Is Lean Against The Wind Theory Works In Indonesia Centrak Bank Policy

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Abstract

This study aims to analyze interrelationship of monetary policy shock, Islamic banking asset, asset prices and economic performance. This study examines the effectiveness of monetary policy and its transmission in Indonesia using monthly data from 2003-2020, variables such as 7-days (reverse) repo rate (BI rate), Sharia SBI (SBIS), Money Asset (MASET), Financing (FIN), Interest Rate Equivalence (RFIN), Composite Stock Price Index (IDX), Indonesia Sharia Stock Index (IDXS), Bond Price Index (BOND), Residential Property Price Index (HPI), Gold (GOLD), Inflation (INF) and Index Industrial Production (IPI) was analyzed in the Structural Vector Autoregression (SVAR) model with block-exogeneity and non-recursive in modeling monetary policy shocks in Indonesia. SVAR estimation is carried out on 13 variables at the first difference with a lag length of 1, thus 13 coefficients will be obtained for each equation, or overall obtained 169 (13 x 13 matrix) equation coefficients with a minimum restriction of 78 in order to be exact-identified., here are added some more restrictions so that the model is over-identified.

The results of the SVAR analysis show that there is a monetary transmission through Islamic monetary variables and asset prices even though it only shows for a short time. Bank Indonesia does not react too much when there is an increase in asset prices, and asset prices also do not respond when there is a monetary policy shock. This is characterized by an impulse response that tends to quickly return to its original balance, there is no permanent change when there is a shock on both sides. The results of this study also provide a novelty regarding the ineffectiveness of the lean against the wind, where monetary policy is indifferent to

volatility of asset price, which means neither lean against the wind nor clean up the mess

Generally sharia banking asset portfolio affect asset price and a small effect on the price of gold. This proves that, not always Islamic banking assets are allocated to Islamic shares and real back assets. Islamic banking still plays a role in assets price volatility and non-Islamic common stock. Although assets such as property, bonds and gold are not affected by the portfolio, if the Islamic bank's assets are in assets that contain speculation, the Islamic principles are still not perfectly practiced.

Keywords: Transmission Mechanism, Monetary Policy, Sharia banking Asset, Asset Prices.

JEL Classification: E44,E47,E52,G12

Introduction

The banking sector has a strategic role in reducing transaction costs, conducting risk sharing and reducing the possibility asymmetric information. Credit is intended for production, consumption and speculation. Only credit for production that strengthen the financial sector has begun to be investigated in the literature which is usually referred to as a financial accelerator (Kashyap & Stein, 2000), (Stiglitz & Akerlof, 2007), (B. Bernanke et al., 1996) (Kiyotaki & Moore, 1997). An important issue for central banks is whether the monetary authority should respond to asset prices to stabilize inflation and output variability. It is believed that a well functioning and growing stock market can channel money from savers (shareholders) to borrowers (companies) for productive investments, thereby spurring economic growth (Ali et al., 2014).

The focus of monetary policy will be on whether the policy process has a significant role in the real economy. The process of the role in influencing the real sector is shown through the process in its transmission mechanism (Warjiyo et al., n.d.). Banking intermediation also influences the development of the capital market, both in terms of investment and sources of financing by emitens. Hubbard and O'Brian (2012) stated that monetary policy should be lean against the wind, which is raising interest rates beyond the level required to maintain short and medium term price stability when a potential bubble or bursts occur.

Empirical research has not shown a definite relationship between changes in monetary policy and asset prices. Due to the difficulty in identifying price bubbles, monetary policy can be taken to reduce the negative impact after the bubble burst, meaning that it is still needed as a policy instrument as research of Bean (2003),B. S. Bernanke & Gertler (2001), (Gertler, n.d.); Bordo et al., (2001), Bordo & Wheelock, (2004), Filardo (2011), Roubini (2006). Several studies suggest that

the central bank does not only use asset prices as part of information to estimate inflation and output levels but also as an element of monetary policy response, Borio & Lowe (2002), Filardo, (2005). Inflating asset prices led to excessive consumption and investment growth, which disrupted macroeconomic stability due to high output variability and inflation. Changes in the central bank interest rate policy are needed to offset deviations in asset prices to reduce the potential for bubble formation. Akram et al. (2007) show that monetary policy responses that accommodate changes in housing prices and stock prices further enhance macroeconomic performance. Farooq (2007), Kontonikas & Mantagnoli (2005) state that monetary policy should respond to changes, movements and sources of changes in asset prices from their fundamental prices in transmission of monetary policy (Kontonikas & Montagnoli, n.d.).

The role of asset prices in monetary policy with similar results has also been carried out by Ball (1999), Batini & Haldane (2005), Svensson (2000), Walsh (2016), Woodford (2000). Wadhwani (2008), Borio & Lowe (2002) argue that there is a capital market channel rather than the interest rate channel and the credit channel. According to him, inflation due to expansionary monetary policy will reduce the company's real assets (Madjumerd & Zamanian, 2017). Monetary policy can boost macroeconomic performance with its role in changes in asset prices, as well as inflationary deviations and the output gap (Bordo et al., 2001).

Otherwise, B. S. Bernanke & Gertler (2010) and Bean (2003) state that interest rates should be set only to respond to the inflation and output gap. Apart from the fact that asset prices are quite volatile, it is also difficult to identify their movements, so an overactive monetary policy will actually lead to instability. Mishkin and White (2002) argue that asset price fluctuations that occur are not related to monetary policy, both in real fundamentals and speculation (animal spirit). The central bank simply responds indirectly to changes in asset prices, while still focusing on inflation and output. Instead, it has been assumed that investors are a homogeneous group. If the bubble itself is not significantly affected by lean against the wind, macroeconomic performance can be improved if monetary policy reacts to mismatches in asset prices (Wadhwani, 2008). However, the behavioral finance literature suggests that heterogeneity in investor behavior affects stock market outcomes and may explain stock market anomalies (Baker & Nofsinger, 2011), (Hong & Kacperczyk, 2009). Uhrin & Herwartz (2016) shows that asset price impulses respond positively to changes in contractionary monetary policy.

Islamic banks have different nature and composition in the assets and liabilities. Therefore, based on the unique features of contracts (akad) and motivations of Islamic financial institutions. Kaleem and Isa (2006), Sukmana (2010), Sukmana (2012), dan Sajjad Zaheer & Ongena (2010), S. Zaheer (2013) uses aggregate data on Islamic

banking to examine the response of Islamic financing to monetary policy. Individual and institutional behavior in the Islamic financial system is subject to Islamic norms, which arise from assumptions that are different from conventional markets. If speculation is considered undesirable in Islam, then the actions of investors are limited to Islamic stocks that have yields less than or equal to non-sharia stocks. This is because Islamic portfolios do not include stocks that have been shown to have high returns, such as sin stocks which define as public companies that are directly involved or linked to alcohol, tobacco, and gaming (Hong & Kacperczyk, 2009). However, there is an essential difference between non-Islamic stocks and sin stocks, as non-Islamic stocks also cover other business sectors that are prohibited by sharia. such as conventional banks and insurance companies, as well as companies with high debt, cash and interest bearing securities or receivables.

Meanwhile, more researchers are running the Structural VAR model to examine the relationship between monetary policy and key macroeconomic variables. The same conclusion was also made by Rigobon and Sack (2004), Alessi & Kerssenfischer (2016) and Fausch & Sigonius (2018) finding a heterogeneous relationship between monetary policy and stock prices, an increase in the European Central Bank (ECB) benchmark interest rate has a negative impact on the composite stock price index. This study will try to identify the process of monetary transmission through sharia monetary macro variables with the simultaneous SVAR equation and then how the sharia monetary variables play a role in the ultimate goal of monetary policy.

Theoretical Review

In a competitive market model without friction, the price of an asset, like the price of a good, is determined by the supply and demand. In this model, asset prices reflect the exact present (discounted) value of future cash flows. The canonical representation of this idea is described by the Gordon equation which is often used in the context of equity pricing. The calculation of projecting the path of future cash flows requires analysis of various influencing factors, including macroeconomic variables as well as the uncertainty associated with these variables and the correlations between them. In addition, asset pricing requires the use of an appropriate discount rate. The risk-adjusted discount rate used in calculating the present value is the sum of the risk-free rate and the applicable risk premium for a particular asset. The risk-free rate can often be observed, for example the interest rate on government bonds or government bonds. The risk premium depends on the specific behavior of the asset's cash flows and can be determined using an asset pricing model, assuming that the market is complete and without financial friction.

The asset price channel is an important channel in the transmission mechanism of monetary policy such as research results (Dabla-Norris

& Floerkemeier, 2006), (Mishra & Montiel, n.d.), Tobin's q theory and the wealth effect is transmitted because of its impact on corporate investment decisions and household consumption. In another study as Elbourne et al. (2020), Vo & Nguyen (2017), asset paths can be transmitted through stock and housing prices. Generally literature concludes that asset prices react negatively to exogenous increases in monetary policy instruments, the magnitude, timing, and persistence of these negative reactions vary widely across studies. Previous studies using recursive identification schemes, including Thorbecke (1997), Neri (2004), found that an increase in monetary policy instruments causes a small decrease in stock prices. Bjørnland and Leitemo (2009) criticized the use of a recursive identification scheme by applying short and long term constraints, they found a large continuous negative effect. Lanne et al. (2017) assumed a non-Gaussian SVAR and confirmed the findings of Bjørnland and Leitemo (2009) in rejecting the recursive identification scheme, and found a significant monetary negative effect. In contrast, exploiting changes in the heteroscedasticity structure of the error terms, Rigobon and Sack (2004) and Lütkepohl & Netšunajev (2018) found smaller, negative but relatively persistent effects. In a time-varying SVAR, Giamattei et al. (2020) found negative short-term effects that quickly turned positive after impact especially in the 1980s and 1990s.

Methods

The data used in this study are secondary in the form of monthly time series obtained from various valid sources, such as the Indonesian Economic and Financial Statistics at Bank Indonesia, the Central Bureau of Statistics, Indonesian Banking Statistics, Islamic Banking Statistics, CEIC data, World Bank, The Fed, IBFA and so on. All data are monthly from the period 2003:01 to 2020:12. The data consists of the BI Rate, SBIS (Bank Indonesia Syariah Certificate), MASET (banking assets in the form of liquid/securities/money), FIN (financing), RFIN (equivalent rate of return on financing), FCAP (foreign investment in the capital market), IDX (Composite Stock Price Index), IDXS (Indonesian Sharia Stock Index), BOND (rate of return/bond yield), HPI (Residential Housing Price Index), GOLD (gold price), INF (inflation rate) and IPI (Indonesian Production Index)

Table 1. Variables definition

Notation	Definition	Description
BI rate	BI rate/7days repo rate	Official interest rate for a period of 3 months
SBIS	Sharia SBI	Outstanding placement in sharia SBI

MASET	Money Asset	Allocation in the money market and SBIS shows how sharia bank portfolio
RFIN	Equivalent rate of return	Average rate /average profit-sharing ratio for banking
FIN	Financing	Total financing provided by Islamic banking
FCAP	Foreign capital	Foreign investment in the Indonesian capital market
IDX	Composite Stock Price Index	Stock assets in the capital market
IDXS	Jakarta Islamic Index Islamic	Islamic financial assets in the capital market
BOND	Bonds	Average rate of return on Bond
HPI	Residential Property Price Index	Proxy for property asset prices
GOLD	Gold	Average world gold price
INF	Inflation	Monthly nominal inflation rate
IPI	Indonesian Production Index	Proxy of monthly economic growth rate

The Structural VAR (SVAR) method is an extension of Vector Autoregression (VAR). In the VAR method, a theoretical restriction is not made based on the relevant economic theory on the variables used in the analysis, while in the SVAR a restriction is made based on a strong theoretical relationship to the scheme (relationship map) of the ordering of the variables used in the VAR system. Exact identification requires parameters in B_0 and D, totaling $2k^2 - k$ reduced form equation. Since has parameter $k(k+1)/2$, we need $2k^2 - k - k(k+1)/2$ restrictions on B_0 and D. It is standard in the SVAR literature for the D form diagonally, imposes a $k(k-1)$ restriction, as well as a $k(k-1)/2$ restriction on matrix B_0. The B matrix in the SVAR system of the transmission mechanism of Islamic monetary policy and the role of Islamic banking in the formation of the asset price bubble can be arranged as follows:

$$
\begin{bmatrix}
1 & \alpha12 & 0 & \alpha14 & 0 & 0 & \alpha17 & \alpha18 & \alpha19 & \alpha110 & \alpha111 & \alpha112 & \alpha113 \\
0 & 1 & \alpha23 & \alpha24 & 0 & 0 & 0 & \alpha28 & 0 & \alpha210 & 0 & 0 & 0 \\
\alpha31 & \alpha32 & 1 & \alpha34 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
\alpha41 & 0 & 0 & 1 & 0 & 0 & 0 & \alpha48 & \alpha49 & \alpha410 & \alpha411 & \alpha412 & 0 \\
\alpha51 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & \alpha512 & 0 \\
0 & 0 & 0 & 0 & 0 & 1 & \alpha67 & \alpha68 & 0 & 0 & \alpha611 & 0 & 0 \\
\alpha71 & \alpha72 & \alpha73 & \alpha74 & \alpha75 & \alpha76 & 1 & 0 & 0 & 0 & 0 & \alpha712 & 0 \\
\alpha81 & \alpha82 & \alpha83 & \alpha84 & \alpha85 & \alpha86 & 0 & 1 & 0 & 0 & 0 & \alpha812 & 0 \\
\alpha91 & \alpha92 & \alpha93 & \alpha94 & \alpha95 & \alpha96 & 0 & \alpha98 & 1 & 0 & \alpha911 & \alpha912 & 0 \\
\alpha101 & \alpha102 & 0 & \alpha104 & \alpha105 & 0 & 0 & \alpha108 & \alpha109 & 1 & \alpha1011 & \alpha1012 & 0 \\
0 & \alpha112 & 0 & \alpha114 & \alpha115 & 0 & 0 & 0 & 0 & \alpha1110 & 1 & \alpha1112 & 0 \\
\alpha121 & \alpha122 & 0 & \alpha124 & 0 & 0 & 0 & 0 & \alpha129 & 0 & 0 & 1 & 0 \\
\alpha131 & 0 & 0 & \alpha134 & \alpha135 & 0 & 1 & 0 & \alpha139 & 0 & 0 & \alpha1312 & 1
\end{bmatrix}
$$

Result and Discussion

Table 2. Descriptive Statistic

	BI_RATE	SBIS	MASET	FIN	RFIN	FCAP
Mean	7.148565	5374.114	46019.98	137124.2	13.11769	36045481
Median	7.000000	4004.550	28506.00	102172.3	12.77500	37046981
Maximum	12.75000	14694.00	189689.0	385012.8	85.17000	1.09E+08
Minimum	3.750000	309.0000	672.3870	3457.872	5.000000	100306.0
Std. Dev.	2.041095	4129.209	48424.70	120263.3	8.448293	21758167
Skewness	0.879231	0.534493	1.020745	0.517076	6.900794	0.267485
Kurtosis	3.769770	1.983997	2.892635	1.890163	55.92982	2.453154
Jarque-Bera	33.16262	19.57495	37.61288	20.71087	26928.44	5.267112
Probability	0.000000	0.000056	0.000000	0.000032	0.000000	0.071823
Sum	1544.090	1160809.	9940316.	29618832	2833.420	7.79E+09
Sum Sq. Dev.	895.7047	3.67E+09	5.04E+11	3.11E+12	15345.34	1.02E+17
Observations	216	216	216	216	216	216

IDX	IDXS	BOND	HPI	GOLD	INF	IPI
3555.880	476.8876	8.150620	13.24852	1113.600	6.019028	3.824024
3915.130	533.3500	7.823500	12.30500	1249.450	5.620000	3.686500
6605.630	787.1200	16.98900	17.93000	2004.600	18.38000	33.74500
388.4400	62.35000	4.528000	8.980000	335.9000	1.320000	-13.63400
1899.280	210.3385	2.323804	3.007258	441.3327	3.342670	4.806878
-0.157291	-0.518021	0.893985	0.217452	-0.302502	1.623624	0.766456
1.648089	1.914326	3.709810	1.470871	2.006835	6.009013	10.46193
17.33963	20.26862	33.30600	22.74640	12.17167	176.3890	498.0928
0.000172	0.000040	0.000000	0.000011	0.002275	0.000000	0.000000
768070.0	103007.7	1760.534	2861.680	240537.6	1300.110	787.7490

7.76E+08	9512092.	1161.014	1944.374	41876528	2402.290	4736.746
216	216	216	216	216	216	206

Before estimating the VAR model, the stationarity of the data used is first checked. Stationarity testing of the data in this study was carried out using the Augmented Dickey Fuller Test (ADF Test) method.

Tabel 3. Stationery Test

Variabel	Uji Augmented Dickey-Fuller					
	Level			First different		
	t-stat	Prob.		t-stat	Prob.	
BI RATE	-2.418929	0.1377	non stationer	-6.475411	0.0000	Stationer
SBIS	-1.437026	0.5636	non stationer	-15.73439	0.0000	Stationer
MASET	4.620830	1.0000	non stationer	-14.29585	0.0000	Stationer
FIN	-3.787888	0.0035	Stationer			Stationer
RFIN	-4.181788	0.0009	Stationer			Stationer
FCAP	-2.164316	0.2201	non stationer	-20.23715	0.0000	Stationer
IDX	-9.915794	0.0000	Stationer			Stationer
IDXS	-1.843338	0.3588	non stationer	-12.77800	0.0000	Stationer
BOND	-2.066118	0.2588	non stationer	-12.64082	0.0000	Stationer
HPI	-0.719875	0.8381	non stationer	-2.973612	0.0391	Stationer
GOLD	-0.900002	0.7869	non stationer	-16.25016	0.0000	Stationer
INF	-2.673528	0.0803	non stationer	-6.949916	0.0000	Stationer
IPI	-7.993784	0.0000	Stationer			
1% level	-3.460884					
5% level	-2.874868					
10% level	-2.573951					

Table 4. Lag optimum test

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-11670.22	NA	5.66e+35	119.2165	119.4339*	119.3045
1	-11384.39	530.8187	1.72e+35	118.0244	121.0684	119.2568*
2	-11194.07	328.2052	1.41e+35*	117.8069*	123.6774	120.1835
3	-11035.99	251.6435*	1.67e+35	117.9183	126.6153	121.4392
4	-10912.53	180.1482	2.94e+35	118.3830	129.9065	123.0483

* indicates lag order selected by the criterion

The prerequisite test required in the SVAR analysis is the unit root test, where all variables pass the test at the first degree of integration. For the purpose of simultaneous SVAR equations, sometimes it requires the right lag, usually a smaller lag will result in better data processing and can be processed, then lag 1.

Structural VAR Anaysis

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Table 5. Strucutural VAR estimation

Log likelihood	-15529166		
LR test for over-identification:			
Chi-square(19)	31034595	Probability	0.0000

The estimation results of the SVAR model use the Maximum likelihood method via Newton-Raphson (analytic derivatives), with Convergence achieved after 372 iterations.
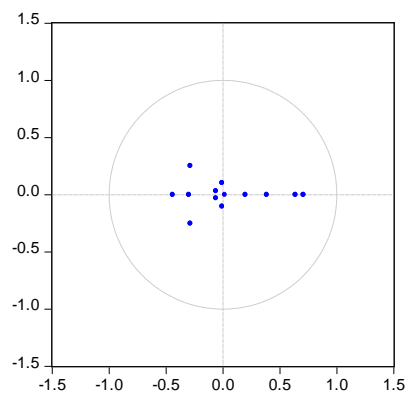
Figure 1. Stability test

Impulse Response Analysis

The impulse response image will show the response of a variable due to the shock of another variable for several periods. If the impulse response image shows a movement that is getting closer to the equilibrium point (convergence) or returns to the previous balance, it means that the response of a variable due to a shock will gradually disappear so that the shock does not leave a permanent effect on the variable.

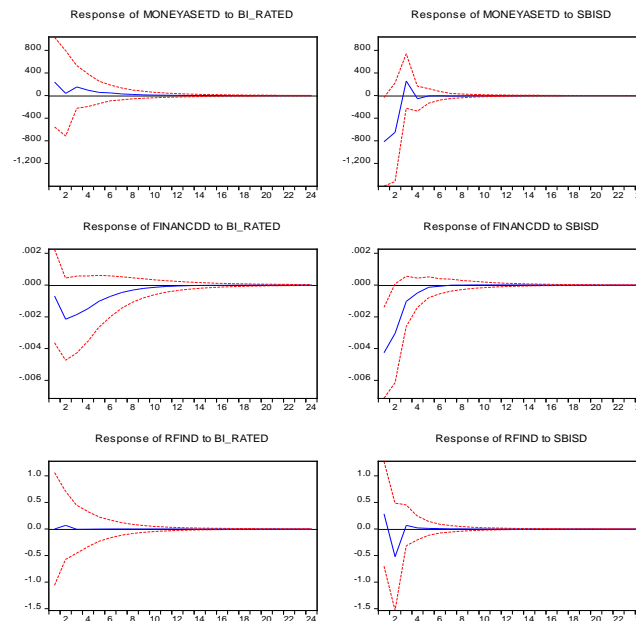Response of Islamic Monetary Variables to BI Rate and SBIS

Figure 2. Response of sharia monetary variables to BI Rate dan SBIS

The estimation of the SVAR model indicate the transmission of monetary policy through Islamic banking variables. MASET's response to the shock of one standard deviation in the BI rate was immediately followed by a positive change of 240.26 in the 1st month, then decreased to 39.69 in the 2nd month and rose again in the 3rd month to 153.90. After that, the MASET response continued to decline until the end of the period with a positive value. Meanwhile, in responding to changes in SBIS, MASET showed different results with negative values. In the first month MASET immediately reacted to -817.22, then rose to -649.27, in the 3rd month there was a change in response with a positive value of 258. Starting in the 4th month, MASET gave a constant negative response which continued to decline until the end of the period. The increase in the BI policy rate was followed by an increase in the portfolio in money carried out by Islamic banking, while changes in the SBIS showed an overall negative relationship.

As for the FIN variable, it responds to the shock of BI rate and SBIS in a neutral manner, meaning has no effect on Islamic banking financing. This is indicated by the value of the FIN response which shows a value of zero, starting from the beginning to the end of the period. This is certainly interesting and unique because the reference interest rate is usually a reference in providing credit, especially by setting loan interest rates.

Another Islamic banking variable, namely the equivalence rate of interest on financing RFIN, responds to a standard deviation shock in a neutral manner (indeffent), with a value of zero. Although the value

is still greater than the response given by the FIN variable. At the beginning of the 1st and 2nd periods the value was still positive 0.28 and in the 2nd month it was negative -0.52 and then onwards the response to changes in SBIS was getting smaller. From these three variables, it can be concluded that when there is a change in monetary policy, the Islamic banking variable that responds is the portfolio in the form of liquidity (MASET).
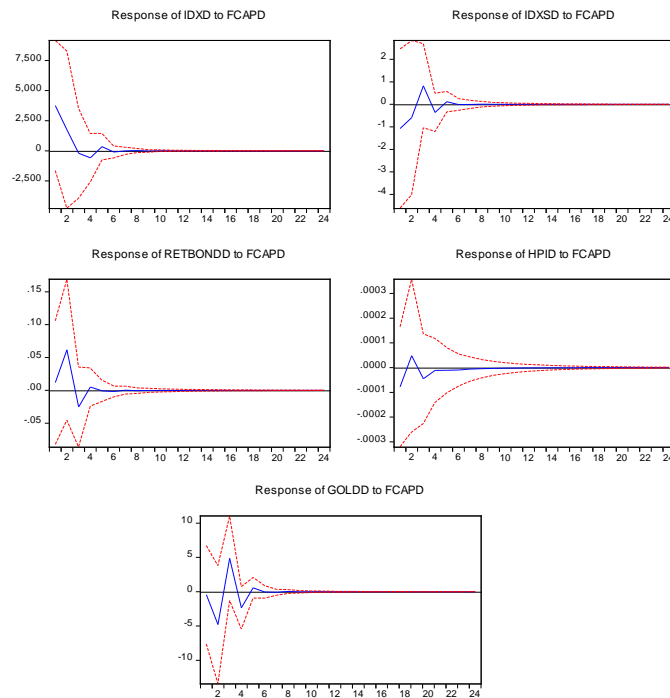
Response of Asset Price to Foreign Capital Flow (FCAP)

Figure 3. Response of assets prices to FCAP

The figure shows that IDX's response to a change in FCAP has increased by 1 standard deviation and from the beginning, the IDX variable has responded strongly and became the highest point with a value of 3755.96 and starting in the 3rd month, it began to respond negatively with a value of -199 .49, 16.53 in the 8th month and then towards the convergence at the 12th month with a value of zero. Likewise with IDXS, it is not too affected by foreign investment, the value changes not more than 1, still around 0 and then has returned to balance in the 5th month. Responses such as IDXS to FCAP also apply to other asset variables, both BOND and HPI. These results show that foreign direct investment (hot money) into the Indonesian capital market cannot affect volatility in either the stock market or other asset markets. Foreign investment is not dominant enough in influencing asset prices in Indonesia, although foreign funds entering the capital market on average reach 40%. The ratio is quite large, but the volatility can be different when there is a sudden and massive rush or big sale from foreign investors. However, the capital market

in Indonesia is still dominated by the behavior of domestic investors. This is different from other studies such as research on the relationship of foreign capital flows and stock market performance is Froot, O'Connell and Seasholes (2001).

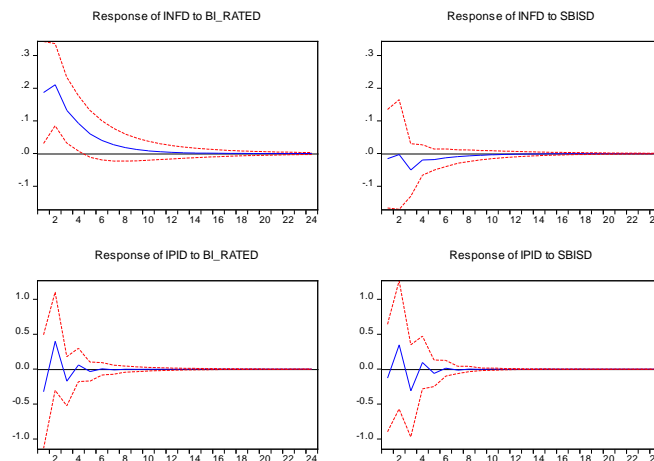Response of INF And IPI To BI Rate And SBIS

Figure 4. Response of INF and IPI to BI Rate and SBIS

Impulse response of INF to BI rate shocks which tends to be positive and small, namely in the 1st month it is 0.19, in the 2nd month 0.21 and so on it gets smaller in the 10th month and so on it reaches 0.00. This value can be interpreted that the BI rate shock will move in the long term with the INF, where an increase in the BI rate will encourage an increase in inflation and vice versa. These results are consistent with the theory that expansionary monetary policy is aimed at reducing inflation, although during a shock, inflation rises as an anticipation and public expectation of the economy, but after that it continues to decline until it reaches its original balance. The convergence of impulse response to SBIS that occurs in a relatively short period starting from the 7th period shows that the impact of SBIS volatility to inflation will occur in a fairly short period and in the long term will decrease before becoming neutral. Thus, efforts to manage SBIS to influence inflation in the short term it is not too influential, inflation only responds briefly and small, then returns to its original balance. IPI's response to changes in monetary policy fluctuated at the beginning of the period and subsequently became negative.

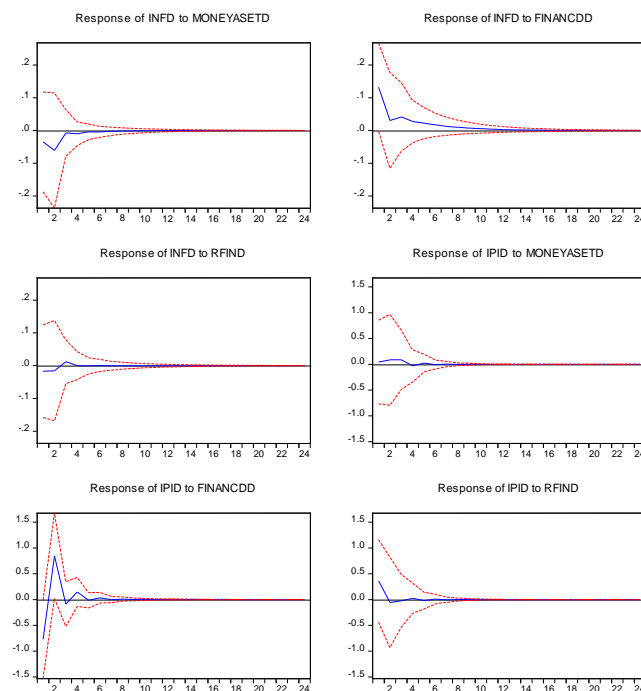Response of INF Dan IPI to Sharia Monetary Variables

Figure 5. Response of INF and IPI to sharia monetary variables

To see how the role of Islamic banking in the economy can be seen the response of the real sector, which is proxied by inflation (INF) and the Indonesian Production Index (IPI), to the shock of one standard deviation in each Islamic monetary variable. In the 1st period, INF responded negatively to both variables, -0.03 to MASET and -0.02 to RFIN, while INF's response to FIN had 0.13. The inflation response to the three Islamic monetary variables tends to be small because they are in the range of zero. While the IPI responds to the variability of the shock on the Islamic monetary variable in reverse with the INF. The IPI response to MASET and RFIND showed positive values at the beginning of the period, 0.04 and 0.36, while the IPI response to FIN was -0.77. Although after the next period it tends to fluctuate, it is still in the zero range. Then IPI will return to its original balance in the 6th month for MASET, 7th month for FIN and 6th month for RFIN. It can be seen here, that the variability of Islamic monetary variables has a fairly small influence on the development of IPI.

In contrast to financing and economic growth, which decreased with an increase in policy interest rates, the estimation results show that a tighter monetary policy was initially followed by a higher rise in inflation before finally declining. This finding shows that in Indonesia there is also a price puzzle, in which a tighter monetary policy is first followed by a higher increase in inflation before it declines. In this study, it can be seen that the increase in policy interest rates was followed by higher inflation in a fairly short time, the first two months

and then decreased. The peak of the decline in inflation is seen in the 10th month and then will begin to disappear after 12 months.

This is consistent with the logic that financing takes time to be channeled into the real economy. GDP growth, core inflation, and business activities responded positively to the shock of Islamic bank financing. The increase in sharia financing boosted GDP growth by 0.15 percent in the 2nd month and peaked at 0.21 percent in the 4th month before the impact disappeared at the beginning of the 12th month. In terms of the response to public purchasing power, which is represented by inflation, the impact of sharia bank financing shocks takes longer to be transmitted to boost people's purchasing power. The increase in sharia financing by less than 1 percent in month 1 was followed by an increase in core inflation of 0.03 percent in the 3rd month and reached a peak of 0.06 percent in the 6th month (Mansur, 2019).

Bank Indonesia's Policy in Responding to Changes in Asset Prices (Is there a Law Against The Wind Theory?)

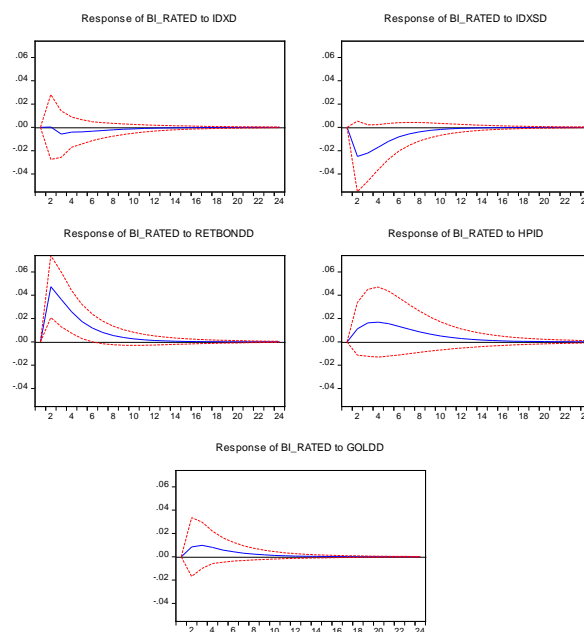Response of BI Rate to Asset Prices

Figure 6. Response of BI Rate to Asset price

To see whether Bank Indonesia adheres Lean Against the Wind, impulse response analysis at this time can explain it. How the BI rate responds and how large the response shows the pattern of policies formulated in response to fluctuations in asset prices. Of the five types of assets in a shock change, the BI rate responded in a neutral manner. BI does not take special policies when there are fluctuations in the asset market. This can be shown from the change in the BI rate

which has a value of 0. For the IDX and IDXS variables there is a negative sign, while BOND, HPI and GOLD have a positive sign. Although there is a response at the beginning of the period, the value is very small and in the short term it immediately converges to the original balance.
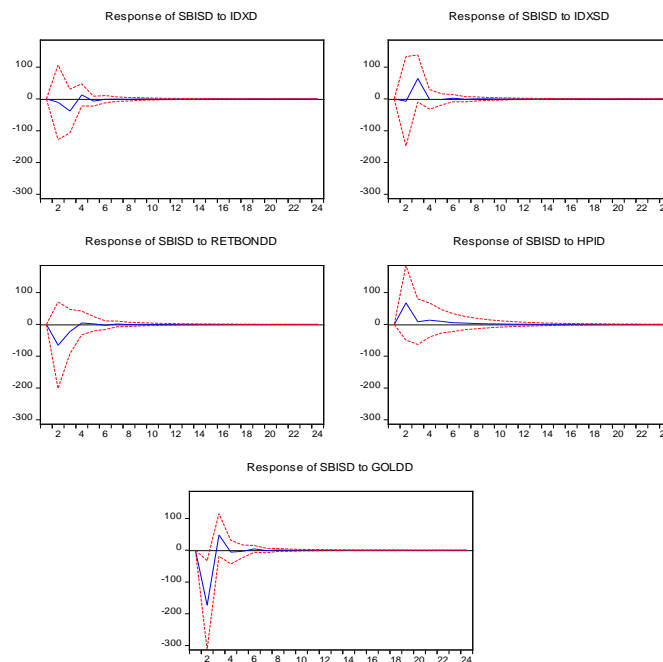
Response of SBIS to asset price

Figure 7. Response of SBIS to asset price

Meanwhile, SBIS's response to a shock of one standard deviation in asset prices shows a slightly different pattern from the BI rate. Even though it did not react at the beginning of the period, until the 1st month it still had a value of 0 in the response of all assets. However, in the 2nd month all assets except HPI responded negatively, IDX was -10.55, IDXS was -7.33, BOND was -65.74 and GOLD was -173.10. SBIS responded positively to the HPI shock of 67.54 in the 2nd month. Respectively, GOLD assets exert the strongest influence and IDXS the lowest. SBIS returns to its original balance with different timeframes. The fastest convergence to IDX is in the 7th period, IDXS, BOND and GOLD in the 8th period and HPI in the 11th period. All of them are indicated by numbers starting at zero at that time.

The Role of Islamic Banking in Volatility of Asset Price
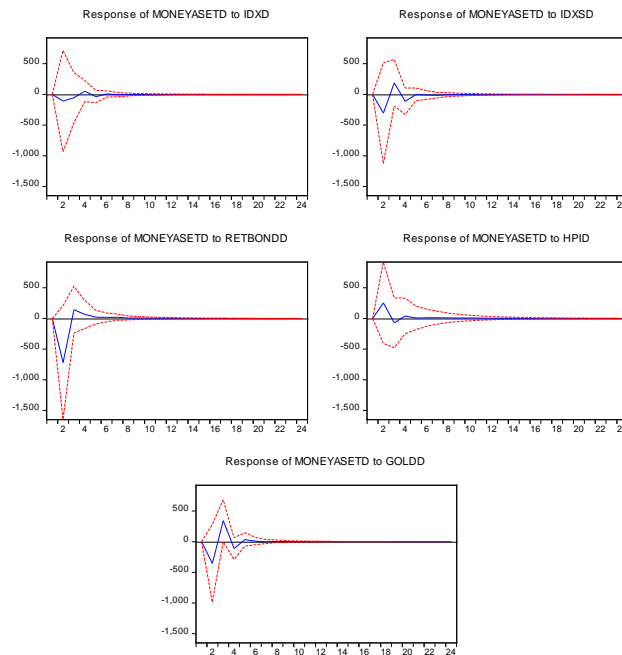
Response of MASET to Asset Prices

Figure 8. Response of MASET to asset price

Even though MASET did not react at the beginning of the 0 and 1st period, until the 1st month it still had a value of 0 in the response of all assets. However, in the 2nd month, all assets except HPI responded negatively, IDX was -108.55, IDXS was -304.41, BOND was -718.71 and GOLD -354.33. MASET responded positively to the HPI shock of 254.78 in the 2nd month. We can see that MASET responds to changes in asset prices more than SBIS. Respectively, BOND assets have the strongest impact and IDX the lowest. MASET returns to its original balance with different time periods. The fastest convergence to IDX and GOLD is in the 12th period, IDXS, BOND and GOLD in a period of more than one year.
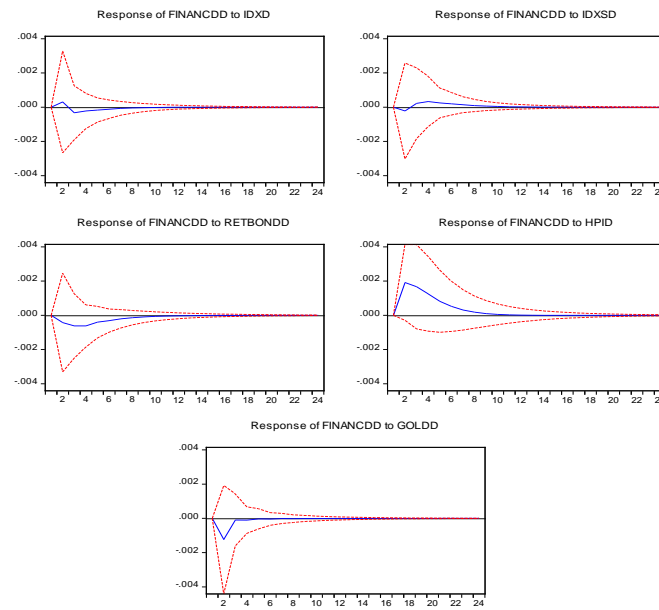
Response of FIN to Asset price

Figure 9. Response of FIN to asset price

Meanwhile, the response of FIN financing to a shock of one standard deviation in asset prices shows the same pattern as the BI rate and different from SBIS and MASET. Even though it shows the same response as the BI rate, the value is much smaller or even completely absent. It can be concluded that the FIN variable cannot be affected by changes in the shock of one standard deviation for each asset. Convergence to assets has not changed, it has been steady since the beginning of the period.
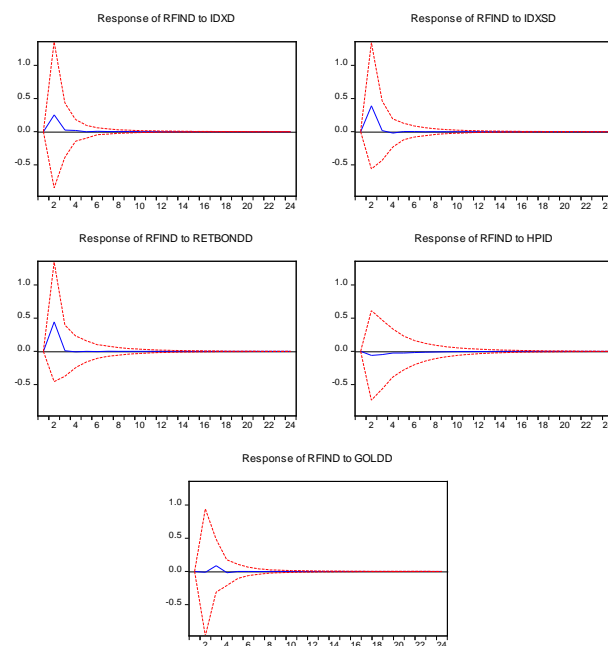
Impulse Response RFIN to Asset Prices

Figure 10. Response of RFIN to asset price

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Meanwhile, the RFIN response to a shock of one standard deviation in asset prices showed the same pattern as the BI rate and different from SBIS and MASET. Even though it shows the same response as the BI rate, the value is much smaller or even completely absent, the zero value reaches 3 digits behind the comma which is meaningless. It can be concluded that the RFIN variable cannot be affected by changes in the shock of one standard deviation for each asset. Convergence to assets has not changed, it has been steady since the beginning of the period.

This turmoil is a logical consequence of the disconnection of the monetary sector with the real sector. The monetary sector has grown rapidly beyond national borders, while the real sector has always lagged behind. Money no longer only functions as a medium of exchange, but has become a commodity tool, as a result of the speculative motive of money holders (money demand for speculation). This is different from the concept that underlies the Islamic financial system which considers money as a medium of exchange, not as a commodity. As a medium of exchange, money does not produce any added value, unless it is converted into goods or services. Thus, every financial transaction must be based on real sector transactions. In the Islamic concept there is also no known motive for money demand for speculation, because speculation is not allowed.

There are three essays that concentrate on the dynamic relationship between financial markets or institutions and monetary policy. The first essay shows that the monetary authorities did take into account the movement of equity prices after the bubble burst. The last two essays focus on the role of monetary policy in financial distress. The easing of monetary policy had a significant impact in encouraging banks with large capital to take more risks. Meanwhile, banks with small capitals were not significantly affected by the expansionary monetary policy. It is also found that the extended expansionary monetary policy since the 2001 recession had a significant contribution to the housing market boom, which exploded after 2006.

Furthermore, since the Islamic stock index consists of low-leveraged stocks, it is less sensitive to leverage risk and may have lower pressure risk due to reduced exposure to credit markets (Bhatt &Sultan, 2012). The PLS system can impose discipline on the bank because the depositors, who will share in the profits or losses of the bank, will be concerned about the ex-post profit rate and therefore about the bank's operations. As a result, they will demand better management and governance, greater transparency, and more effective risk management, auditing, regulation, and oversight. These investment savers are like "temporary shareholders" and they must make the right decisions when choosing to hold or withdraw their

deposits, such as buying or redeeming bank shares. Furthermore, Kayed and Hassan (2011) believe that when the lender and the borrower have a common interest in the transaction, then speculative and subprime agreements are highly unlikely. Another protective feature of PLS is that the prices of assets and liabilities decrease simultaneously, which is different from the conventional system which is dominated by interest-based debt contracts (Mirakhor&Krichene, 2009).

Under Islamic finance there are limited securitization arrangements for debt and restricted debt trading in secondary financial markets, as well as more stringent regulations (eg short selling, speculation and margin trading). According to sharia principles, "a person cannot sell or rent unless he has real assets". In the context of a crisis, these restrictions will protect Islamic financial institutions from trading and holding subprime mortgage securities. For example, an Islamic stock index that excludes conventional financial institutions does not include banks that collapse due to exposure to risky subprime securities. While certain securitization contracts are permitted (e.g. various contracts based on tawriq or sukuk, see Abdul Aziz and Gintzburger 2009), most investors hold securities to maturity, contracts must be transparent and clear, and they must be asset based. asset-backed (Pahlavi et al., 2009). Islamic bonds, or sukuk are asset-based contracts that achieve the same economic returns as conventional bonds, but they need to be structured with care to avoid explicit interest. The idea of a sukuk is that its rate of return is related to the performance of real assets, and therefore needs to be backed by certain tangible assets (Iqbal&Tsubota, 2006).

CONCLUSION

The results of the SVAR analysis show that asset prices do not respond significantly to shocks at the central bank level or shocks to changes in the balance sheet of Islamic banking. This result in no way implies that monetary policy is the only contributor to extreme changes in asset prices. Monetary policy, particularly traditional interest rate targeting policies and inflation have an effect on asset prices through monetary transmission mechanisms. The results of this study indicate that the relationship is strong but does not show a direct effect.monetary policy lean against the wind in response to deviations in asset prices from fundamentals hinges on the assumption that an increase in interest rates will succeed in shrinking the size of the emerging asset price bubble. However, there appears to be no evidence available to support the association. This study provides evidence on the response of asset prices to monetary policy shocks.

The results of the research in this dissertation show that for an open economy with capital mobility (especially short-term fund flows, hot money) and a capital market that is still not perfect, information asymmetry is still high and herding behavior still dominates, causing

both monetary policy and asset prices to haverelationship indifferent (not interdependent), Bank Indonesia does not react too much when there is an increase in asset prices, and asset prices also do not respond when there is a monetary policy shock. This is characterized by an impulse response that tends to quickly return to its original balance, there is no permanent change when there is a shock on both sides. The results of this study also contribute to the novelty of the Lean Against the Wind, where monetary policy is indifferent to asset price volatility and bubbles, which means neither Lean Against the Wind nor Clean up the Mess.

In general, Indonesia's Islamic banking asset portfolio can affect IDX stock prices and asset prices in Indonesia, and have a small effect on gold prices. This proves that Islamic banking assets are not always allocated to Islamic stocks and real back assets. Even though the property contains a bubble, it is not significantly related to asset allocation. The dichotomy in sharia and conventional discourse in investment is relatively not very visible, the two types of policies, portfolios and sharia monetary variables work together and are synergistic. There is no significant difference in the relationship and causality pattern, both conventional ones such as the BI rate, ordinary shares, and asset instruments that are more compatible with sharia do not respond differently to shocks or changes to other different variables.

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