The relationship between liquidity and stock returns and systematic risk of stock market investment companies on the Stock Exchange

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Abstract
Given the increasing importance of liquidity, the emphasis on improving the liquidity of markets supervisory authority, is justified and understandable. The main objective of the regulatory measures, market development and market reform, deep markets with high liquidity. Cash markets, investor confidence and market efficiency increases and thus increase the flexibility of the market to follow. This research seeks to answer is the question of whether the liquidity of the stock market return and the systematic risk of the investment companies in Tehran Stock Exchange has a relationship or not? The population consists of all investment companies listed in Tehran Stock Exchange is who are eligible. In this study, the statistical methods used to analyze the data, is a hybrid approach. The results imply that, with regard to standards, stock rotation, zero returns, adjusted for non-trading days, based on the workflow, as indicators of liquidity, a significant positive correlation between stock returns and the level of market liquidity exists. Also, with regard to standards, stock rotation, zero returns, adjusted for non-trading days based on the flow, as a measure of liquidity, it was a negative relationship between systematic risk and liquidity stated.

Keywords: Liquidity, stock turnover, Amihud(ILLIQ), stock returns, systematic risk, yielding zero.

Introduction
In the last decades in almost all developing countries discussed companies of one of the most serious concerns of statesmen and thinkers. However, economic growth and prosperity of any country depends on investment and proper planning. No doubt many experts as the most important financial management in order to encourage people to invest in productive activities or purchasing shares of companies, a balance between risk and return 1, 2 such investment compared to other investments is non-productive. (Fadaei race, 2003, pp. 26-6) Stock Exchange as a capital markets that can attract people from one side to collect the cash savings to help and other small savings achieved by minimizing the role of producers of capital intermediation and brokerage services require huge capital to form and rise to produce. In Iran the economic characteristics of developing countries to create conditions for investors of different options, securities and investment on the company's stock pick is of great importance. In this way we can provide a competitive and efficient market conditions for equity securities with a fair price at any moment can be traded at the studies to find out and functional to the investment in correct decision helped. (Namazi, 2008, 104-82)

In this study, liquidity, as a measure of shareholder value by investors, returns and systematic risk associated with investing in companies discussed.

Problem Statement
Liquidity as one of the key elements in developing markets has become increasingly important.

First, the lack of market liquidity, adverse effects on the formation and price discovery of the useful features of the market, it will.

Moreover, market liquidity is an important factor in the strength and stability of the market.

A critique of the market is able to absorb and withstand external shocks is negative.

Second, the competitions to attract international orders, particularly in highly developed markets are rising sharply. In other markets, there is a clear vision of the market as well as the identification of listed companies is a basic requirement. It is now in the markets, measures to increase the liquidity of the market and the variety of products available to enhance the infrastructure is being done. Liquidity in the secondary market
has a decisive role to reduce the cost. Also invest in cost reducing transaction costs amplitude decreases. So from a macro perspective on the capital markets criticism is essential for the efficient allocation of capital (Acharya, 2005). To take advantage of this research analysts and investors as a measure of liquidity in the Stock Exchange benchmark stock assessment, the relationship between systematic risk, liquidity and efficiency in dealing with investment firms.

Therefore, the researcher has tried to answer the question whether the liquidity of the stock market return and the systematic risk of the investment companies in Tehran Stock Exchange has a relationship or not?

**Review of literature**

Start research on Liquidity Risk Liquidity as it sometimes has been since the mid-80s returns. Despite being part of this radically new research in the field of financial management is considered. During the same period, though few people have a lot to study this aspect of the financial risk, especially in the stock market have been and results of early studies were very different in this field. In some cases a very strong positive relationship between output and lack of liquidity is shown, while in others the special relationship between the two it's unproven. Others have considered this relationship specific to the month of January. But in general, the question of whether liquidity affects asset returns or not completely and securely has not been answered yet. However, studies have not stopped it, because it has been shown that this agent is effective return on assets and investors have always considered it. But in general, the question of whether liquidity affects asset returns or not completely and securely has not been answered yet. However, studies have not stopped it, because it has been shown that this agent is effective return on assets and investors have always considered it.

Langstaf (2005) showed that a large number of assets with limited liquidity and characteristics that cannot always deal with them immediately. His research has investigated the role of liquidity in asset pricing. Some assets are in stocks with high liquidity, but others are traded in a relatively long period. The lack of a significant liquidity effect on portfolio decisions are optimal. She declared value and liquidity of an asset with an asset value of more than 25 percent above can be valuable liquid.

Another study was conducted to study the realizability that Chang and others (2010) in a study entitled Liquidity and stock returns, liquidity effect on stock returns, the Tokyo Stock Exchange (Japan) have been examined. Results indicate a strong positive relationship between liquidity and stock returns is variable. (Chang et al, 2010)

Fakhari H, Bazrafshan E. (2010) research stated that the significant positive relationship between stock liquidity and long-term performance of the companies there.

**Research objectives**

This research analysts and investors taking advantage of the Stock Exchange of liquidity as an important criterion for evaluating the amount of stocks, to examine the relationship between liquidity and systematic risk is concerned with efficiency. The overall objective of this study was to identify the relationship between liquidity and stock returns in the stock market companies are investing in Tehran Stock Exchange.

The specific objectives include the following:

1-Identify the relationship between stock liquidity and stock returns by investing in companies in Tehran Stock Exchange

2-Identify the relationship between stock liquidity and systematic risk equity investment firms in Tehran Stock Exchange

**Materials and Methods**

or describe the phenomena studied. The correlation research in the area of research hypotheses. R correlation or correspondence will try to include all the ways in which the relationship between different variables using linear regression and correlation, discovered or determined. The purpose of the correlation analysis, the study of one or more variables change with the change of one or more other variables. The model used in this study is multiple regressions.

The community and Statistical sample research

The population-based study was to determine the scope of research. Including investment companies listed on the Tehran Stock Exchange

The 5-year period 1386 to 1390 were involved in the Tehran Stock Exchange.

And because of this research is limited, it was decided to examine the entire population, and the sample should be avoided. So all companies that meet the following criteria, were selected for this study:
Before 1386 the company should be listed on the Tehran Stock Exchange and the beginning of 1386, whose shares are traded on the exchange.

These companies during the period 1386 to 1390 trades on the exchange must not be interrupted. In other words, the company's shares have been active during the exchange and the maximum lag length is not more than 3 months. The companies selected investments that meet the conditions set forth above have been selected, including 16 companies which are as follows:


Patterns and research variables

In this section the method of calculation used in the research process variables and hypotheses are described. For this model, the model used in the study, Chang (2010) have also been studied and the following model was presented.

Dependent Variable Models

In the research model, to measure the dependent variable of liquidity following four criteria are used:

1. Shares Circulation (DVOL)

The measure of the ratio of the number of shares traded to the number of shares outstanding is calculated. Monthly stock turnover is calculated by the following equation:

\[
DVOL_{it} = \frac{VOL_{it}}{Share_{it}}
\]

2. Non-standard liquidity Amihud

Relative lack of liquidity of a stock divided by the absolute value of daily returns, trading volume is calculated in the same day. No monthly liquidity ratio is calculated from the following equation (Amihud; 2002)

\[
ILLIQ_i = \frac{1}{D} \sum_{t=1}^{D} \frac{|R_i d|}{VOLD_{id}}
\]

3. Benchmark returns zero (Zero)

The criteria by which Lsmvnd et al (1999) introduced, for a month, following equation is obtained:

\[
ZERO_{it} = \frac{Zero Return_{it}}{Trading Day_{it}}
\]

4. adjusted for non-trading days, based on the workflow (LIO)

The goal is to obtain a measure of liquidity and a special focus on different aspects of transactions quickly. The liquidity criterion for a month is defined as follows: (LIO, 2006)
$LIO_{it} = \left[ \frac{\text{NoZV}_{it}}{\frac{\text{turnover}_{it}}{480000}} \right] \times \frac{21}{\text{NoTD}_{t}}$

- Stock price at the end of each month (PRICE)

In this study the stock prices at the end of each month (PRICE), based on the logarithm of the stock price per month will be used.

2- The value of stock trades per month (VOLUME)

In this study, to calculate the value of stock trades per month (VOLUME), the logarithm value of transactions per month will be used.

3- Return on equity (ABSR)

To obtain monthly returns, the market value per share at the end of each month is obtained.

$\text{(MarketValue)}_{ij} = P_{ij} \times Q_{ij}$

The market value per share divided by earnings adjusted for capital increase and we finally adjusted to market value at the end of the month divided by the number of shares of the Company to obtain-adjusted monthly price.

Then, to obtain monthly returns, Ln adjusted monthly price obtained and the difference between the monthly returns are obtained from Ln.

$\text{Ln(Adjusted Price)}_{i2} - \text{Ln(Adjusted Price)}_{i1}$

Then again, the arithmetic average return on equity for the period will be calculated.

$\text{(Re turn)}_{i} = \frac{\sum_{i=1}^{n} (\text{Re turn})_{ij}}{n}$

4. The size of the firm (SIZE)

Company size, based on stock market value is calculated as follows:

$\sum_{i=1}^{n} P_{i} \times Q_{i} = \text{Size}_{m}$

Ratio of book value to market value of equity divided by book value to market value of equity is calculated as follows.

$BM = \frac{MV}{BV}$
6. Systemic risk (Systematic Risk)
Systematic risk of the stock market regressions between annual returns and annual stock returns are obtained. So that by linking a proportion of returns with the returns of individual stocks

\[ R_i = \alpha + \beta_i R_m + e_i \]

To calculate the rate of return on equity beta must be achieved, then the rate of return on the market portfolio earns Stock Price Index is calculated, then the covariance between these two variables. Then the variance of market returns (portfolio) is calculated. Finally, by dividing the covariance of two variables on the variance of market returns, beta coefficient is used to calculate the formula is as follows (range field 2003, 47).

\[ \beta_i = \frac{Cov(R_i, R_m)}{Var(R_m)} \]

7) Results of data analysis
In this section, using inferential statistical indicators to confirm or refute the research hypotheses are discussed in Table 1. In this way we generalize the results of observations of the sample.

Table 1: research hypotheses

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>(The dependent variable (liquidity indicators)</th>
<th>Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stock returns</td>
<td>Roll stock (DVOL)</td>
<td></td>
</tr>
<tr>
<td>Stock returns</td>
<td>Liquidity Amihud Criterion (ILLIQ)</td>
<td>Hypothesis 1</td>
</tr>
<tr>
<td>Stock returns</td>
<td>Benchmark yields zero</td>
<td></td>
</tr>
<tr>
<td>Stock returns</td>
<td>Adjusted based on the number of days without trading turnover (LIO)</td>
<td></td>
</tr>
<tr>
<td>Systemic risk</td>
<td>Roll stock (DVOL)</td>
<td>Hypothesis 2</td>
</tr>
<tr>
<td>Systemic risk</td>
<td>Liquidity Amihud Criterion (ILLIQ)</td>
<td></td>
</tr>
<tr>
<td>Systemic risk</td>
<td>Benchmark yields zero (Zero)</td>
<td></td>
</tr>
<tr>
<td>Systemic risk</td>
<td>Adjusted based on the number of days without trading turnover (LIO)</td>
<td></td>
</tr>
</tbody>
</table>

8-1 - regression models to investigate

\[ Y_{it} = \alpha_i + \beta_1 Price_{it} + \beta_2 Volume_{it} + \beta_3 ASR_{it} + \beta_4 SIZE_{it} + \beta_5 BM_{it} + \beta_6 SRISK_{it} + v_{it} \]

For this model, the model used in the study, Chang (2010) have also been studied and the following model was presented.

\[ DVOL_{it} = 0.001759 Volume_{it} + 0.144441 ASR_{it} + 0.001657 SIZE_{it} - 0.001903 BM_{it} - 0.014798 SRISK_{it} \]

For this test, the variables stock price at the end of each month (PRICE), The value of stock trades per month (VOLUME), stock returns (ABSR), Company size (SIZE), Ratio of book value to market value of equity (BM) ,Systemic risk. As independent variables, was used in this study. It is explained to perform this test, the liquidity of the stock turnover indices (DVOL), Cutie lack of liquidity Amihud (ILLIQ) Criterion yields zero has been measured for each of these indicators, the regression model is fitted. And adjusted based on the number of days without trading turnover (LIO).

1.1 - Estimating the model using Criterion stock turnover
First, before doing the regression, to determine estimates (fixed effects model, random) will apply. Chow and Hausman tests are used for this task.

According to the results of the model are estimated as follows:
First, before doing the regression, to determine estimates (fixed effects model, random) will apply. Chow and Hausman tests are used for this task.

According to the results of the model are estimated as follows:

\[ AMIHUD_{it} = \alpha + \beta_1 Price_{it} + \beta_2 Volume_{it} + \beta_3 ASR_{it} + \beta_4 SIZE_{it} + \beta_5 BM_{it} + \beta_6 SRISK_{it} + \nu_{it} \]

8.1.3 - Estimated using the a benchmark model yields zero (Zero)

According to the results of the model are estimated as follows:

\[ ZERO_{it} = \alpha + \beta_1 Price_{it} + \beta_2 Volume_{it} + \beta_3 ASR_{it} + \beta_4 SIZE_{it} + \beta_5 BM_{it} + \beta_6 SRISK_{it} + \nu_{it} \]

8-1-4 - Adjust the number of days without trading estimation of the model using the criteria based on the flow (LIO)

\[ LIO_{it} = \alpha + \beta_1 Price_{it} + \beta_2 Volume_{it} + \beta_3 ASR_{it} + \beta_4 SIZE_{it} + \beta_5 BM_{it} + \beta_6 SRISK_{it} + \nu_{it} \]

The result of the data analysis, summarized in Table 2 is reflected.

Table 2: Result of the data analysis

<table>
<thead>
<tr>
<th>Conclusions</th>
<th>Decision making</th>
<th>Significance level</th>
<th>Coefficients</th>
<th>Independent variable</th>
<th>The dependent variable</th>
<th>Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive significant correlation</td>
<td>Rejected H0</td>
<td>0.0000</td>
<td>0.144441</td>
<td>Stock returns</td>
<td>Roll stock (DVOL)</td>
<td>1</td>
</tr>
<tr>
<td>Positive significant correlation</td>
<td>Rejected H0</td>
<td>0.0000</td>
<td>2.722329</td>
<td>Stock returns</td>
<td>Liquidity Amihud Criterion (ILLIQ)</td>
<td>1</td>
</tr>
<tr>
<td>Positive significant correlation</td>
<td>Rejected H0</td>
<td>0.0000</td>
<td>3.180291</td>
<td>Stock returns</td>
<td>Benchmark yields zero</td>
<td>2</td>
</tr>
<tr>
<td>Positive significant correlation</td>
<td>Rejected H0</td>
<td>0.0000</td>
<td>24.79594</td>
<td>Stock returns</td>
<td>Adjusted based on the number of days without trading turnover (LIO)</td>
<td>2</td>
</tr>
<tr>
<td>negative significant correlation</td>
<td>Rejected H0</td>
<td>0.0021</td>
<td>-0.014798</td>
<td>Systemic risk</td>
<td>Roll stock (DVOL)</td>
<td>2</td>
</tr>
<tr>
<td>negative significant correlation</td>
<td>Rejected H0</td>
<td>0.0000</td>
<td>-0.718403</td>
<td>Systemic risk</td>
<td>Liquidity Amihud Criterion (ILLIQ)</td>
<td>2</td>
</tr>
<tr>
<td>negative significant correlation</td>
<td>Rejected H0</td>
<td>0.0000</td>
<td>-1.112685</td>
<td>Systemic risk</td>
<td>Benchmark yields zero (Zero)</td>
<td>2</td>
</tr>
<tr>
<td>negative significant correlation</td>
<td>Rejected H0</td>
<td>0.0015</td>
<td>-3.754291</td>
<td>Systemic risk</td>
<td>Adjusted based on the number of days without trading turnover (LIO)</td>
<td>2</td>
</tr>
</tbody>
</table>

**Discussion and conclusions**

The results indicate that, with respect to the benchmark stock turnover as a measure of liquidity, there is a relationship between stock returns and the level of market liquidity. The coefficients of the regression equation fitted to stock returns, is 0.144441. But the lack of liquidity Amihud measure, as an indicator of liquidity, lack of relationship between stock returns...
and liquidity Amihud there. The coefficients of the regression equation fitted to stock returns, is 2.722329. Also, using the zero- return measure, as an indicator of liquidity, it is a significant relationship between stock returns and liquidity using zero returns measure expressed. The coefficients of the regression equation fitted to stock returns, is 3.180291. Also, using the criterion of trade adjustment based on the number of days without flow, as a measure of liquidity, a significant relationship between stock returns and liquidity can be adjusted using the flow can be expressed by the number of days without trading. The coefficients of the regression equation fitted to stock returns, is 24.79594. The results of this study, the same research, Chang and others (2010) that the impact of liquidity on stock returns on the Tokyo Stock Exchange (Japan) have been studied. They conclude, a strong and positive relationship between liquidity and stock returns is variable.

According to the research findings and theoretical studied with regard to corporate governance and liquidity purposes, the following recommendations are offered:

1. The results obtained indicate that the proposed risk factors which may influence the efficiency and liquidity of their shares. It can help investors with respect to the rate of return and degree of risk in their portfolios better form. Activists in Tehran Stock Exchange can Liquidity factors identified in this study may be used to measure the liquidity of its shares.

2. Creditors and investors continue to invest and buy stocks such as stock returns and systematic risk, liquidity stocks to consider. Three. Exchange Act reporting of liquidity positions of securities to the public

3. Purchased and sold to investors before they have provided no information regarding the history of stock liquidity and these criteria should be involved in their decisions.

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