สภาพคล่องและศักยภาพในการลงทุนของหลักทรัพย์ในตลาด MAI

Liquidity and Investment Potentials of MAI Stocks

รศ.ดร. ธนโชติ บุญวรโชติ[1]

บทคัดย่อ

บทความวิจัยนี้มีวัตถุประสงค์ในการศึกษาศักยภาพในการลงทุนของหลักทรัพย์ในตลาดเอ็มเอไอ ผลวิจัยพบว่าหลักทรัพย์ในตลาดเอ็มเอไอมีขนาดเล็กกว่า มีความสามารถในการทำกำไรที่ต่ำกว่าหลักทรัพย์ในตลาดหลักทรัพย์แห่งประเทศ (หลักทรัพย์กลุ่ม SET100) นอกจากนั้น ยังพบหลักฐานว่าสภาพคล่องในตลาดเอ็มเอไอต่ำกว่า สภาพหล่องของหลักทรัพย์ในในตลาดหลักทรัพย์แห่งประเทศไทย ดังนั้น กองทุนรวมที่มีนโยบายลงทุนในหลักทรัพย์ที่มีขนาดเล็กและขนาดกลางจึงยังไม่พร้อมที่จะเลือกหลักทรัพย์จากตลาดเอ็มเอไอ เนื่องจากหลักทรัพย์ในตลาดเอ็มเอไอมีขนาดเล็กกว่า มีความสามารถในการทำกำไรที่ต่ำกว่าและมีโอกาสเกิดผลกระทบจากราคาสูงกว่าหลักทรัพย์ในตลาดหลักทรัพย์แห่งประเทศไทย ดังนั้น ผู้กำกับนโยบายควรมุ่งเป้าในการเพิ่มความสามารถในการทำกำไรเพื่อเพิ่มขนาดของหลักทรัพย์ในตลาดเอ็มเอไอ เพื่อทำให้หลักทรัพย์ในตลาดเอ็มเอไอสามารถเป็นทางเลือกที่ดีในการลงทุนของกองทุนรวมที่มีนโยบายลงทุนในหลักทรัพย์ที่มีขนาดเล็กและขนาดกลางในอนาคต

คำสำคัญ สภาพคล่อง ต้นทุนการซื้อขาย ตลาดเอ็มเอไอ ตลาดหลักทรัพย์แห่งประเทศไทย

---

[1]ภาควิชาเทคโนโลยีอุตสาหกรรมเกษตร คณะอุตสาหกรรมเกษตร
มหาวิทยาลัยเกษตรศาสตร์ กรุงเทพฯ 10900 Email: tanachotee.b@ku.ac.th

Liquidity and Investment Potentials of MAI Stocks

Tanachote Boonvorachote[1]

Abstract

This paper exhibits that stocks in MAI are much smaller and have lower profitability than those in SET100 stock universe. Moreover, the MAI still have lower liquidity than the SET has. The small and mid-cap equity funds are not ready to pick up stocks in MAI due to its too small sizes, lower profitability, and potential price impact. Policy makers or regulators should aim to make MAI stocks become bigger and more profitable. Smaller stock sizes cause price impact happen easily. That is why the small and mid-cap equity funds do not pick up stocks in MAI for the time being.

Keywords : Liquidity, trading costs, MAI, SET

Department of Agro-Industrial Technology, Faculty of Agro-Industrial,

Kasetsart University, Bangkok 10900, Thailand Email: tanachote.b@ku.ac.th

Introduction

Bank of Thailand (2016) reports Thailand economic foresight that Thailand economic is in gradual recovery stage. Nevertheless, private investment still expands in low level. Export sector also remains in contraction growth. Monetary policy board made a decision to hold policy rate at 1.5%. Hence, it is not a good idea to invest for interest incomes by bank deposit. Investors search for financial instruments that pay higher return than inflation rate in order to increase their wealth. Currently, there are several investment alternatives those are fit to investors' knowledge, interest, and their on-hand information. Investing in stock exchange is one of good alternative investment, especially investing in mutual funds.

Mutual fund industry in Thailand consists of 1,400 mutual funds with asset value more than trillion Baht (SEC, 2016). Most of mutual fund investments concentrate in fixed-income security. Equity mutual fund proportions are about 14% of total mutual fund industry. Nevertheless, these equity mutual funds normally invest in large market capitalization stocks or SET50 stocks of the Stock Exchange of Thailand (SET). Equity fund managers hardly pick up potential stocks from Thailand's Market for Alternative Investment or MAI. It is common that mutual fund managers select only liquid stocks shown by large market capitalization. This common practice results that large market capitalization stocks are SET50 stocks in SET those fund managers select. MAI stocks are much smaller than SET stocks.

Market for Alternative Investment was established on 11 November 1998 under the Stock Exchange of Thailand. The main purpose of establishing MAI is to give a chance for small and medium firms (SMEs) to raise funds in Thailand's capital markets. These SMEs cannot directly raise funds in the Stock Exchange of Thailand (SET) because their sizes are too small to comply with SET regulations. To ease SMEs' fund raising means boosting up overall Thailand economic. Whenever these SMEs have stronger financial condition, they can go public in SET later. Currently, MAI market size is approximately 0.324 trillion Baht with 120 listed companies or 2.57% of SET's market size. Then, evidence that MAI supports SMEs' fund raising and enhances growth and potential competitiveness of SMEs is reported in Sarapaivanich and Kotey, 2006.

It's quite interesting to explore stock characteristics in MAI comparing to stock characteristics in SET. Stock characteristics comprise profitability, their market sizes, and liquidity. Illiquidity can be interpreted as trading transaction costs obstructing institutional investors e.g. mutual funds to invest in illiquid stocks. This paper purpose is to evidence MAI stock characteristics including MAI stock profitability, market sizes, and liquidity. Two years ago, equity mutual funds issue mutual fund type focusing on investing in small and mid-capitalization stocks. Nevertheless, fund managers only expand their stock universe to SET100 stocks, not MAI stocks. My purpose is to explore MAI stock characteristics whether they are suitable and comparable to SET's small and mid-capitalization stocks.

Literature review

Liquidity literatures are well explored in developed exchanges. Emerging markets are experiencing high growth of both total values of shares and market capitalization. Bakaert et. al 2003 report that liquidity risk models outperform other models that incorporate only market risk factors in predicting future returns for emerging markets.

Kyle (1985) note that liquidity is a slippery and elusive concept because it encompasses a number of transactional properties of markets. These include tightness, depth, and resiliency. Hence, by nature, liquidity is difficult to define and estimate. Empirical liquidity estimation explains direct trading costs (tightness) by the bid-ask spread (quoted or effective). Empirical literatures measure indirect trading costs (depth and resiliency) by price

impact. Roll (1984) estimates the effective bid-ask spread in an efficient market by measuring the first-order serial covariance of price changes. Nevertheless, the assumption of an efficient market might be easy to be broken down in emerging exchanges. Amihud (2002) shows that expected market illiquidity positively affects ex ante stock excess return over time. His paper also suggests that expected stock excess return partly represents an illiquidity premium. Moreover, illiquidity affects more strongly small firm stocks. It is well recorded that most of stocks traded in emerging exchanges are small-firms stocks. Amihud (2002) attempt generalizing the measure of liquidity can make it more applicable to markets around the world.

Lesmond (2005) evidences liquidity of emerging markets. Although emerging markets are volatile, however their returns are quite high. He presents that price-based liquidity measures perform better at representing cross-country liquidity effects than do volume-based liquidity measures. His paper also reports that countries with weak political and legal institutions have significantly higher liquidity costs than do countries with strong political and legal systems.

The estimation and use of liquidity proxies is high varied. Bailey and Jagtiani (1994) use trading volume to measure liquidity. Amihud et al. 1997 and Berkman and Eleswarapu (1998) use trading volume scaled by the stock return called the Amivest measure as a liquidity proxy for market depth in order to explain return differentials in their research on the Thai, Israeli, and Indian stock exchanges. Domowitz et al. 1998 use a variant of the well-known Roll (1984) model to measure liquidity effects in their paper of cross listings and market segmentation for the Mexican Stock Exchange.

In order to provide a consistent liquidity measure for all markets, Amihid (2002) recommends a price impact measure defined as the absolute value of stock returns scaled by dollar volume in assessing the relation between ex ante returns and liquidity. Zero returns (percent) representing the number of zero returns over one month scaled by the total number of available trading days are frequently quoted to measure liquidity in several papers. Other implicit measures of liquidity include bid-ask spreads and stock turnovers.

Although there are a few numbers of liquidity literature in emerging markets, most of these literature record that illiquidity shows an important role on explaining returns in emerging exchanges. For example, Pavabutr and Sirodom (2008) show that stocks with high split factors have better post-split adjusted price performance and lower bid-ask spreads and price impact. They provide evidence that these trading frictions can be reduced with higher split factors. Moreover, all liquidity literature in emerging exchanges reports trade frictions in their main stock exchanges or large market-capitalization stocks.

Overall, institutional investors focus on high liquid stocks shown by high market capitalization to avoid those trade frictions. Institutional investors in Thailand, especially mutual fund managers, also pick up liquid stocks from SET50 stock universe. After they issue small and mid-capitalization mutual funds, they only expand their stock universe to SET100 stocks (the most 100 liquid stocks in the Stock Exchange of Thailand or SET). It will be interesting to compare liquidity between large stocks from MAI and SET100 stocks. It should be noted that large stocks in MAI are much smaller than SET100 stocks. I expect that trade frictions should play a major role in both SET and MAI, especially in MAI. The results of liquidity costs in MAI will reflect trade frictions of SMEs stocks as well. Trading friction observation in both MAI and SET will help fund managers and policy makers pick up suitable stocks including improving overall trading frictions via suitable policy.

Methodology

Data

Daily data were collected from the SETSMART website covering 2011-2015. I pick up 30 largest market-capitalization stocks in MAI comparing to approximately same-size SET100 stocks. I collect portfolio information from wealth management system (2015).

Liquidity proxies and measures

Turnover: Stock turnover measures trading volume per total listed shares as shown in equation (1).

$$\text{Turnover} = \frac{\text{Volume}}{\text{Listed share}} \tag{1}$$

Where Volume represents trading volume in domestic currency (Baht) and listed share means value of total listed shares (Baht).

Amihud's or illiquidity ratio considers combination between price changes and trading volume shown in equation (2). Liquid stocks will exhibit low Amihud's measure. Amihud also provides a measure of the price impact.

$$Amihud_t = \frac{1}{d_t}\sum_{d=1}^{D_t} \left|R1_{d,t}\right| / v_{d,t} \tag{2}$$

Where

$Amihud_t$	means illiquidity ratio of stock in month t
d_t	measures numbers of trading days in month t
$R1_{d,t}$	measures stock daily returns in month t
$v_{d,t}$	measures stock trading volume in month t

Roll's is developed in order to estimate the effective bid-ask spread in efficient markets. It can be calculated by auto-covariance of stock price changes as shown in equation (3). Roll's measure provides a measure of the effective spread.

$$\text{Roll's}_t = 2\left(\sqrt{\text{-cov}(\Delta P_t, \Delta P_{t+1})}\right) \tag{3}$$

Where ΔP_t , ΔP_{t+1} are price changes at time t and t+1, successively.

Zero return (percent) represents the number of zero returns over one month scaled by the total number of available trading days as shown in equation (4)

$$\text{Zero return} = \frac{Z}{N} \tag{4}$$

Where Z means numbers of zero-return days and N represents total trading days of that month.

Quoted spread suggested by Lesmond (2005) as shown in equation (5).

$$\text{Quoted Spread}_m = 1/2\left[\left(\frac{\text{Ask}_m - \text{Bid}_m}{(\text{Ask}_m - \text{Bid}_m)/2}\right) + \left(\frac{\text{Ask}_{m-1} - \text{Bid}_{m-1}}{(\text{Ask}_{m-1} - \text{Bid}_{m-1})/2}\right)\right] \tag{5}$$

where Ask_m and Ask_{m-1} represent the best selling price in month m and m-1, while Bid_m and Bid_{m-1} represent the best buying price in month m and m-1, successively.

Empirical results

Figure 1 exhibits net asset value (NAVs) comparison among four mutual funds scaled to 10 Baht at time May, 2558 B.E. (2015 A.D.). The benchmark mutual fund represents by the K-SET50 mutual fund managed by the Kasikorn mutual fund plc. the SET50 is a stock index constructing from largest market-capitalization stocks in the Stock Exchange of Thailand (SET). The purpose of this equity fund is to follow SET50 index or as a SET50 index fund. Hence, if any other equity mutual funds' NAVs are above (under) this SET50 index fund, we can interpret that those equity funds have better (lower) fund performance than the K-SET50 fund (the index fund) has. Table 1 also exhibits returns and risks of these four equity mutual funds. K-SET50 fund show historical one-year return at 22.42% with standard deviation of returns (risk) at 12.88%. The beta of K-SET50 fund that equals to 1 confirms that the K-SET50 represents SET50-index fund. Its investment policy is blending including large SET50 stocks. Total numbers of stocks that K-SET50 fund invests are 51 stocks, while its top-ten stocks represent 55.27% of total weight of all equity investment.

B-LTF equity fund is managed by Bualuang mutual fund plc. We can see that this fund has investment policy similar to the K-SET50 fund. B-LTF fund show historical one-year return at 22.11% with standard deviation of returns (risk) at 10.41%. The beta of B-LTF fund is quite low at 0.66. Its investment policy is also blending including large SET50 stocks. Total numbers of stocks that B-LTF fund invests are 40 stocks, while its top-ten stocks represent 59.31% of total weight of all equity investment. Overall, these two equity funds (K-SET50 and B-LTF) focus their stock investment in the SET50 stocks that are large stocks in the Stock Exchange of Thailand (SET). Interestingly, the B-LTF fund picks up one stock (EA) from the Market of Alternative Investments (MAI). Although the EA is the Energy

Absolute Plc listed in MAI, its market capitalization is beyond 0.11 trillion Baht. This size is much larger than other stock sizes in the MAI. In fact, the EA's financial strength is sufficient to be listed stocks in SET. Hence, we can assume that the EA can be counted as a member of SET50 group.

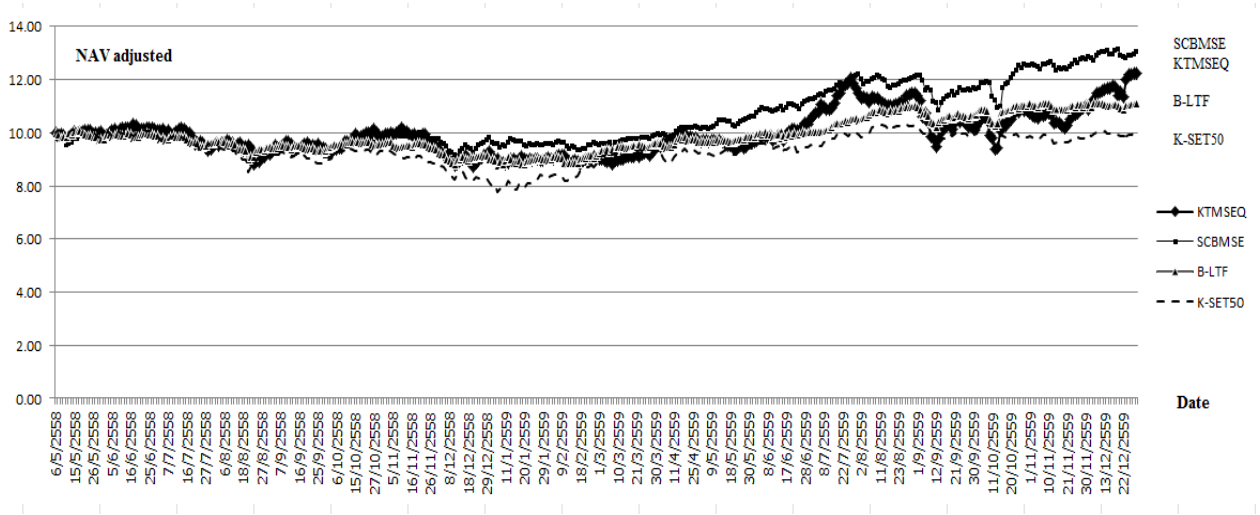

Figure 1 Net asset value of mid and small market capitalization mutual fund

Remark: Year 2558 (B.E.) means year 2015 (A.D.).

The KTMSEQ is the KrungThai mid- and small equity fund operated by the KrungThai asset management plc. The SCBMSE is the Siam Commercial Bank mid and small equity fund operated by the Siam Commercial Bank mutual fund plc. The B-LTF is Bualuang long-term equity fund operated by the subsidiary company under the Bangkok Bank. The K-SET50 is the K-Bank SET50 equity fund operated by the K-Asset management group.

My research focus of this paper is to explore stock characteristics of MAI stocks including their profitability and liquidity (trading costs). Because mutual fund managers do not normally pick up stocks from the MAI (except EA stock), I select small and mid-capitalization equity funds (KTMSEQ and SCBMSE) to study characteristics of small and mid-capitalization stocks those two fund managers pick up to their funds. The small and mid-capitalization equity funds are quite new for Thai mutual fund industry. Both funds are set up for only two years ago.

Figure 1 shows that two small and mid-capitalization equity funds (KTMSEQ and SCBMSE) have a bit better performance than large-capitalization equity funds (B-LTF and K-SET50) as known by a small-firm effect (one type of market anomalies). The KTMSEQ and SCBMSE equity funds are managed by KrungThai asset management plc. and Siam Commercial Bank mutual fund plc., respectively. Both equity funds have investment policy of investing in small and mid-capitalization stocks. Nevertheless, these two funds' ages are about two years. Table 1 exhibits that the KTMSEQ and SCBMSE equity funds have higher historical returns at 30.92% and 34.28%. However, the KTMSEQ and SCBMSE equity funds show higher risks representing by higher standard deviation of returns at 21.81% and 13.61% that beyond large-capitalization equity funds' risks. The beta of the KTMSEQ is 1.35 that is

higher than the B-LTF (beta = 0.66) and K-SET50 (beta = 1) equity funds have. The KTMSEQ equity fund invests in only 14 stocks with 82.64% for ten stocks (stock clustering in small and mid-cap stocks). The SCBMSE fund has a blend-mid cap policy investing in 55 stocks with 32.99% for ten stocks. We can evidence that the SCBMSE fund has lower beta (0.70) than the KTMSEQ fund beta (1.35). Overall, the KTMSEQ and SCBMSE equity funds focus on investing in SET100 stocks. They do not pick up stocks from the MAI. Readers who are not familiar to the small and mid-cap stocks can see below remarks for such stock details. Their small- and mid-capitalization stocks mean SET100 stock universe, not in MAI.

Table 1 Return and risk of mid and small market capitalization mutual funds

The KTMSEQ is the KrungThai mid- and small equity fund operated by the KrungThai asset management plc. The SCBMSE is the Siam Commercial Bank mid and small equity fund operated by the Siam Commercial Bank mutual fund plc. The B-LTF is Bualuang long-term equity fund operated by the subsidiary company under the Bangkok Bank. The K-SET50 is the K-Bank SET50 equity fund operated by the K-Asset management group.

	KTMSEQ	**SCBMSE**	**B-LTF**	**K-SET50**
Historical return (1 year)	30.92%	34.28%	22.11%	22.42%
Beta (1 year)	1.35	0.70	0.66	1.00
SD (1 year)	21.81%	13.61%	10.41%	12.88%
Equity style	Growth-small	Blend-Mid	Blend-Large	Blend-Large
Numbers of equities	14	55	40	51
Top 10 holdings	82.64%	32.99%	59.31%	55.27%
Top 10 stocks in SET	TSR	BJC	BJC	PTT
	SCI	PTT	SCC	SCC
	SMT	TAAC	CPALL	AOT
	BJC	BEAUTY	PTT	CPALL
	ORI	TPCH	BLA	SCB
	TAAC	GL	KTB	AIS
	JWD	COM7	BBL	K-BANK
	ANAN	SPALI	BDMS	BDMS
	TPBI	SCC	EGCO	PTTEP
	BR	PTG	**EA**	BBL

Remark: Example of small and mid-cap stocks:

ANAN: Ananda Development PCL., BEAUTY: Beauty Community PCL., BR: Bangkok Ranch PCL., COM7: Com7 PCL., EA: Energy Absolute Plc., GL: Group Lease PCL., JWD InfoLogistics PCL., ORI: Origin Property PLC., PTG: PTG Energy PCL., SCI: SCI Electric PLC., SMT: Stars Microelectronics (Thailand) PLC., TAAC: T.A.C. Consumer PCL., TPCH: TPC Power Holdings PLC., TSR: Thiensurat PCL. Other stocks are large stocks of SET50 stocks. I do not record all stock names in order to save paper spaces.

Table 2 exhibits descriptive statistics of stock liquidity (trading costs) and profitability in the Stock Exchange of Thailand (SET) and the Market for Alternative Investment (MAI). Small listed companies' issued stocks will be traded in the MAI. Liquidity in SET shows higher than one in MAI does. Average trading days or numbers of trading days that investors

traded stocks in SET are 1,194 days comparing to 768.77 days in MAI. Zero returns (percent) represent the number of zero returns over one month scaled by the total number of available trading days are quite same in both markets around 19-20%. Average turnover in MAI defined as shown in equation (1) is 2%, a bit higher than average turnover in SET (1%). Lower liquidity in MAI might happen from much smaller market-capitalization stocks in MAI.

Trading costs that I measure in this research are price impact (Amihud), effective spread (Roll's), and quoted spread. Amihud defined as shown in equation (2) of MAI is 0.02, a bit higher than one in SET at 0.01. Roll's measure is calculated by the serial autocorrelation of daily security returns and provides a measure of the effective spread. Roll's autocorrelation in MAI is average at 2% comparing to 3% in SET, not much different. Average quoted spread in MAI is 1%, larger than 0.3% in SET.

Trading smaller stocks cause larger variance of returns. Average variance in MAI reaches 43.42%, while only 9.5% in SET. Average value or daily trading volumes are quite same in both exchanges (64.74 million Baht for MAI and 55.75 million Baht for SET). Average market capitalization of SET (11,408 million Baht) is double size of MAI's (6,425 million Baht). Price is the average of daily prices of the month and is stated in domestic currency (Baht). Average stock price in MAI is 7.23 Baht, smaller than that in SET at 23.64 Baht.

Overall, trading in MAI shows lower liquidity than that in SET. Nevertheless, higher illiquidity (trading costs) in MAI should not be interpreted that MAI has severe liquidity problem than SET has, because liquidity in SET is a bit better than liquidity in MAI.

In profitability view, SET stocks show higher profitability. Profit2015 or companies ' net incomes in Year 2015 of SET companies is 809.12 million Baht by average, much larger than net incomes of MAI companies at 182.84 million Baht. These results might come from larger company sizes in SET can perform higher profitability. SET stocks also show higher average dividend yield at 3% comparing to 1% in MAI. Average PE (the price per earnings per share) is higher, 50.73 in MAI, comparing to 27.29 in SET. ROA (the return of assets) are quite same around 12-14% in both exchanges. ROE (the return on equities) in SET is higher at 21%, comparing to that in MAI at 14%. Free float is percentages of small shareholders' proportions. Stock free float in SET at 47% is higher than that in MAI at 37%. In sum, stock profitability in SET shows higher than that in MAI, Moreover, companies' sizes in SET are larger.

Table 3 exhibits correlation matrix for trading cost measurement (illiquidity) between each pair of variables that I measure. Surprisingly, Amihud (price impact) and quoted spread show significantly high correlation coefficient at 0.951 in MAI, much higher than 0.422 in SET. Turnover and variance of daily returns also have high correlation coefficient at 0.656 in MAI, as same as 0.628 in SET. Because turnover and value (trading volume) are correlated, I found that these coefficients are 0.608 in SET and 0.348 in MAI.

Numbers of trading days are correlated with zero returns (0.555) and with Amihud (0.366) in MAI, while they are correlated with zero returns (0.378) and with quoted spread (0.392) in SET. Zero return is also correlated to the quoted spreads at 0.483 in MAI. Roll's or the effective spread is highly significantly correlated to stock price (0.888) in SET. Overall, I notice that Amihud might play a major role for explaining trading costs or illiquidity in MAI due to highly significant correlation coefficient between Amihud and quoted spreads.

Table 2 Descriptive statistics

Trading days mean numbers of trading days that investors traded stocks. Zero returns (percent) represent the number of zero returns over one month scaled by the total number of available trading days. Turnover is defined as shown in equation (1). Amihud is defined as shown in equation (2) and provides a measure of the price impact. Roll's measure is calculated by the serial autocorrelation of daily security returns and provides a measure of the effective spread. The quoted spread is defined as shown in equation (5). Variance means variance of daily returns. Value means daily trading volumes in million Baht. Market cap represents daily market capitalization of stocks. Price is the average of daily prices of the month and is stated in domestic currency (Baht). Profit2015 means companies' net incomes in Year 2015. Yield is the dividend yield. PE is the price per earnings per share (EPS). ROA is the return of assets. ROE is the return on equities. Free float is percentages of small shareholders' proportions.

Panel A: Liquidity (Trading costs)

	Trading day (Days)	*Zero return (%)*	*Turnover*	*Amihud*	*Roll's*	*Quoted spread*	*Variance (%)*	*Value (mil. Bt)*	*Market Cap (mil. Bt)*	*Price (Baht)*
MAI										
Mean	768.77	20	0.02	0.02	0.02	0.01	43.42	64.74	6,425	7.23
Median	676.00	19	0.01	0.00	0.01	0.01	21.13	45.12	3,471	6.39
STD	459.70	8	0.01	0.07	0.03	0.01	56.21	59.22	10,645	5.08
SET										
Mean	1194.00	19	0.01	0.01	0.03	0.00	9.50	55.75	11,408	23.64
Median	1415.00	18	0.01	0.00	0.00	0.00	7.60	52.31	10,218	14.84
STD	383.18	5	0.01	0.01	0.07	0.00	8.49	40.60	6,985	35.03

Panel B: Stock profitability

	Profit2015 (mil. Baht)	*Yield*	*PE*	*ROA*	*ROE*	*Free float*
MAI						
Mean	182.84	0.01	50.73	0.12	0.14	0.37
Median	90.91	0.00	28.87	0.13	0.17	0.36
STD	418.19	0.01	79.77	0.14	0.18	0.12
SET						
Mean	809.12	0.03	27.29	0.14	0.21	0.47
Median	499.96	0.04	16.25	0.12	0.18	0.43
STD	712.50	0.02	34.49	0.09	0.13	0.15

Table 3 Correlation matrix

Trading day means numbers of trading days that investors traded stocks. Zero returns (percent) represent the number of zero returns over one month scaled by the total number of available trading days. Turnover is defined as shown in equation (1). Amihud is defined as shown in equation (2) and provides a measure of the price impact. Roll's measure is calculated by the serial autocorrelation of daily security returns and provides a measure of the effective spread. The quoted spread is defined as shown in equation (5). Variance means variance of daily returns. Value means daily trading volumes in million Baht. Market cap represents daily market capitalization of stocks. Price is the average of daily prices of the month and is stated in domestic currency (Baht).

	Trading day	*Zero return*	*Turnover*	*Amihud*	*Roll's*	*Quoted spread*	*Variance*	*Value*	*Market.cap*	*Price*
MAI										
Trading day	1.000									
Zero return	0.555***	1.000								
Turnover	-0.577	-0.486	1.000							
Amihud	0.366**	0.424**	-0.120	1.000						
Roll's	0.029	0.078	-0.060	0.567***	1.000					
Quoted spread	0.340*	0.483***	-0.054	**0.951*** **	0.380**	1.000				
Variance	-0.462	-0.265	**0.656*** **	0.038	0.145	0.078	1.000			
Value	-0.547	-0.468	0.348*	-0.085	-0.104	-0.040	0.108	1.000		
Market cap	-0.195	-0.250	-0.020	-0.101	-0.135	-0.090	-0.084	0.720***	1.000	
Price	0.051	-0.203	-0.250	-0.312	-0.374	-0.291	-0.338	0.054	0.326*	1.000
SET										
Trading day	1.000									
Zero return	0.378**	1.000								
Turnover	-0.283	-0.600	1.000							
Amihud	0.247	0.240	-0.079	1.000						
Roll's	0.085	0.166	-0.197	-0.010	1.000					
Quoted spread	0.392**	0.134	0.054	**0.422** **	-0.299	1.000				
Variance	-0.499	-0.584	0.628***	-0.118	-0.127	-0.257	1.000			
Value	-0.255	-0.642	0.608***	-0.366	-0.230	0.015	0.382**	1.000		
Market cap	-0.147	-0.022	-0.370	-0.379	0.073	-0.330	-0.051	0.361**	1.000	
Price	0.077	0.176	-0.283	-0.059	**0.888*** **	-0.514	-0.063	-0.218	0.293	1.000

*** Significance level at 0.01
** Significance level at 0.05
* Significance level at 0.10

Table 4 confirms my expectation of trading cost explanation in MAI by regression analysis of market liquidity measure and quoted spread. My dependent variable is the quoted spread. Although intercepts are mostly significant, Amihud measure play a major role on explaining the quoted spread in MAI with strong high R-squared figure at 0.89. Its coefficients in regression models are positively significant in explaining quoted spread in both MAI and SET. Zero returns can explain quoted partially, not much with adjusted R-squared at 0.207 in MAI, but it cannot explain quoted spread in SET. Roll's and variance of daily returns have wrong expected signs (negative) on explaining the quoted spread. In sum, trading cost measure that is suitable to explain quoted spread in Thai exchanges is Amihud.

Table 4 Regression analysis of market liquidity

Dependent variable is the quote spread. Price is the average of daily prices of the month and is stated in domestic currency (Baht). Variance means variance of daily returns. Value means daily trading volumes in million Baht. Market cap represents daily market capitalization of stocks. Roll's measure is calculated by the serial autocorrelation of daily security returns and provides a measure of the effective spread. Amihud is defined as shown in equation (2) and provides a measure of the price impact. Turnover is defined as shown in equation (1). Zero returns (percent) represent the number of zero returns over one month scaled by the total number of available trading days. Adj-R^2 is the adjusted R-squared.

	Intercept	**Price**	**Variance**	**Value**	**Market cap**	**Roll's**	**Amihud**	**Turnover**	**Zero return**	**Adj-R^2**
MAI	0.016**	-0.623	-0.003	-0.010	0.049					-0.060
	0.011*	-0.375	-0.005	-0.001	0.012	0.113				-0.002
	0.006**	0.077	0.007	0.013	-0.056		**0.138****			**0.890**
	0.017**	-0.604	0.021	0.013	-0.039			-0.209		-0.076
	0.008**	-0.029	0.011	0.009	-0.041	-0.089**	**0.155****	0.000		**0.932**
	-0.010	-0.151	0.032	0.060	-0.135				0.084*	0.207
SET	0.007**	-0.052*	-0.183*	0.017	-0.176					0.308
	0.007**	-0.118*	-0.148	0.010	-0.085	0.004				0.335
	0.005*	-0.050*	-0.177*	0.028	-0.111		0.117*			0.422
	0.008**	-0.048*	-0.131	0.043	-0.305			-0.259		0.296
	0.005*	-0.117*	-0.104	0.037	-0.098	0.005	0.121*	-0.172		0.450
	0.002	-0.051*	-0.143	0.031	-0.201				0.021	0.306

** Significance level at 0.01
* Significance level at 0.10

Conclusion and Policy Implication

My paper records that small and mid-capitalization equity funds (KTMSEQ and SCBMSE) have a bit better performance than large-capitalization equity funds (B-LTF and K-SET50). The reason that these two small and mid-cap mutual funds perform better than larger funds do because they focus on investing in small and mid-cap stocks. The better returns that they achieve result in the small and mid-cap mutual funds' risks to increase. Nevertheless, the KTMSEQ and SCBMSE equity funds focus on investing in only SET100 stock universe. They do not pick up stocks from the MAI. EA is only one stock in MAI that B-LTF fund picks up. The market capitalization the EA stock can be counted as a member of the SET100 stock universe.

Trading environment in MAI shows lower liquidity than that in SET. Nevertheless, higher illiquidity (trading costs) in MAI should not be interpreted that MAI has severe liquidity problem than SET has, because liquidity in SET is a bit better than liquidity in MAI. Stock profitability in SET shows higher than those in MAI. Moreover, companies' sizes in SET are larger. Amihud (price impact) play a major role for explaining trading costs or illiquidity in MAI due to highly significant correlation coefficient between Amihud and quoted spreads. Regression results also confirm that price impact plays a major role on explaining quoted spread in SET and, especially in MAI.

In sum, stocks in MAI are much smaller and have lower profitability than those in SET. Moreover, the MAI still have lower liquidity than the SET has. The small and mid-cap

equity funds are not ready to pick up stocks in MAI due to its too small sizes, lower profitability, and potential price impact. Policy makers or regulators should aim to make MAI stocks become bigger and build higher profitability. Smaller stock sizes in MAI cause price impact easily. That is why the small and mid-cap equity funds do not pick up stocks in MAI for the time being.

Reference

Amihud, Y. 2002. "Illiquidity and stock returns: cross-sectional and time-series effects." **Journal of Financial Markets** 5, 31-56.

Amihud, Y., H. Mandelson, and B. Lauterbach. 1997. "Market Microstructure and Securities Values: Evidence from the Tel Aviv Stock Exchange." **Journal of Financial Economics** 45, 365-390.

Bakaert, G., Harvey C., and C. Lundblad. 2003. "Liquidity of emerging markets: lessons from emerging market." Unpublished working paper. Duke University, Durham, North Carolina.

Berkman, H. and V. Eleswarapu. 1998. "Short-Term Traders and Liquidity: a test of using Bombay Stock of Exchange data." **Journal of Financial Economics** 47, 339-355.

Bank of Thailand. 2016. Meeting report of monetary policy board. Source: https://www.bot.or.th/Thai/MonetaryPolicy/Documents/PressMPC_42559_IP759N.pdf.

Bailey, W. and J. Jagtiani. 1994. "Foreign Ownership Restrictions and Stock Prices in the Thai Capital Market." **Journal of Financial Economics** 36, 57-88.

Domowitz, I., J. Glen and A. Madhavan. 1998. "International Cross-Listing and Order Flow Migration: Evidence from an emerging market." **Journal of Finance** 53, 2001-2028.

Wealth Management System. 2015. "Mutual Fund Data" Source: https://www.wealthmagik.com.

Kyle, A. 1985. "Continuous auctions and insider trading." **Econometrica** 53, 1315-1336.

Lesmond, A. D. 2005. "Liquidity of Emerging Markets" **Journal of Financial Economics** 77, 411-452.

Pavabutr, P. and K. Sirodom. 2008. "The Impact of Stock Splits on Price and Liquidity on the Stock Exchange of Thailand" **International Research Journal of Finance and Economics** 20.

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

Sarapaivanich. N. and B. Kotey. 2006. "The Effect of Financial Information Quality on Ability to Access External Funds and Performance of SME in Thailand." **Journal of Enterprising Culture** 14 (3): 219-239.

SEC. 2016. "Capital Market Report." Security Exchange Commission. Source: http://www.sec.or.th/TH/Pages/CapitalMarketReport.aspx.