Inversed Illiquidity and Corporate Investment on the Indonesian Stock Exchange's Kompas 100 Index

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Investors will respond to high investment by increasing trading volume, while firms will also boost this growth with their capital spending as a form of investment. Through inversing illiquidity, we can find another measurement viewpoint on the stock liquidity while also assessing the impact of corporate investments. This paper investigated empirical evidence on the Kompas 100 Index, which consisted of one hundred of the most liquid stocks in the Indonesian Stock Market. The result showed that corporate investment has a negative relationship to stock liquidity, caused by the increasing leverage to fund the investment. Investors viewed this as an increasing risk and reacted negatively.

Keywords: *Inversed illiquidity, corporate investment, firm size, stock turnover, stock return.*

Introduction

Corporate investments are formulated by firm managers and stockholders with the goal of increasing a firm's productivity in the future and are considered an option to increase a firm's growth (Kang et al., 2017). Corporate market risk has an effect on the relationship between corporate investment and stock liquidity (Zhang et al., 2019). This view is also supported by market microstructure theory; a change on firm risks will influence the pricing strategy by market makers, thus affecting its stock price (Kyle, 1985).

Stock liquidity is an important indicator of capital market efficiency, which has a great impact on asset pricing, resource allocation efficiency, and corporate governance (Zhang et al., 2019). Corporate decisions and stock liquidity have joint causality effects as high stock liquidity increases stock price informativeness and encourages firms to invest more (Loukil,

2015). Corporate investments reduce stock risks by converting growth options into assets and a lower risk leads to a higher stock liquidity by increasing the liquidity capacity of its suppliers (Kang et al., 2018). Berk et al. (1999) argued that corporate investment gives a positive signal of good risk management and provides favourable prospects in the future.

A firm has to manage its stock liquidity by decreasing the risk through accumulating its value, as capital market applicants find firms with high liquidity intriguing (Mardani et al., 2018). Firms rely on corporate indicators as a signal of their financial strength to market participants with the objective of enhancing the liquidity of their securities in the market, hence avoiding being placed in the lower liquidity area by the stock exchange (Beaupain & Joliet, 2011).

According to the OECD Equity Market Review Asia 2019, the Indonesian Stock Exchange is considered one of the top markets with a good liquidity at the ASEAN level. Moreover, the IPO activity in Indonesia is ranked as having one of the highest growths, more than most advanced economies. Indonesia also contributes 2.2 per cent to the MSCI Emerging Market Index, the second highest in the ASEAN after Thailand. Therefore, it can be inferred that the future prospects in the Indonesian Stock Market are looking bright. Furthermore, it is interesting to study the Indonesian market through assessing the level of corporate investment and its liquidity.

The index used is elected by the independent and distinguished publisher named Kompas 100. Previous studies conducted by Sitepu et al. (2017), Dwialesi and Darmayanti (2016), Wijaya and Sihombing (2015), and Jiwandono (2014) also used Kompas 100 because of its high liquidity, big market capitalisation, and consistency of firms with good fundamentals and performances. The Kompas 100 index is also considered to represent approximately 70–80 per cent from the total market capitalisation of the Indonesian Stock Exchange. From these previous studies, the measurement of liquidity and corporate investment is only using a firm's current ratio and a firm's return ratio, respectively.

This paper contributes to the growing literature of corporate investment and its effect on stock liquidity. Indonesia has been known as one of the developing countries with high stock transactions, hence it will be fascinating to see what affects liquidity among the best stocks in Indonesia. We examined firm internal factors like corporate investment, firm size, and cash balance, while also examining external factors which are stock turnover and return. The novelty of this paper lies in the samples used and its measurement. We used the Kompas 100 Index which consists of one hundred of the best stocks in terms of market capitalisation, liquidity, and fundamental firm performances. We also used a newer sample of data from the 2013–2017 period, as the previous studies mentioned above used an older data timeframe while using a different approach of measurement on the variables.

Methodology

Becker-Blease and Paul (2006) proved that an increase in corporate investment could improve stock liquidity by regressing changes in capital expenditure with changes in stock liquidity. Kang et al. (2017) verified that an optimal corporate investment increases stock liquidity through risk shifting, and long-term investment shows that the firm is already well funded and attracts investors in perceiving it as low risk. It can be concluded that the corporate investment has a positive effect on stock liquidity. In summary, the main hypothesis of this study is as follows:

H1: Corporate investment has a positive effect on stock liquidity

Liquidity Measurement

By inversing Amihud's (2002) illiquidity formula, we can calculate the liquidity of the firms' stock. Illiquidity calculates an investor's discount levels for selling their stocks in a fast term, as liquid stocks do not decrease when sold at a relatively fast term. Amihud's formula is a low frequency measure which explains the daily price impact of the order of flow, while usual formulas of liquidity will take lots of microstructure data, such as bid-ask spread, market impact of each transactions or the probability of information-based trading. Such data is not always readily available in the stock market. This formula also reflects the impact of the trading volume on the price, and is more widely accepted (Jiang et al., 2017; Zhang et al., 2019). The equation is as follows:

$$ILLIQ_{it} = \frac{1}{D_{it}} \sum_{t=1}^{D_{it}} \frac{|R_{itd}|}{VOLD_{itd}} \tag{1}$$

Where D_{it} shows the available trading days data of stock i in year t, while R_{itd} and $VOLD_{itd}$ shows the stock daily return and the daily volume in Rupiah of firm i on day d in year y, respectively. Then, we inverse the formula to find the measurement of liquidity:

$$LIQ_{it} = -1 \, (ln \, ILLIQ_{it}) \tag{2}$$

Corporate Investment Measurement

The measurement of corporate investment is using a firm's capital spending, recognised as capital expenditure from Ross et al. (2008):

$$CINV_{it} = (NFA_{it} - NFA_{it-1} + Dep_{it}) \, / \, TA_{it} \tag{3}$$

Where NFA$_t$ shows the net fixed assets of firm i in year t, Dep$_{it}$ shows the fixed assets depreciation, and TA$_{it}$ shows the total asset.

Controlling Variables

Controlling variables used in this study are firm size (SIZE), stock turnover (TOV), stock return (RTN), and cash balance (CAB). Menaje (2012), and Hsiao and Li (2015) stated that bigger market capitalisation provides positive signal as a sign for higher potential return, prompting higher demands for the stock and its liquidity as well. Stock turnover is one of liquidity characteristics taken from Ametefe et al. (2016); the higher the stock volume traded will also increase liquidity. According to Amihud (1986), stock with a higher liquidity will have a smaller stock spread, and therefore, the stock return has a negative effect towards its liquidity. Dittmar and Mahrt–Smith (2007) noted that investors valued firms with higher cash balance with the aim to receive a higher dividend payment from its cash, hence resulting in a higher stock liquidity.

The first control variable is firm size with the formula:

$$SIZE_{it} = ln\,(P_{it} \times TOUT_{it}) \tag{4}$$

Firm size is measured using the market capitalisation approach, where P_{it} is the market price of the stock multiplied with TOUT$_{it}$ which is the total outstanding stock. The second control variable is the stock turnover formula, which divides the stock volume (VOUT$_{it}$) with the total outstanding stock (TOUT$_{it}$), using the equation as follows:

$$TOV_{it} = VOUT_{it}\,/\,TOUT_{it} \tag{5}$$

The third control variable is the stock return using the formula from Ross (2008):

$$RTN_{it} = (P_{it} - P_{it\text{-}1} + DIV_{it})\,/\,P_{it} \tag{6}$$

Where P_{it} is the stock price, while DIV$_{it}$ is the stock dividend. The last control variable is the cash balance ratio using the equation:

$$CAB_{it} = CE_{it}\,/\,TA_{it} \tag{7}$$

Where CE$_{it}$ and TA$_{it}$ is the cash or cash equivalent and the total asset of firm i in year t, respectively. The model for this research is as follows:

$$LIQ_{it} = \alpha_t + \beta_1\,CINV_{it} + \beta_2\,SIZE_{it} + \beta_3\,TOV_{it} + \beta_4\,RTN_{it} + \beta_5\,CAB_{it} + \varepsilon_t \tag{8}$$

Data

This research was conducted using data from the Indonesian Stock Exchange and each firms' financial report. The data set was taken from 2013 to 2017. Samples in this research were limited to non-financial firms consistently listed in the Kompas 100 Index. The Kompas 100 is a stock index formed by the Indonesia Stock Exchange and the Kompas daily newspaper since 10 August 2007. The Kompas 100 is reviewed and updated regularly once every six months. The decision to use this index was to test several of the best stocks in Indonesia as one of developing countries with a developing stock market as well. Hence, we chose the best and most liquid stocks to avoid bias from illiquid and small ones. We used 70 out of 100 firms listed in the Kompas 100 by excluding financial firms such as banks, insurances, etc. The total number of observations made in this research were 350.

Table 1: Descriptive statistics

	Minimum	Maximum	Mean	Std. Deviation
LIQ	19.086	36.506	29.263	2.448
CINV	-0.031	1.618	0.246	0.264
SIZE	26.885	33.941	30.274	1.364
TOV	9.05	20.709	16.342	1.486
RTN	-0.791	26.857	0.27	1.756
CAB	0.00	0.514	0.117	0.084

From Table 1 above, it could be inferred that the Kompas 100 Index is favourably liquid and has a considerable firm size value. The standard deviation value of liquidity shows a varying liquidity level between firms and sectors. The average corporate investment is 22.3 per cent, but the range of min-max value indicates that some firms are cutting their capital spending as low as -3.1 percent, while some are spending as high as 161.8 per cent. The cash balance ratio shows that several firms have zero cash balance (insolvent), meaning that several firms hold non-cash assets funded solely by debt or negative retained earnings.

Results and Discussions

The result presented in Table 2 below uses the same Equation 8, but the second one is time lagged for the first robustness test. Both results are consistent from the negative and/or positive effects and the significance value, and hence confirmed the reliability of our findings. The moderately high goodness of fit value also supports our findings to explain the variability of stock liquidity. In this research, a higher investment decreases stock liquidity. The differences could be caused by a dissimilar perspective among Indonesian investors

when it comes to corporate investment. This result rejected the study hypothesis that corporate investment has a positive effect on stock liquidity. It is inconsistent with Kang et al. (2017), who stated that a high capital expenditure is seen as a decreasing risk for investors, hence increasing its stock liquidity in the exchange.

Table 2: Statistical Result

	Model 1 (LIQt)	Model 2 (LIQ$_{t+1}$)
Constant	-17.878*** (0.000)	-14.418*** (0.000)
CINV	-0.715*** (0.000)	-0.421*** (0.008)
SIZE	1.285*** (0.000)	1.162*** (0.000)
TOV	0.498*** (0.000)	0.506*** (0.000)
RTN	-0.072** (0.038)	-0.075** (0.035)
CAB	2.235*** (0.001)	2.064** (0.031)
R-Square (R^2)	0.592	0.416
F Statistic	99.905*** (0.000)	48.981*** (0.000)

The strong correlation of liquidity and next year liquidity with the value of 0.65, and the relatively weak corporate investment value of -0.117 to liquidity, persist with Kang et al. (2017). The strong CINV value (0.723) to CAB is consistent with Nyborg and Wang (2014). The varying correlation value of liquidity might be due to the sample used in this study, as the Kompas 100 index has varying firms in different sectors and some are becoming market leaders in the industry. Firms with high market capitalisation enjoy high stock liquidity because they are well known and respectable firms, so investors will feel safer to buy these firms' stocks (Menaje, 2012). This can be seen with the strong correlation (0.681) between firm size and liquidity.

Table 3: Correlation Matrix

	LIQ	LIQ$_{t+1}$	CINV	SIZE	TOV	RTN
LIQ$_{t+1}$	0.65					
CINV	-0.117	-0.05				
SIZE	0.681	0.558	-0.03			
TOV	0.114	0.15	-0.098	-0.261		
RTN	-0.041	-0.042	-0.022	0.008	0.028	
CAB	-0.019	0.023	0.723	-0.056	-0.007	-0.031

Firm size positively affected stock liquidity. When firm size is controlled, a large portion of the information asymmetry component of stock liquidity is stripped (Nyborg & Wang, 2014; Jiang et al., 2017). Stock turnover in this study has a positive effect towards liquidity, as turnover represents frequency and velocity of trading on the stock exchange. Firms with high stock liquidity have tight spreads and a slight margin will be responded to quickly by other investors, increasing volume liquidity (Ametefe et al., 2016). The results are also in line with Amihud (1986), on the significantly negative relationship of stock return and liquidity. The higher the acquired return, the greater the stock spread, and thus, indicates low stock liquidity. The reduction in risk causes investors to get a smaller return compared to low liquidity stocks.

Cash balance has a positive effect on stock liquidity by lowering a firm's uncertainty and boosting investors' confidence that the firm can pay its expenses, resulting in greater stock demand and higher liquidity. This result confirms the work of Nyborg and Wang (2014), that firms would reserve their cash an 'ammunition' to respond to stock market fluctuations. An increase in liquidity also increases cash holdings as both are jointly determined, because it takes more cash to support a stock more liquid than it was.

Investors often perceive high leverage with higher risk because firms should pay higher interest cost, lowering its profit and future dividends for investors. Stockholders also bear the highest risk during bankruptcy, as stockholders are in the last position for claiming residual assets after preferred investors and creditors, thereby reducing investor transactions on the capital market. This corresponds with Cheung et al. (2019) who documented a significant effect of stock liquidity on debt issuance than equity issuance on hostile takeover.

Indonesia, as one of the developing nations, still largely depends on loan funding for corporate investments. A change in risks can affect a market maker's pricing strategy, as investor's perception on debt-based capital expenditures are increasing corporate risks. This is proven by the data on the sample firm's leverage level which has risen during the study period, as described below:

Table 4: Alternative Sources of Funding

Year	Mean Leverage (Debt to Equity Ratio)	Stock (Numbers of Rights Issue)
2013	56%	19
2014	65%	25
2015	141%	20
2016	108%	34
2017	133%	17

There was a high leap for the firm's leverage ratio during 2014 to 2015 and it consistently disclosed above 100 per cent, which means a high portion of the firm's asset was funded by debt, either from bank loan or issuing bonds. This is in contrast with the low number of rights issues, confirming that the Indonesian stock exchange is still rarely seen as source of funding.

The second robustness test aims to assess alternate measurement on corporate investment. Hsiao and Li (2012) assessed several measurements of corporate investment that utilise capital expenditure as the base calculation while having mixed results. Thus, implying that different measurements may affect the study result. Using the design from Loukil (2015), and the equation from Baber et al. (1996), which is defined as the sum of capital expenditure on fixed assets, acquisition cost, and research and development, it is then divided by the depreciation expense. The depreciation expense is a good deflator as it is related to fixed assets balance and reflects more recently purchased fixed assets and its replacement cost in accelerated depreciation schedules. Therefore, Baber's equation is identified as variable BAB.

Table 5: Alternate Measurement of Investment

	LIQ_t	
Constant	-13.825***	(0.001)
BAB_t	-0.428**	(0.012)
$SIZE_t$	1.178***	(0.000)
TOV_t	0.387***	(0.007)
RTN_t	-0.084**	(0.043)
CAB_t	1.313**	(0.013)
R-Square (R^2)	0.472	

The results of the different measurements of liquidity above, prove that the study result is robust. Corporate investment still has a negative effect on stock liquidity and the control variables also have the same positive and/or negative effects respectively to the research model. The goodness of fit value shows that the prior Amihud's liquidity measure is better than Babel's alternate measure.

The third robustness test assesses how the postulate of optimal corporate investment decreases the risk of a stock. Previous literature implied that stock liquidity is susceptible to a change in systematic risk, even though mostly systematic risk only, not the total risk (Carlson et al., 2006; Comerton-Forde et al., 2010; Nagel, 2012). Borrowing the technique and measurement from Kang et al. (2017), corporate investment (CINV) uses the same measurement on Equation 8, and other variables are changes in characteristics measured between the month the fiscal year ends and three months after. The dependent variable is a change in the logarithm of the standard deviation of daily stock return (STRT). DTOV is a change in the logarithm of the average daily turnover, while DPRIC is a change in the logarithm of the average stock price.

Table 6: Return Volatility and Corporate Investment

	STRT	
Constant	-0.012***	(0.020)
DTOV	0.029***	(0.002)
DPRIC	-0.063***	(0.044)
CINV	-0.198***	(0.000)
R-Square (R^2)	0.091	

It could be inferred from Table 6 that stock return volatility is likely to be reduced for firms with high corporate investment, even after controlling for other well-known relevant variables such as trade volume and stock returns. Taken together, corporate investment indeed decreases the risk, both total and systematic risk.

Conclusion

This study reignites the importance of assessing corporate investment and stock liquidity, focusing on one of the developing nations where loans are the most common source of funding, unlike developed countries with a more sophisticated stock exchange. Investors may have a different perspective towards a corporate investment. When it is funded from leverage, it will increase the risk and lessen the demands of the stocks, thus lowering its liquidity. The results also supported previous studies postulate that corporate investment decreases the risk

of a stock. It will be interesting for future research to find a linkage of corporate investment, leverage, and stock liquidity using samples from another county, while also using different stock indexes. Stock liquidity also still offers various ventures and a standpoint to further inquiry, whether through the measurement or the model used.

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