Evaluation of the Association between Company Performance and Tehran's Stock Market Liquidity

Zahra Amirhosseini[*] , Sadegh Hadipour

Department of Management, Shahr-e- Qods Branch, Islamic Azad University, Shahr-e-Qords, Iran

ABSTRACT

This research studies the companies' effectiveness and performance relationship with stock market liquidity in Tehran Stock Exchange during 2010-2015. Simultaneously, in the study, the three indicators: return on assets, return on investment and Tobin's Q ratio were applied as a measure of the performance and bid-ask spread as a measure of liquidity, bid-ask spread to the stock market. This research has a practical purpose and descriptive correlation in research nature and also post-event research. The under study population comprises all companies accepted in Tehran Stock Exchange during the intended period, 198 companies selected with systematic elimination sampling to be studied and analyzed. The results show a positive and significant association between companies' performance and Stock market liquidity

1 Introduction

Most of creditors, investors, managers and those who play a role in economy make decisions based on the performance of companies in order to enter the capital market, appropriately return increasing the wealth and as a result, to change the stock market value. Company's performance is affected by various factors such as Life Company, book value of assets, index of fifty top companies and stock market liquidity. In addition, as a measure of company extent, book value is an important factor in company fundamental analysis that it is considered to select investment opportunities. Increasing or decreeing the index of top fifty companies with affecting market condition and psychological atmosphere could affect company stock price and as a result the company's performance[23]. Liquidity supports miner shareholders to be major shareholders, improves management rights, benefits (advantages), and encourages investors to trade [7]. Capital markets have been created to allocate optimized resources and to increase the welfare of society. Liquidity supply is one of the main features of these markets to achieve the mentioned purpose, which means that assets can trade in the shortest time and cost [3]. Liquidity has been important, especially after the world crisis and financial markets crash and it is important for Iran's market. Line sales indicate problems in Iran's markets. Increasing liquidity, the trading cost will decrease significantly. The effect of liquidity has been proven on company value. Companies with better liquidity have higher evaluation [12]. The main question is with con-

---

sidering the importance of the (above) mentioned issues, whether there is a significant relationship between companies' performance and stock market liquidity in Tehran stock exchange or not?

2 Theoretical Basics and Research History

Recently, liquidity has been considered in academic studies and important issues. Liquidity of asset is defined as "the merchantability of that asset in possible lowest time and cost". In the absence of trading costs liquidity happens. Trading costs are divided into two categories: explicit and implicit. Explicit costs including commission brokers and tax that are measurable easily. However, implicit costs include the cost of inaccessibility to accurate and complete information, search costs, lack of technological efficiency, the difference between supply and demand, incomplete competition and other factors. According to the efficient market theory, one of the characteristics of efficient and ideal markets is lack of trading costs and the ability of high liquidity. Accounting is one of the information resources, which could reduce market information inefficiency, by providing relevant and reliable information and through the action effects on improvement of companies' stock liquidity. Therefore, stock liquidity discusses a measure of market performance, particularly in terms of information and wildly used in study of effective factors on providing useful information. We know information content is measured by market reaction. Generally, there are two types of information reactions in markets. The first one is important information effect on stock exchange that most of accounting researches have been done to study this reaction to accounting information. However, the market reacts to the information in a volume effect. This reaction is observed by increase or decrease in supply, demand or stock buying and selling that could happen (occur) or without changing in stock price.

This effect is appeared in liquidity indicators and is considered less importantly and accounting researchers using in Iran's capital market.

Liquidity plays an important role in price discovery process and it is a criterion for market performance, particularly in terms of information [1]. In addition to theoretical, in scientific aspect and according to available facts such as line sales and other problems, it is essential to pay attention to liquidity and trying to solve the problem. Increased liquidity could result in more financial risk through reducing the cost of portfolio management and more investors' motivation in their trading decisions. Studies show trading cost in American markets is important economically [8]. Sometimes, in financial texts, to convey meaning, merchantability is used instead of liquidity, because more potential buyers and sellers of an asset have more liquidity of that asset [22]. We can note to the bid-ask spread as an important effective factor on liquidity [7, 4], states liquidity is not measurable by an absolute measure. But it should evaluate by key elements of liquidity such as trading costs, time and volume (amount) [2], reported about 70 criteria being used in different research studies to measure liquidity and said there is no unique and agreed liquidity criterion indeed. Liquidity criteria can be divided into two groups:

A) Trading-based or trading liquidity criteria measures: including trading volume of trading, frequency of trading, value of traded stock and stock turnover rate.

B) Order-based or information liquidity of criteria measures: including bid-ask spread of supply and demand, effective supply and demand difference and market depth. Ben states there are about 68 markets liquidity that has been used in different articles [11]. This issue shows disagreement about the best criteria to use. Company performance is the result of the company activities and investment return. When the performance criteria are measured by percentage or ratio instead of raw numbers, it is possible to measure and compare the company's performance, both large and small and in different interties during a period easily. In financial literature, various criteria are used to measure companies'

performance. Companies' performance evaluating criteria in capital market are divided in two catego-ries: traditional criteria and value-based criteria. Using traditional criteria such as company earnings, stock profit, return on equity, return on assets, cash flow, etc. were raised to evaluate companies' per-formance in capital market for years. Evaluating companies' performance in the traditional way is not desirable because of the lack of consideration the costs of companies' capital resources supply. Fol-lowing traditional criteria, value-based criteria such as Tobin's Q ratio, investment return and eco-nomic value added were also raised to evaluate the company's performance [10]. Deng, et al studied benefit management relations and stock market liquidity [5]. Results show managers who are in-volved in real benefit management activities, want to attract unconscious trading with the purpose of providing the liquidity and cost reduction in supplying seasonal stock. In addition, they found less liquidity caused more manipulation in benefit and unconscious trading takes place more benefit to manipulate. Riahi, et al conducted a research with the purpose of evaluating the relationship between benefit management and stock market liquidity [13]. They found a positive and significant relation-ship between benefit management and stock market liquidity. Lang, et al studied the relationship be-tween company information environment and stock market liquidity in 48 countries [2]. Results showed companies with clear information have less trading cost and more liquidity and clearness has an effect on company capital cost and value through liquidity [9]. Fang, et al studied the relationship between stock liquidity and company performance in the research titled "stock market liquidity and company value". In this research, Tobin's Q ratio has been considered as performance index and bid-ask spread and as stock market liquidity index [2]. Results showed a positive and strong relationship between stock market liquidity and company performance. In addition, Gopalan, et al [6], predicted a positive relationship between company assets liquidity and stock liquidity of that company. Their argument was the relationship depends on market expectations in liquid assets layout. In their re-search, it was assumed that stock liquidity is related to managerial decisions such as investment and financing supply change company assets liquidity. Their stock liquidity criterion was Amihud criteria, sales price gap, average sales of price gap and zero return. For assets liquidity, the combined assets were given the score of zero to one, according to liquidity, weighted score was calculated and it was used as an asset liquidity criterion. They concluded increasing one unit in assets liquidity led to 14.5% in company stock liquidity. In a research, Bagheri Mehmandust [17] explaining the concept of liquid-ity using combined data from 53 companies chosen and qualified in the Tehran Stock Exchange dur-ing 2000-2006, studied the relationship between stock liquidity and (Stock turnover ratio and Amihud criteria) with gearing ratio using econometric techniques. Results showed lack of stock liquidity caused financial managers when financing gone into debt more and use financial advantage. Hosseini, et al [19] studied the relationship between company performance and stock market liquidity of com-panies listed in Tehran Stock Exchange. They studied and compared the relationship between perfor-mance and stock liquidity using multiple variable regression and bankroll of representation theory and feedback. Research variables used in research, for companies' performance are return on assets and Tobin's Q ratio and for the stock market liquidity supply and demand gap are turnover, the market value of trading and number of trading. The results showed a direct and significant relationship be-tween Return on assets, value of trading variables, number of trading and institutional ownership as well as a negative and significant relationship between demand and supply gap variable. Ahmadpour, et al [16] studied the relationship between assets liquidity and stock market liquidity of Tehran Stock Exchange during 2006-2011. They used Amihud liquidity measures being optimized for high skew correction by Gupalan try and relative difference of bid-ask spread as stock trading liquidity indexes.

The results showed a positive significant relationship between asset liquidity and stock market liquidity. Momtazian, et al [21], studied relationship between management capabilities of companies' performance indexes in Tehran Stock Exchange that the effect of company size variable and financial advantage was controlled. First, they measured management capabilities using data covering analysis technique, and then studied the relationship using calculation of four measures of company performance: added economic value, return on equity, the price to earnings proportion and Tobin's Q ratio. The results showed a significant relationship between management capabilities and Company performance indexes in Tehran stock market. Dehghankar, et al [18], studied capital market of liquidity crisis and their results showed a negative significant relationship between financial constraints and stock market liquidity. In addition, they found a significant relationship between financial crisis and asset liquidity.

3 Methodology and Research Hypothesis

A significant relationship between return on assets and liquidity of the stock market may observe.
A significant relationship between return on equity and stock market liquidity may observe.
A significant relationship between Tobin's Q ratio and stock market liquidity may observe.
This research has practical purpose and descriptive correlation in research nature and post-event research. The study population consisted of all companies in the Tehran Stock Exchange in the period of 2010- 2015. In order to increase the power of sample adopting, 198 companies were selected among the companies with fiscal year end of March. In the period under review, the fiscal year does not change, also it does not a part of investment companies, banks, insurance and financial intermediaries, and financial services and the company required data are available. The data for this study is based on real information and figures of Iran stock market and the financial statements of companies listed on the Tehran Stock Exchange. In the study, library and field method was used to collect data and information. Skew test stretch, K-S, Pearson correlation and multivariate regression were used to analyze the data. Simultaneously, in the study, the three indicators: return on assets, return on investment and Tobin's Q ratio were used as a measure of the performance and bid-ask spread was used as a measure of liquidity, bid-ask spread and sell to the stock market. Variable of return on assets is calculated as follows [23].

$$(ROAit = \frac{t \text{ Net profit for the year } t + \text{profit cost for the year} * \text{tax rate for the year } 1-t}{\text{the average assets for the year}})$$

Variable returns are calculated as follows [20].

$$(ROEit = \frac{\text{Net profit}}{\text{Book value of equity at the beginning of period}})$$

Tobin's Q ratio is calculated as follows [14].

$$(Qit = \frac{\text{the average of company common stock market value in year } t + \text{the average of the book value of the company's total debt in year } t}{\text{the average of the book value of total assets}})$$

Difference variable bid-ask spread is calculated as follows [15].

$$(BASit = \frac{\text{the average of sell offering price in year } t - \text{the average of buy Offering price in year } t}{\text{the average of sell offering price in year } t + \text{the average of buy Offering price in year } t \div 2})$$

4 Results and Analyses

Data analysis is carried out in two parts. The first section examines the relationship between corporate performance and stock market liquidity using Pearson correlation coefficient, in the second part, multivariable regression models will be used to examine the performance indicators and benchmark stock market liquidity. First, before the hypothesis testing, the normality of the variables was examined and the results are shown in Table 1.

Table 1: the normality of the variables

Variable	Z Kolmogorov test	Significant level (sig)	Skewness	Kurtosis	Result
Return on assets	0.671	0.759	1.620	0.137	Normal
Tobin's Q ratio	1.334	0.065	1.867	0.911	Normal
Return on equity	1.144	0.146	1.787	1.726	Normal
Bid-ask spread	1.182	0.109	1.595	1.622	Normal

According to the results in table, and Kolmogorov – Smirnov test, the significance level for all variables, is greater than error 0.05. (Sig > 0.05) Therefore, the variables have normal distribution. In addition, Skewness and kurtosis values for all variables are in the range of (-2, 2). Therefore, Distribution of all these variables will have normal strain. Therefore, parametric tests were used to evaluate the effectiveness and Pearson correlation and multivariate regression were used to evaluate the relationship between the performances of companies with stock market liquidity.

4.1 Pearson Correlation Coefficient

According to the normality of variables, Pearson correlation coefficient was used to evaluate the relationship between independent and dependent variables and the results are shown in Table 2.

Table 2: The relationship between corporate performance and stock market liquidity

Performance indexes	The correlation coefficient r	The alpha error	Level of significance	Conclusion
Return on asset	-0.658	0.05	0.000 *	Relationship
Return on equity	-0.766	0.05	0.000 *	Relationship
Tobin's Q ratio	-0.742	0.05	0.000 *	Relationship

As the results are shown in Table 2, since a significant level (0.000) is smaller than the error (0.05), so, assuming no significant relationship between the three independent variable return on assets, return on equity and the dependent variable Tobin's Q ratio, bid-ask spread is rejected and hypothesis 1, based on a significant relationship between these three variables and liquidity is accepted. The correlation coefficient (r), return on assets, return on equity and Tobin's Q ratio respectively being – 0.658, -0.766 and -0.742 show correlation between these three variables bid-ask spread. Since, in this research, supply and demand gap is selected as liquidity index and if the supply and demand gap is less, the stock would have more liquidity, so, there is a significant and positive relationship between return on assets, return on equity return and Tobin's Q ratio and market liquidity. First, assumptions related to regression test are tested in order to test multiple regressions.

4.2 The regression defaults test

It should be shown whether linear regression was used or not before evaluating the linear regression. (Table 3).

Table 3: Evaluation using of linear regression

The error	Degree of freedom	F value	Level of significance
0.05	3	4.193	0.000 *

- Sig < 0.05

According to the results in Table 3, since significance level is 0.000 and smaller than the error 0.05, so hypothesis 1, the linear regression, has been concluded. (Degrees of freedom equal to the number of independent variables)

4.3 Durbin-Watson test or independence errors test

One of the assumptions of regression considered, is independence errors (The difference between the actual values and the values predicted by the regression equation) of each other. If the hypothesis of independence errors is rejected, the errors are correlated with each other; there is no possibility of using regression. Durbin-Watson test is used to evaluate the independence errors of each other. If Durbin-Watson statistic is in the range of 1.5 to 2.5, the null hypothesis is confirmed. Otherwise, hypothesis 1 is confirmed. In recent regression, the amount of Durbin-Watson statistic is 1.998 placed in the range 1.5 to 2.5, so the condition is very good and there is no problem in this aspect.

4.4 Evaluation the normality of errors

One of other considered assumptions in linear regression is that errors have a normal distribution with mean zero. For this purpose, the standard value calculation errors should be calculated. (Fig 1)
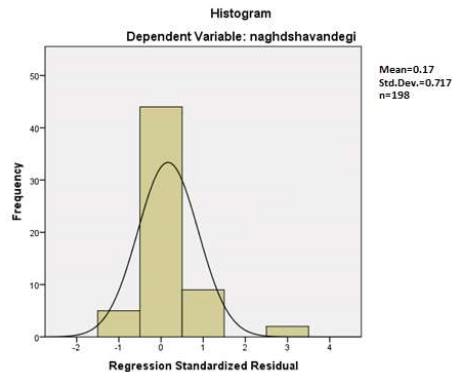

Fig 1: Result of the errors normality

Observing Figure 1 shows error distribution is normal, so linear regression can be used. In addition, the average value shown in the right side of the chart is very small (about 0) and the standard deviation is close to 1.

4.5 Tolerance and common multiple linear regression

Linear power line between independent variables is measured by an index named tolerance. Tolerance is the proportion of variable distribution for each independent variable, which is not justified by linear relationship with other independent variables in the model. Considering tolerance is a proportion, its value changes between 0-1. The amount close to one means a small portion of its dispersion is not

justified by other independent variables in an independent variable. The amount close to zero means a variable is a linear combination of other variables. The data have common multiple linear regression. VIF is variance inflation factor which is tolerance reverse and as it increases the variance of regression coefficients will increase and make its regression difficult to predict. If any of the tolerances are small, common multiple linear relationship could have difficulty to data and if tolerance is close to 1, we will have very good condition in model. (The amount of tolerance should be greater than 0.1 and VIF value amount be less than 10). (Table 4).

Table 4: Results of multiple linear regressions of Determine Tolerance and VIF

Independent variables	Tolerance	VIF
Return on equity	0.962	1.039
Tobin's Q ratio	0.388	2.574
Return on assets	0.379	2.636

According to the results in table 4, the amount of tolerance is greater than 0.1 for all three variables and VIF amount is less than 10, so the situation is very favorable and there is no multicollinearity.
After confirming the assumptions of regression, coefficients and results of variable regression model as follows in table 5:

Table 5: The relationship between return on assets, Tobin's Q ratio and return on equity on stock market liquefy

	Unstandardized regression coefficients		Standardized regression coefficients	t value	Level of significance
	B	Standardized error	Beta		
Constant	-4.906	9.133	-	-4.537	0.001
Return on equity	-3.190E-005	0.002	-0.002	-2.015	0.000
Tobin's Q ratio	-8.377	11.043	0.162	-3.759	0.01
Return on asset	-0.120	0.199	0.129	-4.600	0.003
F value	F value Level of significance		Coefficient of determination	Adjusted coefficient of determination	
83.56	0.000		0.793	0.628	

According to the results in table 5, since for all variables the significant level is less than error 0.05 and t absolute statistics is more than the table 1.96, so, there is a significant relationship between all variables return on assets Tobin's Q ratio and return on equity on stock market liquidity. The level of statistical significance F model the amount 0.000 is much smaller than the error level 0.05, so the model is significant. Adjusted coefficient of determination shows 0.628 that 62.8 percent of the dependent variable stock market liquidity is due to the company's performance.

5 Discussion
According to the conducted analysis, which means that there is quantitative relationship between a company's performance and liquidity of the stock market, we can say that the liquidity can be considered as a driving performance and a critical criterion in the evaluation of business units.
In addition, it can be a guarantee for financial reporting and accounting considering the extent and depth of financial markets, performance indicators can be considered reliable for investments because investors need their investment finance quickly and the liquidity of assets will put down the need.

We should not ignore the investors' eagerness to deal in stock exchange and company targeted leadership and accounting information that can affect the market value. We can imagine liquidity can provide the probability of controlling and balancing the interests of managers and shareholders and as a result, representation conflict will reduce. Companies with higher liquidity value will face less representation conflict problem. Past researches show stock market liquidity has negative effect on the efficiency of companies' leadership. Therefore, considering supervision and reviewing junior investors consumedly, can hurt controlling the active and senior investors. It can be argued stock cash markets allow senior investors to get benefit through informed by monitoring the stock exchanges and reduce problems. We know stocks are worthy documents in addition to providing liquidity, also have the right to vote and supervision. So trading of these securities will have a key role in supervision, evaluation and performance of companies. Liquidity will allow junior shareholders to become a senior shareholder, improve management pay and advantages and encourage awareness of investors to trade. Investors turn to high liquidity markets and it can be an important factor in market growth and improvement. Liquidity means the market ability in attracting large volumes of trading without causing sharp fluctuations in prices. One of the market features with high liquidity is a small gap between bids-ask spread that trading costs will also decrease by reducing the amplitude deals and this will provide accessing to different investors with different trading strategies, and it can be very important in economic boom in every country. Liquidity can guarantee the ability of investors to convert financial assets into cash at a similar price of the last trading of assets in the investment more profitable conditions and requirements. In the early 20th century, studies on liquidity indicators show that from the beginning of this agent has attracted financial markets attention. One of the reasons for this can be easiness of purchase and sale of intended assets and the speed of converting investments or assets to cash that the results is a guarantee for this argument. Tehran Stock Exchange as Iran capital market symbol has a lot of effects in economic cycle changes. Investment managers and other natural and legal persons who make Stock trading and other financial assets in this market, surely, need to study various factors affecting the efficiency of their investments to maintain and increase the value of their investment portfolio. One of these factors is amount of Stock market liquidity that there are the results of its relationship with return on equity in this research. It is worth noting, while three criteria: return on assets, return on equity and Tobin's Q ratio are common in many aspects, Tobin's Q index, is considered an appropriate benchmark for measuring the performance of companies because of using market values in Tobin's Q ratio calculation. Therefore, it is suggested to use performance indicators Return on assets to measure the reliability of financial reporting and accounting those companies that their basis are asset. Investors should use quantitative index (BAS) in stock market liquidity merely, in order to reduce transaction costs that will be achieved to reduce the amplitude of trading and they should not use other quantitative indicators of liquidity. Investment managers and other natural and legal persons who make Stock trading and other financial assets in this market, surely, need to study various factors affecting the efficiency of their investments to maintain and increase the value of their investment portfolio. These results have consistency and compatibility with the results of some previous studies carried out such as Fang et al[7], Hosseini, et al [19], and other earlier research studies have been performed on the same subject.

References

[1] Amihud Y, Mendelson H, Pedersen LH. *Liquidity and asset prices*, Foundations and Trends® in Finance, 2006, **1(4)**, P.269-364

[2] Aitken M, Comerton-Forde C., *How should liquidity be measured?* Pacific-Basin Finance Journal, 2003, **11(1)**, P.45-59.

[3] Agarwal P., *Institutional ownership and stock liquidity*, Springer Verlag, 2008.

[4] Chen WP, Chung H, Lee C, Liao WL., *Corporate governance and equity liquidity: Analysis of S&P transparency and disclosure rankings*. Corporate Governance: An International Review, 2007, **15(4)**, P. 644-660.

[5] Deng X, Ong SE. *Real earnings management, liquidity and REITs SEO Dynamics.* In AREUEA-ASSA Annual Meeting, 2014.

[6] Gopalan R, Kadan O, Pevzner M., *Investment decisions, asset liquidity, and stock liquidity,* Working Paper 2009 Sep.

[7] Fang VW, Noe TH, Tice S., *Stock market liquidity and firm value,* Journal of financial Economics, 2009, **94(1)**, P. 150-169.

[8] Lesmond D.A., *Liquidity of emerging markets.* Journal of financial Economics, 2005, **77(2)**, P.411-452.

[9] Lang M, Lins KV, Maffett M. Transparency, *liquidity, and valuation: International evidence on when transparency matters most.* Journal of Accounting Research, 2012, **50(3)**, P.729-774.

[10] Lovata LM, Costigan ML. *Empirical analysis of adopters of economic value added,* Management Accounting Research, 2002, **13(2)**, P.215-228.

[11] Marshall BR. *Liquidity and stock returns: Evidence from a pure order-driven market using a new liquidity proxy*. International Review of Financial Analysis, 2006, **15(1)**, P.21-38.

[12] Pástor Ľ, Stambaugh RF. Liquidity risk and expected stock returns. *Journal of Political economy*, 2003, **11(3)**, P.642-685.

[13] Riahi Y, Lamiri I, Arab MB. *The Impact of Earnings Management on Liquidity: Case of the Tunisian Stock Market.* Journal of Finance & Economics, 2013, **1(4)**, P.10-29

[14] Silva F, Majluf N., *Does family ownership shape performance outcomes?* Journal of Business Research, 2008, **61(6)**, P.609-614.

[15] Stoll HR. *Inferring the components of the bid-ask spread: theory and empirical tests.* The Journal of Finance, 1989, **44(1)** (1989), P.115-134

[16] Ahmadpour, A. Baghban, M*., The relationship between liquidity assets and stock liquidity in Tehran Stock Exchange*. Journal of Empirical Research in Accounting, 2014, **4(2)**, P.61-77 (In Persian).
[17] Bagheri Mehmandousti, B. *The relationship between stock liquidity and decisions related to capital structure in listed companies in Tehran Stock Exchange*. Shahid Beheshti University Thesis. 2006.

[18] Dehghankar, S. Mohamadzadeh, A*., Evaluation the status of capital market liquidity in financial crisis*, Journal of Financial Management Strategy, 2016, **4(13)**, P.83-102.

[19] Hosseini S A, Karami, Gh. Shafipour, S M. The relationship between company performance and stock market liquidity. Journal of Securities Exchange,2010, **11**, P.25-42.

[20] Mehrani, Kaveh. Mehrani, Kiarash. *Stock valuation (Methods and models)*. Ketab-e-Mehraban Publisher, Tehran. 2010.

[21] Momtazian, A. Kazemnezhad, M. *The relationship between management capabilities and company performance and standards in Tehran Stock Exchange*, Journal of Empirical Research in Accounting, 2016, **5(4)**, P.65-88.

[22] Nobahar, N., *The relationship between market liquidity and stock returns. Master's Thesis*, Faculty of Management - University of Tehran, 2009.

[23] Shanazarian, S., *The relationship between institutional ownership and majority ownership as aspects of company governance and company performance in companies listed on the Tehran Stock Exchange. Master's Thesis*, Faculty of Management and accounting –Shahid Beheshti University. 2010. (In Persian).