

## **THE RELATIONSHIP BETWEEN TRANSPARENCY AND COMPANY'S LIQUIDITY AND MARKET'S LIQUIDITY AND MARKET'S RETURNS**

**Mohammadreza Shahsavari<sup>1</sup>, Dr. Zahra Lashgari<sup>2\*</sup>**

<sup>1</sup>Department of Accounting, Faculty of Economic and Accounting, Central Tehran Branch, Islamic Azad University, Tehran, Iran

<sup>2</sup>Assitant Professor, Department of Accounting, Faculty of Economic and Accounting, Central Tehran Branch, Islamic Azad University, Tehran, Iran

*\*Corresponding Autho*

### **Abstract**

Transparency, meant to provide complete information in a simple form and timely for decision making and operational by users, is an important factor, and also to Increase all three, profitability, liquidity, and assets efficiency is very Influence and is arguable. The main objective of this study is to find an answer for the presence or absence of a relationship between information transparency with the firm's liquidity, market's liquidity and market's returns; according to volatility of liquidity, more frequent of extreme illiquidity, and co-variability of liquidity, thus the Hypotheses were proposed based on the basic assumption that: "There are Relation between transparency and liquidity of the companies, liquidity of market and market returns" and for this purpose is discussed the data of 182 companies listed in Tehran Stock Exchange from 2007 until 2011 (from 2007 to 2011 AD). Results of this research suggest that: there is no relation between levels of transparency with firm's volatility of liquidity; and there are no relation between level of transparency with firm's co-variability of liquidity level and market's returns. There are negative and significant relationship between level of transparency with firm's more frequent of extreme illiquidity; and there are Positive and significant relationship between transparency level of firm's co-variability of liquidity level and market's liquidity.

**Keywords:** Transparency, Liquidity, Volatility, Market's liquidity, Market's returns, Illiquidity, Co-variability

### **Introduction**

Transparency meant to provide information is the form that their analysis is possible simply and easily to users. Today's information transparency to exact decision making, timely and desirable to investors and also operational of other users is so essential and important that make a considerable help to identify and prognosis the liquidity. According to the importance of subject, in this research we consider to factors such as liquidity, volatility, liquidity volatility, absence of liquidity (illiquidity), its frequency and co – variability liquidity, according to liquidity and market's returns and the transparency relationship to all these factors and therefore, this study is attempted to measure the relationship and helps to suitable models by testing hypotheses.

The main reason for the recent emphasis on voluntary disclosure and enhanced transparency is that they are the twin cornerstones to protect shareholders' rights. Complete disclosure practices along with transparency in Financial Reporting can build a climate of trust and also boost the confidence of the investor community. Voluntary disclosure positively influences performance of firms and also protects interests of shareholders. On the other hand, opacity in disclosure practices can contribute to suspicious and unethical behavior leading to poor valuation of firm (Madhani, 2007).

Transparency of financial information and its relationship with firm's liquidity and liquidity and market's returns is very important in developing countries. Hence, the study of this relationship in our country can also be an essential step toward the increasing of financial information transparency, investor's usage from accurate, complete and timely information and a suitable situation for future research. Therefore, it has high importance for researcher and these results that will be reviewed in firm listed at Tehran stock exchange can be helpful to solve many problems in this field.

The main objective of this study is to find an answer for the presence or absence of a relationship between information transparency with the firm's liquidity, and also market's liquidity and market's returns in firms listed at Tehran stock exchange. In addition, the organization can be used the results to improve methods, instructions and more information of investors.

### **Research Hypotheses**

According to research objective, following hypotheses are proposed: First hypothesis: There is a relationship between transparency level and volatility of Liquidity in the firms. Second hypothesis: There is a relationship between Transparency level and more frequent of extreme illiquidity in the firms. Third hypothesis: There is a relationship between Transparency level of firm's co-variability of liquidity and market's liquidity. Fourth hypothesis: There is a relationship between transparency level of firm's co-variability of liquidity level and market's returns.

### **Research Background**

On July 1, 2006, the Shanghai Stock Exchange (SHSE) changed its pre-market opening auction system from an entirely black box into a more transparent system with indicative auction prices, indicative equilibrium volume and indicative unexecuted volume disseminated in real time throughout the pre-opening period. This paper use the natural experiment offered by SHSE to investigate the impact of opening call transparency on market liquidity. The finding is that following the introduction of transparency to call auction process, there is increased participation during the call auction and reduction in the volume of orders placed in the continuous market. Uncertainty is eased, resulting in lower price volatility and narrower proportional bid-ask spreads. But they find it to be detrimental to the liquidity and spreads of thinly traded stocks.

The call auction market competes with the continuous market for order flow. Whereas trading activity in call auctions generally improved after the veil was lifted from SSE's pre-opening process, depth, volume and trading activity during the continuous trading period is diminished, at least during the first hour of the market opening. As well as the movement of order flow from the continuous to the pre-opening period, the dissemination of pre-trade information during that period reduces the impetus for traders to actively place orders to 'test' the market and bring about a faster price discovery in the early moments of trading (Flood 1999). The higher certainty

with which traders regard the opening price is evidenced by a lower average price volatility and narrower spread for the whole day. Overall, opening call auction transparency is beneficial to the quality of the Shanghai Stock Exchange (Gerace, Tian, & Qing Zheng, 2009).

This article examines whether reducing a market's transparency, by delaying the publication of prices for block trades, has any impact on liquidity. The analysis uses a sample of 5987 blocks from the London Stock Exchange that cover three different publication regimes: immediate (1987/88), 90 minutes (1991/92), and 24 hours (1989/90). Delaying publication does not affect the time taken by prices to reach a new level, which is rapid under all regimes. Spreads differ across years, but their size relates more closely to market volatility than to speed of publication. There is therefore no gain in liquidity from delayed publication.

Interestingly, the problems analyzed in this article, the complexity of the information required investing in ABS and its implications for liquidity have resurfaced as investors and policy makers debated how to restart securitizations after the crisis.

We also showed that, when opaqueness results in a frozen secondary market, ex post public liquidity provision may be warranted, and that targeting such liquidity to distressed bondholders is preferable to providing it via support to the ABS secondary market price. The reason is that by supporting ABS prices, public policy ends up enhancing the trading profits of sophisticated investors, and thus subsidizes their information collection effort, which is not beneficial and may actually be harmful from a social standpoint. Anyway, whenever transparency is socially efficient, ex ante mandatory transparency makes any form of ex post liquidity provision unnecessary, thus sparing society the cost of the implied distortionary taxes (Pagano & Volpin, 2012).

In this research developed a simple model of the effect of transaction reporting on trade execution costs and test it using a sample of institutional trades in corporate bonds, before and after the initiation of public transaction reporting through the TRACE system. The results indicate a reduction of approximately 50% in trade execution costs for bonds eligible for TRACE transaction reporting, and consistent with the model's implications, also indicate the presence of a "liquidity externality" that results in a 20% reduction in execution costs for bonds not eligible for TRACE reporting. The key results are robust to allowances for changes in variables, such as interest rate volatility and trading activity, which might also affect execution costs. We also document decreased market shares for large dealers and a smaller cost advantage to large dealers post-TRACE, suggesting that the corporate bond market has become more competitive after TRACE implementation. These results reinforce that market design can have first-order effects, even for sophisticated institutional customers.

The results reported here are important because they verify that market design, and in particular decisions as to whether to make the market transparent to the public, have first-order effects on the costs that customers pay to complete trades.

Our finding that trading costs are reduced for large institutional traders in the more transparent market is therefore consistent with the reasoning that market makers earned economic rents in the opaque market, or that the costs of market making are lower in the more transparent environment. (Bessembinder, Maxwell & Venkataraman, 2005).

We performed analysis in this setup and find that the relationships between market transparency and market liquidity are non-monotonically. More precisely, we find an inverted U-shape relationship between market liquidity and market transparency. The analysis completes the previous studies which consider the effects of market transparency either in a fully transparent market or a fully opaque market. The results of our analysis suggest that an intermediate level of

transparency leads to maximum market liquidity. Therefore, in limit order markets where traders behave strategically, some disclosure of information may increase liquidity. Thus, the prediction of our model is in line with the common belief that some disclosure can improve the market performance (Dumitrescu, 2008).

In this study, we discuss economics-based research focused primarily on the governance role of financial accounting information and propose future research ideas. We present a framework that isolates three channels through which financial accounting information can affect the investments, productivity, and value-added of firms. The first channel involves the use of financial accounting information by managers and investors in identifying promising investment opportunities. The second channel is the use of financial accounting information in corporate control mechanisms that discipline managers to direct resources toward projects identified as good and away from projects identified as bad. The third channel is the use of financial accounting information to reduce information asymmetries among investors.

The euro-denominated bonds segment is much more active and liquid than the sterling-denominated segment. The former involves many more investors and attracts greater liquidity supply. As a result, effective spreads are tighter for euro-denominated bonds than for sterling bonds. While the European corporate bond market is currently not post-trade transparent, the liquidity of euro-denominated bonds compares favourably to that of dollar-denominated bonds post-TRACE. (Biais, Declerck, Dow, et al. 2006).

In this paper, we study the link between liquidity and capital structure decisions. Since enhanced liquidity reduces the required return on equity and the cost of issuing equity, we expect more liquid firms to prefer equity in their capital structures. Thus, in the cross-section we expect more liquid firms to have less leverage and that when firms increase capital we expect them to prefer to increase it with equity (Lipson & Mortal, 2009).

A growing body of literature has examined and noted significant anomalies in the form of empirical regularities in stock return. These phenomena contradict the well-established paradigms of finance and puzzled many financial researchers. To contribute toward this field of study, this paper seeks to investigate two anomalies, namely, Z score and sales growth effects, in the United.

The data used for this study are drawn from two main sources:

- 1) Datastream from the Financial Database.
- 2) Standard & Poor's Research Insight (maintained by COMPUSTAT).

Quarterly stock prices from beginning of July 1988 to June 1998 are extracted for the computation of quarterly stock returns of firms. These stock prices are taken from Data stream in the Financial Database. U.S. 3-month Treasury bill rates are also extracted from the same source for the same time period.

In the recent years, sizes and book-to-market equity have emerged as the more prominent variables in projecting stock returns. Fama and French (1992) in their research paper documented that these two variables together with a market factor (market return minus risk-free rate) combined to explain the cross-section of average returns. (Wang, 2001)

The method of constructing the nine randomized portfolio in this study is quite different from that employed by Fama and French (1995). We are able to separate each variable into three different categories based on certain guiding criteria.

Z-score values are separated into three different categories as suggested by Edward Altman (1993)

where:

- 1)  $Z1 = (Z\text{-score} \leq 1.23)$ , which indicates a bankruptcy likelihood,
  - 2)  $Z2 = (1.23 < Z\text{-score} \leq 2.90)$ , which indicates a gray area,
  - 3)  $Z3 = (Z\text{-score} > 2.90)$ , which indicates financial healthy.
- Sales growth rate will also be separated into three different categories where,
- 1)  $SGR1 = \text{negative sales growth rate}$
  - 2)  $SGR2 = 10\% \leq \text{sales growth rate} \leq 20\%$
  - 3)  $SGR3 = \text{sales growth rate} > 20\%$
- (Wang, 2001)

|                          |      | bankruptcy likelihood- Z |      |     |      |     |      |
|--------------------------|------|--------------------------|------|-----|------|-----|------|
| sales growth<br>rate SGR |      | High                     |      | Mid |      | Low |      |
|                          | high | z3                       | SGR3 | z2  | SGR3 | z1  | SGR3 |
|                          | mid  | z3                       | SGR2 | z2  | SGR2 | z1  | SGR2 |
|                          | low  | z3                       | SGR1 | z2  | SGR1 | z1  | SGR1 |

In this study, discriminatory earnings management, as a sign of lack of transparency and Tobin's Q, was used as the criteria of valuation. The results indicate that there is a significant and reversed relationship between earnings management and liquidity. On the other hand, there is a direct relationship between liquidity and transparency. The results also indicate a significant and direct relationship between transparency and valuation. Transparency has an indirect effect on firm valuation alone or through the liquidity channel. Although the effect of transparency on the value of a firm was reduced by adding the variable of liquidity [to the model], the cumulative effect of transparency and liquidity increased (Lashgari & MaghamiTekiyeh, 2013).

## Research Methodology

The research methodology in terms of nature and content is a correlation type that using secondary data extracted from the financial statements of firms listed in Tehran Stock Exchange is analyzed the correlation relationship. Also this research is library – study based type and causal – analysis based on panel data analysis. This research first will be examined the correlation between variables and if there is correlation between variables, it is attempted to estimate the appropriate models. In term of goal, this research is applied research study.

## Statistical population and sample and sampling method

In this study , the sampling method is systematic sampling and statistical population will be included firms listed in Tehran Stock Exchange for the five years period from 2007 to 2011 that listed in Stock Exchange before 2007 as statistical sample are 433 firms and of these numbers under review , 122 firms were removed from that firm's list , 50 firms with change in their fiscal year and or they have fiscal year excepted the end of year (March 20), 49 firms that included financial firms (such as banks , financial institutions , etc.) and insurer firms , investment and financial intermediation , 30 firms that deducted their financial information aren't completed because lack of providing to stock and finally , 182 firms are selected as sample firms of research and from 910 samples are used like year – firm.

## **Basic models of research**

### **basic model 1 of research**

The basic model 1 of research is  $\frac{|R_{i,d}|}{P_{i,d}VO_{i,d}}$ . basic model 1 of a research is used to obtain research dependent variable of first model that is related to first hypothesis .

### **basic model 2 of research**

$$\% \Delta ILLIQ_{i,d} = \alpha_i + \beta_{i,1} \% \Delta ILLIQ_{m,d-1} + \beta_{i,2} \% \Delta ILLIQ_{m,d} + \beta_{i,3} \% \Delta ILLIQ_{m,d+1} + \varepsilon_{i,d}$$

basic model 2 of a research is used to obtain research dependent variable of third model that is related to third hypothesis .

### **basic model 3 of research**

$$\% \Delta ILLIQ_{i,d} = \alpha_i + \beta_{i,1} MKTRET_{m,d-1} + \beta_{i,2} MKTRET_{m,d} + \beta_{i,3} MKTRET_{m,d+1} + \varepsilon_{i,d}$$

basic model 3 of a research is used to obtain research dependent variable of fourth model that is related to fourth hypothesis .

## **Research models components**

First hypothesis : There is a relationship between transparency level and volatility of Liquidity in the firms .

According to Lung and Maft (2010) , the bellow model is used to test this hypothesis . It can be said that ADR\_EX and ADR-NEX variables are removed because they are not apply to statistical population of present study .

Model (1)

$$LIQVOL_{i,m} = \alpha_i + \beta_1 AILLIQ_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 BM_{i,t} + \beta_4 STDRET_{i,t} + \beta_5 CLHLD_{i,t} + \text{Transparency VAR} + \text{Fixed Effects} + \varepsilon_{i,t}$$

Model (1) components: LIQVOL Monthly volatility (turnover) shares liquidity. Standard deviation or SD of ILLIQ and through basic model of a research that included 12 monthly data are used to LIQVOL. ILLIQ is calculated as the effect of price average per month (where the price effect was defined).

The basic model (1) that referred before is  $\frac{|R_{i,d}|}{P_{i,d}VO_{i,d}}$  and its components are absolute value of  $R_{i,d}$  that is the daily changes percent of firm portfolio ,  $P_{i,d}$  is the daily price in terms of Riyal and  $VO_{i,d}$  the daily turnovers of portfolio. The data providing on this variable is as follow that a research basic model is used to calculate the daily ILLIQ and after calculating monthly average of ILLIQ, standard deviation is obtained from monthly average of ILLIQ.

Same items available in all models that are referred here to them because of lack of repeated here are: i as firm, m as market, t as period,  $\alpha_i$  constant coefficient and  $\beta_i$  as the effect amount of independent variable on dependent variable,  $\varepsilon_{i,t}$  as random error on firm i at the of period t and

fixed effects .Fixed effects or year fixed effects ,are the industry fixed effects or country fixed effects. According to this explanation that the transparency is likely to be vary in different countries, so that the country fixed effects are important potentially. The year fixed effects must be reduced the effect of changes in the overall macroeconomic conditions , (for example)the frequency or consistency of liquidity in related to industry or the difference in business models in related to industry fixed effects; or accounting and auditing principles are not changing over time but we are faced to change of income.

Also same variables in all models that are referred here to them because of lack of repeated here are: Control variable AILLIQ; annual average ILLIQ , control variable SIZE; logarithm of the firm's stock market value that calculated to obtain a company's stock market value , market value or last year's price multiplied by the total number of firm's shares and then its logarithm , control variable BM; book value of common stocks is related to the market value of common stocks , control variable STDRET; standard deviation of monthly stock return average that first the monthly average return and standard deviation (StdDev) of the average monthly percentage return and then the control variable CLHLD are obtained; that is the average stock in non – floated shares in firm i.e. normally 20 % of the firm's stock , trading and other floating shares (Closely held shares). This variable is used to control the stock because the firm typically not available to trade and may affect the firm's overall liquidity. Firms' float portfolio data and their non - float portfolio will be used to obtain this variable.

Transparency variables are independents variables of transparency level and including earnings management, accounting quality and according to accounting accepted principles. The first transparency variable is measured as a degree of firm usage from free profit by name DIS\_SMT HC and in fact, as if more earnings management be applied the transparency will be lower and as if lower earnings management be applied the transparency will be higher. To measure earnings management , first operating profit is minus from operating cash flow of firm and then using Jones model , number 1 is minus from free (voluntary) accruals ( $1 - \text{DIS\_SMT HC} = 1 - \text{voluntary accruals}$ ) to determine use and earnings management and this obtained value is considered as one of transparency symbols . In fact DIS\_SMT HC is criterion and measure for profit smoothing.

Jones model and its components:  $TA_{i,t} = \alpha_i + \beta_1 \Delta RE_{i,t} + \beta_2 PPE_{i,t} + \epsilon_{i,t}$

In jones model,  $TA_{i,t}$  is the total affairs of firm i at t-year or period ,  $\Delta RE_{i,t}$  is the income changes of firm or the same income of firm i at t-year or period minus firm's income on pervious t-1 year or period and  $PPE_{i,t}$  is the property, machinery and equipment for firm i in t-year that after their obtain , their results is divided by the first period total assets to assimilation and uniformity of data . It should be noted that  $\epsilon_{i,t}$  , is a remained number that represents the voluntary affairs .

The second variable transparency of this triple- variable is audit quality that zero and a dummy variable is used to measure it.

the auditors classified list of trusted audit institutions of the Tehran Stock Exchange have been used to measure the quality of the audit that it classified auditing institutes between numbers one to four that or these cases, the number one is used and otherwise it is zero.

TrustAud is one if the accounting of firm is measured by trusted audit institution of the Tehran Stock Exchange and otherwise the TrustAud is zero.

Third transparency variable from this triple – variable is acted by accepted accounting principles that one and zero dummy variables to measure it.

TrustAud is one if the firm follows from accounting accepted principles and otherwise it is zero. Finally, the model is considered three times with these three variables as independent variable of the transparency level. As a result, if the remained value is more than “1- voluntary affairs” and it is close to one, it indicates the greater transparency and if this value is little the symbol management and transparency profits will be lower.

It can be said about the following variable from accounting accepted principles that in accordance with paragraph 12 of Article 6 of the common stock (the second part) accepting Conditions of Securities and the second part of the admission process and in accordance with Article 26 Securities firms must be willing to accept these conditions in the Tehran Stock Exchange are: "Approved auditor, from accounting information system (including financial accounting and cost accounting) and fits well with their activity in the stock admission requirements (including ability to provide timely and reliable financial information and disclosure) " and the main financial statements and applicant consolidated must be provided in accordance with legal regulations , accounting and financial reporting standards and regulations and operating procedures by the organization and at the time of application and submit application before the last financial year , the firm's auditor shall be selected from organization trustee auditors."

Consequently, following these standards accepted by accounting principles are necessary for all firms listed in Tehran Stock Exchange and this variable is shows number 1 for all of those and the effect of this variable is neutral for tests and likely it has no effect to measure this research . Because of accordance with the basic form of research, its usage to ACC\_TRANS independent variable and not use it for the possible damage, it is not removed.

Second hypothesis: There is a relationship between Transparency level and more frequent of extreme illiquidity in the firms.

According to Lang and Moffet (2010), the following model is used to test this hypothesis. It can be said that ADR\_EX and ADR\_NEX variables were removed because they do not apply to the population of this study and also, TRANSRANK variable is replaced as transparency grade to ANALYST\_TRANS variable that it is required I / B / E / S software data.

Model (2)

$$\text{Extreme Illiquidity}_{i,t} = \alpha_i + \beta_1 \text{AILLIQ}_{i,t} + \beta_2 \text{SIZE}_{i,t} + \beta_3 \text{BM}_{i,t} + \beta_4 \text{STDRET}_{i,t} + \beta_5 \text{CLHLD}_{i,t} + \beta_6 \text{ACC\_TRANS}_{i,t} + \beta_7 \text{TRANSRANK}_{i,t} + \text{Fixed Effects} + \epsilon_{i,t}$$

The components of model (2):

The more frequent of extreme illiquidity in the firms is measured from firm's liquidity skewness (LIQSKEW) and likely LBH (PROB\_LBH) .The monthly skewness ILLIQ is used to measure liquidity or liquidity skewness . PROB\_LBH is the likelihood of extreme increase in the cost of stock trading of firm and the months are used which its ILLIQ is more than 50 amount equal to the average of all samples, the number of months in a year (E.g. 25 % = three twelfth) to obtain



it and as we could not use the dependent variable and in the OLS regression from one , zero or unreal variables , we use the logarithm of the percentages for hypothesis testing and for this variable the measuring is done once by skewness (LIQSKEW) and once with PROB\_LBH. Thus by obtaining skewness of monthly ILLIQ and the risk of a sharp rise in trading costs (PROB\_LBH) according to above method and the preparation of its logarithm , for companies that have not it ( almost ) zero is use of and finally , the measure of this variable is done once with LIQSKEW and once with PROB\_LBH .

It is can be said that it is explained about the same variables and cases, previously.

Independent variable ACC\_TRANS (symbol transparency), the percentile rank average of variables 1-DIS\_SMTHC, INTGAPP and TrustAud was given as described previously.

1-DIS\_SMTHC = 1 – voluntary affairs

INTGAPP is one If the firm follows from accounting accepted principles and otherwise it is zero. TrustAud is one if the firm's accounting is measured by trustee auditors of Stock Exchange organization and otherwise it is zero.

As the voluntary affairs are obtained according to the Jones model and other variables in the order way, using the average percentile rank of these three variables, the independent variable is obtained.

Independent variable TRANSPRANK = (transparency symbol) : is the transparency ranking or rating of the quality of corporate disclosure and notification . Rating of firms listed in Tehran Stock Exchange, based on the quality scores and the information will be disclosed. The rate of informing publishers according to the situation of informing regarding reliability and timely delivery of information to be calculated. Immediate measures are based on information sent by the firm (earnings per share forecasts, financial statements midterm that do not accounted, portfolio statements, auditor's statements regarding anticipated earnings per share and half raw and half interim financial statements, the financial statements and the end financial period and shareholders payout schedule) are calculated according to the instructions of the disclosure of information and the amount of delay in data transmission Rate fluctuations and changes in the amount of the difference between predicted and actual performance as well as predictions submissions is the measure of reliability in the calculations. Thus the data lists ranking firms in Tehran Stock Exchange Organization is used for the independent variable TRANSPRANK.

Third hypothesis: There is a relationship between Transparency level of firm's co-variability of liquidity and market's liquidity.

Following Lang and Moffet (2010), the following model is used to test this hypothesis. It can be said that as ADR\_EX and ADR\_NEX variables do not apply to the population of this study variables were removed as well as TRANSPRANK variable is replaced to ANALYST\_TRANS variable as the level of transparency that it is require I / B / E / S data software.

Model (3)

$$LIQCOV1_{i,m} = \alpha_i + \beta_1 AILLIQ_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 BM_{i,t} + \beta_4 STDRET_{i,t} + \beta_5 CLHLD_{i,t} + \beta_6 ACC\_TRANS_{i,t} + \beta_7 TRANSPRANK_{i,t} + \text{Fixed Effects} + \epsilon_{i,t}$$

Components of model (3): LIQCOV1, distribution or monthly covariance between firm's liquidity and market's liquidity. For LIQCOV1 the coefficient of determination (R2) is used the regression basic model ( 2 ) of research .

### **Basic model (2) of research**

$$\% \Delta \text{ILLIQ}_{i,d} = \alpha_i + \beta_{i,1} \% \Delta \text{ILLIQ}_{m,d-1} + \beta_{i,2} \% \Delta \text{ILLIQ}_{m,d} + \beta_{i,3} \% \Delta \text{ILLIQ}_{m,d+1} + \varepsilon_{i,d}$$

The changes percentages ILLIQ or illiquidity of firm (i) in day( d ) equal to changes percentages in ILLIQ of market (m) the before day (d-1), the same day (d) and after days (d +1) are placed to obtain data and after calculating the monthly mean data for both sides of the equation, final measuring model is done to LIQCOV1 .

It can be said that it is explained about the same variables and cases previously.

Fourth hypothesis: There is a relationship between transparency level of firm's co-variability of liquidity level and market's returns.

Following Lang and Moffet (2010), the following model is used to test this hypothesis. It can be said that as ADR\_EX and ADR\_NEX variables do not apply to the population of this study variables were removed as well as TRANSPRANK variable is replaced to ANALYST\_TRANS variable as the level of transparency that it is require I / B / E / S data software.

### **Model (4)**

$$\text{LIQCOV2}_{i,m} = \alpha_i + \beta_1 \text{AILLIQ}_{i,t} + \beta_2 \text{SIZE}_{i,t} + \beta_3 \text{BM}_{i,t} + \beta_4 \text{STDRET}_{i,t} + \beta_5 \text{CLHLD}_{i,t} + \beta_6 \text{ACC\_TRANS}_{i,t} + \beta_7 \text{TRANSPRANK}_{i,t} + \text{Fixed Effects} + \varepsilon_{i,t}$$

Components of the model (4): LIQCOV2, distribution or monthly covariance between firm's liquidity and market returns. The determination coefficient (R2) of the regression basic model 2 is used For LIQCOV2.

### **Basic model (3) of research**

$$\% \Delta \text{ILLIQ}_{i,d} = \alpha_i + \beta_{i,1} \text{MKTRET}_{m,d-1} + \beta_{i,2} \text{MKTRET}_{m,d} + \beta_{i,3} \text{MKTRET}_{m,d+1} + \varepsilon_{i,d}$$

The changes percentages ILLIQ or illiquidity of firm (i) in day(d ) equal to changes percentages in ILLIQ of market (m) the before day (d-1), the same day (d) and after days (d +1) are placed to obtain data and after calculating the monthly mean data for both sides of the equation, final measuring model is done to LIQCOV2 .

It can be said that it is explained about the same variables and cases previously.

## **Results of hypothesis testing**

### **Descriptive Statistics**

Data description: In Table 3, central indexes such as mean and median and dispersion indexes, including standard deviation, stretching and skewness are calculated for different variables. The large amount of mean to median shows large parts in data, because the mean are affected by these values. In these cases, the data distribution is a skew to the right. For example, the distribution of the variables LIQVOL, AILLIQ, BM and STDRET is a skew to the right and vice

versa, and in some cases, a skew to the right. TrustAud variable distribution is a skew to the left, and if the mean and median values are close together, the variables distribution is symmetric and this is considered as one of the characteristics of a normal distribution. Skewness values for the dependent variables equal to 1.25 (LIQVOL after logarithms), 0.87 for LIQSKEW, 1.07 for PROB\_LBH, 0.77 for LIQCOV1 and 0.61 for LIQCOV2, respectively that the distribution of these variables is similar to a normal distribution. Also, other variables have almost symmetrical distribution.

Table 1: Descriptive statistics for research variables

| Variables    | number | mean   | Median | SD    | Skewness | Skewness | Minimum | maximum |
|--------------|--------|--------|--------|-------|----------|----------|---------|---------|
| LIQVOL       | 910    | 0.00   | 0.00   | 0.00  | 4.99     | 29.26    | 0.00000 | 0.00009 |
| Ln(LIQVOL+1) | 910    | 0.00   | 0.00   | 0.00  | 0.99     | 1.25     | 0.00000 | 0.00009 |
| LIQSKEW      | 910    | 2.29   | 2.61   | 1.11  | -0.87    | -0.22    | -1.00   | 3.46    |
| PROB_LBH     | 910    | 0.03   | 0.00   | 0.17  | 1.07     | 1.42     | 0.00    | 1.22    |
| LIQCOV1      | 910    | 0.35   | 0.26   | 0.29  | 0.77     | -0.62    | 0.00    | 1.00    |
| LIQCOV2      | 910    | 0.23   | 0.20   | 0.19  | 0.61     | 0.52     | 0.00    | 1.00    |
| ALLIQ        | 910    | 0.00   | 0.00   | 0.00  | 5.46     | 35.90    | 0.00    | 0.00    |
| SIZE         | 910    | 11.53  | 11.44  | 0.66  | 0.83     | 1.04     | 10.10   | 13.92   |
| BM           | 910    | 0.01   | 0.01   | 0.02  | 3.03     | 16.45    | -0.06   | 0.16    |
| STDRET       | 910    | 16.81  | 11.72  | 17.59 | 3.08     | 12.23    | 0.09    | 126.72  |
| CLHLD        | 910    | 0.76   | 0.80   | 0.15  | -1.31    | 2.14     | 0.10    | 0.99    |
| DIS_SMTHC    | 910    | 1.00   | 1.00   | 0.13  | 0.11     | 2.01     | 0.47    | 1.53    |
| TrustAud     | 910    | 0.94   | 1.00   | 0.24  | -3.58    | 10.82    | 0.00    | 1.00    |
| ACC_TRANS    | 910    | 0.19   | 0.19   | 0.10  | -0.01    | -1.19    | 0.00    | 0.36    |
| TRANS RANK   | 910    | 141.83 | 135.50 | 88.50 | 0.17     | -1.13    | 1.00    | 327.00  |

### Inferential statistics

, the test Kolmogorov - Smirnov test was used to control normal distribution of the dependent variables and the results are presented in Table 2.

Table 2: Kolmogorov - Smirnov Test to examine normality of the research dependent variables

| variable     | Number | Normal parameters |      | maximum difference |          |           | Z value<br>Kolmogorov -<br>Smirnov | Possibility<br>value |
|--------------|--------|-------------------|------|--------------------|----------|-----------|------------------------------------|----------------------|
|              |        | Mean              | SD   | Absolute<br>value  | Positive | negatives |                                    |                      |
| LIQVOL       | 910    | 0.00              | 0.00 | 0.37               | 0.34     | -0.37     | 11.07                              | 0.00                 |
| Ln(LIQVOL+1) | 910    | 0.00              | 0.00 | 0.37               | 0.34     | -0.37     | 1.22                               | 0.10                 |
| LIQSKEW      | 910    | 2.29              | 1.11 | 0.14               | 0.14     | -0.12     | 0.97                               | 0.31                 |
| PROB_LBH     | 910    | 0.03              | 0.17 | 0.54               | 0.54     | -0.43     | 0.85                               | 0.47                 |
| LIQCOV1      | 910    | 0.35              | 0.29 | 0.14               | 0.14     | -0.11     | 1.04                               | 0.23                 |
| LIQCOV2      | 910    | 0.23              | 0.19 | 0.11               | 0.11     | -0.11     | 0.99                               | 0.28                 |

Significant possibility values for the dependent variable LIQVOL is less than 0.05 , which is converted into logarithmic distribution normalized (its value is 0.10) for LIQSKEW equal to 0.31 , for PROB\_LBH 0.47, for LIQCOV1 0.23 , LIQCOV2 0.28 that the probability values are

greater than 0.05 . Therefore, the null hypothesis (variable normalization) for variables is not rejected, i.e. the distribution of these variables in accordance with the prediction (skewness and skewness indexes close to zero) is normal.

### **Models and hypotheses test**

First, the appropriate model is selected among the models (combined model, a model with fixed effects or random effects) using Chow and Hausman test. Based on the performed tests, appropriate models first, second and fourth are no effects models or combined models and the third appropriate model, a model with random effects, is the most appropriate model.

**First hypothesis test:** Selection of first appropriate model – the first case

Table 3: Chow test to select the appropriate model (the model with the effects or non-effects)

| Observation number | Statistics | Statistics value | Freedom degree | Possibility |
|--------------------|------------|------------------|----------------|-------------|
| 910                | F          | 0.777            | -181722        | 0.981       |
| 910                | Chi-square | 161.967          | 181            | 0.842       |

The probability is equal to 0.98. Therefore, model with no effects or combined model is appropriate.

### **First model – first case**

Table 4: model embedding with no – effects

| Dependent variable : Liquidity volatility (observations : 910 year – firm) |              |                            |         |                   |
|----------------------------------------------------------------------------|--------------|----------------------------|---------|-------------------|
| Variables                                                                  | Coefficients | SD                         | t value | Possibility value |
| C                                                                          | 0.00000188   | 0.00000219                 | 0.859   | 0.391             |
| AILLIQ                                                                     | 2.14677500   | 0.02097700                 | 102.340 | 0.000             |
| SIZE                                                                       | -0.00000021  | 0.00000017                 | -1.248  | 0.212             |
| BM                                                                         | -0.00001320  | 0.00000598                 | -2.205  | 0.028             |
| STDRET                                                                     | 0.00000001   | 0.00000001                 | 0.932   | 0.352             |
| CLHLD                                                                      | 0.00000135   | 0.00000063                 | 2.157   | 0.031             |
| DIS_SMTHC                                                                  | -0.00000010  | 0.00000074                 | -0.133  | 0.894             |
| Value of determination coefficient                                         | 0.924        | Mean of dependent variable |         | 0.000             |
| Adjusted determination coefficient                                         | 0.923        | Dependent variable SD      |         | 0.000             |
| SD of dependent variable                                                   | 0.000        | Akaike criterion           |         | -22.692           |
| Reminded sum of squares                                                    | 0.000        | Schwartz criterion         |         | -22.655           |
| Likelihood ratio                                                           | 10332.030    | Hannan – Quinn criterion   |         | -22.678           |
| F value                                                                    | 1821.929     | Durbin - Watson            |         | 2.403             |
| Possibility value                                                          | 0.000        |                            |         |                   |

According to Table 4, the significant F probability value is equal to 0.000. This value is less than 0.05, so the 95% confidence level, there is a significant model. Determination coefficient value is equal to 0.92, i.e. about 92 % of dependent variable changes are explained by the independent variables. Durbin - Watson statistics value is equal to 2.4 and with respect to values close to 2 which implies no autocorrelation of remained variables, so there is no autocorrelation between the remains. T -statistic value for AILLIQ is equal to 102.34 (meaningful and positive) , SIZE is equal to -1.25 (no meaningful) , BM is equal to- 2.20 (meaningful and negative) STDRET is equal to 0.93 (non - meaningful) , CLHLD is equal to 2.16 (meaningful and positive) DIS\_SMTHC is equal to -0.13 (no meaningful). T-statistics value for the y- intercept is equal to 0.89 which is at the 95% confidence level region of non- rejection of the null hypothesis i.e. the y- intercept is not meaningful.

### **Selection of first appropriate model – the second case**

Table 5: Chow test to select the appropriate model (the model with the effects or non-effects)

| Observation number | Statistics | Statistics value | Freedom degree | Possibility |
|--------------------|------------|------------------|----------------|-------------|
| 910                | F          | 0.789            | -181722        | 0.974       |
| 910                | Chi-square | 164. 266         | 181            | 0.809       |

The probability is equal to 0.97. Therefore, model with no effects or combined model is appropriate.

### **First model – second case**

Table 6: model embedding with no – effects

| Dependent variable : Liquidity volatility (observations : 910 year – firm) |              |                            |         |                   |
|----------------------------------------------------------------------------|--------------|----------------------------|---------|-------------------|
| Variables                                                                  | Coefficients | SD                         | t value | Possibility value |
| C                                                                          | 0.00000193   | 0.00000202                 | 0.957   | 0.339             |
| AILLIQ                                                                     | 2.14708500   | 0.02098300                 | 102.323 | 0.000             |
| SIZE                                                                       | -0.00000021  | 0.00000017                 | -1.226  | 0.221             |
| BM                                                                         | -0.00001330  | 0.00000598                 | -2.230  | 0.026             |
| STDRET                                                                     | 0.00000001   | 0.00000001                 | 0.926   | 0.355             |
| CLHLD                                                                      | 0.00000132   | 0.00000063                 | 2.102   | 0.036             |
| TrustAud                                                                   | -0.00000019  | 0.00000039                 | -0.483  | 0.630             |
| Value of determination coefficient                                         | 0.924        | Mean of dependent variable |         | 0.000             |
| Adjusted determination coefficient                                         | 0.923        | Dependent variable SD      |         | 0.000             |
| SD of dependent variable                                                   | 0.000        | Akaike criterion           |         | -22.693           |

|                         |           |                          |         |
|-------------------------|-----------|--------------------------|---------|
| Reminded sum of squares | 0.000     | Schwartz criterion       | -22.656 |
| Likelihood ratio        | 10332.140 | Hannan – Quinn criterion | -22.678 |
| F value                 | 1822.399  | Durbin – Watson          | 2.401   |
| Possibility value       | 0.000     |                          |         |

According to Table 6, the significant F probability value is equal to 0.000. This value is less than 0.05, so the 95% confidence level, there is a significant model. Determination coefficient value is equal to 0.92, i.e. about 92 % of dependent variable changes are explained by the independent variables. Durbin - Watson statistics value is equal to 2.4. T -statistic value for AILLIQ is equal to 102.34 (meaningful and positive) , SIZE is equal to -1.23 (non- meaningful) , BM is equal to -2.23 (meaningful and negative) STDRET is equal to 0.93 (non- meaningful), CLHLD is equal to 2.1 (meaningful and positive) TrustAud is equal to -0.48 (non- meaningful). T-statistics value for the y- intercept is equal to 0.96 which is at the 95% confidence level region of non- rejection of the null hypothesis i.e. the y- intercept is not meaningful.

**First test conclusion:** According to the results of the test the first hypothesis can be stated with 95% confidence that is no significant relationship between the level of transparency and liquidity volatility of firms.

### Second hypothesis Test: Selection of first appropriate model – the first case

Table 7: Chow test to select the appropriate model (the model with the effects or non-effects)

| Observation number | Statistics | Statistics value | Freedom degree | Possibility |
|--------------------|------------|------------------|----------------|-------------|
| 910                | F          | 1.200            | -181722        | 0.055       |
| 910                | Chi-square | 239.634          | 181            | 0.002       |

The probability is equal to 0.055. Therefore, the model is with no effects.

### Second model – first case

Table 8: model embedding with no – effects

| Dependent variable : Liquidity volatility (observations : 910 year – firm) |              |                            |         |                   |
|----------------------------------------------------------------------------|--------------|----------------------------|---------|-------------------|
| Variables                                                                  | Coefficients | SD                         | t value | Possibility value |
| C                                                                          | 1.710        | 0.784                      | 2.180   | 0.030             |
| AILLIQ                                                                     | 15176.030    | 8029.155                   | 1.890   | 0.059             |
| SIZE                                                                       | 0.021        | 0.065                      | 0.324   | 0.746             |
| BM                                                                         | -1.410       | 2.288                      | -0.616  | 0.538             |
| STDRET                                                                     | 0.001        | 0.002                      | 0.384   | 0.701             |
| CLHLD                                                                      | 0.717        | 0.240                      | 2.988   | 0.003             |
| ACC-TRANS                                                                  | 0.364        | 0.379                      | 0.961   | 0.337             |
| TRANSRANK                                                                  | -0.002       | 0.000                      | -5.054  | 0.000             |
| Value of                                                                   | 0.044        | Mean of dependent variable |         | 2.289             |

|                                    |           |                          |       |
|------------------------------------|-----------|--------------------------|-------|
| determination coefficient          |           |                          |       |
| Adjusted determination coefficient | 0.037     | Dependent variable SD    | 1.110 |
| SD of dependent variable           | 1.090     | Akaike criterion         | 3.018 |
| Reminded sum of squares            | 1070.789  | Schwartz criterion       | 3.060 |
| Likelihood ratio                   | -1365.266 | Hannan – Quinn criterion | 3.034 |
| F value                            | 5.973     | Durbin - Watson          | 1.799 |
| Possibility value                  | 0.000     |                          |       |

According to Table 8, the significant F probability value is equal to 0.000. This value is less than 0.05, so at 95% confidence level, there is a significant model. Determination coefficient value is equal to 0.04, i.e. about 4.4 % of dependent variable changes are explained by the independent variables. Dourbin - Watson statistics value is equal to 1.80. T -statistic value for AILLIQ is equal to 1.89 (meaningful and positive at 90% confidence level), SIZE is equal to 0.32 (no meaningful), BM is equal to- 0.62 (meaningful and negative) STDRET is equal to 0.38 (no meaningful), CLHLD is equal to 2.99 (meaningful and positive) ACC\_TRANS is equal to 0.96 (no meaningful) and TRNS RANK is equal to -5.05 (negative and meaningful). T-statistics value for the y- intercept is equal to 2.18 which is at the 95% confidence level region of rejection of the null hypothesis i.e. the y- intercept is meaningful.

### Selection of Second appropriate model – the second case

Table 9: Chow test to select the appropriate model (the model with the effects or non-effects)

| Observation number | Statistics | Statistics value | Freedom degree | Possibility |
|--------------------|------------|------------------|----------------|-------------|
| 910                | F          | 1.103            | -181722        | 0.193       |
| 910                | Chi-square | 222.512          | 181            | 0.019       |

The probability is equal to 0.19. Therefore, The null hypothesis based is not rejected from combined model and model is appropriate with no effects.

### Second model – first case

Table 10: model embedding with no – effects

| Dependent variable : Liquidity volatility (observations : 910 year – firm) |              |         |         |                   |
|----------------------------------------------------------------------------|--------------|---------|---------|-------------------|
| Variables                                                                  | Coefficients | SD      | t value | Possibility value |
| C                                                                          | -0.064       | 0.080   | -0.801  | 0.424             |
| AILLIQ                                                                     | 27903.500    | 821.373 | 33.972  | 0.000             |
| SIZE                                                                       | 0.007        | 0.007   | 0.986   | 0.324             |
| BM                                                                         | 0.290        | 0.234   | 1.238   | 0.216             |
| STDRET                                                                     | 0.000        | 0.000   | -1.660  | 0.097             |
| CLHLD                                                                      | -0.022       | 0.025   | -0.911  | 0.362             |

|                                    |         |                            |        |        |
|------------------------------------|---------|----------------------------|--------|--------|
| ACC-TRANS                          |         | 0.039                      | -0.874 | 0.382  |
| TRANS RANK                         | -0.034  | 0.000                      | 0.645  | 0.519  |
| Value of determination coefficient | 0.569   | Mean of dependent variable |        | 0.029  |
| Adjusted determination coefficient | 0.566   | Dependent variable SD      |        | 0.169  |
| SD of dependent variable           | 0.111   | Akaike criterion           |        | -1.542 |
| Reminded sum of squares            | 11.206  | Schwartz criterion         |        | -1.499 |
| Likelihood ratio                   | 709.404 | Hannan – Quinn criterion   |        | -1.525 |
| F value                            | 170.015 | Durbin - Watson            |        | 2.233  |
| Possibility value                  | 0.000   |                            |        |        |

According to Table 10, the significant F probability value is equal to 0.000. This value is less than 0.05, so at 95% confidence level, there is a significant model. Determination coefficient value is equal to 0.569, i.e. about 57 % of dependent variable changes are explained by the independent variables. Durbin - Watson statistics value is equal to 2.23. T -statistic value for AILLIQ is equal to 32.97 (meaningful and positive), SIZE is equal to 0.99 (non -meaningful) , BM is equal to 1.24 (non - meaningful) STDRET is equal to -1.66 (meaningful and negative at 90% confidence level ) , CLHLD is equal to -0.91 (non - meaningful and positive) ACC\_TRANS is equal to -0.87 (non- meaningful) and TRNS RANK is equal to 0.64 (non-meaningful). T-statistics value for the y- intercept is equal to 0.80 which is at the 95% confidence level region of rejection of the null hypothesis i.e. they- intercept is not meaningful.

**Second test conclusion:** According to the results of the test the first hypothesis can be stated with 95% confidence that is meaningful and negative relationship between the level of transparency and firm's more frequent of extreme illiquidity.

### Third hypothesis Test: Selection of Second appropriate model – the second case

Table 11: Chow test to select the appropriate model (the model with the effects or non-effects)

| Observation number | Statistics | Statistics value | Freedom degree | Possibility |
|--------------------|------------|------------------|----------------|-------------|
| 910                | F          | 1.537            | -181722        | 0.000       |
| 910                | Chi-square | 296.959          | 181            | 0.000       |

**The probability is equal to 0.00. Therefore, The model has appropriate effects.**

Table 12: Hausman test to selection appropriate model (model with fixed effects or with random effects)

| Observation number | Statistics | Statistics value | Freedom degree | Possibility |
|--------------------|------------|------------------|----------------|-------------|
| 910                | Chi-square | 0.000            | 7              | 1.000       |



**Third model – first case**

Table 13: model embedding with random effects

| Dependent variable : Liquidity volatility and market's liquidity (observations : 910 year – firm) |                    |                   |                   |                    |
|---------------------------------------------------------------------------------------------------|--------------------|-------------------|-------------------|--------------------|
| Possibility value                                                                                 | Possibility value  | Possibility value | Possibility value | Possibility value  |
| 0.004                                                                                             | 2.908              | 0.223             | 0.649             | C                  |
| 0.117                                                                                             | 1.571              | 2054.461          | 3226.624          | AILLIQ             |
| 0.041                                                                                             | -2.042             | 0.018             | -0.038            | SIZE               |
| 0.084                                                                                             | 1.733              | 0.622             | 1.078             | BM                 |
| 0.164                                                                                             | -1.394             | 0.001             | -0.001            | STDRET             |
| 0.119                                                                                             | 1.561              | 0.069             | 0.108             | CLHLD              |
| 0.968                                                                                             | -0.040             | 0.098             | -0.004            | ACC_TRANS          |
| 0.001                                                                                             | 3/252              | 0.000             | 0.000             | TRANS RANK         |
| Random Effects (Cross)                                                                            |                    |                   |                   |                    |
| Weighted Statistics                                                                               |                    |                   |                   |                    |
| 0.296                                                                                             | Mean dependent var |                   | 0.036             | R-squared          |
| 0.277                                                                                             | S.D. dependent var |                   | 0.028             | Adjusted R-squared |
| 67.093                                                                                            | Sum squared resid  |                   | 0.273             | S.E. of regression |
| 1.859                                                                                             | Durbin-Watson stat |                   | 4.763             | F-statistic        |
|                                                                                                   |                    |                   | 0.000             | Prob(F-statistic)  |
| Unweighted Statistics                                                                             |                    |                   |                   |                    |
| 0.351                                                                                             | Mean dependent var |                   | 0.042             | R-squared          |
| 1.723                                                                                             | Durbin-Watson stat |                   | 72.373            | Sum squared resid  |

According to Table 13, the significant F probability value is equal to 0.000. This value is less than 0.05, so at 95% confidence level, there is a significant model. Determination coefficient value is equal to 0.569, i.e. about 57 % of dependent variable changes are explained by the independent variables. Durbin - Watson statistics value is equal to 1.86. T -statistic value for AILLIQ is equal to 1.57 (non - meaningful), SIZE is equal to -2.04 (meaningful and negative), BM is equal to 1.73(meaningful and positive at 95% significant level) STDRET is equal to -1.39 (non -meaningful), CLHLD is equal to 1.56 (non - meaningful) ACC\_TRANS is equal to 0.04 (non-meaningful) and TRNS RANK is equal to 3.25 (non- meaningful). T-statistics value for the y- intercept is equal to 2.91 which is at the 95% confidence level region of rejection of the null hypothesis i.e. the y- intercept is not meaningful.

**Third test conclusion:** According to the results of the test the first hypothesis can be stated with 95% confidence that there is meaningful and positive relationship between the level of transparency and and market's liquidity in the firms.

**Fourth Hypothesis Test: Selection of Second appropriate model – the second case**

Table 14: Chow test to select the appropriate model (the model with the effects or non-effects)

| Observation number | Statistics | Statistics value | Freedom degree | Possibility |
|--------------------|------------|------------------|----------------|-------------|
| 910                | F          | 1.203            | -181722        | 0.052       |
| 910                | Chi-square | 240.165          | 181            | 0.002       |

The probability is equal to 0.052. Therefore, The model is appropriate with no effects or combined effects.

#### **Fourth model – model embedding with no – effects**

Table 15: model embedding with no – effects

| <b>Dependent variable : Liquidity volatility and market's return (observations : 910 year – firm)</b> |                     |                            |                |                          |
|-------------------------------------------------------------------------------------------------------|---------------------|----------------------------|----------------|--------------------------|
| <b>Variables</b>                                                                                      | <b>Coefficients</b> | <b>SD</b>                  | <b>t value</b> | <b>Possibility value</b> |
| C                                                                                                     | 0.183               | 0.095                      | 1.933*         | 0.054*                   |
| AILLIQ                                                                                                | 3061.937            | 824.087                    | 3.716          | 0.000                    |
| SIZE                                                                                                  | -0.006              | 0.008                      | -0.802         | 0.423                    |
| BM                                                                                                    | 0.743               | 0.159                      | 4.690          | 0.000                    |
| STDRET                                                                                                | -0.001              | 0.000                      | -1.130         | 0.259                    |
| CLHLD                                                                                                 | 0.093               | 0.039                      | 2.425          | 0.016                    |
| ACC-TRANS                                                                                             | 0.025               | 0.048                      | 0.523          | 0.601                    |
| TRANS RANK                                                                                            | 0.000               | 0.000                      | 4.333          | 0.000                    |
| Value of determination coefficient                                                                    | 0.043               | Mean of dependent variable |                | 0.232                    |
| Adjusted determination coefficient                                                                    | 0.036               | Dependent variable SD      |                | 0.185                    |
| SD of dependent variable                                                                              | 0.182               | Akaike criterion           |                | -0.560                   |
| Reminded sum of squares                                                                               | 29.913              | Schwartz criterion         |                | -0.517                   |
| Likelihood ratio                                                                                      | 262.659             | Hannan – Quinn criterion   |                | -0.544                   |
| F value                                                                                               | 5.830               | Durbin - Watson            |                | 1.927                    |
| Possibility value                                                                                     | 0.000               |                            |                |                          |

According to Table 15, the significant F probability value is equal to 0.000. This value is less than 0.05, so at 95% confidence level, there is a significant model. Determination coefficient value is equal to 0.043, i.e. about 4.3 % of dependent variable changes are explained by the independent variables. Durbin - Watson statistics value is equal to 1.93. T -statistic value for AILLIQ is equal to 3.79 (meaningful and positive), SIZE is equal to -0.80 (non -meaningful), BM is equal to 4.69 (non - meaningful) STDRET is equal to -1.13 (non - meaningful and) , CLHLD is equal to 2.42 (meaningful and positive) ACC\_TRANS is equal to 0.52 (non-meaningful) and TRNS RANK is equal to 4.33 (meaningful and positive) . T-statistics value for the y- intercept is equal to 1.93 which is at the 90% confidence level region of rejection of the null hypothesis i.e. the y- intercept is meaningful.

Fourth test conclusion: According to the results of the test the Fourth hypothesis can be stated with 95% confidence that is meaningful and positive relationship between the level of transparency and market's return in the firms.

### **Model validity**

The validity of the value of estimated models amount is to the extent to establish assumptions for the model. The most important assumptions are: 1) the normality of remains; 2) homogeneity of variance; 3) no autocorrelation or remains; 4) there is linear relationship between the outlier and influential; 5) absence of co-linearity between independent variables. So, in this study, by tests and diagnostic plots, have been investigated defaults: 1) Kolmogorev - Smirnov test; 2) residual plot against the estimated values (lack of homogeneity of variance model is shown in this diagram, these diagrams are provided in Appendix) 3) Dourbin - Watson test (values are close to 2 indicates no autocorrelation); 4) scatter diagrams, 5) using the correlation matrix (is in the Appendix).

### **Summary of the statistical tests results**

Statistical tests performed according to the above description, a summary of results is presented as follow and according to hypotheses.

$H_1$ : Transparency level is related to volatility of Liquidity in the firms.

$H_2$ : Transparency level is related to more frequent of extreme illiquidity in the firms.

$H_3$ : Transparency level of firm's co-variability of liquidity level is related to market's liquidity in the firms.

$H_4$ : Transparency level of firm's co-variability of liquidity level is related to market's returns in the firms.

### **Conclusion**

First hypothesis: There is a relationship between transparency level and volatility of Liquidity in the firms.

As if in this study two profit management and audit quality variables are used to measure the level of transparency, there was no relationship between the independent and dependent variables for this hypothesis because potential investors in Iran aren't paid attention to buy and sell stocks according to a previous study on the financial statements and based on traditional methods, the transactions will be applied and these investors haven't attention and react to which organization audited the financial statements or how much the profit management in firms. So in Iran, cannot be observed significant relationship between the level of transparency and liquidity volatility of Liquidity in the firms.

Second hypothesis: There is a relationship between Transparency level and more frequent of extreme illiquidity in the firms.

According to research findings, there is a significant and negative relationship between Transparency levels and more frequent of extreme illiquidity in the firms, it means that the firms listed in Tehran Stock Exchange, if the level of transparency is lower, firms are faced with more frequent of extreme illiquidity.

The criterion of transparency in this hypothesis is based on the firms ranking recently was measured by the Tehran Stock Exchange that this criterion is provided to investors.

Third hypothesis: There is a relationship between Transparency level of firm's co-variability of liquidity and market's liquidity.

According to research findings, there is a significant and positive relationship between Transparency level of firm's co-variability of liquidity and market's liquidity and therefore, as if the transparency level is higher, the co-variability of liquidity is higher and has a positive effect on market's liquidity.

As if in this study two profit management and audit quality variables are used to measure the level of transparency, according to accepted accounting principles and used transparency level, the difference of results between two researches show that also because of mentioned reason, potential investors in Iran aren't paid attention to buy and sell stocks according to a previous study on the financial statements and based on traditional methods, the transactions will be applied and these investors haven't attention and react to which organization audited the financial statements or how much the profit management in firms.

Fourth hypothesis: There is a relationship between transparency level of firm's co-variability of liquidity level and market's returns.

According to research findings, there is observed no significant relationship between transparency level of firm's co-variability of liquidity level and market's returns at 95% significance level, but this relationship exists at 90% significance level which equaled to level of above research findings and shows a close relationship at 95% significance level (about 94.6 %).

According to Long and Maft findings (2010), there is observed significant and negative relationship in all cases.

the end result of this research is that : There is no meaningful relationship between transparency level and volatility of Liquidity in the firms. There is a meaningful and negative relationship between Transparency level and more frequent of extreme illiquidity in the firms. There is a meaningful and positive relationship between Transparency level of firm's co-variability of liquidity and market's liquidity. There is no meaningful relationship between transparency level of firm's co-variability of liquidity level and market's returns.

## **References**

1. Amihud, Y, "Illiquidity and stock returns: Cross-section and time-series effects" Journal of Financial Markets 5, (2002): 31-56.
2. Amihud, Y, Mendelson, and Pedersen "Liquidity and asset prices" Foundations and Trends in Finance 1, (2005): 269-364.
3. Bessembinder, Hendrik, William Maxwell, and Kumar Venkataraman. "Market Transparency, Liquidity Externalities, And Institutional Trading Costs in Corporate Bonds." Journal of Financial Economics (2005): 1-37.
4. Biais, Bruno, Fany Declerck, James Dow, Richard Portes, and Ernst Ludwig Von Thadden. "European Corporate Bond Markets: Transparency, Liquidity, Efficiency." Centre for Economic Policy Research (2006): 1-75.
5. Brunnermeier, M, and Pedersen, "Market liquidity and funding liquidity" Review of Financial Studies 22, (2009): 2201-2238.
6. Bushman, Robert M., and Abbie J. Smith. "Transparency, Financial Accounting Information, and Corporate Governance." FRBNY Economic Policy Review (2003): 65-87.

7. Dumitrescu, Ariadna. "Liquidity and Optimal Market Transparency." (2008): 1-32. ESADE Business School. <<http://ssrn.com/abstract=942912>>.
8. Friewald, Nils, Rainer Jankowitsch, and Marti G. Subrahmanyam. "Liquidity, Transparency and Disclosure in the Securitized Product Market." (2012): 1-37. Vienna University of Economics and Business.
9. Gemmill, Gordon. "Transparency and Liquidity: A Study of Block Trades on the London Stock Exchange under Different Publication Rules." *THE JOURNAL OF FINANCE* Dec., 1996 51.5 (1996): 1765-1790.
10. Gerace, Dionigi, Gary G. Tian, and Willa Hua Qing Zheng. "Call Auction Transparency and Market Liquidity: The Shanghai Experience." Research Online, Faculty of Commerce - Papers (Archive), Faculty of Business (2009): 1-28. University of Wollongong.
11. Goldstein, Michael A., Edith S. Hotchkiss, and Erik R. Sirri. "Transparency and Liquidity: A Controlled Experiment on Corporate Bonds." *The Review of Financial Studies* 20.2 (2007): 235-273. By Oxford University Press on Behalf of The Society for Financial Studies.
12. Grossman, S, and Miller, "Liquidity and market structure" *Journal of Finance* 43, (1988): 617-633.
13. Hameed, A, Kang, and Viswanathan, "Stock market declines and liquidity" *Journal of Finance* Vol. LXV, no. 1, (2010): 257-293
14. Jin, L, and Myers, "R<sup>2</sup> around the world: New theory and new tests" *Journal of Financial Economics* 79, (2006): 257-292.
15. Karolyi, G, Lee, and Van Dijk, "commonality in returns, liquidity, and turnover around the world" (2009): 1-50. Fisher College of Business, Ohio State University.
16. Laganá, Marco, Martin Peřina, Isabel Von Köppen-Mertes, and Avinash Persaud. "Implications for Liquidity from Innovation and Transparency in the European Corporate Bond Market." *Occasional Paper Series AUGUST 2006* 50 (2006): 1-44.
17. Lang, M., and Lundholm, "Corporate disclosure policy and analyst behavior." *The Accounting Review* 71, (1996): 467-492.
18. Lang, M., Lins, and Maffett, "Transparency, liquidity and valuation: International evidence" (2009): 1-49. University of North Carolina at Chapel Hill.
19. Lang, Mark, and Mark Maffett. "Transparency and Liquidity Uncertainty in Crisis Periods." (2010): 1-50. University of North Carolina at Chapel Hill. <<http://ssrn.com/abstract=1565776>>.
20. Lashgari, Zahra, and Naghmeh Sadat MaghamiTekiyeh. "Relationship between Transparency, Liquidity and Valuation." *World Academy of Science, Engineering and Technology* 78 (2013): 554-559.
21. Leuz, C., Nanda, and Wysocki, "Earnings management and investor protection" an international comparison. *Journal of Financial Economics* 69, (2003): 505-527.
22. Lipson, Marc L., and Sandra Mortal. "Liquidity and Capital Structure." *Darden Business School Working Paper* March 3 (2009): 1-48.
23. Madhani, Pankaj. "Role of Voluntary Disclosure and Transparency in Financial Reporting." *The Icfai University Press* (2007): 63-66. <<http://ssrn.com/abstract=1507648>>.
24. Ng, J, "The effect of information quality on liquidity risk" (2008): 1-59. University of Pennsylvania.
25. Pagano, Marco, and Paolo Volpin. "Securitization, Transparency, and Liquidity." April 2012 (2012): 1-52. University of Naples Federico II.
26. Vayanos, D. "Flight to quality, flight to liquidity, and the pricing of risk" *The National Bureau of Economic Research* (2004): 1-55.

27. Wang, Kangmao. "Multifactor Model of Growth and Z- Score for Projecting Stock Return and Evaluating Risk." Social Science Research Network Electronic Paper Collection (2001): 1-40. <[http://Papers.ssrn.com/ abstract =286174](http://Papers.ssrn.com/abstract=286174)>.