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Examination of Relative Contribution of Impacts of Monetary Policies on Tehran Stock Exchange

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Abstract: The financial markets by providing liquidity, reducing transactions' cost through reduction of searching cost and lowering information cost are good place to lead people stagnant savings toward producing and providing economic companies and institutions investment. One of the most important and most popular financial markets in most countries is stock markets. The fluctuations' behavior of stock market has always been discussed and investigated. Due to the importance of stock markets in attracting great and small savings, the discussion on the factors affecting the stock market fluctuations had always been under attention. Hence, this paper intends to examine the relative contribution of impacts of monetary policies on the Tehran Stock Exchange. This research method is descriptive-survey. Since past data of companies and central bank will be used, data collection method is historical. The statistical population consists of all companies listed on Tehran Stock Exchange. Sampling method has been used is cross-cut sampling. Data obtained from cross-cut are prepared at a point of time and randomly. The selected sample is data related to price series and stock return, as well as data related to variables of the government's monetary policy from 2001-2011. SPSS software and 5 E-views software have been used in order to examine the model and analyze data in this research.The results showed coefficient variable of the government expenditures in the short term is indicative of this point that with the increase in this variable at 1% stock returns is reduced at 0.176 % with a lag. Current values and taxes' lag had a significant negative impact on nominal return of stocks. The current values of the money supply have a significant negative impact (at the critical level of 10%) on current return of stocks. Values with lag of this variable have no impact on current return of stocks. Interest rate coefficient is negative and is also consistent with the theory but not statistically significant. Another result is the positive impact of inflation on nominal return of stocks.

Key words: Economical politics, stock market, stock exchange, fluctuations, monetary policy

INTRODUCTION

Stock exchange market is as an organized and official market and official and reliable reference to attract individuals' capital and the private sector and the government in order to finance long-term investment projects. Of course, different domestic and foreign factors, such as poor management, increase of raw material prices and costs, particularly fixed cost, economic fluctuations, variety of monetary and fiscal policies of the government runs to improve the economy and many other factors threaten the stock exchange market and cause sudden fluctuations in the stock price. So, how the stock market performance is and how it interacts with these factors is very important for economic policymakers and investors.

Financial markets are among the markets affecting the economy of any country (Karim, 2004). Monetary policies refer to policies that monetary authorities affect real economy variables through changes in the money supply or changes in public expectations about future interest rate or both. The most important role of monetary policies is to control money volume and total liquidity. In fact, in this way it affects economic variables.

The way through which amount of money volume influences the stock price index can be expressed from different aspects. From the viewpoint of "real balance impact", an increase in liquidity causes imbalance in real money balance. But since, people tend to keep the balance of their real balance, they try to lead extra money volume towards buy other financial assets such as stocks. Therefore, from this viewpoint can be seen that increase of money volume increases demand and consequently increases stock price.

In Iran economy when investment risk returns due to fluctuations in macroeconomic variables, particularly

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monetary variables is changed by any causes, it can severely affect the investment options. The overall evidences indicate that investment in stock market exchange generally reacts quickly to macroeconomic changes. Obviously this is a factor that can severely affect investment in stock market exchange. This paves the ground for further expansion of underground economy and movement of capital from the financial markets to other unhealthy markets (Keshavarz, 2007). Factors affecting the stock price can be divided into two categories: domestic and foreign, domestic factors are: dividend policy, bonus stocks and stock split, the quality of financial information, management and industry. Foreign factors are: cultural factors, political-social factors, technical (technological) factors, brokers and speculators, returns of other assets and macroeconomic variables. The purpose of macroeconomic variables is GNP variables, monetary and fiscal policies, tax, inflation, interest, saving, foreign debts and the exchange rate (Bakhsh, 1996).

In recent decades the development of capital markets in developing countries has been with favorable economic growth. The stock market on the one hand is a place of collecting saving and liquidity of the private sector in order to finance investment projects. On the other hand, it is reliable and official reference that the holders of stagnant savings can seek relatively suitable and safe place for investment, and apply their funds to invest in companies. Therefore, the role of the stock market is significant in order to improve the economy of countries like Iran that are on the one hand faced with large amounts of adrift capital and on the other hand a shortage of investment resources. Therefore, understanding the factors affecting the behavior of the stock market can be considered an effective step in directing capital in Iran economy.

Literature review Ebrahimi conducted a study entitled "Examination of impact of fiscal and monetary policy on Tehran Stock Exchange returns". Seasonal time series data will be used in order to do this research. Various techniques of statistical models econometric of (VAR) and (ARDL), as well as appropriate software such as Eviews and Microfit will be used in order to perform tests and analyze the results. The research dependent variable is stock market returns. Changes in Tehran Exchange Price Index (TEPIX) are used to measure this dependent variable. Also a number of most important fiscal and monetary policies and components of the country, such as: Gross Domestic Product (GDP), inflation rate, government expenditures (as a proxy of fiscal policies), the amount of money supply (as a proxy of monetary policies), and interest rate have been considered as the model independent variables. The results of this research show that the impact of monetary policies on the stock exchange returns is statistically significant and positive at the 95% confidence level and fiscal policies are statistically negative and significant at the 95% confidence level.

Soda (2014) conducted a study entitled "impact of monetary and fiscal policy shocks on Iran stock market". The results obtained from the model estimation indicates that the money supply shock (monetary policy instrument) in short term and government expenditures shock (fiscal policy tool) in long-term explain the most fluctuations in stock price index growth.

In other words, the impact of monetary policy on stock price index is faster than the effectiveness of fiscal policy. For this reason that government spending affect by mediated on stock market means at first government spending effect on total demand and thus on consumers' income and general level of prices the stock price changes followed by. But, people can spend their available excess cash to buy assets faster by changing the money supply that stock also constitutes part of it. So, influence of monetary policy lag is shorter compared to influence of fiscal policy lag.

Engle-Granger approach and error correction model have been used to explain the relationship between the intended variables. All variables became stationary at first difference. Results indicate that government taxes and expenditures, money supply, inflation rate and interest rate have a positive, mutual and significant relationship on Iran stock returns. This means that stock market participants pay attention to the impact of fiscal and monetary policies on stock returns and consider all of these variables' information in their calculations. Saadati and Ghaderi performed an article entitled "evaluate the effect of monetary and fiscal policy on the performance of the stock market in Iran" .The aim of this study is to investigate the empirical relationship between monetary and financial policy on efficiency of the stock market in Iran by using quarterly data in the time period of Q41390-Q11377 and have been analyzed by using Auto regressive distributed lags model.

Abbasian *et al.* (2008) in a research studied "the effect of monetary policy in creating the price bubble of stock in Tehran stock exchange". Empirical studies of this issue by using of tool variables method GMM and applying the statistical data in the time interval, since April 2000 to March 2009 show that real interest rate has negative effect and production has positive but weak effect on real efficiency of the stock. Also the efficiencies of the past periods have positive feedback on the current

prices of stock that this indicates the agiotage behaviors existence and the prices deviation from their natural values.

Shahbazi and coauthors in their research en titled "monetary and financial policies and the stock market efficiency" studied the empirical evidences in Iran market. According to the results of the estimated model, current amounts of the money supply have negative effect on the current efficiency of stock but the interruptions of this variable have no effect on the current efficiency of stock. The results confirm that unlike the financial policies, the stock market activists see the monetary policies as one of the effective factors on the stock efficiency and consider the changes of these policies in their accounts.

Afonso and Sona studied the relation between the changes of financial policies and capital markets and perceived that the expense changes have positive and continuous effect on domestic gross production of America and Britain countries but in German and Italy countries this effect is positive but temporary and also has positive and permanent effect on housing prices and negative effect on the stock price in stock exchange and mixed effect on the price levels.

Alajiddeh and coauthors studied the relation between the currency rate and stock price in Australia, Canada, Japan, Switzerland and England during the time period of 1992-2005 by using of repletion test and Grenger causality test. Their results show casual relation existence from currency rate to the stock price for Canada, Switzerland and England and casual relation existence from the stock price to the currency rate for Switzerland.

Chinzra studied the uncertainty relation of economic huge variables and the stock price by using of VAR-GARCH models for South Africa. His findings show the bilateral relation existence between these variables. Also uncertainty of economic huge variables has meaningful effect on the fluctuations of the stock market.

Mourli in a research studied the relation between the stock price and currency rate in short-term and long-term for England, Japan and Switzerland during the time period of 1985-2005 by using of bounds test. The results show the long-term relationship existence between the currency rate and the stock price for mentioned countries. Also the results of estimating the error correction models suggest the positive relation between the currency rate and the stock price.

Gaun and coauthors studied the effect of economic huge variables on the index of stock exchange market of Newsland during the period of 1990-2003 by using of Youhansen collective test. Their results show that there is long-term equilibrium time relation between the model variables and the index of stock exchange price. Also, the obtained results of variance analysis show that after passing two years, variables of money supply, short-term interest rate, long-term interest rate and real gross production totally explain 71 percent of lack of equilibrium obtained from shock.

The research hypotheses:

- The index of the government expenses to domestic gross production is effective on the price and pecuniary efficiency of the stock
- The index of the government fiscal incomes to domestic gross production is effective on the price and pecuniary efficiency of the stock
- The index of real supply of money is effective on the price and pecuniary efficiency of the stock
- The index of nominal interest rate is effective on the price and pecuniary efficiency of the stock
- The index of inflation rate is effective on the price and pecuniary efficiency of the stock

MATERIALS AND METHODS

This multivariate research is multi relation and practical. In practical researches, theories, laws apply the rules and techniques which are compiled in basic researches to solve the executive and real problems. Considering that the research studies the effect of monetary policies on Iran stock market therefore the research in terms of method is descriptive-survey. The method of data collecting is historic method because the past data of the companies and Markazi bank will be used. The statistical society includes all accepted companies in Tehran stock exchange. The sectional cutting sampling method has been used. The obtained data of sectional cutting are prepared in an interval of time and randomly. Selective sample is the data related to the price series and stock efficiency and also the data related to the variables of the government monetary policies during the years of 2001-2011. For collecting the data and information, library method is used. In library part, theoretical foundations of the research are collected from Persian and Latin specialized books and journals and the research data are collected through the sample companies' data with referring to the financial statements, explanatory notes, weekly reports and stock exchange periodical which exists in the site of Tehran stock exchange. Also for collecting the variables related to monetary policies, Markazi bank site is used.

The information related to study the theoretical foundations and subject literature has been collected through library studies and internet searching and the information related to time series of total index of Tehran stock exchange has been collected through formal site of

Stock Exchange Company and related CDs. Also, the data related to the economic huge indexes (Monetary and financial policies of the government) can be extracted from the site of Markazi bank of Iran Islamic Republic. Also in order to assess the model and analyze the data of this research E-views5and SPSSprograms have been used.
In this research the relation between the monetary and financial policies and the stock efficiency will be studied by using of seasonal data. Data analysis is accomplished by using of ARDL. The used model in this research has been based on the accomplished researches in this field and it is taken from Laoupoudis study. Also the econometric frame has been considered following Pesaran and coauthors. Generally descriptive and inferential analysis and analyzing the work results constitute this part.

RESULTS

In this research for data analysis, at first each one of the data groups has been described with determining the average, mean, the most and least amount, skewness and elongation. Then, the effect of economic policies on Iran stock market has been studied.

Descriptive statistics: Table 1 shows descriptive statistics which are applied in the model.

Correlation coefficient: Table 2 shows correlation coefficient between the economic policies with price index and pecuniary efficiency of the stock during the studied period.

Table 2 describes the simple correlation of the model variables. Correlation matrix between the variables indicates that the price index and the stock pecuniary efficiency with the variables of real supply of money with correlation coefficient of 0.78, the government expenses ratio to domestic gross production with correlation coefficient of 0.08 and inflation rate with correlation coefficient of 0.25 have positive correlation; and also this index with the ratio of the government fiscal incomes to domestic gross production with correlation coefficient of -0.01 and nominal interest rate with correlation coefficient of -0.17 have negative correlation. Of course it should be considered that these correlations have been simple standards and don't reflex the dynamism between the variables completely and it is necessary that the relation between these variables to be considered by using of more creditable methods.

Table 1: Descriptive statistics of the variables

Variable	Companies numbers	Average	Mean	Maximum	Minimum	Standard deviation
NSR	81	15	7	200	-57	34
GGDP	The whole country	0	0	1	0	0
TGDP	The whole country	0	0	1	0	0
M1	The whole country	27	23	189	-146	26
R	The whole country	21	17	98	-78	18
INE	The whole country	72	60	185	26	44

Table 2: Correlation coefficient between the price index and pecuniary efficiency of the stock with economic policies

Variable	The price index and pecuniary efficiency of the stock	The ratio of government expenses index to domesti gross production	The ratio of government fiscal incomes index to domestic gross production	The index of real supply of money	The index of nominal interest rate	Inflation rate index
The price index and pecuniary efficiency of the stock	1.00	0.08	-0.012	0.78	-0.17	0.25
The ratio of government expenses index to domestic gross production		1.00	0.73	0.08	-0.21	0.18
The ratio of government fiscal incomes index to domestic gross production			1.00	-0.03	0.31	0.27
The index of real supply of money				1.00	-0.10	0.45
The index of nominal interest rate					1.00	0.29
Inflation rate index						1.00

The research accounts with Eviews software

Table 3: The results of estimating dynamic model of ARDL (1, 2, 1, 0, 0 and 0)

Variable	Coefficient	The error of estimation standard	t-statistics
Logarithm of the price index and pecuniary efficiency of the stock (-1)	0.759***	0.067	8.95
Logarithm of government expenses index to domestic gross production	0.013	0.142	0.74
Logarithm of government expenses index to domestic gross production (-1)	0.236***	0.096	3.52
Logarithm of government expenses index to domestic gross production (-2)	0.165***	0.084	4.32
Logarithm of fiscal incomes index of government to domestic gross production	-0.146	0.085	-1.74
Logarithm of fiscal incomes index of government to domestic gross production	-0.345***	0.0752	3.52
Logarithm of real supply index of money	-0.726*	0.485	-1.95
Logarithm of nominal interest rate index	-0.085	0.057	-0.25
Logarithm of inflation rate index	1.478*	0.895	2.10
c	3.895	2.185	1.52
T	0.023	0.006	1.67

***, **, * are the meaningfulness indication of related coefficient in order at level of 1, 5 and 10%

Table 4: The results of bounds test

F1 valuse	Measures	Catagory 1	Catogory 2
FII	F-statistic = 5.98	Lower bound = 2.45	Upper bound = 3.61
Fv	F-statistic = 4.15	Lower bound = 2.87	Upper bound = 4

Table 5: The results of estimating the long-term relation of model ARDL (1, 2, 1, 0, 0 and 0)

Variable	Coefficient	The error of estimation standard	t-statistics
Logarithm of government expenses index to domestic gross production	2.78***	1.25	2.85
Logarithm of government fiscal incomes index to domestic gross production	-2.45***	0.85	-3.23
Logarithm of real supply index of money	-3.74**	1.65	-1.98
The index of nominal interest rate	-0.035	0.35	-0.23
Inflation rate index	10.23	7.42	-1.37
C	23.45**	10.58	2.18
T	0.078**	0.045	2.36

***, ** are the meaningfulness indication of related coefficient in order at level of 1 and 5%

The method of the model estimation and doing the statistical tests: After doing the stability tests and with putting maximum interruption of 4 due to seasonality of data, dynamic model of ARDL (1, 2, 1, 0, 0 and 0) has been estimated through Schwartz standard and its results have been presented in Table 3. Classic assumptions were studied in estimation and their correctness was confirmed.

Hypotheses test of the research (short-term): As it is observed in Table 4, first interruption of stock efficiency has positive effect on itself and it is meaningful. First and second interruptions of government expenses have meaningful effect on the stock efficiency and with regard to the mentioned issues; the results of simultaneous meaningfulness test of interruptions coefficients of government expenses indicate that the coefficients of these interruptions are statistically meaningful with high certainty degree:

The results also indicate that current amounts and taxes with interruptions have meaningful negative effect on the stock nominal efficiency. These findings are according to the theoretical expectations, because taxes increasing prevent the investors from future investment in the stock market and will decrease the expected efficiency or the assets price. Therefore, with regard to the effect of the government expenses interruptions and taxes on the current efficiency of stock it can be said that efficiency hypothesis of Iran stock market to financial policies isn't accepted. This means that the Stock Market activists don't pay attention to the effect of financial policies on the stock efficiency, while this information can have meaningful role in determining the stock efficiency. Also the other result in this part is positive effect of inflation on the stock nominal efficiency.

The hypotheses test of the research (long-term): Now for testing the long-term relation existence, bounds test method is used. The results of this test have been mentioned in Table 4. Considering that the calculated statistic amount is more than the critical amount of upper bound at level of 25 percent, the long-term relation existence is confirmed.

Critical amounts have been determined at level of 95% by Pesaran *et al*. (2001). Indicates F-statistics related to the model with free width from origin and without process and F_v indicates F-statistics related to the model with width from origin and free process. With confirming the long-term relation existence, we estimate the long-term model related to relation 1 that the results have been shown in Table 5.

With regard to t-statistic in long-term, government expenses, taxes and money supply have meaningful effect on the stock nominal efficiency and inflation and interest rates don't have meaningful effect on it. About 1%

Table 6: The results of estimating the error correction model of ARDL (1, 2, 1, 0, 0 and 0)

Variables	Coefficient	The error of estimation standard	t-statistic
The changes of logarithm of government expenses index to domestic gross production	0.075	0.874	0.978
The changes of logarithm of government expenses index to domestic gross production (1)	-0.231***	0.074	-3.213
The changes of logarithm of government fiscal incomes index to domestic gross production	-0.214*	0.087	-1.974
The changes of logarithm of real supply index of money	-0.456*	0.412	-1.971
The changes of logarithm of nominal interest rate index	-0.006	0.514	-0.234
The changes of logarithm of inflation rate index	1.74*	0.914	1.967
C-changes	4.63	3.147	1.879
T-changes	0.018	0.009	1.658
The coefficient of error correction sentence	-0.153***	0.063	-2.562

***, **, * are the meaningfulness indication of related coefficient in order at level of 1, 5 and 10%

increase in the ratio of the government expenses in long-term leads to 3.13% increase in the stock nominal efficiency. One percent increase in taxes and real supply of money causes that averagely in long-term the stock nominal efficiency to be decreased in order 3.21 and 3.98%. The results of estimating the error correction model have been mentioned in Table 5.

According to the results of Table 6, government expenses, taxes, nominal interest rate and money supply in short-term have negative effect on the stock efficiency and have meaningful positive effect on inflation rate. The coefficient of the government expenses variable in short-term indicates this point that with increasing of this variable, the stock efficiency will be decreased one percentwith an interruption equal to 0.176 percent.

What is more important than the other things in error correction model is the coefficient of error correction sentence ECM (-1) that indicates the adjustment speed of lack of equilibrium process. As it is expected the sign of this coefficient is negative and indicates that about 16 percent of the deviations of the stock nominal efficiency index from its long-term equilibrium amounts will be disappeared after passing a period. Therefore if deviation is created in long-term relation, about 6 periods will take up till this error to be corrected that upper equilibrium speed will not be accounted.

DISCUSSION

According to the accomplished analyses, government expenses, taxes, nominal interest rate and money supply in short-term have negative effect on the stock efficiency and inflation rate has meaningful positive effect. In the following the obtained results for each hypothesis are presented separately: In explaining the results of hypothesis 1, first efficiency interruption of the stock has had positive effect on itself and it is meaningful. The coefficient of government expenses variable in short-term indicates this point that with increasing of this variable equal to one percent, the stock efficiency will be decreased with an interruption equal to 0.176. This negative effect can be due to this fact that usually great part of the government expenses is allocated to the infrastructure part that these kinds of the government expenses in long-term can help to increase the economic production and growth and with development of foreign advantages it can become the investment encourager of private part and can bring reversed effects in short-term. On the other hand, the first important effectiveness of the government expenses on the stock efficiency in short-term is a confirmation on non-efficiency of the stock market related to financial policies.

Also, the results of hypothesis 2 indicate that current amounts and taxes with interruption have meaningful negative effect on the stock nominal efficiency. These findings are according to the theoretical expectations, because increasing of the taxes prevents investors from future investmentin the stock market and will decrease the expected efficiency or the assets price. With regard to the taxes effectiveness on the stock nominal efficiency with an interruption, the stock market doesn't have efficiency related to this variable. Therefore, with regard to the effect of the government expenses interruptions and taxes on the current efficiency of the stock it can be said that the efficiency hypothesis of Iran stock market related to financial policies isn't accepted. This means that the stock market activists don't pay attention to the effect of financial policies on the stock efficiency, while this information can have meaningful role in determining the stock efficiency.

With regard to the results of third hypothesis, current amounts of money supply have meaningful negative effect (at criminal level of 10%) on current efficiency of the stock and the amounts with interruption of this variable don't have any effect on the current efficiency of the stock. In other words, the stock market activists pay attention to the changes of money supply and its effect on the stock efficiency and apply it in their accounts. According to the forth hypothesis, in spite of this fact that the coefficient of the interest rate has been negative and has also conformity with theory, but it is not statistically meaningful. These results indicate that the interruptions related to the monetary policy tools don't have any effect on current efficiency of the stock and

unlike the financial policies; the stock market activists see the monetary policies as one of the effective factors on the stock efficiency and consider the changes of these policies in their accounts. Therefore, in this relation it can be said that the hypothesis of the stock market efficiency related to monetary policies is accepted.

The other result in this part is the positive effect of inflation on the stock nominal efficiency. Also the reason of positive effect of inflation rate on the stock nominal efficiency is due to this fact that the prices increasing in short-term causes to increase the stock nominal profit, therefore with increasing of demand for the stock, the stock price and consequently the stock nominal efficiency will be increased. According to the accomplished analyses for the long-term relation existence test, with regard to this fact that the amount of calculated static is more than critical amount of upper bound at level of 95 percent, the long-term relation existence is confirmed.

With regard to t-statistic in long-term, government expenses, taxes and money supply have meaningful effect on the stock nominal efficiency and inflation rate and interest rate don't have meaningful effect on it. These findings indicate that government expenses in Iran in long-term act as the investment complementary of private part and with development of foreign advantages it becomes the investment encourager of private part and consequently causes to increase the stock efficiency. On the other hand, increasing of taxes with assumption of lack of change of government expenses will decrease the expected efficiency or assets price because prevents investors from future investment in the stock market. Negative effect of increasing of money supply on the stock nominal efficiency is interpreted in this way that in long-term with increasing of money supply, liquidity flows toward real assets market like housing that leads to high income and this causes that investors in the stock market also transfer their capital to the other parts in order to obtain higher profit and the stock price and efficiency will be also decreased with reduction of demand for the stock.

CONCLUSION

As it was also mentioned before, long-term relation existence between the variables provides the base of using the error correction model. Error correction model links short-term fluctuations of variables to long-term equilibrium amounts. These models in fact are a kind of partial adjustment models in which effective factors in short-term and the speed of approaching to long-term equilibrium amount is measured by interning Mana residue.

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