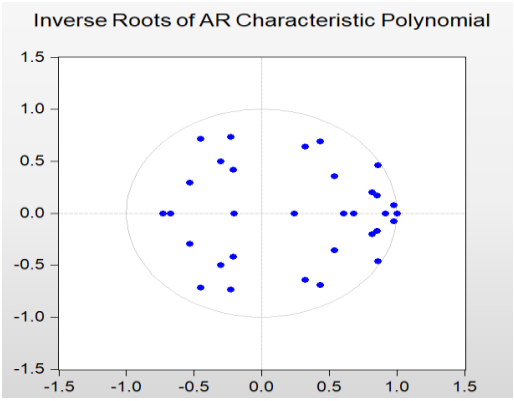

FIGURE 1
SVAR STABILITY TEST

Impulse Response Function

Figure 2 shows the vertical axis in the Impulse Response Function (IRF) image describing the standard deviation used to measure how much response will be given by RDEP, RFIN, DEP AND FIN if there is a shock to the 7DRR. Whereas the horizontal axis shows the duration of variable response time in the model if there is a shock to 7DRR. If the 7DRR response is above the horizontal axis, it indicates that the shock will have a positive effect, and vice versa, if the 7DRR response is below the horizontal axis, it indicates that the shock has a negative effect.

IRF analysis on Islamic monetary transmission is within the next 10 months. It can be explained that monetary policy shocks have been responded positively by Islamic banks with an increase in the equivalent rate of return (DEP) and financing (FIN). Although the pattern of change in the rate of return is different because the RFIN level starts to fall in the 5th month and negative in the 7th month, both the DEP and FIN variables continue to show a decline. The highest response to the shock of 7DRR monetary policy is the equivalent level of savings in Islamic Banks (RDEP), where RDEP responds positively about 1.5 percent to 7DRR shock at one standard deviation. This means that the higher the 7DRR, Bank Indonesia (BI) implements a tight monetary policy, the Islamic banks will also increase yields by increasing the equivalent rate of return.

The level of return on deposits in Islamic banking is consistently positive until it reaches a balance of around 1 percent in the 10th month. Therefore, it is true that the movement of the BI benchmark interest rate will encourage both conventional banks and Islamic banks to raise interest or profit rates, which proves a positive relationship between the two. As such, BI policies are also aligned to the transmission of Islamic banks by increasing the rate of return so that people save their funds in the banking system. However, the public's responses to the increase in the rate of return only lasted for 2 months, after which time deposit funds (DEP) actually responded to being negative at the start of the 3rd month, in which during the 10th month it only began to rise again.

The DEP variable only responds in short term because the response to the financing interest equivalent rate (RFIN) also rises at the same time with an increase of 7DRR. In this case, the two indicators of the rate of return show a similar response that is positive to the shock of monetary policy. Even though in the 7th month the financing interest rate (RFIN) begins to fall negative to minus 1 percent, concurrently, financing (FIN) continued to show a downward trend. The response of both RDEP and RFIN returns shows a positive relationship until the 5th month, where the interest rate of financing responds to greater monetary policy shock. This large response was apparently not consistent enough because starting from month 5, it tends to decrease even negatively entering month 7.

It can be explained that the high level of interest financing equivalent will subsequently result in declining financing so that banks will eventually reduce their financing interest rates again. This is consistent with FIN's response to 7DRR which tends to continue to decline. While for the DEP variable, although initially decreased, recovery began in the 9th month. The difference in adjustment is related to the time value of money, where people still need banks as a place to store their funds in the long run.

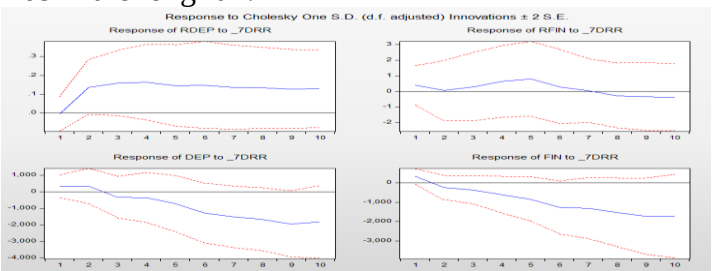

FIGURE 2
SHARIA VARIABLE RESPONSE TO 7DRR

Figure 3 shows the response of sharia monetary variables to SBIS shock variables. RDEP consistently responds positively until the end of the observation period, even going up slightly in the middle of the 6th and 7th months. This means that the higher the SBIS as indicated by the increasing number of Islamic banking funds parked in the SBIS instrument, the higher the rate of return on deposit by the bank so that the DEP rises, with the expectation the funds can be placed on SBIS providing a good and safe return rate. However, DEP responded differently in the 4th month, whereby the community began to respond negatively to SBIS shock. When Islamic banks increase RDEP, the public stays to increase their deposits (DEP) up to the 4th month. For the Return on Financing (RFIN), Islamic banking immediately responds negatively by lowering the Financing Interest Rate (FIN) but tends to return stable at the 8th months onwards. But the amount of Financing (FIN) tends to continue to decline negatively from the original condition.

This condition is related to risk, as placement in SBIS will be safer than providing financing for the real sector which is riskier even with a profit-sharing scheme. In general, sharia transmission variable responses to 7DRR and SBIS monetary policy shock tend to show the same pattern and in accordance with monetary theory. A slight difference was shown in the RFIN variable because it immediately responded negatively by 16 percent at the start of shock, and returned to the initial balance at the 10th month.

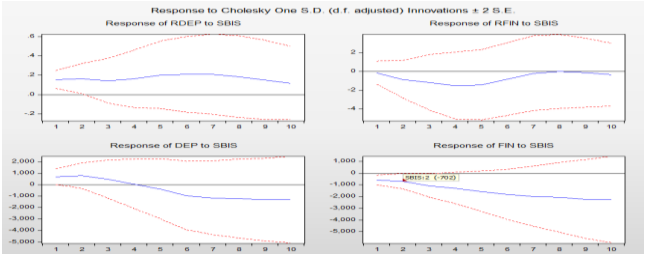

FIGURE 3
SHARIA VARIABLE RESPONSES TO SBIS

Figure 4 shows how the transmission of monetary policy can be crossed by Islamic monetary variables in influencing inflation. All RDEP variables, RFIN, DEP and FIN contributed to the increase in inflation. It is shown that the response of P which is positive at above the midline. All variables affect inflation around 1 percent even though with different fluctuations, for example the FIN variable was responded negatively in the 3rd month, but only briefly later rose again. From the perspective of monetary policy, raising the benchmark interest rate of 7DRR and SBIS is still unable to restrain inflation, but at least, Islamic banks are able to transmit to inflation moderately. An increase of 1 percent inflation in a year is a natural phenomenon in a developing economy such as Indonesia.

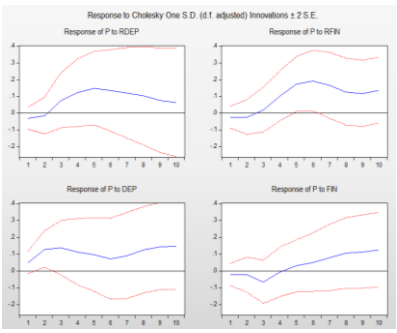

FIGURE 4
INFLATION RESPONSE TO ISLAMIC MONETARY VARIABLES

Variance Decomposition

After analyzing dynamic behavior through impulse response, the characteristics of the model will be analyzed using variance decomposition as presented in Table 5. The analysis focuses on how variables in Islamic banking affect inflation (P). The results showed that the most dominant RDEP variable was influenced by its own variable, reaching 90 percent in the first month, then consistently becoming 70 percent at the end of the period. Next, SBIS had influenced RDE by 16 percent and 7DRR by 10 percent. This shows that the SBIS sharia monetary policy variable shows a greater influence than the 7DRR as a proxy for conventional policies, although it also influences RDEP.

Variance Decomposition (VD) on the transmission of Islamic monetary policy is used to determine the contribution of the RDEP, RFIN, DEP AND FIN variables to the changes in 7DRR AND SBIS and their effect on inflation (P) in the coming periods. The analysis showed that the variable that is expected to have the greatest contribution to P was itself which reached 90 percent at the beginning of the period and continues to fall until 45 percent. In the next ten months RFIN, DEP and RDEP and FIN contributed 16 percent, 12 percent, 8 percent and 7 percent respectively. However, at the beginning of the period, DEP made a greater contribution because it affected the money supply (JUB) as a target between monetary policy of 1.5 percent.

Table 5
VARIANCE DECOMPOSITION

Variance Decomposition of RDEP:									
Period	**S.E.**	**EFFR**	**SBIS**	**_7DRR**	**RDEP**	**RFIN**	**DEP**	**FIN**	**P**
1	0.538378	0.708372	8.312537	0.007231	90.97186	0.000000	0.000000	0.000000	0.000000
2	0.774734	0.593621	8.443248	3.099924	87.86321	0.000000	0.000000	0.000000	0.000000
3	0.947908	0.462227	7.881812	4.870249	85.96439	0.052682	0.606021	0.100340	0.062277
4	1.071384	0.431652	8.447035	6.113279	82.98357	0.301412	1.353343	0.306803	0.062902
5	1.156226	0.440420	10.31838	6.809934	80.06720	0.571909	1.355400	0.277696	0.159057
6	1.222347	0.465783	12.12524	7.562588	77.32047	0.789670	1.260103	0.291312	0.184828
7	1.271452	0.514101	13.89877	8.128419	74.73868	0.841276	1.276493	0.400292	0.201975
8	1.304447	0.584929	15.21699	8.756087	72.69206	0.836262	1.272741	0.410954	0.229975
9	1.326477	0.612744	16.02000	9.383998	71.19886	0.819725	1.287626	0.405287	0.271759
10	1.343392	0.601475	16.36023	10.07947	70.02814	0.805121	1.403394	0.397327	0.324847
11	1.354775	0.591793	16.40658	10.65121	69.22732	0.794153	1.526328	0.403282	0.399327
12	1.362648	0.599152	16.30532	11.11552	68.66444	0.786386	1.611126	0.447071	0.470985
Variance Decomposition of RFIN:									
Period	S.E.	EFFR	SBIS	_7DRR	RDEP	RFIN	DEP	FIN	P
1	7.022624	0.090467	0.053674	0.324514	0.120926	99.41042	0.000000	0.000000	0.000000
2	9.968092	0.060248	0.775572	0.165205	0.112980	98.85412	0.000542	0.000122	0.031212
3	11.67052	0.086999	1.558905	0.187720	0.496292	97.61926	0.015587	0.004690	0.030551
4	11.96083	0.278176	3.136170	0.458948	0.916759	94.24461	0.847546	0.081135	0.036655
5	12.46358	0.644445	4.215166	0.829674	1.951113	86.96438	4.486994	0.729855	0.178376
6	13.21815	1.265772	4.146336	0.786479	3.831058	78.01964	8.566393	2.784652	0.599675
7	13.75110	2.591353	3.853250	0.727998	3.931504	72.12948	10.12566	5.856488	0.784267
8	14.12244	4.165355	3.653310	0.728745	3.732067	68.86966	10.12107	7.983708	0.746093
9	14.37099	5.168235	3.538436	0.756985	3.876193	67.07304	9.801196	8.837208	0.948705
10	14.47957	5.619607	3.546076	0.816134	3.885579	66.11648	9.718583	8.964262	1.333273
11	14.52973	5.650701	3.575464	0.873729	3.905539	65.68009	9.869645	8.903229	1.541600
12	14.61390	5.612987	3.537058	0.946494	4.402820	64.96836	10.07358	8.889299	1.569402
Variance Decomposition of DEP:									

Period	S.E.	EFFR	SBIS	_7DRR	RDEP	RFIN	DEP	FIN	P
1	3901.925	0.073593	3.101820	0.646141	20.41551	0.001423	75.76151	0.000000	0.000000
2	5622.830	0.088919	3.369192	0.617480	22.95602	0.001371	72.96701	0.000000	0.000000
3	6722.857	0.195921	2.805618	0.680145	32.00614	0.049901	63.35087	0.863265	0.048136
4	7996.831	0.414193	1.987301	0.687156	40.66050	0.122726	54.88916	0.780731	0.458232
5	8965.595	0.374353	1.755993	1.223850	44.32477	0.102742	48.92955	1.984575	1.304160
6	9619.895	0.769433	2.529360	2.883924	44.70988	0.094033	43.45489	3.389807	2.168671
7	10331.75	1.645795	3.458362	4.666708	41.60673	0.105147	37.83463	7.575152	3.107475
8	11158.41	3.281123	4.152759	6.262810	36.51462	0.153541	32.44345	13.44293	3.748768
9	12130.48	6.634135	4.693620	7.908810	30.93628	0.260438	27.68872	18.01955	3.858440
10	13134.73	9.683334	5.007003	8.684629	26.40913	0.394403	23.83015	22.15468	3.836663
11	14038.61	12.12623	5.299909	8.929643	23.18814	0.467937	20.93414	25.29248	3.761525
12	14796.00	14.59452	5.770752	9.032362	20.93762	0.496232	18.84831	26.73304	3.587169
Variance Decomposition of FIN:									
Period	S.E.	EFFR	SBIS	_7DRR	RDEP	RFIN	DEP	FIN	P
1	2338.925	0.003438	6.755408	1.971231	7.738607	0.000275	19.62864	63.90240	0.000000
2	3333.168	0.006028	7.758486	1.564963	7.880372	0.004435	18.70418	63.47788	0.603662
3	4073.142	0.977127	12.14690	1.887854	6.461040	0.151772	13.72013	63.56794	1.087233
4	5210.714	0.627596	13.56094	2.567988	4.921276	0.226691	9.871767	67.55922	0.664521
5	6330.078	0.675170	15.34486	3.574369	3.533213	0.173170	7.128403	69.05357	0.517238
6	7440.630	1.610084	17.19599	5.559540	2.571248	0.125884	5.160920	67.38815	0.388191
7	8653.629	1.889080	17.94254	6.423864	1.982603	0.093164	3.816413	67.51657	0.335774
8	9873.179	2.286844	18.22291	7.344076	1.725899	0.071655	2.958682	67.09747	0.292471
9	11053.44	3.200888	18.58620	8.293178	1.714752	0.059315	2.412525	65.48830	0.244847
10	12170.46	3.644141	18.82228	8.853142	1.716741	0.052241	2.020645	64.66443	0.226382
11	13192.58	3.994295	19.17371	9.264820	1.678598	0.045049	1.733231	63.89329	0.217001
12	14120.07	4.445769	19.66556	9.725514	1.616472	0.039354	1.513156	62.79314	0.201031
Variance Decomposition of P:									
Period	S.E.	EFFR	SBIS	_7DRR	RDEP	RFIN	DEP	FIN	P
1	0.386509	0.046212	0.078494	5.554885	0.645782	0.439735	1.585331	0.356125	91.29344
2	0.560117	0.042887	0.154227	5.747068	0.383739	0.413194	5.977688	0.339151	86.94205
3	0.647098	0.104979	0.485818	8.544639	1.655266	0.404236	8.928438	1.340205	78.53642
4	0.699650	0.166583	1.911750	9.676275	4.462284	2.497210	10.18250	1.157351	69.94605
5	0.762995	0.140515	2.920686	9.544289	7.505892	7.252862	10.13155	1.120015	61.38419
6	0.829571	0.121127	2.966094	8.636121	8.976779	11.56842	9.302388	1.307090	57.12198
7	0.894124	0.107388	2.599532	8.121718	9.524513	13.39775	9.033443	1.877017	55.33864
8	0.948529	0.150086	2.326567	7.833730	9.635998	13.71710	9.755657	2.901846	53.67901
9	0.990278	0.179000	2.235403	7.553569	9.441987	13.98222	11.06593	3.969857	51.57203
10	1.029858	0.293960	2.221979	7.110558	9.106086	14.67566	12.21634	5.112714	49.26270
11	1.074397	0.575595	2.297784	6.562675	8.690963	15.65429	12.72557	6.442060	47.05106
12	1.123007	0.879226	2.572457	6.006836	8.244795	16.41186	12.77698	7.931594	45.17625

CONCLUSION

This paper investigates the SVAR of the interdependent relationship of inflation, monetary policy and Islamic banking variables (RDEP, RFIN, DEP, FIN) in Indonesia. By using monthly data for the period 2001M01-2019M12, the Impulse Response Function (IRF), Forecasting Error Decomposition Variation (FEDV) is used to track the impact of sharia

variables on inflation (prices). The study found that the variables in Islamic banking which are proxy by FIN, RFIN, DEP and RDEP have different responses in parameters both in impulse and decomposition, but in general, the variables have shown a similar response when there was a change or shock of monetary policy from both conventional (7DRR) and sharia (SBIS). Similarly, Islamic monetary variables affected inflation (P), but with little impact. The results are consistent with previous studies as showed by (Amaluddin, 2007; Ascarya, 2012; Hamza & Saadaoui, 2018). They found that the Islamic monetary system is capable of reducing the adverse effects of interest rates despite having lesser influence in transmitting monetary policy to the real sector as compared to the conventional system, thus preventing inflation and increase.

Next, by using the IRF, the study found that the pattern of relationships between SBIS and Islamic Banking Financing (LFIN) was negative. This means that the higher the SBIS determined by Bank Indonesia, the lower the amount of Islamic financing provided to the public. Given a relatively high SBIS, Islamic banks tend to deposit funds in the Central Bank, Bank Indonesia, and have less provision for financing. The impact will certainly be counterproductive, as people who need capital will find it more difficult to look for business financing, including from Islamic banking. Similarly, the relationship will occur between 7DRR with sharia banking financing variable (FIN).

In addition, the results showed that the DEP relationship pattern with SBIS was negative. It implies that the higher the SBIS, the lower the collection of Islamic funds, although the initial shock responded positively. The reason is, when the monetary authority conducts a policy of raising SBIS profit rates, it will trigger the conventional banking industry to raise interest rates, both loans, savings and deposit rates. This will have an impact on the decline in competitiveness of Islamic banking. The profit-sharing return provided by Islamic banks will be less competitive compared to savings and deposit interest given by conventional banks. This will both directly and indirectly affect the reduction in the amount of third-party funds (DPK) received and the amount of financing channeled by the Islamic banking industry.

Finally, the variation decomposition revealed that SBIS sharia monetary instruments contributed more, namely 6.76 percent to the sharia FIN compared to the conventional 7DRR instrument by only 0.003 percent. A possible explanation is Islamic banking financing is more influenced by Islamic monetary policy instruments, as evident by a greater contribution. Another important conclusion is that the pattern of relationships between Islamic monetary variables and inflation (P) is volatile, which means it can be positive or negative. This condition can be explained when inflation is getting higher, BI as the monetary authority will respond by raising SBI interest rates, which is why conventional banks generally raise interest rates. Whilst, when conventional banks' interest in saving is high, it will cause Islamic banking to be less competitive. In the end, it is very likely that the number of third-party funds along with Islamic bank financing will decline. An increase in the amount of Indonesian Islamic banking financing will have an effect and contribute positively to the decrease in Indonesia's inflation rate.

ACKNOWLEDGEMENT

We would like to thank the Malaysian Accounting Research Institute (HICoE), Ministry of Higher Education, Malaysia, for providing the financial support needed for the project.

REFERENCES

Agha, A.N., Ahmed, Y.A., Mubarik & Shah, H. (2005). Transmission mechanism of monetary policy in pakistan. SBP-Research Bulletin, 1(1), 1-23.

Amaluddin, F. (2007). Effectiveness of monetary policy transmission between Islamic and conventional banks. Unpublished dissertation, University of Indonesia.

Anwar, S., & Nguyend, L.P. (2018). Channels of monetary policy transmission in vietnam. Journal of Policy Modelling, 40(4), 709-729.

Ascarya. (2014). Monetary policy transmission mechanism under dual financial system in indonesia: Interest-Profit Channel. International Journal of Economics, Management, and Accounting, 22(1), 1-32.

Ascarya. (2012). Transmission lines and the effectiveness of multiple monetary policies in Indonesia. Bulletin of Monetary Economics and Banking, 14(3), 283–315.
Auclert, A. (2017). Monetary policy and the redistribution channel (NBER Working Paper No. 23451). National Bureau of Economic Research.
Aysun, U., & Hepp, R. (2013). Identifying the balance sheet and the lending channels of monetary transmission: A loan-level analysis. Journal of Banking & Finance, 37(2), 2812-2822.
Aysan, A.F., Disli, M., & Ozturk, H. (2018). Bank lending channel in a dual banking system: Why are Islamic banks so responsive? The World Economy, 41(3), 674–698.
Ayuniyyah, Q., Beik, I.S.A., & Arsyianti, L.D. (2013). Dynamic analysis of islamic bank and monetary instrument towards real output and inflation in indonesia. Proceeding of Sharia Economics Conference-Hannover, 154-162.
Aziz, M., Said, J., & Alam, M. (2015). Assessment of the practices of internal control system in the public sectors of Malaysia. Asia-Pacific Management Accounting Journal, 10(1), 43-62.
Bernanke, B.S., & Gertler, M. (1995). Inside the black box: The credit channel of monetary policy transmission. The Journal of Economic Perspectives, 9(4), 27-48.
Bernanke, B. (1993). Credit in the Macroeconomy. Quarterly Review, 18, 50-70.
Cushman, D.O., & Zha, T. (1997). Identifying monetary policy in a small open economy under flexible exchange channel. Journal of Islamic Monetary Economics and Finance, 4(2), 251-278.
Cecchetti, S.G. (1999). Legal structure, financial structure and the monetary policy transmission mechanism. NBER Working Paper Series, 1-35.
Dungey, M., & A. Pagan. (2000). A structural VAR model of the Australian economy. The Economic Record, 76, 321-342.
Erdogdu, A. (2017). Functioning and effectiveness of monetary transmission mechanisms: Turkey applications. Journal of Finance and Bank Management, 5(1), 29-41.
Evans, C.L., Fisher, J.D.M., Gourio, F., & Krane, S. (2015). Risk management for monetary policy near the zero lower bound. Brookings Papers on Economic Activity, 1, 141-219.
Fikri, R.J. (2018). Monetary transmission mechanism under dual financial system in Indonesia. Credit-Financing Cha Journal of Monetary Economics, 39, 433-448.
Halim, H. A., Said, J., & Yusuf, S. N. S. (2012). Individual characteristics of the successful asnaf entrepreneurs: Opportunities and solutions for zakat organization in Malaysia. International Business and Management, 4(2), 41-49.
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, 557-570.
Helmy, O., Fayed, M., & Hussien, K. (2018). Exchange rate pass-through to inflation in Egypt: A structural VAR approach. Review of Economics and Political Science, 3(2), 2-19.
Herianingrum, S., & Syapriatama, I. (2016). Dual monetary system and macroeconomic performance in indonesia. Al-Iqtishad: Jurnal Ilmu Ekonomi Syariah (Journal of Islamic Economics), 8(1), 65-80.
Ivanov, V., & Kilian, L. (2007). A practitioner's guide to lag-order selection for var impulse response analysis. Studies in Nonlinear Dynamics & Econometrics, 9(1), 1219.
Jermann, U.J. (2020). Negative swap spreads and limited arbitrage. The Review of Financial Studies, 33(1), 212-238.
Kashyap, A., & Stein, J. (1994). Monetary policy and bank lending. In N. Gregory Mankiw (Ed.), Monetary Policy. 221-261. National Bureau of Economic Research, Inc., US.
Kazemian, S., Djajadikerta, H. G., Roni, S. M., Trireksani, T., & Mohd-Sanusi, Z. (2020). Accountability via social and financial performance of the hospitality sector: the role of market orientation. Society and Business Review, ahead-of-print(ahead-of-print), https://doi.org/10.1108/SBR-1104-2020-0061.
Kazemian, S., Djajadikerta, H. G., Said, J., Roni, S. M., Trireksani, T., & Alam, M. M. (2021). Corporate governance, market orientation and performance of Iran's upscale hotels. Tourism and Hospitality Research, 14673584211003644.
Liew, V.K.S., & Terence, T.L.C. (2005). Autoregressive lag length selection criteria in the presence of ARCH errors, Economics Bulletin, 3(19), 1-5.
Majid, M.S.A., & Hasin, Z. (2014). Islamic banks and monetary transmission mechanism in Malaysia. Journal of Economic Cooperation & Development, 35(2), 137–166.
Miah, D.M., & Uddin, H. (2017). Efficiency and stability: A comparative study between islamic and conventional banks in GCC Countries. Future Business Journal, 3(2), 172-185.
Montes, G.C., & Monteiro, G.G. (2014). Monetary policy, prudential regulation and investment: Evidence from Brazil Considering the bank lending channel. Journal of Economic Studies, 7(1), 63–83.
Octaviani, I., & Arif, M.N. (2018). Islamic monetary policy and its impact on real sector. Trikonomika, 17(2), 43-48.
Ozkan, I., & Erden, L. (2015). Time-varying nature and macroeconomic determinants of exchange rate pass-through. International Review of Economics and Finance.
Parrado, E. (2001). Effects of foreign and domestic monetary policy in a small open economy: The case of Chile. (Central Bank of Chile Working papers 108). Central Bank of Chile.

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.

Azofra, S.S., Olmo, T.B., Saiz, C.M.N., & Gutiérrez, L.C. (2017). Financial development and the bank lending channel in developing countries. Journal of Macroeconomics, 55, 215–234.

Said, J., Alam, M. M., Karim, Z. A., & Johari, R. J. (2018). Integrating religiosity into fraud triangle theory: findings on Malaysian police officers. Journal of Criminological Research, Policy and Practice, 4(2), 111-123.

Said, J., Ghani, E. K., Zawawi, S. N. H., & Yusof, S. N. S. (2012). Composite performance measurement for zakat organisations. British Journal of Economics, Finance and Management Sciences, 4(1), 50-60.

Setiawan, R.Y., & Karsinah. (2016). The transmission mechanism of monetary policy in influencing inflation and economic growth in Indonesia. Economics Development Analysis Journal, 5(4), 460-474.

Shuhidan, S. M., Hamidi, S. R., Kazemian, S., Shuhidan, S. M., & Ismail, M. A. (2018). Sentiment analysis for financial news headlines using machine learning algorithm. Paper presented at the International Conference on Kansei Engineering & Emotion Research. KEER.

Shuhidan, S. M., Said, J., Mokri, S. H., & Kazemian, S. (2016). Market orientation within technological companies: Risk based approach. Paper presented at the 2016 3rd International Conference on Computer and Information Sciences (ICCOINS).

Simpasa, A., Nandwa, B., & Nabassaga, T. (2015). Bank lending channel in zambia: empirical evidence from bank level data anthony. International Journal for Researcher Development, 7(1), 63–83.

Kaseem, S. (2014). Islamic banks and monetary transmission mechanism In Malaysia. Journal of Economic Cooperation and Development, 35(2), 137-166.

Setapa, M., Mamat, M., Bakar, H. A., Yusuf, S. N. S., & Kazemian, S. (2020). Enterprise risk management: impact on performance of private higher educational institutions in Malaysia. Polish Journal of Management Studies, 22(1), 485-501.

Syafrida, I., & Aminah, I. (2015). Factors slowing the growth of Islamic banks in Indonesia and Handling efforts. Economics and Business, 14(1), 7-20.

Widodo, A. (2017). Evaluating the effectiveness of dual monetary policy in promoting price stability in indonesia. Iqtishadia: Journal of Islamic Economics and Business Studies, 10(2), 210-233.

Wirama, D. G., Wiksuana, I. G. B., Mohd-Sanusi, Z., & Kazemian, S. (2017). Price Manipulation by Dissemination of Rumors: Evidence from the Indonesian Stock Market. International Journal of Economics and Financial Issues, 7(1), 429-434.

Yarasevika, S., Tongato, A., & Muthia, A.C. (2015). Bank lending channel in Indonesia's monetary policy transmission mechanism: A VECM approach. Proceedings of ISER 5th International Conference, Singapore, 27–32.

Yungucu, B., & Saiti, B. (2016). The effects of monetary policy on the Islamic financial services industry. Qualitative Research in Financial Markets, 8(3), 218-228.

Zulkhibri, M., & Sukmana, R. (2017). Financing channel and monetary policy in a dual banking system: Evidence from Islamic Banks in Indonesia. Economic Notes, 46(1), 117-143.