THE EFFECT OF MONETARY POLICY ON MACROECONOMIC STABILITY AND STOCK MARKET: EVIDENCE FROM INDONESIA

Maria Praptiningsih
Martin de Tours School of Management and Ecomonics, Assumption University of Thailand

Abstract

Monetary policy can have a significant effect on the movement in the stock market. This paper investigates the effect of monetary policy through monetary instruments on macroeconomic objectives and stock market utilizing Vector Error Correction Model (VECM) in order to examine the dynamic effect of Bank Indonesia Rate and Overnight Money Market Rate in achieving price stability, foreign exchange stability, economic growth, and capital market stability. This paper utilizes Impulse Responses and Variance Decomposition approach to examine the responses and the contribution of monetary policy instruments in affecting the macroeconomic objectives. The findings confirmed that Bank Indonesia Rate and Overnight Money Market Rate are statistically significant in affecting the inflation rate, foreign exchange rate, the output growth and the Jakarta Composite Index. Finally, there is a trade-off between inflation and economic growth.

INTRODUCTION

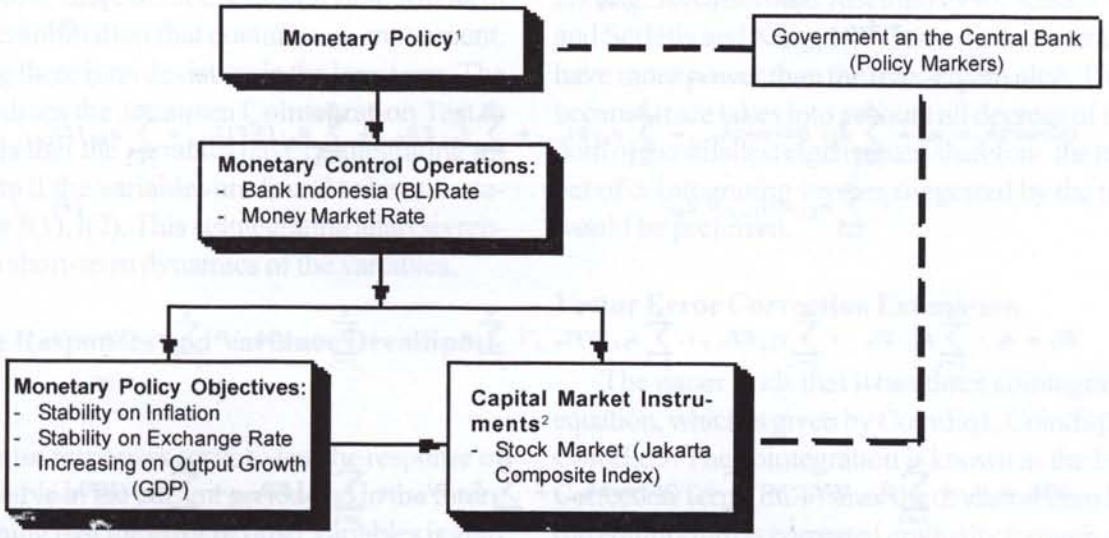
According to major fluctuations and high volatility in inflation rates, exchange rates, gross domestic products growth rates and the stock index movements during the empirical period of 1990 to 2009, Bank Indonesia implemented several monetary policies to reduce the high volatility. However, some policies were found to be insufficient to mitigate the negative shocks affective macroeconomic stability. Therefore, Bank Indonesia continued working on minimizing the negative impact of economic shocks that can influence the stock market's performance as well as the macroeconomic stability. The Indonesian Capital Market, Financial Institution Supervisory Agency, and the Indonesian Stock Exchange Board played an important role in limiting deeper financial market's decline, particularly on the Indonesia Composite Index. Since stock market has become one of the main elements in influencing macroeconomic stability, movements in the stock market can have a significant impact on the macroeconomy.[1] To some extent, some literature argued that changes in the macroeconomic variables can have a significant impact on the movements in the stock market.[2] With respect to these linkages, Bank Indonesia's role in maintaining macroeconomic and financial sector stability would be strongly influenced by the effectiveness of the monetary policy implementation or the effectiveness of monetary instruments. An important monetary policy instrument used by Bank Indonesia is the Bank Indonesia (BI) Rate. This is the main instrument of Bank Indonesia in controlling macroeconomic and financial performance. According to the operational mechanism, the instrument is known as the Interbank Overnight (O/N) Money Market Rate. In order to assess whether Bank Indonesia can influence inflation rates, exchange rates, economic growth and the stock market effectively, the relationship between these variables must be tested empirically. If the empirical test results identifies that the monetary policy instrument is significant in influencing the macroeconomic and financial stability, Bank Indonesia will be able to identify measures to reduce the volatility that encourages positive expectations of investors and businesses in Indonesia's economic and investment activity. With uncertainty and high volatility in macroeconomic indicators, these tend to increase the cost of all economic activities. Furthermore, it is important to conduct a study to test how effectively Bank Indonesia implements monetary policy through its instruments in achieving the ultimate goals namely price stability, exchange rate stability, economic growth, and sta-

bility in financial markets. Therefore, this paper will investigate whether the monetary policy can have a significant effect on macroeconomic indicators such as the inflation, the exchange rate, the output growth, and the stock market through the monetary policy transmission mechanisms. The result will be beneficial to the investors, firms, government and central bank in terms of their decision-making regarding the market perception and expectation. Furthermore, the study will provide valuable knowledge and experience based on the empirical studies and current research in terms of monetary policy and financial systems.

REVIEW OF RELATED LITERATURE

According to the Law of Bank Indonesia's Independency, No.23, 1999, it stated that the single objective of Indonesian monetary policy is to maintain the stability of the rupiah. It means that Bank Indonesia should control the inflation rate, where the representation of the value of rupiah is in terms of goods and services under consumption activities. The other implication is to maintain the stability in the foreign exchange in terms of rupiah. Therefore, in order to influence the economic activity, Bank Indonesia issued a monetary policy instrument, known as Bank Indonesia (BI) rate. BI rate is Bank Indonesia's monetary policy instrument used to control the monetary and financial sector. In the operational level, the movement in the Interbank Overnight (O/N) rate indicates the operational target of monetary policy where interest rate in the money market is often referred as the Interbank Money Market (MM) rate (Bank Indonesia, 2009). According to Cargill (1991); Thomas (1997); Mishkin & Eakins (2000), the monetary policy instruments are used to influence the economy in achieving monetary objectives. Thomas (1997) defined that the general tools of monetary policy include open market operations, discount window policy, and reserve requirement policy. The targets that the central bank can influence most quickly and accurately are various measures of bank reserves and short term interest rates. Mishkin and Eakins (2000) also discussed that the objectives of monetary policy is to achieve: (1) high employment, (2) economic growth, (3) price stability, (4) interest rate stability, (5) stability of financial markets, and (6) stability in foreign exchange markets. Economic growth are measured by the percentage change in the real gross domestic product every year. Price stability, an important macroeconomic objective, depends upon the central bank's control of the inflation rate that reflects the price stability because a rising price level or the inflation rate creates uncertainty in the economy that may lower the economic growth. Stability in foreign exchange markets reflets the stability in the value of domestic currency in foreign exchange markets. Greenspan (1989) and Thomas (1997) stated that the ultimate goals of monetary policy are price level stability, full employment, exchange rate stability and long-term economic growth. Cargill (1991) and Ferguson (2003) proved that monetary policy is concerned with reducing fluctuations in domestic economic activity, full employment, price stability, and economic growth; ensuring a stable domestic financial system and considering financial stability. According to Ross (1997); Blanchard, Ariccia, and Mauro (2010), these studies empirically proved the existence of a positive relationship between the development of financial systems to economic growth. Issing (2003) found that there is a trade-off between the financial stability and the monetary stability. Thorbecke (1997) examined how stock return data respond to monetary policy shocks. Similarly, Rigobon and Sack (2003) found that movements in the stock market can have a significant impact on the macro-economy and are likely to be an important factor in the determination of monetary policy. In addition, Bernanke & Gertler (2000) concluded that monetary policy also responded to variability in asset prices particularly in the stock market. According to the literature reviewed, the ultimate goals of monetary policy are to maintain the price stability, exchange rates stability, economic growth and financial market stability. Empirical evidence confirmed that the central bank still faces many challenges in achieving the macroeconomic and the stock market stability. The challenges happened when a trade-off exists. In order to control the positive and negative relationship among macroeconomic indicators and stock market index regarding the trade-off, central bank should maintain the monetary instruments effectively. Therefore, it is important to

Figure 1: Conceptual Framework



[1]The Effect of Monetary Policy Toward Monetary Policy Objectives (Green, 1996; Fraga, 2003, Walsh, 2003; Chowdury & Siregar, 2004; Naqvi & rizvi, 2009)

[2]The Effect of Monetary Policy Toward Capital Market (Lee, 1992; Thorbecke, 1997; Bernanke & Gertler, 2000; Regobon & Sack, 2003; Gupta, 2006)

Source: Author (processed)[4]

conduct a study that emphasizes on the effectiveness of monetary policy instruments in achieving macroeconomic and financial stability. This study attempts to examine the effectiveness of Indonesian monetary policy toward macroeconomic and financial stability through the monetary policy mechanisms.

RESEARCH FRAMEWORK

The BI rate is the monetary policy instrument that is able to give signals to the market regarding the policy changes.[3] The BI rate can be increased, decreased, or unchanged. Bank Indonesia utilized the 1-month BI rate to affect the interest rates particularly in the interbank money market. Figure 1 shows the conceptual framework of the study. The main part of this study is to examine the impact of monetary policy toward the macroeconomic objectives and the financial markets particularly on Indonesian Stock Market. The objective is to measure whether the monetary policy has a significant effect on macroeconomic indicators and the financial markets especially in affecting the price of stock markets.

Research Models and Hypotheses

This paper employs the autoregressive distributed lag (ADL) models to identify the lag length. The ADL model consists of the "autoregressive", because lagged values of the dependent variable are included as regressors, as in autoregression, and "distributed lag" because the regression also includes multiple lags of an additional predictor. The research model and hypotheses used in this paper are based on the study of Bernanke and Gertler (2000). The following are the integrated models[5], which consists of six-autoregression models. The models are given as follows:

$$INFL_t = \alpha_i + \sum_{j=1}^{k} \beta_{ij}\, INFL_{t-j} + \sum_{j=1}^{k} \gamma_{ij} JCI_{t-j} + \sum_{j=1}^{k} \delta_{ij}\, MM_{t-j} + \sum_{j=1}^{k} \theta_{ij}\, QGrowth_{t-j} + \sum_{j=1}^{k} \mu_{ij}\, BI_{t-j} + \sum_{j=1}^{k} \pi_{ij}\, ER_{t-j} + \varepsilon_{it} \quad (2)$$

$$ER_t = \alpha_2 + \sum_{j=1}^{k} \beta_{2j}\, ER_{t-j} + \sum_{j=1}^{k} \gamma_{2j}\, INFL_{t-j} + \sum_{j=1}^{k} \delta_{2j}\, JCI_{t-j} + \sum_{j=1}^{k} \vartheta_{2j}\, MM_{t-j} + \sum_{j=1}^{k} \mu_{2j}\, QGrowth_{t-j} + \sum_{j=1}^{k} \pi_{2j}\, BI_{t-j} + \varepsilon_{2t} \quad (3)$$

$$QGrowth_t = \alpha_6 + \sum_{j=1}^{k} \beta_{6j}\, QGrowth_{t-j} + \sum_{j=1}^{k} \gamma_{6j}\, BI_{t-j} + \sum_{j=1}^{k} \delta_{6j}\, ER_{t-j} + \sum_{j=1}^{k} \theta_{6j}\, INFLI_{t-j} + \sum_{j=1}^{k} \mu_{6j}\, JCI_{t-j} + \sum_{j=1}^{k} \pi_{6j}\, MM_{t-j} + \varepsilon_{6t} \quad (4)$$

$$BI_t = \alpha_1 + \sum_{j=1}^{k} \beta_{1j}\, BI_{t-j} + \sum_{j=1}^{k} \gamma_{1j}\, ER_{t-j} + \sum_{j=1}^{k} \delta_{1j}\, INFL_{t-j} + \sum_{j=1}^{k} \theta_{1j}\, JCI_{t-j} + \sum_{j=1}^{k} \mu_{1j}\, MM_{t-j} + \sum_{j=1}^{k} \pi_{1j}\, QGrowth_{t-j} + \varepsilon_{1t} \quad (5)$$

$$MM_t = \alpha_5 + \sum_{j=1}^{k} \beta_{5j}\, MM_{t-j} + \sum_{j=1}^{k} \gamma_{5j}\, QGrowth_{t-j} + \sum_{j=1}^{k} \delta_{5j}\, BI_{t-j} + \sum_{j=1}^{k} \theta_{5j}\, ER_{t-j} + \sum_{j=1}^{k} \mu_{5j}\, INFL_{t-j} + \sum_{j=1}^{k} \pi_{5j}\, JCI_{t-j} + \varepsilon_{5t} \quad (6)$$

$$JCI_t = \alpha_4 + \sum_{j=1}^{k} \beta_{4j}\, JCI_{t-j} + \sum_{j=1}^{k} \gamma_{4j}\, MM_{t-j} + \sum_{j=1}^{k} \delta_{4j}\, QGrowth_{t-j} + \sum_{j=1}^{k} \theta_{4j}\, BI_{t-j} + \sum_{j=1}^{k} \mu_{4j}\, ER_{t-j} + \sum_{j=1}^{k} \pi_{4j}\, INFL_{t-j} + \varepsilon_{4t} \quad (7)$$

Where, $INFL_t$ is the Inflation Rate on time t; Q_t is the Output Growth at time t; *ER* is the Exchange Rate at time t; *BI* is the Bank Indonesia Rate at time t; MM_t is the Money Market Rate at time t; JCL_t is the Jakarta Composite Index at time t; α is a constant and ε_t is an error term. Time t is in quarterly and j is lagged values that are chosen by the best estimation. According to the research model[5], we construct the null hypotheses as follows:

Ho_t: β_t; δ_t; θ_t;; μ_t; π_t; = 0

There is no significant effect between the BI Rate, Exchange Rate, Inflation Rate, JCI, Money Market Rate, and Output Growth. The alternative hypotheses as follows:

Ha_t: β_t; δ_t; θ_t;; μ_t; π_t; = 0, or minimum of one variable not equal to zero.

There is a significant effect between the BI Rate, Exchange Rate, Inflation Rate, JCI, Money Market Rate, and Output Growth

RESEARCH METHODOLOGY

The research investigates the effect of monetary policy in achieving the price stability, foreign exchange stability, economic growth, and financial markets stability. This paper utilizes Quarterly Database, which is from Q1:1990 to Q4:2009. The secondary data are collected from International Financial Statistic (IFS)-IMF, CEIC Database and Bank Indonesia quarter database. The variables that are used in this paper are: (1) Bank Indonesia (BI) Rate – the proxy is the Bank Indonesia (BI) interest rate, which is the benchmark of the determination of interest rates in Indonesia. (2) Money Market Rate – the proxy is the interest rate in the Interbank Overnight (O/N) Money Market Rate. (3) Exchange Rate – the proxy is the exchange rate of domestic currency to the foreign currency (Rp/USD). (4) Inflation Rate – the proxy is the percentage change in Consumer Price Index (CPI) in Indonesia. (5) Output Growth – the proxy is the percentage change in Indonesia's Gross Domestic Product (GDP). (6) Jakarta Composite Index (JCI) – the proxy is the Jakarta Composite Index (JCI) as the average stock index in the Indonesian Stock Exchange.

Cointegration and Error Correction Models

Co-integration states that if the time series data

are not stationary or has a unit root, the combination of two or more of time series variable will form a linear combination that contain a co-movement, assuming there is no deviation in the long term. The paper utilizes the Johansen Cointegration Test to check whether the variables have cointegrating relationship if the variables are found to be non-stationary or I(1), I(2). This cointegrating analysis represents a short-term dynamics of the variables.

Impulse Responses and Variance Decomposition

Impulse responses serve to test the response of each variable in the current period and in the future by assuming that the error of other variables is zero (Stock & Watson, 2007). Stock & Watson (2007) defined that forecast error decomposition is the percentage of the variance of the error made in forecasting a variable due to a specific shock at a given horizon. According to Enders (2004), the forecast error variance decomposition tells us the proportion of the movements in a sequence due to its "own" shocks versus shocks to the other variable.

PRESENTATION OF DATA AND CRITICAL DISCUSSION OF RESULTS

Stationarity Test, Granger Causality Test and Johansen Cointegration Test

The paper concludes that all six variables are stationary at first difference or I(1). Thus, this requires at cointegration method be conducted. The decision on the appropriate lags in the model is related on the lowest AIC or SC criterion. According to the AIC criterion, the result finds that the appropriate lag is 2. The Granger causality test finds that BI rate, exchange rate, JCI, and money market rate can help to predict the volatility on inflation rate. In terms of financial market, the BI rate and money market rate are statistically significant on explaining the changes on JCI. The paper finds that there are three cointegrating equations at 0.05 levels. Meanwhile, the max-eigenvalue test provides one cointegrating equation at 0.05 levels. There are conflicting results between trace statistics and max-eigenvalue. However, it is suggested by several researchers (e.g. Johansen and Juselius, 1990; Kasa, 1992; and Serletis and King, 1997) that the trace tends to have more power than the max-eigenvalue. This is because trace takes into account all degrees of freedom of the smallest eigenvalues, therefore, the number of cointegrating vectors suggested by the trace would be preferred.

Vector Error Correction Estimation

The paper finds that it has three cointegrating equation, which is given by CointEq1, CointEq2, or CointEq3. The cointegration is known as the Error Correction Term (ECT) since the deviation from long run equilibrium is corrected gradually through a series of partial short run adjustments. The negative or positive coefficient of ECT shows the speed of adjustment quarterly of the endogenous variables toward equilibrium. According to the first ECT (CointEq1), BI rate is statistically significant at 5% level, JCI at 1% level, and Output Growth at 5% level. The speeds of adjustment toward the equilibrium per quarter are 80.2479 percent, 103.0889 percent, and 257.5734 percent for BI rate, JCI, and output growth. The second ECT (CointEq2) shows BI rate is significant at 1%, Inflation at 5%, JCI at 1% and money market rate at 1%. The speeds of adjustment for BI rate, inflation, JCI, and money market rate are 71.3854 percent, 58.1485 percent, 48.2143 percent, and 90.6338 percent. The last ECT stated BI rate is significant at 1%, Inflation at 1%, and money market rate at 1%. The speeds of adjustment are 20.3748 percent, 56.2835 percent, and 28.2914 percent. BI rate has negative influences in two cointegrating relationship that is the first and the third ECT, indicating a downward adjustment but has a positive influence in the second cointegrating relationship. This means that the changes in BI rate will be corrected mostly from the previous performance. The implication of these results confirms that there is interdependent relationship among BI rate, money market rate, inflation, output growth and Jakarta Composite Index. The change in one variable will influence the change in other variables. (Table 1)

Table 1: Speed of Adjustment Parameter of the Error Correction Term (ECT)

Error Correction:	Bank Indonesia (BI) Rate	Exchange Rate (ER)	Inflation Rate (INFL)	Jakarta Composite Index (JCI)	Money) Market Rate (MM	Output Growth (Qgrowth)
CointEq1	-0.802479	-0.179749	0.749369	1.030889	-0.873949	2.575734
	(0.34614)	(0.14370)	(0.51775)	(0.32659)	(0.55414)	(1.24172)
	[-2.31835]**	[-1.25083]	[1.44734]	[3.15650]***	[-1.57713]	[2.07433]**
CointEq2	0.713854	0.044428	0.581485	-0.482143	0.906338	-0.392215
	(0.16238)	(0.06741)	(0.24288)	(0.15321)	(0.25995)	(0.58249)
	[4.39629]***	[0.65906]	[2.39411]**	[-3.14703]***	[3.48661]***	[-0.67334]
CointEq3	-0.203748	0.018037	-0.562835	-0.00922	-0.282914	-0.268844
	(0.06739)	(0.02798)	(0.10080)	(0.06358)	(0.10788)	(0.24174)
	[-3.02349]***	[0.64473]	[-5.58375]***	[-0.14501]	[-2.62244]***	[-1.11211]

Note: ***means significant at α = 1%; ** means significant at α = 5%; * means significant at α = 10%

Impulse Responses

Impulse responses test the response of each variable in the current period and in the future period. Eviews are provided automatically in ten periods that is ten quarters. First is the response of BI rate. The shocks of exchange rate, money market rate and JCI result in a positive response of BI rate. The change in the inflation and output growth can negatively affect response of BI rate. Second is the response of exchange rate. The shocks of money market rate and exchange rate itself bring a positive response to exchange rate. Only the shock of JCI results in a negative response of exchange rate. Third is the response of inflation rate. The shock on the exchange rate is a positive response of inflation rate. Similarly, the JCI has influence on the inflation rate in a positive direction. The shock on money market rate has a significant effect on creating a negative response of inflation. Fourth is the response of JCI. A negative response of JCI emerge when there are shocks on exchange rate and money market rate. Fifth is the response of money market rate. The fluctuation on exchange rate and money market rate in terms of its lagged values generate a positive response on the money market. The negative response will emerge when the inflation are changed. Lastly, the response of output growth is negative when there are shocks on money market rate and exchange rate. (Figure 2)

Variance Decomposition

First, the money market rate contributes 27.662 percent to BI rate, and 11.278 percent from the exchange rate. The second findings are the variances of exchange rate are influenced by 19.767 percent of money market rate, and 12.577 percent of BI rate. Third, the variance of inflation rate are mainly affected by 26.942 percent of BI rate, and 15.309 percent from JCI. Fourth is the variance decomposition of JCI. The highest contribution is from money market rate of 45.613079 percent on average to JCI and 9.970 percent from exchange rate variation. Fifth is the variance decomposition of money market rate. The result finds that the contribution comes from BI rate by 20.760 percent and 9.804 from exchange rate. Lastly is the variance decomposition of output growth. The regressive model shows that the lagged values of output growth creates a relatively high influence of 41.783 percent, followed by 20.963 percent from money market rate, and 18.424 percent from BI rate. As a general conclusion, we can confirm that BI rate has a significant contribution to all variables. Table 2 presents a brief summary of the contribution among variables.

Table 2 shows the contribution of each variable in influencing one another in an average percentage. Each variable in the row has three columns that are highlighted. The three columns refer as the three highest influences among variables. The paper finds that

Figure 2: Impulse Responses

Responses to Cholesky One S.D. Innovations

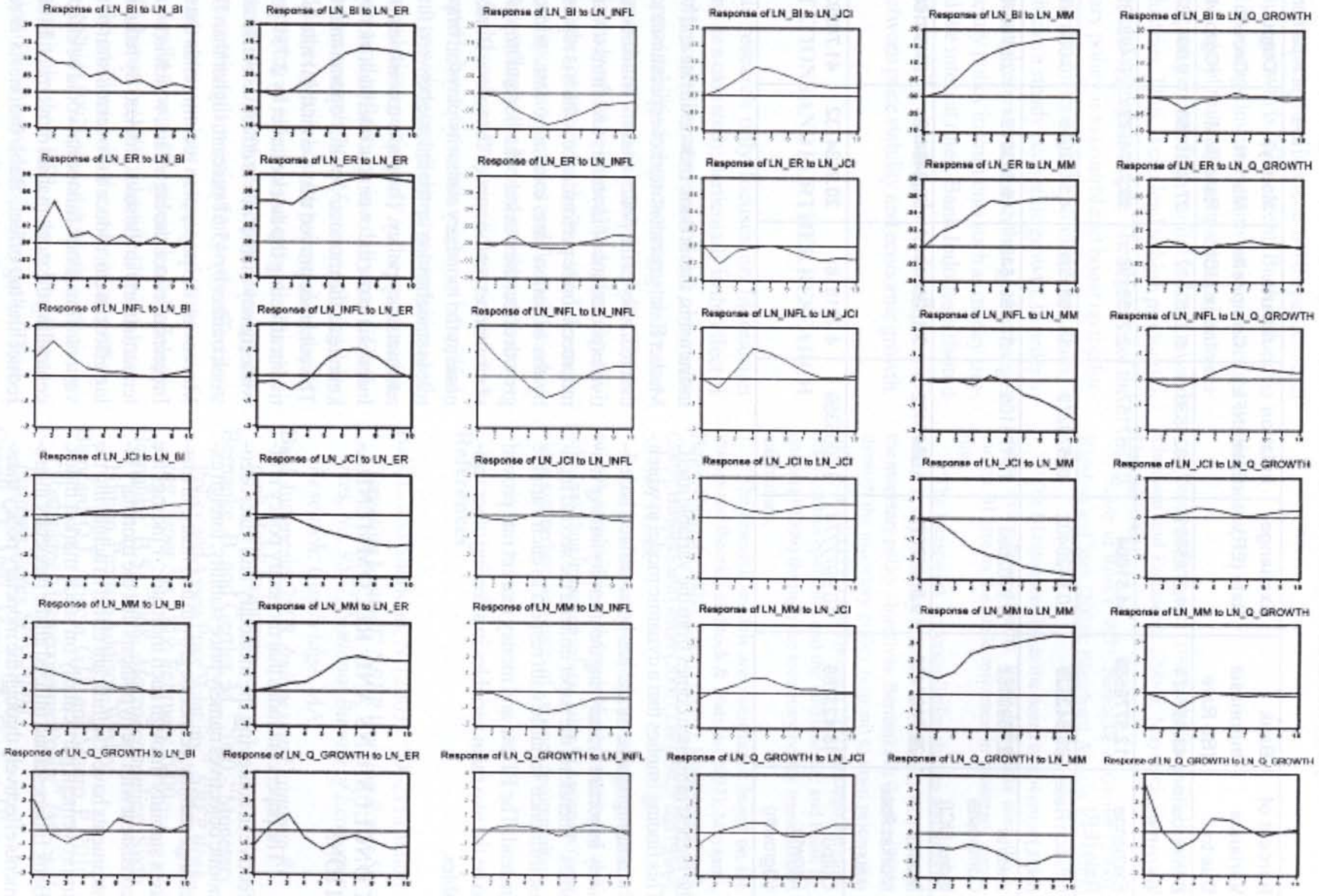


Table 2: Summary of Variance Decomposition[6]

(average in percentage)

Percent of Variance Due to:	Bank Indonesia (BI) Rate	Exchange Rate (ER)	Inflation Rate (INFL)	Jakarta Composite Index (JCI)	Money) Market Rate (MM	Output Growth (Qgrowth)
Bank Indonesia (BI) Rate	**43.807474**	**11.2785661**	7.9824836	8.2752617	**27.6619256**	0.9942872
Exchange Rate (ER)	**12.5776559**	**64.51004**	0.4357157	2.2158198	**19.7674577**	0.493309
Inflation Rate (INFL)	**26.942329**	10.9428402	**39.579279**	**15.3091328**	4.1432958	0.0831202
Jakarta Composite Index (JCI)	**2.7599462**	9.9702692	1.2175105	**37.7601545**	**45.613079**	2.6790406
Money Market Rate (MM)	**20.7607492**	**9.8040767**	5.0845462	3.6520044	**58.248456**	2.4501684
Output Growth (Qgrowth)	**18.423766**	10.9977774	3.5605359	4.2715181	**20.9634732**	**41.78293**

the highest influence comes from the variable itself. This finding implies that a dynamic model in which the autoregressive model has been utilized is definitely important in analyzing the intensity among variables. Therefore, the paper utilized the second highest influence variable with respect to each variable instead. The BI rate and money market rate proved to be the two main variables in affecting other variables.

CONCLUSIONS AND RECOMMENDATIONS

The paper concludes that monetary policy is effective in achieving the monetary and macroeconomic objectives namely price stability, foreign exchange stability, economic growth and financial markets stability through each indicator. Findings are consistent with the hypothesis that the monetary instruments have a significant effect in achieving the improvement particularly on stock market index. Bank Indonesia had utilized all the monetary instruments effectively through the monetary policy transmission mechanisms. The effectiveness of monetary instruments, that is Bank Indonesia rate and Money Market Rate, generates market expectations toward the credibility of the policy makers. In addition, positive expectations of investors and firms toward the macroeconomic performance, which is represented by the inflation rate, exchange rate, and output growth affect the market behavior and improve the stock market performance. Therefore, Bank Indonesia as the monetary authority plays an important role in straightening up the linkage between financial and monetary policy. The paper recommends Bank Indonesia to use the overnight interbank money market rate as the monetary policy operational target. The evidence proved that 1-month BI rate is effective in affecting the stock market by 2.759 percent, while money market rate is effective in affecting the stock market by 45.61 percent, higher than BI rate. Moreover, the paper also recommends that Bank Indonesia reduce the lag effect, which is two quarter particularly in the stock market. By reducing the lag effect, it can reduce the overreaction of the investors. Thus, Bank Indonesia would be effective in controlling the stock market movement. In order to reduce the lag effect, Bank Indonesia is recommended to consider the JCI and output growth re-

sponses since the JCI and output growth proved to move faster in adjusting toward the changes in monetary instruments. JCI's speed is 103 percent and the output growth is 257 percent. Bank Indonesia should encourage investors to invest in real sectors. Buying stocks of real sector companies such as manufacturing can generate high capital inflows toward the industries. Thus, it can lead to high production capacity and aggregate output. The objective of the monetary policy is to control and boost up the foreign investment through the stock market. Thus, it will achieve a steady economic growth. In order to generate a high economic growth through the changes in monetary policy instruments such as money supply and the interest rates, Bank Indonesia should respond carefully, regarding the trade-off phenomenon between price stability and economic growth.

LIMITATIONS AND FURTHER RESEARCH

This research only focuses on Indonesian economy as a case study, particularly in the effect of monetary policy on macroeconomic objectives namely price stability, foreign exchange stability, economic growth and financial markets stability. Therefore, this study might be limited in adoption for utilization in other countries that have many differences in terms of monetary policies and financial market bases. According to the limited number of observations, which is only seventy nine time series data and on a quarterly basis, the results might not be applied directly in providing comprehensive conclusions and recommendations particularly as the stock market indicators tend to fluctuate in a daily basis. Obviously, further research should focus on utilizing daily data and further identify how the policymakers should act in producing an effective policy to minimize the investment risks. Therefore, the paper strongly encourages continued investigation on the effectiveness on monetary policy as opposed to the use of fiscal policy. In terms of the research methodology, study of Johansen's (1990) identified limitations regarding the problems with the order of integration. Pesaran & Shin (1997) proved that in quantitatively and qualitatively, the ADRL approach and the cointegration (ECM) provided similar results. Therefore, the paper suggests utilizing the ADRL approach in providing an alternative method that may result in alternative findings in further research.

Endnotes

[1]Study of Thorbecke (1997); Rigobon and Sack (2003); Ehrmann and Fratzscher (2004); Maysami, Howe, and Hamzah (2004).

[2]Study of Ross (1997); Bernanke & Gertler (2000); Rigobon and Sack (2003); Blanchard, Ariccia, and Mauro (2010).

[3]The BI rate specified in the board of governors meeting in every three months. Bank Indonesia used the 1-month BI rate as the basic reference in monetary operation.

[4]The framework is a compilation studies and theories which is supported by Mishkin & Eakins (2000) through the monetary policy objectives; Bernanke & Gertler (2000) through the monetary policy respond to asset price volatility; Cargill (1991) and Thomas (1997) through the monetary control operation and the instruments; and Bank Indonesia (2009) through the monetary policy transmission mechanism.

[5]The research models are constructed based on the studies and theories of Stock & Watson (2007); Maysami, Howe, Hamzah (2004); Enders (2004); Rigobon and Sack (2003); Bernanke and Gertler (2000); Lee (1992); and Eviews 5.1 User's Guide.

[6]The table shows the average percentage of variance on each variable due to the most highly contributed variables including its lagged values. Table 9 (Appendix) provide a comprehensive results of variance decomposition.

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About the author:-

Maria Praptiningsih completed her Master of Science in Financial Economics (MSc.FE) from the Martin de Tours School of Management, Assumption University of Thailand. She is a full-time lecturer in the Business Management Department, Faculty of Economics, Petra Christian University, Indonesia. She can be reached at maria_npa@yahoo.com.