

Impact of Stock Market Liquidity on Firm Value

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ABSTRACT: This study examines the relationship between stock liquidity and market value of companies using Tobin's Q measure. Depending on the type of data, to test the hypothesis of a correlation analysis (Pearson coefficient) and Multiple Regression are used. Final result for each hypothesis using four regression models, Suggest that there is no significant relationship between Tobin's Q and gap between supply and demand index prices as a measure of the stock liquidity. But there are statistically significant relationship between the Turnover Volume and Tobin's Q as independent variable. The relationship between Turnover Volume and Tobin's Q is Direct.

Key words: Stock Liquidity, Market Value, Gap Between Supply And Demand Index, Turnover Volume

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INTRODUCTION

There are strong theoretical reasons to suspect that market liquidity will positively affect firm value. Because stock shares are the currency which commands both cash flow and control rights, the tradability of this currency plays a central role in the governance, valuation and performance of firms. In theoretical analyses, liquid markets have been shown to permit non-block holders to intervene and become block holders (Maug, 1998), facilitate the formation of a toehold stake (Kyle and Vila, 1991), promote more efficient management compensation (Holmstrom and Tirole, 1993), reduce managerial opportunism (Edmans, 2009; Admati and Pfleiderer, 2009; Palmiter, 2002), and stimulate trade by informed investors thereby improving investment decisions through more informative share prices (Subrahmanyam and Titman, 2001; Khanna and Sonti, 2004). Thus, a priori, a positive relation between liquidity and firm value is quite plausible. However, despite the large number of theoretical papers with predictions related to liquidity's effect on performance, empirical researchers have not made this relation the center of systematic empirical investigation. Our paper aims to fill this gap in the literature by examining whether and why liquidity affects firm value.

background and hypotheses development

The relation between liquidity and firm value has received considerable attention in financial economics from a variety of perspectives. Researchers have considered both the effect of liquidity on performance as well as the dependence of liquidity on performance. The causative theories advance many distinct mechanisms through which liquidity affects performance. Most focus on the effect of liquidity on operating performance and are agency-based causative theories. Important theories in this vein include Maug (1998) which models a large relationship

investor's monitoring decision. The investor monitors and trades with an aim to profit from the price appreciation caused by his monitoring activities. Maug concludes that liquid stock markets, far from being a hindrance to corporate control, tend to support effective corporate governance. Another causal mechanism through which liquidity may discipline management is identified in Edmans (2009), Admati and Pfleiderer (2009), and Palmiter (2002) if engagement's compensation is tied to current stock prices, then increased liquidity increases the cost of opportunism to managers by facilitating informed selling or "dumping". The distinguishing characteristic of the causative agency theories is they predict that the effect of liquidity on performance will be related to the extent of the agency conflict within the firm.

In contrast to the agency-based causative theories, Subrahmanyam and Titman (2001) and Khanna and Sonti (2004) show liquidity can positively affect firm performance even when agency conflicts are absent. In this setting liquidity stimulates the entry of informed investors who make prices more informative to stakeholders. As shown in Khanna and Sonti (2004), informed traders factor the effect of their trades on managerial behavior to their trading strategy, trading more aggressively, and thus making prices more informative. This feedback effect improves operating performance and relaxes financial constraints. Both effects increase firm value. Furthermore, non-financial stakeholders' decision to stay or go affects firm cash flows. This is particularly valuable when the relationship between stakeholders and the firm is fragile or there is high cash flow uncertainty with respect to existing projects. This is because positive cascades (success or good news begets more success) will be most valuable in this setting. Feedback theories imply that the effect of liquidity is proportional to the sensitivity of firm operations to the information content of stock prices. While many models focus on the positive role of

liquidity in resolving manager/shareholder agency problems, other researchers have noted potential adverse effects of market liquidity on agency problems within the firm. Coffee (1991) and Bhide (1993) note that though liquidity is a lubricant for share purchases by outside activists, it also facilitates the exit of current block holders who are potential activists. Hence, liquidity may encourage block holders to vote with their feet and sell their shares if they are unhappy with firm performance. Goldstein and Guembel (2008) show that negative feedback trading is also possible when speculators exploit liquidity with short-selling strategies that harm firm performance. Both agency-based and feedback-based causative theories focus on the effect of liquidity on operating performance. However, liquidity might also affect firm value by changing the discount rate. If the marginal investor values liquidity as in Holmstrom and Tirole (2001), then illiquid stocks should trade at a discount.

This implies a positive relation between stock liquidity and market-price based performance measures such as Tobin's Q. More recently, Baker and Stein (2004) suggested that liquidity might be related to valuation as a sentiment indicator. In their model, high liquidity stocks are over-valued. Since they trade at a premium they have lower future expected returns.

In summary, causative theories are either operating-performance-based, asserting that liquidity affects operating performance, or pricing-based, asserting that the performance effect stems from an illiquidity premium or mispricing. Operating performance theories, in turn, can be divided into agency or feedback theories. Moreover, the relation between liquidity and performance might not be based on a causal effect from liquidity. First, liquidity may simply be correlated with other variables that affect firm value. For example, Spiegel and Wang (2005) show that including stock idiosyncratic risk along with liquidity in equations that predict stock returns renders liquidity insignificant. Second, a strong case can be made for liquidity being the dependent variable in the liquidity/performance relation rather than the independent variable. The logic supporting dependent liquidity is that high performance firms will have high market-to-book ratios and high market-to-book ratios may attract institutional investors. Such trades increase market depth and augment stock liquidity. Thus, high firm performance generates liquidity by producing institutional investor demand. Under this theory of dependent liquidity, the relation between liquidity and performance should be driven by those manifestations of high performance that are most attractive to institutional investors. In the

next section we describe our Research hypothesis and the variables we use in our empirical specifications.

Research hypothesis According to the performed

Researches and theoretical principles, the research hypothesis is described as follows:

Hypothesis1: There was a significant relationship between supply and demand gap and firm value.

Hypothesis2: There was a significant relationship between turnover Volume and firm value.

Sample selection

Statistical population of this research is composed of all companies listed in Tehran stock Exchange. The companies under the study were selected for test of the hypotheses such that the initially all TSE-listed companies to the end of 2012 were selected and after that the sample size was limited as follows:

- 1- Companies which to the end of 2006 to be listed in the stock;
- 2- Companies which their financial period to be ended in 29 March of every year;
- 3- Companies which don't halt their activities and have not changed their financial period during 2007-2012.
- 4- The required information in this research, to be available.

According to above terms, 108 companies were selected as samples.

Tools and strategies of data collecting

Since, collecting data according to the research method will be selected. Therefore, the method of collecting data in this research, is the library method and the used tools for collecting data, is one of quadruplet tools in collecting data i.e., the review of documents. Most of data will be achieved from referring to the TSE-listed companies' financial statements. To extract the data related to the stock market value was used of Tehran stock market' sites (www.tsetmc.ir and www.irbourse.com). Financial statements data of TSE-listed companies was extracted via www.codal.ir. Finally, to analyze the data was used of EXCEL and SPSS19.

Measuring the variables of research and hypotheses test model

Dependent variable: Tobin's Q : It is one of the economic models to assess the company that obtained from following equation :

$$\text{Tobin's Q} = \frac{\text{Book value of debt} + \text{market value of the company}}{\text{Book value of assets}}$$

Independent variable: Stock market liquidity:

In this study, two criteria is used to measure the liquidity of stock liquidity As follows:

Supply and demand gap: The difference between the lowest bid and the highest bidder Sales Order named supply and demand gap. This is calculated as follows

$$BidAskSpread_{it} = \frac{Ask\ Price - Bid\ Price}{(Ask\ Price + Bid\ Price) / 2} \times 100$$

Where:

Bid Ask Spread: Gap between stock price supply and demand in the firm i in year t

Ask Price: Average price offer to buy shares in the firm i in year t

Bid Price: Average price offer for sale of shares in the firm i in year t.

Turnover Volume: This measurement is obtained by dividing the number of shares traded on the stock number As follows:

$$TurnoverVolume_{it} = \frac{ShareVolume}{ShareOuts\ tanding}$$

Where:

Turnover volume: Turnover volume of stock i in year t

Share Volume: Volume of shares traded in the firm i in year t

Share out Standing: Number of shares hold by stockholders in the firm i in year t.

Hypotheses test model

To test the first hypothesis, we use the following model:

$$Qtobin_{it} = \alpha_0 + \alpha_1 BidAskSpread_{it} + \alpha_2 Size_{it} + \alpha_3 Debt_{it} + \alpha_4 Profit_{it} + \epsilon_{it}$$

Where:

Qtobin: Tobin's Q measure in the firm i in year t

Bid Ask Spread: Gap between stock price supply and demand in the firm i in year t

Profit: profitability in the firm i in year t

Debt: Debt ratio in the firm i in year t

Size: Size of firm i in year t

To test the second hypothesis, we use the following model:

$$Qtobin_{it} = \alpha_0 + \alpha_1 BidAskSpread_{it} + \alpha_2 Size_{it} + \alpha_3 Debt_{it} + \alpha_4 Profit_{it} + \epsilon_{it}$$

Where:

Bid Ask Spread: Gap between stock price supply and demand in the firm i in year t

RESULTS

Descriptive statistics of the data

In Table 1, mean, Minimum, Maximum, Std. Deviation are calculated.

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---------------------|-----|---------|---------|---------|----------------|
| Qtobin | 648 | -3.22 | 3.16 | .0028 | .96699 |
| Bid Ask Spread | 648 | -1.88 | 1.93 | -.0644 | .51456 |
| Turnover Volume | 648 | .00 | 1.98 | .1466 | .21045 |
| Size | 648 | 9.82 | 18.44 | 13.3116 | 1.48509 |
| Debt | 648 | .04 | 3.06 | .6157 | .22988 |
| Profit | 648 | -.33 | .63 | .1193 | .12194 |
| Valid N (list wise) | 648 | | | | |

First hypothesis was explained as follows

"There was a significant relationship between supply and demand gap and firm value"

Multiple regression model and Pearson correlation coefficient were used to test the first hypothesis. The obtained findings showed that the probable result of Kolmogorov-Smirnov test is 0.082 which indicates the normality residuals with the confidence level of %95. Durbin-Watson statistic is 1.710 that proves the residuals independency in the fitted model. Homogeneity of the residuals' variances was confirmed using statistical scatter plot of standard residuals of predicted standards. Bias-variance and tolerance for independent variables are respectively

less than 10 and more than 0.1, so no linearity problem can be seen among independent variables. And the final fitted model is confirmed.

The coefficient of determination for the final fitted model is about 0.34 which shows that %34 of the dependent variable's changes can be described by the independent variables (supply and demand gap). The probability of F-statistic is 0.0001 which shows the appropriateness of model for hypothesis testing. The significance of the first variable's coefficient (supply and demand gap) can confirm or reject the hypothesis. The probability of T-statistic for the variable of supply and demand gap is more than 0.05. It proves that this coefficient isn't statistically

significant, null hypothesis isn't rejected, and the first research hypothesis is not accepted. The coefficient of this variable is 0.023 which demonstrates the reverse relationship between supply and demand gap and firm value, but it isn't significant.

Second hypothesis was explained as follows

"There was a significant relationship between turnover Volume and firm value"

Multiple regression model and Pearson correlation coefficient were used to test the first hypothesis. The obtained findings showed that the probable result of Kolmogorov-Smirnov test is 0.587 which indicates the normality residuals with the confidence level of %95. Durbin-Watson statistic is 1.687 that proves the residuals independency in the fitted model. Homogeneity of the residuals' variances was confirmed using statistical scatter plot of standard residuals of predicted standards. Bias-variance and

tolerance for independent variables are respectively less than 10 and more than 0.1, so no linearity problem can be seen among independent variables. And the final fitted model is confirmed.

The coefficient of determination for the final fitted model is about 0.34 which shows that %34 of the dependent variable's changes can be described by the independent variables (turnover Volume). The probability of F-statistic is 0.000 which shows the appropriateness of model for hypothesis testing. The significance of the first variable's coefficient (turnover Volume) can confirm or reject the hypothesis. The probability of T-statistic for the variable of turnover Volume is less than 0.05. It proves that this coefficient is statistically significant, null hypothesis is rejected, and the first research hypothesis is accepted. The coefficient of this variable is 0.117 which demonstrates the reverse relationship between turnover Volume and firm value.

Table 2.Coefficients^a

| Model | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|-------|----------------|---------------------------|--------|------|-------------------------|-------|
| | | Beta | | | Tolerance | VIF |
| 1 | (Constant) | | 1.316 | .188 | | |
| | Bid Ask Spread | .023 | .704 | .481 | .991 | 1.010 |
| | Size | -.234 | -7.186 | .000 | .974 | 1.027 |
| | Debt | .359 | 8.212 | .000 | .540 | 1.850 |
| | Profit | .744 | 16.895 | .000 | .533 | 1.877 |

Table 3.Coefficients^a

| Model | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|-------|-----------------|---------------------------|--------|------|-------------------------|-------|
| | | Beta | | | Tolerance | VIF |
| 2 | (Constant) | | 1.008 | .314 | | |
| | Turnover Volume | .117 | 3.611 | .000 | .972 | 1.029 |
| | Size | -.224 | -6.928 | .000 | .970 | 1.031 |
| | Debt | .336 | 7.686 | .000 | .529 | 1.890 |
| | Profit | .729 | 16.657 | .000 | .529 | 1.891 |

DISCUSSION

Many theoretical models predict a positive relation between stock liquidity and firm performance. The theories provide agency, stock price feedback, illiquidity risk, or sentiment reasons for why liquidity positively affects firm performance. A small number predict a negative relation between stock liquidity and firm performance. However, no comprehensive empirical study effect on firm performance as measured by a firm's Tobin's Q ratio. The study also explores the distinct mechanism through which liquidity improves firm performance by testing several causative theories in the literature.

This study examines the relationship between stock liquidity and market value of companies using

Tobin's Q measure. Depending on the type of data (panel data), to test the hypothesis of a correlation analysis (Pearson coefficient) and Multiple Regression are used. Final result each hypothesis using four regression models, Suggest that there is no significant relationship between Tobin's Q and gap between supply and demand index price as a measure of the stock liquidity. But there are statistically significant relationship between the Turnover Volume, Number of Transaction and Dollar Volume as dependent variables and Tobin's Q as independent variable. The relationship between the Number of Transaction and Tobin's Q trading on the market, the inverse is reversed and for other two independent variables is Direct.

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