Indian Journal of Economics and Business
Vol. 20 No. 2 (July-December, 2021)

http://www.ashwinanokha.com/IJEB.php

Stock Market Liquidity: A Literature Survey

Divya Verma & Shweta Kundlia*

**University School of Management Studies, Guru Gobind Singh Indraprastha University, India*

[*] *Corresponding author: kundlia.shweta@gmail.com*

Received: 09th May 2021
Revised: 03rd June 2021
Accepted: 29th June 2021

Abstract: This study aims to review the existing literature on stock market liquidity and provide future directions of research. The paper provides a review of seminal, transitional and current literature on stock market liquidity's origin, measures and role in asset pricing. The literature survey found that there is no single universal definition of liquidity. This study contributes in the existing literature by defining market liquidity comprehensively as traded and non-traded liquidity. Cost-based and mixed measures are found to have reached the advanced stage of development of liquidity measures while, the research on quantity-based and time-based liquidity measures is limited in the existing literature. Fundamental studies on market liquidity are concentrated for developed nations and there is future scope for emerging nations. Comprehensive pricing of illiquidity is required to be studied than studying traded and non-trading illiquidity factors studied separately. Since funding and market illiquidity are inseparable, conditional asset pricing models should be developed.

Keywords: market liquidity, review of literature, illiquidity premium, stock market

1. Introduction

Research in the field of liquidity in stock markets dates back to times when stocks started trading in the market. The need for stock market liquidity research was felt necessary when investors faced a lot of issues in acquiring and selling their capital assets in the market. Market structures, rules and regulations were formed gradually to ensure easy tradability and to maintain liquidity in the markets. The development of various economic models took place to study the complications and difficulties faced by investors in trading stocks in the market (Amihud, Mendelson, & Pedersen, 2005; Vayanos & Wang, 2012). Markets are broadly classified as call auction market or order driven markets. Literature suggests that the microstructural issues of trading i.e., liquidity issues are well studied for the call auction market of the US (Kumar & Misra, 2015) and is scantily studied elsewhere. Conventional valuation theories ignore market structures and trading mechanisms that play a significant role in determining liquidity costs and price discovery in the

market (Foucault, Pagano, & Roell, 2013). The simplicity of traditional asset pricing models leads to mispricing of stocks, since the market participants consider market designs and trading rules explicitly when trading stocks. But unfortunately, the topic is widely ignored and less research is available for markets apart from the US market.

The stock market liquidity is said to have many dimensions like tightness, immediacy, depth, breadth and resiliency. The market microstructural models which highlight illiquidity issues and propose market models are based on one or two dimensions of liquidity only. These models are based on microstructural data which is not easily accessible for a lot of markets. To overcome this hurdle, many researchers have proposed low frequency liquidity proxies for high frequency liquidity measures. Many studies have used low frequency measures of liquidity to study the impact of market illiquidity on stock returns. But no low frequency measure of liquidity capture illiquidity premium to the fullest as the measures are generally based on one or two dimensions of liquidity and thus are able to explain limited effects of liquidity on stock returns. For example, Amihud & Noh (2020) found that the Amihud (2002) illiquidity measures' premium fails to capture the Liu (2006) illiquidity measures' premium. Thus, though the asset pricing studies on liquidity are large in number, but they fail to capture complete illiquidity premium. Another issue is the risk in illiquidity, i.e., illiquidity uncertainty due to a major economic or financial crisis. This issue has gained more importance after the liquidity dry up in the global financial crisis 2007/8 (Pedersen, 2009). Moreover, stock market liquidity is influenced by funding and monetary liquidity, which has laid down the foundations of the literature on conditional liquidity augmented asset pricing models. This literature survey aims to outline the future direction of research in stock market liquidity by conducting a thematic analysis of stock market liquidity's origin, measures, and its role in asset pricing. This paper provides a review of seminal, transitional and current literature on stock market liquidity under three themes. A major limitation of the study is that since the literature on stock market liquidity is quite huge, current literature survey fails to review all the papers in the domain.

The importance of studying the concept of stock market liquidity lies in its vast application as it has extensive application for financial markets. Investors and asset managers are concerned about stock market liquidity as it affects their return on investments. Amihud, Mendelson, & Lauterbach (1997) show that stock prices increase with market liquidity and decline with increased market illiquidity. Trading platforms, such as stock exchanges, are also concerned about market liquidity as they attempt to diminish illiquidity issues to attract more orders from traders and convince companies to list with them. The stock's liquidity influences the companies' capital budgeting decisions, as the cost of raising capital rises for companies with illiquid stocks (Amihud & Mendelson, 1988; Lipson & Mortal, 2009). The interdependence of market liquidity with funding liquidity and monetary liquidity makes it essential for central banks and other market regulatory bodies to take policy decisions (Brunnermeier & Pedersen, 2009; Chordia, Sarkar, & Subrahmanyam, 2005).

The markets are becoming hazy as they expand, integrate and adopt automation. The markets do not provide two-way price commitment anymore and are losing their structure with automation (Jones, 2000). The rising complexities in the market, make it difficult to comprehend the order flows in the market-leading to illiquidity issues. Moreover, in the era of automation and high-frequency trading platforms, the importance of illiquidity costs has risen as the traders who indulge in high-frequency trading can gain only

if illiquidity costs are at the least. The excess returns from high-frequency trading strategies are exposed to illiquidity costs and are unrelated to traditional risk factors (Bowen, Hutchinson, & O'Sullivan, 2010). It is also observed that stock market crashes lead to liquidity funding constraints, which instigate sudden liquidity dry ups in stock markets, also known as 'flight-to-quality' (Brunnermeier & Pedersen, 2009).

The paper is organized as follows. Section 2 provides with various definitions on market liquidity. Section 3 discusses liquidity measures. Section 4 portrays the contributions of liquidity in asset pricing. Section 5 gives concluding remarks with suggestions for future research in market liquidity.

2. Market liquidity: an elusive concept

Liquidity is an asset's ability to be encashed in large quantities without any abnormal price movements. The value of a liquid asset is realizable in a short period without incurring any loss (Keynes, 1930). Illiquidity is the converse of liquidity, however, both concepts are elusive (Amihud, Mendelson, & Pedersen, 2013). O'Hara (2004) compared liquidity with pornography and observed liquidity as: "it is hard to define, but you know it when you see it". Amihud et al. (2013) observes illiquidity in a market when there are large differences in buy and sell prices, securities trading in large quantities leads to inappropriate price movements, and it takes a long time to unload positions. Pastor & Stambaugh (2003), "Liquidity is a broad and elusive concept that generally denotes the ability to quickly trade large quantities at low cost without moving the price". Some authors have defined liquidity in financial markets by drawing attention to various dimensions of liquidity as outlined below,

i. Conditions laid down by Black (1971) to define liquid markets are: a) immediate tradability of small quantities; b) spread remains minimum at all times; c) no particular information is needed to trade large quantities of stocks at a price close to the average price prevailing in the market; d) size of the block is positively related to the premium or discount on buying or selling of a large block of stocks.

ii. Kyle (1985) proposes three dimensions of market liquidity, namely, tightness, depth and resiliency. Here, "tightness" is the cost of trading stocks immediately; "depth" defines quantities traded in the market; "resiliency" is the ability of prices to bounce back after a shock to the market.

iii. Liquidity dimensions proposed by Harris (1990) are width, depth, immediacy and resiliency. Here, "width" represents the spread, "depth" is the quantities traded, "immediacy" is the speed with which given stocks can be traded without any additional cost; "resiliency" is the ability to bounce back at the prices prevailing before market imbalances.

iv. Sarr & Lybek (2002) propose five attributes that characterize a liquid market: a) tightness; b) immediacy; c) depth; d) the breadth and e) resiliency.

It is believed that despite the existence of extensive literature on liquidity, researchers have failed to agree on a single universal definition of market liquidity (Wuyts, 2007; Baker, 1996; Le & Gregoriou, 2020). This paper defines market liquidity in two ways: traded market liquidity and non-traded market liquidity. Traded market liquidity deals with the spread, depth, and breadth available in the market at the point of trading

the asset. While, non-traded market liquidity pertains to the dynamics of spread, depth, and breadth with respect to immediacy and resiliency in the market over time. The concept of the traded and non-traded market liquidity comes from the fact that market liquidity can be understood in two ways, one is the market liquidity experienced at the time of trading assets and another is the uncertainty of market liquidity over time. This concept is similar to the pricing of the traded and non-traded illiquidity factor (Amihud & Noh, 2020).

3. Liquidity measures

Researchers have constructed measures of market liquidity, capturing various dimensions of liquidity. The paper attempts to classify measures of market liquidity under its dimensions and data availablitity. Literature suggests that spread and depth measures are among the most popular liquidity measures when high-frequency data are available; while the Amihud (2002) illiquidity measure is widely used as a low-frequency proxy. Low-frequency liquidity measures are good representators of high-frequency liquidity measures (Fong, Holden, & Trzcinka, 2017; Goyenko, Holden, & Trzcinka, 2009).

Figure 1 categorizes the measures of liquidity in dimensions and data availability. Market liquidity measures are sorted in four dimensions (cost, quantity, time, and mixed) and two data availability categories (high and low-frequency measures). High number of cost dimension and mixed measures reveal tremendous development, while a smaller number of quantity dimension and time dimension measures leaves lot of scope for future. Major developments in the market liquidity measure models of cost and mixed measures could be because of their direct influence on stock returns and applicability in asset pricing models.

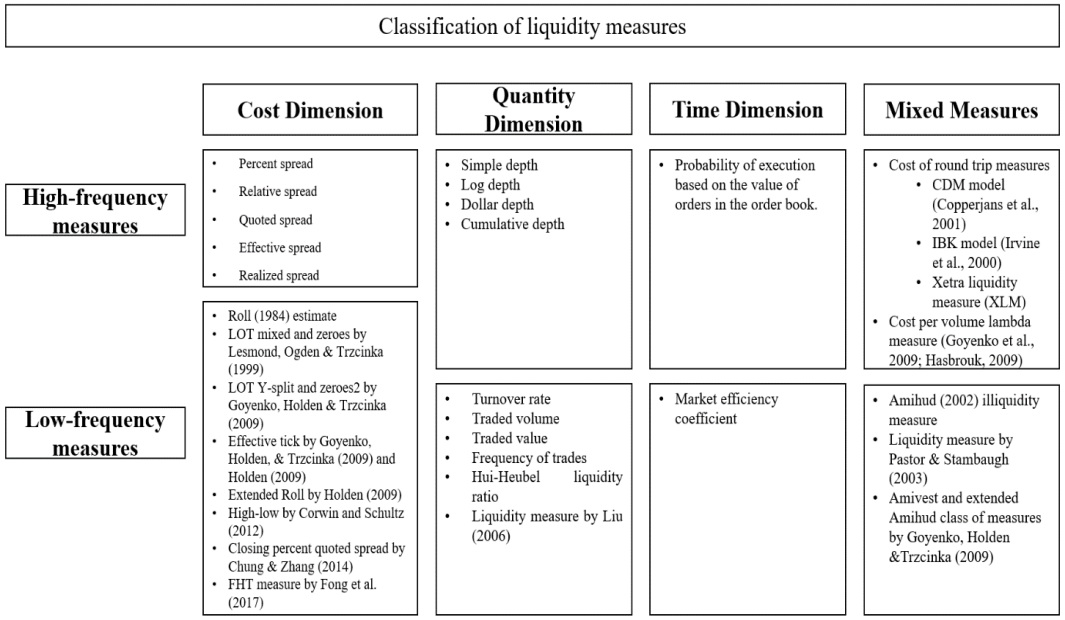

Figure 2: Classification of liquidity measures

Studies which analyze market liquidity measures to identify the best measure are tabulated in Table 1. To facilitate research in the field of market liquidity, comparative studies generally aim to identify an accurate low-frequency liquidity measure by setting high-frequency liquidity measure benchmarks.

Table 1: Comparative studies on market liquidity measures

Author/s (Year)	**Purpose**	**Methodology used**	**Comments/Remarks**
Aitken &Comerton-Forde (2003)	Study Asian economic crises of 1997 and 1998 for measures based on trade and order in the Indonesian market.	Pearson's correlation and sensitivity analysis	Choice of liquidity measure can have significant impact on research results and policy formulation. Order-based liquidity measures outperform the trade-based liquidity measures.
Mianbi & Langnan (2007)	Comparison of low frequency price impact proxies to high frequency measures.	Pearson, partial Pearson and Spearman correlation	Low-frequency liquidity measures needs improvement to a great extent. The most accurate liquidity proxy is the Hui-Heubel liquidity ratio.
Goyenko et al. (2009)	Transaction cost and price impact low frequency liquidity proxies are compared with high frequency liquidity measures.	Horse race test	Transaction costs are best measured by effective or realized spreads while price impact is best measured by Amihud (2002) illiquidity proxy.
Fong et al. (2017)	Percent-cost and cost-per-volume liquidity benhmarks are studied in comparison to daily and monthly low frequency liquidity proxies.	Average cross-sectional correlation, portfolio correlation and prediction accuracy	The best proxy of daily and monthly percent cost aspect of liquidity is the closing percent quoted spread. The Amihud (2002) illiquidity measure is the best proxy for daily cost-per-volume benchmark, while the

			other five low-frequency measures are the best proxies for measuring monthly cost-per-volume benchmark.
Ahn, Cai, & Yang (2018)	Investigates emerging markets for low-frequency liquidity measures.	Wilcoxon test, cross-sectional correlation and regression analysis	In emerging economies, spread and price impact are best proxied by LOT (1999) meausre and Amihud (2002) illiquidity measure respectively.
Stereńczak (2019)	Identify the most appropriate liquidity measure for carrying out asset pricing studies in Poland. Study fourteen low frequency illiquidity measures keeping the four high frequency measures as benchmark.	Conduct series of correlation analysis and error estimation analysis	They found Fong et al. (2017) liquidity measure to be the most appropriate for studying the asset pricing in Poland followed by the modified Amihud (2002) illiquidity measure.

Source: Author's findings

It can be deduced from the above-mentioned comparative studies that the low-frequency illiquidity measure given by Amihud (2002) fares well in measuring the market liquidity more accurately. Since none of the measures are able to explain complete market liquidity, studies using these measures are not error-free, the reason being: a) all dimensions of liquidity are not captured by a single measure; b) empirically derived measures are noisy; c) low-frequency measures reflect measurement noise (Amihud, Mendelson, & Pedersen, 2005). It is possible to construct a composite measure of "liquidity stance" in financial markets, and this can be done by taking into account the multiple facets of liquidity and market-specific factors (Sarr & Lybek, 2002).

4. Liquidity and asset pricing

The relationship between stock returns and bid-ask spread was first documented by Amihud and Mendelson (1986), who studied the US stock market and marked the foundations of role of illiquidity in asset pricing. Their study found that the expected stock returns increase at a diminishing rate with an increase in spreads, i.e., spread-return relation is concave. They proposed that the concave relationship between spread and expected stock returns suggest the presence of clienteles in the market. Hence, they also proved that long-term investors prefer to long illiquid stocks to amortize the illiquidity costs in the long run.

While short-term or frequent traders prefer to long liquid stocks as their trading frequency are more and if they pay high illiquidity costs, they will earn low net earnings.

Table 2 reports the analysis of other literature which tests the relationship between stock illiquidity and expected stock returns. It is demonstrated that most of the illiquidity-return relationship studies are conducted in developed markets, while it is only in recent years that some studies have tested the relationship in developing markets. This is because the microstructural data in developing economies is not readily available to conduct liquidity studies. Moreover, studies that use intra-day data to measure liquidity are conducted majorly on NYSE in the US market. Other studies that test the illiquidity-return relationship in other markets such as Australia, Japan, South Africa, and Indonesia use either daily turnover or daily Amihud (2002) illiquidity ratio to measure liquidity. It is found that many studies have demonstrated a positive illiquidity-return relationship.

Table 2: Studies on illiquidity-return relationship

Author/s and year	**Market and period under study**	**Liquidity measure**	**Methodology**	**Illiquidity-return relationship**	**Clienteles**	**Seasonality**
Amihud& Mendelson (1989)	US, 1961 to 1980	Percentage bid-ask spread	Pooled regression	Positive	N/a	N/a
Eleswarapu&Reinganum (1993)	US, 1961 to 1990	Relative bid-ask spread	Cross-sectional regression	No relation, positive only for January	N/a	Present
Brennan & Subrahmanyam (1996)	US, 1984 to 1991	Market depth	Time series regression	Positive	Present	Not present
Eleswarapu (1997)	US, 1973 to 1990	Relative bid-ask spread	Cross-sectional regression	Positive	N/a	Present
Hu (1997)	Japan, 1976 to 1993	Turnover	Cross-sectional regression	Positive	Present	Not present
Datar, Naik, & Radcliffe (1998)	US, 1962 to 1991	Turnover	Cross-sectional regression	Positive	N/a	Not present
Amihud (2002)	US, 1964 to 1997	Absolute stock return to its dollar volume ratio	Cross-sectional regression	Positive	N/a	Not present
Easley, Hvidkjaer, & O'Hara (2002)	US, 1983 to 1998	Probability of information-based	Cross-sectional regression	Positive	N/a	N/a

		trading				
Chan & Faff (2003)	Australia, 1990 to 1999	Turnover	Cross-sectional regression	Positive	N/a	Not present
Chordia, Huh, & Subrahmanyam (2009)	US, 1976 to 2002	Kyle lambda	Cross-sectional regression	Positive	N/a	Present
Marozva (2019)	South Africa, 2007 to 2016	Trading volume and turnover	Time series regression	Positive	N/a	N/a
Ernawati &Herlambang (2020)	Indonesia , 2013 to 2017	Absolute stock return to its dollar volume ratio	Panel regression	Positive	N/a	N/a

Source: Author's findings

Since studies have demonstrated a positive illiquidity-return relationship, researchers further investigated the illiquidity premium present in the expected stock returns. Literature shows that, illiquidity premium is studied in two forms i.e., traded and non-traded. Studies which test for the presence of traded illiquidity consider the premium expected on illiquid stocks over liquid stocks. Table 3 reports studies on the role of traded illiquidity premium in asset pricing models. The systematic illiquidity factor is generally positive in various markets irrespective of the liquidity measure used. The traded illiquidity premium factor is found to be very significant even after adjusting for other risk premium factors.

Table 3: Studies on traded illiquidity premium factor

Author/s and year	**Market and period under study**	**Liquidity measure**	**Asset pricing model under test**	**Contribution**
Miralles Marcelo, Miralles Quirós, & Miralles Quirós (2004)	Spain, 1994 to 2002	Amihud (2002) illiquidity ratio	CAPM and FF (1993) three factor model	Illiquidity factor is significantly priced. Illiquidity factor augmented CAPM model performs the best.
Chan & Faff (2005)	Australia, 1990 to 1998	Turnover	FF (1993) three factor model	Liquidity factor augmented FF model performs the best and premium on turnover is positive and significant.
Liu (2006)	US, 1960 to 2003	Standardized turnover-adjusted number of zero daily trading volumes	CAPM and FF (1993) three factor model	Presence of illiquidity premium is confirmed even after controlling for other risk premium factors. Illiquidity augmented CAPM

				performs better than the FF (1993) three factor model.
Miralles Marcelo, Miralles Quirós & Oliveira (2011)	Portugal, 1988 to 2008	Proportion of zero returns	CAPM and FF (1993) three factor model	Illiquidity is not priced in the Portugal market.
Amihud, Hameed, Kang & Zhang (2015)	45 countries, 1990 to 2011	Amihud (2002) illiquidity ratio	FF (1993) three factor model	Illiquidity premium is positive and significant across countries.
Chen, Tai, & Cho (2019)	Taiwan, 1982 to 2016	Amihud (2002) illiquidity ratio	Fama-French-Carhart four-factor model	Illiquidity premium is positive and significant. The liquidity augmented five factor model predicts stock returns better.
Zhong & Takehara (2020)	Japan, 1978 to 2016	Amihud (2002) illiquidity ratio, turnover-adjusted zero-return measure, turnover, Pastor & Stambaugh (2003) measure, marginal cost of trade, effective spread	FF (1993) three factor model	Illiquidity factor is positively priced in the Japanese market.

Source: Author's findings

Another branch of literature on illiquidity premium studies non-traded illiquidity factor, which aims to price the shocks/fluctuations in market liquidity. Pastor & Stambaugh (2003) study the cross-sectional effect of innovations in market liquidity on stock returns and found that high sensitivity to aggregate market illiquidity can earn 7.5% annual excess return on stocks over low sensitivity to the aggregate market liquidity in the US market. Acharya & Pedersen (2005) proposed three sources of illiquidity risk: 1) stock illiquidity and market illiquidity co-movement, 2) stock returns and market illiquidity co-movement, and 3) stock illiquidity and market returns co-movement. They proposed a theoretical asset pricing model known as liquidity adjusted CAPM which prices the deviations in liquidity. Anderson, Binner, Hagströmer, & Nilsson (2015) study the liquidity commonality premium in the US market and found that the monthly commonality risk premium is 0.16% which is significant economically and statistically. They also found that liquidity commonality risk is independent of the traded illiquidity effect. Silva Júnior & Machado (2020) studied the Brazilian stock market and found that the premium on liquidity commonality is partially captured by the traded liquidity premium factor and is not found to be significantly priced as an independent factor.

5. Conclusion

Research in the field of stock market liquidity has spread its wings to,

- Defining liquidity comprehensively, covering all the aspects of microstructural issues in trading stocks as it can help framing asset pricing models by ascertaining expected excess stock returns. Researchers have failed to give a comprehensive definition of market liquidity, as the market structures across the world differ and are still evolving. There is no standard market structure for which stock market liquidity can be defined. This paper defines market liquidity in two ways: traded market liquidity and non-traded market liquidity. Traded market liquidity deals with the spread, depth, and breadth available in the market at the point of trading the asset. While, non-traded market liquidity pertains to the dynamics of spread, depth, and breadth with respect to immediacy and resiliency in the market over time.

- The dimensions of liquidity are vast and it is difficult to model one liquidity measure because the concept of stock market liquidity is subjective. Though, it is found that cost-based and mixed measures are at advanced stage of development while, quantity-based or time-based measures are less developed.

- Fons et origo of microstructural studies laying down the foundations of literature on market liquidity are available only for few developed markets like the US.

- Liquidity's role in asset pricing is studied for its traded and non-traded illiquidity risk premium, but there is a need for a comprehensive model which can price both the premiums.

- Further, conditional asset pricing models such as the ones proposed by Amihud & Noh (2020) study the systematic illiquidity premium scaled by funding illiquidity in the market. Such models are still at the initial stage and are still in the process of development.

There is a vast scope of research in stock market liquidity. Future research direction in the field should focus on building simple and comprehensive liquidity models by catering to all the factors influencing market illiquidity. Prospective researchers are encouraged to identify the factors affecting the illiquidity premium. It is also found that the literature on stock market liquidity is abundant in developed markets, but is scarce in emerging markets. Market microstructural issues in emerging markets can be alleviated by studying stock market liquidity for these markets.

References

Acharya, V. V., & Pedersen, L. H. (2005). Asset Pricing with Liquidity Risk. Journal of financial Economics, 77(2), 375-410.

Ahn, H.-J., Cai, J., & Yang, C.-W. (2018). Which liquidity proxy measures liquidity best in emerging markets? Economies, 6(4), 67.

Aitken, M., &Comerton-Forde, C. (2003). How should liquidity be measured? Pacific-Basin Finance Journal, 11, 45-59.

Amihud, Y. (2002). Illiquidity and stock returns: cross-section and time-series effects. Journal of Financial Markets, 5, 31–56.

Amihud, Y., & Mendelson, H. (1986). Asset Pricing and the Bid-Ask Spread. Journal of Financial Economics, 17, 223-249.

Amihud, Y., & Mendelson, H. (1988). Liquidity and asset prices: Financial management implications. Financial Management, 17(1), 5-15.

Amihud, Y., & Mendelson, H. (1989). The Effects of Beta, Bid-Ask Spread, Residual Risk, and Size on Stock Returns. The Journal of Finance, XLIV(2), 479-486.

Amihud, Y., & Noh, J. (2020, December). The Pricing of the Illiquidity Factor's Conditional Risk with Time-varying Premium .Working Paper, Stern School of Business- NYU.

Amihud, Y., Hameed, A., Kang, W., & Zhang, H. (2015). The illiquidity premium: International evidence. Journal of Financial Economics, 117, 350-368.

Amihud, Y., Mendelson, H., & Lauterbach, B. (1997). Market microstructure and securities values: Evidence from the Tel Aviv Stock Exchange. Journal of Financial Economics, 45(3), 365-390.

Amihud, Y., Mendelson, H., & Pedersen, L. H. (2005). Liquidity and Asset Prices. Foundations and Trends® in Finance, 1(4), 269–364.

Amihud, Y., Mendelson, H., & Pedersen, L. H. (2013). Market liquidity: asset pricing, risk, and crises. Cambridge University Press.

Anderson, R. G., Binner, J. M., Hagstromer, B., & Nilsson, B. (2015). Does commonality in illiquidity matter to investors? Working Paper, Federal Reserve Bank of St. Louis.

Baker, H. K. (1996). Trading location and liquidity: An analysis of US dealer and agency markets for common stocks. Financial Markets, Institutions and Instruments, 5(4).

Black, F. (1971). Toward a Fully Automated Exchange, Part 1. Financial Analysts Journal, 27(4), 28-35.

Bowen, D., Hutchinson, M. C., & O'Sullivan, N. (2010). High frequency equity pairs trading: transaction costs, speed of execution and patterns in returns. Journal of Trading, 5(3), 31-38.

Brennan, M. J., & Subrahmanyam, A. (1996). Market microstructure and asset pricing: On the compensation for illiquidity in stock returns. Journal of Financial Economics, 41(3), 441-464.

Brunnermeier, M. K., & Pedersen, L. H. (2009). Market Liquidity and Funding Liquidity. The Review of Financial Studies, 22(6), 2201-2238.

Carhart, M. M. (1997). On Persistence in Mutual Fund Performance. The Journal of Finance, LII(1), 57-82.

Chan, H. W., & Faff, R. W. (2003). An investigation into the role of liquidity in asset pricing: Australian evidence. Pacific-Basin Finance Journal, 11(5), 555-572.

Chan, H. W., & Faff, R. W. (2005). Asset Pricing and the Illiquidity Premium. The Financial Review, 40, 429-458.

Chen, C.-C., Tai, C.-L., & Cho, Y.-C. (2019). Market Illiquidity Premium on Stock Returns: An Empirical Study of Taiwan Stock Markets. Asian Economic and Financial Review, 9(7), 778.

Chordia, T., Huh, S.-W., & Subrahmanyam, A. (2009). Theory-based illiquidity and asset pricing. The Review of Financial Studies, 22(9), 3629-3668.

Chordia, T., Sarkar, A., & Subrahmanyam, A. (2005). An empirical analysis of stock and bond market liquidity. The Review of Financial Studies, 18(1), 85-129.

Coppejans, M., Domowitz, I., & Madhavan, A. (2001). Liquidity in an automated auction. Working Paper, Duke University.

Corwin, S. A., & Schultz, P. (2012). A simple way to estimate bid-ask spreads from daily high and low prices. The Journal of Finance, 67(2), 719-760.

Datar, V. T., Naik, N. Y., & Radcliffe, R. (1998). Liquidity and stock returns: An alternative test. Journal of Financial Markets, 1(2), 203-219.

Easley, D., Hvidkjaer, S., & O'Hara, M. (2002). Is information risk a determinant of asset returns? The Journal of Finance, 57(5), 2185-2221.

Eleswarapu, V. R. (1997). Cost of transacting and expected returns in the Nasdaq market. The Journal of Finance, 52(5), 2113-2127.

Eleswarapu, V. R., &Reinganum, M. R. (1993). The seasonal behavior of the liquidity premium in asset pricing. Journal of Financial Economics, 34(3), 373-386.

Ernawati, E., &Herlambang, A. (2020). The Effect of Illiquidity on Stock Return on the Indonesia Stock. Advances in Economics, Business and Management Research, 115, 239-243.

Fama, E. F., & French, K. R. (1993). Common risk factors in the returns on stocks and bonds. Journal of Financial Economics, 33, 3-56.

Fong, K., Holden, C. W., &Trzcinka, C. A. (2017). What Are The Best Liquidity Proxies For Global Research? Review of Finance, 21(4), 1355–1401.

Foucault, T., Pagano, M., & Roell, A. (2013). Market liquidity: theory, evidence, and policy. Oxford University Press.

Goyenko, R. Y., Holden, C. W., &Trzcinka, C. A. (2009). Do liquidity measures measure liquidity? Journal of Financial Economics, 92, 153-181.

Harris, L. (1990). Liquidity, Trading Rules, and Electronic Trading Systems. New York University Salomon Center Monograph Series in Finance, Monograph.

Hasbrouk, J. (2009). Trading costs and returns for US equities: The evidence from daily data. Journal of Finance, 64, 1445–1477.

Holden, C. W. (2009). New low-frequency spread measures. Journal of Financial Markets, 12(4), 778-813.

Hu, S.-y. (1997). Exchange., Trading turnover and expected stock returns: The trading frequency hypothesis and evidence from the Tokyo Stock. Working Paper.

Irvine, P., Benston, G., & Kandel, E. (2000). Liquidity Beyond the Inside Spread: Measuring and Using Information in the Limit Order Book. Technical Report.

Jones, R. (2000). Liquidity and the markets. Balance Sheet, 8(2), 31-32.

Keynes, J. M. (1930). Treatise on money. London: Macmillan.

Kumar, G., & Misra, A. K. (2015). Closer view at the stock market liquidity: A literature review. Asian Journal of Finance & Accounting, 7(2), 35-57.

Kyle, A. S. (1985). Continuous Auctions and Insider Trading. Econometrica, 53(6), 1315-1335.

Le, H., & Gregoriou, A. (2020). How do you capture liquidity? A review of the literature on low-frequency stock liquidity. Journal of Economic Surveys, 34(5), 1170-1186.

Lesmond, D. A., Ogden, J. P., &Trzcinka, C. A. (1999). A new estimate of transaction costs. The Review of Financial Studies, 12(5), 1113-1141.

Lipson, M. L., & Mortal, S. (2009). Liquidity and capital structure. Journal of Financial Markets, 12(4), 611-644.

Liu, W. (2006). A liquidity-augmented capital asset pricing model. Journal of Financial Economics, 82, 631-671.

Marozva, G. (2019). Liquidity and stock returns: New evidence from Johannesburg Stock Exchange. The Journal of Developing Areas, 53(2), 79-90.

Mianbi, X., &Langnan, C. (2007). The Comparison Investigation on Low-Frequency Measures of Liquidity. In Wireless Communications, Networking and Mobile Computing, WiCom 2007 International Conference, IEEE, 4011-4014.

Miralles Marcelo, J. L., Miralles Quirós, M. d., & Miralles Quirós, J. L. (2004). The pricing of systematic

liquidity risk in stock markets. NotasEconómicas, Faculdade de Economia ,Universidade de Coimbra, 20, 162-176.

Miralles Marcelo, J. L., Miralles Quirós, M. d., & Oliveira, C. (2011). The Role of an Illiquidity Factor in the Portuguese Stock Market. XII Iberian-Italian Congress of Financial and Acturial Mathematics.

O'Hara, M. (2004). Liquidity and financial market stability. National Bank of Belgium Working Paper 55.

Pastor, L., & Stambaugh, R. F. (2003). Liquidity risk and expected stock returns. The Journal of Political Economy, 111(3), 642-685.

Pedersen, L. H. (2009). When Everyone Runs for the Exit. Working Paper 15297, National Bureau of Economic Research.

Roll, R. (1984). A simple implicit measure of the effective bid-ask spread in an efficient market. The Journal of Finance, 39(4), 1127-1139.

Sarr, A., & Lybek, T. (2002). Measuring liquidity in financial markets. IMF Working Paper WP/02/232.

Silva Júnior, C. P., & Machado, M. A. (2020). Is commonality in liquidity apriced risk factor? Revista de Administração Mackenzie, 21(2), 1–27.

Stereńczak, S. (2019). In Search of the Best Proxy for Liquidity in Asset Pricing Studies on the Warsaw Stock Exchange. In Effective Investments on Capital Markets, 33-52.

Vayanos, D., & Wang, J. (2012). Theories of liquidity. Foundations and Trends® in Finance, 6(4), 221-317.

Wuyts, G. (2007). Stock Market Liquidity: Determinants and Implications. TijdschriftvoorEconomieen Management, LII(2), 279-316.

Zhong, X., & Takehara, H. (2020). Stock Liquidity Premium on the Tokyo Stock Exchange. Journal of Critical Reviews, 7(12), 14-28.