THE RELATIONSHIP BETWEEN MONETARY POLICY AND STOCK MARKET: EVIDENCE IN VIETNAM

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Abstract

Recognizing the importance of assessing the stock market's response to the shocks of monetary policy, many studies in Vietnam as well as all over the world have been carried out. Present to analyze this relationship. In this context, the study looks at the level of impact of transmission channels on the stock market volatility at the theoretical level combined with the use of quantitative methods to test the impact of monetary policy. To the stock market as well as the adverse impact from the stock market on monetary policy is necessary. Therefore, the authors decided to implement the theme "The relationship between monetary policy and Vietnam's securities market". Using the model of estimating monetary policy in Vietnam using data from January 2008 to June 2016, the author uses the VAR model to explore the relationship between monetary policy and the stock market, using factors money supply, interbank rates and foreign exchange reserves to represent the monetary policy, the VN-Index represents the stock market together with the impact of other macro variables such as oil price, industrial production index and consumer price index. The results show that during the crisis and post-crisis period, monetary policy did not affect directly on the stock market but impacted on inflation. Since then, the author has suggested that policymakers can analyze the impact of monetary policy on the stock market, thus introducing appropriate policies to adjust the movements of the stock market.

Keywords: *Monetary policy, stock market, Vietnam, money supply, security,…*

1. INTRODUCTION

Launched in July 2000, Vietnam stock market has experienced over 15 years of operation with many changes. When it was newly established, the stock market only included two shares of REE and SAM but today, the number of stocks has reached 319 stocks on the Ho Chi Minh City Stock Exchange (HOSE) with the total value of capital By the end of 2015, the market would reach VND 1.146.925 billion. In order to achieve this growth, Vietnam stock market experienced many ups and downs, including: formation and toddler stage (2000-2005), hot growth period (2006-2007), bear period Affected by the global financial crisis (2008-2009), the post-crisis period (2010-2011) and the stabilization period to date (2012-2016). Many researchers have tried to understand and explain the phenomena of the stock market in different angles. After a period of overheating, with the continuous issuance of securities, the number of listed companies increased, the market repeatedly fell into a state of imbalance. Including the global financial crisis in 2008 has strongly influenced the price and trading volume of the stock market. In addition, the monetary policy in these periods also changed the way of applying flexible management tools, for example: the sharp reduction of the interest rate at the end of 2011 from 14% to 7 %, Control the strong fluctuation of the exchange rate at the end of 2011 to maintain the stability of the exchange rate later. So, the question is whether there is a relationship between the monetary policy and the stock market? Or, more specifically, does this relationship differ from one stage to another?

The empirical results of the correlation between monetary policy and the stock market are abundant. There are many different views about monetary policy affecting the stock market. We

can see a lot of research also on this issue in other developed countries such as Canada, UK ... Many studies have demonstrated the impact of macro factors such as GDP supply, inflation, Consumer price, interest rate, risk ... to stock market such as Poole and Rasche (2000), Kuttner (2001), Bomfim (2003).

However, there is no consistent and consistent pattern that describes the nature of the relationship between monetary policy and the stock market. This is evidenced by numerous empirical evidence reflecting the contrary results of the above-mentioned studies, typically Rozeff (1974). Research suggests that past monetary policy changes can not predict the return on equity. The author has documented and tested the SQ-EM model to conclude that there was no correlation between monetary policy and the stock market in 1974.

In order to understand this relationship, Vietnamese policymakers need to have a certain understanding of the degree of influence of monetary policy's transmission channels to the stock market. Recognizing the importance of assessing the stock market's response to the shocks of the monetary policy, a great deal of research in Vietnam and around the world has been conducted to analyze this relationship. However, the research articles still have certain limitations. In this context, the study looks at the level of impact of transmission channels on the stock market volatility at the theoretical level combined with the use of quantitative methods to test the impact of monetary policy. To the stock market as well as the adverse impact from the stock market on monetary policy is necessary. Therefore, the authors decided to implement the research "The *relationship between monetary policy and stock market: Evidence in Vietnam".*

The paper focuses on three main research objectives, including:

First of all, to systematize the basic issues of monetary policy, the stock market and its impact on the stock market.

Secondly, to focus on conducting quantitative analysis to indicate the degree of impact of monetary policy through money supply channels, interest rates and foreign exchange reserves.

Moreover, base on the results drawn from the quantitative analysis, the authors suggest some solutions to monetary policy aimed at better regulating the Vietnamese stock market.

2. FRAMEWORK THEORY

2.1. Monetary policy

Monetary policy is the sum of the ways in which the central bank through its activities affects the amount of money in circulation to serve the achievement of the country's socio-economic objectives for a time. Certain times. Monetary policy is often divided into two categories: monetary policy loosening and tightened monetary policy.

Expanding monetary policy basically broadens the money supply in the economy, causing interest rates to fall, thereby increasing aggregate demand and executing as the economy recovers or grows. Too low To increase the money supply, the central bank can do three things: reducing the compulsory reserve ratio, discounting the discount rate or buying the OMO stock.

Monetary monetary policy is implemented to reduce the money supply in the economy, leading to higher interest rates on the market. Through this, the central bank indirectly reduces the aggregate demand, lowering the overall price level. To implement this policy, the central bank usually uses a number of measures such as increasing the compulsory reserve, increasing the discount rate, selling securities on the OMO market, strict control over credit activities

Normally monetary tightening policy is applied when the economy has too high growth rate, inflation may explode out of control.

Depending on country conditions, the monetary policy objectives of each country will be different. In general, the central bank, when it comes to tightening or expanding monetary policies, is aiming at developing economies, increasing output, creating jobs and controlling inflation. However, to make the process go in the right direction, the intermediate and target objectives will be addressed by central banks in order to achieve medium and short term goals. If the intermediate target, the strategies set by the central bank to manage the monetary mass of M1, M2, M3 or market interest rates, the targets of the operation will be indicators of total reserves of commercial banks system. , Short-term interest rates on the interbank market and treasury bill rates.

Tools to help central banks implement monetary policy include: compulsory reserves, discount rates, open market operations, exchange rates and credit lines. Each type of tool will have its own advantages and disadvantages. Therefore, the central bank often coordinates many kinds of instruments at once to offset the harms of tools from which to achieve the ultimate goal.

2.2. Stock market and market share

The stock market is part of the financial market. In terms of formality, the stock market is the place where the activities of exchange, purchase, transfer of securities. Based on the flow of funds: the stock market is divided into primary market and secondary market. Primary market is the stock market for newly issued securities. The secondary market is the place where securities are traded on the primary market; The market for transfer of ownership of securities. Primary market is the basis, the premise for the formation and development of the secondary market because it is the place to provide goods circulated on the secondary market. In contrast, the secondary market in turn is the driving force for the development of the primary market, creating liquidity for securities.

Based on commodities in the market: The stock market is divided into markets: stock market, bond market, derivatives market. Stock market is a trading and trading market for all types of stocks, including common stocks, preferred shares. The bond market is the trading and trading market for all types of bonds issued, including corporate bonds, urban bonds, and government bonds. The derivatives market is the market for the issuance and trading of other types of financial instruments such as stock options, warrants, option contracts, and so forth.

The main function of the stock market is to mobilize capital for the economy, provide an investment environment for the public, create liquidity for securities, assess the performance of enterprises, attract capital And provide the environment for the government to implement macroeconomic policies.

Entities involved in the securities market include organizations and individuals that participate in the securities market, which are divided into groups: issuers, investors and institutions involved in securities.

The stock market is where issuers and issuers of equity securities such as common stocks, preferred shares, fund certificates. This market is also classified into the market (primary market) and circulation market (secondary market).

The stock market accounts for a large share of the stock market in both listed volume and listed value. As of 3/12/2016, the volume of shares listed on HOSE was over 48.528 million

shares, accounting for 99.73% of the total market; The listed value on the HOSE is over 485,286 billion, accounting for 98.11% of the total market. Therefore, in their study, the authors will use the stock market to represent the stock market.

2.3. Relationship between monetary policy and stock market through transmission channels

Through the transmission channel, the change in the volume of money supply will affect the economy. Therefore, the stock market will also be influenced by monetary policy through these transmission channels. In the modern financial system, transmission channels of monetary policy include: interest rates, asset prices and bank credit activity.

The impact of the change in the amount of money supplied to the economy is firstly channeled through the interest rate channel. This is the traditional impact channel Keynes describes as follows:

$$M \uparrow \Rightarrow i \downarrow \Rightarrow I \uparrow \Rightarrow Y \uparrow$$

On the other hand, Nikiforos T. Laopodis (2013) shows that if the federal interest rate increases sharply, leading to high deposit rates, for example, will encourage investors to return to the familiar form of investment. Is to save or invest in government bonds instead of investing in stocks, risky.

Interest rates are a type of asset price and are considered the primary transmission channel in Keynesian conception. However, when studying the relationship between M and Y, money-market economists added prices for other types of assets that could transfer the impact of monetary policy, such as exchange rates or stock prices.

Increasing exchange rate (the currency depreciates against foreign currencies) will stimulate foreign investment into the country, encouraging capital inflows into the stock market:

$$M \uparrow \Rightarrow i \downarrow \Rightarrow E \uparrow \Rightarrow XK \uparrow \Rightarrow Y \uparrow$$

Tobin's theory of Q explains the mechanism of the impact of a monetary policy through its effect on the firm's share price on investment demand:

Tobin index = Q = market value of the company / replacement cost

If Q > 1 and high mean that the market value of the stock is higher than the replacement cost of the company's assets. If the index Q <1 and low, the new investment demand will decrease.

As the central bank expands its M money supply, Pe's share price tends to increase, increasing Q and demand for new investments:

$$M \uparrow \Rightarrow Pe \uparrow \Rightarrow Q \uparrow \Rightarrow I \uparrow \Rightarrow Y \uparrow$$

Through bank credit channel, monetary policy can influence the stock market through the following mechanism:

$$M \uparrow \Rightarrow Bank\ deposit \uparrow \Rightarrow loan \uparrow \Rightarrow I \uparrow \Rightarrow Y \uparrow$$

As the central bank implements the broad monetary policy, which increases bank deposits, lending capacity of banks increases. The increase in loans will increase I. When I increase, it will stimulate investment demand in the stock market.

3. RESEARCH METHODOLOGY

3.1. Regression model

The author is based on research by Yun Daisy Li, Talan B. Iscan, Kuan Xu (2010). In addition to the six variables mentioned in the article above, the author will introduce the foreign

exchange reserves in his research paper. The VAR model is made up of seven variables, a system of equations with the equations of the form:

$$\text{VNI}_t = \alpha_1 + \sum_{j=1}^{p} \beta 1jOP_{t-j} + \sum_{j=1}^{p} x1jIP_{t-j} + \sum_{j=1}^{p} z1jCPI_{t-j} + \sum_{j=1}^{p} \pi 1jM2_{t-j} + \sum_{j=1}^{p} \delta 1jVNIBOR_{t-j} + \sum_{j=1}^{p} \omega 1jR_{t-j} + \varepsilon_t$$

In that, α_1 is the blocking variable, p is the latency, β, x, z, π, δ, ω are the parameters to estimate, ε_t is the random error. The variables in the model are described in Table 3.1

Table 3.1: Summary of variables in the model

Variable	Symbol	Explanation	Source
Monthly VN-Index	VNI	VNI represents the stock market	Cophieu68.com
Oil prices by month	OP	Represent the macro factors to analyze the impact of international prices on domestic prices.	Sbv.gov.vn
Industrial production index	IP	Represents domestic output instead of GDP as IP data can be collected on a monthly basis	Imf.org
Consumer price index by month	CPI	CPI is used to calculate inflation and is the target for monetary policy	Imf.org
Money supply by month	M2	M2 is one of the transmission channels of monetary policy	Gso.gov.vn
Interbank interest rate by month	VNIBOR	VNIBOR is one of the transmission channels of monetary policy	Investing.com
Foreign exchange reserves by month	R	R is one of the transmission channels of monetary policy	Imf.org

3.2. The VAR model theory

The VAR model has become an important tool for macroeconomic analysts, an indispensable tool of central banks in countries to measure the effectiveness of the monetary transmission channels. This model proved to be quite useful in expressing not only the long-term relationship between variables but also the short-run relationship between variables. VAR can analyze the transmission mechanism of shocks through impulse response (IRF) functions. The pulse response function will show how the remaining variables in the model will react when a shock occurs to a variable in the model. In addition, the VAR model can also analyze the magnitude of the shocks of variables in explaining the variation of a variable in a model through the variance of variance. In addition, the model provides a systematic approach and provides intuitive experimental results. The VAR also allows regressors not only to depend on other variables but also on the latency of the variable itself. In addition, the use of variable quantities and assumptions not too complicated are also considered as advantages of the model. Furthermore, the VAR model allows the assessment of the effects of variables in the model through a variety of tools, such as the Granger causality test, pulse response function, or variance response.

The relationship between macro variables and monetary policy tools is theoretically shown in the simple structural VAR model with two delay variables and a one-step delay:

$Y_{1t} = a_{10} + a_{11}Y_{2t} + a_{12}Y_{1(t-1)} + a_{13}Y_{2(t-1)} + \varepsilon_{1t}$

$Y_{2t} = a_{20} + a_{21}Y_{2t} + a_{22}Y_{1(t-1)} + a_{23}Y_{2(t-1)} + \varepsilon_{2t}$

Where: Y are the variables of the model; a_{10}, a_{20} are blockers; a_{11}, a_{12}, a_{13}, a_{21}, a_{22}, a_{13} is the amount; ε_1, ε_{2t} are random errors.

Step 1: Verify stop behavior of variables in the model. If not stopped, use the wrong technique to bring back the stops.

Step 2: Select the appropriate delay.

Step 3: The causal test Granger examines the relationship between the variables.

Step 4: Carry out the variance analysis to analyze the importance of shocks in the models.

Step 5: Perform a pulse response between variables to see how the remaining variables in the model will change as a shock occurs to a variable in the model.

3.3. Test the timeliness of the time series

One of the assumptions of the VAR model is that the independent variables must be "stop." A stopping time sequence if its variance is constant over time and the covariance between the two periods depends only on the distance And the time lag between these two periods is not dependent on the actual time that the covariance is calculated.If estimating the model with non-stop time series, then the hypothesis of the model is broken. To "fake" regression results.

Unit-root test is a commonly used test in the study to determine the stop-state of a time series. Consider the model:

$Y_t = \rho Y_{t-1} + \varepsilon_t$ (1)

In it, ε_t is white noise. ε_t satisfies the assumptions of the classical linear regression model, ie zero expectation. The constant variance and zero covariance are called white noise.

According to equation (1), if $\rho = 1$ then Y_t is a random step and Y_t is non-stop. Therefore, to test the continuity of the Y_t sequence we test the hypothesis:

$H_0: \rho = 1$ (Y_t is non stop string)

(1) $\Leftrightarrow$: $\triangle Y_t = Y_t - Y_{t-1} = (\rho-1)Y_{t-1} + \varepsilon_t \Leftrightarrow \triangle Y_t = \gamma Y_{t-1} + \varepsilon_t$

So the above assumptions are rewritten as follows:

$H_0: \gamma = 0$ (Y_t is non stop string)

Dickey-Fuller assumes that the t-value of the Y_{t-1} coefficient will not follow the student-test distribution, even in the case of the large sample but instead is the probability distribution τ (tau statistic) The statistic τ is also called the Dickey-Fuller (DF) test.

As estimated by model (1), $\tau = \frac{\hat{\rho}}{se(\hat{\rho})}$ is distributed according to Dicky-Fuller's rule if $|\tau|$ (value of test)> $|\tau_\alpha|$ Then reject H0. Then, the string Y_t is the stop string.

Most of the economic time series are non-stop sequences as they tend to be linear or exponentially over time. However, they can be transformed into strings through the differential process. In the general case, for all time series, if the deviation of level I of Y_t has not ceased, we continue to take the deviation of level II, III ... The research has always proved that there exists a d-value determined to deviation of level d Y_t is the stop string. Then Y_t is called a link level d, denoted I(d).

Wrong level d is given as follows:

Wrong class I of Y_t: $D(Y_t) = Y_t - Y_{t-1}$

Secondary error: $D(D(Y_t)) = D^2(Y_t) = (Y_t - Y_{t-1}) - (Y_{t-1} - Y_{t-2})$

...

Wrong classification d: $D(D^{d-1}(Y_t))$

3.4. The optimal latency

In economics, the dependence of the dependent variable Y on one or more of the explanatory variables X is rarely synchronous; instead, Y correlates with X after a period of time. Such a period of time is called latency.

Table 3.2: The result of the optimal latency

Standard	Formula	Result
LR	$L = -\frac{n}{2}(1 + ln(2\pi) + ln(\frac{RSS}{n}))$	The larger the L value, the smaller the likelihood ratio.
FPE	$FPE = (\frac{RSS}{n}) \; x \; (\frac{n+k}{n-k})$	The smaller the FPE, the better fit the model.
AIC	$AIC = (\frac{RSS}{n}) \; x \; e^{\frac{2k}{n}}$	The smaller the AIC, the better fit the model.
SC	$SC = (\frac{RSS}{n}) \; x e^{\frac{k}{n}}$	The smaller the SC, the better fit the model.
HQ	$HQ = (\frac{RSS}{n}) \; x \; (\ln(n))^{\frac{2k}{n}}$	The smaller the HQ, the better fit the model.

(Source : GutiÈrrez, 2007, page 6 – 9)

The impact of monetary policy on the stock market almost never occurs immediately after a certain time to recognize that influence. Therefore, to determine the relationship between the transmission channels of the monetary policy and the stock market, the determination of the latency of the model is necessary.

To determine optimal latency for variables, the authors used statistical criteria including LR (Likelihood - Ratio test), FPE (Final Prediction Error), AIC (Akaike's Information Criterion), SC (Schwar's Bayesian Information Criterion and HQ (Hannan and Quinn Information Criterion) are based on GutiÈrrez's (2007) work to find optimal latency for model variables. Through this, the authors will determine the exact time that the channels of monetary policy affect the stock market. Where n is the number of samples, k is the parameter in the regression model and RSS (Residual Sum of Squares) is the sum of the variables of the dependent variable explained by the factors outside the model.

Test the causal relationship between variables

Granger testing is often used to determine the causal relationship between variables. According to Granger, to test whether there is a Granger causal relationship between two time series, we construct the following two equations:

$Y_t = \alpha_0 + \alpha_1 Y_{t-1} + \ldots + \alpha_1 Y_{t-1} + \beta_1 X_{t-1} + \ldots + \beta_1 X_{t-1} + \varepsilon_t$

Where: α_1, β_1 are parameters to be estimated; ε_1 is the random error and is the white noise.

To see if the delay variables of X have an explanation for Y (X, the Granger causal effect on Y), then the following hypothesis test for the equation:

H_0: $\beta_1 = \beta_2 = \ldots = \beta_1 = 0$ (X does not affect the granger effect on Y)

To test this simultaneous hypothesis, we use the Wald statistic F (test for self-correlation between variables) and to determine the result as follows: If the statistic value F is greater than Statistical value F check the table or if the p-value of the test value is less than 0.05 at the 5% significance level, we reject the H_0 hypothesis that the X variable causes the Granger kinetics to affect the Y variable.

Pulse response function

Pulse response (IRF) function is an important function derived from the model

VAR. It allows to determine the temporal effect of the shock of an endogenous variable on the remaining variables in the model.

We have the equation: $Y_t = \alpha + \Phi_1 Y_{t-1} + \Phi_2 Y_{t-2} + \ldots + \Phi_p Y_{t-p} + \varepsilon_t$

Stop system: $Y_t = \mu + \psi(L)\varepsilon_t = \mu + \varepsilon_t + \psi_1 a_{t-1} + \psi_1 a_{t-2} + \ldots$

Where $\psi(L) = [\Phi(L)]^{-1}$

$\psi(L) = [\ I_n + \psi_1 L + \psi_2 L_2 + \ldots]$

We have: $\frac{\partial Y_{i,t+s}}{\partial \varepsilon_{j,t}} = \psi_{ij}(s)$

Thus, the effect of each time shock is the partial derivative of each variable in the system of equations over time.

Select the sample data

In terms of time, the writer collected the data for the period January 2008 to June 2016 because the industrial production index was only approved from 2011 and the data on the production index The current industry is only updated from 2008 onwards. In terms of space, the writer selects the VN Index - the HOSE specific index, representing the stock market. Thus, after the data set, the variables were introduced into the model with 102 observations.

Explain the variables in the model

Table 3.2: The table explains the variables in the model

Variable	Expected	Past reseach
VNI	+/-	Tran Thi Hai Ly (2010)
OP	+/-	Phan Thi Bich Nguyet and Pham Duong Phuong Thao (2013), Nguyen Thi Thu Hang (2010)
IP	+	Ibrahim & Yusoff (2001), Phan Thi Bich Nguyet and Pham Duong Phuong Thao (2013)
CPI	-	Ibrahim & Yusoff (2001), Phan Thi Bich Nguyet and Pham Duong Phuong Thao (2013)
M2	+	Ibrahim & Yusoff (2001), Phan Thi Bich Nguyet và Pham Duong Phuong Thao (2013)
VNIBOR	-	Phan Thi Bich Nguyet and Pham Duong Phuong Thao (2013), Nguyen Phi Lan (2010)
R	+	Rahman, A. A., Sidek, N. Z. M., & Tafri, F. H. (2009)

(*Source: Complied by authors*)

About oil prices: According to Phan Thi Bich Nguyet and Pham Duong Phuong Thao (2013), oil prices are positively correlated with the stock market. Their study shows that when the oil price increased by 1 USD / barrel, the VN Index increased by 4,423 points. However, the two authors argue that, in theory, the correlation between oil prices and the stock market may be either positive or negative, depending on whether the country is an oil exporter (positively correlated) or imported petroleum (Express negative correlation). Vietnam is not a petroleum exporting country but represents a positive correlation between oil prices and the stock market because of the fact that petrol price fluctuations in the Vietnamese market are subject to many interventions from the House. Water, so the signal emitted from this factor has been distorted.

Industrial production index: According to Phan Thi Bich Nguyet and Pham Duong Phuong Thao (2013), industrial output is positively correlated with the stock market: As the industrial output increased 1,000 billion VND / month, 9,985 points. This can be explained as follows: As industrial output rises, the economy grows, the prospects for investment are positive, businesses are more likely to earn high profits, thus attracting investment inflows. Into the stock market. As the economy grows, the demand for capital mobilization through the stock market of enterprises also increases in order to meet the demand for expanding operations and the volume of securities in the market is more attractive. Growth as the economy grows.

Consumer price index: Theoretically, the consumer price index represents inflation, and inflation has a negative impact on the stock market because rising inflation usually means that input costs for the activity The business output of the business increased. In addition, inflation also affects investor sentiment and the value of investments in the stock market. However, Ibrahim & Yusoff (2001), Inflation brings long-term positive effects. This result is similar to the results of Phan Thi Bich Nguyet and Pham Duong Phuong Thao (2013). However, two authors also asserted that the CPI variable in the model is statistically low, which does not accurately reflect the real impact of the inflation factor on the stock market.

On money supply, the results of research by Ibrahim & Yusoff (2001) and Phan Thi Bich Nguyet and Pham Duong Phuong Thao (2013) together resulted in a positive correlation with the stock market. This may be explained by the fact that increased money supply is a condition for the creation of surplus means of payment. This is also a condition for cash flow into the stock market, which increases the stock price index.

About interbank rates: Research by Phan Thi Bich Nguyet and Pham Duong Phuong Thao (2013) shows that when interest rates are negatively correlated with the stock market. This is because interest rates usually increase due to tight monetary policy of the State Bank to control inflation. It can be seen that rising interest rates are also a signal that inflation is on the rise. This signal is easily recognizable. In addition, the phenomenon of psychological investment in the herd and psychology govern the behavior of investors on the stock market is quite strong, causing the stock price index to decline when there are signs of macroeconomic instability. As interest rates rise.

On foreign exchange reserves, Rahman et al. (2009) argue that long-term foreign exchange reserves have a positive impact on stock prices. Foreign exchange reserves affect the solvency and financial security of a country, so high or low levels of foreign exchange reserves will affect market liquidity as well as investor sentiment. About the stability of that market. A high foreign exchange reserve will increase investor confidence in that market, stimulating capital inflows into the market.

4. ANALYSIS OF DATA AND RESEARCH RESULTS

4.1. Overview of Ho Chi Minh Stock Exchange (HOSE) and VN-Index

Ho Chi Minh City Stock Exchange, formerly known as Ho Chi Minh City Securities Trading Center, was transformed under the Prime Minister's Decision No. 599 / QD-TTg dated May 11, 2007 with the capital amount Charter is a trillion. The first two listed stocks were REE and SAM with the listed volume of 15 million shares and 120 million shares, respectively.

The VN Index is an index showing the trend of price fluctuation of all stocks listed and traded on the Ho Chi Minh City Stock Exchange, calculated by the formula:

$$VN\text{-}Index = (\Sigma Q1xP1) / (\Sigma Q0xP0) \; x100$$

4.2. Monetary policy and stock market situation in Vietnam in the period 2008 – 2016

In order to consolidate, build, improve and lift the country out of the world's severe crisis, the central bank has implemented active monetary policy in the following years:

In 2008, Vietnam faced inflation and increased trade deficit, threatening to macroeconomic stability, the State Bank of Vietnam (SBV) has actively implemented the solutions to restrain the government Inflation, macroeconomic stability, maintaining economic growth at a reasonable level and ensuring social security. At the same time, Vietnam stock market plunged in the VN-Index and market prices of shares with the event investment bank Lehman Brothers Bankruptcy on 15/9/2008.

In the period of 2009 - 2010, the financial crisis and global economic recession evolved complicatedly, affecting negatively the economy of many countries, including Vietnam.

In 2009, the SBV implemented measures to control monetary policy, credit and exchange rate in order to prevent economic recession and stabilize the macro economy. Flexible operation of open market operations, refinancing loans to control the amount of money supply, ensure the safety of payment systems, stabilize the monetary market. On the stock market, VN-Index continued to decrease. In addition, in 2009, UPCoM was officially put into operation on June 24, 2009 but did not receive the attention of investors.

2010 is a period of careful macroeconomic policy implementation to stabilize and sustain growth targets. At the same time, VN-Index dropped from 543.46 points at the beginning of the year to 484.66 points on December 31st because investors were cautious before the Vinashin event.

In 2011, the SBV took the initiative in tightening monetary policy, including measures to reduce money supply, increase policy interest rates and many administrative measures to curb credit growth due to the main causes. : Monetary easing policy to stimulate growth for many years; The imbalance between total outstanding loans and total deposits. This has led to the greatest success of monetary policy in 2011 that has stopped the rise of inflation since after August. Also in this year, due to the influence of monetary policy tightened, the VN- Index and HNX-Index decreased respectively 27.7% and 48.8% in 2011.

At the beginning of 2012, the SBV aims to reduce deposit rates to 9-10% per year by the end of 2012 in line with the target of curbing inflation at a low level (6.8%). Meanwhile, the stock market has been affected by the inflow of foreign money flowing into the market and a series of scandals such as Bau Kien (ACB) and Dang Van Thanh (STB) have made the VN Index And HNX-Index fluctuations incessantly. By the end of 2012, VN-Index increased to 413.73 points while HNX-Index stood at 57.09 points.

In 2013, the State Bank of Vietnam will continue to flexibly and synchronously control the monetary policy instruments and take initiative in adjusting the amount of money in circulation in order to stabilize the monetary, foreign exchange and monetary market. Vietnam stock market in 2013 has had positive developments and results when the VN-Index increased nearly 23%.

In order to maintain the stability of the currency market in 2014, the SBV raised a large amount of money to buy foreign currency to increase its foreign exchange reserves and by the end of the year, inflation increased by only 1.84% . The VN-Index reached 571.68 points, up 13.3% from the end of 2013. The total trading value of the whole market reached VND1,164 trillion, an increase of 90% compared to 2013. With the project of construction and Developing the derivative market approved in Decision 366 / QD-TTg dated March 11, 2014, the deployment of new products, creating risk prevention tools for investors has been ensured. By the legal corridor.

By 2015, the amount of money provided will continue to be properly managed. The CPI of the whole country in 2015 will increase by 0.63% compared to 2014. In this period, the State Securities Commission has restructured securities companies to make financial situation Improved, healthier and more transparent. Credit growth was good. Macroeconomic impact has helped Vietnam stock market improve significantly in terms of stock price growth.

In 2016, the SBV mainly regulates flexible operation of open market operations, refinancing with reasonable terms and volume to support liquidity of credit institutions, maintaining the mobilizing interest rate at the level stability. The stock market at the beginning of the year has short-term difficulties due to the context of the world stock market plummeted. However, in the next phase, Vietnam stock market has recovered quite well.

4.3. Regression results

Statistics describe the variables:

- The VNI, R has median and median approximations, so the distribution is relatively balanced. Meanwhile, the variables OP, IP, CPI and VNIBOR are relatively different median and median so the distribution will be unbalanced relative. M2 variables have different median and median distributions, thus distributing asymmetrically.

- Regarding the level of data scattering or standard deviation, the variables have a relatively low standard deviation, which indicates a low degree of scattering of data.

- In terms of inclination, only the VNI variable has the right deviation, the remaining variables have the left deviation. However, the tilt of the VNI, OP, CPI, M2, R variables is negligible, the tilt of the IP variables and VNIBOR is significant.

- In terms of sharpness, the variables have a sharpness of less than 3, so the distribution of the variables is less than normal, the top of the bell is low and prison, and the two tails are longer.

Regression results for the period 2008-2016:

- Test results stop: OP, IP CPI, M2, VNIBOR, R is the stopping sequence at difference level I meaning 1%, the VNI series stops at a 1% significance level. Thus, the use of the VAR model for subsequent tests and estimations is appropriate.

- Optimized latency for the model: FPE, AIC, SC, and HQ standards all agree to choose a latency of 1. So, the writer uses 1 latency to run the VAR model.

Granger results: OP and CPI variables have a causal effect on the VNI. The variables M2, VNIBOR, R have no causal relationship with the VNI but VNIBOR has a causal effect on the CPI. It can be said that monetary policy focuses on inflation, and inflation has an impact on the stock market.

- VAR estimation results: OP, CPI and VNI are significant for VNI.

- Pulse response: When there is a shock in M2, the VNI will increase in the first two months, the impact of the shock will weaken in the future. For VNIBOR, when a shock occurs, the VNI will gradually decrease then the impact of the shock completely disappears from the fifth month. In addition, when there is a positive shock in R, the VNI will rise slightly in the short term. Term, this effect will be sustained in the long term.

When considering the reaction of monetary policy to shocks of the stock market, shocks from real production of the economy will affect the stock market which will affect the monetary policy. Therefore, the sequence of variables is expressed as follows: D (OP) → D (IP) → D (CPI) → VNI → D (M2) → D (VNIBOR) → D (R). The results showed that the hypotheses for monetary policy were almost unchanged when there was a positive shock in the VN Index.

- The variance of the variance distribution: The result from the variance decomposition test shows that the stock market is very little affected by monetary policy. In addition, the VNI does not have a strong impact on the variables that represent the monetary policy. Therefore, the writer has not concluded the relationship between the monetary policy and the stock market, so the writer will conduct the analysis on two smaller stages is 2008-2011 and 2011-2016.

Regression results for the period 2008-2011:

- Test results stop: OP, IP CPI, M2, VNIBOR, R stop at level I difference at 1% significance level, VNI series stopped at 1% significance level.

- The optimal latency for the model: The uniform criteria for selecting latency is 1. So, the writer uses 1 latency to run the VAR model.

Granger causality test: There is no causal relationship between variables for VNI dependent variables.

- VAR estimation results: Only VNI has a large statistical significance for the VNI.

- Pulse response: When there is a positive shock in M2, the VNI variable will fluctuate in the same direction for the first two months and the impact of the shock will disappear later. For VNIBOR, when a shock occurs, the VNI will fluctuate in the opposite direction in the short term, this effect is still in the long run. When there is a positive shock in R, the VNI will drop sharply in the short term, this effect will be sustained over the long term and the impact of the shock will weaken. Similar to the period 2008-2016, the impulse response of M2, VNIBOR and R variables during this period did not show any strong correlation prior to a VNI shock.

- Categorization of variance: Although the impact of monetary policy is somewhat stronger, it is also low (over 6%). On the other hand, the VNI showed stronger but less significant effects on the monetary policy variables.

Regression results for the period 2012-2016:

- Test results stop: VNIBOR stops at 1%, OP, IP, CPI, M2, R, VNI stop at level I difference of 1% significance level.

- Optimized latency for the model: Delay 4 is selected by the LR, FPE, AIC criteria, so the writer will use a delay of 4 to run the VAR model.

Granger: The CPI, M2, VNIBOR, R variables have a causal relationship with the VNI. In contrast, the Granger test for dependent variables M2, VNIBOR and R, respectively, showed no causal relationship between them with the VNI.

- Results of the VAR model estimation: variables D (CPI (-3)), D (CPI (-4)), D (M2 (-2)), VNIBOR (-1), D (R), D (R (-4)), D (VNI (-3)) are statistically significant for the VNI.

- Pulse reaction: Initially when the money supply increases, the VN-Index will decrease in the first two months, but then will increase sharply until April. VN-Index will decrease in the long term. As for interbank rates, initially when interest rates rise, the VN-Index will fluctuate in the same direction until April. By June, this index will increase again but from August this index will decrease. When there is a shock in foreign exchange reserves, VN-Index will increase sharply in the first two months, then begin to decrease until June. However, after a slight increase to July, the index continued to decline sharply.

Considering the impact of the VN-Index on the variables representing monetary policy, the results of pulse response show that the relationship is not very strong.

- Categorization of variance: In the early stages, monetary policy strongly affects the stock market (more than 50%). At a later stage, this effect is reduced, to about 40%. Therefore, the impact of the stock market on monetary policy is stronger than previous periods.

5. CONCLUSIONS AND SUGGESTIONS FOR THE IMPLEMENTATION OF MONETARY POLICY

5.1. Research problem conclusion

From analyzing the VAR model to examine the relationship between monetary policy and the stock market over the period 2008-2016, more specifically the analysis of the VAR model for the smaller period 2008-2011 and 2012-2016, the writer draws The following conclusions:

Firstly, when analyzing the impact of monetary policy on the stock market, the study results show that monetary policy has a strong impact on the stock market during the period of stable economy (2012-2016) but the author does not find the strong relationship of monetary policy and the stock market in the period 2008-2016 and the crisis and post-crisis period 2008-2011.

Second, when assessing the impact of the stock market on monetary policy, the results of quantitative analysis show that the impact of the stock market on monetary policy is very low in periods.

5.2. Some suggestions for improving the implementation of monetary policy

- Regarding policy suggestions, the writer suggested raising the independence of the State Bank, building a reasonable money supply and managing foreign exchange.

- Regarding the implementation of the policy, the SBV should change the legal position from the government to the independent of the Government and the National Assembly. However, changes should be made in a planned manner. In addition, the money supply should be calculated in line with the economy, avoiding the overproduction of money while the economy is not fully absorbed or the money supply is too little, not meeting the demand for the stock market. Moreover, the adjustment of money supply must coordinate with the management of foreign exchange to ensure a stable exchange rate, not too high inflation, and stimulate the economy to

increase output. Attracting foreign currency into the banking system, encouraging remittances should be focused to help adjust the foreign exchange market.

5.3. Limitations of research articles and study suggestions

Although the author has made great efforts, the research still can not avoid the following restrictions:

First, the collected variables do not fully and fully reflect the impact of monetary policy. Vietnam stock market has its own characteristics and many impacts from the Government and specific factors such as legal stability, investor psychology, impact of financial behavior, market constraints Imperfect ... to the stock market not mentioned in the study.

Secondly, in the paper that employs pulse response and decomposition variance, the order of variables is very important. However, the basis for the arrangement of variables of the writer is quite subjective, mainly based on the basis of macroeconomic theory.

Third, the data is updated to the latest period, but the length of time studied in this article is still relatively short (only about 8 years and 6 months) leading to a small sample of research data, which does not reflect the data. The whole relationship between the two subjects studied. In addition, the writer uses VN-Index as the specific index for HOSE to represent the stock market. However, Vietnam stock market has 3 floors: HOSE, HNX and UPCOM. This results in somewhat inaccurate results of the study.

From the above limitations, I hope the following research will overcome these weaknesses to make the topic more meaningful in practice. Particularly expanding the data on variables, time series, and comparing the results obtained with the results of other periods to obtain more accurate results, makes policy making easier. In addition, Vietnam is in the process of opening up so inevitable fluctuations from neighboring areas and global effects. Therefore, the author suggests further research should put the index of other markets into the model to analyze the impact between markets. In the end, Vietnam should learn from other countries about the experience of building and operating the monetary policy so that they can learn and apply those experiences accordingly. Therefore, the writer expects that the next study should make comparisons with the stock market of countries with similar characteristics to the Vietnam stock market, thereby learning how to use effective ETS for your country to regulate. Stock market of Vietnam in a suitable way.

CONCLUSION

Vietnam stock market since its inception has made a positive contribution to the development of the economy. However, beside the achievements, the stock market is facing difficulties and challenges due to the unusual fluctuation of the market in recent times. In addition to a number of causes, such as the world financial crisis, the herd psychology of investors, monetary policy also impacted on our young stock market. Therefore, the analysis and evaluation of the situation to find solutions for stable development of the stock market to increase the efficiency of attracting investment capital for the economy is very necessary.

Using the model of estimating monetary policy in Vietnam using the data from January 2008 to June 2016, the writer uses the VAR model to explore the relationship between monetary policy and the stock market, using factors Money supply, interbank rates and foreign exchange reserves to represent the monetary policy, the VN-Index represents the stock market, along with the impact of other macro variables such as oil price, industrial production index and Consumer price index. The results show that during the crisis and post-crisis period, monetary policy did not affect directly on the stock market but impacted on inflation. In the period of stabilization, monetary policy had a great impact on the stock market. In addition, the regression results also show that the stock market has no strong impact on monetary policy at all stages.

Through the topic, the author hopes to give policy makers the ability to analyze the impact of monetary policy on the stock market, thus introducing policies to apply appropriate tools to adjust the movements of the stock market. However, the research paper still has certain limitations such as subjectivity of the writer in the order and not listed all the variables representing the monetary policy. Moreover, the stock market is also heavily dependent on the health of the economy as well as investor psychology, so the essay will inevitably make mistakes. Therefore, the author expects future research papers to develop, expand the topic and receive comments to help overcome the problem.

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