THE EFFECT OF THE INITIAL PUBLIC OFFERING ON PRICE INDEX OF TEHRAN STOCK EXCHANGE

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ABSTRACT

This study aims to investigate the effect of initial public offerings (IPO$_s$) on the total price index of Tehran Stock Exchange (TEPIX). For this purpose, the data of 74 companies for the period of December 2008 to the end of March 2014 is collected. Least squares were used to test the hypotheses. The results indicate that there is a significant relationship between market sign, the real value of stock and leverage ratio with TEPIX, while there is no significant relationship between underpricing and TEPIX.

Keywords: initial public offering, Tehran stock exchange index (TEPIX), sign market, underpricing, the real value of stock.

INTRODUCTION

The stock exchange, as one of the main pillars of the capital market, guides the savings of society to the flow of production. In all countries, stock market prosperity is considered as one of the indicators of the health and dynamics of the economy [17]. Today, one of the most appropriate financing methods for companies that has become widespread is the initial public offering (IPO). The initial public offering, which dates back to the thriving markets of the 1990s, refers to the shares of companies that are offered to the public potential investors through the stock market for the first time during its lifetime [13]. These companies are not newly established and often have at least three years of experience; therefore, in this term, the word "initial" means the supply of shares of the company for the first time to the external shareholders through the stock exchange at a time when the company found in its operation that admission to the stock exchange would help to raise funds, whether through shareholders or via borrowing, reducing financing costs and even tax cuts. The IPO shares is one of the important events in the capital market, and if it is not properly planned and fully understood by the capital market and potential investors, it can have unpleasant consequences for companies and the capital market [7]. IPO pricing is a key factor in the success or failure of the first IPO$_s$, and the key factor in determining the optimal price is also the return of the first day [11]. Therefore, the price set for IPO$_s$ should be such as to maximize the value of the company, compensating the costs of obtained information by investors , and covering the risk of investor as a buyer of a stock company that has not yet provided its stocks [21]. Based on the Desired Trading Range hypothesis, the price that matches the preferences of different groups of investors is a function of the general average price of the market, the average of the general price of the industry and the value of the company, and if the shares of the companies are traded at Desired Trading Range, both the identity and the character of the company is preserved and also the volume of transactions increases [20]. Although numerous and various studies have been carried out on IPO, but in general, most studies are focused on three anomalies of IPO$_s$: long run underperformance, underpricing and hot IPO$_s$. Some experts in this field also believe that these anomalies are not real and appear only apparently in the

research [19]. Ibbotson (1975) found out that companies offering their shares to the public for the first time through the stock exchange, they offer stocks at a price below their inherent value. So that there is a significant difference between the IPO price and the market price at the end of the first month [10]. The information asymmetry is shown as the first important factor for underpricing by Ljungqvist (2007) [14]; and Biddle and Hilary (2006) argued that better accounting information would lead to more efficient investment decisions [2]. Katti and Phani (2016) also argued that underpricing is dependent on the specific laws of countries, the capital market structure and the price discovery mechanism, which the extent and the way of underpricing can be explained by them [12].

Millions do business every day based on various economic indicators. Increasing the number of indicators over time suggests that decision makers want access to indicators that can summarize a set of important features associated with a particular decision [16]. Stock price indices in all financial markets of the world are also considered as one of the most important measures of stock market performance measurement. Perhaps the most important reason for this increasing attention is that s tock indices are obtained from the aggregation of stock price movements of all companies or a particular class of companies in the stock exchange [15].

Accordingly, the identification of factors affecting the stock market can help the government, capital market managers, companies, investors, and so on. Hence, the present study aimed to investigate the effect of IPO on total exchange price   index of Tehran Stock Exchange (TEPIX) in order to identify the factors affecting the capital market and to inform investors and decision makers.

LITERATURE REVIEW

In a research, Ebrahimi Kordlar and Hasani Azar Dariyani (2006) examined earnings management at the time of the IPO shares in Tehran Stock Exchange listed companies during the years 1999 to 2001. The results show that the average current voluntary accruals items in the year before the IPO and the year of IPO, are more than in the following years. There is a positive relationship between the current voluntary accruals items in the first year of the companies and the long-term performance of the stock price in the next three years. There is also a positive relationship between the current voluntary accruals items and long-term abnormal returns [4]. In another study, Hejazi and Haghbin (2008) examined abnormalities of the first IPO in Tehran Stock Exchange. The results ndicate that the fall in stock price of the first IPO in the long run is due to a gap of six months after the first IPO. In the long run, also there is a significant relationship between the average profit for the three years before the IPO (as a quality, risk, and company reputation indicators) and the percentage of shares issued (as an indicator of agency costs) with the fall in stock prices of the first IPO [8]. Ramirez et al. (2011) investigated the relationship between IPO characteristics and the liquidity of new shares in the Spanish stock market. The results showed that there is a significant negative relationship between underpricing and non-liquidity factor. However, they also found a positive relationship between underpricing and liquidity factor in the period of 120 days after IPO [18]. Adel Azar et al. (2013) compared the factors affecting the pricing lower than the inherent value of the IPO shares of governmental and non-governmental companies admitted to Tehran Stock Exchange during the years 2001 to 2009. According to the results, all companies listed on the Tehran Stock Exchange, both governmental and non-governmental, are presented below the inherent value. But there is no significant difference between pricing below the inherent value of governmental and non-governmental companies [1]. Friedlan (1994) in a research on the US stock market showed initial offering companies for more of the existing financial statements use accruals items that increase earnings in the declaration of

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securities [6]. Boulton et al. (2011) examined the effects of country-level earnings quality on IPO underpricing, by examining 10783 IPO$_s$ from 37 countries. They found that IPOs are underpriced less in countries where public firms produce higher quality earnings information [3]. Yetman (2001) examined the efficiency of IPO pricing information and the three year returns of IPO$_s$ from the point of view of accounting information, and concluded that accounting information has a significant relationship with IPO pricing and the three year returns of initial public offering [22]. In a research on 716 newly-listed companies of New Zealand stock exchange for the period of 1977-1992, Firth (1998) investigated the relationship between the expected profit, company value and the abnormal return of these companies' shares at the IPO. The results show that profit forecasts, 'in relation to the value of companies with IPO$_S$, are more effective than other instruments, such as accumulated profits and there is a significant positive relationship between the error of forecasting profits and abnormal returns [5]. In a study by Hong et al. (2014) on the impact of changes in financial reporting on underpricing of the IPO$_S$ and the globalization of capital markets, examined the effects of mandatory international financial reporting standards on underpricing and the associated increase in capital from the IPO$_S$ in foreign markets. They found that with the mandatory adoption of international financial reporting standards, underpricing decreased, and relative revenues from IPO$_S$ increased in foreign markets [9].

METHODOLOGY

Present study in terms of objective is an applied research and based on data collection method is a descriptive correlational study. It is a descriptive research because it is trying to describe a situation or considering phenomenon and to understand the present situation and the correlation between the variables.

Data and Sample selection

Required data were extracted from a variety of sources, including the software Rahavard Novin, Financial statements of companies, Comprehensive publishers information site and the site of Tehran Stock Exchange Technology Management Company. For estimation of research model Least squares method was used and E. views computer software, version 9 have been used for results derivation. Statistical population includes all companies listed in Tehran stock exchange market during the period of december 2008 to the end of March 2014. In order to select the sample, following criteria have been considered: 1- their IPOs were made between December 2008 and the end of March 2014, 2- during the period under review, they have not stopped their operations, and 3- they have not been removed from the Tehran Stock Exchange. According to the above conditions, 74 initial public offerings were selected. The reason for choosing this period is because of the change in the calculation of TEPIX index of Tehran Stock Exchange since December 2008, therefore, in order to avoid the possible effects of the change in the index calculation, only the companies surveyed, whose IPO$_s$ were made during the period between December 2008 and the end of March 2014.

Hypotheses

To examine the effect of IPO$_s$ on on the total price index of Tehran Stock Exchange (TEPIX), we set the following hypotheses:

H$_1$-There is a significant negative relationship between the market sign variable and TEPIX.

H$_2$-There is a significant positive relationship between underpricing and TEPIX.

H_3-There is a significant negative relationship between stock market value two months after the IPO divided by the net assets of the company and TEPIX.

H_4-There is a significant positive relationship between total debt ratio divided by total assets of the company in the financial period before the IPO and TEPIX.

Model Specification

The estimated model is: TEPIX= β_0 +β_1SIGN + β_2UND + β_3VNK + β_4LEVER + β_5PM + β_6ROA + β_7POSIT + β_8PONEG + β_9AGE + β_{10}MARKET+ β_{11}LOG(TA)

TEPIX= Percentage of Change in Tehran Stock Exchange Index, SIGN= Market sign that shows the changes in the dependent variable of the research (positive or negative) during the IPO_s using the zero-one dummy variable. In other words, if the value of the change in the dependent variable of the research (TEPIX) at the IPO_s is less than zero, the number one and, if it is greater than zero, zero is given. UND = underpricing, VNK = Stock market value two months after the IPO_s, divided by the net assets of the company. In fact, this ratio shows the true value of the stock. In this research, the final price of the stock at the end of the second trading month is considered as the actual price of the stock. LEVER = ratio of total debt divided by total assets of the company during the financial period before the IPO_s. LEVER or Leverage ratios measure the company's ability to pay long-term commitments. PM = net profit divided by net assets in the fiscal year before the IPO_s, ROA = net profit of the year before the IPO_s, divided by total assets on that date, POSIT = number of days the share price increases after the IPO_s, PONEG = The number of days the share price increases after the IPO_s divided by the number of days after which the share price is reduced, AGE = number of years of activity of the company before the IPO_s, MARKET = the main or the secondary market represented by the zero-one dummy variable, LOG (TA) = company size, logarithm of the total assets of the company and β_0, β_1 , B_2, ... β_{11} indicate coefficients of variables.

In this model, market sign variable at the time of the initial offering (SIGN), underpricing (UND), the ratio of the stock market value in two months after the IPO_s divided by the company's assets (VNK) and lever ratio (LEVER) are as independent variables and other variables are control variables.

 The dependent variable of the research is TEPIX. This variable is the percentage of change in TEPIX index of Tehran Stock Exchange at the time of the IPO_s, which is calculated as follows:

$$TEPIX_i = \frac{\text{TEP}_i - \text{TEP}_{i-2}}{\text{TEP}_{i-2}} \times 100$$

TEP_i is the stock index at the end of the day (or the day before the offering), which the i share has been offered in public. This day is determined on the basis of the date of the market observer's notice of the IPO_s. TEP_{i-2} is The stock index in two days before effective date of i.

In this study, underpricing (UND) is calculated as follows:

short-term returns are calculated based on stock price changes after the IPO_s for a two-month period. Then, these returns were compared and adjusted with short-term returns for TEPIX index for the same two-month period.

$$STR_i = \frac{\text{P}_{it+2} - \text{P}_{i0}}{\text{P}_{i0}}$$

STR_i is the short-term return rate of i share which has been offered in public, Pi_{t+2}: is the price of i share in two months after the IPO_s.

P_{i0}: is the price of i share at the end of the day of IPO_s, the short-term return of TEPIX index is calculated as follows:

$$STR_m = \frac{I_{mt+2} - I_{m0}}{I_{m0}}$$

STR_m: is the short-term rate of return of TEPIX index, Im_{t+2} is TEPIX index in two months after any IPO_s and I_{m0} is TEPIX index at the time of each IPO_s. The underpricing amount in the IPO_s is calculated by the difference in the short-term rate of return of TEPIX from the short-term return rate of each share in the IPO_s:

$$ASTR_i = STR_i - STR_m$$

ASTR is adjusted short-term rate of return by market index (underpricing).

EMPERICAL RESULTS

Diagnostic Tests for the Regression Model

This section discusses the statistical tests that were applied to test the overall validity of the model and its statistical properties. These tests were applied to multiple regression model are discussed below.

Test for Autocorrelation

To test for autocorrelation in research model, the study makes use of the Breusch-Godfrey Serial correlation LM test for autocorrelation. As shown in table 1, both the F and χ^2 statistics have exceeded 5%, therefore, there is no problem of autocorrelation in the model as the null of no serial correlation cannot be rejected.

Table 1. Breusch-Godfrey Serial Correlation LM Test

F-statistic	0.467430	Prob. F(2,60)	0.6289
Obs*R-squared	1.135304	Prob. Chi-Square(2)	0.5669

Test for Heteroskedasticity

According to table 2, the F and χ^2 statistics have exceeded 5%, therefore, the null of homoskedastic residuals cannot be rejected, and implying that the residuals of the model are homoskedastic.

Table 2. Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.861719	Prob. F(11,62)	0.2738
Obs*R-squared	9.813238	Prob. Chi-Square(11)	0.2637
Scaled explained SS	6.972686	Prob. Chi-Square(11)	0.8013

Collinearity Test

According to the results of the **collinearity** test in the table 3, the values of all independent variables are less than 10. Therefore, we can conclude that there is no **collinearity** between independent variables in the models.

Table 3. Variance Inflation Factors Test

Variable	*Centered VIF*
C	NA
AGE	1.222029
LEVER	3.967913
MARKET	1.323659
PM	1.214303
PONEG	1.933513
POSIT	3.335548
ROA	2.205175
SIGN	1.130420
LOG(TA)	2.402125
UND	1.965539
VNK	1.532019
Included observations: 74	

Normality Test

Fig. 1, shows that the JB statistic is 3.004569 and the probability value is 0.222621. Therefore, the null hypothesis is not rejected. On the other hand, the value of the skewness coefficient is -0.493421, and since the absolute value of skewness is less than 0.5, this result is in a slight difference with normal distribution. The amount of kurtosis coefficient is also 3.024407 and since the magnitude of the kurtosis of the normal distribution is 3, it can be said that the distribution is normal in terms of kurtosis.
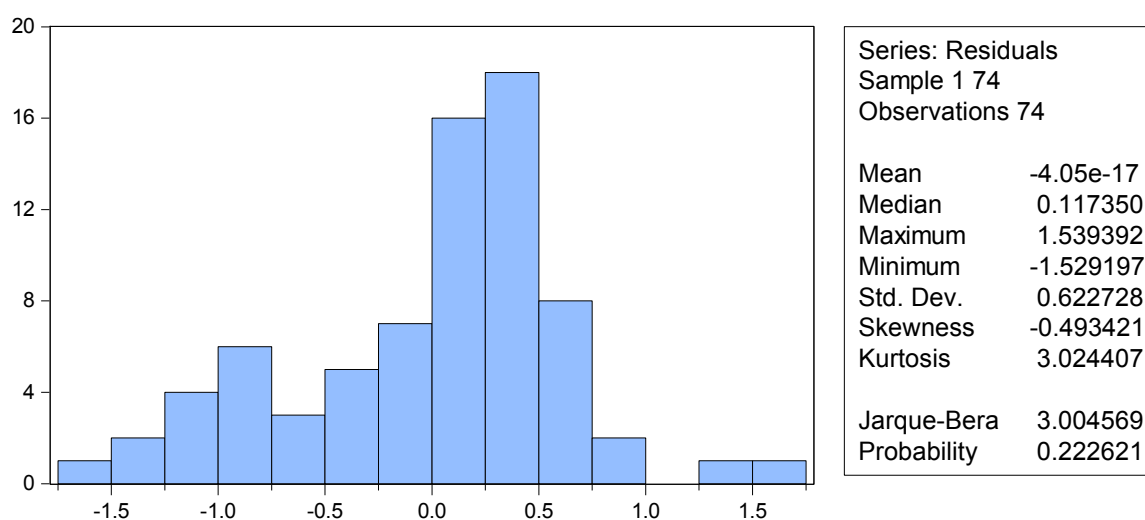

Series: Residuals	
Sample 1 74	
Observations 74	
Mean	-4.05e-17
Median	0.117350
Maximum	1.539392
Minimum	-1.529197
Std. Dev.	0.622728
Skewness	-0.493421
Kurtosis	3.024407
Jarque-Bera	3.004569
Probability	0.222621

Figure 1: Normality Test

Hypotheses Test

In this section, the hypothesis test results are presented using a multiple regression model.

Table 4. Regression Model

Dependent Variable: TEPIX
Method: Least Squares
Sample (adjusted): 1 74
Included observations: 74

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Variabl	Coefficient	Std.Error	t-Statistic	Prob.
C	1.052862	0.695273	1.514316	0.1350
AGE	-0.005083	0.006272	-0.810500	0.4208
LEVER	1.336665	0.621425	2.150968	0.0354
MARKET	0.128057	0.187732	0.682127	0.4977
PM	-0.010982	0.010309	-1.065259	0.2909
PONEG	0.058813	0.024389	2.411445	0.0189
POSIT	-0.050866	0.022814	-2.229590	0.0294
ROA	1.483714	0.920655	1.611586	0.1121
SIGN	-1.716214	0.170103	-10.08924	0.0000
LOG(TA)	-0.055851	0.054473	-1.025289	0.3092
UND	0.251213	0.232263	1.081590	0.2836
VNK	-0.079657	.024951	-3.189015	0.0022

R-squared		0.660593	Mean dependent var	-0.230504
Adjusted R-squared		0.600375	S.D. dependent var	1.068902
S.E. of regression		0.675716	Akaike info criterion	2.201306
Sum squared resid		28.30871	Schwarz criterion	2.574938
Log likelihood		-69.44831	Hannan-Quinn criter.	2.350352
F-statistic		10.97013	Durbin-Watson stat	2.212514
Prob(F-statistic)		0.000000		

H₁: There is a significant negative relationship between the market sign and TEPIX.

According to the table 4, the value of the T statistic for the sign variable is -10.089 and the probability value is zero. As a result, first hypothesis is accepted, that is, there is a significant negative relationship between the sign variable and TEPIX in the IPO at the 95% confidence level. The sign variable has a negative effect on TEPIX. More precisely, with 95% confidence, the increase of one unit in this variable (assuming that other conditions are constant) leads to a decrease of 1.716 in TEPIX.

H₂: There is a significant positive relationship between underpricing and TEPIX.

According to the table 4, the value of the T statistic for the underpricing is 1.082 and the probability value is 0.284. Consequently, at 95% confidence level, there is no significant positive relationship between the underpricing and TEPIX. Underpricing has a positive impact on the stock price index. More precisely, with 95% confidence, the effect of a unit increase in underpricing (assuming that other conditions are constant) results in 0.251 units increase in TEPIX.

H₃: There is a significant negative relationship between stock market value two months after the IPO, divided by the net assets of the company and TEPIX.

According to the table 4, the value of the T statistic for the variable (VNK) is -3.189 and the probability value is 0.002. As a result, third hypothesis is accepted, that is, there is a significant negative relationship between the stock market value two months after the IPO, divided by the net assets of the company and TEPIX at the 95% confidence level. In other words, the stock market value two months after the IPO, divided by the net assets of the company, has a negative effect on TEPIX. More precisely, with a confidence of 95%, one increase in the value of the variable (assuming that other conditions are constant) leads to a 0.080 unit decrease in TEPIX.

H₄: There is a significant positive relationship between the leverage ratio and TEPIX.

According to the table 4, the value of the T statistic for the leverage ratio is 2.151 and the probability value is 0.035. As a result, fourth hypothesis is accepted, that is, there is a significant positive relationship between the leverage ratio and TEPIX at the 95% confidence level. The leverage ratio of the company has a positive impact on the stock price index. More precisely, with 95% confidence, one unit increase in leverage (assuming that other conditions are constant) leads to a 1.337 increase in TEPIX.

CONCLUSION AND SUGGESTIONS

Several factors affect the expansion and development of stock exchange market. In addition to the economic factors and monetary and fiscal policies, the rules and regulations for accepting companies in the stock market and the initial public offerings can be noted. Also, in order to IPOs effectively increase stock returns, and this increase in returns leads to the development and prosperity of the capital market; we need to IPO policies will be properly prepared and implemented. In general, the research findings have strong evidence regarding the direct and significant effects of the variable (VNK) and the leverage ratio (LEVER) and the negative effect of the market sign (SIGN) variable on TEPIX at the time of IPOs. Also, with 95% confidence, there can be no significant relationship between the underpricing (UND) and TEPIX.

Based on the research findings, the IPO has an impact on TEPIX. Hence, it is suggested that TEPIX changes should be considered at the time of initial public offerings by the securities market policymakers. Active stock market investors as well as new investors are advised to be aware of the impact of IPOs on the stock market, and they do not consider sudden changes in TEPIX as a criterion for evaluating and choosing profitability.

The present study also has limitations that cause its results should be explained with caution. These limitations are as follows: The effects of differences in accounting methods in measuring and reporting financial events may affect the results. Also, one of the special features of semi-experimental research in the field of social sciences is the effect of disturbing variables on dependent variables and it is not possible for the researcher to control the disturbing variables completely. In this regard, variables such as political factors and economic factors such as inflation, exchange rate, interest rates, liquidity, monetary policies, etc, can affect stock price index changes.

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