

Investigation of the Relationship between Currency Rate Fluctuations and Stock Returns in Companies Listed on the Stock Exchange

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Abstract: In this research, the relationship between currency rate fluctuations and stock returns in companies listed on the stock exchange has been investigated. Also, in this study, the effect of currency rate fluctuations, firm size, book-to-par value ratio, stock market risk premium and stock price movements on stock returns of companies listed on the stock exchange has been investigated. In order to answer the research questions, five hypotheses were formulated and 94 selected companies from among the companies listed on the Tehran Stock Exchange were studied at a 5-year interval, 2011-2016. Finally, the data was analyzed using Excel and then EVIEWS. The results of the data analysis showed that the amount of currency rate fluctuations, the firm size, the book-to-par value ratio, stock market risk premium and stock price movements affects stock returns of companies listed on the stock exchange.

Key words: Currency Rate Fluctuations, Firm Size, Book-To-Par Value Ratio, Stock Market Risk Premium, Stock Price Movements

Introduction

In each economy, there are four main markets: commodity market, labor market, money market and capital market. The commodity and labor markets are collectively the real sector of the economy and the money and capital markets are the financial sector of the economy (they are called financial markets). These two sectors are like the wheels of a bicycle that need to move together in order to lead to economic growth and development. These markets affect each other (Mashayekh and Haji Moradkhani, 2009). The financial sector of each country provides the financing needed to expand the real economic activities and generally includes the money market and financial markets. One of the important criteria in evaluating financial markets in different countries is the stock price index which can be used as an important tool in examining the internal and external feedbacks in the stock exchange and is the basis for investors' decision. Since the supply and trading of shares of institutions and manufacturing and economic units takes place in the stock market, therefore, the stock price index has a widely and crucial use, both from the perspective of investors for investing in specific companies and as an economic index from a macroeconomic viewpoint (Azimi et al., 2010). According to the classic economics theories, if the efficient sectors of the economy expand, they will be

able to attract additional productive factors from inefficient sectors. In order to achieve efficiency in the community, companies and projects that are efficient and profitable should be differentiated from unprofitable companies and projects. With an efficient mechanism in the capital market, this can easily be done. In an economy in which its capital market operates soundly, on the one hand, the volume of investment increases and, on the other hand, the quality and trueness of investments will increase. Under such a framework, it is also possible to increase economic growth (Saeidi and Akbari, 2010).

The achievement of long-term and continuous economic growth requires the optimal allocation of financial resources at the national level, and this is not easily possible without the help of financial markets, especially the massive efficient capital market. In this regard, the stock exchange, as one of the main elements of the capital market, plays an important role in raising capital and transferring it to individuals and entities that need funds. Basically, the success of the stock exchange and its attractiveness for potential investors can be achieved by increasing the returns and stock prices of companies listed on the stock exchange (Yahyazadehfar et al., 2012).

Some economic analysts believe that stock markets and stock exchange in developing countries have little positive

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effect on economic growth; however, recent evidence suggests that the stock market could have a profound impact on economic growth. These markets can generate long-term capital for profitable investments by collecting liquidity of the community, while providing short-term financing for needy units. In addition to the stock market, banks are also a major source of financing. In developing countries, because of the lack of awareness of firm executives regarding useful tools such as stock exchange, the major amount of capital required is acquired through the banking system. Because borrowing from the banking system has a severe inflationary impact, this approach has a detrimental effect on such economies (Musharafi, 2005).

The currency rate or external value of any currency reflects the economic conditions of that country in general and the purchasing power of currency (internal costs and prices relative to other currencies) in particular. A currency is externally weak if in a fix regime, the government cannot keep it fix and its value falls in a floating regime. Strong money with rising value belongs to a country whose independent foreign receipts are more than its foreign payments (Tamaddon Jahromi, 1985). After the collapse of the Bretton Woods systems, the change of the economies of countries from the fixed currency rate system to the floating currency rate system can strengthen the flow of trade in a country. The basis of this discussion was that the unexpected currency rate fluctuations as a motive for the next year's production, often provides higher profits, but these unexpected changes may reduce the level of trades by changing the domestic sales market (Dimitrios and Nicolas, 2014).

Typically, it is difficult to determine precisely the currency rate in a floating currency rate system due to the future balance of the market by supply and demand; so any change in the currency rate will affect predictions of buyers and sellers (Hu and Motwani, 2014). Any economic activity that is dependent on the currency rate is, thus, subject to fluctuations and consequently uncertainty due to it; hence, currency rate fluctuations, followed by uncertainties resulting from it, just like any kind of risk, can cause economic activity to retard (Castillo, 2014).

In general, countries are divided into two categories in dealing with the foreign sector (most notably in theory rather than in practice): some of them (countries with a floating currency rate system) do not believe in interference in this sector and state that by not controlling market factors, currency rate will be determined by supply and demand and there is no need for the government to enter the currency market; in contrast, there are countries (countries with managed fixed and floating currency rate system) which, given their weak internal and external structure, as well as the dependence of domestic production and consumption on foreign money for providing the facilities, justify the government's interference for policy-making in this field.

Countries with weak structure that cannot give all the power of setting the currency rate to the market look for coordinated policies which will systematically balance their accounts both internally and externally. For their foreign accounts, they seek an optimal currency rate that can, according to the domestic economic conditions, strengthen the process of moving towards balance in both internal and external area (Ebrahimi, 1993). Developing countries such as Iran have a high degree of instability of macroeconomic variables. In these countries, currency rates, stock prices, and other volatilities, in turn, create an uncertain environment for investors and make investors unable to decide more easily and certainly on future investments and possibly incur them considerable losses. Therefore, in order to increase investment and consequently to achieve long-term and continuous economic growth, paying attention to the capital market, especially the stock exchange, as one of the main elements of the capital market and a factor affecting the stock price index, such as currency rate and uncertainty resulting from it, is of particular importance (Heydari et al. 2010).

Considering the importance of the stock market, investigation of the factors affecting stock exchanges, currency rate and its fluctuations is important. Currency rate is important to take into account since it affects the price of external and internal goods. When the value of the domestic currency of a country increases compared to foreign currencies, the value of exports will increase, which will result in improved cash flow for companies that export goods and services. Conversely, if the value of a country's domestic currency decreases, the value of exports as well as cash flows for companies that export goods and services will decrease, and thereby, their stock value, followed by the Stock Price Index will decrease. In the case of companies that are active in the field of import of goods and services, when the value of the domestic currency of a country increases compared to foreign currencies, the prices of imported goods and services will be higher, which will lead to a decrease in the cash flows of these companies and cause a decrease in the value of their shares, followed by a drop in the stock price index of the stock market. Conversely, if the value of a country's domestic currency is reduced compared to foreign currencies, the price of imported goods and services will decrease, and it will improve cash flows for companies that import goods and services, which will increase their stocks value and subsequently improve the stock price index in the stock market (Liu, 2008)

However, considering the importance of currency rate fluctuations and stock returns, and the scientific role these two variables play in stock exchange and realization of its objectives, this study aimed to investigate the relationship between currency rate fluctuations and stock in companies listed on the Tehran Stock Exchange and to provide an appropriate model; in fact, the paradigm of studying the

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relationship between currency rate fluctuations and stock returns in companies listed on the stock exchange is one of the management challenges in the stock market. This research attempts to investigate the relationship between these variables and present a suitable model and suggestions for it.

Literature Review

Changes due to Currency Rate and its Relation to Stock Return

Boubaker and Nadia (2013) investigated the impact of long-term memory on the structural dependence between a pair of stock returns and a pair of currency rate returns. The results showed that the existence of long-term memory affects the structural dependence between financial returns as well as effective boundaries.

Moore and Wang (2013) investigated the linkage between the currency rate and the stock market. The research results showed that this relationship depends on various parameters such as the degree of openness of the economy and the development of the country.

Bashir et al. (2012) studied that the stock market of emerging economies and their currency rate. They showed that this relationship passes through the channel of oil, and the effect of the currency rate on the stock market is different in emerging economies between oil importing and exporting countries.

In general, a review of the literature related to the topic shows that a predetermined relationship cannot be determined for the currency rate and stock market relationship.

Chinzara (2011) examined the relationship between uncertainty of macroeconomic variables and stock prices using the VAR-GARCH model in South Africa. The findings indicated that there is a two-way relationship between these variables. Also, the uncertainty of macroeconomic variables has a significant effect on fluctuations in the stock market.

Alagidede et al. (2010) examined the relationship between currency rate and stock prices in Australia, Canada, Japan, Switzerland and the United Kingdom during the period of 1992-2005 using the Accumulation Test and Granger causality test. Their results showed that there is a causal relationship in such a way that the currency rate affects stock prices in Canada, Switzerland and the United Kingdom, and the stock prices affects currency rate in Switzerland.

Subair and Salihu (2010) examined the effects of currency rate fluctuations on the stock market in Nigeria during the period 1981-2007, using the GARCH model and error correction model. The results showed that currency rate fluctuations have a negative and significant effect on stock prices, while interest rates and inflation rate have no long-term relationship with the stock market.

Morley (2009) studied the relationship between stock prices and currency rates in the short- and long-term in UK, Japan, and Switzerland during the 1985-2005 period using the Bounds Test. Results showed the existence of long-term relationship between currency rate and stock prices for those countries. Also, the results of estimations of error correction models suggest a positive relationship between currency rate and stock price.

Rostami and Sotoudehnia (2016) investigated the risk arising from the effect of currency rate changes on stock returns in companies listed on Tehran Stock Exchange using regression. The results of the research indicated that there is a negative and significant relationship between the risk arising from changes in currency rates and stock returns.

Firozia and Jamal Manesh (2016) investigated the effect of inflation, the currency rate and liquidity volume on the stock returns of metal and chemical companies active in Tehran Stock Exchange. The results showed that the inflation variable has a significant and negative effect on stock returns and the currency rate variable has a direct and positive effect on the dependent variable of stock returns.

Farahi and Mahdavi Rad (2016) investigated the relationship between the currency rate fluctuations and the stock market prices in Iran's petrochemical industry. The results indicated that the currency rate fluctuations are positively correlated with the stock market price in the petrochemical industry. Also, based on the results of the research, the oil price has a negative effect on the stock market price in the petrochemical industry. According to the results of the research, the inflation rate also has a positive effect on the stock market price of petrochemical industry, and the interest rate also negatively and significantly affects the petrochemical industry stock price.

Najafi (2015) investigated the relationship between currency rate fluctuations and common stock returns in the industries listed on the Tehran Stock Exchange. The results indicated that there is no significant correlation between currency rate fluctuations and common stock returns in the industries listed on Tehran Stock Exchange. This study showed the negative effect of the simultaneous currency rate fluctuations on the stock returns of these industries.

Damirchi and Moshdeie (2015) investigated the effects of currency rate fluctuations on stock returns of exporting companies listed on the stock exchange. The results of the research showed that currency rate fluctuations in the short run have a positive and significant effect on stock returns; and inflation and the index of exported goods price have a negative effect on stock returns.

Jafari Samimi et al. (2015) studied the effect of currency rate fluctuations on stock returns in Tehran Stock Exchange during the period from 2001 to 2010. For this purpose, they focused on GARCH model and multivariate regression using monthly data. The results indicated that the real

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currency rate fluctuations, in line with the theoretical expectations, have negative effect on stock returns.

Heydarpour and Hariri Parsa (2016) investigated the relationship between the ratio of profits fluctuations, the quality of accruals and stock returns in companies listed on the Tehran Stock Exchange during 2011-2015. The results showed that the ratio of profit fluctuations has a direct and significant relationship with the rate of return on assets and annual stock returns. The results of control variables indicated that the firm size is directly related to stock returns and the financial leverage has an inverse relationship with stock returns. Profit fluctuations reflect the volatility of profit in the considered financial period. The highly fluctuating profits of the company, which may be due to market changes and the type of management, or etc., cast doubts on managers in making financial decisions and using opportunities for the company. On the other hand, the fluctuation in profits reduces the trust of shareholders in managers and forces them to make more cautious financial decisions, which in turn reduces the return on assets and the annual returns of the company.

Research Hypotheses

H1: Currency rate fluctuations affect stock returns of companies listed on stock exchange.

H2: The stock market risk premium affects stock returns of companies listed on stock exchange.

H3: The firm size affects stock returns of companies listed on stock exchange.

H4: The ratio of the book-to-stock market value affects stock returns of companies listed on stock exchange.

H5: The stock price movement affects stock returns of companies listed on stock exchange.

Research Methodology

In this research, we use the historical data and the multivariable regression method to test the hypothesis. Statistical analysis is performed using Eviews. The statistical population includes companies listed on Tehran Stock Exchange. Also, a 5-year period from the beginning of 2011 to the end of 2016 is considered. In this research, based on the nature of the research and the existence of some inconsistencies among the companies listed on the Tehran Stock Exchange, a systematic (targeted) sampling method is used. The following terms are considered to determine the statistical population of the research:

1. The company should not be in the form of banks, financial institutions, investing firms, holdings or leasing, because the nature of their particular activities and the relationships of the components studied in this research are different for such institutions and cannot be generalized to others;

2- The company listed on stock exchange by the end of 2011 should not be removed from the stock exchange during 2011-2016.

3- For comparability, the fiscal year ends on March 19th each year.

4. The company should not change the fiscal year during 2011-2016 and the company's financial statements and information should be available for that period.

5. Information of the company on indexes of currency rate fluctuations, stock returns and other research variables should be fully available.

According to the above set of criteria, 94 companies were qualified as statistical samples. To test the hypothesis, the regression model is used as follows:

$$R_{i,t} - R_{f,t} = \alpha + \beta_1 \Delta FX_t + \beta_2 MRP_t + \beta_3 SMB_t + \beta_4 HML_t + \beta_5 UMD_t + \epsilon_{i,t}$$

where $R_{i,t}$ is the actual stock returns of the company i in the financial period t , $R_{f,t}$ is the monthly risk-free return, ΔFX_t is currency rate fluctuations, MRP_t is stock market risk premium in the financial period t , SMB_t is market size factor, HML_t is the ratio of the book-to-stock market value, UMD_t is the book price movement and $\epsilon_{i,t}$ is model errors.

Research Variables

Stock Returns (Dependent Variable)

$$R_{i,t} - R_{f,t}$$

$R_{i,t}$ is the actual stock returns of the company i in the financial period t

$$R_{i,t} = \left\{ (1+\alpha) P_{i,t} - P_{i,t-1} - \alpha(1000) + (1+\alpha) D_{i,t} \right\} / P_{i,t-1} + \alpha(1000)$$

where $P_{i,t}$ is stock price of the company i at the end of the period t , $P_{i,t-1}$ is stock price of the company i at the beginning of the period t , $D_{i,t}$ is the interest of the ownership of the share of company i in the period t (cash profit per share), α is the percentage of bonus shares of company and $R_{f,t}$ is monthly risk-free return.

Currency Rate Fluctuations (Independent Variable)

ΔFX_t : Currency rate fluctuations are calculated using the following equation:

$$\Delta FX_t = (FX_t + FX_{t-1}) / FX_{t-1}$$

where FX_t is currency rate in period t and FX_{t-1} is currency rate in period $t-1$.

Stock Market Risk Premium (Independent Variable)

MRP_t in the financial period t is defined as the excessive return of the market portfolio compared to the risk-free returns rate. This variable can be calculated using the following equation:

$$MRP_t = R_{mt} - R_{ft}$$

where R_{mt} is market return in month t (in this study the price index and cash returns i.e. total return index of Tehran stock

exchange (TEDPIX) is used to calculate market returns) which can be calculated through the following equation:

$$R_{mt} = (\text{TEDPIX}_t - \text{TEDPIX}_{t-1}) / \text{TEDPIX}_{t-1}$$

Where TEDPIX_t is returns of the stock price index and cash profit of exchange at the end of the month t and TEDPIX_{t-1} is return of the stock price index and cash profit at the beginning of month t .

R_{ft} is risk-free returns, which are considered as monthly on account interest rates of equity bonds.

Market Size Factor (Independent Variable)

SMB_t : Based on the Fama-French method, at first, all sample firms are sorted at the end of each month from small to large according to the end of the year market value and divided into two categories according to their mean. The first group includes companies with small market value (size). The second group includes companies with large market value (size). In the next step, regardless of the market value, all sample firms are divided into three categories based on the book value to end of the year market value ratio: the first group includes 30% of the companies with the highest ratio of book-to-market value; the second group includes 40% of the companies with a modest book-to-the market value; and the third group includes 30% of the companies with lowest ratio of book-to-market value. Then, using the overlap between the two categories categorized based on the size and the three categories categorized based on the ratio of book-to-market value, six categories will be created as follows:

S/L: Companies with small size and a lower ratio of book-to-market value.

S/M: Companies with small size and a mean ratio of book-to-market value.

S/H: Companies with small size and a high ratio of book-to-market value.

B/L: Companies with big size and a lower ratio of book-to-market value.

B/M: Companies with big size and a mean ratio of book-to-market value.

B/H: Companies with big size and a high ratio of book-to-market value.

Finally, the weighted return of each of the 6 above categories will be calculated using the following equation:

$$WR_{p,t} = \sum R_{i,t} W_{i,t}$$

$WR_{p,t}$ is the weighted return of stock portfolio p at month t , and $W_{i,t}$ is the weight i in month t , which is obtained from the following equation:

$$W_{i,t} = (Q_{i,t} P_{i,t}) / \sum Q_{i,t} P_{i,t}$$

$Q_{i,t}$ is the number of shares of the company i at the end of month t and $P_{i,t}$ is the market price value of each share of the company i at the end of month t .

$$\text{SMB} = (\text{S/L} + \text{S/M} + \text{S/H}) / 3 - (\text{B/L} + \text{B/M} + \text{B/H}) / 3$$

The above operation will be repeated for the calculation of the SMB from the beginning of 2011 to the end of 2016 at the end of each month.

The Ratio of Book-to-Stock Market Value (Independent Variable)

HML_t is the ratio of book value to stock market value. For this purpose, using the Fama-French method, at the end of each month, all sample companies are sorted from the highest to the lowest based on the ratio of book value to the end of the year market value, and divided into two categories according to their mean. The first group includes companies with a high book-to-market value ratio. The second group includes companies with a low book-to-market value ratio.

In the next step, regardless of the ratio of book value to market value, all sample companies are sorted according to the end of the year market value from small to large and divided into two categories according to their mean. The first category includes companies with the lowest market value and the second group includes companies with the highest market value. Then, using the overlap between the categories based on the ratio of the book-to-market value and the categories based on the market value, four categories will be created as follows:

H/S: Companies with high ratio of book-to-market value and small size.

H/B: Companies with high ratio of book-to-market value and big size.

L/S: Companies with low ratio of book-to-market value and small size.

L/B: Companies with low ratio of book-to-market value and big size.

Finally, the weighted return of each of the four categories is calculated using the following equation:

$$WR_{p,t} = \sum R_{i,t} W_{i,t}$$

$WR_{p,t}$ is weighted return of stock portfolio p at month t and $W_{i,t}$ is weight i in month t , which is obtained from the following equation.

And HML will be calculated using the following equation:

$$\text{HML} = (\text{H/S} + \text{H/B}) / 2 - (\text{L/S} + \text{L/B}) / 2$$

The above operation will be repeated for the calculation of HML from the beginning of 2011 to the end of 2016 at the end of each month.

Stock Price Movement Factor (Independent Variable)

UMD_t is the stock price movement factor and to calculate it, from the beginning of 2011 to the end of 2016, at the end of each month, the companies in the sample will be sorted from the highest returns to the lowest returns based on the average return of stock 1 in Excel and divided into

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categories with almost equal numbers of shares. The first category (the winning stock portfolio) includes the shares of the companies with the highest average stock return in the last month; the second category (medium stock portfolio) includes stocks of companies with average stock returns in the last month; and the third category (losing stock portfolio) includes stocks of companies with lowest average stock returns in the last month. Then, stock returns will be calculated for the winning and losing stock portfolios, and ultimately, subtracting the stock returns of the losing stock portfolio from the stock returns of the winning stock portfolio, non-common stock returns of the winning stock portfolio compared to the stock returns of the losing stock portfolio will be achieved per month.

Excessive Stock Return

$$EXRET_{i,t} = R_{i,t} - E(R_{i,t})$$

$EXRET_{i,t}$ is the percentage of excessive return on month t for the stock of company i and $R_{i,t}$ is the monthly real stock return of company i .

Data Analysis

In this section, the data analysis is started by testing the normal distribution for the variables; then, using the regression analysis, the model will be estimated and the hypotheses will be tested. Data analysis was performed using EVIEWS 9.

Table 1: Jarque and Bera Test

Variable	Symbol	Jarque and Bera Statistic	Sig. level
Stock Return	$R_{i,t} - R_{ft}$	2.25	0.325
Currency Rate Fluctuations	ΔFX	8.75	0.013
Stock Market Risk Premium	MRP	0.11	0.947
Firm Size	SMB	11.79	0.003
Book-to-Stock-Market-Value Ratio	HML	1.19	0.551
Stock Price	UMD	497.4	0.000

In Table 1, we examined the normality of the variables using the Jarque-Bera test. In the above table, the significance level greater than 0.05 indicates the normality of the variable.

The usual methods for estimating the coefficients of the model are used based on the assumption that the variables are reliable. Hence, before using these variables, it is necessary to ensure that they are reliable. If the variables are not reliable (i.e. they have a single root), then T and chi-square test will not be valid. In such a situation, the critical

quantities provided by T and chi-square tests are not the appropriate critical quantities for testing. In these tests, the H_0 represents unreliability and the opposite hypothesis represents reliability. Many statistical tests are used for this purpose. To solve the problem and to carry out a test of reliability, Dickey Fuller (1979) proposed statistics with a finite distribution and their critical quantities are obtained and tabulated for the single root test by simulation methods. In the present study, the generalized Dickey Fuller Single Root Test is used to evaluate is the variables reliability. The H_0 in the Dickey Fuller test is the existence of single root (unreliability). Table 2 shows the results of this test.

Table 2: Analysis of Variables Reliability

Variable	Symbol	Test Statistics	Sig. level	Result
Stock Return	$R_{i,t} - R_{ft}$	-9.09	0.000	Reliable
Currency Rate Fluctuations	ΔFX	-7.03	0.000	Reliable
Stock Market Risk Premium	MRP	-9.03	0.000	Reliable
Firm Size	SMB	-10.53	0.000	Reliable
Book-to-Stock-Market-Value Ratio	HML	-9.29	0.000	Reliable
Stock Price	UMD	-6.26	0.000	Reliable

As the results of the single root test shows, since the significance level of all variables is less than 0.05, then the H_0 , i.e. the existence of single root (unreliability) is rejected; so that all variables are reliable.

Also, for analyzing and estimating the overall model, panel analysis was used. The reason for using this method is the nature of the data. Since in panel analysis, data is collected in a cross-sectional fashion, the independence of the observations is not maintained due to the existence of several observations for each company in different years; and these observations are interdependent. In other words, in this analysis, the number of data is the number of companies multiplied by the number of years. Before the model is estimated, the tests must be carried out first. The first test to carry out is hypothesis testing. Given the assumption that the coefficients of the variables are fixed, is the y-intercept constant for all years? First, the Limer-F-F and Hausman and VIF tests were performed.

In order to determine whether the use of panel data will be efficient in estimating the model, the Limer-Ftest was carried out; and to determine whether the panel data method requires using the fixed or random effect approach, the Hassman test was carried out. The random effects method

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assumes that the fixed component determines if the various sections are randomly distributed among different units. Introducing these two methods, this question arises: which method should be used in practice. To this end, the Hausman test statistics is used. The VIF statistic is used to check the collinearity of the variables. The results of the Limer-F and Hausman tests are given in Table 3.

Table 3: Collinearity Results of Limer-F and Hausman and VIF Tests

Model	Test	Value of Statistics	Sig. Level
Panel	Limer-F	3.525	0.022
Fixed Effects	Hausman	2.364	0.034
Lack of Collinearity	VIF	1.940	-

According to Table 3, since the significance level of the two tests is less than 0.05 for all the hypotheses, it is concluded that the data are panel data at the 5% level and the approach to be used in the estimations is the fixed effect method. Also due to the amount of VIF, which is less than 5, there is no significant collinearity between the variables.

To analyze the hypotheses, the following regression model analysis is used:

$$R_{i,t} - R_{f,t} = \beta_0 + \beta_1 \Delta FX_t + \beta_2 MRP_t + \beta_3 SMB_t + \beta_4 HML_t + \beta_5 UMD_t$$

Table 4: Regression Model Fit

Variable	Symbol	Coefficient	T-statistic	Sig. level
Fixed Value	β_0	4.46	2.41	0.004
Currency Rate Fluctuations	ΔFX	-0.48	-2.08	0.008
Stock Market Risk Premium	MRP	0.54	3.40	0.005
Firm Size	SMB	0.32	2.06	0.006
Book-to-Stock-Market-Value Ratio	HML	0.67	3.46	0.000
Stock Price	UMD	0.22	1.98	0.012
Durbin-Watson statistic	1.97			
Coefficient of Determination	0.67			
Adjusted R-squared (R2)	0.58			
Fisher F statistic	3.84			
Significance level	0.022			

Therefore, the regression model is written as follows:

$$R_{i,t} - R_{f,t} = 4.67 - 0.48 \Delta FX_t + 0.54 MRP_t + 0.32 SMB_t + 0.67 HML_t + 0.22 UMD_t$$

Research Findings

According to Table 4, since the coefficient of currency rate fluctuations is equal to -0.48 and its significance level is 0.008 (less than 0.05), it is concluded that currency rate fluctuations affect the regression model. This means that currency rate fluctuations affect stock returns of companies listed on stock exchange. Therefore, H1 is confirmed.

According to Table 4, because coefficient of stock market risk premium is equal to 0.54 and its significance level is 0.005 (less than 0.05), it is concluded that the stock market risk premium affects the regression model. This means that the stock market risk premium affects the stock return of companies listed on stock exchange. Therefore, H2 is confirmed.

According to Table 4, since the coefficient of firm size is 0.32 and its significance level is 0.006 (less than 0.05), it is concluded that the firm size affects the regression model. That is, the firm size affects the stock return of companies listed on stock exchange. Then, H3 is approved.

According to Table 4, since the ratio of the book value to the stock market value is equal to 0.67 and its significance level is 0.000 (less than 0.05), it is concluded that the ratio of book value to the stock market value of the companies affects the regression model. This means that the ratio of book value to the stock market value of companies affects the stock return of companies listed on stock exchange. Therefore, H4 is confirmed.

According to table 4, because the stock price movement is equal to 0.22 and its significance level is 0.122 (less than 0.05), it is concluded that the factor of the stock price movement affects the regression model. This means that the stock price movement affects the stock return of companies listed on stock exchange. Therefore, H5 is confirmed.

Final Conclusion

The present study has led to the understanding of a new and important dimension of the relationship between fluctuations in currency rates and stock returns through studying the link between currency rate fluctuations and stock returns in companies listed on the stock exchange. The results of statistical analysis of the data collected on 94 companies listed on the Tehran Stock Exchange in 2011-2016 indicates that in general, the amount of currency rate fluctuations, the firm size, the ratio of book-to-par-value of stocks, stock market risk premium and stock price movements affect stock returns of companies listed on stock exchange. In other words, the results of the research show that the higher is the currency rate fluctuations, the lower is the stock return in that industry and product, and the less is the currency rate fluctuations, the stock return is higher in that industry and product. That is, currency rate fluctuations reversely affect stock returns.

Therefore, the currency rate is considered as an important and a key variable in economic models, and since this

variable has a significant impact on the real and fiscal sector of the economy, then, policy recommendations for this variable require specific sensitivity and precision; however, using the results of this research following suggestions can be made:

- Considering that one of the tasks of stock market authorities is to determine the stock price of the companies listed on the stock exchange, and this price should reflect all factors affecting the stock exchange; therefore, all economic factors such as currency and price fluctuations should be considered in pricings. Therefore, it is recommended to consider the fluctuations of currency rates and prices when pricing stocks of companies.

- Investors active in the stock market as well as new investors should understand the short-term and long-term effects of currency rate and price changes on the stock price index, and do not consider sudden changes in the stock price index as the criterion for assessing companies profitability and choosing new stocks.

- According to research findings that there is a relationship between fluctuations of currency rate and stock returns, it is suggested the Stock and Securities Exchange Organization as the regulatory authority of the capital market carefully examine these fluctuations and, in this regard, effectively manage and control possible shocks to the capital market.

References

1. Ebrahimi, Ahmad (1993). *Investigating the phenomenon of inappropriate regulation of the real currency rate in Iran*. Tehran: Faculty of Economics, University of Tehran.
2. Tamaddon Jahromi, Mohammad Hassan (1985). *International finance, international monetary and financial relations*. Tehran: Asr-e-Jadid Publications.
3. Heydari, Hasan; Parvin, Soheila; Shakeri, Aba; and Feizi Yengejah, Soleyman (2010). *Gross Domestic Product Fluctuations and Economic Growth in Iran: Observations Based on GARCH Models*. Iranian Journal of Economic Research, 43:189-210.
4. Heidarpour, Farzaneh, and Hariri Parsa, Nazila (2016). *A Study of the Relationship between the Ratio of profit Fluctuations, the Quality of Accruals and Stock Returns in Companies Listed on the Tehran Stock Exchange*. Sixth International Conference on Accounting and Management with a New Research Science Approach.
5. Jafar Samimi, Ahmad; Kazemi Zarumi, Hasan; Riahi Wazvari, Keyvan and Rahmanian, Moslem (2014). *Currency rate fluctuations and stock returns in Iran*. Accounting and Auditing Research, 22: 4-17.
6. Rostami, Ne'mat and Sotoudeh Nia, Mohammad (2016). Investigating the effect of the risk arising from the currency rate changes on stock returns of equity. The 2nd International Conference on Management, Accounting and Economics.
7. Saeedi, Ali and Akbar, Nurdin (2010), *The Relationship of Economic Value Added and Adjusted Value Added based on Inflation with Stock Returns and Price*, Journal of Economic Research, No. 7, pp. 145-172.
8. Farahi, Masoomeh and Mahdavi Rad, Hamid (2016). *A Survey on the Relationship between Currency rate Fluctuations and Stock Market Prices in Iran's Petrochemical Industries*. Conference on Management and Humanities Research in Iran.
9. Firozia, Alireza and Jamal Manesh, Arash (2016). *A Survey on the Relationship between Currency rate and Inflation Rate and its Impact on Stock Returns of Companies Listed on Tehran Stock Exchange*. Second National Conference on Modern Management Science and Socio-Cultural Planning in Iran.
10. Mashayekh, Shahnaz and Haji Moradkhani, Hadiseh (2009), *Investigating the Relationship of Inflation Rate and Guaranteed Interest Rate and Gold Return with Iran's Stock Market*. Journal of Accounting and Auditing. Iranian Accounting Society. No. 4, pp. 130-147.
11. Moshdeie, Mojtaba, Dehdar, Farhad and Damirchi, Mahsa (2014). *The effect of currency rate fluctuations on stock returns of companies listed on Tehran Stock Exchange*. Master Thesis, Islamic Azad University, Shahroud Branch, Faculty of Literature and Humanities.
12. Musharraf, Gelaleh (2005), *Investigating the Causes of Fluctuations in the Stock Market (Stock Market Position in Macroeconomics)*. Tadbir Monthly Journal. No. 160 and 161.
13. Najafi, Afrouz, (2015). *Currency Rate Fluctuations and its Effect on Stock Returns in 10 Industries in Iran*. Third International Accounting and Management Conference.
14. Yahyazadehfar, Mahmoud, Larimi, Jafar and Faramarzi, Roxana (2012). *Investigating the Effect of Oil Price and Income Changes on the Real Stock Returns of Companies Listed on Tehran Stock Exchange*. Journal of Accounting and Auditing Studies. Iranian Accounting Society. No. 2, pp. 63-44.
15. Alagidede, P., T. Panagiotidis & X. Zhang. (2010). Causal Relationship Between Stock Price and Exchange Rates, Discussion Paper NO.1.ISSN 1791 -3144.

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16. Basher, A., Haug, A. & Sadorsky, P. (2012), Oil prices, exchange rates and emerging stock markets, *Energy Economics*, 34, 227 -240.
17. Boubaker, H. & N. SGHAIER. (2013). Portfolio Optimization in The Presence of Dependent Financial Return With Long Memory: A Copula Based Approach. *Journal of Banking & finance*: 361 -377.
18. Castillo. C. (2014). Inflation targeting and Exchange Rate Volatility Smoothing: A Two-Target, Two- Instrument Approach, *Economic Modelling* 43: 330-345.
19. Chinzara, Z., (2011), “Macroeconomic Uncertainty and Conditional Stock Market Volatility in South Africa”, *South African Journal of Economics*, 79(1), pp.27-49.
20. Dimitrios S. & N. Tsounis. (2014). Does Exchange Rate Variation Effect African Trade Flows? *Procedia Economics and Finance* 14 565 – 574.
21. Hu. X. & j.g. Motwani. (2014). Minimizing Downside Risks For Global Sourcing Under price – Sensitive Stochastic Demand, Exchange Rate Uncertainties, and Supplier Capacity Constraints, *Int. J. Production Economics* 147:398-409.
22. Liu, M. H., (2008),”Analysis of the Long –term Relationship between Macroeconomic Variables and the Chinese Stock Market Using Heteroscedastic Cointegration”, *Journal of Managerial Finance*, Vol. 34, PP. 11, PP. 744-755.
23. Moore, T., & Wang, P., (2013), Dynamic Linkage between real exchange rates and stock prices: Evidence from developed and emerging Asian markets, *International Review of Economics and Finance*, Article in press.
24. Morley, B. (2009). Exchange rates and Stock in the Long Run and Short Run, Working Paper. NO5/09.
25. Subair, K., Salihu, O.M. (2010), “Exchange Rate Volatility and the Stock Market: The Nigerian Experience” .
www.aabi.com/OC2010Manuscripts/OC10113.PDF