

Relationship between liquidity and stock returns considering company's life cycle: The case study of Tehran stock exchange listed companies

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Abstract: The purpose of the present study was to investigate the relationship between liquidity and stock returns with regard to a company's life cycle. In this descriptive study, correlation analysis was employed as the research method. The statistical population was comprised of the listed companies on Tehran Stock Exchange from 2010 to 2014. The sampling method was systematic elimination sampling. The estimation method for the present model was based on integrated data. This combined method comes from time-series as well as cross-sectional data for 78 companies listed on Tehran Stock Exchange. Considering the company's life cycle, there was a significantly positive and direct relationship between the variables of liquidity and stock returns; viz., as the liquidity increases, the stock returns grow. In all three categories, the companies were placed in periods of decline, maturation, and growth. The highest coefficient of determination was related to the companies in the growth period with 97 per cent effect.

Key words: *Liquidity; Stock returns; Company's life cycle; Tehran stock exchange*

1. Introduction

In the capital market, the decisions made by dealers are based on a combination of risk and returns. Regardless of the type and the method of investment, two factors including the investor's prediction in case of returnable factors from investment and the real profits of investing are among the most important aspects of financial decision-making. The results of many studies indicate a relationship between financial data and stock returns of companies. The results of some other studies suggest that there is a relationship between stock returns and non-financial information. Liquidity factors such as offered price differences of buying and selling stocks, the company's stock turnover, the volume of transactions, trading rate, and the percentage of the trading days during the time period (year) are among the criteria that can be correlated with the stock returns of companies (Mehran and Rasaeeyan, 2010).

1.1. Statement of the Problem and Significance of the Study

The stock liquidity is one of the most important factors for decision-making as well as one of the most important criteria which are taken into account

by investors while choosing stocks. In fact, one of the most important factors considered in choosing an investment among different investment options is liquidity. Overall, liquidity refers to the ease of buying and selling a security with no considerable change in its price. Similarly, the lack of liquidity shows the effects that order has on the price. This effect is in the form of discounts granted by sellers or premium receivables by buyers for meeting an order in the market. Liquidity in secondary markets plays a determining role in the success of public offers and reduces the costs and risks of underwriters and market-makers. Meanwhile, the investor's expenses are lowered via reducing the variability scope and transaction costs. Accordingly, from a macro perspective, the presence of liquidated capital markets is necessary for the efficient allocation of capital. This will also provide the publishers' capital costs.

Liquidity can be examined both at the level of individual securities and at a certain proportion of the total stock market. Liquidity can be defined as the ability to buy or sell any of the securities to the desired value from the stock market based on the market price at a short period of time. This feature is valuable as on equal terms, securities with higher liquidity have higher prices than securities with lower liquidity (Johnson, 2008). From the perspective of price effect, liquidity is defined as the ability of market to absorb large volumes of transactions without creating any severe

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fluctuations in prices. In addition, the main feature of liquidated markets is the slight gap between offered prices for dealing. Similarly, illiquidity will reflect the influence that the ordering process has on prices.

Liquidity can also be defined as the probability of doing transactions with a price equivalent with the last transaction price. Liquidity is an important measure of market. In such a market, prices are moving slowly and the distance between the proposed buying and selling prices is close to zero (Goss and Barry, 2008).

From different aspects, liquidity in each company and all the stock markets is of significance including the role of liquidity in the market growth and as the main index of market development, its impact on capital expenses, a factor for improving the performance of companies and all the economy ensuring the success of the public offers of new stocks, a factor considered for basket management along with risk and returns, the impact on the effectiveness of risk covering instruments, the pivotal role of market liquidity in the formation of prices, the success of the public offers of new stocks and reducing the risk for underwriters and market-makers, as well as the stability of the financial systems (Perotti and Van Oijen, 2003).

Since the mid-1980s, the issue of liquidity has been proposed as a determinant factor of stock returns. Some investors may quickly require the financial sources of their investments, in such cases, the liquidity power of the assets can be of utmost importance (Safaripour, 2008).

Assets (securities) that are welcomed for trading at the stock exchange can represent their speed of liquidity. Several researchers, among them, Baker and Stein (2003) found a positive relationship between stock returns and liquidity, and some other researchers such as Omri, Zayani, and Lokil (2004) reported a negative relationship between these two variables. However, studies in this area are going on, and the results of this study show that the liquidity factor has an impact on asset returns and it has been considered by investors (Miguel, 2005). However, there are ambiguities in this area; as a result, the present study is to examine the relationship between liquidity and stock returns in terms of two control variables of a company's life cycle.

1.2. Research Objectives

The main objective: identification of the relationship between liquidity and stock returns considering a company's life cycle

The secondary objectives:

1. Identification of the relationship between the relative price gap and the stock returns
2. Identification of the number of stock turnovers and stock returns
3. Identification of the relationship between the relative price gap and stock returns considering the company's life cycle

4. Identification of the number of stock turnovers and the returns considering the company's life cycle

1.3. Review of the Related Literature

The first measure of liquidity is the criterion proposed by Pastor (2003) which is based on an inverse relationship between price fluctuations and the flow of orders. The second measure of liquidity is the criterion of the market performance which is defined as the sensitivity of the returns to the changes of the proposed price for buying and selling, and the final criterion proposed by Amihud (2002) which is the absolute stock returns on the volume of transactions in euro. The results of this experimental study show that the criterion suggested by Amihud (2002) significantly improves the pricing model of assets and for other liquidity criteria it indicates that the liquidity in the three-factor model proposed by Fama and French is considered as an important source of risk.

Salvati and Rsaeyan in their study on the relationship between the capital structure and liquidity of the stock over a time period of 4 years (2001 to 2004) among 60 companies listed on Tehran Stock Exchange concluded that there is no significant relationship between the capital structure and liquidity of the company as well as profitability. Nevertheless, they revealed that there is a significant relationship between the ratio of the market value to the book value and the capital structure (Salavati and Rsaeyan, 2005).

In their study, Namazi and Shirzadeh examined the relationship between the capital structure and profitability of the companies listed on Tehran Stock Exchange. The results indicated the fact that, in general, there is a positive relationship between the capital structure and profitability of companies, but this relationship is statistically weak.

Using correlation coefficient, Malekipour Gharbi probed into the impact of financial leverage on returns per share for listed companies on Tehran Stock Exchange and concluded that financial leverage has no effect on returns per share.

The findings of the study revealed by Arbabian and Safari showed that there are positive relationships between the ratio of short-term debt to total assets and profitability of the company, as well as the ratio of the debt to assets and profitability; on the contrary, there is a negative relationship between the long-term debt ratio to assets and profitability.

Ghadiri Moghaddam and Asadi concluded that there is a significant relationship between the quick ratio and the interest coverage ratio with the debt ratio (capital structure) of the company.

Duskar (2006) presented a model to investigate the liquidity and volatility of stock prices. In this model, the recent changes of prices are predicted by investors. He believes that when volatility is high, the premium risk is high and when the current returns on assets is low, the risk-free rate of the returns on

assets are low, too, and the market will not have liquidity. On the other hand, illiquidity maximizes the supply shock.

Amihud (2002) maintained that the expected market illiquidity has a positive correlation with the expected excess returns on stocks. In his study, he claimed that some of the expected excess returns can be expressed by means of premium illiquidity. The liquidity measure in this study was the absolute stock returns relative to the volume of transactions in terms of dollars. Furthermore, he claimed that illiquidity has a greater impact on the premium stocks of small companies.

Chordeya (2001) supposed that one of the logical hypotheses was that risk is concerned with the changes in liquidity. He also reiterated that the level of liquidity has an impact on asset returns and the relationship between expected stock returns and, in his study, the volatility of trading activities were

evaluated as an indicator of liquidity. The results showed that there is a negative relationship between stock returns and fluctuations in trading volume.

Kaster (1986) along with Marand and Long (1988) concluded that there is a negative relationship between the debt ratio and profitability. Rajan and Zenger (1995) and Valed (1999) found a negative relationship between debt ratio and profitability in the U.S., Japan and Great Britain.

Francis and Long (2005) conducted a study on 984 American companies from 1979 to 1983. In their study, they employed the ratio of profit average to assets as a measure of the profitability of the company and came to the conclusion that there is a negative relationship between the debt ratio and the profitability of companies.

1.4. The Conceptual Model of the Study

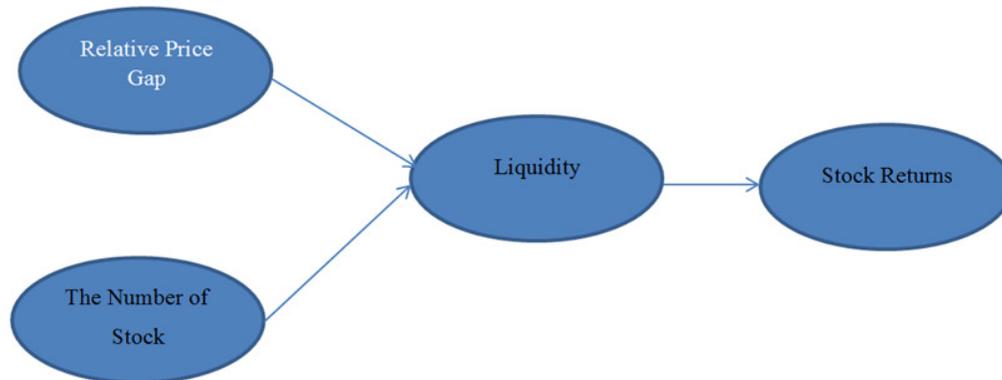


Fig. 1: Company's Life Cycle

2. Methodology

Since the purpose of the present study is to investigate the relationship between liquidity and stock returns considering the company's life cycle, the research method used in this descriptive study is correlation. This study is an applied research in which there is a logical relationship between the research and society and the researcher is to apply the achievements in the society.

2.1. Research Method

Since a number of resources including documents, papers, books, articles and theses as well as online databases were employed to collect the required data in the different sections of this study, the research method in the present study is a correlation study using a post-hoc approach (via the previous data). Post-hoc approach is used when the researcher deals with the subject aftermath of the events. Furthermore, there is no possibility for manipulation of the independent variables (Namazi and Rostami, 1999).

2.2. The Population and the Statistical Sample of the Study

The statistical population of the current study included all the companies listed on Tehran Stock Exchange from 2010 to 2014.

2.3. Sample Size

A sample group was selected and studied from the statistical population. To this end, judgment sampling (systematic elimination) (Nikoomaram and Mohammadzadeh Salte, 2012) was used as follows:

1. In terms of increase in comparability, their financial time period ended in March.
2. They do not have any changes in their fiscal year and no cessation in their operations from 2010 to 2014.
3. The selected company is not among investment companies, financial intermediaries, banks, and insurance centers.
4. The mentioned company is doing continuous activity during the present study and its stocks are traded. Consequently, 78 companies were analyzed.

3. Examination of Normal or Abnormal Situations

Table 1: The annual examination of the normal or abnormal situation of the return rate as the dependent variable using K-S test

Test	Return Rate in 2014	Return Rate in 2013	Return Rate in 2012	Return Rate in 2011	Return Rate in 2010	Return Rate in 5 Years
Kolmogorov-Smirnov	0.558	0.754	0.837	0.722	0.682	0.738
Level of Significance	0.804	0.727	0.632	0.557	0.464	0.494

Table 2: The annual examination of the normal or abnormal situation of liquidity as the dependent variable using K-S test

Test	Liquidity in 2014	Liquidity in 2013	Liquidity in 2012	Liquidity in 2011	Liquidity in 2010	Liquidity in 5 Years
Kolmogorov-Smirnov	0.807	1.035	1.038	1.122	1.050	1.658
Level of Significance	0.533	0.234	0.231	0.161	0.220	0.553

Table 3: Correlation coefficient between liquidity and stock returns

Correlation							
Stock Returns	Year	2010	2011	2012	2013	2014	Total in 5 years
	Pearson Correlation	0.596**	0.442*	0.377*	0.481**	0.339*	0.228*
	Two-tailed Level of Significance	60.00	50.01	030.0	80.00	0.049	0.019
	Confidence Level	99%	95%	95%	99%	95%	95%

In summary, the statistical tests applied to multivariate regression analysis are as follows:

Table 4: The results of regression test between liquidity and stock returns for each year

Results	F-value	Level of Significance for F	Year
The null hypothesis is rejected and there is a significant relationship.	14.044	0.002	2010
The null hypothesis is rejected and there is a significant relationship.	5.860	0.013	2011
The null hypothesis is rejected and there is a significant relationship.	4.554	0.040	2012
The null hypothesis is rejected and there is a significant relationship.	9.825	0.001	2013
The null hypothesis is rejected and there is a significant relationship.	3.151	0.036	2014

Table 5: The amount of coefficient of determination and coefficient of determination adjusted for the years 2010 to 2014

Year	Coefficient of Determination	Coefficient of Determination Adjusted
2010	0.466	0.171
2011	0.352	0.081
2012	0.472	0.087
2013	0.674	0.148
2014	0.222	0.047

The amount of R^2 in Table 5 shows that in all the years, the percentage of liquidity is desirable and in the best model (2010) about 0.466 per cent of changes of dependent variable is explained by the independent variable. Finally, the estimation of the regression model is discussed in the following Table.

According to Table 5, the models are significant for each year.

4. The Second Regression Analysis

There is a statistically significant relationship between liquidity and stock returns considering the company's life cycle.

To determine the effect of the company's life cycle on the relationship between liquidity and stock returns based on classification, companies are separately considered in terms of growth, maturation, and decline and the results are presented as follows:

According to Table 6, it can be seen that from 78 companies listed on Tehran Stock Exchange; 28

companies are included in the first category of life cycle that is the decline period, 26 companies are from the second category of maturation period, and 27 companies are included in the third category that is the growth period. As revealed by the regression test, there is a direct and positive relationship between liquidity and stock returns for companies in the growth period and the amount of changes of stock returns by means of liquidity is about 94 per cent.

Table 6: The regression test between the liquidity variable and stock return rate considering the company's life cycle

Companies		α_0	α_1	Coefficient of Determination	Coefficient of Determination Adjusted	Durbin Watson	Amount of F-value	Amount of Probability for F-value	Number of Companies
Decline	Fixed Amount	-2.7613	205.4643	0.696	0.695	0.198	228.546	0.0002	24
	t-value	-1.8122	15.38045						
	Level of significance for t-value	0.071	0.003						
Maturation	Fixed Amount	-14.725	325.4775	0.924	0.695	0.198	1497.94	0.003	28
	t-value	-1.8144	15.38007						
	Level of significance for t-value	0.000	0.0000						
Growth	Fixed Amount	30.7400	82.73874	0.973	0.949	1.604428	4300.15	0.002	26
	t-value	84.3602	64.64424						
	Level of significance for t-value	0.001	0.001						
	Level of significance for t-value	0.001	0.001						

5. An Overview of Research Results

The main objective of the present study was to investigate the relationship between liquidity and stock returns according to the life cycle of the companies listed on Tehran Stock Exchange.

5.1. The Main Hypothesis of the Study

There is a positive and significant relationship between liquidity and stock returns in terms of the company's life cycle of the companies listed on Tehran Stock Exchange. According to the results, the main hypothesis of the study including the significant relationship between liquidity and stock returns considering the company's life cycle and the companies in the decline period, the amount of value $F=255.029$ and $Sig=0.000$ are approved with the

confidence level of 99 per cent. In the companies located in maturation period, the amount of value $F = 66.768$ and $Sig= 0.000$ are approved with the confidence level of 99 per cent and in the growth period, the $F\text{-value} = 3.863$ and $Sig=0.000$ are approved with the confidence level of 99 per cent.

Generally, however, the more the amount of liquidity in the performance dimensions of individual and collective companies increases, the more the efficiency of the stock returns in the in the Stock Exchange listed companies improves. As a whole, it is concluded that the company's life cycle is one of the factors affecting the relationship between liquidity and stock returns and as each variable associated with the company's life cycle enters the regression equation, the adjusted coefficient of determination increases.

5.2. The Secondary Hypothesis 1

There is a statistical significant relationship between liquidity and stock returns. The direct and positive relationship between liquidity and stock returns means that as liquidity increases, the stock returns increases, too. Therefore, this relationship is statistically significant considering the regression coefficient and the amount of t-value=18.80 and Sig=0.000 which indicates the direct effect of stock turnover on stock returns. In other words, the increase in the circulating price on Tehran Stock Exchange has led to an increase in the stock returns of companies. According to the results of the present study, it is concluded that in Iranian stock exchange, liquidated stocks is highly welcomed and attention as well as public demand for such stocks have been more likely to increase their prices and consequently their returns. The tendency of the market to increasing liquidated stock capital can be additionally mentioned as a factor which has been more likely to generate higher returns for these stocks in the condition of increasing the capital.

5.3. The Secondary Hypothesis 2

There is a statistical significant relationship between liquidity and stock returns in terms of the company's life cycle. According to the results, it can be seen that there is a direct and positive relationship between stock returns and liquidity that is as the liquidity increases, risk management increases in all the three categories of companies in terms of their place in the periods of decline, maturation, or growth. However, the higher absolute coefficient of determination is related to companies in the growth period with 97 per cent impact.

5.4. Recommendations Based on Research Hypotheses

The results of testing hypotheses generally indicate the effect of liquidity on increasing the financial performance power of stock return.

Liquidity is taken into account as an important market measure which plays a determining role in the success of public offers and decreases the expenses as well as underwriters and market-makers. In addition, the investors' expenses decrease via the decline in the variability scope and transaction costs. Therefore, from a general perspective, the presence of liquidated capital markets is vital for the efficiency of the capital and it increases the profits for stockholders obtained from the buying and selling stocks. This in fact increases the stock returns. The importance of the issue is highlighted as in equal conditions; securities with higher liquidity have higher prices in comparison with securities with lower liquidity.

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