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Chapter 9

INDONESIAN MONETARY POLICY IMPACT ON ISLAMIC STOCK MARKET INDEX RETURN

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INTRODUCTION

During half year of 2016, central bank of Indonesia (BI) has announced for the third times the changes of the interest rate benchmark that called the BI-rate. BI has lowered the BI-rate for three consecutive months, beginning in January, by 25 bps, respectively (Kompas, 2016). The latest BI-rate, 6.75 percent will be replaced a month after its launch on August, 19 by the 7-days reverse repo that known as the*BI 7-Days Repo Rate*. This new benchmark aims to make the monetary policy more effective in guiding the interest rates in the banking system and to make the transmission of its monetary policy more effective (Kompas, 2016). The reverse repo rate is tied to the government bonds. BI can use the repo instrument to absorb excess liquidity in the banking system. This policy has been applied promptly since the inflation is under control and the fuel subsidy has continued to decline.

In connection with the downturn and how the impacts will be accepted by Indonesia, particularly in the field of macro-economy as optimism is shown by BI through a policy of reduction in the BI Rate? Mishkin (2004) mentioned that the efficient market hypothesis predicts that stock prices will reflect all available information publicly. In other words, stock market is prone to any information, which will cause volatility in prices. The research done by Yakob, Tzeng, and McGowan (2014), fails to detect any significant market behaviour in the days leading to and immediately after the overnight policy rate (OPR) by the Mone MPC) in Malaysia. This shows that the stock mark l the information before the MPC meeting. Intere t seems to respond to the decline in the OPR judgi n daily return as well as lower standard devia announcement period. In fact, prior to the reduc ock market registers a negative mean daily retur ent period. The mean daily return increases

in the day after the OPR reduction. It proves that the stock market seems to benefit from the downward revision of the OPR.

A number of researchers found a unique direction in the stock return and Granger Cause. They managed to prove that stock return does not Granger Cause interest rate, but interest rate does Granger Cause stock returns. Amarasinghe (2015) found that the result of the Granger Causality Test shows that interest rate is a significant factor for stock return changes. Interest rate also has a significant negative relationship with All Share Price Index (ASPI) in Colombo Stock Exchange (Amarasinghe, 2015). Meanwhile, the result of the t-test analysed by Hariati and Suci (2013), shows that variable exchange rate and interest rates do not significantly influence beta Islamic stocks, but the variable return on assets and return on investment significantly influence beta Islamic stocks.

However, to the best knowledge of the author, there are hardly any studies that have been done in measuring the impact of government announcement in the interest rate reduction towards the return of Islamic stock market index. Therefore, this chapter intends to focus on the objective that is to examine whether interest rates reduction have any impact to the Islamic index return in Indonesia. The chapter is organised in four sections. First, it summarises the literature and previous studies that have been done in investigating the shock in stock market index volatilities. Second, it focuses on the methodology that includes the data collection method. Third, it discusses on the result and analysis of this chapter. Lastly in chapter four, it concludes on the Indonesian monetary policy impact on Islamic stock market index return.

THE SHOCK IN STOCK MARKET INDEX VOLATILITIES

BI Rate is known as the interest rate of Bank Indonesia Certificates (*Sertifikat Bank Indonesia* or SBI) for the period of one year. When the BI Ra banks can put their funds in BI in the form of SB percent interest per annum. BI is using the SBI fo by increasing or decreasing the amount of *R* ney supply). In the case when there is too much su tion rate will rise. At the same time, the central ba e so that banks would prefer to put their third pa rm of SBI) rather than channel the money back in of loan. Thus, money supply will be declining an mp. If the inflation rate stays under control, the

central bank could cut down the BI Rate so that banks will lend money to the public and companies can set up factories and create new jobs that will eventually boost the economic growth (Warjiyo, 2004).

However, even though when the BI rate is low, banks can only withdraw their funds from the BI after one year of tenure from the date they purchase the SBI. As the result, when the BI Rate decline, the money supply will not increase immediately. The process could take time from several months until one year. Hence, the objective of economic growth would need more time to be succeeded. Likewise, when BI inflates the BI Rate, the inflation rate may not decrease immediately because banks may need to rethink to keep their funds in the central bank for the period of one year (Warjiyo, 2004).

Therefore, in order to make the monetary operation become more effective in balancing between inflation and economic growth, BI changes its benchmark rate from BI Rate to BI 7-days Rate. If the BI 7-days Rate increase, banks can keep their third party funds in BI for seven days (or 14 days, 21 days, and so on). Thus, if in the next month the BI 7-days Rate decreases, banks will be able to immediately withdraw their funds and distribute the funds to the public (in form of loan). This BI 7-days Rate is also known as the 'reverse repo rate'. In this scenario, BI as the 'bank of banks' like to borrow money from the banks with the promise that the money will be returned 7 days later, plus interest (The Partner, 2016).

Interest rate is a variable measurement of time value of money which is one of the main determinants in stock prices (Amarasinghe, 2015). It plays a major role in any economy as a key of macroeconomic variable which is defined as the cost of money (Mishkin, 2004). Any change in interest rate can cause difficulty for investors and can affect the profitability of firms as well as fluctuating stock prices due to any changes made [illegible] itivity of stock prices to interest rate has theor[illegible]y explored by many researchers. A large numb[illegible]y in many countries record that share prices are [illegible]te changes by employing a single factor frame[illegible]pproach.

The [illegible]ldwide exclude any company that have their main [illegible]est. However, if the company earn interest from [illegible]iness activity there will be a purification proce[illegible]ukmana & Hidayat, 2012). The purification

process is done by estimating the forbidden increment coming from interest and remove it so whatever remains is permissible (free from the prohibitive elements of *riba'*, gambling, intoxicants, pork and pornography) (Rosly, 2005). Since interest is forbidden under Islamic law, Muslim investors try to avoid it by demanding an Islamic index that excludes companies that earn interest as its main business. As a result, Islamic indices should not be affected by the change in the rate of interest. In other words, Islamic indices should be affected only by real factors in the economy and not by the fluctuations in the interest rate. Zaher and Hasan (2001) indicated that there are seven main pillars that work together to deliver competitive performance and to promote socially and ethically responsible business practices, which in turn, contribute to improvements in the quality of life throughout society. The seven pillars are Shari'ah supervision, screening, purification, charity or *zakat*, shareholder advocacy, monitoring and reporting, and community-based investment.

Some researcher such as Albaity (2011), Sukmana and Hidayat, (2012) and Islam (2013) discussed about the volatility of Islamic indices return using ARCH and GARCH model. Nonetheless, this chapter is focusing on measuring the impact of Government announcement in the interest rate reduction toward the return of Islamic stock market indices.

METHODOLOGY USED IN MEASURING INDONESIAN MONETARY POLICY IMPACT ON ISLAMIC STOCK MARKET INDEX RETURN

Data Collection Method

The data used in measuring the impact on Islamic stock market index towards Indonesian monetary policy are monthly indices closing price of the Jakarta Islamic Index (JII). The data were obtained from Indonesian Stock Exchange website, www.idx.co.id. The data collected are from the period of July 2005 to May 2016 which includes 131 observations. The mo JII market are calculated using continuously co continuously compounded return is calculated as ce in the daily closing price.

stock
g stock price month t
g stock price month t-1.

Empirical Framework

In this chapter, the data analysis of all regression equation models in this study used E-views package 8.

Unit Root Tests and Descriptive Statistics

Augmented Dickey and Fuller (ADF) test is used to get confirmation regarding whether JII return series is stationary or not. If the values of ADF test statistic is less than its test critical value at 1% or 5% or 10% level of significance than it will imply that the JII index return series is stationary.

ARCH-GARCH and VAR Analysis

ARCH Model is a non-linear model which does not assume that the variance is constant. It describes how the variance of errors evolves. Many series of financial asset return that provides a motivation for the ARCH class model is known as 'volatility clustering' or 'volatility pooling'. Volatility clustering describes the tendency of large changes in asset prices (of either sign) to follow large changes and small changes (of either sign) to follow small changes. Under the ARCH model, the 'auto-correlation in volatility' is modelled by allowing the conditional variance of the error term, ∂t2, to depend on the immediately previous value of the squared error and ARCH (1) model takes the following form (Brooks, 2008):

$$\sigma t2 = \alpha 0 + \alpha 1 ut\text{-}12$$

The form of ARCH (q) model is as follows, where error variance depends on *q* lags of squared errors:

$$\sigma t2 = \alpha 0 + \alpha 1 ut\text{-}12 + \alpha 1 ut\text{-}22 + \ldots\ldots + \alpha qut\text{-}q2$$

GAR … d by Bollerslev (1986) and Taylor (1986) inde… this model, the conditional variance is to be depe… own lags. The form of this model is given belo…

$$\alpha 0 + \alpha 1 ut\text{-}12 + \beta 1 \sigma t\text{-}12$$

Vect… R) model were introduced by the macro-econ…). The model combined dynamics and causal

relations among a set of macroeconomic variables. VAR models are useful for forecasting. Consider a univariate autoregressive model - for example, an AR (1) $Y_t = \alpha + \beta Y_{t-1} + \epsilon_t$, which describes the dynamics of just one random variable Y_t (i.e., national income) as a linear function of its own past. Based on this model, the forecast of national income will depend just on its past history. However, economic variables such as national income, employment, prices, money supply, interest rates, and so on interact with each other. For instance, movements in the interest rates affect the level of employment, which in turn affects the level of national income. In this multivariate setting, the forecast of national income will be a function of a larger information set that combines not only the history of national income but also the history of many other variables, such as interest rates and employment. A VAR is the generalisation of the univariate autoregressive model to a vector of economic variables.

UNIT ROOT TEST RESULTS ANDDESCRIPTIVE STATISTICS

In order to check whether the financial time series (returns) are stationary or not, we have to apply the standard ADF test (Dickey & Fuller, 1979). The ADF test statistic rejected the null hypothesis of the existence of unit root in the return series as the absolute values of ADF statistic exceed the McKinnon critical (absolute) values at 1% significance level for all returns. This ensures that we can use the time series stochastic model to examine the dynamic behaviour of volatility of the returns over time. The results are presented in Table 9.1.

Table 9.1: Unit Root Test Results

		BI-RATE	t-Statistic	Prob.*	JII_RETURN	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-3.2473	0.0195		-8.2676	0.0000
Test critical values:	1% level		-3.4820			-3.4820	
			3841			-2.8841	
			5789			-2.5788	
BI					JII_RETURN		
R- Pr Du					R-squared: 0.625590 Prob (F statistic): 0.000000 Durbin Watson stat: 2.016966		

ata, which regressed by the author

The return series for all markets show negative skewness suggesting that the distribution have long left tail. The excess values (that is >3) for kurtosis indicate fat tails characteristics of the asset returns distribution. The Jarque-Bera (JB) test of normality clearly rejects the null hypothesis of normality in all cases. The test suggests that the distributions of the return series are non-normal. The results are presented in Table 9.2.

Table 9.2: Descriptive Statistics

	BI_RATE	JII_RETURN		BI_RATE	JII_RETURN
Mean	7.761450	0.950076	Kurtosis	4.319681	5.399753
Median	7.500000	1.220000	Jarque-Bera	49.60604	32.02425
Maximum	12.75000	31.09000	Probability	0.000000	0.000000
Minimum	5.750000	-21.25000	Sum	1016.750	124.4600
Std. Dev.	1.812049	7.915313	Sum Sq. Dev.	426.8578	8144.784
Skewness	1.355228	0.164488	Observations	131	131

Source: IFS data, which regressed by the author

GARCH-ARCH ANALYSIS

The output of GARCH model on JII index and BI Rate shows that the constant, C, is not statistically significant both in the mean and variance equations since the probability of C is greater than 0.00. The variance equation illustrates that RESID (-1) ^2 terms is also statistically significant at 1% level of significance. This implies that the volatility of risk is influenced by past square residual terms. Therefore, it can be mentioned that the past volatility of both the JII index return and BI rate is significantly influencing the current volatility. The results are presented in Table 9.3.

Table 9.3: GARCH Test

Variable	Coefficient	Std. Error	z-Statistic	Prob.
BI_RATE	-0.075744	0.000408	-185.5219	0.0000
C	1.565602	0.582667	2.686957	0.0072
	Variance Equation			
C	0.035213	0.324432	0.108536	0.9136
RESID(-1)^2	-0.074168	0.029172	-2.542413	0.0110
GARCH(-1)	1.091319	0.040528	26.92723	0.0000
Variable	Coefficient	Std. Error	z-Statistic	Prob.
JII_RETURN	5.80E-05	0.005552	0.010448	0.9917
C	7.491522	0.033231	225.4350	0.0000
	Variance Equation			
C	0.005849	0.000987	5.926699	0.0000
RESID(-1)^2	1.014361	0.357406	2.838121	0.0045
GARCH(-1)	0.058294	0.053023	1.099400	0.2716

Source: IFS data, which regressed by the author

Table 9.4. The ARCH Effect

Heteroskedasticity Test: ARCH				
F-statistic	23.28085	Prob. F(1,128)		0.0000
Obs*R-squared	20.00591	Prob. Chi-Square(1)		0.0000
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	38.14259	11.78016	3.237868	0.0015
RESID^2(-1)	0.392082	0.081260	4.825023	0.0000

Source: IFS data, which regressed by the author

Table 9.4 shows the important part to confirm the existence of heteroscedasticity in the ARCH test. The value of Obs*R-Squared statistics is 20. This clearly suggests that null hypothesis of non heteroscedasticity/homoscedasticity is rejected even in 1%. On the other hand, ARCH effect is at present. However, VAR will generalise the univariate autoregressive model to a vector of economic variables so that the interest rate (BI rate), can interact with JII return.

Va table 9.5 conclude that the contribution of the ch ining the changes to the JII return is so small be e in JII only influenced by the movement of its

Table 9.5: Variance Decomposition of JII

Variance Decomposition of JII_RETURN:			
Period	S.E.	JII_RETURN	BI_RATE
1	7.894866	100.0000	0.000000
2	8.068953	99.99767	0.002332
3	8.088808	99.99192	0.008082
4	8.090886	99.98250	0.017499
5	8.091540	99.97046	0.029544
6	8.092103	99.95676	0.043240
7	8.092690	99.94237	0.057630
8	8.093272	99.92802	0.071976
9	8.093832	99.91426	0.085743
10	8.094353	99.90142	0.098581
Variance Decomposition of BI_RATE:			
Period	S.E.	JII_RETURN	BI_RATE
1	0.186851	0.144308	99.85569
2	0.370051	0.604792	99.39521
3	0.550095	0.276211	99.72379
4	0.719256	0.170219	99.82978
5	0.873336	0.150386	99.84961
6	1.010832	0.160088	99.83991
7	1.131785	0.180966	99.81903
8	1.237049	0.204328	99.79567
9	1.327901	0.226976	99.77302
10	1.405793	0.247585	99.75242

Source: IFS data, which regressed by the author

CONCLUSION

This chapter have utilised ARCH and GARCH to estimate the effect of publicly announced changes in official interest rates by Indonesian Government to the return of Islamic Stock Index which actually prone to the information by the nature. However, the evidence finds out that the Islamic vhich taken from Jakarta Islamic Index are positiv ses in official interest rates. The magnitude of inte , showing that the effectiveness of interest rates a l is still low. The reason is because Islamic Indices ari'ah law and monitor their activities to be comply ne finding can help in guiding investors in making sion by providing information on the risk exposu

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