**Central Bank’s Rate Changes and Monetary Policy Effectiveness**

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**ABSTRACT**

This paper examines whether different patterns of central bank’s interest rate changes would affect major financial variables with a different strength. We find that frequent changes of the interest rates improve the effectiveness of the interest rate part of the transmission mechanism of monetary policy in the short term. We also find that financial depth increases the effectiveness of the transmission mechanism, whereas inflation targeting framework shows an overall negative effect on it.

*Keywords*: Monetary policy, Interest rate changes, transmission mechanism

*JEL Classification*: E43, E58

**1. Introduction**

In many countries, monetary policy is conducted mainly by changing the short term interest rate to maintain price stability and promote sustainable growth. Participants in the financial markets monitor the short term policy rate changes by the central banks, and the interest rates controlled by the central banks have become the major economic variable. In determining the level of short term interest rate, major economic variables are considered to analyze the current state and predict the future path of the economy.

In spite of similar economic situations among the nations, they vary in frequency and range of interest rate changes. This article examines whether such different patterns of interest rate changes would affect fundamental financial variables such as long term interest rates, stock prices and foreign exchange rates with a different strength. These variables play a major role in the transmission of monetary policy and accordingly this article studies how the central bank’s frequency and range of interest rate changes influence the effectiveness of the transmission mechanism of monetary policy.

This paper is organized as follows. Following the introduction, Section 2 reviews the extant literature relating to the central bank’s rate changes and the effectiveness of monetary policy. Section 3 analyses the pattern of how the frequency and the range of the interest rate changes differs by nation. In Section 4, we examine the influence of the central bank’s interest rate on the major financial variables through the variance decomposition analysis. Section 5 investigates a possible linkage between the pattern of central bank’s interest rate changes and the effectiveness of its monetary policy. We also consider the institutional aspects, such as monetary policy framework, foreign exchange scheme and the level of financial depth, associated with the transmission channel of a monetary policy. Section 6 concludes and discusses the implications of this article.

1. **Related Literature**

There are few studies analyzing what effects the pattern of interest adjustment has on monetary policy effectiveness or what pattern strengthen monetary policy effect. However, there are several studies done on whether gradual or steep changes in interest rate are desirable.

 There are a number of empirical studies suggesting gradualism is preferable to cold turkey. Clarida, Gali and Gertler(2002) have addressed that the inertia of monetary policy of Volcker-Greenspan era is greater than that of pre-Volcker era. Poole(2003), Rudebusch(2006) assert that the improvement of inertia results from the Fed’s steady response to shocks. Orphanides(2003), Sacks(1998) show that gradual adjustment is a desirable response when there is uncertainty in an economy. Goodfriend(1991) suggests that expanding volatility of interest rate has harmful effects on the stability of financial market or institutions. Woodford(1999) advocates that smoothing interest rate can make economic agents form rational expectation on monetary policy and inflation bias be reduced.

However, some studies proclaim that aggressive policy action could be better than passive policy rate adjustment. Caplin and Leahy(1996) shows that monetary policy would become inefficient because conservative reaction of central bank makes investors expect additional policy actions and delay their investment. According to Amato and Laubach(2004), it is likely that gradual policy rate adjustment prevents the economy from quickly converging into long term equilibrium, if consumption and inflation inertia is strong. Sargent(1999) emphasizes that severe uncertainty calls for active monetary policy. Herrera and Valdes(2001) points out that through active policy action, central bank had better mitigate difference between domestic and foreign interest rate to restraint volatility of capital flow which is arbitrage transaction.

**3. Interest Rate Change Pattern by Various Nations**

We analyze the pattern of central banks’ interest rate changes by three different measures on the nations that use the short-term interest rate as their monetary policy tools. These three measures refer to the number of interest rates changes, the total range of the changes, and the duration until a successive raise or cuts in the interest rates.

Our sample includes 24 nations that utilize short term interest rates as the main tool for their monetary policies; the study period is from May 1999 to March 2006. Detail explanation on raw data used by us can be seen at Table 1.

The table 2 shows characteristics of the pattern of monetary policy decisions through three measurements discussed above. First, we examine the number of interest rate changes determined by a nation’s central bank. Although the number of interest rate changes is closely related to the economic situation of each nation, it can be seen as an indicator which manifests how aggressively the central bank executes its policy to achieve policy objectives.

The average number of changes is 26; of this, 9 times were rate increases and 17 times were decreases, suggesting an overall expansionary trend during the study period. By nation, Brazil, Hungary, the Philippines, and Thailand implemented the most frequent rate changes averaging more than 40 times during the study period. On the other hand, Switzerland, Korea, Slovakia, Croatia, and Russia implemented the least number of rate changes averaging less than 15 times during the study period. Most countries implemented a greater number of rate decreases rather than the increases except for the U.S., the European Union, Australia, and Hong Kong.

Second, we review the range of changes in the interest rates. The total range of change was on average 15.5% point, in which 4.8% point was an increase and 10.7% point was a decrease. While Brazil, Hungary, Poland, India and Russia implemented rate changes which averaged 25.0% point or greater, countries such as Sweden, the European Union, Switzerland, the United Kingdom, Australia, Thailand, Croatia and Denmark showed much smaller ranges of rate changes. Korea was ranked as the country with the smallest rate change, at only 3.75% point. Among the developed nations, the U.S. exhibited the greatest range of interest rate change by the central bank, while the European Union showed the lowest.

Third, we consider the continuity of short term interest rate change controlled by the central banks. This indicates how aggressively the rate changes have been executed with consistent manner over a long term. As such, we define a tightening period as the period of consecutive increase in interest rate, an expansionary period as the period of continuative decrease in interest rate, and a neutral period as the period of switching between the increase and decrease in interest rate. During the period of analysis, the average contracting period was 1.35 years, the average expansionary period was 2.91 years, and the average neutral period changing from contraction to expansion or vice versa was 2.63 years. In composition ratios, they are 21%, 48%, 38%, respectively.

Canada, the U.S., and Australia had the longest contracting period, while Brazil, the Czech Republic, and Russia had a long expansionary period. In other words, we can infer from the data that these nations had frequent cases of continuous increase or decrease in interest rate, meaning that interest rate changes in these countries were implemented in a relatively long cycle. In contrast, Hungary, Norway, the European Union, Korea, Thailand, Taiwan, and Denmark had long neutral periods indicating that they had many cases of switching between increasing and decreasing the interest rate. It could be assumed that in those countries the consistency and continuity of the policymaking were rather weak and policy stances frequently were shifted.

Given the three types of interest rate change patterns, we find that the developed countries such as the U.S., Canada, the European Union and Britain change their interest rates gradually and continuously within a long cycle since they execute continuous changes and maintain a balance between the increase and decrease in interest rates. Conversely, countries such as Russia, Brazil and India implement a large range of interest rate change. Korea, Sweden, Switzerland, Australia, Thailand, and Denmark remain at a relatively low level range of interest rate change by the central banks. Korea and Sweden in particular both exhibited a low range of interest rate change and a low level of continuity in interest rate change, implying that these countries were very passive in implementing changes of interest rate as part of their monetary policies.

In light of the correlation between the pattern of interest rate change and macroeconomic performance such as level and volatility of economic growth rate, the proportion of tightening policy to the entire monetary policy often imply the negative relationship to economic growth rate, inflation and volatility levels. Interest rate change in relation to an expansionary monetary policy shows a positive correlation to the economic growth rate, inflation and volatility levels. At Table 7 detail results of the correlations are shown. This means that to maintain a reasonable level of economic growth and inflation, the monetary policy needs to keep the balance between the contraction and expansion tools. Particularly, if the volatility level needs to be decreased then a contracting monetary policy is more effective than an expansionary monetary policy.

Of course, it is hard to conclude from the simple correlations analysis that numbers of policy rate have crucial effects on macroeconomic performance such as level and volatility of economic growth and inflation. However, these correlations are relevant to principal economic theory, which suggests that expansionary policy results in high inflation and growth rate, while the opposite results are produced by tight policy. In addition, it is highly likely that expansionary policy can increase volatility of inflation and growth rate because high growth rate cannot be supported by expansionary policy alone without sustainable productivity improvement. Therefore, it is possible that the relation between interest rate change and macroeconomic performance means reasonable economic concepts. We can also find that monetary policy is effective on boosting business cycle if interest rate channel works well whereas it is good at preventing inflation under efficient asset price or foreign exchange channel. The simple correlation may not be strong evidences, but the correlation can give us the implication, it is likely that what policy channel is activated can be crucial factor for estimating or forecasting monetary policy effects or efficiencies. However, further studies on this area are required because simple correlations are hard to become strong evidences.

**4. Validity of the Transmission Process of Each Country’s Monetary Policy**

The major transmission mechanism of a monetary policy can be divided into the interest rate, the asset price and the foreign exchange rate channels.[[2]](#footnote-3) Based on this mechanism, we examine an effect of short term interest rate on the long term interest rate, the stock price and the foreign exchange rate. We use a VAR regression taking into account the central bank’s interest rate, long term interest rate, stock price, exchange rate and other major economic indicators. Then we conduct the variance decomposition to measure the degree of the central banks’ short term interest rates attributable to the volatility of the three major financial variables, long term interest rate, stock prices and foreign exchange rate.

For empirical analysis, we use the yield of ten-year government bond as long-term interest rate if the data is available. However, we cannot find ten-year government bond at some countries. In Brazil, Chile, Slovakia, Croatia and Russia we use lending rate as long-term rate and 5-year or 3-year government bond are taken as long-term rate in Czech, Poland and Korea. While GDP is used widely as an indicator representing economic activity, we take the industrial production index as indicator for economic activity because of data frequency. Monthly data is available for the industrial production index, while GDP can be employed only quarterly. Considering our short sample period, monthly data is better than quarterly data to secure sufficient degree of freedom for VAR analysis. In Australia, Switzerland, Russia, and Hong Kong we take retail sales index as an indicator for economic activity because the industrial index cannot be announced monthly in these nations. The Consumer Price Index (CPI) is used as an indicator for measuring inflation. Table 1 gives detail information of raw data used at this paper.

For analysis of policy rate’s effect on long-term interest rate, exchange rate and stock prices, we employ variance decomposition method. This method is used to explain how much an error of a dependent variable of Vector Autoregressive model can be explained by errors of other variables or how other variables contribute to a shock of one variable. In other words, the variance decomposition separates the variation an endogenous variable into the component shocks to the VAR. Thus the variance decomposition provides information about the relative importance of each random innovation in affecting the variables in the VAR.

Results of the variance decomposition analysis are summarized at Table 3. According to the analysis by the variance decomposition method, the affect that a central bank’s interest rate changes had on the long-term interest rate may vary depending on time, but it averaged 20-22%. By nation, while Brazil, Sweden, South Africa, and Thailand present a 40% level, Switzerland, the Czech Republic, Poland, Korea, Britain, Thailand, and Hong Kong record below 10%. In relation to the central banks’ interest rate change pattern, while the nations with a large range of interest rate change, such as India and Russia, show a high level of change, while those nations with a low range of interest rate change, such as Korea, Thailand, show a low level. Although a country such as Poland shows a large range of interest rate change by the central bank with a small effect on the volatility of the market interest rate, it is not observed where there is a large effect on the volatility when the central bank’s interest rate change was small.

The influence of the central bank’s interest rate changes on the foreign exchange rate, as well as on the long-term interest rate, turns out to be 20% on average. While the central banks’ interest rate changes had a large impact in countries such as S. Africa, the European Union, Slovakia, and Denmark, their effect was small in Norway, the Philippines, Thailand, and Croatia. Among the countries without a large range of interest rate change by the central banks such as Korea, Australia, and Thailand, Korea and Australia have weak effect but Thailand has strong effect. It is assumed that it is probably affected by each country’s institutional factors regarding currency and exchange rate.

 The influence of the central bank’s interest rate changes on stock prices is also 20% on average and it seems to be particularly large in Canada, Sweden, S. Africa, the European Union, and Korea, while Russia records the lowest. The central banks’ interest rate changes in Canada and the European Union among developed countries have a large effect but in the U.S., the effect is average level, and in Britain it is low. In addition, among the countries with a large range of interest rate changes by the central banks, such as Russia, Brazil, and India, only India shows a high level of influence.

In summary, the levels of the central banks’ interest rates attributable to the volatilities of the long term interest rate, the stock price and the foreign exchange rate all turn out to be around 20%. Among developed countries, the interest rate changes by the European Union’s central banks have a large effect on the long term interest rate, the stock price and the foreign exchange rate. In Canada, the effect was sizeable on the foreign exchange rate and stock price. In the U.S., this effect was most noticeable on the interest rate. In Britain, the central bank’s interest rate changes seem to have a relatively small effect with the exception of the foreign exchange rate.

The countries whose central banks adjust the interest rates on a grand scale generally have a large influence on the interest rate, but their influence on the foreign exchange rates and stock prices are not as considerable. Among the countries whose central banks that adjust interest rates on a small scale, the effect was large on the interest rate, foreign exchange rate, and stock price in Denmark. In Korea, the effect was large on the stock price. In Sweden, the effect was strong on the interest rate, and it was not significant in the rest of the countries.

On the other hand, when we look into the correlation between the efficiency of the transmission process of a monetary policy and macro-economic performance, an increase in the efficiency of interest rate change part also brings about an increase in the growth rate, inflation and volatility levels as shown at Table 7. However, when the efficiency of the exchange rate part of the transmission process increases, the economic growth rate, inflation and volatility levels decrease. This demonstrates that when the efficiency of one of the transmission processes changes significantly, it could affect the price of goods and the economy as a whole. For an economic stabilization policy, therefore, it is critical that the exchange rate and asset price parts of the transmission process should be fully operational.

**5. The relationship between the effectiveness of the transmission process of a monetary policy and the country’s interest rate change pattern**

In this section, we study the relationship between the central bank’s pattern of interest rate changes and the effectiveness of the transmission mechanism of monetary policy. For this purpose, we construct a regression model with a dependent variable of the variance decomposition results, explaining the effect of the central bank’s interest rate changes on the long term interest rate, stock prices and the foreign exchange rate. Our major explanatory variables are the three types of interest rate change patterns: The number of interest rate changes, the total range of changes and the number of consecutive increases/decreases in the interest rate. The results of these regressions can be shown at Table 4.

 Regression equation for range of policy rate change

 $VD=C+X \left(1\right), VD=C+X\_{d} \left(2\right), VD=C+X\_{u} (3) $

 Regression equation for frequency of policy rate change

$VD=C+Y \left(4\right), VD=C+Y\_{d} \left(5\right), VD=C+Y\_{u} (6)$

 Regression equation for ratio of consecutive change and tight or easing policy period

 $VD=C+Y+X \left(7\right), VD=C+Y+\frac{1}{Y}×\left(Y\_{dd}+Y\_{uu}\right)+\frac{1}{Z}×\left(Z\_{dd}+Z\_{uu}\right) (8)$

 VD : Contributions estimated by variance decomposition C : Constant

X: Width of Policy Rate Change $X\_{d}$ : Width of Policy Rate Cut $X\_{u}$: Width of Policy Rate Hike

Y: Frequency of Policy Rate Change　$Y\_{d}$: Frequency of Policy Rate Cut $Y\_{u}$: Frequency of Policy Rate Hike

 $Y\_{dd}$: Frequency of Consecutive Rate Cut $Y\_{uu}$: Frequency of Consecutive Rate Hike

Z: Period　 $Z\_{uu}$: Period of Tight Monetary Policy $Z\_{dd}$: Period of Easy Monetary Policy

In the short run (6 month), the range of policy rate change shows significant effects on policy rate’s contribution on the variance of long term interest rate. In addition, the range of both policy rate hikes and cuts also influences the interest rate transmission mechanism of monetary policy. The effect of policy rate hike is stronger than policy a rate cut. All of them, the range of policy rate change, policy rate hike and cut, strengthen a policy rate’s influence on long term interest rate. In the long run (18 month and 24 month), the frequency of policy rate hike and the ratio of tightening to total period increase policy rate’s contribution to variance of long term interest rate. The effects during 24 months period are more influential than in 18 months.

There is no statistically significant factor that can influence the exchange rate transmission mechanism. Besides policy rate, there are plenty of factors such as balance of payment, domestic inflation, foreign monetary policy, that could have effect on exchange rate. Namely, it is unlikely that exchange rate transmission is working well. Therefore, an uncovered interest rate parity explains the relation between policy rate and exchange rate poorly.

Stock prices transmission mechanism is affected by the range of policy rate change, cutting policy rate and the frequency of the policy rate reduction in the short term (6 month). These factors have negative effects on policy rate’s contribution to variance of stock prices that is, decrease policy rate influence on stock prices. In the long term, the frequency of policy rate hike increases policy rate’s contribution to variance of stock prices and the effect of a factor during 24 month is stronger than that of a factor in 18 month.

In sum, we find that frequent changes of the interest rates improve the effectiveness of the interest rate part of the transmission mechanism of monetary policy in the short term, although the effect of this decreases in the long term. On the contrary, the effectiveness of the foreign exchange rate and the stock price parts of the transmission mechanism is limited in the short term, whereas it becomes more prominent in the long term. Furthermore, as to the monetary policy direction, a central bank’s decision on interest rates regarding contraction improves the effectiveness of the transmission mechanism of a monetary policy much more effectively than that which regards expansion. This result implies that the impact of a monetary policy is rather asymmetrical.

Now, we test whether the institutional aspects are associated with the transmission mechanism of monetary policy. This additional analysis is required since each country possesses different factors affecting the effectiveness of its monetary policy such as the monetary policy system, foreign exchange policy framework and the level of financial deepening. We include these variables as explanatory variables to see whether the results in the previous section are robust. The table 5 shows monetary policy framework, foreign exchange schemes and financial depth of various nations.

First, we add a dummy variable indicating the inclusion of ‘inflation targeting,’ on currency and exchange policy by each country regarding its monetary policy. Also, it was added in order to indicate the inclusion of a variable exchange rate system by the countries in analysis. Furthermore, as a variable indicating each country’s development degree of its financial market, the ratio of domestic credit to GDP is used. In other word, we add three variables about monetary policy regime, exchange regime and financial depth to equations (1) ~ (8). Table 6 recapitulates the estimation results of eight regression equations as follow.

Regression equation for the scale of policy rate change

 $VD=C+X +MR+FR+FD \left(9\right), VD=C+X\_{d} +MR+FR+FD \left(10\right) $

$ VD=C+X\_{u}+MR+FR+FD (11) $

 Regression equation for frequency of policy rate change

$$ VD=C+Y +MR+FR+FD \left(12\right), VD=C+Y\_{d} +MR+FR+FD \left(13\right) $$

$ VD=C+Y\_{u} +MR+FR+FD (14)$

 Regression equation for ratio of consecutive change and tight or easy policy period

 $VD=C+Y+X +MR+FR+FD \left(15\right), $

$VD=C+Y+\frac{1}{Y}×\left(Y\_{dd}+Y\_{uu}\right)+\frac{1}{Z}×\left(Z\_{dd}+Z\_{uu}\right) +MR+FR+FD (16)$

According to the analysis, the impact of changing interest rate on the efficiency of the transmission process of a monetary policy turns out to be similar with or without the institutional factor and financial deepening.

On examining the policy rate’s influence on long term interest rate in the short run(6 month), we can find that the scale of policy rate change and the frequency of policy rate hike have significant impact on the interest rate transmission mechanism. The relationship between policy rate effect and these three factors is positive and strengthens interest rate transmission mechanism. In addition, financial deepening is statistically significant factor which keeps negative effect on policy rate’s influence on the long term interest rate. In the long run (18 and 24 month) the frequency of policy rate hike and exchange regime can become statistically significant factors. Frequency of uplifting policy rate increases the policy rate contribution to the variance of interest rate but floating exchange rate regime weakens the effectiveness.

Considering the exchange rate transmission of monetary policy, there are two factors which are significant coefficient, ratio of tightening to total period and monetary policy regime, inflation targeting. The factors strengthen the exchange rate mechanism in both 6~18month and 12~18 month.

In the short run (6 month), the scale of policy rate change, policy rate reduction and frequency of policy rate change are significant coefficient in the above regression equation. All of these factors are negatively correlated to policy rate contribution to the variance of stock prices. In the long run (longer than 12month), the scale of policy rate change and policy rate cut weakens stock price transmission but frequency of total policy rate change and interest cuts strengthen the transmission mechanism. In addition, monetary policy regime has negative effects on policy rate’s contribution to the variance of stock prices.

To sum up, the pattern of interest rate change improves the efficiency of the interest rate part of the transmission process, but the impact is not statistically significant in the long term. The exchange rate and the stock price parts of the transmission process are affected by only policy rate pattern in the short term, but monetary policy regime and financial depth become important factors improving the transmission mechanism in the long term. In addition, financial depth affects not exchange rate but the interest and the stock price transmission mechanism. ‘Inflation targeting’ shows a negative effect on policy rate’s influence on stock price.

We find that the results are not qualitatively different from the results in the previous section. In the meantime, financial deepening affects the effectiveness of the transmission mechanism, increasing it in the long term. Inflation targeting shows an overall negative effect on improving the transmission mechanism of monetary policy.

6. **Conclusion**

This paper examines whether different patterns of central bank’s interest rate changes would affect major financial variables with a different strength. These variables play a major role in the transmission of monetary policy and accordingly, this article studies how the central bank’s frequency and range of interest rate changes influence the effectiveness of the transmission mechanism of monetary policy.

We find that frequent changes of the interest rates improve the effectiveness of the interest rate part of the transmission mechanism of monetary policy in the short term even though the impact is not statistically significant in the long run. We also find that financial depth increases the effectiveness of the transmission mechanism, whereas inflation targeting framework shows an overall negative effect on it. In addition, it is likely that tightening monetary policy is more effective on preventing inflation and for evaluating or forecasting monetary policy effects it is important to have accurate knowledge on what transmission channel is activated in an economy.

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**Table 1 : Data Summary**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 　 | Policy Rate | Long term interest rate | Economic Activity | Data Period |
| Canada | Overnight funding rate  | GB 10y | IP | 99. 1~06. 3 |
| Brazil | SELIC overnight rate | Lending | IP | 99. 3~06. 3 |
| Chile | Discount rate | Lending | IP | 99. 1~05.12 |
| US | Federal fund rate | GB 10y | IP | 99. 1~06. 3 |
| Hungary | 2 weeks deposit rate | GB 10y | IP | 99. 1~06. 3 |
| Norway | Deposit rate | GB 10y | IP | 99. 1~06. 3 |
| Sweden | Repo rate | GB 10y | IP | 99. 1~06. 3 |
| S. Africa | Repo rate | GB 10y | IP | 99. 1~05. 8 |
| Euro Zone | Minimum bid rate | GB 10y | IP | 99.12~06. 3 |
| Swiss | 3 months Swiss libor | GB 10y | RS | 00. 2~06. 3 |
| Czech | 2 weeks repo rate | GB 3y | IP | 99. 3~06. 1 |
| Poland | 14days intervention rate | GB 5y | IP | 99. 3~06. 1 |
| S. Korea | Overnight call rate | GB 3y | IP | 99. 5~06. 3 |
| UK | Repo rate | GB 10y | IP | 99. 1~06. 3 |
| Australia | Cash rate | GB 10y | RS | 99. 1~06. 3 |
| India | Repo rate | GB 10y | IP | 01. 1~06. 3 |
| Philippines | Reverse repo rate | GB 10y | IP | 99. 1~06. 3 |
| Taiwan | Official discount rate | GB 10y | IP | 99. 1~06. 3 |
| 양식의 맨 위Thailand양식의 맨 아래 | Repo rate | GB 10y | IP | 99. 9~06. 3 |
| Slovakia | 2 weeks repo rate | Lending | IP | 00. 5~06. 1 |
| Croatia | Discount rate | Lending | IP | 99. 1~06. 1 |
| Russia | Refinancing rate | Lending | RS | 99. 1~06. 1 |
| Hong Kong | Discount window base rate | GB 10y | RS | 99. 1~06. 3 |
| Denmark | Discount rate | GB 10y | IP | 99. 1~06. 1 |

**Table 2： Monetary policy decision pattern**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 　 | Frequency of increase | Frequency of decrease | Frequency of adjustment | Range of increase | Range of decrease | Range of adjustment | Period (%) | Consecutiveness |
| Tightening  | Loosing  | Neutral  | ++ | +- | -+ | -- |
| Canada | 16 | 17 | 33 | 4.25 | -5.5 | 9.75 | 42.7 | 29.1 | 28.3 | 13 | 2 | 3 | 15 |
| Brazil | 19 | 37 | 56 | 16 | -45.75 | 61.75 | 18.5 | 52.5 | 29.0 | 16 | 3 | 3 | 34 |
| Chile | 14 | 21 | 35 | 6.25 | -9.55 | 15.8 | 23.8 | 44.8 | 31.3 | 11 | 2 | 3 | 19 |
| US | 21 | 13 | 34 | 5.5 | -5.5 | 11 | 36.6 | 33.1 | 30.2 | 19 | 1 | 2 | 12 |
| Hungary | 7 | 34 | 41 | 7.5 | -18.5 | 26 | 8.8 | 42.0 | 49.2 | 3 | 4 | 4 | 30 |
| Norway | 8 | 16 | 24 | 2.75 | -8.25 | 11 | 17.4 | 24.5 | 58.1 | 5 | 3 | 3 | 13 |
| Sweden | 8 | 11 | 19 | 2.35 | -3.75 | 6.1 | 26.0 | 39.8 | 34.2 | 5 | 2 | 3 | 9 |
| S. Africa | 5 | 11 | 16 | 4.25 | -9.25 | 13.5 | 10.1 | 34.1 | 55.8 | 3 | 2 | 2 | 9 |
| Euro Zone | 9 | 8 | 17 | 2.75 | -3.25 | 6 | 19.3 | 31.7 | 49.0 | 7 | 1 | 2 | 7 |
| Swiss | 6 | 7 | 13 | 2.25 | -3.25 | 5.5 | 34.9 | 30.7 | 34.4 | 4 | 1 | 2 | 6 |
| Czech  | 4 | 24 | 28 | 1 | -8.5 | 9.5 | 2.5 | 59.7 | 37.7 | 1 | 2 | 3 | 22 |
| Poland | 7 | 26 | 33 | 7.25 | -18.25 | 25.5 | 15.1 | 46.4 | 38.5 | 5 | 2 | 2 | 24 |
| S. Korea | 6 | 8 | 14 | 1.5 | -2.25 | 3.75 | 18.5 | 29.7 | 51.8 | 3 | 2 | 3 | 6 |
| UK | 10 | 15 | 25 | 2.5 | -4.25 | 6.75 | 17.6 | 43.8 | 38.6 | 7 | 3 | 3 | 12 |
| Australia | 10 | 6 | 16 | 2.75 | -2 | 4.75 | 63.8 | 11.2 | 25.0 | 8 | 1 | 2 | 5 |
| India | 10 | 20 | 30 | 20.25 | -22 | 42.25 | 28.5 | 50.4 | 21.1 | 7 | 2 | 3 | 18 |
| Philippines | 8 | 41 | 49 | 7 | -12.88 | 19.88 | 14.3 | 50.8 | 34.9 | 6 | 1 | 2 | 40 |
| Taiwan | 10 | 17 | 27 | 1.26 | -3.63 | 4.89 | 20.9 | 36.2 | 42.9 | 7 | 2 | 3 | 15 |
| Thailand | 22 | 27 | 49 | 7.5 | -4.5 | 12 | 25.6 | 30.3 | 44.2 | 13 | 8 | 9 | 19 |
| Slovakia | 1 | 12 | 13 | 0.5 | -6 | 6.5 | 4.2 | 52.6 | 43.2 | 0 | 1 | 1 | 11 |
| Croatia | 1 | 2 | 3 | 2 | -3.4 | 5.4 | 0.0 | 44.9 | 55.1 | 0 | 1 | 1 | 1 |
| Russia | 0 | 13 | 13 | 0 | -48 | 48 | 0.0 | 100.0 | 0.0 | 0 | 0 | 0 | 13 |
| Hong Kong | 21 | 13 | 34 | 5.5 | -5.5 | 11 | 36.5 | 33.1 | 30.4 | 19 | 1 | 2 | 12 |
| Denmark | 8 | 9 | 17 | 2.25 | -3.5 | 5.75 | 19.1 | 32.3 | 48.6 | 6 | 1 | 2 | 8 |
| Average | 9.6 | 17 | 26.6 | 4.8 | -10.72 | 15.51 | 21.0 | 41.0 | 38.0 | 7 | 2 | 3 | 15 |

**Table 3 : Variance Decomposition of Financial Variables due to Policy Rate**

|  |  |  |  |
| --- | --- | --- | --- |
| 　 | Long term Interest Rate | Foreign Exchange Rate | Stock Prices |
| 　 | 6 m | 12 m | 18 m | 24 m | 6 m | 12 m | 18 m | 24 m | 6 m | 12 m | 18 m | 24 m |
| Canada | 21.9 | 18.3 | 17.2 | 11.3 | 24.8 | 23.3 | 22.3 | 20.6 | 45.7 | 33.5 | 26.8 | 31.6 |
| Brazil | 40.8 | 19.2 | 12.8 | 8.4 | 2.4 | 7.8 | 13.9 | 13.7 | 7.3 | 9 | 8.5 | 8.4 |
| Chile | 30.4 | 43.3 | 56.1 | 63.5 | 25.1 | 57.8 | 64.5 | 74.7 | 8.8 | 13.6 | 19.9 | 38.3 |
| US | 25.4 | 21.9 | 25.7 | 29.6 | 9.1 | 7.1 | 9.2 | 17.1 | 8.3 | 26.1 | 21.7 | 22.2 |
| Hungary | 18.5 | 12.9 | 9.3 | 12.2 | 23.4 | 17 | 14.4 | 15.6 | 8.6 | 13.1 | 22.5 | 9.5 |
| Norway | 11.3 | 13.7 | 11.7 | 14.6 | 0.9 | 1.5 | 2.9 | 3.3 | 9 | 4.3 | 4.6 | 7.2 |
| Sweden | 41.2 | 38.7 | 33.8 | 30.3 | 26.4 | 18.2 | 17.6 | 15.5 | 39.1 | 19 | 13.8 | 14.3 |
| S. Africa | 44.6 | 42.3 | 36.9 | 32.9 | 46.6 | 43 | 42 | 44.1 | 37.5 | 25.6 | 21.9 | 21.5 |
| Euro Zone | 17.4 | 26.4 | 33.3 | 31.7 | 30.1 | 39.3 | 45.6 | 44.3 | 49.4 | 51 | 45.6 | 42.8 |
| Swiss | 3.8 | 9.4 | 12.1 | 10.2 | 15.1 | 15.8 | 7.7 | 12.5 | 13.8 | 14.5 | 9.5 | 8.4 |
| Czech  | 1.7 | 14.1 | 11.2 | 11 | 16.9 | 20.7 | 19.7 | 19.6 | 17.1 | 29.6 | 17.2 | 21.6 |
| Poland | 5.4 | 6.6 | 10.7 | 10.6 | 29.4 | 28.7 | 31 | 33 | 8.2 | 15.7 | 17.1 | 12.9 |
| S. Korea | 9.4 | 5.6 | 7.3 | 11.2 | 14.4 | 10.6 | 9.9 | 6.1 | 40.9 | 31.4 | 27.8 | 25.2 |
| UK | 2.9 | 5.3 | 6.7 | 5.5 | 28.3 | 17.4 | 24.3 | 21.6 | 6.3 | 4.6 | 14 | 13.1 |
| Australia | 23 | 14.3 | 12.9 | 10.6 | 7.9 | 11.5 | 12.2 | 10.6 | 6.9 | 6.9 | 3.6 | 5.8 |
| India | 34.7 | 24.4 | 19.8 | 25.3 | 14.1 | 14.4 | 21.6 | 20.2 | 18.3 | 36.4 | 26.8 | 35.7 |
| Philippine | 24.7 | 9.9 | 10 | 4.4 | 1.6 | 1.4 | 2.3 | 1.6 | 5.6 | 9.2 | 5.3 | 2.7 |
| Taiwan | 6.7 | 8.2 | 8.9 | 7.5 | 3.8 | 5.1 | 3.8 | 4.4 | 12.1 | 6.2 | 6 | 5.2 |
| Thailand | 44 | 42.1 | 56.6 | 75.4 | 20.7 | 44.7 | 39.7 | 41.7 | 19.3 | 26.7 | 37.6 | 38.1 |
| Slovakia | 24.1 | 22.8 | 20.2 | 19.9 | 42.5 | 47.9 | 39.2 | 34 | 28.8 | 26.1 | 23.2 | 20.6 |
| Croatia | 18.6 | 17.8 | 13.2 | 9.9 | 5 | 6.9 | 9.7 | 9 | 9.2 | 11 | 9.3 | 7.2 |
| Russia | 33.4 | 32.8 | 33.6 | 34.1 | 16.1 | 16.6 | 17.5 | 17 | 2.4 | 7 | 8.2 | 9.4 |
| Hong Kong | 8.8 | 13.3 | 34.1 | 47.6 | 28.8 | 15.8 | 14.9 | 14.9 | 23.4 | 43.4 | 48.1 | 44.2 |
| Denmark | 24 | 32.4 | 29.7 | 25.9 | 35.1 | 34.5 | 29.3 | 25.5 | 33.4 | 34.1 | 33.6 | 32.4 |
| Average | 21.5 | 20.7 | 21.8 | 22.6 | 19.5 | 21.1 | 21.5 | 21.7 | 19.1 | 20.8 | 19.7 | 19.9 |

 **Table 4 : Relations Between Financial Variables and Monetary Policy Pattern**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Long Term Interest Rate | Foreign Exchange Rate | Stock Prices |
| 6 m | 12 m | 18 m | 24 m | 6 m | 12 m | 18 m | 24 m | 6 m | 12 m | 18 m | 24 m |
| Co 1) | P 2) | Co 1) | P 2) | Co 1) | P 2) | Co 1) | P 2) | Co 1) | P 2) | Co 1) | P 2) | Co 1) | P 2) | Co 1) | P 2) | Co 1) | P 2) | Co 1) | P 2) | Co 1) | P 2) | Co 1) | P 2) |
| C | 15.68  | 0.00  | 19.33  | 0.00  | 21.90  | 0.00  | 22.73  | 0.00  | 22.54  | 0.00  | 23.59  | 0.00  | 22.14  | 0.00  | 22.11  | 0.00  | 24.96  | 0.00  | 23.49  | 0.00  | 22.04  | 0.00  | 21.83  | 0.00  |
| X | 0.38  | 0.04  | 0.09  | 0.62  | 0.00  | 0.98  | -0.01  | 0.98  | -0.19  | 0.28  | -0.16  | 0.47  | -0.04  | 0.84  | -0.03  | 0.91  | -0.37  | 0.06  | -0.18  | 0.34  | -0.15  | 0.39  | -0.12  | 0.51  |
| C | 17.30  | 0.00  | 19.59  | 0.00  | 22.10  | 0.00  | 23.35  | 0.00  | 21.82  | 0.00  | 23.24  | 0.00  | 22.39  | 0.00  | 22.53  | 0.00  | 24.23  | 0.00  | 24.03  | 0.00  | 22.57  | 0.00  | 22.70  | 0.00  |
| $$X\_{d}$$ | 0.39  | 0.08  | 0.10  | 0.64  | -0.03  | 0.92  | -0.07  | 0.84  | -0.21  | 0.33  | -0.20  | 0.47  | -0.09  | 0.75  | -0.08  | 0.79  | -0.47  | 0.05  | -0.31  | 0.17  | -0.27  | 0.21  | -0.26  | 0.25  |
| C | 15.96  | 0.00  | 19.70  | 0.00  | 21.23  | 0.00  | 20.76  | 0.00  | 22.04  | 0.00  | 22.44  | 0.00  | 20.77  | 0.00  | 20.44  | 0.00  | 21.97  | 0.00  | 19.42  | 0.00  | 18.32  | 0.00  | 17.45  | 0.00  |
| $$X\_{u}$$ | 1.16  | 0.05  | 0.20  | 0.72  | 0.12  | 0.85  | 0.39  | 0.64  | -0.52  | 0.36  | -0.27  | 0.70  | 0.14  | 0.84  | 0.26  | 0.73  | -0.59  | 0.36  | 0.28  | 0.64  | 0.29  | 0.61  | 0.51  | 0.39  |
| C | 15.40  | 0.02  | 21.23  | 0.00  | 18.99  | 0.01  | 16.10  | 0.07  | 25.67  | 0.00  | 22.96  | 0.01  | 21.44  | 0.01  | 19.60  | 0.02  | 27.65  | 0.00  | 22.51  | 0.00  | 17.69  | 0.01  | 17.52  | 0.01  |
| Y | 0.23  | 0.29  | -0.02  | 0.91  | 0.11  | 0.65  | 0.25  | 0.40  | -0.23  | 0.26  | -0.07  | 0.79  | 0.00  | 1.00  | 0.08  | 0.77  | -0.32  | 0.16  | -0.07  | 0.76  | 0.08  | 0.71  | 0.09  | 0.67  |
| C | 17.74  | 0.00  | 22.82  | 0.00  | 24.08  | 0.00  | 23.90  | 0.00  | 24.61  | 0.00  | 23.38  | 0.00  | 22.53  | 0.00  | 21.83  | 0.00  | 28.49  | 0.00  | 25.95  | 0.00  | 22.51  | 0.00  | 23.39  | 0.00  |
| $$Y\_{d}$$ | 0.22  | 0.44  | -0.13  | 0.62  | -0.13  | 0.67  | -0.07  | 0.85  | -0.30  | 0.27  | -0.13  | 0.69  | -0.06  | 0.85  | -0.01  | 0.98  | -0.55  | 0.06  | -0.31  | 0.27  | -0.17  | 0.53  | -0.20  | 0.47  |
| C | 17.05  | 0.00  | 18.42  | 0.00  | 13.90  | 0.02  | 10.11  | 0.13  | 22.13  | 0.00  | 20.83  | 0.00  | 19.86  | 0.00  | 18.07  | 0.01  | 19.37  | 0.00  | 16.03  | 0.00  | 12.29  | 0.01  | 10.92  | 0.03  |
| $$Y\_{u}$$ | 0.47  | 0.31  | 0.23  | 0.58  | 0.82  | 0.09  | 1.30  | 0.03  | -0.27  | 0.54  | 0.03  | 0.95  | 0.17  | 0.75  | 0.38  | 0.51  | -0.02  | 0.96  | 0.49  | 0.27  | 0.77  | 0.06  | 0.94  | 0.03  |
| C | 14.94  | 0.02  | 21.07  | 0.00  | 19.07  | 0.01  | 16.28  | 0.08  | 25.83  | 0.00  | 23.17  | 0.01  | 21.51  | 0.01  | 19.70  | 0.02  | 28.05  | 0.00  | 22.76  | 0.00  | 17.99  | 0.01  | 17.78  | 0.01  |
| Y | 0.04  | 0.87  | -0.09  | 0.70  | 0.14  | 0.61  | 0.32  | 0.35  | -0.16  | 0.48  | 0.02  | 0.94  | 0.03  | 0.91  | 0.12  | 0.70  | -0.15  | 0.54  | 0.04  | 0.88  | 0.20  | 0.38  | 0.20  | 0.41  |
| X | 0.36  | 0.09  | 0.12  | 0.55  | -0.06  | 0.79  | -0.14  | 0.64  | -0.13  | 0.54  | -0.17  | 0.52  | -0.06  | 0.83  | -0.08  | 0.78  | -0.31  | 0.16  | -0.19  | 0.37  | -0.23  | 0.25  | -0.21  | 0.34  |
| C | 22.11  | 0.28  | 16.24  | 0.40  | 3.55  | 0.87  | 2.77  | 0.92  | 4.12  | 0.83  | 6.17  | 0.81  | 8.90  | 0.72  | 5.59  | 0.83  | 28.59  | 0.20  | 12.37  | 0.52  | 13.97  | 0.41  | 6.74  | 0.70  |
| Y | 0.17  | 0.56  | 0.08  | 0.77  | 0.35  | 0.27  | 0.60  | 0.13  | -0.17  | 0.54  | 0.14  | 0.70  | 0.14  | 0.70  | 0.23  | 0.55  | -0.28  | 0.38  | -0.04  | 0.90  | 0.18  | 0.48  | 0.23  | 0.38  |
| X | 0.32  | 0.29  | -0.04  | 0.90  | -0.30  | 0.34  | -0.41  | 0.30  | -0.28  | 0.33  | -0.41  | 0.28  | -0.24  | 0.52  | -0.26  | 0.51  | -0.16  | 0.62  | -0.15  | 0.61  | -0.19  | 0.46  | -0.24  | 0.37  |
| $Y\_{uu}$/Y | -22.08  | 0.57  | 16.92  | 0.65  | 42.84  | 0.30  | 43.62  | 0.40  | 56.73  | 0.14  | 45.02  | 0.36  | 53.01  | 0.28  | 57.02  | 0.28  | 48.48  | 0.26  | 76.03  | 0.06  | 75.75  | 0.03  | 74.29  | 0.04  |
| $Y\_{dd}$/Y | -46.11  | 0.19  | -34.93  | 0.29  | -46.18  | 0.21  | -67.39  | 0.14  | 30.58  | 0.36  | 7.18  | 0.87  | -3.87  | 0.93  | -7.69  | 0.87  | 11.21  | 0.76  | -0.03  | 1.00  | -12.40  | 0.67  | -24.77  | 0.41  |
| $Z\_{uu}$/Z | 39.07  | 0.32  | 49.57  | 0.20  | 78.56  | 0.07  | 99.19  | 0.06  | 5.34  | 0.89  | 27.55  | 0.57  | 29.95  | 0.54  | 35.78  | 0.49  | -19.83  | 0.64  | 10.79  | 0.77  | 15.14  | 0.65  | 40.35  | 0.25  |
| $Z\_{dd}$/Z | 21.69  | 0.61  | -16.43  | 0.69  | -24.88  | 0.58  | -28.37  | 0.61  | -45.87  | 0.27  | -48.17  | 0.37  | -58.50  | 0.28  | -57.83  | 0.31  | -47.92  | 0.30  | -61.60  | 0.14  | -75.47  | 0.05  | -57.80  | 0.13  |

Note : 1) Coefficient 2) P-Value

C : Constant X: Width of Policy Rate Change $X\_{d}$ : Width of Policy Rate Cut $X\_{u}$: Width of Policy Rate Hike　Y: Frequency of Policy Rate Change

　$Y\_{d}$: Frequency of Policy Rate Cut $Y\_{u}$: Frequency of Policy Rate Hike $Y\_{dd}$: Frequency of Consecutive Rate Cut $Y\_{uu}$: Frequency of Consecutive Rate Hike

Z: Period　 $Z\_{uu}$: Period of Tight Monetary Policy $Z\_{dd}$: Period of Easy Monetary Policy

 Shaded area means a significant coefficient under 10% confidential level

**Table 5 : Monetary policy and Foreign exchange regime**

|  |  |  |  |
| --- | --- | --- | --- |
| Country | Monetary regime | Exchange rate regime | Financial Depth |
| Canada |  IT | Floating | 1.25 |
| Brazil |  IT | Floating | 2.85 |
| Chile |  IT | Floating | 2.76 |
| US | Others | Floating | 0.88 |
| Hungary |  IT | peg | 2.21 |
| Norway |  IT | Floating | 2.91 |
| Sweden |  IT | Floating | 3.61 |
| S. Africa |  IT | Floating | 0.72 |
| Euro Zone | Others | Floating | 5.46 |
| Swiss |  IT | Floating | 7.01 |
| Czech  |  IT | Managing | 1.91 |
| Poland |  IT | Floating | 1.31 |
| S. Korea |  IT | Floating | 3.49 |
| UK |  IT | Floating | 5.69 |
| Australia |  IT | Floating | 0.97 |
| India | Others | Managing | 2.39 |
| Philippines |  IT | Floating | 2.20 |
| Taiwan | Money | Floating | － |
| Thailand |  IT | Managing | 5.21 |
| Slovakia |  IT | peg | 2.02 |
| Croatia | Others 　 | Managing 　 | 2.31 |
| Russia | Others | Managing | 0.94 |
| Hong Kong | Exchange rate | Currency board | 5.74 |
| Denmark | Exchange rate | peg | 5.28 |

**Table 6 : Relations Between Financial Variables and Monetary Policy Pattern Considering Other Factors**

|  |  |  |  |
| --- | --- | --- | --- |
| 　 | Long Term Interest Rate | Foreign Exchange Rate | Stock Prices |
| 　 | 6 M | 12M | 18M | 24M | 6 M | 12M | 18M | 24M | 6 M | 12M | 18M | 24M |
| 　 | Co | t | Co | t | Co | t | Co | t | Co | t | Co | t | Co | t | Co | t | Co | t | Co | t | Co | t | Co | t |
| C | 25.02  | 2.46  | 29.65  | 2.97  | 30.51  | 2.61  | 32.52  | 2.26  | 29.62  | 2.97  | 26.75  | 2.08  | 24.74  | 1.89  | 23.91  | 1.69  | 28.61  | 2.59  | 37.36  | 4.39  | 31.19  | 3.97  | 31.25  | 3.47  |
| X | 0.27  | 1.37  | -0.02  | -0.08  | -0.08  | -0.34  | -0.08  | -0.30  | -0.27  | -1.39  | -0.21  | -0.83  | -0.09  | -0.34  | -0.07  | -0.24  | -0.41  | -1.88  | -0.29  | -1.72  | -0.22  | -1.41  | -0.20  | -1.10  |
| MR | 0.49  | 0.07  | -4.06  | -0.59  | -7.61  | -0.95  | -7.97  | -0.81  | -2.14  | -0.31  | 2.32  | 0.26  | -0.74  | -0.08  | -1.57  | -0.16  | -7.86  | -1.04  | -17.16  | -2.94  | -12.24  | -2.27  | -14.01  | -2.27  |
| FR | -4.74  | -0.75  | -4.44  | -0.71  | -4.58  | -0.63  | -9.26  | -1.03  | -5.36  | -0.86  | -6.36  | -0.79  | -1.76  | -0.22  | 0.55  | 0.06  | 3.09  | 0.45  | -0.25  | -0.05  | -5.09  | -1.04  | -1.68  | -0.30  |
| FD | -1.50  | -0.92  | -0.77  | -0.48  | 0.58  | 0.31  | 1.35  | 0.58  | 0.01  | 0.01  | 0.28  | 0.14  | 0.20  | 0.10  | 0.13  | 0.06  | 0.39  | 0.22  | 0.49  | 0.36  | 1.65  | 1.31  | 1.29  | 0.89  |
| C | 27.53  | 2.70  | 29.67  | 3.03  | 30.59  | 2.67  | 33.62  | 2.38  | 28.16  | 2.84  | 26.23  | 2.08  | 25.31  | 1.97  | 24.92  | 1.80  | 28.19  | 2.61  | 39.13  | 4.92  | 32.76  | 4.41  | 33.68  | 3.96  |
| $$X\_{d}$$ | 0.25  | 1.00  | -0.02  | -0.08  | -0.10  | -0.37  | -0.15  | -0.44  | -0.30  | -1.20  | -0.25  | -0.80  | -0.14  | -0.43  | -0.13  | -0.37  | -0.51  | -1.92  | -0.45  | -2.26  | -0.35  | -1.89  | -0.35  | -1.67  |
| MR | 0.03  | 0.00  | -4.06  | -0.59  | -7.64  | -0.95  | -8.19  | -0.83  | -1.88  | -0.27  | 2.40  | 0.27  | -0.86  | -0.10  | -1.77  | -0.18  | -7.81  | -1.04  | -17.54  | -3.16  | -12.57  | -2.42  | -14.51  | -2.44  |
| FR | -5.02  | -0.77  | -4.45  | -0.71  | -4.61  | -0.63  | -9.45  | -1.05  | -5.23  | -0.83  | -6.35  | -0.79  | -1.88  | -0.23  | 0.37  | 0.04  | 3.01  | 0.44  | -0.61  | -0.12  | -5.40  | -1.14  | -2.11  | -0.39  |
| FD | -1.63  | -0.96  | -0.78  | -0.48  | 0.54  | 0.28  | 1.19  | 0.51  | 0.03  | 0.02  | 0.24  | 0.11  | 0.10  | 0.05  | -0.01  | 0.00  | 0.24  | 0.14  | 0.17  | 0.13  | 1.38  | 1.12  | 0.95  | 0.67  |
| C | 26.83  | 3.04  | 29.29  | 3.31  | 28.62  | 2.76  | 28.74  | 2.25  | 26.01  | 2.90  | 22.97  | 2.00  | 21.77  | 1.87  | 20.71  | 1.65  | 20.18  | 1.93  | 27.87  | 3.43  | 23.59  | 3.22  | 22.69  | 2.78  |
| $$X\_{u}$$ | 0.96  | 1.63  | -0.02  | -0.03  | -0.09  | -0.12  | 0.15  | 0.18  | -0.71  | -1.19  | -0.40  | -0.52  | 0.02  | 0.02  | 0.15  | 0.18  | -0.64  | -0.92  | 0.04  | 0.07  | 0.08  | 0.17  | 0.32  | 0.58  |
| MR | 0.07  | 0.01  | -3.99  | -0.59  | -7.24  | -0.91  | -7.25  | -0.74  | -1.39  | -0.20  | 3.08  | 0.35  | -0.17  | -0.02  | -0.97  | -0.10  | -6.19  | -0.77  | -15.34  | -2.46  | -10.79  | -1.92  | -12.40  | -1.98  |
| FR | -5.23  | -0.85  | -4.39  | -0.71  | -4.29  | -0.59  | -8.77  | -0.98  | -4.67  | -0.74  | -5.73  | -0.71  | -1.35  | -0.17  | 0.95  | 0.11  | 4.42  | 0.60  | 1.06  | 0.19  | -4.05  | -0.79  | -0.57  | -0.10  |
| FD | -2.01  | -1.33  | -0.73  | -0.49  | 0.78  | 0.44  | 1.63  | 0.75  | 0.59  | 0.38  | 0.77  | 0.39  | 0.46  | 0.23  | 0.36  | 0.17  | 1.37  | 0.77  | 1.33  | 0.96  | 2.30  | 1.83  | 1.94  | 1.39  |
| C | 27.83  | 2.95  | 29.07  | 3.17  | 24.33  | 2.29  | 22.28  | 1.73  | 26.02  | 2.77  | 21.50  | 1.79  | 21.65  | 1.79  | 19.77  | 1.52  | 23.04  | 2.18  | 28.30  | 3.36  | 20.80  | 2.79  | 21.37  | 2.54  |
| Y | 0.25  | 1.18  | 0.00  | 0.02  | 0.15  | 0.65  | 0.31  | 1.10  | -0.21  | -1.03  | -0.06  | -0.22  | 0.01  | 0.04  | 0.08  | 0.29  | -0.31  | -1.33  | -0.01  | -0.04  | 0.14  | 0.85  | 0.15  | 0.81  |
| MR | -1.83  | -0.26  | -3.98  | -0.59  | -7.53  | -0.96  | -8.26  | -0.87  | 0.10  | 0.01  | 3.76  | 0.42  | -0.22  | -0.02  | -1.39  | -0.14  | -4.53  | -0.58  | -15.37  | -2.48  | -11.26  | -2.05  | -13.20  | -2.13  |
| FR | -6.32  | -0.99  | -4.38  | -0.71  | -4.45  | -0.62  | -9.35  | -1.08  | -3.82  | -0.60  | -5.34  | -0.66  | -1.38  | -0.17  | 0.72  | 0.08  | 5.37  | 0.75  | 1.05  | 0.18  | -4.32  | -0.86  | -1.03  | -0.18  |
| FD | -2.25  | -1.45  | -0.73  | -0.49  | 0.82  | 0.47  | 1.63  | 0.77  | 0.77  | 0.50  | 0.87  | 0.44  | 0.46  | 0.23  | 0.33  | 0.15  | 1.52  | 0.88  | 1.32  | 0.95  | 2.29  | 1.87  | 1.87  | 1.36  |

Note : Shaded areas mean significant coefficients under 10% confidential level

MR : Monetary Regime, FR : Exchange Regime, FD : Financial Depth

**Table 6: Relations Between Financial Variables and Monetary Policy Pattern Considering Other Factors 　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　 (Continued)**

|  |  |  |  |
| --- | --- | --- | --- |
| 　 | Long Term Interest Rate | Foreign Exchange Rate | Stock Prices |
| 　 | 6 M | 12M | 18M | 24M | 6 M | 12M | 18M | 24M | 6 M | 12M | 18M | 24M |
| 　 | Co | t | Co | t | Co | t | Co | t | Co | t | Co | t | Co | t | Co | t | Co | t | Co | t | Co | t | Co | t |
| C | 30.68  | 3.24  | 30.85  | 3.46  | 28.28  | 2.69  | 28.37  | 2.19  | 25.4 | 2.77 | 22.3 | 1.91 | 22.6 | 1.92 | 21.6 | 1.7 | 23.5 | 2.31 | 29.8 | 3.64 | 23.5 | 3.17 | 24.99 | 2.99 |
| $$Y\_{d}$$ | 0.19  | 0.66  | -0.11  | -0.38  | -0.02  | -0.05  | 0.09  | 0.23  | -0.28 | -0.99 | -0.14 | -0.39 | -0.05 | -0.13 | 0.01 | 0.04 | -0.5 | -1.57 | -0.1 | -0.4 | 0.04 | 0.19 | 0 | 0 |
| MR | -2.35  | -0.32  | -3.34  | -0.48  | -7.03  | -0.86  | -7.99  | -0.80  | 1.23 | 0.17 | 4.45 | 0.49 | 0.08 | 0.01 | -1.25 | -0.13 | -2.38 | -0.3 | -14.8 | -2.33 | -11.2 | -1.94 | -12.8 | -1.98 |
| FR | -5.70  | -0.87  | -4.52  | -0.73  | -4.25  | -0.59  | -8.76  | -0.98  | -4.52 | -0.71 | -5.62 | -0.7 | -1.43 | -0.18 | 0.86 | 0.1 | 4.23 | 0.6 | 0.9 | 0.16 | -4.06 | -0.79 | -0.81 | -0.14 |
| FD | -2.12  | -1.32  | -0.82  | -0.54  | 0.79  | 0.44  | 1.66  | 0.76  | 0.56 | 0.36 | 0.76 | 0.38 | 0.42 | 0.21 | 0.33 | 0.15 | 1.15 | 0.66 | 1.23 | 0.88 | 2.31 | 1.83 | 1.85 | 1.31 |
| C | 27.92  | 3.25  | 26.75  | 3.15  | 21.44  | 2.28  | 19.08  | 1.75  | 23.5 | 2.63 | 19.4 | 1.73 | 20.5 | 1.82 | 18.7 | 1.55 | 17.5 | 1.7 | 26.2 | 3.35 | 19.41 | 2.93 | 18.9 | 2.6 |
| $$Y\_{u}$$ | 0.72  | 1.59  | 0.30  | 0.66  | 0.81  | 1.62  | 1.33  | 2.29  | -0.32 | -0.68 | 0.08 | 0.13 | 0.17 | 0.29 | 0.38 | 0.6 | -0.25 | -0.46 | 0.24 | 0.58 | 0.59 | 1.68 | 0.75 | 1.95 |
| MR | 1.24  | 0.18  | -2.96  | -0.43  | -4.42  | -0.58  | -3.00  | -0.34  | -1.54 | -0.21 | 3.86 | 0.43 | 0.39 | 0.04 | 0.12 | 0.01 | -6.18 | -0.74 | -14.6 | -2.32 | -8.92 | -1.67 | -10.3 | -1.76 |
| FR | -8.01  | -1.27  | -5.22  | -0.84  | -6.52  | -0.94  | -12.64  | -1.57  | -3.22 | -0.49 | -5.65 | -0.68 | -1.85 | -0.22 | -0.25 | -0.03 | 5.62 | 0.74 | 0.36 | 0.06 | -5.79 | -1.19 | -2.94 | -0.55 |
| FD | -2.80  | -1.82  | -0.94  | -0.62  | 0.23  | 0.14  | 0.65  | 0.33  | 1.02 | 0.64 | 0.83 | 0.41 | 0.33 | 0.17 | 0.04 | 0.02 | 1.74 | 0.94 | 1.15 | 0.82 | 1.85 | 1.56 | 1.32 | 1.01 |
| C | 24.08  | 2.29  | 29.52  | 2.83  | 28.50  | 2.40  | 28.83  | 2.04  | 30.2 | 2.91 | 26.2 | 1.95 | 24.1 | 1.77 | 22.7 | 1.54 | 29.4 | 2.57 | 35.8 | 4.16 | 28.49 | 3.92 | 28.58 | 3.31 |
| X | 0.20  | 0.84  | -0.02  | -0.10  | -0.23  | -0.83  | -0.36  | -1.09  | -0.23 | -0.95 | -0.25 | -0.82 | -0.13 | -0.42 | -0.16 | -0.46 | -0.35 | -1.31 | -0.41 | -2.04 | -0.42 | -2.49 | -0.39 | -1.97 |
| Y | 0.13  | 0.52  | 0.02  | 0.07  | 0.28  | 0.99  | 0.52  | 1.52  | -0.08 | -0.34 | 0.08 | 0.26 | 0.09 | 0.26 | 0.17 | 0.49 | -0.12 | -0.42 | 0.22 | 1.09 | 0.38 | 2.17 | 0.37 | 1.8 |
| MR | -0.28  | -0.04  | -4.16  | -0.58  | -9.26  | -1.13  | -10.99  | -1.13  | -1.64 | -0.23 | 1.83 | 0.2 | -1.24 | -0.13 | -2.59 | -0.26 | -7.18 | -0.91 | -18.5 | -3.12 | -14.5 | -2.88 | -16.2 | -2.72 |
| FR | -5.24  | -0.80  | -4.51  | -0.69  | -5.65  | -0.77  | -11.24  | -1.28  | -5.03 | -0.78 | -6.68 | -0.8 | -2.09 | -0.25 | -0.12 | -0.01 | 3.53 | 0.49 | -1.11 | -0.21 | -6.54 | -1.45 | -3.11 | -0.58 |
| FD | -1.68  | -0.99  | -0.80  | -0.47  | 0.19  | 0.10  | 0.63  | 0.28  | 0.13 | 0.08 | 0.17 | 0.08 | 0.08 | 0.04 | -0.11 | -0.05 | 0.55 | 0.3 | 0.18 | 0.13 | 1.12 | 0.96 | 0.77 | 0.56 |
| C | 8.60  | 0.29  | 12.24  | 0.44  | -8.90  | -0.29  | -15.44  | -0.41  | -3.86 | -0.13 | -20.7 | -0.59 | -17 | -0.49 | -23.2 | -0.62 | 47.6 | 1.38 | 45.6 | 1.76 | 22.72 | 1.09 | 13.8 | 0.56 |
| $Z\_{uu}$/Z | -15.54  | -0.30  | -47.43  | -0.97  | -66.76  | -1.23  | -78.90  | -1.18  | -73.7 | -1.43 | -109 | -1.76 | -117 | -1.90 | -125 | -1.91 | -33.8 | -0.56 | -34.6 | -0.76 | -71.6 | -1.95 | -64.4 | -1.48 |
| $Z\_{dd}$/Z | 49.22  | 1.31  | 43.62  | 1.25  | 54.23  | 1.40  | 56.61  | 1.18  | -6.44 | -0.17 | 16.5 | 0.37 | 30.8 | 0.7 | 38.2 | 0.81 | -31.1 | -0.71 | -31.2 | -0.95 | -25.7 | -0.98 | 3.73 | 0.12 |
| $Y\_{uu}$/Y | 56.95  | 0.89  | 65.68  | 1.11  | 118.77  | 1.80  | 149.97  | 1.85  | 90.6 | 1.44 | 143 | 1.89 | 145 | 1.95 | 164 | 2.05 | -0.79 | -0.01 | 20.6 | 0.37 | 81.93 | 1.83 | 90.26 | 1.70 |
| $Z\_{dd}$/Z | -21.97  | -0.65  | -24.91  | -0.80  | -17.66  | -0.51  | -14.56  | -0.34  | 29.2 | 0.88 | 23.2 | 0.58 | 8.38 | 0.21 | 6.73 | 0.16 | -10.8 | -0.28 | 4.09 | 0.14 | 15.6 | 0.66 | -0.91 | -0.03 |
| MR | 12.19  | 0.95  | 8.91  | 0.75  | 15.34  | 1.16  | 20.51  | 1.26  | 11.5 | 0.91 | 24.8 | 1.64 | 22.2 | 1.49 | 24.8 | 1.55 | -8.59 | -0.58 | -15 | -1.34 | -0.77 | -0.09 | 1.34 | 0.13 |
| FR | -10.34  | -1.19  | -7.35  | -0.91  | -12.49  | -1.39  | -20.74  | -1.88  | -9.61 | -1.12 | -13.7 | -1.33 | -8.74 | -0.86 | -8.08 | -0.74 | 4.44 | 0.44 | -1.88 | -0.25 | -11.9 | -1.95 | -8.86 | -1.23 |
| FD | -2.93  | -1.51  | -1.65  | -0.92  | -0.68  | -0.34  | -0.39  | -0.16  | 0.05 | 0.02 | -0.42 | -0.18 | -0.99 | -0.44 | -1.37 | -0.56 | 0.4 | 0.18 | 0.22 | 0.13 | 0.55 | 0.41 | 0.13 | 0.08 |

**Table 7 : Correlation between Macroeconomic Performance and Monetary Policy Pattern or Effectiveness**

**Macro economic Performance and Monetary Policy Pattern**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Montery Policy Stance | Growth | Volatility of Growth | Inflation | Volatility of Inflation |
| Ratio loosing period to entire Preiod | 0.785 | 0.678 | 0.772 | 0.56 |
| Ratio tightening period to entire Period | -0.403 | -0.348 | -0.377 | -0.085 |
| Ratio consecutive hikes to entire adjustment | -0.505 | -0.372 | -0.467 | -0.229 |
| Ratio consecutive cuts to entire adjustemtn | 0.653 | 0.497 | 0.666 | 0.439 |

**Macroeconomic Performance and Monetary Policy Effectiveness**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | Period | Growth | Volatility of Growth | Inflation | Volatility of Inflation |
| Interest rate | 6 | 0.396 | 0.188 | 0.314 | 0.202 |
| 12 | 0.249 | 0.216 | 0.188 | 0.139 |
| 18 | 0.089 | 0.201 | 0.043 | 0.086 |
| 24 | 0.063 | 0.211 | -0.019 | 0.049 |
| Foreign exchange rate | 6 | -0.149 | -0.162 | -0.108 | -0.125 |
| 12 | -0.067 | -0.093 | -0.059 | -0.106 |
| 18 | -0.001 | -0.064 | -0.046 | -0.106 |
| 24 | -0.011 | -0.05 | -0.06 | -0.117 |
| Stock price | 6 | -0.335 | -0.325 | -0.327 | -0.34 |
| 12 | -0.281 | -0.257 | -0.362 | -0.349 |
| 18 | -0.291 | -0.186 | -0.356 | -0.33 |
| 24 | -0.206 | -0.121 | -0.349 | -0.31 |

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2. The interest rate is where a central bank’s short-term interest rate changes affect the financial market’s long-term interest rates. The asset price part of the process is where the prices of stocks and real estates are affected, and the foreign exchange rate is where the prices of goods and economy in general are affected. [↑](#footnote-ref-3)