

THE VALUE EFFECT OF STOCK LIQUIDITY AND THE ROLE OF COUNTRY-LEVEL INSTITUTIONAL ENVIRONMENTS

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Ngày nhận bài: 30/05/2020

Ngày chấp nhận đăng: 27/06/2020

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ABSTRACT

This paper explores the relationship between the liquidity and firm value and how this relationship differs across different institutional and information environments. Using a sample of firms from 14 emerging markets for the period from 2005 to 2014, I demonstrate that the liquidity of stock is positively correlated with firm value. Besides, it shows the implication of mechanism through which the liquidity affects firm value. More than that, it documents that the positive relationship between liquidity and firm value is greater for firms in nations with strong institutional environment. The results offer more insights into the role of liquidity in emerging markets.

Keywords: Liquidity, Firm value, Relationship between liquidity and firm value, Emerging markets.

TÓM TẮT

Bài nghiên cứu này tìm hiểu mối quan hệ giữa thanh khoản và giá trị doanh nghiệp đồng thời chỉ ra sự khác nhau của mối quan hệ này trong các môi trường thông tin và thể chế khác nhau tại các quốc gia. Thông qua việc sử dụng mẫu dữ liệu của các công ty đến từ 14 thị trường mới nổi trong giai đoạn 2005-2014, tác giả nhận định tính thanh khoản của cổ phiếu có mối tương quan tích cực với giá trị doanh nghiệp. Bên cạnh đó, bài nghiên cứu còn làm rõ được các cơ chế mà thanh khoản ảnh hưởng đến giá trị doanh nghiệp và chứng minh mối quan hệ tích cực giữa thanh khoản và giá trị doanh nghiệp tốt hơn đối với các công ty thuộc các quốc gia có môi trường thể chế mạnh. Kết quả thu thập được từ nghiên cứu cung cấp giá trị thực tiễn về vai trò của thanh khoản tại các thị trường mới nổi.

Từ khóa: Thanh khoản, Giá trị công ty, Mối quan hệ thanh khoản và giá trị công ty, Thị trường mới nổi.

1. Introduction

From a variety of perspectives, the liquidity-performance relationship has received considerable attention in financial economics. Researchers considered both the effect of liquidity on performance and the liquidity's dependence on performance. In theoretical analyses, liquid markets have been shown to permit non-blockholders to intervene and become blockholders (Maug, 1998), facilitate the formation of a toehold stake (Kyle and Vila, 1991), foster more effective incentives for management (Holmstrom and Tirole, 1993), and stimulate trade by informed investors, thereby enhancing investment decisions by providing

more information on share prices (Subrahmanyam and Titman, 2001; Khanna and Sonti, 2004). Therefore, the positive relationship between liquidity and firm value is very possible. In this research, the international dataset allows us to exploit the rich variation across countries to examine to whether and how liquidity affects firm value and the role of the country-level institutional environment that can drive the relation between liquidity and firm value.

There are good theoretical grounds for suspecting a positive effect of market

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liquidity on firm value. Firstly, Vivian et al. (2009) supposed that the firm has better performance, as measured by firm's market value relative to its book value, than the others when their stocks have high liquidity in the market. Following Tao Huang et al. (2018), I use the impact of stock liquidity on firm value as a proxy for the real effects of financial markets, building on the framework developed by Fang, Noe, & Tice (2009). These authors document a strong, positive link between stock liquidity and firm valuation measured by Tobin's Q for a sample of U.S. firms and attribute their findings to the informational role of stock prices. This measure is appropriate for our research because stock market liquidity is a key indicator of financial market development and efficiency, while firm value is an aggregate measure that quantifies real effects of financial market efficiency.

In addition, I argue that for at least two reasons, strong investor protection can promote the liquidity-performance relationship. First, effective investor protection is supposed to reduce the level of outsourced investor managerial expropriation (Johnson et al., 2000; La Porta et al., 1999). Second, strong investor protection enhances the quality of financial markets (both in terms of market liquidity and information efficiency) and makes stock market performance an efficient representative of fundamental values, resulting in the widespread use of the equity in executive compensation (Baker et al., 1988).

My results indicate that the liquidity of stock is positively associated with firm value and the impact of liquidity is economically significant.

To mitigate the concern that an endogenous relation between liquidity and firm value can drive my results, I employ

several alternative specifications as control the firm-fixed effects in regressions, using the lagged value of the independent variable in the regression model, I have restricted the possibility of reverse causality from firm value to stock liquidity and using the System GMM. The results are robust to these checks.

Finally, I proceed to examine the channel through which liquidity is related to firm value and investigate whether the association between liquidity and firm value varies with country-level institutional environment.

All of previous studies research on the relationship between liquidity and firm value but do not make this relationship be the center of system research, especially about the mechanisms affect to the relation and the value impact of the country-level institutional environment with the relationship between the liquidity and firm value. My paper with the desire based on research can summarize the effect of liquidity on the value of listed firms on fourteen emerging markets. This research is not only academically important but also practically significant. On the one hand, the study clarifies the relationship between firm value and stock liquidity in emerging markets. On the other hand, it supplies information for investors to build potential portfolios and for firm administrators to achieve effective corporate governance mechanisms. Finally, this research provides the important role of the institutional environment country-level to affect the relationship between liquidity and firm value.

2. Theoretical basis and methodology

2.1. Theoretical basis

My paper is related to the literature on the relationship between liquidity and firm value. The causative theories advance many distinct mechanisms through which liquidity affects

firm value. Most of them focus on the effect of liquidity on operational performance and are causative theories based on an agency. Important theories in this vein include Maug (1998), which model the monitoring decision of a large relationship investor. The investor monitors and trades with a view to taking advantage of the price appreciation made in its monitoring activities. Maug concludes that the liquidity of stock markets tends to support effective corporate governance, far from being an obstacle to corporate control.

On the other hand, the causative theories based on agencies, Subrahmanyam and Titman (2001); Khanna and Sonti (2004) show that liquidity can have a positive effect on firm performance also when agency conflicts are unavailable. The liquidity in this environment encourages the entry of knowledgeable investors that make prices more accessible to stakeholders. Most prior research on the relationship between liquidity and firm value focuses on a single market, and only a few papers investigate international markets. Coffee (1991) and Bhidé (1993) realize that although liquidity is a lubricant used by outside activists to purchase shares, it also allows the escape of existing blockholders who are potential activists. Liquidity can encourage blockholders to make their voices heard and sell their property if they are unsatisfied with firm performance. Goldstein and Guembel (2008) show that negative customer feedback trading is also feasible when investors use short-selling strategies to utilize liquidity that damage firm performance. To the best of my knowledge, my study is among the first to examine the mechanisms affect the relationship between liquidity and firm value with a focus on emerging markets.

In addition, I provide evidence on the role of country-level institutional environment. Tao Huang et al. (2018) found that the heavy

relationship between firm value and stock liquidity holds in both the U.S and non-U.S. Stock liquidity has a strong impact on firm valuation in countries with strong investor protection of minority shareholders. Prior literature offers two competing views on how country-level institutional and information environments affect the relation between liquidity and firm value. First, effective investor protection is supposed to reduce the level of outsourced investor managerial expropriation. Based on the assumption that management's total compensation includes in returns on corporate assets and the expropriation of external investors (Johnson et al., 2000; La Porta et al., 1999), managers have opportunities to try value-enhancement in clothing when their enclosure prospects are significantly limited by law. Such incentives lead managers to learn from stock prices. Second, strong investor protection enhances the quality of financial markets (in terms of both market liquidity and informational efficiency) and makes stock market performance an efficient representative of fundamental values, resulting in the widespread use of the equity in executive compensation (Baker et al., 1988). The expanded use of equity-based compensation is beneficial to balance the preferences of managers and investor's inequities.

2.2. Methodology

To analyze this research, I need to answer three questions: Whether and how liquidity affects firm value? Through which mechanism does liquidity affect firm value? And how the role of the institutional environment country-level affects the relationship between liquidity and firm value?

In this research, the data includes the accounting data from financial statements,

firm value is collected on the annual reports and all samples do not include financial institutions. I obtain yearly stock return data of firms from 14 emerging markets and this selection of 14 emerging countries is based on my ability to access data. The data about firm performance are collected from Worldscope, Datastream which specializes in collecting and analyzing financial data of firms in fourteen countries from 2005–2014. I exclude firm-year observations that lack the trading and financial data needed to build the variables used in this analysis. I describe in detail how the variables used in my empirical analysis are constructed and summarize the descriptive statistics of the analyzed businesses.

2.2.1. Liquidity proxies

Stock liquidity is an unobservable factor, only be estimated and no proxies can capture perfectly the stock liquidity. Previous studies suggest several variables that can be used to measure stock liquidity. In this paper, I estimate the liquidity of stock based on measuring the impact of price by Amihud (2002). Specifically, the liquidity of share I on day d is measured as:

$$Allliq_{i,d} = \frac{|R_{i,d}|}{V_{i,d}} \quad (1)$$

In there, $|R_{i,d}|$ is the absolute value of the rate of return of stock i on the day d; $V_{i,d}$ is the transaction value of stock i on the day d. Liquidity of stocks in year t, $Allliq_{i,d}$ is measured by the average of the daily liquidity of the stock in year t. Besides, I also use ZERORET which is defined as the proportion of the number of days with zero stock returns to the total number of days with non-missing stock returns in a given year. A higher value of Amihud's (2002) illiquidity

measure or ZERORET for a given stock indicates that the stock is less liquid. Similar to previous studies (Karolyi et al., 2012; Ng et al., 2016), I transform the natural logarithm of Amihud's (2002) illiquidity variable to reduce the effect of outliers in the regression model.

2.2.2. Firm performance measures

Following previous literature (Vivian et al., 2009), I use Tobin's Q, as the main measure of firm performance. I define Q as the market value of equity plus the book value of debt scaled by the book value of equity plus debt.

2.2.3. Firm-specific control variables

Followed by the previous literature, I control in the regression model firm-specific control variables to isolate the net effect of stock liquidity on firm value, including the index member dummy that equals one if the firm is included in an MSCI country index (MSCI); the ratio of profit to total assets of the company in the year being calculated (ROA); the log of total assets (SIZE); the fraction of shares closely held by insiders and controlling shareholders (CH); an ADR dummy that equals one if the firm was cross-listed on a U.S. exchange (ADR); 12-month stock returns (RET); the standard deviation of the residuals estimated from a firm's weekly stock returns regressed on a country's weekly market returns and the U.S. weekly market returns (IVOL); the log of one plus the number of financial analysts covering a firm in a given year (LANA).

2.2.4. Country-level variables

Building on current literature, I also control economic development at the country level in regressions, including the log of GDP per capita measured in U.S. dollars (GDPPC), the log of the ratio of stock market

capitalization to GDP (MVGDP), the annual GDP growth (gGDP).

2.2.5. Descriptive statistics

Table 1 presents the summary statistics of firm-level variables for each of the 14 sample countries and for the whole sample. In this table, I use the Amihud and ZERORET to measure the liquidity of stock. The average of firm value in 14 markets is 0.24, China is the country that has the highest firm value (0.687) and it gets the highest MSCI index (0.825). In particular, the average of Amihud value of the whole sample is -0.840 with Indonesia is the country that has a better index than the others. With 0.136 is the average of ZERORET value of the whole sample, the Philippines reaches the highest index, moreover this country also gets the best index of closely held ownership (0.669). Table 2 reports the average of country-

specific economic and institutional characteristics for the sample countries over the period of 2005–2014. As the results, the emerging markets have a higher ratio of market capitalization to GDP and greater annual GDP growth (gGDP).

Table 3 reports the Pearson correlation coefficients between variables use in my analyses. As expected, my two liquidity measures are significantly correlated, with the correlation coefficient of 0.581. Both Amihud (-0.305) and ZERORET (-0.233) are negatively correlated with firm value variables that provide some insight into the hypothetical relationship between the main variables. In general, the moderate correlation between variables mitigates concerns related to multicollinearity in my regression analyses.

Table 1 Descriptive Statistics (Firm-level variables)

Country	No.firm-years	Q	AMIHU	ZRET	MSCI	ROA	SIZE	CH	ADR	RET	IVOL	LANA
Brazil	615	0.466	0.281	0.155	0.650	0.086	13.391	0.466	0.050	0.204	0.051	0.820
China	11763	0.687	-4.102	0.030	0.825	0.034	12.393	0.156	0.005	0.082	0.013	0.262
Chile	1047	0.266	0.493	0.342	0.599	0.072	12.962	0.493	0.156	0.144	0.007	0.373
Indonesia	2678	0.093	3.427	0.321	0.364	0.046	11.506	0.608	0.007	0.001	0.015	0.500
India	5557	0.328	-0.022	0.020	0.520	0.085	12.231	0.388	0.016	0.128	0.049	0.672
Israel	1905	0.181	0.469	0.078	0.338	0.021	11.985	0.189	0.118	-0.011	0.015	0.168
South Korea	6316	-0.087	-2.313	0.085	0.474	0.036	12.644	0.206	0.012	0.052	0.026	0.435
Mexico	825	0.157	0.404	0.146	0.558	0.058	13.758	0.144	0.263	0.051	0.036	1.037
Malaysia	7513	-0.036	1.602	0.243	0.263	0.027	11.399	0.417	0.000	-0.046	0.009	0.481
Philippines	1635	0.160	3.180	0.345	0.382	0.017	11.383	0.669	0.008	0.032	0.015	0.449
Russia	520	0.161	-0.200	0.057	0.502	0.076	14.091	0.504	0.044	0.101	0.025	1.105
South Africa	2518	0.253	1.577	0.286	0.400	0.083	11.534	0.288	0.029	0.040	0.046	0.705
Thailand	3679	0.084	1.257	0.214	0.367	0.058	11.446	0.427	0.000	0.092	0.020	0.723
Taiwan	5979	0.161	-3.010	0.101	0.619	0.046	12.556	0.181	0.010	0.054	0.023	0.507
ALL	52550											
Mean		0.240	-0.840	0.136	0.526	0.046	12.145	0.306	0.020	0.054	0.022	0.483
Std dev		0.590	3.651	0.141	0.499	0.108	1.728	0.305	0.140	0.700	0.056	0.768

Table 2 Descriptive Statistics (Country-level variables)

<i>Country</i>	<i>GDPPC</i>	<i>MVGDP</i>	<i>gGDP</i>	<i>GGOV</i>	<i>GOVEFFECT</i>
Brazil	8.315	0.491	0.041	17.226	0.047
China	7.303	0.670	0.101	15.500	0.099
Chile	8.623	0.997	0.041	18.000	1.121
Indonesia	6.855	0.259	0.053	15.306	-0.277
India	6.426	0.709	0.073	13.900	-0.177
Israel	9.950	0.910	0.043	20.040	1.687
South Korea	9.517	0.624	0.045	19.100	1.069
Mexico	8.728	0.247	0.028	16.800	0.213
Malaysia	8.431	1.320	0.054	18.000	1.032
Philippines	7.002	0.438	0.048	14.800	-0.129
Russia	7.907	0.816	0.066	13.100	-0.316
South Africa	8.117	1.935	0.040	17.800	0.707
Thailand	7.767	0.559	0.045	16.100	0.123
Taiwan	9.652	1.280	0.027	17.700	1.030
Mean	8.107	0.863	0.060	16.723	0.505
Std Dev	1.119	0.528	0.034	1.750	0.599

Table 3 Correlation matrix

<i>Variable</i>	<i>Q</i>	<i>AMIHU</i>	<i>ZRET</i>	<i>MSCI</i>	<i>ROA</i>	<i>SIZE</i>	<i>CH</i>	<i>ADR</i>	<i>RET</i>	<i>IVOL</i>	<i>LANA</i>	<i>GDPPC</i>	<i>MVGDP</i>	<i>gGDP</i>	<i>GGOV</i>	<i>GOVE</i>
<i>Q</i>	1.000															
<i>AMIHU</i>	-0.305	1.000														
<i>ZRET</i>	-0.233	0.581	1.000													
<i>MSCI</i>	0.229	-0.580	-0.313	1.000												
<i>ROA</i>	0.050	-0.124	-0.052	0.123	1.000											
<i>SIZE</i>	-0.045	-0.599	-0.298	0.559	0.143	1.000										
<i>CH</i>	-0.083	0.232	0.250	-0.029	0.099	0.101	1.000									
<i>ADR</i>	0.018	-0.102	-0.062	0.101	0.011	0.207	0.027	1.000								
<i>RET</i>	0.151	-0.130	-0.055	0.069	0.179	0.051	0.034	-0.003	1.000							
<i>IVOL</i>	0.121	-0.247	-0.137	0.239	0.164	0.313	0.021	0.119	-0.011	1.000						
<i>LANA</i>	0.087	-0.335	-0.087	0.357	0.200	0.495	0.128	0.171	0.007	0.401	1.000					
<i>GDPPC</i>	-0.239	-0.115	0.042	-0.094	-0.063	0.092	-0.191	0.072	-0.018	-0.018	-0.022	1.000				
<i>MVGDP</i>	-0.051	-0.048	0.117	-0.087	0.052	-0.046	-0.045	-0.025	0.208	0.079	0.009	0.331	1.000			
<i>gGDP</i>	0.273	-0.289	-0.297	0.184	0.011	0.019	-0.094	-0.064	0.046	-0.021	-0.075	-0.479	-0.076	1.000		
<i>GGOV</i>	-0.272	0.015	0.179	-0.150	-0.077	-0.003	-0.134	0.066	-0.043	-0.056	-0.049	0.905	0.331	-0.434	1.000	
<i>GOVE</i>	-0.209	-0.029	0.104	-0.140	-0.067	0.001	-0.159	0.044	-0.003	-0.033	-0.049	0.864	0.455	-0.346	0.893	1.000

3. Results and discussions

3.1. Results

I present empirical results on the relationship between liquidity and firm value measure. I begin by evaluating the effect of the

total liquidity (LIQ) on firm value. Specifically, I perform the panel regressions of my firm value measures on the total LIQ variable while controlling for other firm-specific and country-level characteristics. My baseline regression model takes the following form:

$$FV_{it} = a + bLIQ_{it-1} + cControls_{it-1} + IND_j + YR_t + error_{it} \quad (2)$$

The t-statistics shown in parentheses are based on standard errors that are adjusted for heteroscedasticity and are clustered at the firm level. Superscripts *, **, and*** denote significance levels of 10%, 5%, and 1%, respectively.

3.1.1. The effect of liquidity on firm value

This section investigates whether and how liquidity affects firm value. Table 4 reports the regression results of Equation (2) for Amihud and ZERORET. The full sample estimation result shows that the coefficient on Amihud is -0.073 (t-value = -28.14) when I

don't control country-level variables and this is -0.071(t-value=-26.56) if I control the variables of country-level, indicating a positive association between the liquidity and firm value. In terms of country-level factors, I find that firm valuation tends to be higher in countries with greater per capita gross domestic product (GDPPC) and the market capitalization to GDP (MVGDP) because as shown in table 4, the coefficient are 0.051 and 0.059 respectively.

Especially with the coefficient on gGDP is 0.569 (t-value5.58) shows that the firm value tends to be highest in countries with better GDP growth.

Table 4: Liquidity and firm value

Variable	AMIHUD		ZERORET	
	(1)	(2)	(3)	(4)
<i>LIQ</i>	-0.073*** (-28.14)	-0.071*** (-26.56)	-0.388*** (-7.80)	-0.374*** (-7.51)
<i>MSCI</i>	0.099*** (8.53)	0.102*** (8.74)	0.158*** (13.10)	0.160*** (13.26)
<i>ROA</i>	-0.036 (-0.60)	-0.033 (-0.54)	-0.002 (-0.03)	0.004 (0.06)
<i>SIZE</i>	-0.168*** (-24.51)	-0.167*** (-24.19)	-0.126*** (-19.53)	-0.126*** (-19.49)
<i>CH</i>	0.161*** (11.03)	0.158*** (10.86)	0.130*** (8.64)	0.127*** (8.43)
<i>ADR</i>	0.009 (0.28)	0.012 (0.37)	0.044 (1.29)	0.047 (1.37)
<i>RET</i>	0.158*** (30.38)	0.153*** (27.95)	0.189*** (34.80)	0.176*** (30.88)
<i>IVOL</i>	0.829*** (5.80)	0.783*** (5.50)	-0.414*** (-2.70)	-0.442*** (-2.89)
<i>LANA</i>	0.144*** (20.15)	0.144*** (19.59)	0.217*** (26.90)	0.213*** (25.59)
<i>GDPPC</i>		0.051 (0.98)		0.096* (1.81)
<i>MVGDP</i>		0.059*** (5.41)		0.127*** (11.82)
<i>gGDP</i>		0.569*** (5.58)		1.016*** (9.96)
Fixed effects	CIY	CIY	CIY	CIY
NObs	44,127	44,127	44,352	44,352
Adjusted R^2	43.9%	43.9%	39.6%	39.9%

To increase sample coverage and to assess the sensitivity of my findings to the liquidity measure, I replace the Amihud's (2002) illiquidity measure with the proportion of zero daily stock returns (ZERORET) as the stock liquidity proxy into the equation (2). Across all model specifications, I find a strong, positive relation between ZERORET and Q. In particular, in the full sample estimation when I control the country-level and firm-specific variables, the coefficient on

ZERORET is -0.374 (t-value = -7.51). However in this case, Tobin's Q is relatively lowest for firms with large idiosyncratic risk (IVOL).

To summarize, the results from the pooled sample analysis show a positive association between stock liquidity and firm value, suggesting that stocks with high liquidity have a higher firm performance.

3.1.2. Robustness check

Table 5 Liquidity and firm value (Robustness checks)

Variables	AMIHUD				ZERORET			
	Firm-fixed effects		Non-crisis		Firm-fixed effects		Non-crisis	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LIQ	-0.057*** (-25.64)	-0.048*** (-21.26)	-0.074*** (-28.34)	-0.073*** (-27.05)	-0.382*** (-7.55)	-0.371*** (-7.31)	-0.364*** (-7.32)	-0.370*** (-7.52)
MSCI			0.105*** (8.67)	0.106*** (8.80)	0.172*** (13.61)	0.173*** (13.72)		
ROA	-0.187*** (-4.01)	-0.168*** (-3.65)	-0.076 (-1.20)	-0.075 (-1.18)	-0.056 (-0.82)	-0.052 (-0.76)	-0.132*** (-2.75)	-0.121*** (-2.59)
SIZE	-0.194*** (-14.64)	-0.198*** (-14.99)	-0.169*** (-24.18)	-0.168*** (-23.97)	-0.125*** (-18.92)	-0.125*** (-18.94)	-0.156*** (-11.19)	-0.169*** (-12.15)
CH	0.088*** (5.55)	0.085*** (5.38)	0.148*** (9.77)	0.147*** (9.66)	0.114*** (7.23)	0.112*** (7.09)	0.087*** (5.38)	0.084*** (5.24)
ADR	-0.009 (-0.17)	-0.032 (-0.57)	0.002 (0.08)	0.004 (0.12)	0.040 (1.16)	0.041 (1.19)	-0.005 (-0.09)	-0.036 (-0.62)
RET	0.138*** (31.32)	0.125*** (26.83)	0.159*** (29.68)	0.155*** (27.67)	0.192*** (34.03)	0.181*** (30.57)	0.162*** (35.63)	0.140*** (28.99)
IVOL	0.290** (2.06)	0.004 (0.03)	0.783*** (5.76)	0.768*** (5.63)	-0.463*** (-3.12)	-0.455*** (-3.07)	-0.519*** (-3.35)	-0.747*** (-4.99)
LANA	0.015** (2.10)	-0.003 (-0.47)	0.140*** (19.11)	0.142*** (18.84)	0.212*** (25.78)	0.211*** (24.94)	0.055*** (7.34)	0.024*** (3.03)
GDPPC		0.360*** (6.47)		-0.043 (-0.83)		-0.010 (-0.18)		0.450*** (7.94)
MVGDP		0.109*** (10.35)		0.048*** (4.35)		0.118*** (10.99)		0.151*** (14.32)
gGDP		0.749*** (7.76)		0.639*** (6.93)		1.035*** (11.11)		1.002*** (10.31)
Fixed effect	CIY	CIY	CIY	CIY	CIY	CIY	CIY	CIY
Observation	44,172	44,172	36,885	36,885	37,064	37,064	44,674	44,674
Adjusted R	74%	74%	45%	45%	41%	41%	72%	73%

The analysis above shows that the positive relationship between liquidity and

firm value after controlling for enterprise-specific variables and industry and year

effects that can impact on the relationship between liquidity and firm value. However, some potential endogeneity issues may affect the reliability of the above results so I conduct robustness tests in this section to determine if my results in the previous section are reliable. First, it may be possible that a factor of an enterprise-specific nature has not changed (or changed little) over time but cannot be observed to have an impact on the relation between stock liquidity and firm value and high-quality managers may tend to manage firms with more liquid stocks; high-quality managers would also result in high firm performance. To mitigate this concern, I incorporate firm-fixed effects into

Equation (2).

Second, I supposed the economics have no-crisis and keep my model specification. This means I estimate whether the explanatory variables are known in table 5 can predict in the non-crisis economy. In this robustness check, the results remain broadly unchanged in this general specification. Finally, by using the lag value of the independent variable in the regression model, the author has limited the possibility of reverse causality from stock liquidity to corporate value. However, the reverse causality from stock liquidity to company value can still occur if the liquidity is highly correlated over time. To solve this problem, I further controls the lagged value of stock liquidity in the regression model and estimates this model using the SystemGMM estimation that is applied to the dynamic panel data model (SysGMM). The analytical results are presented in Table 6. The results show that the estimated value of the coefficient of variation of the specific rate of return is negative, showing that the positive association between stock liquidity and firm value.

Table 6 Endogeneity (System GMM)

Variable	AMIHU		ZERORET	
	(1)	(2)	(3)	(4)
LIQ	-0.030*** (-15.68)	-0.028*** (-15.39)	-0.344*** (-13.20)	-0.236*** (-9.90)
MSCI	0.210*** (23.35)	0.163*** (20.24)	0.253*** (26.11)	0.211*** (23.96)
ROA	-0.055* (-1.80)	-0.078** (-2.55)	-0.053* (-1.72)	-0.070** (-2.28)
SIZE	-0.086*** (-17.44)	-0.070*** (-15.25)	-0.064*** (-16.38)	-0.050*** (-13.29)
CH	0.038*** (3.96)	-0.000 (-0.01)	-0.003 (-0.27)	-0.034*** (-3.73)
ADR	0.095*** (4.90)	0.121*** (6.47)	0.077*** (3.90)	0.103*** (5.49)
RET	0.023*** (4.42)	0.021*** (4.09)	0.031*** (6.22)	0.029*** (5.91)
LANA	0.041*** (8.99)	0.033*** (7.67)	0.056*** (11.57)	0.049*** (10.68)
GDPPC		-0.058*** (-15.41)		-0.041*** (-12.39)
MVGDP		-0.013** (-2.11)		0.000 (0.04)
gGDP		0.798*** (10.18)		1.329*** (15.23)
Lag-Q	0.332*** (17.68)	0.353*** (19.26)	0.331*** (18.93)	0.347*** (20.55)
Fixed effects	CIY	CIY	CIY	CIY
Observations	48,864	48,864	50,144	50,144

3.1.3. The mechanism through which liquidity affects firm value.

In this section, I explore the mechanism through which the value effect of liquidity, namely, the ownership mechanism. Institutional holding data are from the FactSet/LionShare. Institutional ownership (IO) is defined as the percentage of a firm's outstanding shares held by institutional investors at the end of a given year. To test these predictions, I add the equation (2) with institutional ownership (IO) and the interaction between LIQ and IO. Specifically, the regression model is as follows:

$$\begin{aligned}
 FV_{it} = & a + b_1 LIQ_{it-1} + b_2 IO_{it-1} \\
 & + b_3 LIQ \times IO_{it-1} + c Controls_{it-1} \\
 & + IND_j + YR_t + error_{it}
 \end{aligned} \quad (3)$$

Where IO denotes institutional ownership of stock i . All other variables are identical to those in Equation (2). As shown the results on table 7, the stock liquidity impacts stronger on firm value in the company which has higher the ownership of institutional investors (IO value). Liquidity helps to increase the role of institutional investors in the company. It means that in companies with higher liquidity, the more institutional investors increase ownership so they will

easily monitor and manage the company better. On the other hand, when the stock has higher liquidity, it allows the investor to bargain away the stocks if they see the executive board of the company does not care about the benefit of shareholders. So that it creates pressure on the company management to force them to benefit shareholders thereby increasing company value. It is the mechanism that liquidity affects firm value.

Table 7. The economic mechanism

Variable	AMIHU		ZERORET	
	(1)	(2)	(3)	(4)
<i>LIQ</i>	-0.064*** (-24.80)	-0.062*** (-23.74)	-0.353*** (-7.90)	-0.331*** (-7.39)
<i>IO</i>	0.209** (2.07)	0.182* (1.80)	0.445** (2.57)	0.414** (2.41)
<i>LIQ X IO</i>	-0.139*** (-6.11)	-0.143*** (-6.25)	-3.627** (-2.31)	-3.394** (-2.21)
<i>MSCI</i>	0.110*** (9.40)	0.112*** (9.57)	0.166*** (13.68)	0.168*** (13.81)
<i>ROA</i>	-0.134** (-2.54)	-0.130** (-2.46)	-0.009 (-0.16)	-0.007 (-0.12)
<i>SIZE</i>	-0.167*** (-24.18)	-0.166*** (-23.91)	-0.120*** (-19.55)	-0.120*** (-19.48)
<i>CH</i>	0.154*** (10.21)	0.152*** (10.05)	0.119*** (7.78)	0.116*** (7.56)
<i>ADR</i>	0.019 (0.61)	0.022 (0.70)	0.056* (1.68)	0.059* (1.79)
<i>RET</i>	0.147*** (32.88)	0.142*** (30.18)	0.161*** (34.45)	0.151*** (30.92)
<i>LANA</i>	0.110*** (16.27)	0.111*** (15.92)	0.193*** (24.71)	0.193*** (23.84)
<i>GDPPC</i>		-0.056 (-1.24)		-0.125*** (-2.70)
<i>MVGDP</i>		0.083*** (7.90)		0.161*** (15.61)
<i>gGDP</i>		0.226** (2.33)		0.469*** (4.81)
Fixed effects	CIY	CIY	CIY	CIY
Observations	52,613	52,613	53,565	53,565
Adjusted R-squared	41%	41%	37%	37%

3.1.4. The role of the country-level institutional environment

This section investigates the role of the institutional environment country-level affect the relationship between the liquidity and firm value by adding the equation (2) with two proxies for country-level governance characteristics and information environments (IS), including the good government index (GGOV), the world bank's government effectiveness index (GOVE). To investigate the role of country-level institutional structures, I augment equation (4) by incorporating the interaction between stock liquidity and an institutional characteristic variable of interest. So the regression model is as follows

$$FV_{it} = a + b_1 LIQ_{it-1} + b_2 IS_{it-1} + b_3 LIQ \times IS_{it-1} + c Controls_{it-1} + IND_j + YR_t + error_{it} \quad (4)$$

Table 8 reports the regression results of this analysis. Model (1)-(4) summarizes the results regarding the role of the country-level institutional environment, with liquidity measured by Amihud's (2002) and by ZERORET in the model (5)-(8).

First, the liquidity variable is still negatively associated with firm value even after controlling for country-level institutional characteristics, indicating that the effect of liquidity is partly dependent of institutional environments. Second, the positive relation between an institutional environment country-level of stock prices and firm value is more pronounced in countries with good protection of investors (measured by the “good government index”) and strong government effectiveness (GOVE). Specifically, the coefficient estimates of the interaction between stock liquidity and an institutional characteristic variable of interest are significantly negative across all institutional characteristic proxies. These results indicate that the value effect of liquidity is stronger in countries with better investor protection. The country pays attention to the protection of its investors or they have a good institutional environment country-level, this creates trust for its owners to help them maintain and continue investing in the stocks of those domestic companies.

Table 8 The role of country-level institutional environments

Variables	AMIHUD				ZERORET			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>LIQ</i>	-0.035 (-0.85)	-0.029 (-0.69)	-0.108*** (-17.14)	-0.107*** (-16.78)	0.519 (0.52)	0.657 (0.65)	-0.395*** (-3.82)	-0.396*** (-3.83)
<i>GGOV</i>	0.036 (1.63)	0.049** (2.17)			0.076*** (3.32)	0.099*** (4.29)		
<i>LIQ X GGOV</i>	-0.005** (-2.25)	-0.006** (-2.34)			-0.071 (-1.21)	-0.077 (-1.31)		
<i>GOVEFFECT</i>			0.407*** (13.89)	0.406*** (13.37)			0.480*** (13.99)	0.448*** (12.78)
<i>LIQ X GOVEFFECT</i>			-0.036*** (-6.08)	-0.035*** (-6.01)			-0.615*** (-4.99)	-0.567*** (-4.61)
Firm-level controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-level controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	CIY	CIY	CIY	CIY	CIY	CIY	CIY	CIY
Observations	52,530	52,530	52,530	52,530	53,478	53,478	53,478	53,478
Adjusted R-squared	28%	28%	28%	28%	25%	25%	26%	26%

¹ Due to high correlation between GDPPC and GGOV and GOVEFFECT, I exclude GDPPC from the regressions of Table 8

3.2. Discussions

In this research, I investigate whether and how liquidity affects firm value; through which mechanism does liquidity affect firm value and how the role of the institutional environment country-level affect the relationship between the liquidity and firm value. First, I find that the stock liquidity is positively correlated with firm value and the high liquidity firms have higher firm Q ratios as liquidity will increase the gains to activists form buying shares and intervening (Maug,1998) in these emerging markets. The liquidity helps to increase the role of institutional investors in the company. It means that in companies with higher liquidity, the more institutional investors increase ownership so they will easily monitor and manage the company better. On the other hand, when the stock has higher liquidity, it allows the investor to bargain away the stocks if they see the executive board of the company does not care about the benefit of shareholders. So that it creates pressure on the company management to force them to benefit shareholders thereby increasing company value. Finally, I realize that the important role of the institutional environment country-level affects the relationship between liquidity and firm value.

4. Conclusions

This paper explores the relationship between liquidity and firm value and how this relationship differs across different institutional and information environments.

The sample used of various firms from 14 emerging markets from 2005 to 2014 demonstrates that the liquidity of a stock is positively correlated with firm value. It also shows the implication of mechanism that the liquidity effects to firm value. Besides, it documents that the positive relationship between liquidity and firm value is greater for firms in strong institutional environment nations which the results offer more insights into the role of liquidity in emerging markets. This is indeed a broad topic and may have narrower research later. From the above findings, I suggest some of the following recommendations explore a variety of aspects. Firstly, the next paper could focus on case studies from Viet Nam or the developed countries then compare its liquidity and firm value. Secondly, the explorations of a new mechanism that the liquidity effects to firm value are very important due to the development of digital technology and other factors from the volatile market. Finally, the most difficult part is suggesting potential policy and suitable solutions from the findings which indicate the strongness, weakness, challenge, and opportunity in the future. Nevertheless, my findings are subject to many limitations. My inferences are based on a correlation, rather than causality, between stock liquidity and firm value. While I seek to do multiple analyzes to minimize endogeneity, reverse causality is still possible. My findings should be viewed with caution, due to the difficulties of establishing methodological causality.

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