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ABSTRACT

The exchange rate and the inflation rate have been always regarded as the variables influencing the index of the stock price in the valid stock exchanges around the world. Since the effects of such variables can have outcomes, such as the changes in the income distribution and well being abundance in any society, the investigation and analysis of such effects are of high importance. The fluctuations of the exchange rate did not have big effects on the performance of the exchange companies in earlier years; however, in recent years, it had a great effect on the profit margins of the national stock companies. Therefore, this study investigated the relationship between the changes in the exchange rate and total index of the stock price and also the effect of the exchange rate on the type of industry and the size of the companies active in Tehran stock exchange. For this reason, the study tried to answer the following question: how will be the relationship between the changes in the exchange rate and total index of the stock price, industry type, and the size of the companies active in Tehran Stock Exchange? According to the performed tests in the study, it was found that there was a significant positive relationship between the exchange rate and index of the automotive industry in Tehran stock exchange. It means that with the increased dollars rate, automotive and chemical indicators would increase and drug index would decrease. The results of the study indicated that there was a positive relationship between the changes in the exchange rate and the value; that is, with the increased exchange rate, the index of Tehran Stock Exchange would increase. Of course, these results were compatible with the results of the first hypothesis because the total index is the weighted average prices and or the same market value of the stock. Therefore, with the increase in the exchange rate, the value of Tehran stock exchange would increase. Multivariate regression estimation was used to determine the synchronous effect of the variables on each other. The results of the multivariate regression estimation showed a high R2 in the regression and significance of the entire regression. These results indicated that changes in three variables of the index of materials industry and the pharmaceutical products, index of automotive industry and the parts, and the chemical industry index had a great ability to predict the changes in the variable of total index.

KEYWORDS: Changes in the exchange rate, Tehran Stock Exchange, Stock price index, Exchange rate and the type of industry, Size of companies

Despite nearly three decades activities, Tehran Stock Exchange has seen great fluctuations for different reasons and has experienced different periods of boom and depression. From the late 60s to mid-70s, the trend of stock price index has been always rising. From the second half of 1375 and early 1378, thid trend was descending but again it has moved up after this period.

With the start of the 80s, the stock index was initially encountered losses and its growth trend has been continued. Totally, we witnessed an increasing trend in the stock price index of Tehran Stock Exchange. This study would examine the effect of the fluctuations in the exchange rate of the companies in Tehran Stock Exchange. Therefore, if there is no reasonable relationship between this market and other sectors, problems and shortcomings will happen in its performance. Depression and boom of the exchange markets can not only influence the national economy but also the global economy (1). Access to the necessary resources for the economic activities through the mobilization of available saving resources in the national economy is the feature of a common movement towards sustainable economic development. In recent years, the capital market and development of the financial markets had a strong relationship with the economic growth of the countries. Countries, such as the US, Japan, England, South Korea, Singapore, and so forth have utilized such financial markets and especially, securities exchange for economic growth and development (2).

The security market and the exchange market are always considered as the sensitive sectors of the financial market. These two markets are quickly influenced by the fluctuations and commercial cycles in the economy and reflect the economic changes quickly. However, the turbulence in one or both markets results in concerns among the policymakers of market. It was said that the price of securities in the security market should reflect all information, including historical and confidential information. There are some markets, in which the price of securities reflects all published information. The precondition of an efficient security

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market is timely access to the qualitative and quantitative information. Therefore, the degree and quality of the effect of the published information on the securities must be investigated and analyzed in order to determine the efficiency of the security exchange. Such information includes the indices of industry, audited financial statements in the companies, the future plans of the companies and political and social agents, macro economy, and so forth.

The fluctuation in the exchange rate and its deviation from the equilibrium path is one of the most important macroeconomic variables that influence various aspects of different parts of economy. The exchange rate determines the value of each unit of money in a country (for example, the Iranian rial) for foreign currency. In other words, it shows the value of the foreign currency according to the unit of the national currency. For instance, if every US dollar is ten thousands of the Iranian rial it means that ten thousands of Iranian currency is equal to one unit of the US currency. The foreign currency market is one of the largest markets in the world. Based on some speculations, about 2.3 trillion dollars per day is traded in this market. The official currency in Iran, with which the government does its international transactions, is US dollar. Over the past two years, we witnessed a domino-like exchange rate fluctuation that affects other areas of the economy. Gold market and currency was transformed after such fluctuations. Then, the automotive market has been influenced by such fluctuations. Aviation companies suffered from irreparable damages and fluctuations affected both micro and macro fundamental commodities. Therefore, we realize that the high exchange rate and low value could influence public life in every stratum and position.

Actual rate exchange of any country is considered as one of the crucial and fundamental indices in determining the level of international competition and explaining the internal conditions that govern that country’s economy. On the one hand, turbulence and fluctuation in the performance of such index indicate imbalances in the economy and on the other hand, is caused by the greater instability. Iran’s economy is no exception to this rule and the exchange rate is one of the determinants of production and economic growth that will produce opposite effects on the production from different paths.

The exchange rate and the inflation rate have been always regarded as the variables influencing the index of the stock price in the valid stock exchanges around the world. Since the effects of such variables can have outcomes, such as the changes in the income distribution and well being abundance in any society, the investigation and analysis of such effects are of high importance. The fluctuation in the exchange rate did not have much effect on the performance of the exchange companies in earlier years; however, it had great effects on the profit margin of the national exchange companies in recent years (3).

Since the fluctuations in the price of exchange and gold in the country has created a direct effect on the bascke of householde goods and also decision making on how to allocate capital among community members and businesses, especially financial markets, it is necessary to investigate different aspects influencing the financial market and identify the function and pattern governing them. Although, there have been several studies in this area in recent years, given the importance of the exchange rate in financial decisions and the investors’ decisions, this study would examine the relationship between the companies active in Tehran Exchange Stock and changes in the exchange rate and total index of the stock price, the type of industry and size of the companies active in Tehran Exchange Stock. For this reason, the study tried to answer the following question: how will be the relationship between the changes in the exchange rate and total index of the stock price, industry type, and the size of the companies active in Tehran Stock Exchange? Therefore, the relationship between the variables would be evaluated and measured by the statistical tests after the review of the literature.

The objectives of the study

This study aimed to find satisfactory answers for reasonable questions through scientific methods. The first problem that the researcher encountered was to find the right way to do the study. Therefoe, the researcher could easily begin the study when he understood the purpose of the intended study.

The main objective

To study the relationship between the changes in the exchange rate and total index of the stock price, the type of the industry, and size of the companies in Tehran stock exchange.

The secondary objectives

To study the relationship positive relationship between the changes in the exchange rate and total index of the stock price in Tehran stock exchange,
To study the degree of the relationship between the changes in the exchange rate and the type of the industry,

To study the degree of the relationship between the changes and size of the companies active in Tehran stock exchange.

**The hypotheses of the study**

**The main hypothesis**

It seems that there is a significant relationship between the changes in the exchange rate and total index of the stock price, the type of the industry, and size of the companies active in Tehran stock exchange.

**The subhypotheses**

It seems that there is a significant relationship between the changes in the exchange rate in the market and the type of the industry.

It seems that there is a significant relationship between the changes in the exchange rate in the market and the size of the companies.

**REVIEW OF THE RELATED LITERATURE**

Mirhashemi Dehnavi (1390) studied the relationship between the fluctuations in the exchange rate and the index of securities exchange in Iran during 1379-1389. He examined the relationship between the exchange rate and its changes and total index of the stock price of Iran Stock Exchange during July 1379 to December 1389. He used auto-regressive (VAR) for three variables of the liquidity control, the house price index, and the coin price. The results of the response functions to the shock indicated that incidence of a standard deviation of shock in the exchange price had a positive effect in the first four periods and then had a negative effect on the stock price index (4).

Mostafa (1391) investigated the dynamic relationship between the exchange rate and the indices of Tehran stocks through multivariate GARCH model. The indices included total indices, financial indices, industry index, price index, cash returns index, and 50 top companies. Moreover, he examined the effect of fluctuations and the shocks between the gold rate and each of those indices (5).

Sarfaraz (1384) conducted a study on the factors influencing the exchange price and the presentation of a prediction model based on the fuzzy neural networks. Then, he investigated the historical importance of gold in the International Finance, supply and demand of the gold, the relationship between dollar and gold, the factors influencing the fluctuations in the price of gold. He employed the fuzzy neural networks based on Taaagy- Sugeno in order to predict the exchange price. The comparison of the results of the prediction with the fuzzy neural networks and the regression methods indicated that fuzzy neural networks outperformed the regression methods in terms of the prediction of the exchange price (6).

Samadi (2007) examined the degree of the effectiveness of the stock price index in Tehran Stock Exchange due to the world prices of oil and exchange. He used the monthly data of 1997-2006 and econometric GARCH model. The results indicated that the index of the world price of oil influenced the price index of Tehran Stock Exchange more than the index of the world price of gold (7).

Delavari and Rahmati (2009) studied the variability in the fluctuations of the exchange price in Iran through the GARCH models and dealt with the changes in the exchange price and modeling the fluctuations of the returns and its conditional variance. Among these factors, the equality rate of dollar to Rial had the greatest impact on the conditional variance and oil world price of oil was the second factor that had the greatest impact on the conditional variance. In addition, the phenomenon called leverage effects was found in Iran Exchange Market; that is, the good news results in the future further fluctuations of the same size than the bad news in Iran Exchange Market (8).

Forouzesh (2011) examined the sensitivity of the stock price to the changes in the value of other substitute assets (e.g., gold, house, bank deposits, and exchange). He found that despite three decades activities, Tehran Stock Exchange has encountered many fluctuations for different reasons. He aimed to investigate the presence or lack of the significant relationship between the capital movements and changes in the price of bank deposits, the exchange and coin markets, housing, and the stock market based on portfolio theory. Forouzesh examined the effects on the above-mentioned cases by the use of the portfolio theory and vector self-explanation method. The results showed that an increasing shock in gold prices in the short-term resulted in decrease in the stock price index and had a positive effect in the long-term. Therefore, the shock response function of the stock price to the increased shock in the exchange rate, increased bank
interest rate, and the housing price index led to the reduction in the stock price. However, the results of the variance analysis indicated that the changes in the price of the substitute assets explained just nearly 9% of the changes in the stock price (9).

In her study on the effect of the mass behavior of the investors on the variability in the price of the future contracts of gold coins in Iran Merchant Stock, Shahini (2011) stated that extensive studies have been done on the knowledge of the behavioral problems of the investors in popular stock exchanges of the world in recent years that could influence the performance of the capital market. Financial-behavioral is a new approach in the financial markets, which appeared in reaction to the problems faced by the traditional paradigm. In the capital markets, we usually witness behaviors of some investors that are not justifiable by the modern financial methods. The mass behavior is one of the behavioral methods among the investors, which is viewed as an important discussion in the financial-behavioral. This study investigated and evaluated the presence of a mass behavior between the investors and its effect on the variability in the price of the future contracts of gold coins from December, 1387 to January, 1390 (10).

In another study on the relationship between the price fluctuation and size of the transaction and the number of the accrual situations in the future contracts of gold coins in Iran Mercant Stock, Salehpour (2011) found that there was a significant positive relationship between the price fluctuation and the expected and unexpected size of the transactions of future contracts of gold coins. However, a significant negative relationship existed between the price fluctuation and the number of the expected and unexpected accrual situations (11).

Rahimpour (2011) studied the effect of the price fluctuation limit on the changes and fluctuations in the exchange rate and the price. He stated that the securities exchange and derivative securities used mechanisms to control the market emotions and reduce the risk in the clearance room. One of these mechanisms was the use of the price fluctuation limits that allowed for transactions in a specific range with the minimum and maximum permissible price. Previous researches have questioned the efficiency of this method to control the market. Some assumptions were made that violated the proper performance of such a solution. This study investigated the assumptions that included: delay in the price detection, super-response, the effect of the absorption and generalizability of the fluctuations (12).

In a study on the effect of the political variables on the variability of the return of total exchange index in Tehran Stock Exchange, Sharifi (2011) estimated the effects of such variables on the variability through auto-regressive conditional heterogenous variance models or GARCH family, including GARCH-M, TGARCH or threshold GARCH and EGARCH or exponential GARCH. The results of the estimated models suggested of the presence of a GARCH model in the daily return of total index. Before holding the election, elections had a significant opposite effect and the political risk had a significant direct effect after the announcement of the election results. This indicated the increase in the fluctuation of uncertainty and risk in this period. The news on the foreign politics had a significant direct effect that indicated the increase in the political risk and fluctuation in the market after publishing the related news. The presence of the leverage effect and the calendar effects on the fluctuations in the daily returns of total index of Tehran Stock Exchange was also confirmed in this study (13).

Rostami (2009) studied the effect of the monetary variables on total index of the stocks price in Tehran Stock Exchange. Given the importance of the capital market in the economic growth and development and the importance of the monetary variables in the exchange market, it was tried to examine the relationship between these variables and the studied variables, including total index of the stock price, the oil price, inflation, and the real exchange rate on a monthly basis during 1376-1386. After doing the diagnostic tests and ensuring the reliability of data, the data were estimated by the methods of vector auto-regressive and vector self-explanation with the extensive breaks (14).

In another study on total index of Tehran Stock Exchange in a form of FISTAR model, Ghiasinezhad (2011) stated that the main purpose of his study was to examine total index of Tehran Stock Exchange with regard to the characteristics, such as long-term memory and non-linearity in the intended time series. The data included the monthly data of total index in Tehran Stock Exchange from 06/1376 to 10/1390. FISTAR models, which were first introduced by Van Dyjgeck in 2002, were used in this study. The model was developed by programming in MATLAB software that is the transfer function of the exponential state. Therefore, it caused the FISTAR model to transform into FIESTAR. The statistical results indicated that total index of the exchange had a long-term memory
according to the obtained differential factor (0.47). Moreover, it manifested a nonlinear trend due to the asymmetry in coping with the fluctuations so that the speed of adjustment in a nonlinear model is slower than the linear model (15).

Mohajer (2009) studied the effect of the macroeconomic monetary and real variables on total index of the exchange price of Tehran Stock Exchange. He stated that the financial markets are regarded as the markets influencing the economy of any country. Since the fluctuations in the macroeconomic variables (the real and monetary variables) influenced the capital market and the securities exchange (as the main element of the capital market in Iran) this study aimed to describe the relationship of total index of the stock price with the macroeconomic variables (16).

In a study on the “disclosure of the conditional and non-conditional exchange rate”, Chype and Mazouta (2013) investigated the relationships between the fluctuations in the exchange rate and the value of the companies. The data were collected from 1973-2005. The results of the study showed that the fluctuations in the exchange rate depended on the financial conditions and the macroeconomic variables (17).

Garagedara (2012) examined the effect of the fluctuations in the exchange return rate on the regional commercial changes in the countries of Southeast Asia. According to the results of the study, the majority of the transactions were influenced by the exchange price. Therefore, the countries that enjoyed the stability of the exchange rate had the greater stability in the transactions in the region (18).

Taylor et al. (2012) dealt with the effect of the exchange rate on the stocks return and the role of the fluctuations in the exchange rate in the stocks return in England Stock Exchange. They investigated the data related to 2001 to 2011. The results indicated that there was a significant positive relationship between the variables of the study (19).

METHODOLOGY

In any research, the nature, objectives, and scope of the study must be determined in order to discover the realities through the rules, tools, and valid methods. The study is a process, through which the researchers try to test their hypotheses via the scientific processing of the data. The present study is an applied research because the results of the hypotheses-testing can be used by the securities exchange organizations, universities, educational institutes, the university researchers, and individual and institutional investors in order to identify the behavioral problems of the investors and make appropriate decisions under different conditions and situations of the companies admitted in the stock exchange.

Population of the study was the companies admitted in Tehran Stock Exchange from the financial years 1388 to 1391. The automotive, pharmaceutical, and chemical industries were selected as the statistical sample to estimate the size of the sample and sampling.

Through the monthly data of the above-mentioned variables during the interval of April 1388 to March 1391, this study investigated and analyzed the effect of the real exchange rate and the shocks of these variables in the long-term and short-term on the company's active in Tehran Stock Exchange. Therefore, the intended pattern was estimated and analyzed by the vector auto-regressive technique and the investigation of the short-term and long-term relationship between the variables of the model. Novin Rahavard software was employed to collect the raw information and then Excel 2010 and EViews 7 were used to do the estimations.

RESULTS

The data used in the present study was based on a monthly interval. Table 1 shows the symbols used for the variables of the study.

<table>
<thead>
<tr>
<th>Row</th>
<th>The used symbols</th>
<th>The definition of the variables symbols</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>R_\text{index}</td>
<td>Total index of Tehran Stock Exchange</td>
</tr>
<tr>
<td>2</td>
<td>R Shimaie</td>
<td>The stock index of the chemical companies admitted in Tehran Stock Exchange</td>
</tr>
<tr>
<td>3</td>
<td>R Khodro</td>
<td>The stock index of the automotive companies admitted in Tehran Stock Exchange</td>
</tr>
<tr>
<td>4</td>
<td>R Daru</td>
<td>The stock index of the pharmaceutical companies admitted in Tehran Stock Exchange</td>
</tr>
<tr>
<td>5</td>
<td>Size</td>
<td>Size (the value of the stock market of the companies admitted in Tehran Stock Exchange)</td>
</tr>
<tr>
<td>6</td>
<td>ArzA</td>
<td>Changes in the exchange rate</td>
</tr>
</tbody>
</table>

R Index: total index is the mean stocks of the companies admitted in Tehran Stock Exchange. It includes the price and dividends of the available companies that have been weighted according to the market value. Therefore, total index means the price index and cash profit that is termed TEDPIX.

RShimaie: the index of the chemical industry; the mean stock price of the companies admitted in
Tehran Stock Exchange and is classified in the industry of chemical materials and products. This index includes the price and dividends of the available companies in this group and as the total index is weighted according to the market value.

RKhadro: the index of the automotive industry; the mean stock price of the companies admitted in Tehran Stock Exchange and is classified in the automotive industry and construction of the parts. This index includes the price and dividends of the available companies in this group and as the total index is weighted according to the market value.

RDaru: the index of the pharmaceutical industry; the mean stock price of the companies admitted in Tehran Stock Exchange and is classified in the industry of pharmaceutical materials and products. This index includes the price and dividends of the available companies in this group and as the total index is weighted according to the market value.

Table 2: The descriptive statistics of total indices, the indices of the pharmaceutical products, the automotive industry and the construction of the parts, and the chemical products and materials

<table>
<thead>
<tr>
<th>Description</th>
<th>Changes in total index</th>
<th>Changes in the automotive industry and the construction of the parts</th>
<th>Changes in the pharmaceutical products</th>
<th>Changes in the chemical products and materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.03</td>
<td>0.02</td>
<td>0.03</td>
<td>0.05</td>
</tr>
<tr>
<td>Median</td>
<td>0.03</td>
<td>0.02</td>
<td>0.03</td>
<td>0.05</td>
</tr>
<tr>
<td>Maximum</td>
<td>0.15</td>
<td>0.37</td>
<td>0.15</td>
<td>0.20</td>
</tr>
<tr>
<td>Minimum</td>
<td>-0.08</td>
<td>-0.18</td>
<td>-0.07</td>
<td>-0.07</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>0.06</td>
<td>0.10</td>
<td>0.06</td>
<td>0.07</td>
</tr>
</tbody>
</table>

As seen in Table 2, the mean and median of each index are equal to each other; that is, the data were normally distributed and therefore the first condition of the regression was met. However, Jarque-Bera test was used to approve the normality of the data. This test is a statistical test for determination of the type of the data distribution. The null hypothesis of this test is the normality of data and the opposite hypothesis is the abnormality of the data. Table 3 shows the results of the test and its probability.

Table 3: Testing the normality of data

<table>
<thead>
<tr>
<th>Changes in total index</th>
<th>Changes in the index of automotive industry and construction of the parts</th>
<th>Changes in the index of pharmaceutical products</th>
<th>Changes in the index of chemical materials and products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jarque-Bera Statistics</td>
<td>1.57</td>
<td>13.27</td>
<td>2.22</td>
</tr>
<tr>
<td>p-value</td>
<td>0.456</td>
<td>0.161</td>
<td>0.329</td>
</tr>
</tbody>
</table>

The results of the hypotheses will be studied below.

The equality test of two population means was used to investigate the first hypothesis of the study based on the significant relationship between the changes in the exchange rate in the market and total index of the stock price in the Stock Exchange. Table 4 shows the results of this test.
Table 4: The results of the equality of means for investigation of the first hypothesis of the study

<table>
<thead>
<tr>
<th>Method</th>
<th>Difference</th>
<th>Degree of freedom (df)</th>
<th>(Value)</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>t-test</td>
<td>0.007</td>
<td>94</td>
<td>-0.619</td>
<td>0.05</td>
</tr>
</tbody>
</table>

Table 4 shows the results of the differences in the mean changes in the exchange rate and the mean changes in total index. The differences in the means were compared to zero. If the differences were significantly negative, the mean changes in the exchange rate would be greater than the mean changes in total index and if this difference were significantly positive, the mean changes in total index would be lower than the mean changes in the exchange rate. According to Table 4, the mean difference of the changes in total index and the exchange rate is equal to 0.7%. Given the t-statistic value (-0.619) and the p-value (lower than 0.05), the first hypothesis and its claim were accepted. Therefore, it could be stated that changes in the exchange rate in the market had a significant relationship with total index of the stock price in the Stock Exchange.

The degree of explanation and R2 were estimated by the regression equation according to the significance relationship between the changes in the exchange rate and total index of the stock price in the Stock Exchange. Table 5 shows the results of the regression equation.

Table 5: The results of the regression equation

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Coefficient</th>
<th>R-squared</th>
<th>(Value)</th>
<th>Prob(F-statistic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in the</td>
<td>0.13</td>
<td>0.35</td>
<td>0.744</td>
<td>0.0460</td>
</tr>
<tr>
<td>exchange rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dependent variable: changes in total index

As seen in Table 5, for any change in the exchange rate, total index would change by 0.13. R² coefficient of this model, which showed the degree of explanation of the changes in the exchange rate in the market to the changes in total index in the Stock Exchange, was equal to 0.35 and it could be nearly said that the changes in the exchange rate had high ability for the explanation of the changes in total index of the stock price in the Stock Exchange. On the one hand, F-statistic, which is a statistic for correctness of the estimated regression, was equal to 0.046 that showed the correctness of the estimated regression. In total, according to the results of the hypothesis-testing and the estimated regression, the following hypothesis was accepted: there is a significance relationship between the changes in the exchange rate in the market and the changes in total index of the stock price in the Stock Exchange.

The equality test of two population means was used to investigate the second hypothesis of the study based on the significant relationship between the changes in the exchange rate with the stock price in Tehran Stock Exchange and the type of industry. Table 6 shows the results of this test.

Table 6: The results of the man equality for the investigation of the second hypothesis of the study

<table>
<thead>
<tr>
<th>Method</th>
<th>Difference</th>
<th>Degree of freedom (df)</th>
<th>(Value)</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>t-test</td>
<td>0.011</td>
<td>94</td>
<td>-0.678</td>
<td>0.04991</td>
</tr>
</tbody>
</table>

Table 6 shows the results of the differences in the mean changes in the exchange rate and the mean changes in the index of automotive industry. The differences in the means were compared to zero. If the differences were significantly negative, the mean changes in the exchange rate would be greater than the mean changes in the index of automotive industry and if this difference were significantly positive, the mean changes in the index of automotive industry would be lower than the mean changes in the exchange rate.

According to Table 6, the mean difference of the changes in the index of automotive industry and the exchange rate is equal to 0.11%. Given the t-statistic value (-0.678) and the p-value (lower than 0.05), the first hypothesis and its claim were accepted. Therefore, it could be stated that changes in the exchange rate in the market had a significant relationship with the index of automotive industry in the Stock Exchange.

The degree of explanation and R2 were estimated by the regression equation according to the significance relationship between the changes in the exchange rate and the index of automotive industry in the Stock Exchange. Table 7 shows the results of the regression equation.
As seen in Table 7, for any change in the exchange rate, the independent variable, which showed the degree of explanation of the changes in the index of automotive industry in the Stock Exchange, was equal to 0.43 and it could be nearly said that the changes in the exchange rate had high ability for the explanation of the changes in the index of size of the company in the Stock Exchange. On the one hand, the F-statistic, which is a statistic for correctness of the estimated regression, was equal to 0.005 that showed the correctness of the estimated regression. In total, according to the results of the hypothesis-testing and the significance relationship between the changes in the exchange rate in the market and the changes in the index of automotive industry in the Stock Exchange.

Table 8: The results of the man equality for the investigation of the second hypothesis of the study

<table>
<thead>
<tr>
<th>Method</th>
<th>Difference</th>
<th>Degree of freedom (df)</th>
<th>(Value)</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>t-test</td>
<td>0.005</td>
<td>94</td>
<td>0.2856</td>
<td>0.007</td>
</tr>
</tbody>
</table>

Table 8 shows the results of the differences in the mean changes in the exchange rate and the mean changes in the size of the company. The differences in the means were compared to zero. If the differences were significantly negative, the mean changes in the exchange rate would be greater than the mean changes in the index of the size of the company and if this difference were significantly positive, the mean changes in the index of the size of the company would be lower than the mean changes in the exchange rate. According to Table 8, the mean difference of the changes in the index of size of the company and the exchange rate is equal to 0.5%. Given the t-statistic value (0.2856) and the p-value (lower than 0.05), the first hypothesis and its claim were accepted. Therefore, it could be stated that changes in the exchange rate in the market had a significant relationship with the index of size of the company in the Stock Exchange.

The degree of explanation and R^2 were estimated by the regression equation according to the significance relationship between the changes in the exchange rate and the index of size of the company in the Stock Exchange. Table 9 shows the results of the regression equation.

Table 9: The results of the regression equation

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Coefficient</th>
<th>R-squared</th>
<th>(Value)</th>
<th>Prob(F-statistic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in the exchange rate</td>
<td>0.21</td>
<td>0.39</td>
<td>0.749</td>
<td>0.0457</td>
</tr>
</tbody>
</table>

Dependent variable: changes in the size of the company

As seen in Table 9, for any change in the exchange rate, the index of the size of the company would change by 0.21. R^2 coefficient of this model, which showed the degree of explanation of the changes in the exchange rate in the market to the changes in the index the size of the company in the Stock Exchange, was equal to 0.39 and it could be nearly said that the changes in the exchange rate had high ability for the explanation of the changes in the index of size of the company in the Stock Exchange. On the one hand, F-statistic, which is a statistic for correctness of the estimated regression, was equal to 0.0457 that showed the correctness of the estimated regression. In total, according to the results of the hypothesis-testing and the estimated regression, the following hypothesis was accepted: there is a significance relationship between the changes in the exchange rate in the market and the changes in the index of size of the company in the Stock Exchange. Table 10 shows the results of the estimated regression among independent variable of the changes in total index and dependent variables of the changes in the index of pharmaceutical industry, automotive industry, materials industry, and chemical industry. Coefficients of each independent variable indicated the degree of its effectiveness for the changes in dependent variable. Moreover, significance statistics of the regression (F-statistic) and its probability indicated the significance of the multivariate estimated
regression. R2 coefficient, which shows the ability of explanation of independent variables against dependent variables, was equal to 0.97 that confirmed the ability of the regression.

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Coefficient</th>
<th>R2</th>
<th>F-statistic</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in the pharmaceutical industry index</td>
<td>0.931</td>
<td>0.97</td>
<td>51.49</td>
<td>0.000</td>
</tr>
<tr>
<td>Changes in the automotive industry index</td>
<td>0.007</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changes in the chemical industry index</td>
<td>0.035</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant C</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dependent variable: total index

DISCUSSION AND CONCLUSION

This study investigated the relationship between the changes in the exchange rate as independent variable and the variables of the changes in total index, changes in the index of automotive industry and construction of the parts, the chemical materials and products, and the changes in the index of the pharmaceutical products as dependent variables. It was found that there was a significant positive relationship between the changes in the exchange rate and the index of Tehran Stock Exchange. It means that with the increased exchange rate, the index of Tehran Stock Exchange has been increased. The results of the study are compatible with the results reported by Ghalibaf (1381). Ghalibaf studied the relationship between the stocks return of Tehran Stock Exchange and the exchange rate for the interval 1375 to 1380. The variables of return (due to the change in the stock price index of the companies), percentage of the changes in the exchange rate, and the stocks return of the market index were selected on a six month basis. His results indicated that the percentage of the changes in the exchange rate had a negative effect on the stocks return; however, the percentage of the changes in the exchange rate with a time break had a positive effect on the stocks return of the companies. In addition, the results of the present study indicated that there was a significant positive relationship between the changes in the exchange rate and the index of the automotive industry in Tehran Stock Exchange. It means that with the increased dollar rate, the index of automobile and chemical products have been increased. On the contrary, the index of pharmaceutical products would be decreased. These results are compatible with Barazande’s (1376) study. Using information on the variables of the industries price index in Tehran Stock Exchange and variables, such as the exchange rate, the price index of the vehicles and housing index for the interval 1369 to 1376, Barazande dealt with the effect of the macroeconomic variables on the stock price index. He used the vector auto-explanation method to analyze the intended data and demonstrated that the exchange had a little effect on the changes in the industry index. This result indicated that disorders and fluctuations of the exchange market are not strongly generalizable to the stocks market. In addition, it was found that there was a positive relationship between the changes in the exchange rate and the value. It means that with the increased level of the exchange rate, the index of Tehran Stock Exchange would be increased. Of course, these results are compatible with the results of the first hypothesis because total index is the mean weighted prices or the same value of the stocks market. Therefore, with the increased exchange rate, the value of Tehran Stock Exchange would be increased.

Multivariate regression estimation was used to determine the synchronous effect of the variables on each other. The coefficients of the variables, their direction, statistics, and the probability of significance were presented. The results of the multivariate regression showed a high R2 in the regression and significance of the entire regression. These results indicated that changes in three variables of the index of materials industry and the pharmaceutical materials and products, index of automotive industry and the parts, and the chemical materials and products index had a great ability to predict the changes in the variable of total index.
According to the results of the study, it is recommended to conduct the study in another different interval. Moreover, the hypothesis-testing for other industries, such as the refinery industry, cement industry, and investigation of the changes in the exchange rates on the price index and cash profit are other suggestions for the future researches.

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