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Illiquidity and Stock Market Returns during Financial Crises in India

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Abstract

This study investigates the role of liquidity with respect to stock market returns before, during, and after a financial crisis. We refer to firm-wise data from 2006 to 2021 to analyze the effect of illiquidity on stock returns with respect to the two major financial crises in the past two decades – the 2008 Global Financial Crisis and the 2020 economic crisis caused due to the COVID-19 pandemic. The study will be using the 500 stocks constituting the NIFTY 500 index of the National Stock Exchange (NSE), India. We also examine whether the effect of illiquidity on stock returns depends on the company's size by classifying our stock data into 5 portfolios each with 100 companies based on market capitalization. In this analysis, we consider depth, breadth, tightness, and immediacy dimensions of liquidity using share turnover, Amihud Illiquidity Ratio, spread, and elasticity of trading as their respective proxies. We model the effects of these metrics on stock returns by using the panel Autoregressive Distributed-lag (p-ARDL) Bounds Testing Approach. The results obtained show that there is a difference in how different measures of liquidity impact and that this impact also changes across the timeline of a financial crisis. We also note a difference in the impact of liquidity on stock returns of a a company depending on its market capitalization.

Keywords: Liquidity, 2008 Global Financial Crisis, National Stock Exchange (NSE) of India, COVID-19 pandemic, ARDL

1. Introduction

Liquidity is defined as the markets' feature which allows any asset to be readily converted into cash without changing the market price of the asset. A high significant trading activity, along with a high level of supply and demand for an asset, is an indicator of high levels of liquidity. Conversely, an illiquid market is characterized by lesser market buyers and sellers trading infrequently.

Stock market liquidity has always been an important topic of discussion for academics. Liquidity plays an important role in hedging, risk management and asset pricing. Hence, there has been considerable research on the stock market liquidity due to its importance with respect to financial markets. A particular focus of this research has been the effect of stock liquidity (or illiquidity) on stock returns. Amihud (2002) put forth new tests that show that asset returns increase in illiquidity. This research showed that expected stock excess return varies over time as a function of changes in market illiquidity. It is shown that over a thirty year period, illiquidity

has a positive effect on expected stock return both cross sectionally and over time. Amihud (2002) also introduces a new measure of illiquidity, the Amihud Illiquidity Ratio, the ratio of a stock's absolute daily return to its daily dollar volume, averaged over some period.Amihud, Hameed, Kang, and Zhang (2015) studied the commonality in 45 countries and their result showed that there exist positive and significant illiquidity premiums.

Acharya (2005) examines the relationship between stock prices, liquidity risk, and commonality in liquidity using the liquidity-adjusted capital asset pricing model (CAPM). This model shows that liquidity plays an important role with respect to returns, explained as the liquidity risk premium. One of its important observations is that securities with high average illiquidity tend to have high return sensitivity and high liquidity sensitivity to market returns. Sadaqat (2017) analyses the role of liquidity to explain the size and volatility-related irregularities in Pakistan Stock Exchange (PSX) using the liquidity adjusted CAPM model proposed by Acharya (2005). Results show that higher returns serve as compensation to investors for being exposed to illiquidity. This paper reasserts the importance of liquidity being incorporated in asset pricing models. Moreover, the paper finds that like PSX, bigger emerging markets like India and Brazil also yield high premiums. Lee (2011) investigated the role of liquidity in 22 developed and 28 emerging markets using the LCAMP framework. His findings were that commonality existed in liquidity internationally. However, his results show that liquidity is more critical in emerging markets as compared to developed markets.

Naik (2020) measures the liquidity in the Indian stock market and measures interdependencies between four liquidity dimensions. The study aids investors to understand the market depth and tightness which are essential in determining market liquidity. Moreover, their portfolios should incorporate stocks with high turnover to provide a cushion against liquidity shocks. Bhattacharya (2019) tries to find the relationship between five liquidity measures and stock market movements, using the Autoregressive Distributed-lag (ARDL) Bounds Testing Approach. The five liquidity measures considered are tightness, depth, immediacy, breadth, and resiliency. The paper concludes that liquidity plays a pivotal role in determining the stock market movement in India, both in the long and short run.The findings of Bhattacharya (2019) are in support of the observations of Datar (2000) showing that liquidity tracks stock market movements in India.

During a financial crisis, it is expected that market liquidity will go down. In a crisis, the effect of liquidity, or its lack of, may have more influence. Rosch (2014) shows that stock market liquidity is impaired when the market goes down and during a crisis, implying a positive relation between stock returns and illiquidity. This paper further states that during market downturns and crises, the liquidity betas, or the measure of the excess returns due to illiquidity, increase. This research further shows that illiquidity is not only a symptom of a

financial crisis but is also responsible for exacerbating the consequences of a crisis.

In our paper, we investigate whether the different measures of illiquidity have significant effects on stock market returns. We also investigate whether these effects vary before, during

and after a financial crisis. We also investigate whether the size of the firm influences how its stock returns are affected by liquidity before, during and after a financial crisis. Our analysis covers 500 companies listed on the National Stock Exchange (NSE), India and the financial crises in question are the 2008 global financial crisis and the 2020 economic crisis caused due to the COVID-19 pandemic.

2. Data and Methodology

2.1 Stock market Data

We use daily firm-level data from the National Stock Exchange of India Ltd. We look at the daily data of 500 firms listed on the National Stock Exchange of India. Daily returns on a day t are calculated as the change in the closing price on day t compared to the closing price on day t-1 as a fraction of the latter. We use data from January 1, 2006 to December 31, 2012 and October 1, 2019 to March 18, 2021. We then divide these 500 companies into 5 portfolios on the basis of market capitalization.

Table 1: Portfolios according to market capitalization

Portfolio	Average Market Capitalization (in million INR)
Portfolio 1	8.42
Portfolio 2	1.31
Portfolio 3	0.56
Portfolio 4	0.28
Portfolio 5	0.15

2.2 Quantifying Illiquidity

As given by Naik (2020) we use 4 different dimensional metrics to measure the liquidity of the stock market.

a. Tightness: This is one of the most common metrics used to measure illiquidity. This involves the bid-ask spreads that have been used in earlier studies. The daily tightness as shown in Bhattacharya (2019) is calculated as follows:

$$Tightness = \frac{Daily\ highest\ price}{Daily\ lowest\ price} \quad (1)$$

b. Immediacy: This metric tries to indicate the transaction time which is influenced by how willing both the seller and the buyer are with respect to a transaction. Immediacy is measured by the coefficient of elasticity of trading which is calculated as follows:

$$Coefficient\ of\ Elasticity\ of\ Trading = \frac{\%\Delta T_s}{\%\Delta P} \quad (2)$$

Where $\%\Delta T_s$ denotes the percentage change in the daily trading volume of a stock 's' and $\%\Delta P$ denotes the percentage change in daily closing price. Larger this metric, more the illiquidity.

c. Depth: This metric evaluates if there is a significant churn for a particular stock. For this, we use share turnover which is computed as follows:

$$Share\ Turnover = \frac{VO_t}{SO_t} \quad (3)$$

Where VO_t is the number of shares traded on day t and SO_t is the number of shares outstanding on day t. Higher the depth, the more liquid the security is

d. Breadth: This metric evaluates how easily securities can be traded without influencing the prices. We use the Amihud Illiquidity Ratio proposed by Amihud (2002) which is calculated as follows:

$$Amihud\ Illiquidity\ Ratio = \frac{|R_{it}|}{Vol_{it}} \quad (4)$$

Where $|R_{it}|$ and Vol_{it} are the absolute return and volume (in Rs.) on day t for stock i respectively. Higher the breadth, more the illiquidity.

2.3 Subsample Dates for Pre-Crisis, during the Financial Crisis and post-

In this paper we refer to two crises, the 2008 financial crisis and the economic crisis caused by the COVID-19 pandemic. We define the duration of these events and for each event, we define 3 periods: (1) pre-crisis, (2) during crisis and (3) post crisis.

For the 2008 crisis, we follow Tsai (2015) to split our data into three subsamples as follows: (1) Pre-crisis from January 1, 1990 to December 31, 2007, (2) during the financial crisis from January 1, 2008 to June 30, 2009, and (3) post-crisis from July 1, 2009 to December 31, 2012. For the economic crisis caused by the COVID-19 pandemic, we refer to the Nomura India Business Resumption Index (NIBRI) which started falling from a value of 82.9 in March 2020 to a low of 44.7 in April and then came back to the eighties in September 2020. The fall in NIBRI corresponds to the crisis period while the period succeeding its return to March levels marks the start of the post-crisis period. In accordance with this, the periods are as follows: (1)

Pre-crisis from October 1, 2019 to March 31, 2020, (2) during crisis from April 1, 2020 to September 30, 2020 and (3) post-crisis from October 1, 2020 to March 18, 2021.

2.4 Model and Methodology

We attempt to model stock price returns versus the different liquidity metrics mentioned in 2.2. All variables are tests for stationarity using unit root tests. Considering co-integration we then use a panel autoregressive distributed lag (ARDL) model. Due to the nature of the data, we are mainly concerned with the short-run estimates. As mentioned in Bhattacharya (2019), the ARDL model allows asymmetric choice of lag lengths to each variable which differs from other cointegration methods. Pesaran and Shin (2001) state that the ARDL model is more robust than other cointegration techniques and performs better for small sample sizes.

The generic ARDL model is as follows:

$$y_t = \alpha + \sum_{i=1}^{p} \gamma_i y_{t-i} + \sum_{j=1}^{k} \sum_{i=0}^{q_j} X_{j,t-i} \beta_{j,i} + \varepsilon_t \quad (5)$$

For the ARDL model we use, the dependent variable refers to the daily returns for a stock. The explanatory variables (Xj) are: (1) Tightness, (2) Immediacy, (3) Depth and (4) Breadth, which have been defined in 2.2. As done in Bhattacharya (2019), the lag length for each variable is selected as per the Akaike info criterion (AIC).

First, we apply the above mentioned model for the pre-crisis, during crisis and post-crisis periods of both the crises mentioned earlier in this paper. We investigate how the different measures of liquidity affect the stock returns and whether this effect varies across the different stages of a financial crisis. We then run the above mentioned model separately on the 5 portfolios mentioned in 2.1 to see whether the size of the firm plays a role in determining how liquidity affects returns.

3. Results and Interpretation

Table 2: Running ARDL model on all 500 stocks together

	Pre 2008 Financial Crisis			***During 2008 Financial Crisis***			***Post 2008 Financial Crisis***		
	Coefficients value	***p value***	***S.E.***	***Coefficients value***	***p value***	***S.E.***	***Coefficients value***	***p value***	***S.E.***
Immediacy_t	0.0015	0.0000	0.0004	0.0045	0.0000	0.0013	0.0010	0.0000	0.0002
Breadth_t	-6.2599	0.0000	1.2882	-6.5057	0.3450	6.8905	-26.1680	0.1390	17.6806
Tightness_t	-0.0966	0.0000	0.0148	0.0161	0.4660	0.0221	-0.1861	0.0000	0.0178

Depth_t	16.4398	0.0000	2.1403	17.6200	0.0000	4.3356	6.3318	0.0000	0.7975
	Pre COVID-19 Pandemic Crisis			***During COVID-19 Pandemic Crisis***			***Post COVID-19 Pandemic Crisis***		
	Coefficients	***p value***	***S.E.***	***Coefficients***	***p value***	***S.E.***	***Coefficients***	***p value***	***S.E.***
Immediacy_t	0.0034	0.0080	0.0013	0.0051	0.0890	0.0030	0.0071	0.0000	0.0020
Breadth_t	6.4177	0.3130	6.3661	11.1076	0.0030	3.6871	-3.3285	0.4800	4.7130
Tightness_t	-0.5392	0.0000	0.0301	-0.6722	0.0000	0.0648	-0.2246	0.0000	0.0465
Depth_t	9.5189	0.0000	1.0986	13.2630	0.0000	1.3360	6.1595	0.0000	0.4832

On applying the ARDL model for the entire portfolio of 500 companies, we get the results as shown in Table 2. As we can see from Table 2, the immediacy measure of illiquidity has a significant positive effect on stock returns. This means that as the immediacy metric increases in value, implying lesser liquidity, the returns for that particular security also increase. This observation is in line with past research which suggests that lower liquidity will give rise to a liquidity premium with respect to stock returns, as theorized in Acharya (2005). However, this observation holds only for the immediacy measure of illiquidity. According to the results in Table 2, a decrease in liquidity when caused by an increase in breadth or tightness or a decrease in depth will lead to a lower return on a particular security.

We also see that the impact of liquidity immediacy and depth increases during the crisis period. This can be explained by the theory that liquidity is more sought after than usual during the times of crisis, hence increasing the liquidity premium. We also notice a substantial change in the post-crisis coefficient values. We note that there is a decrease in the coefficients of the post-crisis period from the pre-crisis and during crisis periods. One explanation for this can be that in a post-crisis period, the effect of monetary policies, which are enacted by governments to mitigate the crisis and often involve major reforms, take precedence over other effects and hence dampen the effects of liquidity in this case.

Table 3: Running ARDL model on each portfolio individually

Portfolio 1 - Top 100 stocks according to market capitalization								
	Pre 2008 Financial Crisis			***During 2008 Financial Crisis***			***Post 2008 Financial Crisis***	
	Coefficients	***p value***	***S.E.***	***Coefficients***	***p value***	***S.E.***	***Coefficients***	***p value***	***S.E.***

Immediacy_t	0.0010	0.0000	0.0002	0.0040	0.0000	0.0009	0.0005	0.0000	0.0001
Breadth_t	-71.2206	0.1790	52.9488	277.0620	0.0000	52.9801	-39.3096	0.3360	40.8858
Tightness_t	-0.0586	0.0050	0.0208	-0.0781	0.0000	0.0213	-0.1482	0.0000	0.0302
Depth_t	17.0279	0.0010	5.2424	4.5064	0.0020	1.4467	1.8718	0.0000	0.4047
Depth_t-1	13.7021	0.0010	4.2919	2.2571	0.0780	1.2793	0.8581	0.0000	0.2193
	Pre COVID-19 Pandemic Crisis			***During COVID-19 Pa ıdemic Crisis***			***Post COVID-19 Pan 'emic Crisis***		
	Coefficients	***p value***	***S.E.***	***Coefficients***	***p value***	***S.E.***	***Coefficients***	***p value***	***S.E.***
Immediacy_t	0.0021	0.0070	0.0008	0.0026	0.0280	0.0012	0.0017	0.0060	0.0006
Immediacy_t-1	0.0009	0.2820	0.0009	0.0005	0.7720	0.0017	0.0010	0.0230	0.0005
Breadth_t	-0.1092	0.3170	0.1092	0.8577	0.3170	0.8577	-0.0218	0.3170	0.0218
Tightness_t	-0.0274	0.3100	0.0270	-0.3230	0.0000	0.0547	-0.2208	0.0000	0.0507
Depth_t	0.7584	0.0000	0.1987	0.5925	0.0000	0.1304	0.3291	0.0000	0.0494
Depth_t-1	0.3607	0.0220	0.1574	0.1353	0.0000	0.0378	0.0889	0.0000	0.0185
Portfolio 2									
	Pre 2008 Financial Crisis			***During 2008 Financial Crisis***			***Post 2008 Financial Crisis***		
	Coefficients	***p value***	***S.E.***	***Coefficients***	***p value***	***S.E.***	***Coefficients***	***p value***	***S.E.***
Immediacy_t	0.0010	0.0100	0.0004	0.0025	0.0020	0.0008	0.0005	0.0000	0.0001
Breadth_1	-3.0338	0.4070	3.6564	9.4103	0.1450	6.4643	16.7956	0.0790	9.5729
Breadth_t-1	-1.2620	0.4890	1.8222	6.3877	0.1060	3.9473	9.6572	0.0780	5.4730
Tightness_t	-0.0785	0.0190	0.0333	-0.0808	0.0040	0.0279	-0.0978	0.0070	0.0363

Depth_t	23.1902	0.0000	6.0445	18.9567	0.0000	5.1236	8.2238	0.0000	2.1348
Depth_t-1	11.4310	0.0000	3.1922	12.2377	0.0000	3.1493	3.5884	0.0010	1.0976
	Pre COVID-19 Pandemic Crisis			***During COVID-19 Pandemic Crisis***			***Post COVID-19 Pandemic Crisis***		
	Coefficients	***p value***	***S.E.***	***Coefficients***	***p value***	***S.E.***	***Coefficients***	***p value***	***S.E.***
Immediacy_t	0.0091	0.1530	0.0064	0.0041	0.0010	0.0012	0.0022	0.0000	0.0006
Breadth_t	-12.4749	0.2400	10.6206	37.4949	0.0000	8.9700	-24.6778	0.7410	74.7316
Tightness_t	0.1964	0.0000	0.0407	-0.3661	0.0000	0.0499	-0.4199	0.0000	0.0580
Depth_t	3.5604	0.0000	0.9894	2.9215	0.0000	0.4982	1.5331	0.0000	0.2126
Depth_t-1	0.8991	0.0650	0.4879	1.0163	0.0000	0.2532	0.4518	0.0000	0.0790
Portfolio 3									
	Pre 2008 Financial Crisis			***During 2008 Financial Crisis***			***Post 2008 Financial Crisis***		
	Coefficients	***p value***	***S.E.***	***Coefficients***	***p value***	***S.E.***	***Coefficients***	***p value***	***S.E.***
Immediacy_t	0.0015	0.0020	0.0005	0.0042	0.0000	0.0009	0.0013	0.0000	0.0003
Breadth_t	-4.4127	0.0160	1.8339	118.3345	0.0010	36.0121	-48.5512	0.0710	26.8713
Tightness_t	-0.1163	0.0000	0.0283	-0.0465	0.1370	0.0313	-0.1718	0.0000	0.0347
Tightness_t-1	-0.0917	0.0000	0.0222	-0.0219	0.2330	0.0183	-0.1029	0.0000	0.0192
Depth_t	38.6041	0.0000	10.1073	34.8316	0.0010	10.0846	15.0000	0.0000	3.1384
Depth_t-1	17.9569	0.0100	5.2600	15.0249	0.0930	8.9537	7.1144	0.0000	1.6114
	Pre COVID-19 Pandemic Crisis			***During COVID-19 Pandemic Crisis***			***Post COVID-19 Pandemic Crisis***		
	Coefficients	***p value***	***S.E.***	***Coefficients***	***p value***	***S.E.***	***Coefficients***	***p value***	***S.E.***
Immediacy_t	0.0034	0.0000	0.0006	0.0024	0.0050	0.0008	0.0028	0.0000	0.0006

Breadth_t	5.4458	0.3970	6.4321	2.7608	0.5570	4.6969	-0.3820	0.1720	0.2797
Tightness_t	-0.0956	0.0000	0.0226	-0.3158	0.0000	0.0438	-0.1810	0.0010	0.0528
Depth_t	7.0595	0.0000	1.2182	6.9991	0.0000	0.9140	2.3772	0.0000	0.2482
Portfolio 4									
	Pre 2008 Financial Crisis			***During 2008 Financial Crisis***			***Post 2008 Financial Crisis***		
	Coefficients	***p value***	***S.E.***	***Coefficients***	***p value***	***S.E.***	***Coefficients***	***p value***	***S.E.***
Immediacy_t	0.0044	0.0000	0.0012	0.0041	0.0010	0.0012	0.0014	0.0000	0.0003
Breadth_t	-6.5131	0.0000	1.7267	173.2001	0.0020	56.5107	8.1510	0.7540	26.0580
Breadth_t-1	-0.4179	0.8140	1.7717	86.9942	0.0020	28.1331	7.3187	0.6110	14.3760
Tightness_t	-0.1234	0.0000	0.0321	-0.0599	0.1490	0.0415	-0.1538	0.0000	0.0389
Tightness_t-1	-0.0746	0.0000	0.0196	-0.0125	0.6060	0.0242	-0.0897	0.0000	0.0255
Depth_t	27.9910	0.0000	8.4829	46.2770	0.0140	18.9150	18.4463	0.0000	3.5624
Depth_t-1	25.1780	0.0000	7.5096	28.0426	0.0820	16.1453	8.1022	0.0000	1.5396
	Pre COVID-19 Pandemic Crisis			***During COVID-19 Pandemic Crisis***			***Post COVID-19 Pandemic Crisis***		
	Coefficients	***p value***	***S.E.***	***Coefficients***	***p value***	***S.E.***	***Coefficients***	***p value***	***S.E.***
Immediacy_t	0.0078	0.0380	0.0038	0.0056	0.0020	0.0018	0.0044	0.0000	0.0011
Immediacy_t-1	0.0018	0.5070	0.0027	0.0039	0.0120	0.0016	0.0026	0.0020	0.0008
Breadth_t	-22.8483	0.2200	18.6345	9.2206	0.2110	7.3791	-0.0713	0.3170	0.0713
Tightness_t	-0.2039	0.0000	0.0327	-0.3684	0.0000	0.0513	-0.0948	0.0510	0.0486
Tightness_t-1	-0.1401	0.0000	0.0226	-0.1648	0.0000	0.0334	0.0350	0.2680	0.0316
Depth_t	10.7216	0.0000	1.3191	9.0891	0.0000	1.3990	3.4116	0.0000	0.5402

Depth_t-1	4.6010	0.0000	0.9141	3.3099	0.0000	0.8186	0.8261	0.0070	0.3047
Portfolio 5									
	Pre 2008 Financial Crisis			***During 2008 Financial Crisis***			***Post 2008 Financial Crisis***		
	Coefficients	***p value***	***S.E.***	***Coefficients***	***p value***	***S.E.***	***Coefficients***	***p value***	***S.E.***
Immediacy_t	0.0020	0.0010	0.0006	0.0040	0.0000	0.0011	0.0019	0.0000	0.0005
Immediacy_t-1	0.0011	0.0150	0.0005	0.0019	0.0530	0.0010	0.0012	0.0030	0.0004
Breadth_t	-1.5976	0.0030	0.5331	25.9548	0.1020	15.8503	1.9963	0.4670	2.7475
Breadth_t-1	-0.5057	0.5820	0.9186	14.1282	0.1190	9.0716	0.9296	0.4870	1.3365
Tightness_t	-0.1109	0.0000	0.0301	-0.0452	0.1400	0.0306	-0.1496	0.0000	0.0393
Tightness_t-1	-0.0626	0.0010	0.0190	-0.0260	0.1660	0.0188	-0.0812	0.0000	0.0210
Depth_t	43.0403	0.0000	9.6485	54.9579	0.0020	17.6663	20.2020	0.0000	3.4701
Depth_t-1	28.0669	0.0010	8.1704	20.1276	0.0030	6.7833	8.6406	0.0000	1.7189
	Pre COVID-19 Pandemic Crisis			***During COVID-19 Pandemic Crisis***			***Post COVID-19 Pandemic Crisis***		
	Coefficients	***p value***	***S.E.***	***Coefficients***	***p value***	***S.E.***	***Coefficients***	***p value***	***S.E.***
Immediacy_t	0.0057	0.0000	0.0011	0.0087	0.0000	0.0016	0.0047	0.0000	0.0011
Immediacy_t-1	0.0053	0.0010	0.0017	0.0053	0.0020	0.0017	0.0020	0.0390	0.0010
Breadth_t	-14.0567	0.1550	9.8948	5.0048	0.2860	4.6948	-1.5565	0.4280	1.9657
Tightness_t	-0.2606	0.0000	0.0335	-0.3965	0.0000	0.0593	-0.0768	0.1120	0.0484
Tightness_t-1	-0.1564	0.0000	0.0217	-0.1527	0.0000	0.0327	-0.0116	0.6850	0.0287
Depth_t	19.5151	0.0000	2.5484	11.7636	0.0000	1.8148	6.1251	0.0000	0.9803
Depth_t-1	5.5658	0.0000	1.4341	3.4888	0.0010	1.0452	2.4944	0.0000	0.5535

Table 3 gives the results of applying the analysis in Table 2 separately on the 5 portfolios created on the basis of market capitalization. We note that with respect to the effect of immediacy on returns, there is no difference across the 5 portfolios. We also observe that for the smaller portfolios (in terms of market capitalization) the effect of tightness during crisis decreases as compared to the larger portfolios. As the market capitalization decreases, we note that the effect of depth on stock returns increases. Hence, we see that there is some asymmetry in terms of the effect of liquidity on stock returns.

4. Conclusion

In this paper, we investigate how Indian stock returns are affected by liquidity levels before, during and after a financial crisis. We use daily data of 500 companies listed on the National Stock Exchange (NSE), India from January 1, 2006 to December 31, 2012 and October 1, 2019 to March 18, 2021. We refer to 4 measures of liquidity - tightness, immediacy, depth and breadth. We also try to see if the market capitalization of the firm plays a role in determining the extent of the effect of liquidity on stock returns.

Past research suggests that as the illiquidity of stock increases, its returns should also increase as some form of liquidity premium. This behavior is exhibited by the immediacy measure of liquidity. As immediacy increases, implying an increase in illiquidity, there is an increase in the returns as well. However, the other measures of liquidity - tightness, depth and breadth - do not display this behavior. We also observe that the impact of liquidity immediacy and depth increases during the crisis period. This means that in a crisis, liquidity plays an even more important role than during normal times. Furthermore, we notice a decrease in the influence of liquidity post a crisis, which is in alignment with the view that post a crisis, effects of monetary and fiscal policy dominate all others.

We divide the 500 companies in 5 different portfolios according to market capitalization and see that while there is no difference in terms of the effect of the immediacy and breadth measures of liquidity on stock market across the 5 portfolios, asymmetry exists with respect to the tightness and depth metrics of liquidity. We notice that tightness has a significant effect during the crisis for the big companies while it is insignificant for the smaller companies. We also observe the impact of depth on stock returns is less for smaller companies.

This paper conducts a very thorough review of the effect of liquidity on the Indian stock market by looking at different dimensions of liquidity across different economic conditions. The results and observations made in this paper can act as further impetus for studying the effects of liquidity on stock market returns, particularly for developing economies like India.

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