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Stock Market Liquidity and Firm Performance

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Abstract; *The present study is done in Indian context with an objective to find out the effect of Stock Market Liquidity on Firm Performance. NSE listed firms were studied from 2005 to 2014. OLS regression was used to find out a causal relationship between indicators of stock market liquidity and firm performance. The results indicate a positive relationship between age and performance of firm.*
Keywords: *Liquidity, Performance, Tobin's Q*

I. Introduction

Stock market liquidity is an important to measure market growth and efficiency. Stock markets are playing capital mobilization and provide secondary market to the investors. It is help to financial institutions buy sell and the securities. Stock market liquidity is Large markets that are liquid and efficient can continue to receive the required foreign investments to economic growth. A stock market is the aggregation of buyers and sellers of stock and shares. Stock market is place to trade shares in market and include securities listed on a stock exchange as well as those only traded privately. Participants in the stock exchange range from small individual stock market composed the network of computers where trades are made electronically by traders. Liquidity is a liquid asset or security can be easily bought or sold with little or no impact on price. It is high level of trading activity allowing buying and selling of shares and stocks in minimum price disturbance. Liquidity is corporation to short-term obligations. Liquidity is measured with liquidity ratio it means current ratio, quick ratio and case ratio. Liquidity is the asset or process buying and selling the property in less time and cost possible in some time. The liquidity that an exchange affords the investors enables their holders to quickly and easily sell securities in any firms and company. Market liquidity is a market's ability to facilitate an asset being sold quickly without having reduced price. Liquidity market positively impacts the stock market. Conclude that stock market liquidity is the improved of firm performance and increase the efficiency though feedback effect. Stock market relation between liquidity on firm performance because liquidity are positive impact on firm performance and valuation. Stock market is increase in firm performance efficiency of manager pay-for-performance sensitivity. Firms with liquid stocks have better firm performance as measured by the market-to-book ratio. The relation between liquidity and performance has received considerable attention in financial economics variety of perspectives. This researcher has considered the effect of liquidity on performance as well as the dependence of liquidity on firm performance. This study also does not evaluate any evidence that liquidity improves firm performance through block holder investors as the relation between liquidity on firm performance. Firm performance is same for stocks with high and low levels of outside block holdings as well as for stocks with high and low levels of firms' holdings. Evaluation in situation of the market liquidity of the firm's shares/stocks declines due to conceder ownership. The performance value of the firm is expected to decrease. The purpose of did study was to understand the basics of stock market and the effect of market liquidity on the firm performance so as to enhance the overall growth of the firm.

II. Literature Review

In their seminal work, Miller and Modigliani (1961) formally developed the dividend irrelevance hypothesis. In perfect capital markets populated by rational investors, a firm's value is solely a function of the firm's investment opportunities and is independent of the firm's payout policy. Stange, Kaserery(2009) analyzed that Market liquidity was the ease of trading of an asset. It's risk was the potential loss, because a security can only be traded at high or prohibitive costs.

Different stock market researchers have shown different results like Fang, Noe, Sheri and Tice (2006) found out how the market liquidity effects of firm performance and relation between stock liquidity and firm performance. They assessed the effect of the market liquidity on firm performance as measured by a firm's Tobin's Q ratio. Similarly Mendelson (2006) showed that liquidity is an important factor in capital asset pricing. Researchers have shown that expected asset returns depend on their liquidity (or marketability) in addition to their risk.

Kanasro, Jalbani and Junejo (2009) studied the position of stock market liquidity at Karachi Stock Exchange (KSE) during the period from 1985 to 2006. They found the evidence of less stock market liquidity at Karachi Stock Exchange during the sample period. They found that less liquidity causes less synchronicity in

prices attracting less inventors and results is low size of market. They measured of liquidity in a stock exchange and results therefore were mostly on ratios concerning with GDP and Aggregate Market Capitalization as the denominators on the value of total share traded. DALV and BAGH (2003) analyzed that the relationship between performance and liquidity of shares listed on the Tehran Stock Exchange investigated. The results of investigation showed that between the liquidity and performance scales a strong correlation was observed. After a test confirmed the hypothesis was found, there was a significant relationship between firm performance and liquidity.. Cheung, Chung and Fung (2013) investigated the impacts of a firm's stock liquidity on corporate governance and firm performance. Using a sample of REITs in US from 1992 to 2008, they found that stock illiquidity, has a significant negative impact on future firm performance.

Arabsalehi and Beedel (2014) examined the impact of stock market liquidity on companies' economic Performance The statistical population included all firms in Tehran Stock Exchange (TSE) from which 97 firms were sampled on a ten year period from 2003 to 2012. They found that stock liquidity has a significant positive impact on two criteria of firm performance, EVA and Tobin's Q while we find no evidence that liquidity has any significant impact on ROA.

Further other factors related to firm's liquidity were studied by Dass, Nanda, Xiaoy, (2011) found that innovative firms have higher liquidity and take a variety of actions that help to keep their stock more liquid . Uno and Kamiyama (2010) analyzed that A firm's ownership structure influenced both its liquidity and value. They found that the latent investment horizon explains differences in liquidity and firm value among firms listed on the Tokyo Stock Exchange. Empirical results indicate that the longer the investment horizon, the lower the firm's liquidity and value .

Blum, Keim and Amihud (2002 & 2008) showed that institutional participation in the U.S. stock market had played an ever increasing role in explaining cross-sectional variation in stock market illiquidity. They showed that institutional participation in equities markets had played an increasingly important role in explaining cross-sectional variability in illiquidity. Banerjee, Gatchev, Spindt (2005) found evidence that sensitivity of firm value to innovations in aggregate liquidity declines after dividend initiations. Indeed, Baker and Wurgler (2004a, 2004b) present significant evidence that the payout policy of the firm is related to the liquidity of its common stock. Krishna & Bansal (2005) ; Prasanna & Bansal (2014) analyzed that the Indian and the empirical results indicated that Foreign Institutional Trading significantly influences market liquidity in a negative direction.

Objetives of the Study

- To find out market to book value ratio for the firms under study.
- To calculate Tobin's Q ratio for the firms under study.
- To find out the market returns for the firms under study.
- To find out the different constructs of liquidity for the firms under study.
- To find out the relationship between liquidity and firm performance

III. Research Methodology

The study was empirical on nature and secondary data was use to complete it All the companies listed on any of the stock in India will form the population . All the companies listed on NSE was act as sample frame. Individual company listed on nifty was the sample elements.35 companies listed continuously on NIFTY for the study time period was form the sample size.(study time period of 2005 to 2014). Non probability judgmental sampling was used. Secondary resources was use for collecting the data on the variable study (like NSE india.com, moneycontrol.com)

Tools Used For Data Collection

1.Access returns were using the formula= $\frac{\text{(Today Returns–Previous Returns)}}{\text{Previous Returns}} * 100$

2. Market to book value= market-to-book ratio = (Vd + Ve)/(Assets)

- Market-to-book ratio (alternate calculation) = (Vd + Ve)/(Assets) = [(Vd + Ve)/Op. Income] × [Op. Income /Assets] = [Ve/Op Income] × [(Ve+ Vd)/Ve] × [Op. Income/Assets] = (Price to Op. Income Ratio) ×(Leverage Ratio) × (Operating Income to Assets).

3 Tobin's Q

$$\text{Tobin's Q} = \frac{\text{Market To Book Value + Book Value Assets - Common Equity Differ Tax}}{\text{Book Value Assets}}$$

4. OLS regression was used to find out relationship between firms performance and liquidity.

IV. Result & Discussion

Sample Selection and Variable Selection

The data is collected from several databases. daily and monthly stock as well as index return data from nseindia website was collected firm financials data from individual company website and annual report there off were collected. Similarly financial data for ratios was collected through moneycontrol.com. When constructing variables, missing daily returns were deleted from the sample and missing financials were either deleted or averaged.

Liquidity Index, is used a measure for liquidity of the firm. In this paper, we follow Bekaert, Harvey, and Lundblad (2005) to construct our main proxy for liquidity as a transformation of the proportion of zero daily firm returns. Specifically, for each stock-year, we calculate the proportion of zero daily returns, *ZR*, of the stock over the firm's fiscal year. We then compute our liquidity proxy, *LZR*, by taking the natural logarithm of 1-*ZR*. Thus, *LZR* is constructed to be non-positive and positively related to stock market liquidity.

For measuring firm performance: in studying the association between firm performance and stock market liquidity, we rely on a proxy for Tobin's *Q* as our main measure of firm performance. Tobin's *Q* (the ratio of the firm's market value to the replacement cost of its assets) has been used as a measure of firm value in an enormous number of studies (see, e.g., Morck, Shleifer, and Vishny (1988), Yermack (1996), and Gompers et al. (2003)). Our proxy for *Q* is taken from Kaplan and Zingales (1997).

Result & Discussion: This paper investigates the effect of liquidity on firm performance and the mechanisms through which liquidity affects firm performance. We first examine whether liquidity improves performance, lowers performance, or has no effect on performance. To fulfill the objectives of study, following tests were applied and result & discussion is as given below:

1. Normality tests

The normality tests all report a P value. In this case, the null hypothesis is that all the values were sampled from a population that follows a Gaussian distribution.

Variable	Doornik-Hansen test	Shapiro-Wilk W	Lilliefors test	Jarque-Bera test
Return	13862.8, with p-value 0	0.301713, with p-value 2.76757e-034	0.359901, with p-value ~= 0	471677, with p-value 0
MBV	881.915, with p-value 3.12287e-192	0.631048, with p-value 9.26253e-027	0.236955, with p-value ~= 0	11058.8, with p-value 0
tobin Q	16776.7, with p-value 0	0.20622, with p-value 6.48487e-036	0.403757, with p-value ~= 0	183489, with p-value 0
LZR	44400.6, with p-value 0	0.0556686, with p-value 5.74028e-038	0.523769, with p-value ~= 0	777234, with p-value 0
Index Return	= 920.052, with p-value 1.63385e-200	0.584268, with p-value 4.29862e-028	0.436205, with p-value ~= 0	64.3095, with p-value 1.08485e-014
Log Age	45.2838, with p-value 1.4681e-010	0.936035, with p-value 3.99679e-011	0.122341, with p-value ~= 0	55.7627, with p-value 7.78527e-013

From the above table of results, it can be seen that data is almost normal. The data set can be further used for applying test for fulfilling objectives.

2. CURVE ESTIMATION

To find out the impact of stock market on firm performance, linear regression was applied. |A preliminary condition for regression is finding out which type of regression has to be applied. It can be found out through curve estimation. The results of curve estimation results are discussed in the table below.

Relationship	(R^2)	Independent Variable	Independent Variable	Independent Variable	Independent Variable	Independent Variable
Dependent Variable : Tobin's Q	**EQUATION**	**RETURN**	**MBV**	**LZR**	**INDEX**	**LOGA**
	Linear	.426	.000	.000	.001	.005
	Quadratic	.441	.001	.000	.001	.008
	Cubic	.444	.001	.000	.001	.008
	Best fit	**CUBIC**	**Q/CUBIC**			**Q/CUBIC**

The above table results indicates that either cubic or quadratic type is the best fit. This suggests that linear regression can't be applied. In this case Generalized Linear model is the best test to check the relationship between dependent and independent variables.
Still OLS regression was applied to check the causal relationship between the variables as quadratic and cubic models are comparatively difficult to interpret and to check the extent of relationship.

3. Summary Statistics

The Model Fit table provides fit statistics calculated across all of the models. It provides a concise summary of how well the models, with estimated parameters, fit the data. For each statistic, the table provides the mean, standard error (SE), minimum, and maximum value across all models. It also contains percentile values that provide information on the distribution of the statistic across models. For each percentile that percentage of models has a value of the fit statistic below the stated value.

	"R"	MBV	Q	LZR	INDEX	LOGAGE
Mean	1967.5	1278.1	1.08E+05	-5.88E-05	0.31429	3.7569
Median	446.29	770.45	15516	0	0	3.8712
Minimum	-9890.5	0	0	-0.01212	0	1.9459
Maximum	1.06E+05	18318	5.46E+06	0	1	4.6728
Standard deviation	6538.6	1784.7	4.42E+05	0.0007212	0.4649	0.56977
C.V.	3.3232	1.3964	4.1045	12.275	1.4792	0.15166
Skewness	11.668	4.039	9.896	-14.623	0.80009	-0.848
Ex. kurtosis	178.32	26.326	110.41	230.68	-1.3598	0.97331

Interpretation R (Returns) –From the Summary statistics we can see that the Standard deviation is 6538.6. Skewness Positive value indicates a distribution with an asymmetric tail extending towards more positive values. Skewness statistic of 11.668 would be a not acceptable skewness value for a normally distributed set of test scores a positive value indicates the possibility of a positively skewed distribution. Kurtosis statistic of 178.32 would be a not acceptable kurtosis value for a mesokurtic (that is, normally high) distribution.

Interpretation MBV (Market to Book Value) –Find out the Summary statistics In Standard deviation is value is 1784.7. **Skewness,** positive value indicates a distribution with an asymmetric tail extending towards more positive values. Skewness statistic of 4.0390 would be an acceptable skewness value for a normally distributed set of test scores a positive value indicates the possibility of a positively skewed distribution. **kurtosis statistic** of 26.326 would be an not acceptable kurtosis value for a mesokurtic (that is, normally high) distribution.

Interpretation for tobin's Q –Find out the Summary statistics In Standard deviation is value is 4.4160e+005. Skewness Positive value indicates a distribution with an asymmetric tail extending towards more positive values. Skewness statistic of 9.8960 would be an not acceptable skewness value for a normally distributed set of test scores a positive value indicates the possibility of a positively skewed distribution.
Kurtosis statistic of 110.41 would be an not acceptable kurtosis value for a mesokurtic (that is, normally high) distribution.

Interpretation of LZR – Standard deviation value is 0.00072120. Skewness Positive value indicates a distribution with an asymmetric tail extending towards more positive values. Skewness statistic of -14.623 would be an acceptable skewness value for a normally distributed set of test scores a positive value indicates the possibility of a positively skewed distribution. Kurtosis statistic of 230.68 would be an not acceptable kurtosis value for a mesokurtic (that is, normally high) distribution.

Interpretation Index –Standard deviation value is 0.46490. Skewness Positive value indicates a distribution with an asymmetric tail extending towards more positive values. Skewness statistic of 0.80009 would be an acceptable skewness value for a normally distributed set of test scores a positive value indicates the possibility of a positively skewed distribution. kurtosis statistic of -1.3598 would be an acceptable kurtosis value for a mesokurtic (that is, normally high) distribution.

Interpretation logage (Age of the firm) –The Standard deviation value is 0.56977. Skewness Positive value indicates a distribution with an asymmetric tail extending towards more positive values. Skewness statistic of -0.84800 would be an acceptable skewness value for a normally distributed set of test scores a positive value

indicates the possibility of a positively skewed distribution. Kurtosis statistic 0.97331 departs further from zero, a positive value indicates the possibility of a leptokurtic distribution.

4. Ordinary Least Squares

To assess whether stock liquidity improves, harms, or has no effect on firm performance we regress a proxy for Tobin's *Q* on our liquidity measure and other variables. In statistics, **ordinary least squares** (**OLS**) or **linear least squares** is a method for estimating the unknown parameters in a linear regression model, with the goal of minimizing the differences between the observed responses in some arbitrary dataset.

We first estimate equation using pooled OLS and all years for which shareholder rights data is available.

Taking Tobin's q as dependent variable and others as independent variable, PLS regression was applied, the results were:

Model 1: Dependent variable: TOBIN'S Q, Independent Variables:

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
Const	72863.2	134183	0.5430	0.58747	
R	28.9973	2.39859	12.0893	<0.00001	
MBV	9.0621	11.7805	0.7692	0.44228	
LZR	1.88138e+06	2.78004e+07	0.0677	0.94608	
Index	33436.7	44857.1	0.7454	0.45654	
Logage	-15564.3	35365	-0.4401	0.66014	

Mean dependent var	107588.5	S.D. dependent var	441597.0
Sum squared resid	4.74e+13	S.E. of regression	371372.5
R-squared	0.302891	Adjusted R-squared	0.292759
F(5, 344)	29.89338	P-value(F)	3.26e-25
Log-likelihood	-4982.339	Akaike criterion	9976.678
Schwarz criterion	9999.825	Hannan-Quinn	9985.891

Tobin's Q has significant positive relationship with index returns. Tobin's Q has significant negative relationship with age of the firm.

These results support hypothesis since higher stock market liquidity is correlated with higher firm performance as measured by *Q*. The results appear economically significant as well.

Interpretation-The intercept does not seem to be statistically significant (i.e. the population parameter is not different from zero at 10% level of significance), while the slope parameter (the coefficient of the area) is significant at even 1%. The R^2 is also high (0.302891) signifying a positive relationship between the stock market and their firm performance indicators.

5. Generalized Linear Models

Generalized Linear Models- The Generalized Linear Model (GLM) is a model which can be specified to include a wide range of different models.

The **generalized linear model** (**GLM**) was applied as it is a flexible generalization of ordinary linear regression that allows for response variables that have error distribution models other than a normal distribution.

The summary statistics of the dependent variable (Tobin's Q) and covariates can be seen in the table below.

Continuous Variable Information

		N	Minimum	Maximum	Mean	Std. Deviation
Dependent Variable	Q	345	.00	5463515.35	108942.6617	4.44650E5
Covariate	R	345	-9890.54	105509.24	1990.2345	6583.10755
	MBV	345	.00	18317.84	1277.8975	1796.46266
	INDEX	345	.00	1.00	.3043	.46080
	LOGA	345	1.95	4.67	3.7583	.57379

Interpretation of Goodness of Fit Results- The Model Fit table provides fit statistics calculated across all of the models. It provides a concise summary of how well the models, with estimated parameters, fit the data. For each statistic, the table provides the mean, standard error (SE), minimum, and maximum value across all models. It also contains percentile values that provide information on the distribution of the statistic across models. For each percentile that percentage of models has a value of the fit statistic below the stated value. For instance, 95% of the models have a value of Max that is less than 18317.84.

Goodness of Fit[b]			
	Value	df	Value/df
Deviance	3.197E13	326	9.806E10
Scaled Deviance	345.000	326	
Pearson Chi-Square	3.197E13	326	9.806E10
Scaled Pearson Chi-Square	345.000	326	
Log Likelihood[a]	-4845.543		
Akaike's Information Criterion (AIC)	9731.086		
Finite Sample Corrected AIC (AICC)	9733.678		
Bayesian Information Criterion (BIC)	9807.957		
Consistent AIC (CAIC)	9827.957		
Dependent Variable: TOBIN'SQ			

Interpretation-

According to the SPSS output the Deviance for the log linear model for the number of companies due to performance of equals Deviance = 3.197E13, df=326(=n-2=n-(number of parameters in the model)). It is hard to judge this value, without knowing the distribution of the deviance. A better measure is Deviance/df=9.806E10, measures "close" to one indicate good model fit. Here the score is not close to one and can be interpreted as *lack in model fit.*

H0: the saturated model does not fits significantly better than the proposed model.

The P-value for a test of Ho, this model fits as well as the saturated model, equals $P(\chi 2 > \chi 2\ 0) < 0.005$ (with $\chi 2\ 0$ =3.197E13, df = 326). We would therefore reject Ho, and find that the saturated model fits significantly better than the proposed model.

Omnibus Test[a]		
Likelihood Ratio Chi-Square	Df	Sig.
260.460	18	.000

Interpretation- ***Likelihood Ratio Chi-square*** (LRX) was developed more recently than the Pearson chi-square and is the second most frequently used Chi-square. It is directly related to log-linear analysis and logistic regression. The LRX has the important property that an LRX with more than one degree of freedom can be partialised into a number of smaller tables each with its own (smaller) LRX and (lower numbers of) degrees of freedom. The sum of the partial LRXs

and associated partial degrees of freedom, as found in the smaller tables, equals the original LRX and original number of degrees of freedom.

If the resulting chi-square value is significant, stick with the unconstrained model; if insignificant then the constraints can be justified. The likelihood ratio test statistic is x^2 =260.460with a p-value=.000 Hence, we have relatively strong evidence in favor of rejecting Ho. Researcher has to stick to unconstrained model.

Tests of Model Effects			
Source	Type III		
	Wald Chi-Square	Df	Sig.
(Intercept)	3.164	1	.075
LZR	.002	3	1.000
R	3.640	1	.056
MBV	.631	1	.427
INDEX	.000	1	.991
LOGA	4.914	1	.027
R * MBV	.095	1	.758
R * INDEX	1.170	1	.279
R * LOGA	5.258	1	.022
MBV * INDEX	.097	1	.756
MBV * LOGA	.575	1	.448
INDEX * LOGA	.000	1	.990
R * MBV * INDEX	.077	1	.781
R * MBV * LOGA	.292	1	.589
R * INDEX * LOGA	1.133	1	.287
MBV * INDEX * LOGA	.085	1	.770
R * MBV * INDEX * LOGA	.082	1	.774
Dependent Variable: Q Model: (Intercept), LZR, R, MBV, INDEX, LOGA			

Interpretation- The likelihood ratio test statistic is x^2 =3.164 with a p-value=.075 Hence, we have relatively strong evidence in favor of hypothesis are not rejecting.

LZR test statistic is $x^2 = .002$ with a p-value=1 Hence, we have relatively strong evidence in favor of hypothesis are not rejecting.
Return test statistic is $x^2 = 3.640$ with a p-value= .056 Hence, we have relatively strong evidence in favor of hypothesis are not rejecting.
Market to book value test statistic is $x^2 = .631$ with a p-value=.427 Hence, we have relatively strong evidence in favor of hypothesis are rejecting.
Index test statistic is $x^2 = .000$ with a p-value=.991 Hence, we have relatively strong evidence in favor of hypothesis are not rejecting.
Log age test statistic is $x^2 = 4.914$ with a p-value=.027 Hence, we have relatively strong evidence in favor of hypothesis for rejecting.
Returns and market book value interaction relationship with test statistic is $x^2 = .095$ with a p-value=.758 Hence, we have relatively strong evidence in favor hypothesis are not rejecting.
Returns and index interaction relationship with test statistic is $x^2 = 1.170$ with a p-value= .279 Hence, we have relatively not strong evidence in favor hypothesis (Ho) are rejecting.
Returns and log age interaction relationship with test statistic is $x^2 = 5.258$ with a p-value= .022 Hence, we have relatively strong evidence in favor hypothesis (Ho) rejecting.
Market t book value and index interaction relationship with test statistic is $x^2 = 5.258$ with a p-value= .022 Hence, we have relatively not strong evidence in favor hypothesis (Ho) are rejecting.
Market t book value and log age interaction relationship with test statistic is $x^2 = .575$ with a p-value= .448 Hence, we have relatively not strong evidence in favor hypothesis (Ho) are rejecting.
Index and log age interaction relationship with test statistic is $x^2 = .000$ with a p-value= .990 Hence, we have relatively strong evidence in favor hypothesis (Ho) are not rejecting.
Returns, market book value and index interaction relationship with test statistic is $x^2 = .077$ with a p-value= .0781 Hence, we have relatively strong evidence in favor hypothesis (Ho) are not rejecting.
Returns, market book value and log age interaction relationship with test statistic is $x^2 = .292$ with a p-value= .589 Hence, we have relatively strong evidence in favor hypothesis (Ho) are not rejecting.
Returns, index and log age interaction relationship with test statistic is $x^2 = 1.133$ with a p-value= .281 Hence, we have relatively not strong evidence in favor hypothesis (Ho) are rejecting.
Market to book value, index and log age interaction relationship with test statistic is $x^2 = .085$ with a p-value= .770 Hence, we have relatively strong evidence in favor hypothesis (Ho) are not rejecting.
Return, Market to book value, index and log age interaction relationship with test statistic is $x^2 = .082$ with a p-value= .774 Hence, we have relatively strong evidence in favor hypothesis (Ho) are not rejecting.

Parameters Estimates

Parameter			95% Wald Confidence Interval		Parameter	Hypothesis Test		
	B	Std. Error	Lower	Upper		Wald Chi-Square	Df	Sig.
(Intercept)	367344.01	155799.14	61983.312	672704.71	(Intercept)	5.559	1	0.018
[LZR=-.01]	-7170.177	305466.76	-605874.03	591533.68	[LZR=-.01]	0.001	1	0.981
[LZR=.00]	0[a]	.	.	.	[LZR=.00]	.	.	.
R	-58.058	30.4301	-117.7	1.584	R	3.64	1	0.056
MBV	-104.077	131.0485	-360.928	152.773	MBV	0.631	1	0.427
INDEX	-7478.122	670863.99	-1322347.4	1307391.1	INDEX	0	1	0.991
LOGA	-91412.563	41238.463	-172238.47	-10586.661	LOGA	4.914	1	0.027
R * MBV	-0.029	0.0954	-0.217	0.158	R * MBV	0.095	1	0.758
R * INDEX	-541.488	500.5156	-1522.481	439.504	R * INDEX	1.17	1	0.279
R * LOGA	23.039	10.0475	3.346	42.732	R * LOGA	5.258	1	0.022
MBV * INDEX	81.066	260.7338	-429.963	592.094	MBV * INDEX	0.097	1	0.756
MBV * LOGA	24.987	32.9587	-39.611	89.584	MBV * LOGA	0.575	1	0.448
INDEX * LOGA	2113.506	174674.18	-340241.59	344468.6	INDEX * LOGA	0	1	0.99
R * MBV * INDEX	0.103	0.3702	-0.623	0.828	R * MBV * INDEX	0.077	1	0.781

R * MBV * LOGA	0.017	0.0306	-0.043	0.076	R * MBV * LOGA	0.292	1	0.589
R * INDEX * LOGA	133.081	125.0199	-111.953	378.116	R * INDEX * LOGA	1.133	1	0.287
MBV * INDEX * LOGA	-19.634	67.3019	-151.543	112.275	MBV * INDEX * LOGA	0.085	1	0.77
R * MBV * INDEX * LOGA	-0.027	0.0936	-0.21	0.157	R * MBV * INDEX * LOGA	0.082	1	0.774
(Scale)	9.27E+10	7.06E+09	7.98E+10	1.08E+11	(Scale)			
Dependent Variable: Q								
Model: (Intercept), LZR, R, MBV, INDEX, LOGA, R.								

Interpretation -The parameter estimates table summarizes the effect of each predictor. While interpretation the signs of the coefficients for covariates and relative values of the coefficients for factor levels can gives insights into the effects of the predictors in the model. For covariates, positive (negative) coefficients indicate positive (inverse) relationships between predictors and outcome. An increasing value of a covariate with a positive coefficient corresponds to an increasing rate of damage incidents. For factors, a factor level with a greater coefficient indicates greater impact on Tobin's Q. The sign of a coefficient for a factor level is dependent upon that factor level's effect relative to the reference category. One can make the following interpretations based on the parameter estimates:

The highest coefficient is for variable LOGA(-91412.563) and the sign is negative. The lowest coefficient is for * MBV * LOGA (-39.611) hence, hypothesis are significant.

Dependent variable (tobin's Q) =

(367344.012)*loga+(-7170.177)*LZR+(-58.058)*R+(-104.077)*MBV+(-7478.122)*INDEX+(91412.563)LOGA(0.029)*R*MBV+(541.488)*R*INDEX+(23.039)*R*LOGA+(81.066)*MBV*INDEX+(24.987)*MBV*LOG(2113.506)*INDEX*LOG+(0.103)*R*MBV*INDEX+(0.017)*R*MBV*LOG+(133.081)*R*INDEX*LOGA+(-19.634)* MBV * INDEX * LOGA +(-0.027)* R * MBV * INDEX * LOGA

Since $\beta > 0$, this means the higher the total score the higher the probability a independent variable effecting dependent variable. The intercept means, that the probability for a stock to have attended an academic program having a total score of 0 equals $\pi(0) = F(367344.01) \approx 0.018$ hence, result are significance. The intercept means, that the probability for a stock to effect Tobin's Q equals $\pi(0) = F(-91412.563) \approx 0.027$ hence, result are not significance. The variables for which B value is statistically significant, contributes more towards Tobin's Q.In this study following variables contribute significantly return, market to book value, zrlog, index, log age.

V. Discussion

The relation between liquidity and performance has received considerable attention in financial economics from a variety of perspectives**. Liquidity leads to** the entry of informed investors who make prices more informative to stakeholders. Many conceptual models predict a positive relation between stock liquidity and firm performance. The theories provide agency-based, stock price feedback and valuation reasons for why liquidity positively impacts performance. A small number of studies also predict a negative relation between stock liquidity and firm performance.

VI. Conclusion

This study examines the relationship between stock market liquidity and firm performance. The sample of the study was the continuously NSE listed top ten indices from the time period of 2005-2014. To check the relationship of stock market liquidity and firm performance the ordinary least sequence and general linear model were applied on Gretl and SPSS respectively. Also test of normality and summary statistics were applied on Gretl. The dependent variable of the study was Tobin's Q and independent variable were returns, market to book value, index, zrlog and log age. Normality tests provide the null hypothesis of normality of statistical model. Test result in normality log age and index are effective on model of hypothesis strongly accepted. After making the data stationary, the data was checked for linearity of relationship between dependent and independent variables (the relationship between stock market liquidity and firm performance). OLS regression was applied as quadratic and cubic models are comparatively difficult to interpret and to check the extent of relationship between stock market liquidity and firm performance linear OLS regression was applied in Gretl which showed some kind of causality between variables. Based on the type of data (non linear and non normal), Generalized Linear model is the best test to check the relationship between dependent and independent variables.

This results of the study documents that liquidity responds to changes in market values of return and age of the company. The result of this study showed positive effect of independent variables of return and log age on dependent variable Tobin's Q. Stock market liquidity is correlated with higher firm performance as measured by Tobin's Q. The results are consistent with the theory which depicts that changes in the supply of

liquidity, negative market returns decrease liquidity much more than positive returns increase liquidity. This effect is strongest for high volatility firms and during phases when the market making sector is likely to face capital tightness.

Dalvi, and Baghi (2014), Uno and Kamiyama (2010), Vivian , Thomas, and Tice (2006) calculated stock market liquidity and firm performance relationship using the same methodology and found that independent variables return, market to book value, zrlog. index, log age result depends on the Tobin Q .

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