

EFFECTIVE FACTORS OF PRICE BUBBLE IN TEHRAN STOCK EXCHANGE

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Abstract The aim of this study is to investigate effective factors of price bubble in Tehran Stock Exchange. In order to achieve this objective, 92 companies during the 5-year period from 2006 to 2010 are studied. Predicted income, industry characteristic, ownership structure and dividends are considered as effective factors on price bubble and so independent variable and price bubble are regarded as dependent variable. To test the hypotheses, multivariate regression model is used. The results indicate that predicted income and dividend are effective factors on price bubble. The relationship between predicted income and dividend with price bubble is positive and significant showing that increasing dividend and predicted income leads to price bubble. The results also highlight that there is not a significant relationship between industry characteristic, ownership structures with price bubble. These results indicate that firm's behavioural factors are effective factors on price bubble.

Keyword: Predicted Income, Industry Characteristic, Ownership Structure, Dividends, Price Bubble

INTRODUCTION

Accounting objectives stem from information needs of the users. The main goal of accounting is reporting financial condition and performance of enterprises for external users, which may help them make financial decisions and investment (Rostami *et al.*, 2013). One of financial information reporting purposes is to present reliable financial information for users of this information. Financial information is supposed to allocate financial resources in country to suitable economic units. However, some factors may affect in financial resources allocation and investors' perceptions such as stock price bubble.

Stock price bubble was introduced in 17th century. However, this issue had not been investigated until late 20th century. Since its introduction in 2003 in Iran capital market, every steep increase in stock price has been regarded falsely as price bubble. This is while price bubble occurs when speculation of stock increases stock price. In this situation, stock price reaches to unreasonable price and the suddenly decreases. The term of bubble is introduced because stock prices grow like soap bubble and then burst (Salehabadi and Dalirian, 2010). One of the unfavourable factors of capital markets is price bubble. Price bubble increases exceedingly stock prices in capital market through stepping up of investor's expectation. Then, bursting the price bubble introduces financial crisis and firm's bankruptcy (Asadi *et al.*, 2006). A bubble is the difference between an asset's intrinsic value and its market price. The intrinsic value is the amount of discounted future dividends and the price of the asset when

it is sold in infinite future. This is the price that we would expect in an economy that consists of rational individuals with infinite life. If the price deviates from this level, the deviation is called a bubble (Babaie Semiromi, 2010).

Many factors may affect stock price bubble. In this study predicted income, industry characteristics, ownership structure and dividend are supposed to have an impact on price bubble. High and unreasonable predicted income creates price bubble because investors have a vision that a firm will obtain more income and then will distribute more dividends. In addition, firms characteristic may have a significant impact on price bubble since some firms may experience more price bubble because they invest more in stock. Further, firm's ownership structure may have an impact on price bubble. Some investors have a short vision on their investment and they buy and sell stock to obtain gain and some others have internal information using for speculation. Finally, firm's dividend may have an impact on price bubble. More dividends send a signal to potential investor that firm is in good condition while firm's condition may not be good and stock price increase through false information.

However, in this study, taking above arguments into account effective factors of price bubble in Tehran Stock Exchange are investigated.

LITERATURE REVIEW

Vakilifard *et al.* (2010) investigated the relationship between free floating stock and price bubble in firms listed in Tehran

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Stock Exchange. They find that there is a significant relationship between free floating stock and price bubble in the way that firms with less than 20 percent free floating encounter more stock price bubble than other firms.

Smadi *et al.* (2010) studied the influential factors on stock price bubble creation in Tehran Stock Exchange. They indicate that stock price bubble creation of Tehran Stock Exchange is affected by herd behaviour and psychological conditions of capital market.

Asadi *et al.* (2006), in a research, investigated the impact of firm's size and industry type in stock price bubble in Tehran Stock Exchange. Their results indicate that there is significant relationship between firm's size and stock price bubble. However, they could not find evidence to support the relationship between industry type and stock price bubble.

Soltani (2007) indicated that firm's size is an influential factor on price bubble while industry characteristic is not.

Narayan *et al.* (2013) find that trading volume and share price volatility have statistically significant effects on asset price bubbles. They also find that for firms belonging to electricity, energy, financial, and banking sectors, and for the smallest size firms, trading volume has a statistically significant and positive effect on bubbles. They do not find any robust evidence of a statistically significant effect of share price volatility on bubbles at the sector-level.

Hematfar (2013) investigated the relationship between capital and the creation of price bubbles of listed companies in the Tehran Stock Exchange. The results of the study show that there is a negative relationship between the free float and creation of price bubbles. However there is no significant relationship between the amount of capital and composition of shareholders with the creation of price bubbles within the Tehran Stock Exchange.

Campello and Graham (2013) show that high stock prices affect corporate policies because they relax financing constraints. During the tech bubble, constrained non-tech firms' investment responded strongly to "high stock prices" (specifically, the component of price that is not captured by fundamentals). They also issued stock in response to that overvaluation effect, saving part of the proceeds in their cash accounts. They find no such patterns for unconstrained non-tech firms, not for tech firms.

Fischbacher *et al.* (2013) investigated effect of monetary policy on stock market bubbles and trading behaviour in experimental asset markets. They observe a strong impact of our interest rate policy on liquidity in the stock market but only a small impact on bubbles. However, they find that announcing the possibility of reserve requirements significantly reduces bubbles.

Gilchrist *et al.* (2005) argue that dispersion in investor beliefs and short-selling constraints can lead to stock market bubbles and find that firms, unlike investors, can exploit such bubbles by issuing new shares at inflated prices. They also find that increases in dispersion cause increases in new equity issuance, Tobin's Q, and real investment.

Scheinkman and Xiong (2003) show that while Tobin's tax can substantially reduce speculative trading when transaction costs are small, it has only a limited impact on the size of the bubble or on price volatility. They give an example where the price of a subsidiary is larger than its parent firm. Finally, they show how overconfidence can justify the use of corporate strategies that would not be rewarding in a "rational" environment.

Sorayaei *et al.* (2013) investigated the relationship between free float of shares and the P/E ratio with a price bubble in the companies listed in the Tehran Stock Exchange. The result shows that there is no significant relationship between free float of shares and the P/E ratio with price bubble.

Shirazi *et al.* (2012) investigated the relationship between liquidity and price bubble in Tehran's Stock Market. Their result confirms that variation of liquidity has a significant effect on the creating of bubble in long run.

HYPOTHESES DEVELOPMENT

H₁: There is a significant relationship between predicted income and price bubble in firms listed in Tehran Stock Exchange.

H₂: There is a significant relationship between industry characteristics and price bubble in firms listed in Tehran Stock Exchange.

H₃: There is a significant relationship between ownership structure and price bubble in firms listed in Tehran Stock Exchange.

H₄: There is a significant relationship between dividend and price bubble in firms listed in Tehran Stock Exchange.

METHODOLOGY

This research is applied and post hoc study since deterrent of financial information users may utilize its results. Considering that the study tries to find a significant relationship between research variables, it can be considered as descriptive correlation research. Data of firm's information are gathered from TSE database and hypotheses are tested using SPSS software.

POPULATION AND SAMPLE

The population of the study consists of all firms listed in Tehran Stock Exchange. However, to reach a uniform sample, following conditions are posited on sampling:

1. The fiscal year must be ended at the end of Esfand (solar last month) and must not have changed its fiscal year during studied period.
2. Financial information must be available and firms must not be investment, brokerage or insurance company.
3. Sample firms must not have transaction intervals during studied period.

As a result of these conditions, 92 firms are selected to be studied during the period between 2007 and 2011.

VARIABLE DEFINITION

Speculative Bubble: Speculative bubble is defined as steady and steeply increasing of an asset or set of assets price in the way that primary increase in price is stem from expectation about price increasing and consequently absorbs new buyers who are interested in gain from speculation not income from operation of assets. Speculative bubble in this study is derived from following formula:

$$P_t = \sum_{i=0}^{\infty} a^i E_t d_{t+i}$$

$$a = \frac{1}{1 + r}$$

$$\bar{P} = P_t - b_t$$

where:

b_t is intrinsic value of stock price, P_t current stock price value, $\bar{P}_t$ is speculative bubble. As it is shown in the model, if in time t , current value of stock is more than intrinsic value of stock, it shows speculative bubble.

Predicted Income: Firms of TSE are required to predict income quarterly, semiannually, nine monthly and annually.

Firms Characteristic: In this study, following industries are studied: metal, vehicle, beverage, chemical.

Ownership Structure: In this study three types of firms ownership in investigated: institutional, corporate and management ownership.

Corporate Ownership is percentage of stock held by corporations out of firm's total stock which is disclosed in financial statements.

Management Ownership is stock held by board of directors and their relatives which is derived through board of director's minutes.

Institutional Ownership is stock held by government agencies, banks and insurance companies out of total capital stock.

Dividend Per Share (DPS): is distributed cash to common stock holders and calculated as following:

Earnings per share \ Cash dividend per share = DPS

Firm's Size: Firm's size is considered as control variable and is measured through natural logarithm of firm's total assets.

EMPIRICAL RESULTS

Descriptive Statistic

Descriptive statistic only highlights a portrait about data distribution, as shown in Table 1.

Table 1 highlights descriptive statistic for 460 observations. Mean of institutional ownership is 38 percent showing that 38 percent of total firm's ownership is attributed to institutional owners. Mean of corporate ownership is 37 percent showing that 37 percent of total firm's ownership is attributed to corporate owners. Mean of management ownership is 3.5 percent showing that 3.5 percent of total firm's ownership is attributed to management owners.

Table 1: Descriptive Statistics

	PB	EI	IND	IOWN	COWN	MOWN	DPS	SIZE
Observation	460	460	460	460	460	460	460	460
Mean	.46	710.42	3.08	38.2123	37.7016	3.5004	616.9568	4222576.52
Mode	0	501	4	.00	.00	.00	315.00	103104
Std. Deviation	.499	954.292	1.014	24.94629	24.32523	2.93875	823.36723	1.308E7
Minimum	0	18	1	.00	.00	.00	14.40	22725
Maximum	1	8221	4	97.12	96.89	12.36	7398.90	101708893

Notes: PB is price bubble, EI Predicted income, IND is industry characteristic, IOWN is institutional ownership, COWN is corporate ownership, MOWN is management ownership, DPS is dividend per share, SIZE is firms size.

Normality Test

Before regressing the research variables, it should be concluded if research variables are normal or not. To test the normality of research variables, Kolmogorov-Smirnov Test is applied. The correlation matrix is indicated in Table 2.

The results of Kolmogorov-Smirnov Test indicate that only price bubble has a normal distribution and other variables not. However, the normality of depended variable leads to the normality of the whole model. Therefore, it can be simply agreed that the regression model can be applied.

Correlation Matrix

Correlation matrix between research variables is indicated in Table 3.

According to Table 3, the most correlation is between dividend per share and predicted income which is positive and significant indicating that if firms expect more income, they distribute more dividend. The least correlation between research variables is between corporate ownership and firm's size which is not significant.

HYPOTHESES TEST

First Hypothesis Test

H_1 : There is a significant relationship between predicted

income and price bubble in firms listed in Tehran Stock Exchange.

To test this hypothesis, following regression model is used.

$$PB_{it} = EI_{it} + SIZE_{it} + e$$

Where PB_{it} is price bubble for firm i in time t ; EI_{it} is predicted income for firm i in time t ; $SIZE_{it}$ is firms size for firm i in time t ; e is regression error for firm i in time t .

The results of the model regression are indicated in Table 4.

The results of Table 4 indicate that first hypothesis is accepted since significance of predicted income is less than 5 percent confidence level. The sign of beta for predicted income is positive indicating that more disclosed predicted income results in more price bubble. In addition, the results manifests that firm's size is effective factor on price bubble. Durbin Watson statistic is between 1.5 and 2.5, so there is not an auto-correlation problem among regression residuals. Significance of F statistic is less than 5 percent level indicating that the whole model is significant. Finally, adjusted R^2 is 0.132 showing that 13 percent of dependent is explained by independent variable and control variable.

Second Hypothesis Test

H_2 : There is a significant relationship between industry characteristics and price bubble in firms listed in Tehran Stock Exchange.

Table 2: Kolmogorov-Smirnov Test

	PB	EI	IND	IOWN	COWN	MOWN	DPS	SIZE
N	460	460	460	460	460	460	460	460
K-S	7.628	5.577	6.604	2.809	1.579	2.505	5.367	8.072
Sig.	.067	.000	.000	.000	.014	.000	.000	.000

Table 3: Correlation Matrix

	PB	EI	IND	IOWN	COWN	MOWN	DPS	SIZE
PB	1							
EI	.371**	1						
IND	.067	.036	1					
IOWN	-.062	-.107*	.043	1				
COWN	.104*	.211**	.054	-.702**	1			
MOWN	.066	.189**	-.200**	-.299**	.227**	1		
DPS	.374**	.998**	.036	-.107*	.211**	.189**	1	
SIZE	.067	-.064	-.234**	-.080	-.037	.224**	-.064	1

*. Correlation is significant at the 0.05 level.

**, Correlation is significant at the 0.01 level.

Table 4: First Hypothesis Test

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.307	0.028		10.879	0.000
EI	0.000	0.000	0.361	8.288	0.000
SIZE	3.719E-9	0.000	0.098	2.238	0.026
R	R ²	Adjusted R ²	Durbin-Watson	F	Sig.
0.368	0.135	0.132	1.832	35.803	0.000

Table 5: Second Hypothesis Test

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.324	.078		4.152	.000
IND	.038	.024	.078	1.625	.105
SIZE	3.527E-9	.000	.093	1.934	.054
R	R ²	Adjusted R ²	Durbin-Watson	F	Sig.
.106	.011	.007	1.827	2.597	.076

To test this hypothesis, following regression model is used.

$$PB_{it} = IND_{it} + SIZE_{it} + e$$

where PB_{it} is price bubble for firm i in time t ; IND_{it} is industry characteristic for firm i in time t ; $SIZE_{it}$ is firms size for firm i in time t ; e is regression error for firm i in time t .

The results of the model regression are indicated in Table 5.

The results of Table 5 indicate that second hypothesis is rejected since significance of industry characteristic is more than 5 percent confidence level. Durbin Watson statistic is between 1.5 and 2.5, so there is not an auto correlation problem among regression residuals. Significance of F statistic is more than 5 percent level indicating that the whole model is insignificant. Finally, adjusted R^2 is 0.007 showing that 0.7 percent of dependent is explained by independent variable and control variable.

Third Hypothesis Test

H_3 : There is a significant relationship between ownership structure and price bubble in firms listed in Tehran Stock Exchange.

To test this hypothesis, following regression model is used.

$$PB_{it} = IOWN_{it} + COWN_{it} + MOWN_{it} + SIZE_{it} + e_{it}$$

where PB_{it} is price bubble for firm i in time t ; $IOWN_{it}$ is institutional ownership for firm i in time t ; $COWN_{it}$ is corporate ownership for firm i in time t ; $MOWN_{it}$ is management ownership for firm i in time t ; $SIZE_{it}$ is firms size for firm i in time t ; e_{it} is regression error for firm i in time t .

The results of the model regression are indicated in Table 6.

The results of Table 6 indicate that third hypothesis is rejected since significance of ownership structure (institutional, corporate ownership and management ownership) is more than 5 percent confidence level. Durbin Watson statistic is between 1.5 and 2.5, so there is not an auto-correlation problem among regression residuals. Significance of F statistic is more than 5 percent level indicating that the whole model is insignificant. Finally, adjusted R^2 is 0.007 showing that 0.7 percent of dependent is explained by independent variable and control variable.

Fourth Hypothesis Test

H_4 : There is a significant relationship between dividend and price bubble in firms listed in Tehran Stock Exchange.

To test this hypothesis, following regression model is used.

$$PB_{it} = DPS_{it} + SIZE_{it} + e_{it}$$

Where PB_{it} is price bubble for firm i in time t ; DPS_{it} is dividend per share for firm i in time t ; $SIZE_{it}$ is firms size for firm i in time t ; e_{it} is regression error for firm i in time t .

The results of the model regression are indicated in Table 7.

The results of Table 7 indicate that fourth hypothesis is accepted since significance of dividend per share is less than 5 percent confidence level. The sign of beta for dividend per share is positive indicating that more dividend per share results in more price bubble. In addition, the results manifests that firm's size is effective factor on price

Table 6: Third Hypothesis Test

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.294	.104		2.835	.005
IOWN	.001	.001	.054	.799	.425
COWN	.003	.001	.123	1.869	.062
MOWN	.004	.008	.023	.468	.640
SIZE	2.971E-9	.000	.078	1.617	.107
R	R ²	Adjusted R ²	Durbin-Watson	F	Sig.
.124	.015	.007	1.871	1.782	.131

Table 7: Fourth Hypothesis Test

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.305	.028		10.805	.000
DPS	.000	.000	.363	8.340	.000
SIZE	3.725E-9	.000	.098	2.244	.025
R	R ²	Adjusted R ²	Durbin-Watson	F	Sig.
.370	.137	.133	1.882	36.244	.000

bubble. Durbin Watson statistic is between 1.5 and 2.5, so there is not an auto-correlation problem among regression residuals. Significance of F statistic is less than 5 percent level indicating that the whole model is significant. Finally, adjusted R² is 0.133 showing that 13 percent of dependent is explained by independent variable and control variable.

RESULTS AND CONCLUSION

The aim of this study is to investigate effective factors of price bubble in Tehran Stock Exchange. In order to achieve this objective, 92 companies during the 5-year period from 1385 to 1389 are studied. Predicted income, industry characteristic, ownership structure and dividends are considered as effective factors on price bubble and so independent variable and price bubble are regarded as dependent variable. To test the hypotheses, multivariate regression model is used. To reach the aim of the study, four hypotheses are developed. First hypothesis suggests that there is a significant relationship between predicted income and price bubble in firms listed in Tehran Stock Exchange. The results show first hypothesis is accepted indicating that more disclosed predicted income results in more price bubble. In addition, the results manifest that firm's size is effective factor on price bubble. Adjusted R² in this hypothesis is 0.132 showing that 13 percent of dependent is explained by independent variable and control variable. Second hypothesis manifests that there is a significant relationship between industry characteristics and price bubble in firms listed in Tehran Stock Exchange.

The results indicate that second hypothesis is rejected. Adjusted R² is 0.007 in this hypothesis showing that 0.7 percent of dependent is explained by independent variable and control variable. Third hypothesis argues that there is a significant relationship between ownership structure and price bubble in firms listed in Tehran Stock Exchange. The results indicate that third hypothesis is rejected showing that institutional, corporate ownership and management ownership is not effective factor on price bubble. Adjusted R² in this hypothesis is 0.007 showing that 0.7 percent of dependent is explained by independent variable and control variable. Fourth hypothesis explains that there is a significant relationship between dividend and price bubble in firms listed in Tehran Stock Exchange. The result indicates that fourth hypothesis is accepted indicating that more dividend per share results in more price bubble. In addition, the results manifest that firm's size is effective factor on price bubble. Durbin Watson statistic is between 1.5 and 2.5, so there is not an auto correlation problem among regression residuals. Adjusted R² is 0.133 showing that 13 percent of dependent is explained by independent variable and control variable. These results are consistent with the results of Asadi *et al.* (2006) and Soltani (2007).

SUGGESTION REMARKS

Since there is a positive significant relationship between predicted income and price bubble in firms listed in Tehran Stock Exchange, it is suggested to Tehran Stock Exchange

commission to set regulations to improve the reliability and accurateness of predicted income to prevent from the stock capital crisis. In addition, since there is not a significant relationship between industry characteristic and ownership structure with price bubble, it is suggested that Tehran Stock Exchange commission sets the same regulations for all firms listed in Tehran Stock Exchange without considering the type of industry and ownership structure. Since dividend results in price bubble, it is suggested to firm's managers that consider dividend distribution possible impact on price bubble because stock price bubble consequently results in steeply falling stock prices.

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