

**LIQUIDITY AND PERFORMANCE: EVIDENCE
FROM ACTIVELY MANAGED OPEN ENDED
EQUITY FUNDS OF MSCI- ASIAN EMERGING
COUNTRIES**

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COUNTRIES**

by

SURESH KUMAR

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LIST OF ABBREVIATIONS

ADF	Augmented Dickey Fuller
AMC	Asset Management Companies
ASC 820	Accounting Standards Codification 820
CEF	Closed-End Funds
EMH	Efficient Market Hypothesis
FSB	Financial Stability Board
IOSCO	International Organization of Securities Commissions
IPO	Initial Public Offering
LCAPM	Liquidity-Based Capital Asset Pricing Model
MAS	Monetary Authority of Singapore
MSCI	Morgan Stanley Capital International
NAV	Net Asset Value
OEF	Open-Ended Funds
SEC	Securities and Exchange Commission
SFC	Securities and Futures Commission

LIST OF APPENDICES

Appendix A Computation of NAV

**KECAIRAN DAN PRESTASI: BUKTI DARI DANA EKUITI TERBUKA
YANG DIURUSKAN SECARA AKTIF DI NEGARA KEMUNCULAN
BAHARU MSCI- ASIA**

ABSTRAK

Ini adalah kajian komprehensif mengenai kecairan dana bersama terbuka yang diurus secara aktif di negara-negara Asia yang disenaraikan sebagai pasaran sedang pesat membangun oleh indeks Morgan Stanley Capital International (MSCI). Selepas krisis kewangan global 2007–2009, terdapat peningkatan yang ketara dalam aset dana bersama seluruh dunia. Sebaliknya, ramai sarjana telah mendapati bahawa prestasi bersih dana bersama tidak lebih baik daripada prestasi pasaran masing-masing. Ini bermakna pengurus dana tidak mempunyai kepakaran untuk menawarkan pelabur lebih daripada kos peluang mereka. Walau bagaimanapun, penyelidikan lepas mungkin salah oleh kegagalan untuk mempertimbangkan kekangan mudah tunai dengan secukupnya. Malah, industri dana bersama memerlukan penyiasatan yang mendalam untuk memahami kesan kecairan ke atas prestasi dana. Pertama, kajian ini mencari pulangan jangkaan tambahan daripada dana tidak cair (dana paling sedikit cair) berbanding dana cair (dana paling cair), dipanggil premium kecairan. Kedua, menggunakan analisis regresi, dana boleh diklasifikasikan sebagai dana sensitif (dana beta kecairan tinggi) atau dana tidak sensitif (dana beta kecairan rendah) kepada kejutan dalam kecairan pasaran untuk mendekati premium risiko kecairan. Memandangkan sifat mudah tunai yang dinamik, tempoh kajian (2007–2019) dibahagikan kepada dua sub-tempoh: tempoh krisis (2007–2009) dan tempoh tenang (2009–2019). Tambahan pula, kami menemui persamaan dalam kecairan dalam sesebuah negara dan merentasi negara Asia yang sedang pesat membangun

menggunakan faktor umum pulangan pasaran, turun naik pasaran dan kecairan pasaran. Kajian ini menjalankan analisis dua kali ganda ke atas dana melalui: pertama, prestasi individu bagi setiap sampel dana; dan kedua, prestasi kumpulan dana dengan mencipta portfolio dana dana. Kajian ini mendapati bahawa kecairan mempengaruhi prestasi dana bersama dengan ketara. Prestasi dana bersama dengan peratusan aset tidak cair yang lebih tinggi dalam portfolio mereka menunjukkan bahawa terdapat premium mudah tunai yang positif dalam dana bersama semasa tempoh tenang dan juga krisis. Tambahan pula, dana isihan beta kecairan melaporkan secara purata premium risiko kecairan yang positif dalam tempoh yang tenang dan negatif dalam tempoh krisis. Akibatnya, model dua faktor ditambah kecairan yang menggabungkan faktor kecairan (tahap kecairan atau risiko kecairan) dicadangkan. Keputusan empirikal selanjutnya menunjukkan bahawa kecairan pasaran Asia (membangun) ialah faktor risiko harga dan menandakan sumber risiko tidak boleh dipelbagaikan, menunjukkan bahawa pasaran Asia (baru muncul) mempunyai persamaan kecairan intra-pasaran dan antara pasaran yang besar.

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ABSTRACT

This is a comprehensive study on the liquidity of actively managed open-ended mutual funds in Asian countries that are ranked as emerging markets by the Morgan Stanley Capital International (MSCI) index. After the global financial crisis of 2007–2009, there was an intense rise in worldwide mutual fund assets. Instead, many scholars have found that the net performance of mutual funds is not better than the respective market performance. Which means fund managers do not have the expertise to offer investors more than their opportunity cost. Nevertheless, past research may be flawed by a failure to adequately consider liquidity constraints. Indeed, the mutual fund industry requires an in-depth investigation to understand the impact of liquidity on the performance of funds. First, this study looks for an additional expected return from illiquid funds (the least liquid funds) over liquid funds (the most liquid funds), called the liquidity premium. Second, using regression analysis, funds can be classified as sensitive funds (high liquidity beta funds) or insensitive funds (low liquidity beta funds) to shocks in market liquidity in order to approach the liquidity risk premium. Considering the dynamic nature of liquidity, the study period (2007–2019) is divided into two sub-periods: the crisis period (2007–2009) and the tranquil period (2009–2019). Furthermore, we discover commonality in liquidity within a country and across emerging Asian countries using the common factors of market return, market

volatility, and market liquidity. This study conducts a two-fold analysis of funds via: first, individual performance of each sample fund; and second, group performance of funds by creating fund of funds portfolios. This study finds that liquidity significantly affects mutual fund performance. The performance of mutual funds with higher percentages of illiquid assets in their portfolios indicates that there is a positive liquidity premium in mutual funds during tranquil as well as crisis periods. Furthermore, liquidity beta sorted funds reported a liquidity risk premium on average that is positive in a tranquil period and negative in a crisis period. As a result, a liquidity-augmented two-factor model which incorporates a liquidity factor (a liquidity level or liquidity risk) is suggested. The empirical results further indicate that Asian (emerging) market liquidity is a priced risk factor and denotes a source of non-diversifiable risk, demonstrating that Asian (emerging) markets have substantial intra-market and inter-market liquidity commonalities.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Since the 2008s, global financial crisis mutual funds have grown significantly, attracting interest and necessitating in-depth research. Their intense rise is fueled by globalization and accelerated by the fusion of numerous financial markets all over the world. Investors also require financial assets that are safe, liquid, and nevertheless promise significant future returns. The amount of scientific research on mutual funds is growing as they are becoming more and more significant in business nowadays.

Despite the increasing studies on mutual funds, because of the availability and dependability of data, developed markets have received significantly more attention than developing ones. As a result, the development of mutual funds in emerging markets has not been fully described and requires further discussion. In response to this requirement, this study uses a larger dataset than previous research to exclusively examine mutual funds in emerging markets. The study analyzes the liquidity of open-ended funds listed in six MSCI Asian emerging economies, which comprise China, India, South Korea, Malaysia, Thailand, and Taiwan. According to Kumar and Prasanna (2019) liquidity determines the quality of the emerging Asian markets. Since there aren't many research in this area, this covers one of the gaps in the literature currently available.

The majority of studies have concentrated on the mutual fund performance and if the manager may generate abnormal returns compared to the benchmark. This study tries to offer new outcomes and characteristics of emerging equity funds, from fund illiquidity consideration. The present study tries to investigate the existence of an

illiquidity premium that might contribute to the performance of equity funds. In terms of the illiquidity of the asset, investors demand a higher return from an illiquid asset than from a liquid asset to compensate for the illiquidity risk embedded in the assets. One goal of this investigation is to see if the mutual fund might expose this previously recorded trend at the security level. Stock liquidity and fund liquidity are interrelated since both the stock liquidity and proportion of stocks held in the fund portfolio determine the fund level liquidity. However, both the stock liquidity and fund liquidity are two distinct variables. Stock liquidity is described as the ability of a stock, on average, to be converted into cash quickly, without affecting much of its market price. As for mutual funds, using a value weighted average liquidity of all stocks held in fund portfolio is a very common approach in measuring fund liquidity. This approach has been employed by numerous researchers such as Dong, Feng and Sadka (2019), Huang (2015), Idzorek et al. (2012), Phalippou and Massa (2005) and Lo, Petrov and Wierzbicki (2006).

A mutual fund is an indirect way of investing in a diversified portfolio of securities, professionally managed by asset management companies that are registered with the Securities and Exchange Commission (SEC) in respective countries. Funds pool money from retailers and institutional investors to invest in a number of different liquid and illiquid securities such as stocks, bonds, currencies, commodities, money market instruments, and foreign securities. In comparison to direct investment, mutual funds attract investors because of three main advantages: affordability, diversification, and professionalism (Chang, J-Lin, H-Lin, and Chiang, 2010).

The open ended funds (OEF) does not have a limit on authorized capital (Pollet and Wilson, 2008). When someone invests in OEF, new units or shares are created at the current Net Asset Value ($NAV = \text{Market Value of Portfolio} - \text{Liabilities} / \text{Number}$

of Fund's Shares Outstanding), which is likely when investors sell their shares in OEF, which decreases their total units/shares at the current NAV. (See Appendix A for a hypothetical calculation of NAV). Investors can invest in OEFs by purchasing units issued by professional asset management companies (AMC). In fact, investors can also redeem their investment by selling their units at the available NAV back to AMC.

The liquidity provision (redemption of investment) is a basic obligation for OEF. The redemption process is quite simple and easy. When a current customer submits a request for redemption to AMC, the amount is credited back to his/her account at the current NAV. For investors, easy redemption is an incentive. However, it creates risk for fund managers. OEF's managers are held in check by the persistent prospect of asset withdrawal. Normally, OEF holds enough cash in its portfolio to meet the daily redemption requirement (Huang, 2015), and does not make changes to the portfolio when any redemption request is submitted. But if an institutional investor offloads a large number of shares, then OEF must sell some securities to pay the redemption amount (Zeng, 2017).

Illiquid assets must give a greater expected return than their liquid equivalents in order to attract investors, because liquidity-based asset pricing model considers liquidity as one of the factors of asset's return (Amihud and Mendelson, 1986). When a fund portfolio holds illiquid securities, fund managers find it difficult to locate a counterparty that is willing to trade a bulk quantity of a particular security. Trading an illiquid security incurs costs. Fund managers, either have to wait longer to trade at a perfect price or offer price concessions to trade immediately (Amihud et al., 2006), which is known as the price of liquidity. However, fund managers also expect a higher return or premium for their clients/investors for holding illiquid securities rather than liquid securities, called a liquidity premium. A frictionless or ideal market assumption

(a perfectly liquid market with no trading costs, or other restrictions) of a capital asset pricing model (CAPM) also supports the liquidity premium hypothesis. It holds that securities offering the same return should charge similar prices, while in the case of noncompliance, the market will offer arbitrage opportunities (Amihud et al., 2005; Hibbert et al., 2009). When there is a liquidity premium, fund managers must choose between redemption risk and liquidity premium. That is why fund managers would like to balance a portfolio with both liquid and illiquid assets, so that they can enjoy a premium and mitigate redemption risk as well.

Is investing in liquid securities a good way to safeguard investments during a crisis? An important question raised by Lou and Sadka (2011). Since illiquid securities greater overall performance stems mostly from their superior performance in the crisis period. These results are revealed by Lou and Sadka (2011) analysis of equity stocks and Idzorek et al. (2012) analysis of equity funds, who discovered that during the crisis of 2007–2009, illiquid securities outperformed liquid securities, since liquid securities, rather than illiquid securities, are more susceptible to liquidity shocks. Nonetheless, Lou and Sadka (2011) notified that liquidity risk, rather than liquidity level, can explain the cross section of stock returns during the crisis.

It is necessary to make clear at this point that the discussion above only covers liquidity level rather than liquidity risk. The ability of a stock to exchange large quantities of its shares quickly and cheaply is defined as its level of liquidity. In comparison, a stock's liquidity risk (beta) is covariation returns with unforeseen changes (innovations) in aggregate liquidity (Lou & Sadka, 2011; Liu, 2006; Chordia et al., 2000; Hasbrouck & Seppi, 2001). Liquidity beta has long been seen to be a viable mechanism for systematically affecting the expected return of an investment in the cross section. While Pastor and Stambaugh (2003), Acharya and Pedersen (2005),

Korajczyk and Sadka (2008) show that liquidity risk also carries a premium, called the liquidity risk premium (the differential return between high and low liquidity beta security). Therefore, two approaches are available to price liquidity. First, as a pricing attribute, liquidity level examines a security's liquidity as a factor of its return, where differential return between high and low liquid security is liquidity premium (Amihud & Mendelson, 1986). Second, liquidity risk, or the exposure of a security's return to shocks (innovations) in aggregate liquidity, is a risk factor.

According to past research, liquidity appears to play a role in asset pricing (Liu, 2006; Foran & O'Sullivan, 2014). This study uses liquidity-based two-factor asset pricing models (LCAPM) to measure and examine mutual fund performance and tries to offer new outcomes and explanations from fund liquidity consideration and test the validity of liquidity factors estimated at the fund level analysis. As a result, this research adds to LCAPM by loading fund liquidity factors, first with fund level liquidity and then with a fund level liquidity risk factor, along with the market risk factor.

Moreover, this study also considers the significance of fund liquidity in the integration of MSCI Asian emerging economies, and it does so by focusing on another characteristic of liquidity known as "commonality in liquidity." Because liquidity is a dynamic variable, a stock's liquidity co-moves with overall market liquidity, a phenomenon known as liquidity commonality (Bai & Qin, 2015; Pastor & Stambaugh, 2003). Using data from six MSCI Asian emerging equities markets, this study examines how changes in equity market liquidity affect fund liquidity.

1.2 Issues with quantification of liquidity for Open-Ended Funds

Investment in mutual funds has played an important role in the financial market and its industry size has increased dramatically over the past decade, especially after the global financial crisis of 2007-2008. This can be confirmed by the intense rise in worldwide mutual fund assets from \$26 trillion in 2007 to \$53 trillion in 2018 (Bloomberg, 2019). With increasing capital inflows, the mutual fund industry requires an in-depth investigation to understand the impact of liquidity on the performance of funds in MSCI Asian emerging countries.

Many researchers, such as Dong et al. (2019), Foran and Sullivan (2014), and Huang (2015), have tried to explore the determinants of mutual fund performance and selection, such as fund past performance, size, age, front and back-end loads, family size, turnover, fund flows, discount puzzle, expenses, and timing. This may be among the few mutual fund studies to examine the evidence of liquidity as a factor for measuring fund performance. However, earlier studies may be ambiguous because there is no universally accepted methodology for the quantification of liquidity (Sommer & Pasquali, 2016; Baker, 1996; Sarr & Lybek, 2002). The industry lacks a consistent measure to report liquidity. "Liquidity refers to the ease with which a security can be traded without deviating from its current market price. According to definition, liquidity has four commonly known dimensions: (i) breathe (Bid-Ask spread); (ii) depth (volume traded); (iii) immediacy (speed of transaction); and (iv) resiliency (recovery of traded price). Besides, each measure or proxy of liquidity (e.g., price impact, volume, transaction cost) may capture certain dimensions of liquidity and generate different outcomes (Benic & Franic, 2008; Aitken & Ford, 2003). In addition, there is no agreement about the fitness of a single best measure. The limitation of using

a single liquidity measure is clear, as shown by Hasbrouck (2009) and Goyenko et al. (2009), all of whom find that the quality of liquidity measures varies.

To derive the liquidity, two things are mandatory, which are: a quality liquidity measure and data. The liquidity measure in early research were based on bid and ask quotes and trading data for one day or month-end prices, which are not available in most emerging nations (Zhang et al., 2009). Nonetheless, due to the unavailability of the data, these studies of mutual fund issues were conducted in the developed markets. The majority of earlier studies on liquidity-related mutual fund analyses, such as Chen et al. (2010), Huang (2015), and Otten and Reijnders (2012), Khandani and Lo (2011), have focused on developed markets. Furthermore, Asian countries only account for about 10% of global fund assets (Bloomberg, 2018). That is why only a few studies have targeted mutual funds in Asian emerging economies.

1.3 Liquidity transformation benefits leads to liquidity premium

Liquidity transformation is a process by which mutual funds are invested in illiquid securities but provide investors with liquid securities. A long literature is available on liquidity transformation as a basic function of financial intermediaries, which is contributed by Kacperczyk and Schnabl (2010), Krishnamurthy and Jorgenson (2015), Chernenko and Sunderam (2016), Moreira and Savov (2016). Mutual funds, for example, may hold highly illiquid long-term assets such as bonds and real estate but provide investors with the ability to redeem their investment on demand in the short run. As stated by Cherkes et al. (2009), liquidity transformation benefits by comparing the bid-ask price gap between municipal bonds and the market price of a fund (CEF), which reported a 10% average spread in municipal bonds against 0.5% in the CEF's share price. Similarly, Cherkes (2003) reports the presence of a

liquidity premium by comparing the returns of municipal bond CEFs and OEFs. According to Cherkes' (2003) analysis, due to the advantage of holding illiquid assets in a portfolio, the annual gross return premium of a 10-year horizon municipal bond CEF was 0.28%, and similarly, it was 1.54% for a 5-year horizon.

Keeping other factors constant, the yield curve always slopes upward, which confirms a positive relationship between time to maturity and the associated interest rate. Figure 1.1 and Table 1.1, for example, depict a Malaysian sovereign curve as of February 4th, 2019, and indicate an upward-sloping shape. According to the Keynesian Liquidity Preference Theory, this positive relationship in terms of the structure of interest rates is due to the liquidity premium. In chorus, it may call for a liquidity premium in the OEF market, as OEFs underlying long-term bonds offer more liquidity transformation benefits than OEFs underlying short-term bonds.

Table 1.1
Malaysian Sovereign Price and Yield

Tenor	Description	Price	Yield
3Months	MGTB 0 03/08/19 Corp	3.377	3.3861
6Months	MGTB 0 04/26/19 Corp	3.356	3.3807
1Year	MGTB 0 11/22/19 Corp	3.3235	3.413
3Years	MGS 3.62 11/30/21 Corp	100.09	3.585
5Years	MGS 3.757 04/20/23 Corp	100.00	3.756
7Years	MGS 3.906 07/15/26 Corp	100.05	3.898
10Years	MGS 3.733 06/15/28 Corp	97.435	4.065
15Years	MGS 4.642 11/07/33 Corp	102.70	4.391
20Years	MGS 4.893 06/08/38 Corp	104.25	4.559
30Years	MGS 4.921 07/06/48 Corp	102.30	4.774

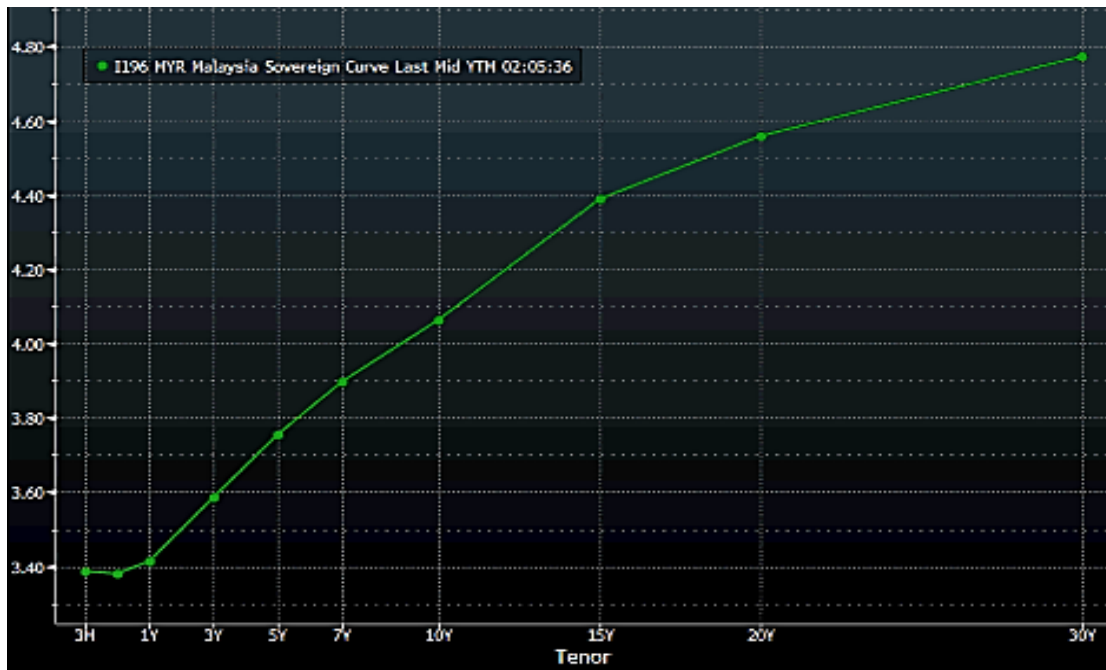


Figure 1.1. Malaysian Sovereign Curve

According to Table 1.1 and Figure 1.1, it shows that there is a significant connection between the terms, liquidity transformation, and liquidity premium. As mentioned by Chernenko and Sunderam (2016) and Cherkes et al. (2009), the liquidity transformation is the difference between the liquidity cost of underlying assets of an investment and the liquidity cost of an investment (a positive difference is a benefit, and a negative difference is a cost).

In the OEFs system, the investor demand for redemptions is fulfilled with perfect liquidity (fund units or shares are redeemable at current NAV as long as inflows and liquid reserves are more than the redemption amount), so the penalizing liquidity cost of funds' units for redeeming investors is zero. Therefore, the LTB of OEFs becomes equal to the liquidity cost of the underlying assets of OEFs, as in the case of direct investment, investors used to bear this cost themselves. A liquidity premium, in other words, is the difference in return between more LTB (liquidity transformation

benefits) intended investments (i.e., illiquid investments) and fewer LTB intended investments (i.e., liquid investments).

1.4 Liquidity risk derived from redemption risk

Illiquid securities may offer a higher return in comparison to liquid securities. Nonetheless, according to the Financial Stability Board (2017: p.11), "a key structural vulnerability from asset management activities is the potential mismatch in open-ended funds between the liquidity of fund investments and daily redemption of fund units."

An OEF is a publicly offered collective investment scheme that can issue an unlimited number of units to attract investment and, similarly, withdraw units when there is investor demand to redeem investment. Units or shares of OEF are not listed on any exchange (secondary market); therefore, the issuance or redemption of units is a direct obligation of the asset management company (AMC). New units issued and issued unit redemptions are logged at the net asset value per unit (NAV), which is just computed after receiving a purchase or redemption request from a customer. A standard procedure for the calculation of NAV is given in Appendix A. The current NAV (1+0) is a result of the previous day's (T-1) closing prices of securities in the fund's portfolio. This practice of funds is known as "forward pricing." The fund valuation may be further delayed if it has foreign securities in its portfolio, which may cause a difference in time zones. When a new business day starts, investors have the NAV from the previous day and the NAVs published in daily newspapers with an asterisk (*) used to indicate the one-day time lag.

Open-end fund (OEF) managers always operate under liquidity constraints because of withdrawal threats from investors. In the aftermath of Brexit in July 2016,

six U.K. open-end property (OPF) funds with nearly £15 billion in commercial property assets suspended redemptions (Money and Banking 2017). Ausbill Investment Management temporarily halted redemptions for its microcap fund (Financial Review/Twitter 2017). RAB Capital Inc. suspended client redemption to prevent liquidation of its hedge fund after its value fell by half in a year (Cahill, 2008). Third Avenue Focused Credit Fund suspended redemption in 2016 and started paying back to investors after a year in instalments (Nataranjan, 2016). Funds that have concentrated their investments heavily on a certain asset class or industry face very difficult times during market stress (IMF, 2015). Moreover, investment in liquid assets is not the only constraint faced by OEF fund managers; there are several other disciplining mechanisms. According to Deli and Varma (2002), OEF has limitations in accessing foreign investors, debt, and leverage opportunities.

To summarize, OEFs are facing liquidity risk as they are offering perfect liquidity by offering daily redemption to investors, whereas the assets in the underlying portfolio are not perfectly liquid, as elaborated in Figure 1.2.

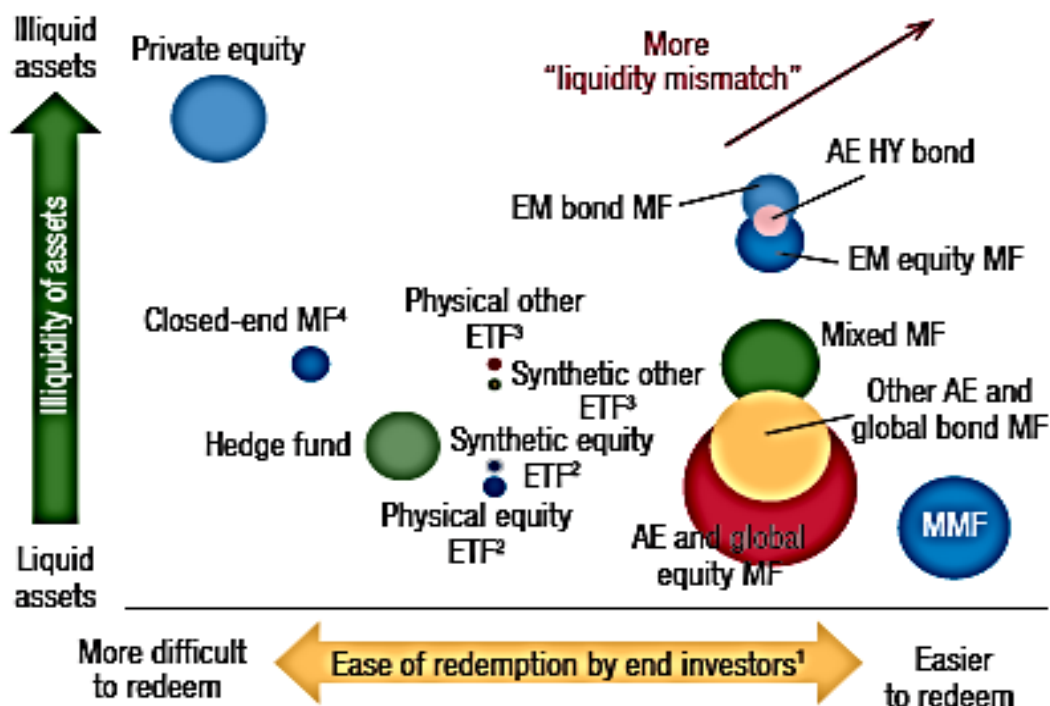


Figure 1.2. Liquidity Mismatch (2013)

Sources: Barclay Hedge; Deutsche Bank; ETFGI; European Fund and Asset Management Association; Lipper; Prequin; and IMF staff estimates.

Note: The liquidity ranking of assets is based on IMF staff's judgment. AE = advanced economy; EM = emerging market; ETF = exchange-traded fund; HY = high yield; MF = mutual fund; MMF = money market fund.

1.5 First Mover Advantage and liquidity cushion

Another hazard caused by easy redemption is first mover advantage. According to Financial Conduct Authority (2017: p. 09), "This could create the risk of a first-mover advantage if the first investors to sell are paid from available cash or the sale of highly liquid assets, but later sellers have to be paid through the sale of less liquid assets that incur greater transaction costs." Easy redemption always encourages investors to exit first before others will rush for withdrawals, specifically during stress market conditions. The severity of first mover advantage depends on the depth dimension of liquidity, which considers volume between the bid and ask spread. Table

1.2 shows ten open-ended funds in Malaysia. It shows how liquidity costs increase with an increase in the percentage sale of underlying assets.

Table 1.2

Transaction Cost (basis points) with percentage of Sellable Asset Volume

Fund Name	25%	50%	80%	90%	95%	100%
MAYBANK ASIAPAC EX-JAPAN EQUITY-I	1.36	2.01	2.83	3.42	4.17	6.01
RHB ASIA REAL STATE FUND	1.85	3	4.91	6.19	7.11	7.92
APEX ASIAN EX JAPAN FUND	0	0.33	0.92	1.6	2.5	5.72
AFFIN HWANG ABSOLUTE RETURN 3	0.74	3.12	15.72	29.12	37.02	42.18
MENU-SIP AGGRESS EQUITY	0.53	0.75	1.02	1.1	1.15	1.33
PHEIM MT DANA MAKMUR	0	3.51	36.47	64.28	85.6	116.2
CIMB ISLAMIC BALANCED FUND	0.01	3.16	13.72	19.74	23.33	32.38
APEX QUANTUM FUND	0.01	0.78	5.15	11.4	15.93	20.06
RHB-GOLDEN GRAGO	0.94	1.39	1.74	1.88	1.98	2.09
HONG LEONG BALANCED FUND	1.27	7.71	25.79	38.85	48.75	168.5

Source: Author's Compilation

*Transaction cost taken from Bloomberg L.P (Bloomberg's multidimension model)

Table 1.2 confirms a direct relationship between liquidity cost and volume of sellable assets of portfolio. As long as a fund has liquid assets, it will not post the cost of liquidity on existing investors and be able to avoid run risk. However, these costs are normally diluted in the NAV of funds, which harms the rest of the non-trading fund holders, as stated in Table 1.3.

Table 1.3

Example of First Mover Advantage

	01/Jan/19	After New Purchase	After Redemption	After Selling Equity
Panel A				
Total Equity Assets	9000	9000	9000	8083.8
Total Cash	1000	2000	0	898.2
Total Assets	\$10000	\$11000	\$9000	\$8982
Number of units issued	100	110	90	90
Panel B				
NAV at 01/Jan/2019 (\$10000/100)	100			
NAV after New Purchases of 10 units (\$11000/110)		100		
NAV after redemption of 20 units			100	
NAV after Selling Equity Asset to maintain 10% cash				99.8
Panel C				
Liquidity cost of Purchasing fund units by investor				0
Liquidity cost of Redeeming fund units by investor				0
Liquidity cost imposed to remaining investors				0.2

Source: Author's Calculations

Table 1.3 portray how liquidity cost of selling equity assets from mutual funds negatively affects NAV of mutual funds. The most critical factor here is the division of trading fees (liquidity costs) between existing and redeeming fund shareholders. In Panel B it demonstrates that when a new investor buys 10 units of fund at a starting NAV of 100, the NAV does not change (it stays at 100), because the new investment ($10 \times 100 = \$1000$) is parked in the most liquid asset: cash, as elaborated in Panel A.

On the other hand, when an existing investor redeems 20 units, on the other hand, he or she is paid at the current NAV (equal to 100) and the redemption amount (\$2000) is settled from the fund's available cash. The fund manager then sells part of the fund's equity holdings to maintain a 10% cash position in the portfolio. The overall cost of selling those assets is \$18 (i.e., bid ask spread), which is divided by the number of units available ($\$18/90 = 0.20$), shown in Panel C.

1.6 Return/Market Timing Skills and Liquidity Cost (Price Impact)

Market timing is the act of using predictive methods to move money into or out of a capital market, or to diversify funds between available asset classes. If fund managers can forecast when the market will rise and fall, they can place trades to profit from the market movement.

In the financial literature, there has long been a dispute about whether mutual fund managers have the ability to deliver extraordinary returns and surpass benchmarks. Fund managers have minimal market timing skills, according to early studies (Treyner and Mazuy, 1966; Jensen, 1968; Titman and Grinblatt, 1989; Lee and Rahman, 1990). Other studies (Cuthbertson et al. 2012; Elton et al. 2012; Bodson et al. 2013; Ferson and Mo 2016; Oliveira et al. 2019) investigated the timing abilities using different risk-adjusted performance measures and failed to document the significant outcome. The lack of evidence of timing ability in terms of returns raises concerns about the role of actively managed mutual funds (Alam and Ansari, 2020).

A fund manager with a better ability to add superior stocks with greater ease will find that liquidity costs will not have as much of an impact on their performance. Whereas some fund managers underestimate the transaction cost (liquidity cost) while picking superior stocks for their portfolio. As a result, funds are unable to produce

profitable investment ideas, and no fund should attempt to do so unless it is due to liquidity cost (Alam and Ansari, 2020). Furthermore, Idzorek et al. (2012) suggests that fund managers with higher turnover or who use frequent trading strategies have higher trading costs and suffer the greatest losses.

1.7 Problem Statement

Numerous studies have concluded that mutual funds or collective investment schemes as a whole do not perform (net performance after deducting expenses) better than their benchmark. Malkiel (1995), Wermers (2000), Gruber (1996), Frino and Gallagher (2001), Brown et al. (2015). Wang and Yao (2017) found that the net performance of mutual funds is not better than their respective benchmark. It would mean that average fund managers are not so skilled as to beat the market. The lack of superior performance for the typical fund, along with a lack of performance persistence, appears to indicate a managerial competence deficit (Pollet and Wilson, 2008). Nevertheless, these studies had not well-thought about liquidity constraints, even though a number of studies have verified the existence of significant and robust liquidity costs and liquidity risk premiums at stock level. Hence, this research pays much attention to liquidity effects on mutual fund performance and argues that it is a preference for holding highly liquid stocks that results in the perceived underperformance. Fund managers maintain a certain percentage of their portfolio with cash and other liquid assets, instead of investing them in high-yielding illiquid assets or other lucrative opportunities (Huang, 2015; Zeng, 2017; Chernenko & Sunderam, 2016). Mutual funds that are pooling capital in illiquid assets are willing to pass on the maximum liquidity transformation benefits and premium of investing in illiquid assets to their investors. On the other hand, regulators and industry have concern for

investors' protection on the ground of liquidity mismatch (between portfolio liquidity and the offer of perfect liquidity to investors). According to FSB (2017), the allocation of assets in the underlying portfolio of open-end funds should keep in mind the redemption terms. When fund managers allocate large chunks of illiquid assets (including unlisted securities and properties) in the fund's portfolio in expectation of a high yield, the probability of breaching the daily redemption obligation becomes obvious, especially in stressed market conditions. Finally, the fund will miss out on performance if it holds many liquid securities to ease redemption. If it maintains a small number of liquid securities, it may not be able to award redemption on time. Between the redemption obligation and the additional return, a precise balance is necessary, which creates a risk of liquidity.

The regulations for the mutual fund business are still in their infancy. Only a few governments have issued liquidity risk management standards. These, on the other hand, are offering investment firms a lot of leeway in defining and managing liquidity risk. It requires the funds to maintain a minimum percentage of liquid assets and to set a maximum limit on illiquid asset holdings. However, each fund's criteria and measurement of liquidity vary due to differences in liquidity measures or methodology. The liquidity category assessments might vary from fund to fund, which hinders investors and regulators from comparing the liquidity of two funds.

Liquidity's impact on the performance of actively managed funds can be more complicated. Variations in market liquidity can have an impact on fund managers' investment decisions and, as a result, on the value generated by those decisions. It is not necessary that investments in liquid securities offer protection to funds during a crisis period. Funds may hold securities that are liquid in stable market conditions but become illiquid in stressed market conditions. These securities may cause high costs

in rebalancing or selling from the underlying portfolio to meet redemptions during a crisis. On average, funds perform below a threshold level in a crisis, thereby encouraging investors to withdraw their funds (Vayanos, 2004). Meanwhile, volatility and preferences for liquid assets both increase, and consequently, the price of liquidity tends to rise (Hibbert et al., 2009). Liquidity is a dynamic variable; it varies and changes with market volatility (Vayanos, 2004). Even the liquidity and returns of a security vary with aggregate market liquidity (Lou & Sadka, 2011; Karolyi, 2012). In particular, securities with higher return sensitivity to aggregate market liquidity exhibit greater declines when the market experiences turbulence (Dang & Nguyen, 2020). Hence, the performance of funds during the crisis can be better explained by their liquidity risk than by their liquidity levels (Lou & Sadka, 2011). Therefore, this study incorporates both the liquidity premium and the liquidity risk premium, accounting for both during the tranquil period of 2009–2019 and the crisis period of 2007–2009. The two measures capture different attributes of a fund's liquidity profile.

Nevertheless, liquidity commonality is a source of Asian market integration (Suraj & Krishna, 2019). According to Kumar and Prasanna (2019), liquidity commonality (positive covariance of a security's liquidity with aggregate market liquidity) increases in Asian financial markets when foreign participants are involved in correlated trading. According to the OECD (2018), approximately 12% of the Asian capital markets are funded by foreign institutional investors. To a large extent, the Asian mutual fund industry, particularly in emerging Asia, is dependent on capital flows from the United States and the developed countries in Europe (Chuen & Gregoriou, 2014). Financial integration among economies helps to improve their capacity to absorb shocks and foster development. But on the other hand, it intensified financial linkages in a world of increasing capital mobility, which may also harbour

the risk of cross-border financial contagion. If there is liquidity commonality in the Asian region, it will be difficult for fund managers to diversify liquidity risk if they only invest in Asian markets. Positive liquidity commonality indicates that innovation in the aggregate market is a source of systematic risk (Bai & Qin, 2015). Furthermore, the market integration process picked up in the crisis period and slowed down in the tranquil period (Yu et al., 2010). Therefore, commonality in liquidity serves two purposes in this research: first, to confirm the systematic liquidity risk in emerging Asian fund markets and second, to measure the degree of integration (financial linkage) among emerging Asian capital markets.

1.8 Research Objective

Based on the scenario discussed in the problem statement, this study aims to determine the impact of liquidity preferences on the performance of open-ended mutual funds in MSCI Asian emerging countries. The aim of this study is to separate and compare two types of fund portfolios, such as liquid and illiquid (high liquidity beta and low liquidity beta), and to determine whether a liquid portfolio (high liquidity beta) adds value relative to the more widely claimed illiquid (low liquidity beta) portfolio. Thus, we need to compare the risk-return characteristics of both portfolios along with their different liquidity properties. A careful review led to the following specific objectives:

1. To investigate the relationship between the liquidity level of open-ended funds (OEF) and the performance of OEF in MSCI Asian Emerging Markets.

2. To investigate the relationship between the liquidity risk of open-ended funds (OEF) and the performance of OEF in MSCI Asian Emerging Markets.
3. To examine the liquidity factor's ability to explain the cross section of the MSCI Asian open-ended fund's return (both in terms of liquidity level and liquidity risk).
4. To determine the difference in liquidity level premium at fund level between tranquil and crisis periods in MSCI Asian Emerging Markets (whether liquidity level premium vary across different economic states).
5. To determine the difference in liquidity risk premium at fund level between tranquil and crisis periods in MSCI Asian Emerging Markets (whether liquidity risk premium vary across different economic states).
6. To investigate the commonality in liquidity for the MSCI Asian Emerging Open-Ended Fund industry's integration.

1.9 Research Questions

The study attempts to answer the following research questions.

1. Does liquidity level effect performance of open-ended funds in MSCI emerging Asian countries?
2. Does liquidity risk effect performance of open-ended funds in MSCI emerging Asian countries?
3. Does the liquidity factor (both as liquidity level and liquidity risk) explain the cross section of the MSCI Asian open-ended fund's return?

4. Does liquidity premium of MSCI Asian open-ended funds, varies during tranquil and crises period?
5. Does liquidity risk premium of MSCI Asian open-ended funds, varies during tranquil and crises period?
6. Does the MSCI Asian emerging mutual fund industry have commonality in liquidity?

1.10 Contribution of the Study

This study provides theoretical, industrial, and methodological significance in the context of open-ended equity funds of MSCI emerging Asian countries.

1.10.1 Academic Contributions

In terms of theoretical significance, this research considers the Efficient Market Hypothesis. Prof. Engene Fama introduced EMH in the 1960s. According to EMH, stock markets are efficient; by efficient, mean securities prices absorb all the relevant information into prices quickly and completely. If this hypothesis holds, the existence of active fund management will never be justified. The issue of market efficiency is alarming for fund investors with respect to whether fund managers have the ability to outperform the market as a whole.

We are adding other variables, liquidity level premium and liquidity risk premium, in mutual fund analysis to test the significance of EMH with consideration of liquidity risks. If no liquidity premium or liquidity risk premium is observed in MSCI Asian emerging market OEFs, it indicates that fund managers are sharp enough to deal with liquidity risk, which is another deviation from EMH. Furthermore, we develop a liquidity-augmented two-factor model to estimate intercepts and evaluate

funds' risk adjusted performance for both objectives: fund level liquidity premium and fund level liquidity risk premium. We expect that the alpha generated by a liquidity-augmented two-factor model will be statistically insignificant after adjusting for the liquidity factor if fund under- or overperformance is associated with the liquidity factor. As a result, if the liquidity level or liquidity risk factor cancels out the fund's alpha, the EMH is valid. That is why the performance of mutual funds has been the subject of discussion for many years and it has been widely accepted as a yardstick for measuring market efficiency.

Secondly, we are applying a liquidity-based two-factor asset pricing model (LCAPM), which is an extension of a well-known capital asset pricing model (CAPM), to quantify the liquidity premium in MSCI Asian emerging economies. Our research offers a new insight into mutual fund performance and identifies the liquidity factor as an important and non-negligible determinant in asset pricing. Our results emphasize the importance of understanding liquidity in the evaluation of mutual fund performance. This study empirically tests LCAPM in Asian emerging economies. I reported how liquidity risk in OEFs of Asian emerging economies is compensated with an additional liquidity premium and varies across Asian emerging countries.

Thirdly, this study investigates commonality in liquidity in the Asian emerging market at the fund level. According to Amihud et al. (2015), commonality is a source of financial integration within a region or globe. However, our study differs from previous research in that it considers the liquidity of mutual fund portfolios. Where fund managers have the option to alter their portfolio with liquid or illiquid (high liquidity beta or low liquidity beta) assets.

1.10.2 Practical Contribution

Investing indirectly through mutual funds is a good idea for investors who have limited knowledge of the risk-return relationship associated with different types of financial instruments in which they can invest directly. As indirect investment in mutual funds is regarded as "buying capital with labor" (Flynn, 2002). Therefore, this study will help investors with better investment decision-making with the contemplation of liquidity cost and benefit, which is normally ignored by investors. According to Lee (2011), the liquidity factor is mostly studied in US financial markets, and yet the rest of the world has not considered it seriously. Most of the literature related to mutual funds belongs to the US and European developed countries (Premaratne and Mensah, 2014). According to the Investment Company Institute (2016), net capital inflow (net foreign investment in capital markets) to emerging economies has crossed \$1.7 trillion from 2000 to 2013. which means that emerging markets are net receivers of foreigners' capital. Therefore, the study of collective investment schemes in Asian emerging markets needs to be addressed more.

Furthermore, in response to the global financial crisis of 2007–2009, a number of regulatory authorities have taken steps to manage liquidity risk. The Board of the International Organization of Securities Commissions (IOSCO) published a final report in 2018, which contains principles of liquidity risk management for collective investment schemes. On January 12, 2017, the Financial Stability Board (FSB) issued policy recommendations relating to liquidity to address structural vulnerabilities arising from asset management activities. In the US, Accounting Standards Codification 820 (ASC 820) and GAAP require asset management firms and other financial institutions to disclose the liquidity class of assets and liabilities. In Asia, regulators, including Hong Kong's SFC (Securities and Futures Commission)

and Singapore's MAS (Monetary Authority of Singapore) have also emphasized the need for fund managers to further strengthen liquidity risk management and fund resilience. (Bloomberg Professional Services, November 23, 2017). The consideration of liquidity risk globally by regulators can be a significant undertaking, which we are incorporating into our study. The findings of this research will contribute towards the improvement, further development, and growth of the mutual fund industry. The findings of this study provide policymakers and regulatory authorities an insight into the current environment of the Asian mutual fund industry. It provides possible evidence for determining the effect of the upcoming policies on maintaining liquidity profiles on the risk-return performance of the mutual fund industry.

At last, but not least, we are outsourcing the computation of liquidity risk to Bloomberg Professional Services. Bloomberg liquidity assessment tool (LQA) developed for quantification of liquidity across multiple asset classes. This model also meets the global regulatory requirements. According to Bloomberg, currently in Asia, Asian central bank and Asia life insurance group are using this model of liquidity assessment.

A long literature starting with Malkiel (1977), Lee et al. (1991), Nanda, Narayanan & Warther (2000), Datar (2001), Varma (2002), Cherkes et al. (2009), Cullinan, & Zheng (2014) argues for miscalculation of illiquid assets in underlying portfolio of funds. But no model or tool was available in their era to quantify the miscalculation. In addition, existing measures typically focus on one dimension of liquidity, i.e. Amihud and Mendelson (1986) bid-ask spread captures trading cost, Datar et al. (1998) turnover ratio captures the trading quantity, Amihud (2002) and Pastor (2003) price impact capture the price reaction to trading volume. Where LQA provides assessment of liquidity for each type of asset including transaction cost in