*Research Article*

# EXAMINATION OF RELATION BETWEEN CAPITAL AND CREATION OF PRICE BUBBLE AT LISTED COMPANIES IN TEHRAN STOCK EXCHANGE

\***Abbas Taleb Beydokhti[1], Nasrollah Amoozesh[2] and Zahra Moeinfar[3]**
[1]*Dapartment of Management, Gachsaran Branch, Islamic Azad University, Gachsaran, Iran*
[2]*Dapartment of Accounting, Deylam Branch, Islamic Azad University, Deylam, Iran*
[3]*Dapartment of Accounting, Gachsaran Branch, Islamic Azad University, Gachsaran, Iran*
*\*Author for Correspondence*

## ABSTRACT

Exponentially, at Tehran's stock exchange the total index have grown in Tehran Stock Exchange from 2002 to mid 2004 and since the middle of 2004 until 2006 were observed. At Tehran's stock exchange at 2004 until 2006 we saw fall of total index. This study seeks to answer is whether the period 2002 to 2006 Tehran Stock Exchange has faced with phenomenon of price bubble or not, and if so, to identify the factors affecting on price bubble should be examine whether the amount of capital, the amount of levels free float stock and the composition of companies's shareholders on price bubbles is effective or not. The procedure of this study is comparative and correlation using the continuity test, the chi-square and logistic regression. This paper in terms of documents on the basis of data collection and library and in terms of purposes is functional. The results showed that during In the mentioned course, stock prices Updated with price bubble in Tehran Stock Exchange and hypothesis of existing of price bubble has been approved, Also, there is an inverse relationship between the amount of free float shares in companies and creation of price bubbles., but there is no significant relationship between capital amount and composition of shareholders with creation of price bubbles in Tehran Stock Exchange.

*Keywords: Price Bubble, Amount of Capital, Free Float Shares, Composition of Shareholders, Stock Exchange*

## INTRODUCTION

As stock markets is an important choice for investing, so it is in good position to attract capital and investors with consider degree of risk and expected result pick out their shares. Therefore, the efficiency of capital markets and financial resources necessary to attract investors and thus more efficient allocation of resources that they have, it means that the prices fluctuations in the market should develop logically based on fundamental factors.

But in today's economy, many developing countries the macroeconomic variables statues is Inconsistent with e stock index climbs In fact, the relationship between economic and stuck has been beaked and one of the factors causing these subjects is fluctuations in asset prices in particular, creation of stock price bubble . The phenomenon bubble is a term that appears frequently in the stock market. Early 17th century since then, numerous examples is mentioned as price bubble period. In the period 1985-1990 Japanese assets and in the period 1998-2000 America Internet market has been experiencing with bubble which second item is known manic dot-com and also, in Iran, to fall of the stock exchange comes in mid-2004 after a period of prosperity which following on many questions have created for researchers and experts whether price increases is as a result of the existing of bubbles in Tehran Stock Exchange or not (Johnsson *et al.,* 2002)?. So, this study examines the price bubble in the index of Tehran Stock Exchange during the period 2002 to 2006 and if approved the existing of price bubble will be examine its relationship with capital, free float shares and composition of shareholders in order to identification of the affecting factors on price bubble.

### Definitions of Bubbles and Literature Review

A bubble can simply defined as continuous and intensive increasing in price of an asset or a set of the properties in the case which be defined that the initial rise in price from exception of rising in prices and

---

*Research Article*

thus attracting new buyers - speculators often interested in profits from trading assets and earning capacity are not to use it.

Charles (2000), university' professor of MIT and author known history of financial crises, defined the bubble as following: upside movement in asset prices so much will eventually he economic dictionary Palgrave, Kindleberger defines bubble as: rapid increase in the price of an asset or a group of the asset continuously with an increase start early and expect a further increase for new buyers, especially speculators who capacity-building assets tend to benefit to buy and sell stocks, they are created (Larsen, 1997).

Sultani (2007) in his doctoral thesis examines stock price bubbles at Tehran Stock Exchange during the period 2001 to 2007 for the 70 active companies in the exchange which results of the test showed that the 95% confidence level, 55% of companies surveyed have a bubble in the price of its stock and in continue he paid to explore the relationship between bubble and the size of the company. The results showed that company paid there is a significant relationship between bubble's price and companies size (Flood *et al.,* 1986).

Turki and Vaez (2008) in their study titled price bubble and investment market in Iran using technology RALS and application of Monte Carlo method to study price bubble in the stock market in Iran which shows that stock price of the long-term equilibrium (present value of future profits under the spotlight) deviated, thus, existing of bubble in Iranian stock market is approved (Blanchard *et al.,* 1982).

The overall goal of this research is that investors and stock companies with study of this research realized the importance of the bubble in world stock exchanges, including Iran. By using results , presence or absence of a bubble and in the case of existing of the factors creating price bubbles in the stock companies analyzed and stock investors in investment and companies in determining the amount of capital investment and corporate ownership structure and the extent of trade liberalization on the stock to take more informed decisions.

This research seeks to answer the question whether during the years 2002 to 2006 the stock price at the Tehran Stock Exchange has faced with effect price bubble or not, and if any bubble to examine whether the amount of capital, the amount of free float (Free float) and the composition of shareholders is effective on equity price bubble or not?

Accordingly, the research hypotheses are as follows:

*Hypotheses*

**The Main Hypotheses:** stock price listed in accepted companies has a price bubble during the period 2002 to 2006 in Tehran Stock Exchange.

**Sub-Hypothesis 1**: There is a relationship between the amount of capital and a price bubble.

**Sub-Hypothesis 2**: There is a relationship between the amount of free float of companies and creating price bubbles.

**Sub-Hypothesis 3:** There is a relationship between shareholders and creating price bubbles.

**MATERIALS AND METHODS**

The goal of this research is applied research because of the fact that it explores the relationships of variables and it has sought to explain relationships and providing suggestions for improving the efficiency of the market. Also, this study is a type of descriptive and solidarity. Between researches is the type of the correlation of the regression analysis and its approach is an inductive component of the arrival of the inductive approach to reach out to the whole of it. For collecting data document studies and library is used. This study concludes 4 hypotheses. Data needed were extracted to investigate the financial statements of the listed companies on the Stock Exchange for the years 2002 to 2006 fully. And for determination of the price per share and the extraction of required information from the application of TSE soft ware Rahavard Novin 3 were used. Then, average data for the five-year period has been calculated in this study for the test. The main hypothesis of serial independence test Haya efficiency test sequence is used. In this research, we used Kolmogrove -Smirnov test for study of situation of the normal of variable data which the average of the variable of companies' capital was not normal but by LN

*Research Article*

mathematical function try to normalize it. In addition to Pre-test to test hypotheses Chi-square test and logistic regression was used (The name of the dependent variable) for data processing used wide screen EXCEL and for data analysis used the software SPSS16.

*Operational Definition of Variables*

*Price Bubble*

The research method used to test the existence of bubbles, the test is dependent on the serial output. Serial correlation is concerned to consecutive returns over time. One of the tools of the identification of serial dependence is test sequence (Runs test). Previous studies on the bubble were used test sequence for sequential dependent changes in the level of prices or a continuous dependence of the efficiency. Blanchard and Watson (1982) was used the test of the existence of a bubble in the gold market (Garber, 1990; Kindleberger, 2000). Santona (1987) was used the test of sequence for testing the booming stock market bubble of the 1920s and 1980s (Lamont, 1998).

*Capital Amount*

Financial capital is defined as the ratio of equity to assets. Capitalization rate in this study is derived from the financial statements of the selected companies. To calculate the average of selective investment companies in period under consideration at the beginning were capital amount of each company at the end of each year (Five-year) outcomes of the application of Rahavard Novin software and then, the average mentioned figures belongs to Investment companies is calculated during the period under consideration (Engsted and Tanggard, 2001).

*Free Float Stock*

According definition of Tehran Stock Exchange, free float stock is generally defined as the number of shares that are expected to be traded in the near future, it means getting ready in the event that the property price, offer it for sale. To calculate the free float stock is set with a review of shareholders, which is scheduled for shareholders, stakeholder's strategy (strategic owner) and the transfer of its stock is short and usually wants to apply his management, to maintain the stock. With this assumption, the estimated free float stock, the number of shares owned by stock holder's strategy will be deducted from the total number of shares. These calculations are based on international rules in this field and after this study, academic community and ultimately use of external experts, have taken place (West, 1987).

Free float stock for companies in Tehran Stock Exchange is calculated as follows (Tehran Stock Exchange):

**A)** Holders of more than 5% of the ownership are considered as a strategic shareholder.
**B)** If the total family shareholder, the group crossed over 5% is owned by a non-floating point computation capability.
**C)** 5% of the labor stock is considered as a strategic stock.

*Shareholders (Shares of Stock under the Company's Legal Entities)*

Composition of shareholders includes the division the amount of shares owned by legal entities the company's total shares. To calculate the average divided by the shareholders equity legal entities of the company's shares for during the first choice of company's consideration shareholders of each company on hold the annual general meeting (five years) male outcomes extracts through the application of Rahavard Novin. Then, the above figures average for the consideration period is calculated (Engsted and Tanggard, 2001).

*Scope of Research*

The scope of the study is from 2002 to the end of 2006. The reason for this realm is that in this period, the stock index rose a high record there, and according to experts opinion during in this period stock has price bubble, so general index dropped from 3766 units at the beginning of this period, compared with 13,882 units in Mordad 2004 then the decline in the number of units at the end of 9821 totaled. The spatial domain of all listed companies in Tehran Stock Exchange for the period is considered. The following chart shows the fluctuations in the stock index for the period under consideration:

The chart of the fluctuations in the stock index for the period under consideration:

*Research Article*

## *The Statistical Population and Sampling Method*

The statistical population of this research concludes listed companies in Tehran Stock Exchange which approximately number of them are 400 companies totally.

Considering that number of the statistical population is 400 people, using the Cochrane method, 78 samples were selected to participate as follows:

**Equation 3**

Where $n$ = the number of selective members

$N$= statistical population members

$a$= Probability of Type I error

$p$=Proof of the success in the research hypotheses

$p-1$= Failure to confirm in the research hypotheses

$e$= Acceptable variation in report's


**RESULTS AND DISCUSSION**

*Findings*

The main hypotheses:

Hypothesis H1: There is a price bubble in stock prices in the Tehran Stock Exchange.

Hypothesis H0: There is no price bubble in Tehran Stock Exchange stock.

*Sequence Test*

To carry out of sequence Test, first of all the average efficiency is calculated for series of performance. Efficiency which is higher than the average is positive and ones that are less than of the average marked with a minus sign. Then a series of positive and negative signals is considered. The sequence number expected in a random sequence is calculated with the following formula:

Where $E(R)$ is the expected number of dynasties, $n1$ is number of positive efficiency and $n2$ is number of negative efficiency. SD S through a formulas series of specific formulas to set the duration longer then what is expected from a random formula.

In order to calculate the standard deviation of a series to address this issue of whether the sequence number is calculated as follows:

If the t statistic from+ 1, 96 to -1, 96 we can say with 95% confidence that the hypothesis of H0 is based on independence series (i.e randomized efficiency) is confirmed. Also, if we assume a 99% confidence interval, then the t-statistic should be between + 2,576 and -2,576.

If changes in stock prices, are correlated with each other, ie when there is a stock bubble, can be expected to have a longer range and therefore less than the number of independent observations exist.

In this study, for doing test sequence, first, calculate the average of weekly series time efficiency of companies and then, weekly efficiency were compared with obtained average. Weekly efficiency which is less than average has negative sign and weekly efficiency which is higher than average will be received positive sign. So, for weekly efficiency come a series signs + and -. Then the entire series will be considered. However, the total number of positive and negative to be counted in series of time. After these steps, the sequence number expected and standard deviation is calculated by the above formulas.

Then, the significance of the difference between the counted numbers of series will be considered with range expected for a random variable by t test. If the test statistic (ie, the difference between counted number and the expected number series divided by the of criteria) is -1, 96 to +1, 96 in critical range. So, there is no significantly difference between numbers of series with a number of excepted series and finally, there is no difference between length of the series with length of the independent and random sequences. So, no bubbles., But If the test statistic is no in the scope of the critical range this means that the number of counted series to be are significantly lower than of excepted series. If the case is expected to be concluded the length of the time series sequence, so long independent and inconsistent with random data and there is a bubble.

For example calculations for the two investment companies Alborzand Mehvar Sazan is described as figure 1.

---

*Research Article*

**Table 1: Chi-square test for dependent or independent variables chi-square test**

| Name of Company | test statistic t | number of observed series | number of excepted series | weekly efficiency series | Status |
|---|---|---|---|---|---|
| Alborz Investment | -3.47 | 83 | 107 | 226 | bubble |
| Abadan Petrochemical | -1.64 | 101 | 112 | 239 | Non-bubble |

Using extracted information from the Stock Exchange by a software update Rahavard Novin 3 and gathering and summarize of doing the test sequence as described above on the data obtained revealed that between 87 selected companies 44 companies has bubble and 34 participating has non-bubble . Therefore, the hypothesis price bubble in Tehran Stock Exchange during the period 2002 to 2006 will be confirm and one of the reasons for the falling prices price bubble in Tehran Stock Exchange has been considered and Tehran Stock Exchange also protected against the incidence of bubbles has no good situation. Therefore, as other research has been done on the price bubble in stock Tehran papers [14, 2, 10, 12, 5 and 1] in this study, this hypothesis is confirmed.

However, the main hypothesis on the basis of existing the bubbles price in the Tehran Stock Exchange through applying the test sequence was confirmed, to Identify the factors affecting price bubbles will be discussed to investigate the relation between the amount of capital, the amount of free float stock and composition of the shareholders through the applying of the chi-square test and Logistic regression:

*Sub-hypothesis 1*
There is a relationship between capital companies and creating price bubbles.
$H_0$: There is no relationship between capital companies and creating price bubble.
$H_1$: There is a relationship between capital companies and creating price bubble.

**Table 2: Chi-square test for dependent or independent variables chi-square test**

| | | Chi-square | Degree of freedom | the level of significance test |
|---|---|---|---|---|
| First step | Step | 0.007 | 1 | 0.934 |
| | Block | 0.007 | 1 | 0.934 |
| | Model | 0.007 | 1 | 0.934 |
| Second step | Step | -0.007 | 1 | 0.934 |

According to the chi-square test is not significant at any level (0.934), so there is not any dependence between dependent and independent variables.

**Table 3: Model Summary**

| step | -2 Log likelihood | Cox & Snell R Square | Nagelkerke R Square |
|---|---|---|---|
| 1 | 106.83 | 0.000 | 0.000 |
| 2 | 106.84 | 0.000 | 0.000 |

**Table 4: Regression Coefficients**

| | | B | Standard error | degrees of freedom | the level of significance test |
|---|---|---|---|---|---|
| first step | average capital | -0.012 | 0.150 | 1 | 0.934 |
| | The value of constant model | 0.400 | 1.72 | 1 | 0.816 |
| Second step | The value of constant model | 0.258 | 0.228 | 1 | 0.259 |

### Research Article

In the above table (3) it can be seen that the value (Nagelkerke R Square) is zero, so, the value of the dependent variable explained by the independent variable was zero.

In the above table (4) it can be seen that the second step of this model, the average of capital has been out of model, so, it had no effect on the dependent variable. Thus the hypothesis H0 is confirmed and hypothesis H1 is rejected. So there is no relationship between capital companies and creating price bubbles.

*Sub-hypothesis 2*

$H_0$: There is no relationship between the average float stock companies and creation of price bubble.

$H_1$: There is relationship between the average float stock companies and creation of price bubble.

**Table 5: Chi-square test for dependent or independent variables**

|  |  | chi-square test | Freedom degree | the level of significance test |
|---|---|---|---|---|
| First step | Step | 15.58 | 1 | 0.000 |
|  | Block | 15.58 | 1 | 0.000 |
|  | Model | 15.58 | 1 | 0.000 |

According to the chi-square test is significant at one percent (0.000), so there is a relationship between the dependent and independent variables.

**Table 6: Model Summary**

| First | -2 Log likelihood | Cox & Snell R Square | Nagelkerke R Square |
|---|---|---|---|
| 1 | 91.26 | 0.181 | 0.243 |

In the above table it can be seen that the value (Nagelkerke R Square) is 24%, therefore, the value of the dependent variable explained by the independent variable is 24 percent.

**Table 7: Regression Coefficients**

|  |  | B | Standard error | Freedom degree | the level of significance |
|---|---|---|---|---|---|
| First step | The average of float stock | -0.057 | 0.018 | 1 | 0.001 |
|  | The value of constant model | 1.89 | 0.546 | 1 | 0.001 |

In the above table it can be seen that the first step of this model, the model coefficients or fixed value and floating stock average variable is lower than 1 percent. Therefore, it can be included in the model.

(Average float stock) 1.89-0.057 = the statues of the companies bubble

According to above equation, the average of float stock (-0.057) will decrease in the statues of companies bubble or on the other word, float stock has established an inverse relationship with status of companies bubble. Therefore H0 hypothesis is rejected and the H1 hypothesis is confirmed .Thus, there is a relationship between the average of companies float stock and creation of price bubble.

*Sub-hypothesis 3*

$H_0$: there is no relationship between the averages of composition of shareholders (equity of legal person to total of the company capital) and creation of price bubbles.

$H_1$: there is a relationship between the averages of composition of shareholders (equity of legal person to total of the company capital) and creation of price bubbles.

*Research Article*

**Table 8: Chi-square test for dependent or independent variables**

|  |  | Chi-square | Freedom degree | the level of significance |
|---|---|---|---|---|
| first step | Step | 0.302 | 1 | 0.583 |
|  | Block | 0.302 | 1 | 0.583 |
|  | Model | 0.302 | 1 | 0.583 |
| Second step | Step | -0.302 | 1 | 0.583 |

According to the chi-square test is not significant at any level (0.583), so there is not any dependence between dependent and independent variables.

**Table 9: Summary model**

| Step | -2 Log likelihood | Cox & Snell R Square | Nagelkerke R Square |
|---|---|---|---|
| 1 | 106.54 | 0.004 | 0.005 |
| 2 | 106.84 | 0.000 | 0.000 |

In the above table it can be seen that the value (Nagelkerke R Square) is zero. So, the value of the dependent variable explained by the independent variable was zero.

**Table 10: Regression Coefficients**

|  |  | B | Standard error | Freedom degree | the level of significance |
|---|---|---|---|---|---|
| first step | averages of composition of shareholders | 0.005 | 0.01 | 1 | 0.583 |
|  | The value of constant model | -0.115 | 0.716 | 1 | 0.872 |
|  | The value of constant model | 0.258 | 0.228 | 1 | 0.259 |

In the above table it can be seen that in the second step of this model, the average of capital's person to the total capital of the model is out .l, so, it had no effect on the dependent variable. Thus the hypothesis H0 is confirmed and hypothesis H1 is rejected. So there is no relationship between the averages of composition of shareholders (equity of legal person to total of the company capital) and creation of price bubble.

*Conclusion*

According to test results, the main and sub-main hypothesis is confirmed that Tehran Stock Exchange during the period 2002 to 2006 has updated with price bubble. Also, with consideration of influential factors on risk of price bubble and the lack of impact of capital composition of ownership in the incidence of price bubble appears that the amount of capital and composition of shareholders cannot be effective on making decisions for investors in other companies without bubbles. Nevertheless, study and consideration of the other items forming the equity will be useful.

But according to test result , the second sub-hypothesis which shows a inverse relationship between amount of float stock and creation of price bubble, it means that as much as the float stock a company is more so, likely price bubble Less, investors are advised to investment, along with other information consider to the information of free float stock. In particular, when experts warn about in the price bubble from the stock prices of companies the shares of companies companies have low relief and float away with more attention to the higher free float.

*Research Article*

## REFERENCES
**Blanchard Q and Watson M (1982).** Bubbles, Rational Expectations and Financial Markets, NBER Working Paper **94**(4) 58-96.

**Blanchard O and Watson Mark WJ (1982).** Bubbles, rational expectations and financial markets. *National Bureau of Economic Research Working Paper* **86**.

**Christophe B (2003).** Testing for Rational Bubbles with Time Varing Risk Premium and Non- Linear Cointegration: Evidence from the USA and French Stock Markets; University Paris Nord. CEPN, France, Version November.

**Engsted T and Tanggard C (2001).** *A New Test for Speculative Bubbles Based on Return Variance Decompositions*; Department of Finance (the Arhus School of Business Denmark Publication).

**Flood Robert P, Hodrick Robert J and Kaplan P (1986).** An Evaluation of Recent Evidence on Stock Market Bubbles. *Working Paper* **1971**.

**Garber PM (1990).** Famous First Bubbles. *Journal of Economic Perspectives* **4**(2) 35-54.

**Johnsson M, Lindblom H and Platan P (2002).** Behavioral Finance, and the change of investor's behavior during and after the speculation Bubble at the end of the 1990s. Masters Thesis in Finance, Lund University.

**Kindleberger CP (2000).** *Manias, Panics and Crashes: A History of Financil Crices,* 4th edition (Wiley) New York.

**Koustas Z and Serletis (2005).** Apostolos . Rational Bubbles or Persistent Deviations from Market Fundamentals?. *Journal of Banking and Finance* **29** 2523-2539.

**Lamont O (1998).** Earnings and Expected returns. *Journal of Finance* **53** 1563-1587.

**Larsen ES (1997).** Theories and tests for bubbles, Norges Fiskerihogskole. Working papers of UniversitetiTromso 17-19

**Nunes M and Sergio DS (2007).** Rational Bubbles in Emerging and Stock Markets. *MPRA Paper* **4641** 1-10.

**West KD (1987).** A specification test for speculative bubbles. *Quarterly Journal of Economics* **102** 553-79.