Performance Evaluation of Return, Risk and Liquidity of Firms Newly Listed in Tehran Stock Exchange

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ABSTRACT

It is essential to understand the behavior of initial offerings in comparison with other firms in different periods of recession and prosperity of stock market, considering three indicators of performance, i.e., return, risk and liquidity. The focus of this study is performance evaluation of newly listed stocks considering above indicators in different periods of recession and prosperity. For this purpose, 317 active firms which were not consistently inactive for 3 months or traded by March 20, 2006 were studied. Based on the suggested model, performance of the newly listed stocks was evaluated simultaneously based on three indicators of performance. Then, performance of the newly listed stocks was evaluated individually based on those three indicators. Through multivariate analysis of variance, performance of the newly listed stocks was evaluated better than other stocks.

Keywords: Initial Public Offering, Return, Risk, Liquidity
JEL Classifications: G11, G32

1. INTRODUCTION

The easiest, cheapest yet the most reliable method of financing are to use internal resources for firms. However, these resources do not always meet the needed amount of capital and organizations will be forced to use external resources, which in turn is associated with financial risk for the firm. Among external financing resources, the cheapest and low-risk source of new public offerings is through financial markets and stock exchange after being listed in the market. However, being listed in the stock exchange and public offering has advantages for the firm such as tax exemption and credibility. Initial stock pricing is of great importance. Since these firms lack a history of trading on the stock exchange, the stock value determined by the stock market may be different from the intrinsic value. In fact, stock of the firms listed in the stock exchange for the first time must be priced properly and close to their intrinsic value. Only in this way, investment in stocks of these firms will result in a reasonable return commensurate with the risk. Banerjee and Duflo, (2007) stated that the increased transaction has been followed by accelerated liquidity in the stock exchanges worldwide. Along with improving quality of stock liquidity, the crisis caused by risky financial instruments in 2000-2002 and the financial recession crisis in 2008-2009 were the most important events occurred. The

bitter outcome of suddenly falling total index undermined many stock exchanges worldwide (Zheng et al., 2015). This encourages people and in general investors to invest in shares of these firms through which they can obtain their needed resources.

It is essential to understand behavior of initial public offerings in comparison with other firms in various periods of recession and prosperity of the stock market, considering three indicators including risk, return and liquidity (Begenau, 2015). This will be more evident with regard to the widespread plans of the previous government and emphasis of the new government on privatization and implementation of the Article 44. Privatization will succeed and achieve its long-term goals by reasonable returns along with proper risk and liquidity to new shareholders. For the investors, the most important factor in investment and decision to buy a stock is the expected, reasonable return along with reasonable risk and good liquidity considering other options of investment (Dhar and Sinha, 2015).

In fact, profitability and reasonable return of the investors enable the stock market to achieve one of its missions which is mobilization and optimal allocation of capital. Hence, this study addresses initial public offerings in the stock market and evaluates

the performance of these stocks based on three important indicators including return, risk and liquidity.

2. LITERATURE REVIEW

To evaluate performance, this study measures three important indicators: Return, risk and liquidity, as discussed below. Return refers to the profit from a change in stock price plus dividend and cash dividend during a given period (Jahankhani & Parsaeian, 1999). Risk refers to the expected value of deviation of returns from the expected return. Risk is written as:

$$y - E(Z) = dz - E(z) + \varepsilon \tag{1}$$

Where, y is riskier asset than Z, if ε is not zero (ε is a random variable with zero mathematical expectation, independent of Z); that is:

$$E(\varepsilon|Z) = E(\varepsilon) = 0 \tag{2}$$

In this study, risk is measured by calculating standard deviation. Liquidity refers to stock exchange capacity in the shortest time possible (Omri et al., 2003). In this study, liquidity is calculated by following formula:

$$L = \frac{1}{\dfrac{1}{x_1} + \dfrac{1}{x_2} + \dfrac{1}{x_3} + \dfrac{1}{x_4} + \dfrac{1}{x_5} + \dfrac{1}{x_6}} \tag{3}$$

Where, L denotes liquidity, x_1 is the number of buyers, x_2 is the number of transactions, x_3 is the number of trading days, x_4 is the average value of transactions during the period, x_5 is the number of shares, and x_6 is the average daily value of the firm.

Chung et al. (2009) examined the effect of stock liquidity on firm value and corporate governance. Their results showed that stock liquidity had a direct significant effect on firm value calculated by Tobin's Q index. On the other hand, stock liquidity was associated with improved corporate governance by increasing institutional ownership (including active institutional ownership). Using data from Warsaw Stock Exchange, Zaremba and Konieczka (2013) evaluated momentum, value, size and liquidity in the Polish market, and found that the portfolio formed on the basis of size (market value), value (book value to market value ratio), momentum (annualized rate of return excluding dividends for 12 months prior to 31 November) and liquidity (average daily turnover in the previous month) had positive stock returns. Lischewski and Voronkova (2012) examined that whether stock liquidity as well as firm size and value is one of the important factors effective on stock return. Their results showed that stock liquidity compared to stock value and firm size unexpectedly had no significant effect on stock returns. Using ask-bid spread as a measure of stock liquidity, Dennis and Strickland (2011) related ownership structure during stock split to liquidity. Although they concluded that liquidity increased after stock split, liquidity benefits depended on ownership. Overall, their results suggested that ask-bid spread was negatively related to the level of organizational ownership. Dittmar and Smith (2007) addressed corporate governance and value of cash holdings to

find out how good corporate governance increases firm value. They found a relationship between good corporate governance and cash balances; they believed that good corporate governance increases firm value through better use of the cash. Pinkowitz et al. (2006) tested the effect of equity support on cash holdings and firm value under asymmetry. Their results showed that cash is less valuable for shareholders in countries with lower support from the investor. This result is consistent with the assumption that weak equity support would facilitate the direction of resources in the interests of managers and shareholders. Mikkelson and Partch (2003) concluded that continuous cash holding does not lead to poor performance and represents no conflict of interest between managers and shareholders. Their evidence is consistent with the assumption that cash reserves increase firm value. In countries with weak support from shareholders, managers can accumulate cash with relative impunity and divide less cash dividend. Tables 1 and 2 summarize the studies conducted in different countries.

2.1. Hypotheses

Hypothesis 1: There is a significant difference in performance of newly listed firms and that of other firms.

Hypothesis 2: There is a significant difference in average return of newly listed firms and that of other firms.

Hypothesis 3: There is a significant difference in risk of newly listed firms and that of other firms.

Hypothesis 4: There is a significant difference in liquidity of newly listed firms and that of other firms.

3. MATERIALS AND METHODS

The studied population consists of 420 companies listed in the Tehran Stock Exchange by 2005. Considering the selected period (2002-2005), the population is surveyed during this period, excluding those whose trademarks were regularly stopped for more than 3 months or not traded. Given the selected period, this can be considered as a time sample of population; out of 420 companies, 317 companies are selected as representative samples. A checklist of variables is developed for which the required information is extracted by reviewing documents available in the stock exchange. Few shares are selected as samples; their return is calculated and matched to the software to ensure accuracy of data and accuracy of software calculations as well as reliability and validity of the instruments.

Variables studied include return, risk and liquidity which are calculated as follows:

3.1. Return

Return per share is calculated based on prices at the beginning and end of the period and dividend at that period using the following formula:

$$R_{it} = \frac{P_{it} - P_{it-1} + D_{it}}{P_{it-1}} \tag{4}$$

Where, R_{it} is rate of return on share i at time t, P_{it} is price of share i at time t, P_{it-1} is price of share i at time $t-1$ and D_{it} is dividend of share i in time t. Dividend belongs to shareholders at periods when the firm has assembly. Dividend paid in a period reduce

Table 1: Studies conducted on short-term returns (low pricing)

Country	Scholar	Year	Sample size	Initial average return
Germany	Ljungqvist (1997)	1970-1993	180	9.2
Australia	Finn and Higham (1988)	1966-1978	93	29.2
Belgium	Manigart and Struyf (1997)	1984-1994	28	13.7
Brazil	Aggarwal et al. (1993)	1979-1990	62	78.5
Chile	Dhatt et al. (1993)	1982-1990	19	16.3
Spain	Ibbotson et al. (1994)	1986-1990	58	22.4
USA	Ritter (1987)	1960-1992	10,626	15.3
USA	Ritter (1987)	1977-1982	664	14.8
USA	Keloharju (1993)	1977-1982	364	27.8
France	Jenkinson and Mayer (1988)	1972-1986	87	4.8
England	Jenkinson and Mayer (1988)	1983-1986	143	10.7
Hong Kong	Mcguinness (1992)	1980-1990	80	17.6
Japan	Jenkinson (1990)	1986-1988	48	54.7
Japan	Kanebo and Pettway (1994)	1989-1993	37	12.0
Malaysia	Dawson (1987)	1978-1983	21	166.6
Mexico	Aggarwal et al. (1993)	1987-1990	37	33.0
Netherlands	Buijs and Eijgenhuijsen (1993)	1982-1991	72	7.4
Portugal	Alphao (1989)	1986-1987	62	54.4
Singapore	Koh and Walter (1989)	1973-1987	66	27.0
Sweden	Rydqvist and Högholm (1995)	1970-1991	213	39.0
Thailand	Wethyavivorn and Koo-Smith (1991)	1988-1989	32	58.1

Table 2: Studies conducted on long-term returns

Country	Scholar	Year	Sample size	Holding period	Return
Germany	Ljungqvist (1997)	1970-1990	145	3	−12.1
Brazil	Aggarwal et al. (1993)	1980-1990	62	3	−47.0
Canada	Shaw et al. (1976)	1956-1963	105	5	−32.3
Chile	Aggarwal et al. (1993)	1982-1990	28	3	−23.7
Korea	Kim et al. (1995)	1985-1988	99	3	+91.6
USA	Stigler (1964 a, b)	1923-1928	70	5	−37.7
USA	Stigler (1964 a, b)	1949-1955	46	5	−25.1
USA	Cusatis et al. (1993)	1965-1988	146	3	+33.6
USA	Loughran et al. (1994)	1967-1987	3656	6	−33.3
USA	Loughran and Ritter (1996)	1970-1990	4753	5	−30.0
USA	Ritter (1991)	1975-1984	1526	3	−29.1
Finland	Keloharju (1993)	1984-1989	79	3	−21.1
England	Levis (1993)	1980-1988	712	3	−8.1
Hong Kong	Mcguinness (1992)	1980-1990	72	2	−18.3
Japan	Cai and Wei (1997)	1971-1990	172	3	−27.0
Singapore	Hin and Mahmood (1993)	1976-1984	45	3	−9.2
Sweden	Loughran et al. (1994)	1980-1990	162	3	+1.2

stock price. Therefore, substitution of D_{it} in the formula for rate of return can also be considered as an adjustment factor. In periods when the company has no assembly, D_{it} is zero. Depending on decisions of the assemblies, D_{it} is given to shareholders in various forms as follows:

(a) The formula for calculating return on the dividend paid:

$$R_{it} = \frac{P_{it} - P_{it-1} + D_{it}}{P_{it-1}} \qquad (5)$$

D_{it} is equal to the cash dividend.

(b) The formula for calculating return on the bonus shares granted (at the rate of α percent):

$$R_{it} = \frac{(1+\alpha)P_{it} - P_{it-1} + D(1+\alpha)}{P_{it-1}} \qquad (6)$$

(c) If the general assembly approves α percent capital increase (priority), the formula for calculating return per share is as follows:

$$R_{it} = \frac{(1+\alpha)P_{it} - P_{it-1} - \alpha(1000) + D(1+\alpha)}{P_{it-1} + \alpha(1000)} \qquad (7)$$

Nominal value of each share is 1000 rials.

Note that, all returns here are calculated on a weekly basis. In fact, nearly 50 weekly returns are calculated for each share per year.

3.2. Risk
Risk is the standard deviation of weekly returns per share.

3.3. Liquidity
Liquidity index which is calculated by the software Pars Portfolio using the following formula is used for liquidity:

$$L = \frac{1}{\frac{1}{x_1} + \frac{1}{x_2} + \frac{1}{x_3} + \frac{1}{x_4} + \frac{1}{x_5} + \frac{1}{x_6}} \quad (8)$$

Where, L denotes liquidity, x_1 is the number of buyers, x_2 is the number of transactions, x_3 is the number of trading days, x_4 is the average value of transactions during the period, x_5 is the number of shares and x_6 is the average daily value of the firm. This numerical ratio calculates liquidity of the stock considering the factors substituted in the formula. A coefficient is calculated for each company; then, consecutive ranks of the shares are calculated in terms of liquidity by sorting those values. This means that if L calculated in the formula is a larger value for each share, the share will be more liquid and its rank will be better than other shares.

4. RESULTS

Multivariate analysis of variance (MANOVA) is used to examine differences in several variables at a time. Tests of significance in MANOVA are obtained by different combinations of these eigenvalues. These tests include:
1. Pillai-Bartlett Trace
2. Wilk's lambda
3. Hotelling-Lowley Trace
4. Roy's largest root.

Hypothesis 1: There is a significant difference in performance of newly listed firms and that of other firms.

Each of the four tests indicates significance of multivariate mutual effect; thus, the hypothesis that performance of newly listed stocks is similar to other stocks is rejected based on dependent variables at 95% probability. Therefore, H_0 is rejected (Table 3). Given that newly listed stocks are more liquid, average return and performance of newly listed stocks are higher than other stocks. There is a significant difference in performance of newly listed firms and that of other firms in the prosperity period.

Each of the four tests indicates significance of multivariate mutual effect; thus, the hypothesis that performance of newly listed stocks is similar to other stocks is rejected based on dependent variables at 95% probability. Therefore, H_0 is rejected (Table 4). Given that newly listed stocks are more liquid and average return of newly

listed stocks is higher, thus the performance of newly listed stocks is better than other stocks in recession period. As multivariate mutual effect is significant in three MANOVAs for prosperity, recession and overall period, the hypothesis that performance of newly listed stocks is similar to other stocks in different periods is rejected based on dependent variables at 95% probability. Given that newly listed stocks are more liquid and average return of newly listed stocks is higher, thus the performance of newly listed stocks is better than other stocks in prosperity, recession and overall period.

Hypothesis 2: There is a significant difference in average return of newly listed firms and that of other firms.

Significance level is smaller than error level; thus, H_0 is rejected (Table 5). Therefore, there is a significant difference in average return of newly listed firms and that of other firms at 95% confidence. Given the positive t calculated, mean of the first group is larger than the second group (Table 6). That is, average return of newly listed firms is higher than that of other firms.

Hypothesis 3: There is a significant difference in risk of newly listed firms and that of other firms.

Significance level is greater than error level; thus, H_0 is accepted. Therefore, there is no significant different in risk of newly listed firms and that of other firms at 95% confidence (Tables 7 and 8).

Hypothesis 4: There is a significant difference in liquidity of newly listed firms and that of other firms.

Significance level is smaller than error level; thus, H_0 is rejected (Table 9). Therefore, there is a significant difference in liquidity of newly listed firms and that of other firms at 95% confidence. Given the negative t calculated, mean of the first group is smaller than the second group. That is, rank of liquidity of newly listed firms is lower than that of other firms. Thus, newly listed firms are more liquid (Table 10).

5. DISCUSSION AND CONCLUSION

Findings show a significant difference in average return of newly listed firms and that of other firms; moreover, average return of newly listed firms is higher than that of other firms. There is no

Table 3: Differences in performance of newly listed firms and that of other firms in prosperity period

Test	Test value	Estimated F-value	Degrees of freedom	Error degree of freedom	Significance of F
Pillai's trace	0.038	14.213	3	1071	0
Wilk's lambda	0.962	14.213	3	1071	0
Hotelling trace	0.04	14.213	3	1071	0
Roy's largest root	0.04	14.213	3	1071	0

Table 4: Differences in performance of newly listed firms and that of other firms in recession period

Test	Test value	Estimated F-value	Degrees of freedom	Error degree of freedom	Significance of F
Pillai's Trace	0.044	9.214	3	600	0
Wilk's lambda	0.956	9.214	3	600	0
Hotelling trace	0.046	9.214	3	600	0
Roy's largest root	0.046	9.214	3	600	0

Table 5: Descriptive findings for return of newly listed firms and other firms

Group	Number	Mean±standard deviation
Newly listed	100	1.27±1.95
Other	976	0.50±1.25

Table 6: Difference in return of newly listed firms and that of other firms

t calculated	Degrees of freedom	Significance	Error level	Test result
3.847	107.438	0.00	0.05	H_0 rejected

Table 7: Descriptive findings for risk of newly listed firms and other firms

Group	Number	Mean±standard deviation
Newly listed	100	6.19±3.61
Other	976	5.44±4.86

Table 8: Difference in risk of newly listed firms and that of other firms

t calculated	Degrees of freedom	Significance	Error level	Test result
1.5	1074	0.13	0.05	H_0 accepted

Table 9: Descriptive findings for liquidity of newly listed firms and other firms

Group	Number	Mean±standard deviation
Newly listed	99	92.03±44.13
Other	976	113.71±48.53

Table 10: Difference in liquidity of newly listed firms and that of other firms

t calculated	Degrees of freedom	Significance	Error level	Test result
−4.27	1073	0.00	0.05	H_0 rejected

significant difference in risk of newly listed firms and that of other firms. There is a significant diffreence in liquidity of newly listed firms and that of other firms; moreover, newly listed firms are more liquid. There is a significant difference in average return of newly listed firms and that of other firms in prosperity period. Average return of newly listed firms is higher than average return of other firms in prosperity period. There is no significant difference in risk of newly listed firms and that of other firms in prosperity period. There is no significant difference in liquidity of newly listed firms and that of other firms in prosperity period. There is no significant difference in average return of newly listed firms and that of other firms in recession period. There is no significant difference in risk of newly listed firms and that of other firms in recession period. There is a significant difference in liquidity of newly listed firms and that of other firms in recession period. Newly listed firms are more liquid in recession period.

The next discussion is performance of newly listed stocks in three indicators including return, risk and liquidity during 2002-2005

relative to other stocks. For this purpose, weekly data of the selected sample including 312 firms was calculated and tested. In MANOVA, performance of the newly listed stock is better than other stocks. Student's t-test shows a significant difference between average return and liquidity of the newly listed firms and other firms. Average return of newly listed firms is higher than average return of other firms; moreover, newly listed firms are more liquid than other stocks. However, there is no significant difference in risk of newly listed firms and that of other firms. In the following, performance of newly listed firms is evaluated in above indicators during 2002-2005 in different periods of recession and prosperity relative to other stocks. For this purpose, weekly data of the selected sample including 312 firms are evaluated and tested. In MANOVA, performance of the newly listed firms is better than other stocks in prosperity period. Average return, risk and liquidity of the sample are compared to the average return, risk and liquidity of other companies. Student's t-test shows no significant difference in risk and stock liquidity of newly listed firms and that of other firms; however, there is a significant difference in average return of newly listed firms and that of other firms. Average return of newly listed firms is higher than that of other firms.

Given the significance of return, risk and liquidity in decision-making process of investors, as well as the significant role of these three indicators in success of the firms to be listed in stock exchange, the present results can be helpful in periods of recession and prosperity. As MANOVA showed, performance of newly listed firms is better than that of other firms in recession and prosperity periods. Nevertheless, t-test results can further help investors and companies to be listed in the stock exchange. For example, investors need to pay more attention to their risk taking capacity in prosperity period to be listed in the stock exchange. Moreover, they particularly need to consider liquidity in this period. Furthermore, these companies need to reduce their risk and increase liquidity through major shareholders. Investors need to consider the expected return and their risk taking capacity in recession. Moreover, they need to increase return and reduce their risk in this period through major shareholders to be listed in the stock exchange.

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