

# Ownership Structure and Market Liquidity – Sectorial Evidence From India

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## Abstract

A firm's ownership consists of shares held by promoters, public, institutions and other bodies. Ownership concentration in fewer hands leads to amplified agency cost and information asymmetry and impinge on the firm's performance and market liquidity. Given the large number of liquidity measures and methodologies employed both by practitioners and academic researchers, this paper examines the market liquidity using impact cost, turnover ratio and coefficient of elasticity of trading. Looking at the logic behind their construction, and how they relate to each other and its relation with constituents of firm's ownership structure, this study also attempts to find the relationship between the ownership structure and liquidity indicators. NSE Banking index stocks were taken as the sample for the period from July 2013 to June 2014. It is observed that the market liquidity as measured by impact cost and turnover ratio is not influenced by promoter group holding, institutions shareholders and non institutions shareholders and it confirms the findings of Paul Brockman, Dennis Y. Chung, and Xuemin (Sterling) Yan (2009). However, promoter group holding and institutions shareholding are significant explanation variables for market liquidity as measured by coefficient of trading model. The granger causality test confirms that public shareholding granger cause coefficient of elasticity of trading. It also shows that there is no causal relationship between promoter group holding, public shareholding, institutions shareholding, non institutions shareholding, and impact cost and turnover ratios.

**Keywords:** ownership structure, market liquidity, impact cost, granger causality.

## 1. Introduction

Ownership structure of a firm is crucial in determining firm's performance and market liquidity.

A firm's ownership structure may consist of shares held by promoters, public, institutions and other bodies. Ownership concentration in fewer hands leads to amplified agency cost and information asymmetry and impinge on the firm's performance and market liquidity. This categorization varies across the continents and there are only a handful of studies that actually focus on developing a classification system for ownership. Djakov (1999) grouped firm's ownership as management, employees, the state, and local outsiders. La Porta et al. (1999) further categorized owners as which is widely held, family owned, state owned, and which is controlled by corporations. Jensen et al. (1976) classified as owners with inside equity, outside equity, and debt. Charkham (1995) categorizes owners as foreign, miscellaneous, privately held corporations, legal persons in public law, private persons, insurance companies, banks, pension funds, and mutual funds. Gerndof (1998) observed many of the same classifications, but also differentiated between majority owners, minority owners, long term owners, 'wildcat' investors, foreign investors, domestic investors, risk spreaders, actives owners, passive owners, known owners, absent owners, and strategic owners. These and other similar classifications have also been adopted by authors such as Thomsen et al (2000), Mathiesen (2002), Kalmi (2003), Vitols (2003), Heubischl (2006). Nevertheless, these classifications distinctively accentuate on the concentration of ownership rights and its implications on the firms performance, value creation and price volatility and liquidity is always a research interest for many.

It is always contentious question that what composition and percentage of each of these ownership variables influence the organizational performance and market liquidity. Earlier researches assert that concentrated ownership leads to less liquidity and increased firms performance. More shares in the hands of public may lead to enhanced liquidity and volatility due to frequency of trading. Empirical researches have proved that enhanced insider ownership causes for market illiquidity. Considering this fact, in the recent days regulatory bodies have insisted for more percentage for public allotments. In India currently it is mandatory to offer minimum of 25% of shares to general public. Earlier researches also have shown a negative relation between stock market liquidity and insider ownership. Demsetz and Lehn (1985) and Denis and Denis (1994) asserts that the benefit of higher ownership is greater in firms where the profit potential of managers' actions is less observable and they show that firms facing a more uncertain environment have larger insider ownership. Since the insiders are expected to be informed, the market maker would incorporate a larger adverse selection component into the quoted bid-ask spread and depth leading to wider spreads and a smaller depth.

Stock market exists to provide liquidity to the shareholders by providing ready market all time. Liquidity is considered as the lifeblood of any financial markets and is the key driver for the market growth. Its adequate provision is critical for the smooth operation of an economy. Its sudden wearing away in even in a single market sector can fuel disruptions. Despite its importance, problems in measuring and monitoring market liquidity risk persist in India. Not all the sectors stock has same liquidity. There are cross sectional studies which have proved the varied level of liquidity in different sectors of the market. Dissimilarity in liquidity exists due to various firms specific to market specific factors. Market Liquidity can be defined as ability of continuously transforming asset from one form into another (Ivanovic 1997). Liquidity in the context of stock markets means a market where large orders can be executed without incurring a high transaction cost. The transaction cost referred here is the cost attributable to lack of market liquidity. Liquidity comes from the buyers and sellers in the market, who are constantly on the lookout for buying and selling opportunities. Lack of liquidity translates into a high cost for buyers and sellers. The electronic limit order book (ELOB) as available on NSE is an ideal provider of market liquidity information. In a relatively illiquid market, selling it quickly will require cutting its price by some amount. Liquidity is influenced by number of shares available in the market and the shares held by persons or group of persons. It may include the shares held by proprietors, public and other institutional investors. Earlier researches have proved that there is significant relationship between the shareholding pattern and market liquidity (Marshall E. Blume & Donald B. Keim, 2012). In this study, an attempt has been made to ascertain the impact of ownership structure on the stock liquidity of banking sector in India.

## 2. Review of literature

Liquidity is an imperative element of stock market. Liquidity is a complex variable and influenced by numerous internal and external factors. Glosten and Milgrom (1985) assert that one cause of illiquidity is the presence of privately informed traders. One such group of privately informed traders is the insiders of a firm. Seyhun (1986) shows that insider trades precede abnormal changes in the price of their company's stock. This suggests that the level of insider ownership in a firm may influence the liquidity of the stock. Thou attempts made to find the causal relationship between stock liquidity and ownership structure in the yesteryears, its findings are contradicting over the years and across the market. Theoretically, it is known that when there is more public shareholding, there must be better liquidity. But, in such cases chances of concentration of shares in fewer hands is high and thereby there is no enhanced liquidity. Hardly there is any specific research in this regard in the past. Earlier researchers have also found relationship between institutional ownership and liquidity (Bennet, Sias and Starks (2003)). Amihud and Mendelson (1986) show that market participants are willing to pay for liquidity. They measure liquidity by the quoted bid-ask spread and show that there is a positive relation between expected returns and spread. This suggests that the costs of acquiring capital are lower for firms with more liquid securities. Amihud and Mendelson (1989) further note that managers who are concerned about increasing the liquidity of their firm's financial claims can do so through corporate policies such as going public, voluntary disclosure, and distributing ownership among a wider base of shareholders. The fact that increase in liquidity through such corporate decisions can increase value suggests that increase in liquidity can also lower the cost of capital. Amihud and Mendelson (1986) also suggest that firms have an incentive to choose corporate policy that makes their securities more liquid because liquidity increases firm value.

Indeed, Weston, Butler, and Grullon (2005) find that a) investment banks charge lower fees to firms with more liquid equity and b) the time to complete a seasoned equity offering decreases with a firm's equity liquidity. Thus, liquidity in the stock market has consequences for a firm's financing/investment policies. Evidence on the ownership-liquidity relation is not often outside the U.S. Comerton-Forde and Rydge (2006) document that in Australia, director holdings of less than ten percent of issued capital enhance liquidity, whereas director holdings greater than ten percent reduce liquidity. Institutional ownership concentration has no impact on spreads. Jun Uno and Naoki Kamiyama (2010) argue that the manner in which ownership structure affects liquidity depends upon a weighted average investment horizon of the firm's shareholders. If the average investment horizon of the firm is longer, then the illiquidity of its shares is more severe.

In India, study of lakshmi Sharma (2005) on Ownership Structure and Stock Liquidity findings claim that the promoters' shareholding is not a statistically significant variable in explaining the determinants of liquidity in both Nifty stocks and Nifty junior stocks though is contrary to the a priori relation proposed by the market microstructure literature, it is not unusual in empirical literature. Venkat R. Eleswarapu (2008) find evidence in favor of a liquidity premium for stocks on the B.S.E and confirms that the trading frequency is positively related to number of shareholders and shares outstanding. In addition, the ownership structure seems to matter, with concentration in the hands of insiders and government bodies having a deleterious effect on liquidity. Data M K (2000) empirically examines the stock market liquidity measurement and implications and develops a new model to measure the liquidity known as Elasticity of Trading as an alternate measure of liquidity and asserts that CET has superior information content compared to traditional models like turnover ratio. The elasticity of trading measures volume of trading in relation to changes in prices. This paper attempts to

measure liquidity using impact cost, turnover ratio and coefficient of elasticity of trading and find the relation of firm ownership constituents with market liquidity of banking sector stocks.

### 3. Methodology

This study empirically examines the relationship between the constituent of firm's ownership structure and the stock liquidity. The study also attempts to find an impact of key components of ownership structure on the stock liquidity. The percentage of shares held by proprietors, public and institutional investors are taken as the key constituents of the ownership structure. Banking sector stocks were chosen for the study and data has been taken from the NSE website on CNX Banking index stocks. CNX Bank Index is an index comprised of the most liquid and large capitalized Indian Banking stocks. It provides investors and market intermediaries with a benchmark that captures the capital market performance of Indian Banks. The total traded value of CNX banking stocks is 82.59% of the traded value of the stocks forming part of the Banking sector universe. To measure the liquidity there are many indicators available on real time basis in the market that measure different aspects of liquidity like: the trading time, depth, resiliency, tightness etc. Data were taken from July 2013 to June 2014 for measuring the stock liquidity through impact cost (IC), coefficient of elasticity of trading (CET) as promulgated by Datar M K (2000) and daily stock traded quantity and turnover (TR). Firm's ownership variables are taken as public shareholding, institutional shareholding, Non-Institutions and Promoter & Promoter Group shareholdings.

#### 3.1 Impact cost

Impact cost represents the cost of executing a transaction in a given stock, for a specific predefined order size, at any given point of time. Impact cost is a practical and realistic measure of market liquidity; it is closer to the true cost of execution faced by a trader in comparison to the bid-ask spread. In mathematical terms it is the percentage mark up observed while buying / selling the desired quantity of a stock with reference to its ideal price (best buy + best sell) / 2.

#### 3.2 Coefficient of Elasticity of Trading (CET)

Though the impact cost or spread is the better measure of market liquidity, it cannot be used as a tool to measure liquidity in the Indian context as the impact cost data is not available for all the stocks on daily basis. NSE releases impact cost data for certain indexes on monthly basis. Therefore, there are fewer research with impact cost measure. Datar M K (2000) propounded an alternative measure known as coefficient of elasticity of trading (CET). It is similar to price elasticity measure. It is measured as price elasticity of trading volumes. It can be computed for individual stocks or group thereof. It can be computed for any period of time (day or month). The main advantage is it can be computed by anyone who has access to information on prices and volumes of trading data. It is measured by taking % change in trading Volume / % change in Price. The drawback of this model is that it considers only the absolute change in price and volume and overlooks the unit root issue of the time series data. Therefore, in this study log change in price and volume has been adopted and unit root test has been conducted using the ADF test. The modified version of CET is as follows.

$$CET = \sum_{t=1}^n \frac{\log(V_t/V_{t-1})}{\log(p_t/p_{t-1})}$$

According to Datar M K (2000) the range of CET is quite wide: from + infinity to - infinity. The coefficient would be positive when the direction of changes in volume and price is same while it would be -ve when the directions are different. High value of CET would indicate that price changes are accompanied by high volume of transaction. When large sized transactions take place with little or no change in price, value of CET would approach infinity and indicate high liquidity. As a measure of elasticity, the sign of CET may not be very relevant, but with its sign, the information content will be enriched. CET, together with price trends would convey a lot of information about state of the market: either for individual scrip or the whole market. Normally there would be inverse relationship between prices and quantity demanded but in case of asset markets as expected prices have more important role, it would be difficult to envisage any ex ante relationship between prices and volumes.

#### 3.3 Turnover ratio

Turnover ratio indicates the number of shares traded in relation to total number of shares outstanding in the market. This ratio signals the number of floating shares and liquidity of the stock is concentrated around this ratio. Higher the ratio better is the liquidity. Major criticism of this measure is that the total outstanding shares are not all available for trading in the market, because of proprietary holdings and other institutional holdings. Promoter's holdings are stocks which are generally locked for longer period expecting long-term value creation and enjoy the information advantages and released to the market infrequently. This leads information asymmetry and abnormal returns to shareholders. Turnover ratio cannot reflect information asymmetry in the market.

Turnover ratio is not suitable for concentrated ownership structures. It is ideal to calculate the turnover ratio in relation to the number of public shareholdings as it is the shares held by the general public in the market.

$$TR_{i,t} = \frac{q_{it}}{v_{it}} \dots\dots\dots (1)$$

Where,  $q_{it}$  is the number of stock units traded at time  $t$  for stock  $i$ , and  $v_{it}$  is the total number of stock units outstanding.

$$TR_{i,t} = \frac{q_{it}}{S_{it}} \dots\dots\dots (2)$$

Where,  $q_{it}$  is the number of stock units traded at time  $t$  for stock  $i$ , and  $S_{it}$  is the total number of stock units held by public. The average of the turnover ratio for sample period is expressed as follows.

$$TR_{it} = \frac{1}{N} \sum_{t=1}^{N_t} TR_{it} \dots\dots\dots (3)$$

Table: 1  
 Descriptive Statistics

	Mini	maxi	Mean	S.D	t test	Sig. (2-tailed)
Promoter Group holding	0.000	0.690	0.366	0.251	5.047	.000
Public Shareholding	0.310	0.978	0.579	0.205	9.784	.000
Institutions Shareholding	0.241	0.657	0.449	0.155	10.041	.000
Non Institutions Shareholding	0.043	0.335	0.130	0.086	5.233	.000
Impact cost	0.057	0.103	0.075	0.012	20.944	.000
Coefficient of Elasticity of Trading	-118.209	146.008	-8.131	68.901	-.409	.691
Turnover ratio/Total issued capital	0.001	0.020	0.005	0.005	3.826	.003
Turnover Ratio/Public share holding	0.002	0.025	0.010	0.008	4.386	.001

Table 1 gives the descriptive statistics of the sample. The promoters' group shareholding for an average firm in the sample is 36%. The maximum shareholding by promoters stands at 69% as against the minimum of zero. This indicates the concentrated ownership is around 36% and earlier researches have proved that higher the concentrated ownership lower the market liquidity. Higher concentrated ownership will have better information advantage and leads maximization of firms performances and abnormal returns. This leads to illiquidity of stock as these stocks are less frequently traded in the secondary markets. The mean public shareholding is 58% and it ranges from 31% to 98%. The mean institutional shareholding for the sample firms is 45%. The institutional shareholding ranges from 0.24% and 65%. The mean impact cost of the sample is at 0.075 per cent. The minimum and maximum impact cost for the sample varies widely from 0.057% to 0103%. Similarly it can be observed that the mean of CET is -8% and it is insignificant and its maximum value is 146%. Turnover ratio to total issued capital mean is 0.5% and TR to public share holding is 1%.

Table: 2  
 Liquidity Indicators

Month	CET		TR/Total Share Holdings		TR/Public Share Holdings		Impact Cost	
	Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D
July	0.1452	14.3525	0.0039	14.3525	0.0066	14.3525	0.0708	14.3525
august	4.9888	34.2360	0.0073	0.0099	0.0116	0.0122	0.0992	0.0306
September	1.1671	31.5691	0.0081	0.0112	0.0134	0.0143	0.0958	0.0254
October	20.8608	37.4041	0.0060	0.0076	0.0096	0.0095	0.0750	0.0228
November	3.8690	70.2834	0.0060	0.0049	0.0119	0.0107	0.0750	0.0145
December	-7.6287	60.2527	0.0039	0.0026	0.0076	0.0058	0.0617	0.0153
January	-3.9544	70.3306	0.0042	0.0029	0.0080	0.0062	0.0633	0.0115
February	8.8054	30.8784	0.0035	0.0025	0.0066	0.0050	0.0567	0.0167
March	10.8388	38.6957	0.0055	0.0046	0.0102	0.0078	0.0633	0.0167
April	-30.5689	102.7088	0.0051	0.0039	0.0097	0.0078	0.0750	0.0178
May	-6.8612	83.8894	0.0064	0.0050	0.0133	0.0137	0.0867	0.0161
June	-12.6196	44.9612	0.0044	0.0033	0.0088	0.0087	0.0817	0.0199

Table 2 describes the data on three measures of liquidity viz. Coefficient of Elasticity of Trading, Turnover ratio and Impact cost. The table shows the cross sectional liquidity trends month wise for the sample companies. High value of CET would indicate that price changes are accompanied by high volume of transaction. When large sized transactions take place with little or no change in price, value of CET would approach infinity and indicate high liquidity. An increase in impact cost would indicate decline in liquidity and vice versa. An increase in turnover ratio indicates high liquidity. It may be observed that the liquidity as measured by CET indicates for the sample period unstable scenario with a high liquidity in the month of October and April with high standard deviations which indicates the high fluctuations in the liquidity. For the rest of the period the liquidity was hovering around the average of -8.131. Impact cost indicates that the liquidity has come down whereas CET indicates an improvement in liquidity. For all other months the liquidity movements are quite similar. Turnover ratios indicate high liquidity in September month and lowest in February month. The trend shown by the turnover ratio is similar to that of CET and impact cost.

Table: 3  
 Variables Correlation Matrix

	Impact Cost	Coefficient of Elasticity of Trading	Turnover ratio/Total issued capital	Turnover Ratio/Public share holding
Promoter Group holding	-.053	.132	-.068	.447
Public Shareholding	.223	-.109	.181	-.339
Institutions Shareholding	-.078	.067	.359	-.184
Non Institutions Shareholding	.670*	-.379	-.213	-.477

The first inferential statistic is correlation. Correlation is used to test the degree of association between variables. Table 3 shows the relationship between liquidity variables and ownership factors. It is can be observed that promoter and Institutional shareholding has negative correlation with impact cost and it is statistically insignificant. Promoter group holding has positive correlation with TR to public shareholding. Other variables have statistically insignificant correlations.

Table: 4  
 Regression Results

Independent Variables	Turnover ratio			Impact Cost			CET		
	$\beta$	<i>T</i>	<i>Sig</i>	<i>B</i>	<i>t</i>	<i>Sig</i>	$\beta$	<i>t</i>	<i>Sig</i>
Constant	-.030	-1.925	0.90	.041	1.163	.278	-233.534	-.845	.423
Promoter Group holding	.029	2.048	.075	.032	.970	.361	212.601	.833	.029
Institutions Shareholding	.055	2.678	.028	.008	.180	.862	391.614	1.077	.003
Non Institutions Shareholding	- 0.00035	-.019	.985	.145	3.417	.009	-215.492	-.648	.535

Market microstructure theories predict a negative relation between stock market liquidity and insider ownership. This prediction emerges from the assumption that the benefit of insider ownership is greater in firms where the profit potential is less observable because of the presence of information asymmetry. Market microstructure models derive how the fear of trading with people with privileged access to information is reflected in the liquidity of stocks through higher impact costs of trading. The larger the insider ownership with privileged accesses to information in a firm, the higher the cost of transactions and wider the bid-ask spread for the firm's stock. Hence, increased insider ownership is assumed to contribute to information asymmetry and reduced liquidity. Glosten and Milgrom (1985) argue that one of the causes of illiquidity is the presence of privately informed traders. According to them, one such group of privately informed traders is the insiders of the firm. The study by Seyhun (1986) shows that insider trades precede abnormal changes in the price of their company's stock. Seyhun suggests that the level of insider ownership in a firm may influence the liquidity of the stock. Table 4 regression results coefficient provides information on the confidence with which we can support the estimate for each variable. If the value in "Sig." is less than 0.05, then we can assume that the estimate in column "B" can be asserted as true with a 95% level of confidence. It is evident that promoter group holding, institutions shareholding and non institutions shareholdings is not significant explanation variables of market liquidity as measured by impact cost and turnover ratios. However, promoter group holding and institutions shareholding are significant explanation variables for market liquidity as measured by coefficient of trading



model. This finding confirms the Paul Brockman, Dennis Y. Chung, and Xuemin (Sterling) Yan (2009) findings which affirm that relative lack of trading, and not the threat of informed trading, explains the inverse relation between block ownership and market liquidity.

Table – 5  
 Pair wise Granger Causality Tests

Null Hypothesis:	F-Statistic	Probability
CET does not Granger Cause Promoter shareholdings	0.27761	0.76855
Promoter shareholdings does not Granger Cause CET	11.5528	0.01335*
impact cost does not Granger Cause Promoter shareholdings	1.85185	0.25013
Promoter shareholdings does not Granger Cause impact cost	0.35938	0.71478
TR does not Granger Cause Promoter shareholdings	0.02723	0.97328
Promoter shareholdings does not Granger Cause TR	1.22390	0.36928
CET does not Granger Cause Public shareholdings	0.29623	0.75582
Public shareholdings does not Granger Cause CET	6.27709	0.04330*
Impact cost does not Granger Cause Public shareholdings	1.23453	0.36666
Public shareholdings does not Granger Cause Impact cost	0.82594	0.48985
TR does not Granger Cause Public shareholdings	0.01651	0.98368
Public shareholdings does not Granger Cause TR	2.42697	0.18340
CET does not Granger Cause Institutional shareholdings	0.96241	0.44300
Institutional shareholdings does not Granger Cause CET	7.55433	0.03083*
Impact cost does not Granger Cause Institutional shareholdings	1.65675	0.28052
Institutional shareholdings does not Granger Cause Impact Cost	0.60217	0.58302
TR does not Granger Cause Institutional shareholdings	0.34217	0.72565
Institutional shareholdings does not Granger Cause TR	0.78841	0.50395

Table 5 shows the result of the granger causality test. Using the 5% level of significance, if any of the P-values for the coefficients were less than .05, it can be concluded that Granger causality is present. if none of the p-values is less than .05 then it can be concluded that granger causality is not present. it is observed that p value is less than 0.05 for promoter shareholdings to CET, which means that the null hypothesis can be rejected and concluded that public shareholding granger cause Coefficient of elasticity of trading. Public shareholding does Granger Cause CET and Institutional shareholding does Granger Cause CET. The granger causality test also confirms that there is no causal effect between Promoter Group holding, Public Shareholding, Institutions Shareholding, Non Institutions Shareholding, impact cost and turnover ratios.

#### 4. Conclusions

This study attempts to find the relationship between ownership structure and the different liquidity indicators. It can be concluded that market liquidity as measured by impact cost and turnover ratio is not influenced by the percentage of shares held by promoter group holding, institutions shareholders and non institutions shareholders. However, promoter group holding and institutions shareholding are significant explanation variables for market liquidity as measured by coefficient of trading model. CET measure of market liquidity shall be taken as the superior tool for measure of liquidity as it indicates directional information of liquidity. Therefore it is concluded that liquidity depends in the promoter and institutional shareholding of firm. Higher the percentage of promoter and institutional shareholdings better is the liquidity. The granger causality test confirms that public shareholding granger cause Coefficient of elasticity of trading. It also indicates that there is no causal relationship between promoter group holding, public shareholding, institutions shareholding, non institutions shareholding, and impact cost and turnover ratios.

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