

Liquidity Premium Foreign and Domestic Investor in Indonesian Stock Market

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ABSTRACT

This research use Fama-French 3 Factor Model as basic model to measure excess return and adding illiquidity factor which categorized on Foreign and Domestic in Sell and Buy Transaction constructed with Amihud illiquidity by volume transaction basis. This research find evidence the effect form market beta, size factor, value factor, and foreign-domestic buy and sell illiquidity in Indonesia Stock Exchange. The research period 2010 – 2018 with weekly data uses OLS regression. The result show market beta, SMB (size factor), and HML (value factor) have positive significant effect to excess return. It is indicating market movement have effect in return in Indonesian Stock Exchange. Small and high value firm is considered better performance. In two model regression, sell-side and buy-side models foreign variable have significant positive value. It is indicating foreign investor better performance and want more premium on illiquid stock. According to Dvorak (2005) foreign investors tend to reluctance on small and illiquid stocks, then expect more premium to invest in illiquid stock.

Keyword: Fama-French 3 Factor Model, Amihud Illiquidity, and Foreign-Domestic illiquidity

1. INTRODUCTION

The liquidity is one of issue in financial market research, the question is whether investors want returns that are greater than securities that are less liquid. Prior research Amihud and Mendelson (1986), Brennan and Subrahmanyam (1996), Brennan, Chordia, and Subrahmanyam (1998), Jones (2002), Amihud (2002), and Lam and Tam (2011) find evidences that liquidity is a crucial variable of expected return.

Investors expect higher return from illiquid stock. First study about liquidity and expected return Amihud and Mendelson (1986), Brennan and Subrahmanyam (1996) show significant positive relation between liquidity and expected return. Other research Amihud (2002) and Lam and Tam (2011) use price impact of liquidity show that significant positive relation expected return and

illiquidity. Those matters proof that investors expect higher return from illiquid stock.

Liquidity as a variable have many proxies to measure. Measurement is an important issue in the study of liquidity, how liquidation is related to price and collateral is an empirical proxy used for liquidity. The simplest proxy calculation is the bid-ask spread, which is the difference between the price effect of buying and selling. Other proxies measure by relating trade size to price movement measures (that is, measuring the impact of trade prices), assuming that the effects of buying and selling prices are symmetrical. The approach supported by Kyle (1985) predicts a linear relationship between net order flows and price changes. Amihud (2002) finds the ratio of absolute returns to dollar trading volume as a measure of liquidity. In addition, Brennan and Subrahmanyam (1996) suggest a measure of liquidity with the

relationship between price changes and order flows, based on the analysis of Glosten and Harris (1988). Pastor and Stambaugh (2003) measure the extent to which liquidity returns after high trading volumes, an approach based on the idea that such a reversal captures the impact of price pressures due to immediate demand. Hasbrouck (2009) provides a comprehensive set of estimates of these and other measures of liquidity.

In addition, there are also several empirical studies that explain the relationship between liquidity and asset pricing. Chang et al. (2009) analysed the effects of the liquidity of stock returns on the Tokyo Stock Exchange (TSE). Negative effects are reported between stock returns and liquidity measures even after accounting for risk adjustments in place of returns. The study further explores that liquidity is valued during the expansion phase of the business cycle but is not valued significantly during the contraction phase. This is inconsistent with the idea that liquidity matters more in bad times which is a kind of liquidity puzzle. Narayan and Zheng (2011) studied the impact of liquidity on returns on the Shanghai Stock Exchange (SHSE) and the Shenzhen stock exchange (SZSE). Liquidity negatively impacts event returns which are stronger on the SHSE than on the SZSE. Hubers (2012) studied the relationship between asset prices and liquidity on the London Stock Exchange (LSE) and showed that decreasing liquidity increases returns.

Several other literatures also examine the impact of market internationalization. The interaction between foreign investor trade and market returns is one of the focuses of international financial studies and the market microstructure. The findings of foreign and domestic investors are mixed. Choe et al. (2005) found that foreign investors do not have the advantage of being informed in the Korean stock market. In contrast Bae et al. (2004) proved that there is a positive relationship between return volatility on individual stocks and foreign investor investment in the Indonesian capital market.

This research also captures the characteristic of foreign and domestic investor. Dvorak (2005) conduct studies on Indonesian Stock Market and show that foreign investor expects higher liquidity premium than domestic investor. Motivation of this studies to observe how foreign and domestic investor expect liquidity premium on Indonesian stock market and relation with expected return.

2. METHODS

2.1 Data

This research use fama French 3 factor model (1993) as expected return model and amihud illiquidity (2002) as liquidity measure. The Fama French 3 Factor model is examined for stock price, market value equity, and common equity of all listed company Indonesian Stock Exchange in the years 2010 – 2018, using data from weekly database of datastream. Liquidity measure is divided by four category foreign sell, foreign buy, domestic sell, and domestic buy. They are arranged with weekly trading volume using TICMI and IDX website data.

2.2 Model Developing

Expected return measure by Fama French three factor model, the model becomes

$$R_{i,t} - RF_t = a_i + \beta_i(RM_t - RF_t) + s_iSMB_t + h_iHML_t + \varepsilon_{i,t}$$

The equation above, $R_{i,t}$ is cross-sectional return of all Indonesian stock at period t . The measure uses equally weighted. RF_t is risk free return with proxy SBI-90 days. $RM_t - RF_t$ is market risk premium, RM_t measure with return of IDX Composite stock Index (IHSG). SMB_t is size factor and HML_t is value factor.

In Fama and French (1993) size factor size relates to profitability. The finding shows that small firm tend to have lower return than big firm, controlling with book-to-market equity. This research uses all stock listed and categorized by three book-to market equity groups for the bottom 30% (Low), middle 40% (*Mediurn*). and top 30% (High) for IDX stocks. Book equity (BE) is defined as the value of general equity on the balance sheet.

Book-to-market equity, BE / ME. is general equity book for the fiscal year ended t, divided by market equity at the end of December t - 1. Companies with negative book equity are excluded from the sample. In addition, the research also does not use companies in the financial sector. And value factor is measure with market value equity (ME). Market value equity divided by two categories small and big.

We develop six portfolios (S/L, S/M, S/H, B/L, B/M, B/H) from market value equity and the three groups of BE/ME. *Weekly* average-weighted returns on the six portfolios are calculated from January of year t to December t + 1. and the portfolios are reformed in January of t + 1. This is the variable formula.

$$SMB = \frac{(SH + SM + SL) - (BH + BM + BL)}{2}$$

$$HML = \frac{(BH + SH) - (BL + SL)}{2}$$

Liquidity proxy uses amihud illiquidity measure which calculate price impact to categories of illiquidity of stock. The amihud illiquidity measure becomes.

$$ILLIQ = \frac{|R_i|}{Total\ Volume\ x\ Price}$$

Illiquidity measure by R_i , absolute return of stock i divided with total volume in rupiah. Higher illiquidity value mean that investor want higher return from illiquid stock. Illiquidity ratio classified by three groups based on the breakpoints for the bottom 30% (Low Liquidity), middle 40% (*Medium Liquidity*). and top 30% (High Liquidity) and

recalculate every year. Then, the portfolio construct from intersection two Market Value Equity (ME) and three group illiquidity group. There are six portfolio constructs (S/LL, S/ML, S/HL, B/LL, *B/ML*, *B/HL*). The illiquidity variable developed from this portfolio use Lam and Tam (2011) model.

$$ILLIQ = \frac{(S\HL - S\LL) + (B\HL - B\LL)}{2}$$

Illiquidity variable developed in four variables, there are foreign sell (FS), Domestic Sell (DS), Foreign Buy (FB), and Domestic Buy (DB). A practical limitation of this model is many empty volumes of stock. This research uses lesmond (2005) that discard grater than 80% empty data. Then, the final model divided by two Buy-Side and Sell-Side.

Sell-Side Model.

$$R_{it} - RF_t = a_i + \beta_i(RM_t - RF_t) + s_iSMB_t + h_iHML_t + f_iFS_{ILLIQ_t} + d_iDS_{ILLIQ_t} + \varepsilon_{it}$$

Buy-Side Model.

$$R_{it} - RF_t = a_i + \beta_i(RM_t - RF_t) + s_iSMB_t + h_iHML_t + f_iFB_{ILLIQ_t} + d_iDB_{ILLIQ_t} + \varepsilon_{it}$$

3. RESULT AND DISCUSSION

At the first stage, Table 1 is descriptive statistics from all variable on weekly data. Excess return, market risk premium, SMB and HML has average 0.000055, 0.0006, -0.0003, and -0.0007. Negative value on SMB and HML show that return can't compensate risk in size and value. At illiquidity variable on average domestic buy has negative value -0,0003. foreign sell, foreign buy, and domestic sell have positive value 0.00117, 0.0018, and 0.0008. The research period from 2010 – 2018 on weekly data, the total observation is 468. The beginning period is 2010 to avoid crisis period which can be data bias.

Table 1 Descriptive Statistics

	EXCESSRETURN	RMRF	SMB	HML	FS_ILLQ	FB_ILLQ	DS_ILLQ	DB_ILLQ
Mean	0.000055	0.000623	-0.000313	-0.000787	0.001174	0.001890	0.000853	-0.000309
Median	0.001918	0.001110	-0.000555	-0.000551	0.000771	0.001343	-0.001263	-0.001628
Maximum	0.052417	0.097780	0.057158	0.053623	0.353408	0.353408	0.209497	0.113741
Minimum	-0.073545	-0.109240	-0.055109	-0.071012	-0.236778	-0.335961	-0.452177	-0.097036
Std. Dev.	0.014277	0.020939	0.013294	0.016362	0.051386	0.052036	0.045262	0.025959
Observations	468	468	468	468	468	468	468	468

Table 2 show stationarity test using Augmented Dickey-Fuller (ADF). This testing is carried out to find whether individual variable have unit root.

Results show nothing unit root on variable and all variable are stationer at data-level.

Table 2 ADF Unit Root Test

Variable	Difference	Prob ADF Test	Criteria
Excess Return	I(0)	0.00000	Stationer
Market Risk Premium (Rm-Rf)	I(0)	0.00000	Stationer
SMB	I(0)	0.00000	Stationer
HML	I(0)	0.00000	Stationer
Foreign Sell Illiquidity	I(0)	0.00000	Stationer
Foreign Buy Illiquidity	I(0)	0.00000	Stationer
Domestic Sell Illiquidity	I(0)	0.00000	Stationer
Domestic Buy Illiquidity	I(0)	0.00000	Stationer

Table 3 is robustness least square test of two model on sell-side and buy-side. On two model, market risk premium is positive significant. Market risk premium is 0,50 at 1% significant level on sell-side model and 0,51 at 1% critical value on buy-side model. Result show that market beta can explain market return on Indonesian stock market. Positive value means that the increase of market risk, investor wants more excess return. This result appropriate with prior research on capital asset pricing model (CAPM) Sharpe (1964)

SMB coefficients have positive significant value on two model sell and buy side. SMB coefficient 0,091 on sell side and 0,083 on buy side with 1% significant level. It shows that investor wants higher excess return on small firm than big firm consistently. Investor consider small firm riskier than big firm. Otherwise, investor wants more return to invest on small firm.

HML coefficients have positive significant value on two model sell and buy side. HML coefficient 0,204 on sell side and 0,205 on buy side with 1% significant level. It indicates investor wants higher excess return on firm with higher book to market. Investor consider that high value firm can generate higher return on Indonesian Stock market. This result different with Fama and French (1993) result that show investor wants higher return on small book to market firm or firm with smaller value.

Cross Sectional Excess Return is difference between average return of all stock in Indonesian stock exchange and SBI-90 days every week. Rm-Rf is market risk premium, difference between return market index (IHSG) and SBI-90 days every week. SMB (small minus big), the return on the mimicking portfolio for (S/L, S/M, and S/H) and (B/L, B/M, and B/H). HML (high minus low), is difference each week between portfolios (S/H and B/H) and

portfolios (S/L and B/L). Illiquidity is the return on mimicking portfolio for amihud measure, is the average each week of the difference return between high portfolio (B/HL and B/LL) and difference

return between small portfolios (S/HL and S/LL). There are four illiquidity Foreign Sell (FS), Foreign Buy (FB), Domestic Sell (DS), and Domestic Buy (DB).

Table 3 Foreign-Domestic Illiquidity and Asset Pricing

Dependent Variable	Cross Sectional Excess Return	
	1	2
C	0.000402 (0.1898)	0.000375 (0.2264)
Rm-Rf	0.500964*** (0.0000)	0.513100*** (0.0000)
SMB	0.091002*** (0.0040)	0.083792*** (0.0087)
HML	0.204658*** (0.0000)	0.205373*** (0.0000)
FS_Illiquidity	0.017224*** (0.0041)	
DS_Illiquidity	-0.000117 (0.9865)	
FB_Illiquidity		0.015375*** (0.0102)
DB_Illiquidity		0.017669 (0.1700)
N	468	468
R ²	0.515855	0.519328
Adj. R ²	0.510615	0.514126

From the results in table 3, it shows that in all models the market risk premium (Rm-Rf) has a significant positive value at the 1% significance level. The Rm-Rf coefficient value is 0.51 for the CAPM model and 0.50 for the Fama-French three-factor model. The coefficient value in the CAPM model shows a greater value than the Fama-French three factor model. This shows that consistently in the Indonesian capital market, market risk is considered by investors as a variable that affects returns.

In size effect find positive significant coefficient. This finding shows that stocks with a small size (small) are superior (outperformed) in generating returns than large companies (big) in the Indonesian capital market. These results are

consistent with the findings of Fama and French (1993) who observed that the company with a smaller size tends to produce a greater return than the company that produces a greater return. Research by Amanda and Husodo (2014) also shows that in the Indonesian capital market, companies with small sizes are more likely to have a superior performance in generating returns than large companies. The existence of this phenomenon shows that investors in the Indonesian capital market consider that company size is a risk factor in investing in stocks so that investors ask for an additional premium when investing in companies with small sizes.

The positive HML value shows that companies with high value (book to market) generate higher

returns than companies with low value (book to market) in the Indonesian capital market. This result is different from the findings of Fama and French (1993) which show that on the New York Stock Exchange (NYSE) companies with low value (book to market) tend to produce higher returns. The existence of positive results in the Indonesian capital market shows that investors in the Indonesian capital market tend to expect higher returns to companies with a higher book to market value. Stock with high book to market value indicates that the stock price is lower than the book value, which is usually called the stock value. The lower book to market value indicates that the stock price is higher than the book value, which is usually called the growth stock. In the Indonesian capital market, value stock generates a higher return than growth stock. This finding is in accordance with Amanda and Husodo (2014) who showed a positive relationship between HML (value effect) and excess return.

illiquidity coefficient has positive significant value on sell-side model. Foreign sell illiquidity has 0,0172 coefficient on 1% percent significant level. It shows foreign investor wants higher excess return on illiquid return than domestic investor on sell transaction. Sell side model has R^2 51,58% and adjusted R^2 51,06%.

Illiquidity coefficient also has positive significant value on buy-side model. Foreign buy illiquidity has 0,0153 coefficient on 1% percent significant level. It shows foreign investor wants higher excess return on illiquid return than domestic investor on buy transaction. Foreign variable on sell-side model has higher coefficient than buy-side model explain that foreign investor expects more excess return on sell transaction. Buy side model has R^2 51,93% and adjusted R^2 51,41%.

This finding shows that foreign investors want a higher liquidity premium than domestic investors. It is consistent on buy-side transaction and sell-side transaction. Expected return on sell-side models higher than buy-side models. These results are consistent with research conducted by Dvorak

(2005) foreign investors want higher liquidity premium than domestic investors. Foreign investors do not have the advantage of information as much as domestic investors so foreign investors tend to prefer higher returns on the market than domestic investors for their higher risk.

4. CONCLUSION

This research tests the effect of market beta, size-factor, value-factor, and foreign-domestic illiquidity on buy and sell transaction with excess return in Indonesia Stock Market. According to research Fama and French (1993) market beta, size-factor, and value factor affect excess return consistently. Market beta (market risk premium) and size-factor have positive impact on excess return consistent with prior research Sharpe (1964) and Fama and French (1993). This indicate that market movement which can relate on market index (IHSG) affect excess return. Investor should be considering the market movement on Indonesia stock Market as a proxy return. Return also higher on small firm than higher firm. It is indicating small firm are considered riskier so higher return requested as risk premia of investor.

Different from Fama and French (1993) result, HML as proxy of value -factor is positive significant on Indonesian Stock Exchange. It is indicating company with higher value more capable to generate return. The result of research show that higher value firm has better performance on Indonesian Stock Exchange. It is different with Fama and French result that lower value firm can generate higher return because of requested risk premia from investor.

Illiquidity variable show that finding significant value just on foreign transaction, in buy-side model and sell-side model. Result indicating foreign investor more capable to earn excess return than domestic investor. In conclusion, this Finding is different with research conclusion from Dvorak (2005) about information advantage in Indonesia Stock Market with Hasbrouck and Sofianos (1993) trading profit model. Dvorak find that domestic

investors have higher profits than foreign investor in Indonesia Stock Market. This research use illiquidity model Lam and Tam (2011) to find effect of excess return. Positive sign illiquidity on foreign transaction indicating that foreign investor wants higher return on illiquid stock.

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Appendix

Figure 1 Output Sell-Side Model

Dependent Variable: EXCESSRETURN
 Method: Robust Least Squares
 Date: 06/24/20 Time: 03:59
 Sample (adjusted): 1/13/2010 12/26/2018
 Included observations: 468 after adjustments
 Method: M-estimation
 M settings: weight=Bisquare, tuning=4.685, scale=MAD (median centered)
 Huber Type I Standard Errors & Covariance

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.000402	0.000307	1.311072	0.1898
RMRF	0.500964	0.017978	27.86501	0.0000
SMB	0.091002	0.031653	2.874983	0.0040
HML	0.204658	0.022549	9.076203	0.0000
FS_ILLQ	0.017224	0.006007	2.867264	0.0041
DS_ILLQ	-0.000117	0.006895	-0.016973	0.9865

Robust Statistics			
R-squared	0.515855	Adjusted R-squared	0.510615
Rw-squared	0.772300	Adjust Rw-squared	0.772300
Akaike info criterion	542.1733	Schwarz criterion	568.3966
Deviance	0.017755	Scale	0.005780
Rn-squared statistic	1367.979	Prob(Rn-squared stat.)	0.000000

Non-robust Statistics			
Mean dependent var	5.49E-05	S.D. dependent var	0.014277
S.E. of regression	0.007397	Sum squared resid	0.025275

Figure 2 Output Buy-Side Model

Dependent Variable: EXCESSRETURN

Method: Robust Least Squares

Date: 06/24/20 Time: 03:58

Sample (adjusted): 1/13/2010 12/26/2018

Included observations: 468 after adjustments

Method: M-estimation

M settings: weight=Bisquare, tuning=4.685, scale=MAD (median centered)

Huber Type I Standard Errors & Covariance

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.000375	0.000310	1.209587	0.2264
RMRF	0.513100	0.018764	27.34547	0.0000
SMB	0.083792	0.031916	2.625411	0.0087
HML	0.205373	0.022638	9.071992	0.0000
FB_ILLQ	0.015375	0.005987	2.567981	0.0102
DB_ILLQ	0.017669	0.012876	1.372281	0.1700

Robust Statistics

R-squared	0.519328	Adjusted R-squared	0.514126
Rw-squared	0.774110	Adjust Rw-squared	0.774110
Akaike info criterion	527.1963	Schwarz criterion	553.5122
Deviance	0.017934	Scale	0.005892
Rn-squared statistic	1373.789	Prob(Rn-squared stat.)	0.000000

Non-robust Statistics

Mean dependent var	5.49E-05	S.D. dependent var	0.014277
S.E. of regression	0.007361	Sum squared resid	0.025034