Response of Indonesia *Shari'ah* Compliance Stock Index Towards Macro Prudential and Monetary Policy of Indonesia Central Bank

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Abstract

The objective of this study is to measure the response from Indonesia *Shari'ah* compliance stock index toward macro prudential and monetary policy of Bank Indonesia from 2000-2013. There are several factors that can influence volatilities of companies that classified in Indonesia *Shari'ah* compliance, including macro and micro economic issues. Bank Indonesia as institution that responsible to maintain and supervise financial stability through the implementation of macro prudential and monetary policy. However, the measurement of response from investor that represent by stock prices is still limited and rare. The measurement is important to conduct to know the efficiency of the policy and to investigate distribution of losses based on the market reaction from investor that described in the stock prices. On the contrary, Indonesia *Shari'ah* compliance is index that has uniqueness and characteristics. This index is prohibiting companies that classified in the compliant to operating under *riba*, this also means that all conventional financial industries are unclassified. Measurement of the response is using standard event study approach assesses the markets speed of price adjustment to information releases by testing whether the abnormal returns are significantly different from zero during the time of

the event window. The response measurement indicate that 36 macro prudential and monetary policy from Bank Indonesia, Indonesia *Shari'ah* compliance stock index needs less than one minute to adapt and absorb the policy. The result also implicate that there should be separate trading system between conventional and *Shariah* capital market to eliminate the probability of *Shariah* compliance having the impact of volatilities from macro and micro economic condition.

Keywords: Islamic Capital Market, Indonesia Shari'ah Compliance Stock Index, Macro prudential Policy, Monetary Policy, Indonesia Stock Exchange

JEL Classification: G1, G2, G3

1. Introduction

The Islamic capital market has many diversifications in the implementation, such as *Ijarah, Sukuk* and *Shari'ah* compliance stock index. This research focuses on *Shari'ah* compliance stock index since this index is representing one of the biggest funding accumulations in the *Shari'ah* financial industry besides *Shari'ah* banking. For the last ten years, the growth of *Shari'ah* compliance stock index has shown major influence not only to the capital market industry but also for economic growth in a country. The distinguished feature of *Shari'ah* compliance stock index compared to the conventional stock market is the implementation of screening process of *Shari'ah* classified companies that based on *Shari'ah* principle.

In the application of trading system, the fundamental differences between *Shari'ah* and conventional markets is that in *Shari'ah* compliance stock index following *Shari'ah* principle where the trading system support and establish free market system where stock price are not only determined by the forces of demand and supply, but also with the availability and flow of information. Any attempt to influence stock prices by creating artificial shortage of supply (*ihtikar*) or to bid up prices by creating artificial demand are considered unethical according to the *Shari'ah* principle or Islamic code of ethics.

Table 1.1

Market Capitalization of *Shari'ah* Compliance Stock by Global and Regional Indexes

No.	Index	Market Capitalization (Billion US Dollar)
1	Dow Jones Islamic Market World Index	19,995.5
2	Dow Jones Islamic Market Asia/Pacific Index	4,195.9
3	Dow Jones Islamic Market Asia/Pacific ex-Japan Index	3,308.6
4	Dow Jones Islamic Market ASEAN Index	523.4
5	Dow Jones Islamic Market Developed Markets Index	13,000.8
6	Dow Jones Islamic Market Developed Markets ex-Japan Index	12,113.5
7	Dow Jones Islamic Market Emerging Markets Index	6,994.8
8	Dow Jones Islamic Market Europe Index	3,238.2
9	Dow Jones Islamic Market GCC Index	290.0
10	Dow Jones Islamic Market GCC ex-Saudi Index	104.0
11	Dow Jones Islamic Market Greater China Index	1,171.6
12	Dow Jones Islamic Market MENA Index	349.9

Source: Various Fact Sheet of Dow Jones Islamic Market Index (2012)

Table 1.1 showed the growth of *Shari'ah* compliance stock index market capitalization that represent by Dow Jones Islamic Market Index (DJIMI). DJIMI is one of prominent and widely accepted index benchmark that started to provide Islamic index since 1999, According to DJIMI the biggest market capitalization of *Shari'ah* compliance stock index on August 2011 was 19,995.5 billion US followed with *Shari'ah* compliance stock index market capitalization from developed market and the lowest market capitalization are from MENA countries.

The subprime mortgage crisis in 2008 followed with the instability of political and social economic condition impose capital market industry in particular investor to seek stable platform of portfolio (see Trihadmini, 2011). Stability concerning financial crisis can be found in investment portfolio that giving minor shocking

volatility toward news and events that happened in a country. Financial crisis that occur in 1997 and 2008 has proven a setback for asset gatherers of all kinds in all marketplaces, but it is possible for *Shari'ah* compliance stock index to derive a long-term benefit because of its capability to serve as optional investment that more invulnerable toward crisis (Price Water House Coopers, 2008). However, the existence of *Shari'ah* compliance stock index in Indonesia is excessively influence by the trading system that is integrated to the conventional trading system, hence making the volatilities that occur in conventional stock market will also influence *Shari'ah* compliances stock index, in addition to volatilities of macro and micro economy in Indonesia is very high due to the economic and policy uncertainties from government.

Bank Indonesia as Indonesia Central Bank has the function to manage and regulate the stability of financial system in Indonesia through the implementation of monetary and macro prudential policy. The aim of macro prudential policy from Bank Indonesia not only to supervise banking system, maintaining stability of Indonesia currency, stabilizing payment system but also to maintain the entire financial industry including Islamic financial industry that has grew significantly in Indonesia. Macro prudential policy from Bank Indonesia is a part of main policy that implemented by Bank Indonesia to prevent and minimize systemic risk. Generally, systemic risk is distraction toward financial system that occur because of contagion factor as the impact from interconnectedness between financial markets and the tendency of financial institution behavior to follow economic cycle that can incur a treat toward the stability of national economy (Elsinger et al. 2006)

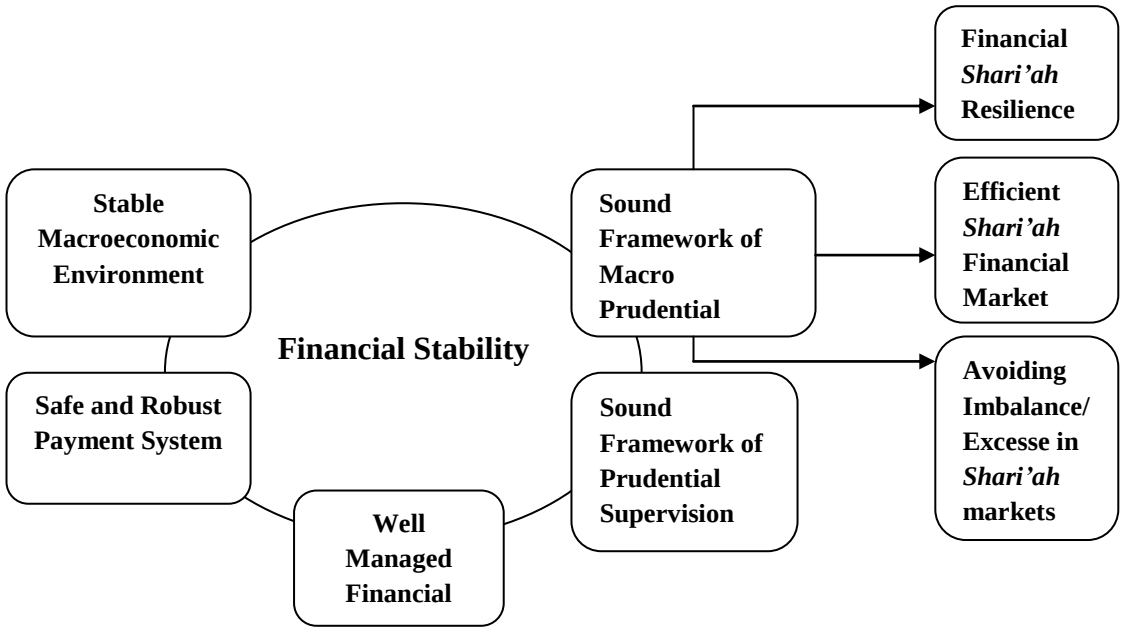
The *Shari'ah* capital market in this research is represent by Indonesia *Shari'ah* compliance capital market, where the impact of systemic risk is in form of contagion toward the integration of trading system to conventional capital market, that makes *Shari'ah* capital market vulnerable toward shock from macro and micro economic events and news, economic crisis and crash down of stock exchange due to the failure of supporting system or economic failure. The mechanism of macro prudential policy from Bank Indonesia started with the implementation and integration of monetary and macro prudential policy that will contribute to the

development of *Shari'ah* compliance stock index not only as a part of financial system to overcome risk in term of market efficiency, anomalies, investor behaviour and *Shari'ah* market integration but also to stabilize macro economy condition of a country.

Bank Indonesia as Indonesian central bank has to measure the response of financial institutions toward the implementation of monetary and macro prudential policy. For banking institution, the appropriate measurement tools to measure the response is through financial stability index, capital adequacy ratio, banking liquidity and the implementation of bank intermediation function. However, tools to measure response of *Shari'ah* capital market toward Bank Indonesia policy is unavailable, while *Shari'ah* capital market is part of financial system that has their own uniqueness, particularly in term of distinguished features of *Shari'ah* compliance that differentiate from the conventional stock market where the screening process of *Shari'ah* classified companies based on *Shari'ah* law or principle. In the implementation of trading system, fundamental differences between *Shari'ah* compliance and conventional capital market is that *Shari'ah* compliance following *Shari'ah* law trading system where the trading system courage and establish free market where stock prices are not only determined by forces of demand and supply, but also by the availability and flow of information. Any attempts to influence stock prices by creating artificial shortage of supply (*ihtikar*) or to bid up prices by creating artificial demand is considered unethical according to the *Shari'ah* law or Islamic code of ethics.

Free market that based on the availability and flow of information will only happened if there is stability in term of stable macroeconomic environment based on the capability of Indonesian central bank to creates efficient financial market, resilience toward financial crisis and other imbalance in financial system. Graph 1.1 showed how the financial stability achieves through the framework of macro prudential and prudential supervision from bank Indonesia.

Figure 1.1
Bank Indonesia Macro Prudential Sound Framework



Source: Bank Indonesia Fact Book, (2004)

The figure also explained the function of Bank Indonesia toward financial stabilization through macro prudential framework, since Bank Indonesia authorized to measured systemic risk and other related risk that can jeopardize economic stability. Macro prudential policy that implemented by Bank Indonesia to achieve financial stability through monetary policy, including; interest rate policy, exchange rate, money supply, credit and asset price. However, macro prudential and monetary policy needs to be regularly measure to detect the impact of the policy toward financial stability not only related to conventional financial industry but also toward *Shari'ah* financial industry since this industry has uniqueness and characteristics that differentiate from other financial industries. The measurement of *Shari'ah* capital market response that represent by Indonesia *Shari'ah* compliance stock index will lead Bank Indonesia to creates more efficient *Shari'ah* capital market in term of fairness, transparency, protection to investor and reducing systematic risk.

2. Literature Review

Measurement of stock return behaviour in *Shari'ah* compliance stock index will gives comparison of how volatile stock market in one country. *Shari'ah* compliance stock index with grown market potential as in Indonesia still limited particularly in research about stock return behaviour that focusing not only in stock price volatility, but also stock price response toward policy or events and news. In the implementation, the volatility of the stock price should be stable during long term period, in order to prevent investor to take advantages for gambling or speculation activity (Ginting, 2011).

In *Shari'ah* compliance stock index, the assumption of stock return behaviour is that investors is risk averse and response directly to recent policy or information, investors also in positions to produce unbiased forecast, thereby leading to linear relationship between return and information flow. On the contrary, uninformed investor in *Shari'ah* compliance stock index responds with a delay to information flow either because the cost of acquiring information is high or because the information is unreliable. Therefore the relationship between price and information flow in *Shari'ah* compliance stock index may be non linear.

Currently, study that combined stock return behaviour from stylized facts and news event are still rare, particularly studies that focusing on *Shari'ah* compliance stock index, followed with the facts that non linearity is as a result of returns evolution over time makes stock return behaviour observation using news event compromise with the existence of publicly available information which makes the diminishing of the existence of time lag between information being available and the stock price adjustment. News and events that influence stock return behaviour is not only came from internal environment but also external environment. Beaulieu et al. (2006) using political risk as news event that affecting the return behaviour. Political risk is a global phenomenon that affects several nation stock markets in the twentieth century. Beaulieu found that the uncertainty surrounding the referendum outcome had short run affect on stock return of Quebec firm positively. Beaulieu et

al. (2006) also stated that stock market was directly influenced by the political risk and uncertainty; it implies that certain events announcement may create abnormal returns to share holders.

Hadi (2006) considered time period as tools to adjust with new information in term of rapidity and appropriate response. Various reasons applied depend on how investor interpreting new information and whether investor has access to information or is there any dependency toward trading security and restriction on short sale. Green et al. (2005) analyze the second moments of stock returns in order to investigate the nature of the stochastic process that defines stock prices. The analysis also motivated by asset pricing model, which can be predict the expected return of a stock price that related to its covariance with one or more pricing factors.

In Indonesian stock exchange, there are similarities of research about stock return behaviour, particularly research that focusing on investor and stock price reaction. Ady et al. (2013) explore the investment understanding to construct investment behavior, as well as to construct the model design of investor decision-making behavior in stock buying and selling in short-term in Indonesia stock exchange. The study used a qualitative interpretive paradigm, with phenomenology deontology method. Behavioral finance theory perspective was used as a tool to analyze the results. The results showed that; compared with fundamental analysis and technical analysis, well emotions management based on age, gender, education and personality of investor was central in determining the success, compared with other short term investor type, such as a swing trader, position trader and historical investors, the day traders have greatest psychological burden in decision to buy or to sell shares, short-term investors can manage emotions rightly to obtain greater benefit from short-term investments than long-term investments, experience was the best teacher for trader journey. Traders who able to learn from experience would be better than the traders who understand the stock market science but lack of experience, because the decisions based on a combination of rational and intuitive.

Rahmawati and Suryani (2005) examine the overreaction hypothesis in listed manufacturing company in Indonesia Stock Exchange (IDX) throughout the years 2000 to 2002. Samples obtained by using market adjusted model amounted to 15 loser stocks and 15 winner stocks. The result of this research indicate that

overreaction occur separate in its move. Winners and losers are not constant over time. Analysis independent sample *t* test, winners and losers do not show the different average abnormal return significantly. Implication on the efficient market hypothesis is that the phenomena of overreaction shows that market is not efficient (especially Jakarta Stock Exchange), since the stock price can be predicted on the previous stock price

Nurhaeni (2009) analyze the differences in average abnormal return trading volume activity of LQ-45 stocks before and after the legislative general election event's 2009. The event study method observes average abnormal return and average trading volume activity within 3 days before and after the event date. The result shows that based on statistical test on the average abnormal return during event method, the finding showed that there is significant average abnormal return before and after the legislative general election events. The finding indicates that stock exchange before the legislative general election events, two days before general election events; number investors have implemented profit taking action and avoiding uncertain situations.

3. Data and Methodology

3.1 Volatility Modeling

Modeling and forecasting stock return volatility is central to modern finance. Arguably, volatility, as measured by the standard deviation or variance of returns is often used as a crude measure of the total risk inherent in financial assets. This research using proposed framework that differs from other research in two significant ways: First, the methodology that used is approach based on the markets speed of price adjustment to information releases by testing whether the abnormal returns are significantly different from zero during the time of the event window. The measurement of speed is important to know the adjustment period between the releases of policy by Bank Indonesia to investor decision. Second, this research framework is to identify investor mis-reaction for each trading day, and then

searches for policy that can be associated with those detected significant return autocorrelations.

3.2 Wild bootstrapped automatic variance ratio (WBAVR) test

The usage of wild bootstrap version to test the hypothesis of no return autocorrelation, with improved small sample properties.

Let Y_t be an asset return at time t, where t =1,2,...,T. Choi"s (1999) AVR test statistic takes the following form:

$$VR(k) = 1 + 2\sum_{i-1}^{T-1} m(i/k)\hat{\rho}(i) \qquad (1)$$

Where $\hat{\rho}(i)$ is the sample autocorrelation of order I and $\hat{\mu}$ is the sample mean of Y_t. Note that $m(\cdot)$ is a weighting function with positive and declining weights. We follow Choi (1999) and use the quadratic spectral kernel for the weighting function so that

$$m(x) = \frac{25}{12\pi^2 x^2}\left[\frac{\sin(6\pi x/5)}{6\pi x/5} - \cos(6\pi x/5)\right] \qquad (2)$$

According to Choi (1999), $VR(k)$ given in (5.1) is a consistent estimator for the normalized spectral density for Yt at zero frequency. Under the null hypothesis that Yt is serially uncorrelated, Choi (1999) shows that:

$$AVR(k) = \sqrt{T/k}\left[VR(k) - 1\right]/\sqrt{2} \xrightarrow{d} N(0,1) \qquad (3)$$

as $k \to \infty$, $T \to \infty$, $T\,k \to \infty$, when Yt is generated from a martingale difference sequence with proper moment conditions. In order to choose the value of lag truncation point (or holding period) k optimally, Choi (1999) adopts a data-dependent method of Andrews (1991) for the spectral density at the zero

frequency. The automatic variance ratio test statistic with the optimally chosen lag truncation point is denoted as $AVR(\hat{k})$.

To complement the $AVR(\hat{k})$ test, we use the normal critical values of 2.576 and -2.576 for 1% level of significance. This is based on the asymptotic approximation using the limiting distribution given in (5.3). However, this approximation can be inadequate in small samples, especially when *Yt* is subject to conditional heteroskedasticity. Following Kim (2006), the wild bootstrap for $AVR(\hat{k})$ is conducted in three stages as below:

(i) Form a bootstrap sample of T observations $Y_t^* = \eta_t Y_t$ $(t = 1,...,T)$ where η_t is a random sequence with $E(\eta_t) = 0$ and $E(\eta_t^2) = 1$;

(ii) Calculate $AVR^*(\hat{k}^*)$, the AVR statistic obtained from $\{Y_t^*\}_{t=1}^T$; and

(iii) Repeat (i) and (ii) B times to form a bootstrap distribution. $\{AVR^*(k^*; j)\}_{j=1}^B$

The two-tailed *p*-value of the test is obtained as the proportion of the absolute values of $\{AVR^*(k^*; j)\}_{j=1}^B$ greater than the absolute value of $AVR(\hat{k})$. The $100(1-2\alpha)\%$ confidence interval for the test can be obtained as the interval $[AVR^*(x), AVR^*(1-x)]$, where $AVR^*(x)$ represents the αth percentile of $\{AVR^*(k^*; j)\}_{j=1}^B$. If the test statistic $AVR(\hat{k})$ lies outside this interval, the null hypothesis is rejected at the $(1-2\alpha)$ level of significance.

3.3 Data

The data obtained from data stream, collected in basis of the daily closing prices for weekdays (Mondays to Fridays) in the period of 2000: 1 to 2013: 12 of Indonesia *Shari'ah* compliance stock index. The data consist of daily closing price of Indonesia compliances stock index from the year of 2000: 1 to 2013: 12. The choice based on two considerations. First, Indonesia is considered to be emerging markets begins in the year of 2000. Second, the choice of the sample period is based on the volatility of the markets after 1997 crisis and 2008 crisis. Indonesia *Shari'ah* compliances also have experienced major structural changes with the potential for affecting the volatility of stock market. The period of observation can be divided in three stages of major structural changes that influence to *Shari'ah* compliances in Indonesia:

1. January 1, 2000 – December 29, 1 2004 is period during the early stages of Indonesia *Shari'ah* compliances development. In the early stages showed that many turbulences influence the establishment of *Shari'ah* compliances in both countries especially in term of policy and socialization.
2. January 1, 2005 – December, 29 2008 is period during which Indonesia *Shari'ah* compliances grew significantly in size and number. Socialization process and number of listed companies influences the growth of Indonesia *Shari'ah* compliances.
3. January 1, 2009 – December, 29 2010 is period after market crash. The period after market crash showed that *Shari'ah* compliances in Indonesia are reluctant to crisis particularly subprime mortgage crisis.

Table 1.2 Collection of Data

Notations	Index	Sample Period	Observations
ISC	Indonesia *Shari'ah* Compliance Stock Index	2000 : 1 to 2013 : 12	214 Companies

4. Result and Discussion

Table 1.3 Descriptive Statistic (Logarithmic Returns) of Indonesia *Shari'ah* Compliances Stock Index

Item	Indonesia
Mean	0.1411
Median	0.4500
Maximum	0.4900
Minimum	0.0956
Standard Deviation	0.9224
Skewness	0.0206
Kurtosis	2.3836
Jarque-Bera	0.1898
Probability	0.9094
Sum	1552
Sum Sq. Dev.	0.9871
Observations	14

Descriptive Statistics of the variables are given in table 3. From the table, some observations may be made. First, total number of observations used in this research is 14 years. Indonesia *Shari'ah* compliance stock index volatility showed by the value of standard deviation. Highest volatility means that Indonesia *Shari'ah* compliance stock index vulnerable to the changing of their stock market environment. The volatility of stock price in Indonesia *Shari'ah* compliances stock index showed that the stock price was depending on the availability of information to investor, including the information that investor gain from past information in form of data about daily prices or public information in form of news and policies.

Table 1.4 Nonlinearity Test on AR (*p*) Residuals

Item	Indonesia	
	Asymptotic	Bootstrap
McLeod-LI (20 lags)	0.000	0.000
McLeod-Li (24 lags)	0.000	0.000
Cicovariance		

(17 lags)		
	0.000	0.000
	Engle LM	
1	0.000	0.000
2	0.000	0.000
3	0.000	0.000
4	0.000	0.000
5	0.000	0.000
Tsay	0.000	0.000

Table 1.5 BDS Test on AR (*p*) Residuals

Dimension	**Indonesia**		
	EPS= 1	EPS=2	EPS=5
			Bootstrap
2	0.000	0.000	0.000
3	0.000	0.000	0.000
4	0.000	0.000	0.000
			Asymptotic
2	0.000	0.000	0.000
3	0.000	0.000	0.000
4	0.000	0.000	0.000

Notes: only p-values are reported under the null hypothesis that the time series is a serially iid process. All calculations are done using the non-linear toolkit by Patterson and Ashley (2000).

Patterson and Ashley (2000) has made available a "nonlinearity toolkit" that provides convenient access to a selection of the best tools available for statistically detecting nonlinearity in the generating mechanism of a given time series. The method also specifying the true data generating process that would affecting modeling and analyzing the financial relations (some recent applications include Patterson and Ashley, 2006; Panagiotidis and Pelloni, 2007).

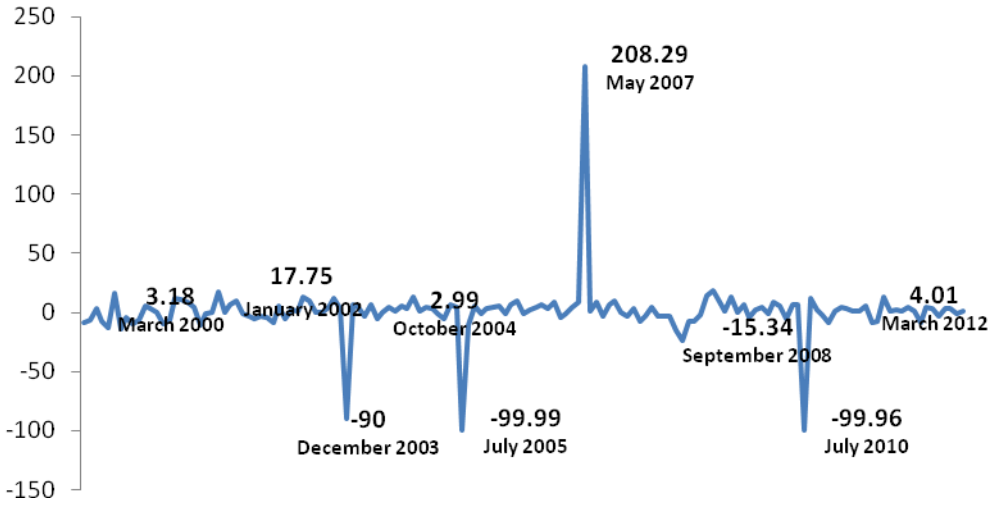
The test was conducted in two forms, using asymptotic distribution of the relevant test statistic and using the bootstrap. From table 1.4, under the "asymptotic theory", the values are withdrawn from relevant statistic test. The result of 1000 bootstrap showed that there is independent empirical distribution of present framework. The result of the application of non linearity toolkit also showed that there is significant support towards nonlinear serial dependence in Indonesia and *Shari'ah* compliance stock index. The existence of nonlinearity showed that there is historical volatility that happened during the period of observation. This result also

show that there are sensitivity of Indonesia *Shari'ah* compliance toward news and policies in the stock market that will gives description about financial risk management that faced by investor in particular for Bank Indonesia on how to manage the risk that occur during the announcement of macro prudential policies.

Several news events that occurred during periods of observation, the news and events influence the reaction from investor in choosing to invest in *Shari'ah* compliance stock index. News and events that occurred during the period of 2000-2013 are 2008 financial crisis known as subprime mortgage crisis, this is well explained as one of the salient features of globalization and the rapid transmission of information across market is the spread of financial crisis from one country to another, even when underlying economic fundamentals are different (Ahlgren & Antell, 2009).

Graphics 1 show the monthly return of Indonesia *Shari'ah* compliance stock index, where the volatility of return showed the influence of policy toward profitability that gain by investor in Indonesia *Shari'ah* compliance stock index.

Graphics 1. Indonesia *Shari'ah* Compliance Stock Index Monthly Return From 2000-2012



The graphics also revealed several policies as major market mover toward stock prices. Monthly return for Indonesia *Shari'ah* compliance at December 2003

show declining at -90 point where at that time Indonesia on the process of having the first democracy election and several bombing accident in Indonesia that influences Indonesian composite index and Rupiah stability. Bank Indonesia releases policy of Rupiah stabilization by announcing deregulation package that related with interest rate and FED rate level (Bank Indonesia Fact Book, 2004). The policies from Bank Indonesia absorb by Indonesia *Shari'ah* compliances with stability in term of monthly return continuous until following year. Monthly returns for Indonesia *Shari'ah* compliance also show increasing point at 208.29 on May 2007. The period also marked as subprime mortgage crisis where financial volatilities also influencing profitability's. Indonesia *Shari'ah* compliance monthly return performance show that there are no influences toward monthly return on May 2007 with potential explanation that *Shari'ah* index with interest prohibition show stability during crisis due to conventional financial institution is not allowed to be classified in the *Shari'ah* compliances. On the contrary, Indonesia *Shari'ah* compliance monthly return show significant stability with decreasing and increasing point, the index also experienced heat toward news that happened in Indonesia related with several news and events that happened in Indonesia during the period of 2000-2013.

Figure 1.2 News Impact Curves

The *Shari'ah* compliance stock index as the heat of the stock market detected to have responded on some social national-scale issues in Indonesia.

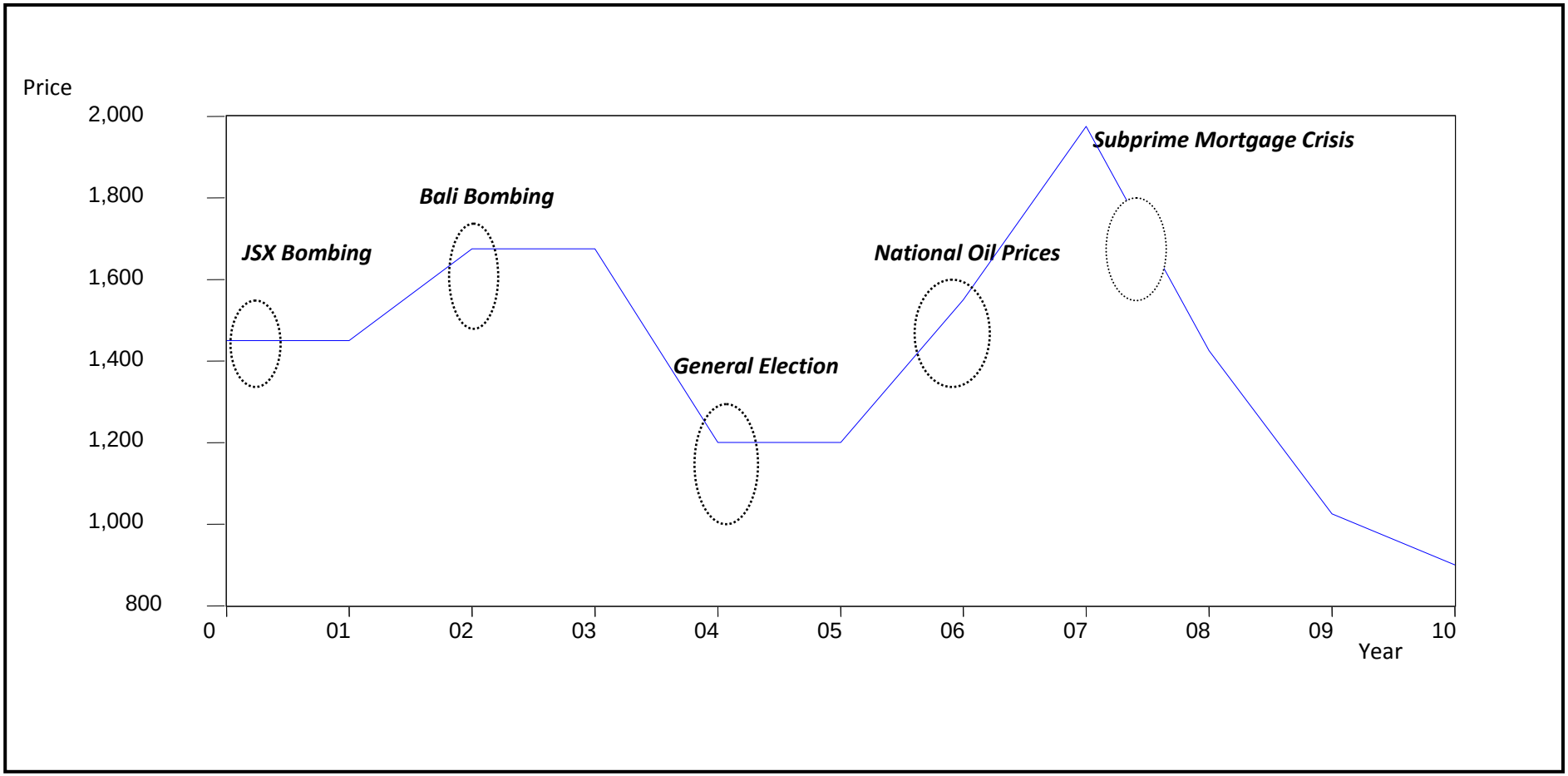


Figure 2. Show that the movement of Indonesia *Shari'ah* compliance stock index was influence by several news and events[1]. Political issues and national securities is the major factor that influences the movement of stock prices, particularly the market price[2]. In 2000, national security was the main issued that hit Indonesia Stock Exchange in November 2000, several bombing has triggered panic attack for investor and lowering level of trust to the government. In 2004 general election held in Indonesia, which is the first democracy general election in Indonesia. Conclusion can be made that stock return behaviour pattern also influenced by the response of heat and fragility of the *Shari'ah* compliance stock index towards several news events both in Indonesia therefore, it is worth studying the dynamics of stock return in Indonesia.

Table 1.6 : Significant Return Autocorrelations of Indonesia *Shari'ah* compliance Stock Index that Coincide with Big News in Indonesia

Date	AVR-1	Market-moving News Events
02/02/2000	4.74286	Stronger Balance of Payments Surplus in Q3/2009
04/02/2000	5.83333	The implementation of *Shari'ah* system in Indonesia *Shari'ah* compliance stock index, with considered 30 companies that classified as *Shari'ah* in Jakarta Islamic Index.
13/04/2000	4.66667	Paris Club II meeting has reached establishment to rescheduling debt payment for Indonesia government to loan that due to 1 April 2000 and 31 March 2002.
09/09/2000	1.454545	Debt rescheduling from commercial loan that taken from bank syndication in foreign countries through London Club
03/03/2001	2.60839	Japan Government increasing money supply to the banking system and money market to support the increasing level of lending and financing.

[1] Authors do not rule out alternative explanations such as (1) the presence of noise trading; (2) investors‟ delayed reaction to news on previous day, which take them several days to fully grasp its impact; (3) the reaction to news only known by informed investors.

[2] Market price is very important is *Shari'ah* perspective the price must reflect the real current condition of company which issued a stock, Thus the more volatile the market the more it will influence the condition of *Shari'ah* compliance that can definite the transparency of company that classified in *Shari'ah* compliance and in the end it will determine the development of *Shari'ah* compliance

12/04/2001	3.10345	IMF suspending Loan leasing to Indonesia.
26/07/2001	2.31578	BI Keeps the BI Rate at 6.5%
30/01/2002	3.72873	IMF agrees on loan settlement for Indonesia with value of 341 million USD.
01/03/2002	1.70216	Bank BCA divestment, Bullies trend Asian currency.
18/04/2002	5.91365	S&P decreasing Indonesia rating from CCC to SD.
05/08/2002	8.76792	Singapore Telecommunication buying Telkomsel, the largest telecommunication provider in Indonesia.
04/04/2003	3.6773	Bombing at Soekarno Hatta international airport.
05/08/2003	1.78052	Jakarta Marriot Hotel Bombing.
02/04/2004	3.39485	The expectation of the increasing FED Rate Interest in US.
06/06/2004	1.23399	Bandwagon Effect.
05/07/2004	4.8173	Bank Indonesia Alerted to Heightened Inflation Risk
27/04/2005	2.19711	Announcement of Rupiah stabilization.
05/07/2005	7.68939	Bank Indonesia and Government announce deregulation package.
01/03/2006	5.090698	Rules implementation toward conventional bank that implemented *Shari'ah*.
08/09/2006	1.38938	Rescheduling debt payment to IMF.
03/10/2006	8.92924	Fiscal stimulus and aid program to stabilize price after oil price increasing in Indonesia.
03/07/2007	2.57761	Agreement reached on Cooperation and Coordination to support Task Implementation at Bank Indonesia and the Indonesian Financial Services Authority (OJK)
01/11/2007	4582892	The implementation of tax incentive for ASEAN new Member (Cambodia, Laos, Myanmar, and Vietnam).
30/11/2007	7.39416	The merger between Surabaya Stock exchange and Jakarta Stock Exchange becoming Indonesia Stock Exchange.
07/04/2008	8.07591	Composite Index in US, Europe, and Japan decrease at 47%, 51,5% and 55,6% point, while composite index in developed and Asian countries were decrease at 60 percent point, higher than the great depression.
21/11/2008	10.2358	Bank Century case has reached the stage of corruption by pointing several related administrator as the suspected.
01/01/2009	2.37241	Bank Indonesia announced BI rate packaged that launched three times during the year of 2009.

01/03/2009	1.61054	Bilateral Currency Swap Agreement between Indonesia and China.
07/05/2009	9.52639	Minimum Secondary Reserve Requirement effective 15th May 2009
01/01/2010	2.89889	Response towards the improvement of China economic data growth.
03/03/2010	2.89856	BI Rate raised 25 bps to 7.50%
07/05/2010	2.13804	Portfolio adjustment from investor in Indonesia toward several economic policy, such inflation rate and SBI rate.
15/03/2010	2.79888	Loan to Value Ratio to Housing Credit and Down Payment for Failure of Customer Payment
4/10/2010	1.54832	Minimum Adequacy Ratio based on the Loan to Deposits Ratio
1/10/2013	1.68832	Adjustment toward Minimum Adequacy Ratio based on the Loan to Deposits Ratio
15/01/2013	1.89076	The transpiration of based interest rate credit

Notes: AVR-1 refers to the automatic variance ratio statistic minus one.

This research identifies 36 macro economy and monetary policy that have major impact toward Indonesia *Shariah* compliance stock index, not only causing large price changes but also investor mis-reaction. Several interesting observation are highlighted here. First, Indonesia *Shari'ah* compliance only reacts to certain policy that investor generally understand the impact of the policy. Macroeconomic and monetary policy that related to foreign policy is considered less affecting to investor since not only they do not familiarly known with the policy or the policy only implemented among financial institution. Second, investor already fully aware toward certain policy that regularly released by Bank Indonesia such as interest rate and the announcement of inflation rate where this policy usually have major impact to market but have minor impact toward stock markets particularly for Indonesia *Shari'ah* compliance that prohibiting interest rate do not take account toward banking industry and industry that based in interest rate system.

The result of AVR-1 in Indonesia *Shari'ah* compliance stock index market showed that all the classified companies in Indonesia *Shari'ah* compliance stock index needs more than one minute to fully adjust and incorporated with the influence and impact of the 36 policy that implemented in Indonesia during the period of observation. Policy related to macroeconomic and monetary mainly determined by

Indonesian Central Bank (Indonesian Bank). From 36 monetary policies in Indonesia, Indonesia *Shari'ah* compliance stock index adapts and absorb more than one minute. The result also proved that macroeconomic and monetary policy determined by Indonesia central bank will further digest by investor in Indonesia *Shari'ah* compliance stock index by analyzing whether the policy categorized as major market movers or minor market movers that will implicate the result of their decision. The analysis process will give an implication result towards certainty and uncertainty in economic condition in Indonesia that will create a substantial risk for company that classified in Indonesia *Shari'ah* compliance stock index.

The result also suggest that though Bank Indonesia regularly issued macro and monetary policy to stabilize economic condition, media coverage is brings huge impact toward large price change and market mis-reaction. The distribution and changing of Indonesia *Shari'ah* compliance index is depends on how much investor understands the objective and risk of the policy. Interest rate policy from Bank Indonesia only have impact and bring market reaction only if investor in Indonesia is well aware that investing in conventional financial institution is prohibited according to *Shari'ah* rules. Major policy that issued by bank Indonesia is related with 2008 subprime mortgage crisis, where Composite Index in US, Europe, and Japan decline at 47%, 51,5% and 55,6% point, while composite index in developed and Asian countries were decrease at 60 percent point, higher than the great depression. The decreasing of composite index in European counties and Asian countries does not influence the performance if Indonesia *Shari'ah* compliance stock index, since this index were recorded to be stable at 76,7% (Indonesia Stock Exchange Fact Book, 2008).

The result is supporting another research about market behaviour towards policy that conducted by Rahmawati and Suryani (2005) emphasize on testing the unexpected information that shockingly influence the reaction of market behaviour by using sample from manufacturing companies that listed in Indonesia Stock Exchange and the result showed that there is separation of long period overreaction as indication from companies that classified in the manufacturing company and Sartono and Yarmanto documenting overreaction in Indonesia Stock Exchange by

using Damodaran model to measure market adjustment towards new information and found that Indonesia Stock Exchange tend to overreact towards new information.

5. CONCLUSION

In this research, we propose a novel framework to explore the direct relationship between macroeconomic and monetary policy and stock return autocorrelations. The intention of this research is to see whether significant serial correlation in the return series reflect *Shari'ah* market mis-reaction toward policy that implemented by Indonesian Central Bank. This research is interesting in the way how *Shari'ah* compliance stock index coincides with policy that implemented by Bank Indonesia, while as *Shari'ah* compliance the stock index have their own regulation that needs to comply with the adjustment toward the policy. High frequency minute-by-minute data is used to detect significant return autocorrelation for each trading day. The main contribution of this research is to design model of network that can be used to investigate the influence of policy toward probability of loss among investors and to measure the scale of impact of each policy that issued by Bank Indonesia.

This research apply wild bootstrapped automatic variance ratio test recently proposed by Kim (2009) to detect significant serial correlations in the 1-minute transaction returns of the Indonesia *Shari'ah* compliance stock index. The result showed that only 3287 out of the 4480 trading days during the period of observation exhibit significant return autocorrelations at the 1% level. The result indicated that stock prices in the remaining 76% imply that policy from Bank Indonesia incorporated into *Shari'ah* compliance stock prices within one minute. This research also finds that from 31 of 2738 trading days with significant return autocorrelations can be associated with macro prudential and monetary policy that issued by Bank Indonesia with high level of information uncertainty and makes investor in *Shari'ah* compliance stock market needs more time to absorb and adjust the implication of macro and monetary policy. However, there are 6 policies that considered as market

movers and influence the condition of macro economy but the 1-minute return series exhibit insignificant serial correlations.

The results also suggest that every macro and monetary policy tend to bring implication and changes of large price if there are major media coverage and intense socialization of the policy from Bank Indonesia. The significant autocorrelation also explained as response from investor as they were driven by information and makes decision based on the policy. However, proposed framework of this research is needs more construction, since macro and monetary policy that taken on this research is salient policy and it does not capture the rate of policy that implemented as a sudden action toward emergency economic condition such economic crisis, the instability of Indonesian currency or the increasing of CPO price. The proposed framework has major implication, since the investigation can be extended toward the development of model network or model probability of default to measure how much the impact of macro and monetary policy from Bank Indonesia toward the stability of *Shari'ah* financial industry and can be used as an early warning system toward financial crisis in Indonesia since this country has implemented dual stock exchange (conventional stock market and *Shari'ah* stock market) and dual banking system (conventional bank and *Shari'ah* bank) that makes the vulnerability toward shock from macro economy that happened in conventional markets will also influence the *Shari'ah* markets.

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