STOCK LIQUIDITY AND BOARD COMPENSATION: THE CASE OF TEHRAN STOCK EXCHANGE

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Abstract *This study investigates the relationship between stock liquidity and board compensation listed in Tehran Stock Exchange (TSE) during the period between 2004 and 2010. The population of study includes 74 firms and fourteen hypotheses are developed for purpose of study. The results show that there is a positive relationship between trading days, trading quantity, trading volume, trading value, percentage of floating stock, turnover ratio, stock flow ratio, liquidity ratio, stock market depth, absolute bid-ask spread and board compensation and there is a negative relationship between waiting period, illiquidity ratio, relative bid-ask spread and board compensation spread. Moreover, there is no relationship between floating stock flow and board compensation.*

Keyword: *Liquidity, Board Compensation, Tehran Stock Exchange.*

INTRODUCTION

Separation of ownership in a firm gives rise to conflicts between the shareholders and the managers as agency theory assumes that both parties are seeking to maximize their interests are not necessarily aligned. Such separation of ownership also gives rise to information asymmetry characterized in terms of the fact that the board of directors has more information about the company than investors as a group. A second characterization of information asymmetry is the extent to which the amount of information regarding the company varies from one group of investors to another and thus, provides the differentiation between the informed and uninformed investors (Watts and Zimmerman, 1986). Such information asymmetry generates adverse selection costs. When liquidity providers face adverse selection problems, they may therefore post wider spreads and thinner depths for stocks which may result in a drop in the stock liquidity (Glosten and Milgrom, 1985). However, it is generally accepted that stock liquidity is an important attribute which influences investor decision making. It is a measure of the ease with which cash can be converted to an investment in the stock or vice versa (Foo and Zain, 2010:93). A certain level of liquidity is necessary for securities to be traded in the quantities required in a timely fashion without any price discount. Liquidity proxies used in the literature can be classified into these four categories of tightness, depth, resiliency, and immediacy. While these dimensions are to some degree overlapping, there is no single liquidity proxy that fully captures all dimensions. Tightness refers to the cost of transactions, such as the bid–ask spread. Depth represents the ability of the market to absorb a large quantity of trade without having a large impact on price. Resiliency is defined as the speed with which the prices bounce back to equilibrium following a large trade. Immediacy represents the speed with which buy or sell orders can be executed (Chai et al., 2010: 182). An accurate liquidity proxy should correctly classify an asset as being more liquid than another if it is more certainly realisable at short notice without loss. Under certain circumstances traditional liquidity proxies may fail to achieve this. Trade-based measures such as trading volume and the turnover ratio are ex post rather than ex ante measures. In this sense, they indicate what people have traded in the past which is not necessarily a good indication of what will be traded in the future, particularly for small stocks. In an order-driven environment there is no obligation for liquidity to be provided to the market at any point in time. Order based measures, such as the bid–ask spread, are an effective measure of liquidity for small investors because they are likely to have all their order filled at the bid or ask price. However, larger investors may not be able to complete all of their order at the best bid or ask price. For these investors the bid–ask spread understates the true cost of trading (Marshall, 2006: 22). On the other hand, a stock is illiquid when ‘‘sell’’ orders are filled at a lower price than ‘‘buy’’ orders. Such spread can be interpreted as

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the compensation required by traders and intermediaries who satisfy other investors' liquidity needs. The spread has three main components. The first is the inventory control cost. It arises due to the fact that liquidity provision implies a temporary deviation from optimal asset holdings, involving excess risk taking and a risk premium. The second component is linked to adverse selection: the order being filled may be placed by a counterpart with private information on the future price. A third component gathers costs which are unrelated to volatility or information, such as order-processing costs and mark-ups charged by non-competitive dealers (Bortolotti and de Jong, 2007: 299-300).

On the other hand, two factors known to influence managerial compensation are firm size and stock price performance (Bliss and Richard, 2001). This study unfolds the new aspect which may affect managerial compensation. However, the issue of the relationship between stock liquidity and board compensation is important because information about stock liquidity has information content for managers, investors and other decision makers and linking this to board compensation makes it more useful. Therefore, in this research the relationship between liquidity and board compensation is investigated to enrich the literature.

LITERATURE REVIEW

Ascioglu et al. (2005) investigated the relationships between auditor compensation, disclosure quality, and market liquidity and find a weak evidence to support the argument that auditor compensation lowers firm disclosure quality and market liquidity. In addition, they find evidence to suggest that the adverse effects of auditor compensation on market liquidity are concentrated in firms with weak corporate governance mechanisms.

Brockman et al. (2008) studied the relationship between stock market liquidity and the decision to repurchase. Their results confirm that stock market liquidity plays a significant role in repurchase and dividend initiations, as well as in recurring payout decisions. They also show that managers condition their repurchase decision on a sufficient level of market liquidity.

Cumming et al. (2011) examined stock exchange trading rules for market manipulation, insider trading, and broker–agency conflict, across countries and over time, in 42 stock exchanges around the world. They find that some stock exchanges have extremely detailed rules that explicitly prohibit specific manipulative practices, but others use less precise and broadly framed rules. They show that differences in exchange trading rules, over time and across markets, significantly affect liquidity.

Moulton and Wei (2009) investigated the impact of substitutes on cross-listed stock liquidity. Their findings suggest that narrower spreads and more competitive liquidity provision during overlapping trading hours reflect a significant impact from the availability of more substitutes in addition to the enhanced information environment and liquidity externalities when home markets are open.

Chai et al. (2010) using data from the Australian equity market find that stocks' trading characteristics are important determinants of liquidity. They also find that some proxies do react differently to certain trading characteristics. Their findings are consistent with the contention that liquidity is a multifaceted concept and each alternative proxy may only capture a certain aspect of liquidity.

Kothare (1997) investigated the effect of equity issues on ownership structure and liquidity and finds that bid ask spread increase after rights offerings of common stock but decrease after public underwritten offerings. He also finds that the changes are correlated with the changes in the issuing firm's ownership structure and public offering cause greater dispersion in share ownership while rights offering lead to more concentrated ownership.

Kale and Loon (2011) find that stock liquidity increases with market power because market power reduces return volatility. Further, they find that the impact of market power on liquidity is more pronounced when information asymmetry is more severe, that is, for smaller firms and for firms with less analyst coverage.

Fang et al. (2011) investigated the relationship between stock market liquidity and firm value. Their results show that firms with liquid stocks have better performance as measured by the firm market-to-book ratio.

Chang et al. (2010) investigated the relationships between liquidity and stock returns and found a significantly negative (positive) relationship between liquidity (illiquidity) proxies and returns. They found that while the expansionary phases largely confirm the overall finding, contractionary phases do not when exploring for the impact of business cycles. When they controlled for liquidity variability in the cross-sectional regressions, the role of the liquidity level showed strong significance across business cycles, different sub periods. With regard to liquidity variability, they observed a strongly significant and negative association with stock returns.

Jun et al. (2003) investigated the relationships between liquidity and stock returns and found that stock returns in emerging countries are positively correlated with aggregate market liquidity as measured by turnover ratio, trading value and the turnover–volatility multiple.

Zheng and Li (2008) investigated the relationships between underpricing, ownership dispersion, and aftermarket liquidity of IPO stocks find that underpricing is positively correlated with the number of non-block institutional shareholders after IPO but negatively correlated with the changes in the

total number of shareholders. They also find that firms with many non-block institutional shareholders tend to have high liquidity in the secondary market and underpricing also has direct effects on secondary market liquidity after controlling for ownership structure and other factors.

Foo and Zain (2010) studied the relationship between board independence, board diligence and liquidity in Malaysia. They proxied liquidity by three measures; relative volume, relative quoted depth and proportion of zero-returns. Their results using a sample of 481 public-listed firms in Malaysia show that more independent and diligent boards are associated with higher liquidity.

METHODOLOGY AND POPULATION

The method of this study is inductive-deductive, that is, for literature and theatrical framework purpose inductive and for data gathering to accept or reject hypotheses deductive methods are used. In addition, present study is an applied research using TSE firms data during 2003 to 2010. After considering following conditions, a sample of 74 firms is obtained.

1: Transactions intervals must not be more than 150 days. 2: Fiscal year must be ended at the end of year and must not change during studied period. 3: Firms must not be investment, banks, and financial institutions.

HYPOTHESES DEVELOPMENT

Main hypothesis: There is a relationship between stock liquidity and board compensation listed in Tehran Stock Exchange (TSE).

Sub-hypothesis1: There is a relationship between trading days and board compensation listed in Tehran Stock Exchange (TSE).

Sub-hypothesis2: There is a relationship between trading quantity and board compensation listed in Tehran Stock Exchange (TSE).

Sub-hypothesis3: There is a relationship between trading volume and board compensation listed in Tehran Stock Exchange (TSE).

Sub-hypothesis4: There is a relationship between trading value and board compensation listed in Tehran Stock Exchange (TSE).

Sub-hypothesis5: There is a relationship between percentage of floating stock and board compensation listed in Tehran Stock Exchange (TSE).

Sub-hypothesis6: There is a relationship between turnover ratio and board compensation listed in Tehran Stock Exchange (TSE).

Sub-hypothesis7: There is a relationship between floating stock flow and board compensation listed in Tehran Stock Exchange (TSE).

Sub-hypothesis8: There is a relationship between waiting period and board compensation listed in Tehran Stock Exchange (TSE).

Sub-hypothesis9: There is a relationship between stock flow ratio and board compensation listed in Tehran Stock Exchange (TSE).

Sub-hypothesis10: There is a relationship between illiquidity ratio and board compensation listed in Tehran Stock Exchange (TSE).

Sub-hypothesis11: There is a relationship between liquidity ratio and board compensation listed in Tehran Stock Exchange (TSE).

Sub-hypothesis12: There is a relationship between stock market depth and board compensation listed in Tehran Stock Exchange (TSE).

Sub-hypothesis13: There is a relationship between absolute bid-ask spread and board compensation listed in Tehran Stock Exchange (TSE).

Sub-hypothesis14: There is a relationship between relative bid-ask spread and board compensation listed in Tehran Stock Exchange (TSE).

VARIABLES DEFINITION

For measuring liquidity 12 measures used by Rubin (2007) Cueto (2009) Aggarwal (2008) are selected. In addition, floating stock flow and percentage of floating stock are considered as liquidity determinations leading us to have 14 measures classified in two groups of trade-based measures and order-based measures as following:

Trade-based Measures

Trading days: number of days that stock is traded in a specific period calculated annually.

Trading quantity: number of specific stock trading in a year.

Trading volume: number of stock traded in a specific period calculated annually for each firm.

Trading value: price of stock trading multiplied by trading volume calculated annually.

Stock turnover: ratio of the number of shares traded to the number of shares outstanding in a specific period calculated annually.

Floating stock flow: traded stock divided by number of floating stock.

Waiting period: difference between consequent trading in a specific stock usually is considered as average for a specific period and calculated daily. This shows that, on average, how many days take to a transaction to be conducted. Because this measure is calculated annually, 240 is taken as denominator.

Stock flow ratio: this measure is obtained from trading value divided by waiting period calculated quarterly.

Illiquidity: stock return divided by trading value

Liquidity: trading value divided by stock return

Order-based Measures

Order-based measures need daily information while trade-based measures calculated annually. To calculate every three measures daily we filter our data so that we retain only those trades that take place during the one-hour period between 11.00 p.m. and 12:00 p.m. on any given trading day. Calculation is done quarterly and then their average for each quarter is put in the model.

Market depth: quantity of bid multiplied price of bid plus quantity of ask multiple price of ask.

$MD = P_{A.}Q_A - P_{B.}Q_B$

Where MD is market depth, P_A is price of ask, Q_A is quantity of ask, P_B is price of bid, Q_B is quantity of bid.

Absolute bid-ask spread: difference between ask and bid:

$ABS = \Sigma (P_A - P_B)$

Relative bid-ask spread: difference between ask and bid to average difference between ask and bid:

Table 1: Descriptive Statistic

	Obs	Mean	Median	St deviation	Skewness	Kurtosis	Min	Max
FSF	592	7490.81	4379.36	1051.31	4.713	31.04	67.536	112468.94
PFS	592	13.86	7.581	18.07	2.84	10.99	.002	147.71
VT	592	1616380	405177	3506194	4	17	22680	27310000
TV	592	281000	35400	757200	6	61	5773248	10000000
TQ	592	6686.25	1130.00	16391.02	5.06	33.919	7	171434
TD	592	125.28	131.50	66.05	-.16	-1.22	4	239
CS	592	.0122	.0016	.0329	5.32	38.48	.37	.000
WP	592	.847	.212	2.51	8.01	80.79	34.28	.001
FFR	592	4428.44	1110.07	9606.011	4	17	74760	62.15
IR	592	.00401	.000063	.036914	13.701	201.39	.6352	.000
LR	592	2836260	173207	18511010	12	170	315500000	1368
MD	592	65.3665	7.68342	252.6715	12	191	4642	1361
ABA	592	139.22	70.649	210.73	3.77	17.79	.000	1732.2
RBA	592	.0187	.0172	.0102	1.34	4.80	.0000	.0830
BC	592	5098.0	800.00	1000	24898.3	8.7	320482	26

Notes: Where 6 digits are omitted from VT, TV, FFR, LR and DM. FSF is floating stock flow, FPS is percentage of floating stock, VT is tradings value, TV is trading volume, TQ is trading quantity, TD is trading days, CS is turnover ratio, WP is waiting period, FFR is firm flow ratio, IR is illiquidity ratio liquidity ratio, MD is stock market depth, ABA is absolute bid-ask spread, RBA is relative bid ask speread and BC is board compansation.

Table 2: Kormogrof-smirnov for testing normality of research variables

	FSF	PFS	VT	TV	TQ	TD	CS	WP	FFR	IR	LR	MD	ABA	RBA	BC
Value	6.13	5.38	7.9	1.86	8.317	8.64	8.63	8.95	7.90	11.11	10.68	9.68	6.19	1.84	11.02
Sig	.000	.000	.000	.002	.000	.000	.000	.000	.000	.000	.000	.000	.000	.002	.000

Notes: FSF is floating stock flow, FPS is percentage of floating stock, VT is tradings value, TV is trading volume, TQ is trading quantity, TD is trading days, CS is turnover ratio, WP is waiting period, FFR is firm flow ratio, IR is illiquidity ratio liquidity ratio, MD is stock market depth, ABA is absolute bid-ask spread, RBA is relative bid ask speread and BC is board compansation.

Table 3: Summary of results

Hypotheses	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12	H13	H14
Value	0.317	0.404	0.405	0.503	0.119	0.331	-0.014	-0.404	0.503	-0.376	0.396	0.405	0.093	-0.233
Sig	.000	.000	.000	.002	.000	.000	.000	.000	.729	.000	.000	.000	.000	.002

$$RS = \sum \frac{(P_A - P_B)}{(P_A - P_B)/2}$$

Dependent variable: amount of board compensation which is maximum 5 percent according to Iran Business Law.

Emperical Results

Discriptive statistic of reseach variables is presented in Table 1.

Table 2 shows that all variables have not normal distribution; however, to investigate the relationship between research variables Spearman correlation is used.

Table 3 shows that all our 14 hypotheses are accepted at 99 significance level other than hypothesis 9 showing that stock liquidity, trading days, trading quantity, trading volume, trading value, percentage of floating, turnover ratio, waiting period, stock flow ratio, illiquidity ratio, liquidity ratio, stock market depth, absolute bid-ask spread, relative bid-ask spread impacts board compensation listed in Tehran Stock Exchange (TSE). However, there is no relationship between floating stock flow and board compensation. In addition, the sign of significance shows the direction of the relationship between variables. Therefore, we can conclude that our main hypothesis is accepted that means stock liquidity affects board compensation.

DISCUSSION AND CONCLUSION

This study investigated the relationship between stock liquidity and board compensation listed in Tehran Stock Exchange (TSE) during the period between 2004 and 2010. The population of study includes 74 firms and fourteen hypotheses are developed for purpose of study. The results show that there is a positive relationship between trading days, trading quantity, trading volume, trading value, percentage of floating stock, turnover ratio, stock flow ratio, liquidity ratio, stock market depth, absolute bid-ask spread and board compensation and there is a negative relationship between waiting period, illiquidity ratio, relative bid-ask spread and board compensation spread. Moreover, there is no relationship between floating stock flow and board compensation. These results are consistent with the results of Larcker (1983), Brickley et al. (1985), Axelson and baliga (2008). Therefore, considering the results of the study it would be useful for participants, investors and all who involved in TSE to take stock liquidity in their decision making especially in board compensation decisions.

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