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Full Length Research Paper

A study of the relation between free float rate and stock yield rate: Some Iranian perspective

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The aim of this study is to review the relation between free float stock rate and stock yield rate of the listed companies in Tehran Stock Exchange. This research is semi-experimental. In this research, the independent variant is the free float stock percentage of the companies, while the dependent variant is the stock yield rate of the companies. The overall purpose of this study is for investors and stock exchange companies to discover the relation between free float stock and stock yield rate of the stock exchange companies in different amplitudes of free float stock and various industries, and make an awareness decision according to the result of this research. This research was carried out from 2005 to 2009 in Tehran Stock Exchange. Finally, the research result shows that there is no relation between free float stock and stock yield rate of the companies; although, this relation is different in various amplitudes of the free float stock.

Key words: Free float stock, stock yield, index, investment, Tehran Stock Exchange.

INTRODUCTION

Nowadays, one of the important economical sections in every country is equity market. Equity market has a close relation with the economical structure of a country, and its weak and strong points can be considered as a sign of the economical situation in the country (Salehi and Biglar, 2009). The most economical scientists believe that forming equity is the most important factor in economical promotion. Economical promotion in civilized world is dependent on the activities of the stock exchange and equity market. Equity market, in the form of financial market, is the incidence place of supply and demand for long- and medium-term financial sources.

The most equity suppliers are individual savers, legal members having saved or surplus finance, organizations and credit institutions and government. This market leads as one of the centers providing safe equity payments and people liquidity by functionaries and financial middle men towards productive long-term and commercial equity (Gholizadeh, 2006).

According to this research, about 41% of the people living in civilized countries have straight investment in stock, 20% have straight ownership in stock and 34% in an indirect form partake in the total investments in the world. Although this statistics is below 20%, this process is increasing, and when we consider the investment in the interest free loan boxes, we have 54% (Aghaei and Mokhtarian, 2006).

Research problem

One of the effective factors in the assessment of the situation of equity markets is looking toward the indexes that are measured in these markets (Salehi, 2008). Indexes are a mirror reflector of the market situation and a way for measuring the market function or industry department. The index that is designed correctly plays an important role in the market. The most important part in index calculation is: what stock or what part of it is calculated in the index? In general, in traditional calculation method, the index on "total value" has been

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calculated according to the level average method of the price. The coefficient of every stock has been harmonized with the total market value of the stock in index. Many indexes have been calculated with this method in a long period. New vicissitude in the field of coefficient nomination for use in index depends on the calculation of the market value that is adjusted for the percentage of the free float stock. When there are a few stocks for transaction, if we multiply the total stock in the index, the result will have an effect on the prices. Of course, index makers produce different indexes and these indexes have various definitions for free float stock (Salehi and Rostami, 2009). The people who explain index are the big companies' financial analysts that are doing calculations all over the world, but none of the indexes nowadays are being calculated in Tehran stock exchange market. Moreover, the calculation that will be used to implement the measurement of the capitalists' yield will not be considered as the amount of the free float stock. The merit of using the free float stock coefficient in comparison with using the total value coefficient of the market is that capitalists get more vivid image of the company stock percentage, that is, the transaction subject and the real amount that the stock can deal with. Of course, the variation of the index calculation method has created some changes on the seller and buyer's behavior. For instance, the companies that have salient equity in a condition that the major part of their equity is in the authority of the government, or people who are not determined to sell them in a new index calculation will encounter this reality that their importance decreases in the index (Salehi and Abedini, 2009). Instead, the companies that have a petty role in the index provided have some changes in the index and their importance and weight increase in the index. On the other hand, the study is aware of the fact that one important factor that has a qualified effect is the created yield amount for capitalists.

The questions here are: Is there a meaningful relation between free float stock and yield of this stock? Also, can the study use a component from the free float stock to prospect yield stock?

Theoretical issues

Free float stock definition

Free float stock is some percentage of the equity of a company that is available to capitalists in the stock exchange market and is able to deal without any restriction. Free float stock amount is the rest of the stock number deducted from the total stock of a company that cannot be dealt with. This definition was represented for the first time by Salomon Smith Barney Global Equity Index in 1989. Free float stock is not composed of that part of stock related to the government, but to the company stock holders' managers that are not ready to sell their stock in any way.

Index definition

It is a representative of the various homogenous quantities that shows the amount and swings aspects according to a base number in a standard time (Ide, 2001).

Index of every stock exchange is the demonstrator of the equity market situation and economical situation of a country, like thermometer, and it is very important. Popular indexes used in and out of the country for measuring the amount of the free float stock consist of: MSCI – FTSE – DJGI – SWIS EXCHANGE – DEUSCH BOURSE – BORSA ITALIAN and SandP – MEDIYA BANCA – MIB, which are extracted from the "Stock Market Indexes Weighted With Free Float" (www.mbres.it). Also, in Tehran, the bourse multi-indexes calculations available to the public are: (1) Index of the total price; (2) the industries' index; (3) Index of the 50 companies that are more active; (4) index of the price and pecuniary yield; and (5) index of the pecuniary yield (Tehran bourse organization site: www.irbourse.com).

Yield definition

Yield is the proportion of the total loss resulting from a standard investment according to the investment amount used for acquiring this loss that was consumed at the first period. Yield usually consists of two parts, namely: receivable interest and equity interest (detriment).

LITERATURE REVIEW

In a research that was implemented by Chan et al. (2002) with the title "Free float and market liquidity" in Hong Kong stock exchange in 2000, the relation between float stock and liquidity market was evaluated after the interference of the government in Hong Kong stock market. Hong Kong government interfered in the stock market in August 1998 (14 to 28th August) and bought more than 118 billion Hong Kong dollars, and then supplied 7.3% of its stock into the market. The authors with the assessment of the information in two periods: first, from January to June 1998 (before government interference) and secondly, from January to June 1999 (after government interference), draw a conclusion that government interference in stock exchange market caused the free float stock deduction and then resulted to a decrease in the transactions volume of retail stocks and an increase in the liquidity that was at a standstill in the market.

Numann and Voetmann (2001) conducted a study with

a total review in the world stock exchange market and discovered that the adjustment of the companies' stock index in companies which have a low free float coefficient will result to loss of deals and a slump of stock price in the market, and vice versa. Consequently, in companies with high coefficient of free float, investors' behavior will result to changes in demand in the companies' stock. On the other hand, a lot of people who know the index very well revise their indexes after doing the free float in price index and evacuate their properties from the company with low free float to get more free float from other countries.

Abde (2003), in an article titled "Free float and base volume nomination", assessed Iran market index. He expresses that in a country where the major parts of the stock have been imprisoned in governmental and semi governmental institutions authority, the free stock amount that cannot be dealt with is restricted. The index that represents the market total value and does not represent the free float conception cannot show the market demands. Therefore, there is no reason for a little part of the stock which has a few free float stock to give a price reflection all over the market with effects on the index, but because of the technical restriction of Tehran Stock calculation motor, this possibility may be spared from bourse organization which can do the calculation quickly in a short period and design a new stock index to perform it.

Since the calculation of the free float in companies has been accepted in bourse, experts need to work for a long time. For adjustment of a more suitable index, the experts are supposed to use a coefficient of the "base volume" temporarily as a viewpoint in the index. Base volume is seen in the minimum numbers of a deal which form a change in the share price of the index. However, this substitution is not necessarily qualified for free float calculation, but it can illustrate the market situation for investors in a short time, paying more attention to the precise calculation of the free float stock.

Mehranfar (2005), in a research titled "The points about base volume and a suggestion presentation", perused the free float role in base volume calculation. At the first part of this article, he expressed the base volume calculation in a recent method and mentioned that the companies' free float did not have any effect on the base volume calculation in the recent method and thus, 20% of the coefficient was applied in all the companies. Mehranfar believes that the use of the free float role in base volume may be more effective in rate calculation at the end of the day and secondly on the market index. As a result of this, he expresses a relation in which free float percentage have a reverse relation with base volume; thus, if the company's free float percent is more, the management of the companies stock price will be more convenient. Mehranfar believes that these stockholders' method can use the high percent of the companies' free float and criterion as a fundamental value for stock in decision making.

Objectives of the study

A qualified equity market can play an important role in sources specification and desirable equity of the investors in an economy and cause efflorescence in that economy. Iran as a developing country with potential sources can use this market to arrive at their development goals completely, but it is clear that according to the production structure, there is no competition and irregularities in the systematic and unsystematic obstacles in this market. In addition, equity illustrates this reality that this market turnover has encountered several swings. These swings will result to investors' confidence loss and finally cause an equity exit.

Moreover, if these swings are found in other rival markets, this act will shock the country production. Undoubtedly, one of the important solutions to the equity market development problem is the proposition of a qualified situation for people's attendance in this market and a creation of a background for absorbing the retail equities and people's savings in this market. In this research, a trial has been made to help the investors and investment companies get an awareness of investment by analyzing the relation between free float amount and stockholders' yield, and also evaluate a new aspect of the equity market that cause an increase in the market yield via this way. So, the main goals of this study are as follow:

1. Illustrating the relation between yield rate and the companies' free float percentage.
2. Characterizing a place for free float percent in decision makings.

RESEARCH METHODOLOGY

Here, the hypotheses of this study are as follows:

1. There is a relation between free float percent and the companies stock yield rate.
2. The relation between free float percent and stock yield rate is different in various industries.

This research is a semi-experimental research that assessed the relation between free float as the independent variant and yield rate as the dependent variant via the past information of the companies. This research is a kind of practical research, which illustrates the relation between research variants in the social statistics of various industries via statistics method. To reach the models and past information from library studies and the hypothesis test, scope studies were used to obtain the companies' information; therefore, the research method comprises a scope study. Social statistics was used to assess the accepted companies' information available in Tehran bourse. Besides, SPSS Microsoft was used for analyzing the information, while regression was used for the hypothesis test.

Social statistics and the sample

Social statistics and the sample of this research contain the present companies in Tehran Stock Exchange from 2005 to 2009, in which their information has been accessible in these years.

The numbers of the present companies in the equity market are 416 companies in these years. Among these companies, 320 had the complete information between 2004 and 2009. Therefore, other companies were eliminated from the sampling process. The sampling method that was used in this research was chosen according to the available lists from the systematic companies. Sample volume was defined to assess the relation between the variant with the aid of the Fisher test (correlation coefficient test). With the consideration of the incidence probability, type 1 error (α=0.05) and a power that is equivalent to 80% (β=0.2), the study still need 187 givens from every variants for the appearance of a difference that is less than 0.1 between the rightful correlation coefficient and it's sampling calculation. As for that the information from every company were obtained from 2004 to 2009 (5 years) periodically (4 quarterly period). Since 20 givens were obtainable from every company for every variant, 40 companies were considered (787÷20=39.5=40). However, a number which is completely random was selected, while a related number was obtained for every company by calculating (k+8) for the selection of these companies. Thus, we can maintain this until we can get 40 companies.

For testing the second hypothesis, the sampling companies were divided into three sections.

Section 1: The companies that their activity is in the automobile industries and equipment manufacturing.
Section 2: The companies that are active in food and health industries.
Section 3: The companies that are active in industries' derivation and extracting industries.

RESEARCH FINDING

Free float percent is considered as the independent variant and the companies stock yield rate is considered as the dependent variant. At first, the normal test of the givens was done, and it shows if the givens are normal or not. Then, Watson Durbin test was done to study the correlation among the givens in order to show that the used givens are not correlated because the test quantity puts them between 1.5 and 2.5. Due to these subjects, the simple regression model and $Rt = \alpha + \beta oFFt$ model were used for testing the hypotheses in this research.

In this research, Excel and SPSS were used. First of all, the information regarding the statistics sample was entered into the Excel; then after calculating the yield rate, the givens was transferred to SPSS and the statistics tests were conducted.

The Pierson correlation coefficient was used in this research for the givens normal test, while the correlation coefficient and adjusted nomination coefficient (R) were used to explain the variant changes of the research in comparison with each other in the sample. Also, the elicitation test (t) was used to accept or reject the test hypothesis. This test was used to study if the correlation coefficient obtained from the sample is binomial or not. The binomial level was considered as 25% in this research, whereas for many researches, the edited articles in the field of humanism were done according to the research givens.

The participants were informed of free float every quarter according to the calculation of the selected methodology and its report was done with the following conditions, in which the free float numbers were rounded in the calculated numbers' notification as seen thus:

i. The companies share between 0 and 5% is notified as 5%.
ii. The companies share between 5 and 10% is notified as 10%.
iii. The companies share between 90 and 95% is notified as 95%.
iv. The companies share between 95 and 100% is notified as 100% (The instruction of the free float calculation, the bourse organization).

The percentage of the companies' free float in Tehran bourse was calculated and reported in quarterly periods (four times in a year) from 2005 till now. However, the respective percentage was assembled with Tehran bourse organization site as a reference in this research.

First hypothesis

There is a binomial relation between free float and yield rate.

H_0: Investment yield rate in companies stock does not correspond with free float percentage.
H_1: Investment yield rate in companies stock corresponds with free float percentage.

Testing of the first hypothesis

The results of the first hypothesis test are summarized in Table 1. There is no binomial relation between free float and stock yield rate. The earned result of the T amount from the variance analysis table and its comparison with the quantities of the standard table, as well as the earned p-value amount, shows a regressive rejection of the first hypothesis.

If the nomination coefficient is equal to zero, the free float percent in 5% error level did not cover the yield changes. The test in the foregoing is done in three other ranges in detail to analyze the first hypothesis more and study the binomial relation between free float and stock yield rate with more attention. These three ranges are:

A) Studying the relation between free float and yield rate in the first, second, third and fourth quartiles of the free float.
B) Studying the relation between free float and yield rate with quarterly seasonal severance, calculated from free

Table 1. The results of the first hypothesis.

F amount	T amount	Nomination coefficient	p-value	β (Beta)	Result
0.002	0.045	0.000	0.964	0.002	Rejected

Table 2. Results of the relation test of 2 variants in the first to fourth quartile.

Quartile	T amount	Nomination coefficient	p-value	β (Beta)	Result
First	1.394	0. 015	0.166	0.123	Rejected
Second	0.366	0.001	0.715	0.030	Rejected
Third	-2.342	0.036	0.020	-0.188	Accepted
Fourth	-0.084	0.000	0.933	-0.007	Rejected

Table 3. The results of float percentage and the companies yield rate.

Date	T amount	Nomination coefficient	p-value	β (Beta)	Result
03/31	-0.988	0.008	0.325	-0. 091	Rejected
06/31	1.299	0.011	0.196	0.103	Rejected
09/30	0.400	0.001	0.690	0.032	Rejected
12/29	0.288	0.001	0.774	0.023	Rejected

float in the bourse.
C) Studying the relation between free float and yield rate annually.

The relation test of 2 variants in the first to fourth quartile and the total results

The earned results from the relation test of 2 variants in the first to fourth quartile are shown in Table 2. As it is shown, there is no binomial relation between t statistical amount and p-value with the consideration of the changes, but in the third quartile of the companies, their free float is between 50 and 75%. This relation will become binomial and the study opines that there is a binomial relation between free float percent and yield rate in 95% confidence level. The nomination coefficient is equal to 0.036 in the third quartile, which explain that it can cover almost 3% of the free float by yield changes, and also the earned β coefficient explains the reverse relation between free float and yield rate; thereby taking a look at the nomination coefficient changes and p-value amount from the first quartile to the fourth one. As such, we can say that the relation is weak in the first quartile, very weak in second and fourth quartiles and binomial in the third quartile.

The relation test of 2 variants in seasonal measurements and the total results

For doing this test, free float percentage and the companies yield rate for the periods in the measurement bourse (03.31, 06.31, 09.30 and 12.29 dates) were separated and the relation of 2 variants was evaluated in every one of them. The givens result test is shown in Table 3 according to the severance of the calculation dates.

The results obtained from analyzing the relation of 2 variants in the time distances related to free float calculation show that this relation is not binomial in any of the time periods and there is no relation between free float and yield rate in free float calculation distances.

The relation test of 2 variants in annual measurements and the total results

In carrying out this test, the companies stock yield rate which is calculated annually is examined with the companies free float percent by the end of every year. However, their results are shown in Table 4. The results obtained from the givens test (Table 4) explain that there is no relation between free float percent and yield rate in any of the studied years and this relation is rejected in every 5 years.

Second hypothesis

H_0: The relation between free float percentage and yield rate is not different in various industries.
H_1: The relation between free float percent and yield rate is different in various industries.

Table 4. The results of the study.

Year	T amount	Nomination coefficient	p-value	β	Result
2005	1.803	0.027	0.074	0.164	Rejected
2006	-1.287	0.010	0.200	0.102	Rejected
2007	-0.882	0.005	0.379	0.070	Rejected
2008	0.993	0.006	0.322	0.080	Rejected
2009	-1.084	0.007	0.280	-0.086	Rejected

Table 5. The results of testing the second hypothesis (automobile and equipment industries).

F amount	T amount	Nomination coefficient	p-value	β	Result
3.383	1.839	0.011	0.067	0.106	Rejected

Table 6. The results of testing the second hypothesis (food and health industry).

F amount	T amount	Nomination coefficient	p-value	β	Result
0.202	-0.449	0.001	0.654	-0.037	Rejected

Table 7. The results of testing the second hypothesis (derivation industries and metal manufacturing).

F amount	T amount	Nomination coefficient	p-value	β	Result
0.198	0.445	0.001	0.657	0.032	Rejected

Testing of the second hypothesis

The second hypothesis assessed the relation between free float and stock yield rate in various industries. As for a category which was done by the bourse organization, the sample companies and the division which was applied by other researches, these companies were divided into 3 sections and the relation of 2 variants was studied in this industry. These three sections are:

A) Automobile and equipment industries.
B) Food and health industries.
C) Derivation industry and metal manufacturing.

However, the simple regression model was used to test this hypothesis in 95% confidence level.

Automobile and equipment industries

The model test results in automobile and equipment industries are shown in Table 5. The total results show that in this industry, there is no binomial relation between free float percentage and the companies stock yield rate in 5% error level. The statistical amount (1.839) and the p-value amount (0.067) obtained from this test show that this relation is not binomial.

Food and health industries

The model test results in the food and health industry are shown in Table 6. The statistical amount obtained from the variance analysis table and the p-value show that there is no relation between free float and stock yield rate in this industry.

Derivation industries and metal manufacturing

The model test results in derivation industries and metal manufacturing are shown in Table 7. The results in Table 7 explain this reality that there is no binomial relation between free float percentage and the companies stock yield rate in 5% error level. In addition, with the consideration of the model test result in 3 industries, the study can opine that there is no binomial relation between the 3 industries in 5% error level; so, the second hypothesis which is based on the difference between free float percent and the stock yield rate in various industries is rejected.

Conclusion

In this study, it was observed that there is no binomial relation between the companies' free float and yield. As such, the t statistical amount and p-value amount explain the existence of a relation, while the nomination coefficient amount (0.000) show that free float percentage can not cover the yield rate changes.

In the first, second, third and fourth quartiles, there was no binomial relation between the 2 variants; as such, the model with a high amount of p-value was rejected, but in the third quartile, this relation exists in companies whose free float is between 50 and 75%, though the t statistical amount (-2.344) and p-value amount was less than 5%. However, the nomination coefficient equals 0.036 and it explains the yield rate changes by free float percent in an average of 4%.

The total results show that there is no binomial relation between free float percent and yield rate in any of the periods (first to fourth). Also, there is no relation between these two variants in the annual study. The companies' information, through analysis of the research model in the three industries, shows that there is no binomial relation between free float percentage and yield rate in 5% error level. As for the total results in the 3 industries, the second hypothesis was rejected because the difference in the t statistical amount and total p-value in the 3 industries showed that there is no relation between the 2 variants in 5% error level.

Suggestions

This study suggests to bourse companies to look for a range of float stock which not only cause a qualified turnover for the company and the investors, but for the companies that desire to have management in the company stock to reach its goals.

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