PRICING OF LIQUIDITY RISK IN THE INDIAN STOCK MARKET

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Abstract

Empirical literature from developed stock markets identifies liquidity risk to have impacts on the price of a stock. Given this, using one-minute trade and quote data of fifty stocks constituting the NIFTY 50 Index, this study examines the pricing of liquidity risk in the Indian stock market. The study uses thirteen liquidity measures identified from literature that cover the cost, quantity, time and multidimensional aspects of liquidity. The innovations in the liquidity measures are considered as the proxy for liquidity risk. Employing Generalized Methods of Moments estimation, the study proves that Indian investors expect to have a premium for holding securities that are illiquid when the whole market is illiquid. It proves liquidity risk as a priced factor and thus validates the liquidity-adjusted capital asset pricing model in the Indian stock market. It cautions the investors that the liquidity shocks can have significant inferences on portfolio diversification strategies to be adopted.

Key Words

Liquidity; liquidity risk; liquidity innovations; capital asset pricing model; liquidity beta; GMM.

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INTRODUCTION

Liquidity holds direct linkage with the returns required by the investors out of their investments (Amihud, Mendelson, 1986; Datar, Naik, Radcliffe, 1998; Bekaert et al., 2007) and thus has implications for the investment performance as well as portfolio diversification strategies. Liquidity is often considered both as a risk factor (Acharya, Pedersen, 2005; Pastor, Stambaugh, 2003) and as a characteristic of asset returns (Brennan, Subrahmanyam, 1996). It is an important component affecting the efficiency of asset pricing models (Chordia, Roll, Subrahmanyam, 2008). The liquidity risk which is regarded as the possibility of liquidity being disappearing from the market is also proved to be significantly impacting the asset prices (Acharya, Pedersen, 2005).

The market microstructure literature provides enough empirical evidence to prove that liquidity and asset pricing have a relationship (Acharya, Pedersen, 2005; Pástor, Stambaugh, 2003; Brennan, Subrahmanyam, 1996). The lower the liquidity of an asset (due to higher transaction costs), higher will be the return expected out of the asset. A more liquid asset will have a higher price for which it can be sold. This liquidity consideration is a must as it affects financial policies.

The traditional, as well as modern multidimensional measures of market-wide liquidity, are empirically proved to be doing a reasonable job in capturing overall levels of market liquidity. It shows that these levels of liquidity have a certain influence on the determination of the price of a security (Acharya, Pedersen, 2005). However, Pastor and Stambaugh (2003) point out that such measures are not apprehending the innovations or the unexpected changes in liquidity which affect the asset pricing worsen than the level of liquidity. Therefore, to capture innovations in liquidity or to calculate innovations in aggregate market-wide liquidity, they propose averaging the changes in liquidity at the individual security level. These innovations in liquidity are regarded as the liquidity risk and gained wider acceptance in market microstructure literature (Lee, 2011). Such studies document the liquidity risk as a factor contributing to the price of a stock in the market.

Most of the empirical literature analysing the role of liquidity risk in determining the price of an asset is focused on the US market (Acharya, Pedersen, 2005; Lee, 2011; Pastor, Stambaugh, 2003). The idea behind such exclusive focus is the increased reliability of developed market data and therefore that of the inferences made out of such data (for instance, Liang and Wei, 2012). Contrarily, the literature also provides that the effects of liquidity could be more resilient in emerging markets, given the relatively scarce liquidity scenario in such markets compared to developed economies. For instance, Amihud et al. (2015) document higher illiquidity premiums in emerging markets. Similarly, while establishing strong positive (negative) responses in prices followed by positive (negative) price shocks, Lasfer et al. (2003) reveal that the momentum phenomenon is economically more significant to the emerging markets. Therefore, the emerging markets are expected to be tested and analyzed more powerfully and to provide better insights. There are some attempts in literature in this direction. Hearn (2010) investigates the size and liquidity effects for emerging stock markets of South Asia, and Donadelli & Prosperi (2012) document the significant liquidity risk-adjusted returns in emerging countries, to name a few. However, such studies are limited in number and there exists a lack of studies testing the validity of liquidity-adjusted CAPM in emerging stock markets, including Indian market, which is the need of present-day market microstructure literature, given the strong integration among global markets that are often challenged by liquidity downturns. Thus, the present study attempts to examine whether the liquidity risk is a priced factor in Indian stock market.

DATA AND METHODOLOGY

This study employs one-minute trade and quotes data of fifty stocks constituting NIFTY 50, the most active stock market index of India for a period from 1st January 2016 to 31st December 2016 comprising 246 trading days. The trade and quotes data employed in the study include the minute-by-minute bid price, ask price, trade price, bided volume, asked volume, traded volume, number of trades occurred, number of transactions bided, and number of transactions asked. The 1-minute sampling frequency provided for 374 data points from 9:16 am, to 3:29 pm resulting in a total of 92,004 trading observations per stock.

Thirteen measures of liquidity are determined for each security for every one-minute interval corresponding to all the 246 trading days. The measures used in the study are of four broad categories based on the dimension of liquidity that a particular measure covers viz. cost, quantity, time and multidimensional measures. The cost dimensional measures consist of quoted spread (S_t), proportional quoted spread (PS_t), effective spread (ESPR) and proportional effective spread (PESPR). The quantity dimensional measures include turnover (V_t), depth (D_t) and value depth (VD_t). The number of transactions (N_t) attributes to the time dimensional measure and quote slope (QS_t), log quote slope ($LnQS_t$), composite liquidity (CL_t), Amihud measure (AMR), and flow ratio (FR) to the multidimensional measures.

Aggregate market-wide measures of liquidity are arrived at by averaging individual security-level measures. To calculate innovations in market-wide liquidity measures which are considered as a proxy for liquidity risk, changes in individual security-level liquidity measures are averaged as suggested by Pastor and Stambaugh (2003).

The daily innovations in market-wide liquidity are fit into Principal Component Analysis (PCA) and principal components are derived for the innovations in cost dimensional measures, innovations in quantity dimensional measures and innovations in multidimensional measures. These innovations essentially return the liquidity risks arising out of cost, quantity and multidimensional aspects of liquidity. The innovations in market-wide liquidity (or liquidity risk) due to the fluctuations in the number of transactions are taken as such.

Using the liquidity innovation series, three different liquidity innovation betas are constructed viz. the beta arising out of covariance between liquidity innovations of individual security and the market, the beta due to covariance between return of individual security and the market-wide liquidity innovations, and a third one arising out of covariance between market return and the liquidity innovations of individual security. From these three betas, two additional betas are measured as given by Acharya and Pedersen (2005).

Generalized Methods of Moments (GMM) estimation is used to test the validity of the liquidity-adjusted capital asset pricing model. Developed by Hansen (1982), GMM is considered as an adoptable econometric technique in empirical research as it provides a unified framework for comparison with the minimum number of assumptions. The GMM estimation is further benefited as it facilitates the estimation of coefficient, where the likelihood analysis looks to be impossible. Widely employed in empirical research focusing on asset pricing, this econometric technique made it possible to evaluate the asset pricing models using more realistic assumptions about the characteristics of underlying stochastic process that controls the time-varying evolution of explanatory variables (Hansen, Hodrick, 1980; Hansen, Singleton, 1982). The GMM is further considered as a significant tool as it allows the asset return to be serially correlated with the stochastic discount factor. It also offers the results that are binding irrespective of the leptokurtic or heteroscedastic distribution of asset returns and the associated discount factors.

CONSTRUCTION OF THE BETAS

Three liquidity innovation betas are calculated aiding the liquidity innovation series. These betas and the additional betas calculated for the analysis are explained in this section.

The first beta constructed is based on the covariance between liquidity innovations of individual security and that of the market, as provided in Equation (1). The second beta is arising out of the covariance between the return of individual security and the market-wide liquidity innovations (Equation (2)) and the third one is based on the covariance between market return and the liquidity innovations of individual security (Equation (3)).

$$\beta 1_{it} = \frac{\sum_{p=1}^{N_t} LIQINN_{ipt} LIQINN_{mpt}}{\sum_{p=1}^{N_t} R_{mpt}^2} \quad (1)$$

$$\beta 2_{it} = \frac{\sum_{p=1}^{N_t} R_{ipt} LIQINN_{mpt}}{\sum_{p=1}^{N_t} R_{mpt}^2} \quad (2)$$

$$\beta 3_{it} = \frac{\sum_{p=1}^{N_t} LIQINN_{ipt} R_{mpt}}{\sum_{p=1}^{N_t} R_{mpt}^2} \quad (3)$$

Here, $LIQINN_{ipt}$ refers to the liquidity innovation of individual stock *i* during the interval *p* of trading day *t*, $LIQINN_{mpt}$ is the liquidity innovation of market during the interval *p* of trading day *t*, R_{ipt} is the return of individual stock *i* during the interval *p* of trading day *t*, and R_{mpt} indicates the return of NIFTY 50 Index at the interval *p* of trading day *t*. The liquidity adjusted Capital Asset Pricing Model advocated by Acharya and Pedersen (2005) postulates that $\beta 1_{it}$ ought to be related positively to the expected security returns. It implies that if the changes in liquidity of securities are negatively commoved with the liquidity of the market, such securities will trade at a premium in the market. Contrarily, $\beta 2_{it}$ and $\beta 3_{it}$ are suggested to be negatively correlated to the returns expected by the investor.

The three betas explained above follows the realised beta logic as expressed by Andersen, Bollerslev, Diebold, and Wu (2006) as follows:

$$\hat{\beta}_{it} = \frac{\sum_{p=1}^{N_t} R_{ipt} R_{mpt}}{\sum_{p=1}^{N_t} R_{mpt}^2} \qquad (4)$$

Here the numerator indicates the covariance between the return of the market and that of individual security, and the denominator explains the realised volatility of the market.

Further, the study measures two additional betas, similar to Acharya and Pedersen (2005) as follows:

$$\beta^{liqnet}{}_{it} = \beta 1_{it} - \beta 2_{it} - \beta 3_{it} \qquad (5)$$

$$\beta^{net}{}_{it} = \beta_{it} + \beta 1_{it} - \beta 2_{it} - \beta 3_{it} \qquad (6)$$

Here, $\beta^{liqnet}{}_{it}$ refers to a liquidity net beta that brings out a linear combination of the three liquidity betas excluding market beta. It enables to differentiate the impact of liquidity risks on the pricing of securities from that of market risk. $\beta^{net}{}_{it}$ provides a net beta that comprises of all the four covariance terms, where β_{it} refers to the market beta as posits by CAPM constructed using equation (4).

EMPIRICAL RESULTS AND DISCUSSIONS

The Principal Component Analysis

Principal Component Analysis (PCA) is carried out for the innovations in liquidity measures at the market level which is then extended to security level to bring out more comprehend principal components based of the nature of measures. The first principal components are found to be significantly comprehending the characteristics of the innovations in different groups of measures, viz. cost, quantity and multidimensional. Therefore, for further analysis, the liquidity innovations derived from the first principal components under each category of measures are employed. They are named as innovations in spread, innovations in quantity, and innovations in multidimensional measures. Innovations in the number of transactions are used as such indicating time dimension in the analysis.

Pricing of Innovations in Liquidity Measures in Indian Stock Market

The present study analyses whether liquidity risk as established by the innovations in liquidity is priced in Indian stock market. It examines how liquidity risk affects expected returns. This is carried out by running cross-sectional regressions on the data using a GMM framework that takes into account the pre-estimation of betas (Cochrane, 2001). Standard errors are computed using the Newey and West (1987) method with two lags.

By employing the returns of individual securities along with the betas estimated using innovations in liquidity measures, the cross-sectional regression models are estimated for the study period. The estimates of such cross-sectional regressions for the impact of innovations in spread, innovations in quantity, innovations in number of transactions, and innovations in multidimensional measures on the pricing of security in Indian stock market are discussed below.

Pricing of innovations in spread

Innovations in spread explain the changes in individual security-level and market-wide cost dimensional measures of liquidity viz. quoted spread (S_t), proportional quoted spread (PS_t), effective spread (ESPR) and proportional effective spread (PESPR). Five betas are derived using these innovations in spread as discussed earlier, which are brought into a GMM framework to analyse the impact of innovations in spread on the pricing of stock in the Indian context. These innovations are considered as the liquidity risk arising out of changes in the cost dimension of liquidity. Table 1 reports the estimates of GMM.

Table 1. Cross-sectional Regressions: The Impact of Innovations in Spread on Security Prices

Panel A			***Adjusted R^2***
Intercept	$\beta5_{it}$		0.09
-0.0102 (-1.39)	0.0606 (2.38)**		
Panel B			
Intercept	$\beta4_{it}$		0.14
-0.0117 (-1.42)	0.09610 (1.91)*		
Panel C			
Intercept	$\hat{\beta}_{it}$	$\beta5_{it}$	0.16

-0.0149 (-1.58)	0.03814 (0.62)	0.09827 (1.84)*			
Panel D					
Intercept	$\hat{\beta}_{it}$	$\beta1_{it}$	$\beta2_{it}$	$\beta3_{it}$	0.20
0.0294 (0.91)	0.0406 (0.63)	0.09965 (2.21)**	-0.01019 (-0.48)	-0.01008 (-0.66)	

Source: Own survey.

Panel A of Table 1 reports the results of regression carried out by considering a single regressor viz. net beta which accounts for the realised standard market beta as well as the betas derived from innovations in spread. The results reported in Panel A of the Table prove that the net beta is priced in Indian stock market. This indicates that along with the traditional market risk component (standard beta), the liquidity risk arising out of innovations in the cost dimension of liquidity i.e. innovations in spread is having a significant positive impact in the price of securities in Indian stock market. However, the premium for such net beta incorporating market risk as well as liquidity risk arising from cost concerns is negligible.

Panel B depicts the premium in the price of a security for the net liquidity beta comprising of all the three liquidity betas derived from innovations in spread. It is found that the market offers a premium for the securities having liquidity concerns arising out of wider spreads leading to greater transaction costs. This premium is found to be greater than the premium offered for the net beta in Panel A.

Panel C exhibits the result of regression estimated detaching the effect of standard beta (market beta) on the security returns from that of net beta. It measures the distinct contribution of net beta to the pricing of the most active securities in Indian stock market. The results vindicate that the market beta got an expected sign as per the predictions of CAPM. However, it is found to be insignificantly priced in Indian stock market coinciding with the results of Fama & French (1992). It depicts that the market risk, as measured by standard market beta, fails in explaining the cross-sectional differences in asset returns. However, the net beta component comprising the features of standard beta as well as the liquidity betas resulting from innovations in spread is found to be significant with a positive premium. It can be inferred that the investor prefers a premium for holding securities that are risky in the cost dimension of their liquidity.

Panel D provides the coefficients of each of the liquidity risk measures along with the standard market beta. It shows that the liquidity beta arising out of covariance between innovations in market-wide spread and innovations in security-level spread ($\beta1_{it}$) is significantly priced in Indian stock market. It indicates that the investor demands excess returns for holding securities whose innovations in spreads co-moves with the market and fluctuates in disproportionately higher terms responding to the market volatility. However other two betas derived from innovations in spread, $\beta2_{it}$ and $\beta3_{it}$ are not influencing the price of securities in Indian stock market. It can be understood that the innovations in spread at individual security level or that at the market level alone are not affecting the pricing of a security, but it is the co-movement in the liquidity risk arising out of wider spreads in the individual securities and the market as a whole demands for the premium in the price of a security in the Indian context. Confirming Panel C, $\hat{\beta}_{it}$, which is the standard market beta is not found to be playing a significant role in determining the price of a security in Indian stock market, when the innovations in spread or the liquidity risk arising out of cost-related aspects are incorporated in the model. Thus, similar to the findings of Dunne, Moore, and Papavassiliou (2010), it can be concluded that the investor in Indian stock market expects a premium for securities that are exhibiting wider spread or higher transaction costs when the whole market exhibits a similar scenario.

Pricing of innovations in quantity

The changes in security-level and market-wide quantity dimensional measures of liquidity viz. turnover (V_t), depth (D_t) and value depth (VD_t) are combined to form the innovations in quantity. This section explains the role of such innovations in quantity in the pricing of securities in Indian stock market. Cross-sectional regressions are employed in a GMM framework to examine the impact of innovations in quantity or the liquidity risk arising out of changes in the quantity dimension of liquidity on the pricing of security in Indian stock market. The estimates of GMM are presented in Table 2.

Panel A of Table 2 sums up the results of cross-sectional regression carried out by employing a single regressor, i.e. net beta. The net beta as represented by $\beta5_{it}$ takes into account the market risk component along with the liquidity risk arising out of fluctuations in the quantity dimension of liquidity. The results show that despite negligible premium offered the net beta is significantly priced in Indian stock market. It reveals that the investor expects a premium for holding securities that have market risk as well as the risk of illiquidity hailing from abnormal fluctuations in the market depth.

Panel B exhibits the average premium that an investor expects to have for holding security which is having a net liquidity risk arising out fluctuations in the quantities traded in the market. It is found that the investor expects a significant premium for holding the securities having significant innovations in quantity.

Panel C reveals the result of regression estimated removing the effect of market beta on the stock returns from the impacts of the net beta. The results show that, as in the case of liquidity risk arising out of wider spread, the investors are not bothered about the premium for bearing the market risk alone, but demands for a significant premium for bearing additional risk of liquidity arising from unexpected changes in the quantities of securities traded in the market along with the market risk.

Table 2. Cross-sectional Regressions: The Impact of Innovations in Quantity on Security Prices

Panel A	***Adjusted R^2***

Intercept	$\beta5_{it}$				0.06
0.1741 (1.89)	0.00921 (1.72)*				
Panel B					
Intercept	$\beta4_{it}$				0.11
0.2347 (1.60)	0.008540 (2.08)**				
Panel C					
Intercept	$\hat{\beta}_{it}$	$\beta5_{it}$			0.07
0.2479 (1.58)	0.0649 (0.62)	0.006610 (1.69)*			
Panel D					
Intercept	$\hat{\beta}_{it}$	$\beta1_{it}$	$\beta2_{it}$	$\beta3_{it}$	0.15
0.20621 (1.96)	0.0718 (0.89)	0.007284 (2.61)***	-0.00287 (-1.04)	-0.00136 (-0.78)	

Source: Own survey.

From the Panel D, it can be derived that it is the disproportionate fluctuations in the quantity of particular security transacted in the market in response to the fluctuations in market volume contributes to the pricing of innovations in quantity in Indian stock market. Investors are not expecting significant premiums for holding securities whose returns are co-moving with the market-wide innovations in quantity or whose innovations in quantity are co-moving with market returns. The results confirm that the investors are not demanding premiums for market risk as well. However, it reassures that the common investors expect a premium for holding securities that are having greater innovations in quantity.

Pricing of innovations in number of transactions

Innovations in the number of transactions refer to the changes in the number of transactions between two given time intervals at the security level as well as market level. This section explains the impact of innovations in number of transactions on the pricing of securities in Indian stock market. Table 3 reports the results of the cross-sectional regression models estimated to analyse the impact of innovations in number of transactions or the liquidity risk arising out of changes in the time dimension of liquidity on the pricing of security in Indian stock market.

Panel A of Table 3 shows that the net beta comprising of the market risk component and the liquidity risk arising out of the innovations in number of transactions is significantly priced in Indian stock market. Even though it demands a negligible premium in the price of the security, it can be inferred that the common investors in the Indian market demands a premium for holding securities that have market risk as well as the risk of illiquidity arising out of innovations or unexpected changes in the number of transactions.

Table 3. Cross-sectional Regressions: The Impact of Innovations in Number of Transactions on Security Prices

Panel A					***Adjusted R^2***
Intercept	$\beta 5_{it}$				0.03
-0.0269 (-0.78)	0.00173 (2.17)**				
Panel B					
Intercept	$\beta 4_{it}$				0.12
-0.0148 (-1.09)	0.00199 (1.74)*				
Panel C					
Intercept	$\hat{\beta}_{it}$	$\beta 5_{it}$			0.07
-0.0197 (-0.61)	0.02479 (1.49)	0.00167 (1.65)*			
Panel D					
Intercept	$\hat{\beta}_{it}$	$\beta 1_{it}$	$\beta 2_{it}$	$\beta 3_{it}$	0.15
0.0327 (2.37)	0.01280 (1.27)	0.00368 (1.86)*	-0.00418 (-0.70)	-0.00964 (-1.21)	

Source: Own survey.

From Panel B, it can be inferred that the investors specifically demand a premium for holding securities whose innovations in number of transactions greatly co-moves with the innovations in market-wide number of transactions. Panel C reveals that, as in the case of liquidity risk arising out of innovations in quantity, the investors are not concerned significantly for having a premium for bearing only the market risk alone. However, it can be seen that they demand a significant premium as a return for bearing the additional risk of liquidity arising from unanticipated changes in the number of transactions per unit time in response to that in the market besides the market risk.

Panel D exhibits that it is the co-moving innovations or unexpected changes in the number of transactions per unit time of security with that of the market funds to the pricing of innovations in number of transactions in Indian stock market. Similar to the earlier cases, the investors are not found to be expecting any significant premiums for holding securities whose returns are co-moving with the market-level innovations in number of transactions or whose innovations in number of transactions are co-moving with market returns. The results endorse that the common investors expect a premium for holding securities that are having greater innovations in number of transactions rather than for the mere market risk.

Pricing of innovations in multidimensional aspects of liquidity

The changes in security-level and market-wide multidimensional measures that encompass the cost, quantity and time dimensions of liquidity viz. quote slope (QS_t), log quote slope ($LnQS_t$), composite liquidity (CL_t), Amihud measure (AMR), and flow ratio (FR) are pooled to form the innovations in multidimensional measures. Table 4 reports the estimates of GMM carried out using the betas estimated from the innovations in multidimensional measures.

Table 4. Cross-sectional Regressions: The Impact of Innovations in Multidimensional Aspects of Liquidity on Security Prices

Panel A					***Adjusted R^2***
Intercept	$\beta 5_{it}$				0.14
0.0199 (2.09)	0.0167 (3.98)***				
Panel B					
Intercept	$\beta 4_{it}$				0.12
0.01548 (2.14)	0.0261 (2.31)**				
Panel C					
Intercept	$\hat{\beta}_{it}$	$\beta 5_{it}$			0.09
0.0179 (3.90)	0.2565 (0.69)	0.0308 (1.71)*			
Panel D					
Intercept	$\hat{\beta}_{it}$	$\beta 1_{it}$	$\beta 2_{it}$	$\beta 3_{it}$	0.04
0.0148 (2.89)	0.01662 (0.42)	0.0639 (1.89)*	-0.0031 (-0.34)	0.0006 (0.87)	

Source: Own survey.

Panel A of Table 4 shows that the net beta comprising of the systematic market risk component and the liquidity risk arising out of the innovations multidimensional measures is significantly priced in Indian stock market. It confirms that the common Indian investor demands an excess return for holding securities that are having liquidity risk which may be arising out of cost, quantity or time aspects of liquidity along with the systematic risk of the market.

From Panel B, it can be reaffirmed that the investors explicitly demand a premium for holding securities whose liquidity movements (expected or unexpected) commoves with the liquidity of the market. Such commoving innovations can be raised out of cost, quantity or time aspect of liquidity, or from the combination of these aspects. Panel C discloses that, as in the case of innovations in individual aspects of liquidity, when the element of liquidity risk is incorporated, the investors are not concerned significantly for having a premium for bearing only the market risk alone. Nevertheless, they demand a significant premium for bearing the additional risk of liquidity (illiquidity, more precisely) arising from unexpected fluctuations in different dimensions of liquidity of a stock responding to that in the market in addition to the market risk.

Panel D confirms that the co-movements between innovations in individual stocks liquidity and that of market liquidity are significantly priced in the Indian stock market. However, it is found that the investors are least bothered about having significant premiums for holding securities whose returns are co-moving with the market-level innovations in liquidity or whose innovations in liquidity are co-moving with market returns when the liquidity risk (it can be any dimension of liquidity risk) of individual stock is found to be responding significantly to the market-wide liquidity risk. The results thus, validate that the common investors expect a premium for holding securities that are having greater liquidity risk in association with market-wide liquidity risk rather than for the mere market risk.

CONCLUSION

The present study aimed at analysing whether liquidity risk is a priced factor in Indian stock market. A set of cross-sectional regressions are run in a Generalized Methods of Moments framework which test for the impact of liquidity risk as derived from liquidity innovations on the pricing of security in Indian stock market employing liquidity innovations from each dimension of liquidity as well as from a multidimensional aspect. The results provide that the liquidity risk is significantly priced in Indian stock market. It indicates that among the three betas calculated using liquidity innovations concerning different dimensions of liquidity, it is the liquidity risk arising out of co-movements between liquidity innovations of individual securities and that of the market alone is priced in the Indian stock market. It confirms that the Indian investor is concerned about the unexpected changes in liquidity of a security in response to the unexpected changes in liquidity of the market rather than the responsiveness of returns of individual securities to the innovations in the market or the reactions of innovations in the liquidity of individual securities to the market returns. Thus, it is the relative liquidity risk of a security that demands a premium in the Indian stock market.

Similarly, in line with Fama and French (1992), the study found that market risk is not priced when the component of liquidity risk is included in the market. Thus, this study points out that it is the liquidity risk for which an investor demands a premium rather than the systematic market risk. It indicates an increase in the anticipated value of security responding to the liquidity risk it bears and thus validates the liquidity-adjusted capital asset pricing model in the Indian stock market. The study suggests the investors consider these additional factors along with market risk while determining the anticipated return from security. It further proposes to have future research analysing the impact of the level of liquidity on determining the price of a security which was beyond the scope of this study, given that it is often the level of liquidity rather than the liquidity risk that affects the stock market the worst.

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