Print ISSN: 1738-3110 / Online ISSN 2093-7717
http://dx.doi.org/10.15722/jds.15.5.201705.29

Testing the Liquidity Hypothesis in the Korean Retail Firms*

Sang-Su Kim**, Jeong-Hwan Lee***

Received: April 7, 2017. Revised: April 28, 2017. Accepted: May 15, 2017.

Abstract

Purpose – Prior theories predict a negative correlation between stock liquidity and dividend payout propensity. We test this hypothesis by examining the sample Korean retail firms.

Research design, data, and methodology – We construct four different types of stock liquidity measures and investigate how these stock liquidity variables affect dividend payout propensity by employing the logit regression model. The retail firms listed in the KOSPI and KOSDAQ markets are analyzed from 1990 to 2015.

Results – Our estimation results support the liquidity hypothesis if we adopt the stock turnover rate as the stock liquidity measure, particularly for the retail firms listed in the KOSPI markets and for non-conglomerate firms. Yet, our estimation results adopting the illiquidity measure of Amihud (2002), the proportion of non-trading day, and the volume of trading do not support the liquidity hypothesis.

Conclusions – Our findings provide mixed results for the validity of stock liquidity hypothesis, which enriches the existing literature. In terms of turnover rate, the stock liquidity hypothesis holds robustly. Yet, we are not able to find any empirical evidence supporting the hypothesis if we use the other three measures of stock liquidity.

Keywords: Dividend Policy, Liquidity Hypothesis, Retail Industry.

JEL Classifications: G30, G32, G35.

1. Introduction

The liquidity hypothesis expects a negative correlation between a firm's stock liquidity measures and the firm's dividend payout propensity (Banerjee et al., 2007). This hypothesis emphasizes significant trading frictions in the financial market, which make investors to favor more liquid stocks. To be specific, investors have to pay transaction costs, and they either have to concede a lower price for an immediate execution or to wait until optimal execution of their trades. Yet, stocks paying dividends allow investors to meet their liquidity demands without trading, and thus enable the investors to avoid trading frictions.

This study investigates whether Korean retail firms pay dividends to satisfy the investors' liquidity needs. This liquidity hypothesis is largely unexamined for the Korean retail firms, whereas a number of studies confirm its significance in the U.S. market (Banerjee et al., 2007) and international markets (Griffin, 2010). There exists a growing branch of literature in testing the liquidity hypothesis in the Korean financial market as well. The results, however, are rather inconclusive. For instance, the empirical analysis of Kim (2016) supports the liquidity hypothesis in the KOSPI market. In contrast, recent empirical studies highlight the weak explanatory power of the liquidity hypothesis after controlling for the life-cycle aspect of a firm. To our best knowledge, this work is the first one that tests the liquidity hypothesis for the Korean retail firms.

For this purpose, we firstly introduce four different stock liquidity variables consistent with Banerjee et al. (2007). The turnover rate, the illiquidity measure of Amihud (2002), the proportion of days with zero trading volume, and the annual traded volume in won are adopted to measure the stock liquidity of an individual retail firm. Then we employ a logit regression model to examine how a firm's liquidity measures

* This research was supported by Korea National Open University Research Fund (201600580001)

** Corresponding Author, Assistant Professor, Department of Economics, Korea National Open University, Korea. Tel: +82-2-3668-4618, E-mail: sskim512@knou.ac.kr

*** First Author, Assistant Professor, College of Economics and Finance, Hanyang University, Korea. Tel: +82-2-2220-1036, E-mail: jeonglee@hanyang.ac.kr

are related to its dividend payout decisions. Then we investigate the validity of the liquidity hypothesis for the entire firms as well as for a variety of firm-year observation groups.

Our main empirical results are as follows. First of all, a representative liquidity measure, the turnover rate is negatively correlated with dividend payout propensity in line with the liquidity hypothesis. Even after accounting for the life-cycle aspect of a firm, this finding remains unchanged. This result is robust to the choice of different sample periods consistent with the results of Kim (2016).

Next, our empirical analysis also shows that this negative relationship between the turnover rate and dividend payout tendency is more pronounced for the sample of non-conglomerate firms and the firms listed in the KOSPI market. A more significant explanatory power in non-conglomerate firms is well aligned with the liquidity hypothesis because these firms tend to be small/less profitable and consequently less liquid. Conglomerate firms have different governance structures, which may influence the dividend payout policy of these firms. Our results in the KOSPI market is consistent with the result of Kim (2016).

Finally, our analysis found no supporting evidence for the liquidity hypothesis when we employ the other three measures of liquidity as the independent variable. For most of the cases, there exists no statistically significant correlation between these liquidity measures and dividend payout propensity. Sometimes, the coefficients of Amihud illiquidity measure argue against the liquidity hypothesis by showing significantly negative signs.

This work contributes to the existing literature in a number of perspectives. Most of all, our analysis partly confirms the role of the liquidity hypothesis in the Korean financial market even after controlling for the life-cycle theory of firms. When we use the turnover rate as the liquidity measure, the coefficient is significantly negative consistent with the liquidity hypothesis. This finding is in line with Kim (2016) but is not well aligned with other recent empirical studies.

A negative correlation of the turnover rate with dividend payment propensities in the non-conglomerate firms also support the validity of the liquidity hypothesis for the Korean financial market. Non-conglomerate firms tend to be less liquid and more severe needs to make dividend payments to compensate for the liquidity demand of investors compared to the conglomerate firms, “Chaebol” in the Korean market. In fact, Griffin (2010) argued that the negative relations between stock liquidity measures and dividends payout propensity is more critical for small/less profitable firms.

Yet, our findings from the other three measures of liquidity provides pieces of empirical evidence arguing against the role of liquidity hypothesis. This is also in line with recent international evidence. For instance, Griffin (2010) documents that the liquidity hypothesis is only held for some countries such as Canada, Brazil, and Mexico. He does not find supporting evidence for the liquidity hypothesis in other countries.

This paper has the following structure. In Section 2, we review the relevant literature. Section 3 depicts our sample selection and empirical models. Section 4 documents the estimation results. Section 5 concludes.

2. Related Literature

While the seminal work of Miller and Modigliani (1961) formulated the well-known dividend irrelevance theorem, their propositions do not seem to explain why corporations, investment analysts, and individual investors are highly interested in dividend policies. To address this puzzling empirical regularity, a wide range of economic theories have been introduced and tested since the work of Miller and Modigliani (1961). One branch of literature emphasizes the significance of asymmetric information between CEOs and shareholders; Bhattacharya (1979) and Miller and Rock (1985) are representative works. This strand of literature highlights the signaling effect of dividend payment decisions. Another branch of literature stresses the role of dividend payout as a tool to reduce excess investments by managers; large dividend payments decreases a firm’s free cash flow (Easterbrook, 1984; Jensen, 1986).

The life cycle theory of a corporation has recently emerged as an important determinant in dividend payout decisions. DeAngelo et al. (2006) reported that the mix of earned and contributed capital in a firm’s equity capitalization affects the initiation and continuation of dividend payments substantially. The retained earnings take a significant proportion of the equity capitalization of mature firms, DeAngelo et al. (2006) showed a greater propensity of dividends for these mature companies. Denis and Osobov (2008) provide international evidence supporting the life cycle hypothesis as well. This life cycle perspective of dividend choices, is nonetheless a significant departure from the existing hypotheses.

Our study is most closely related with the literature investigating how firm characteristics change dividend payout choices, particularly from the view of investors’ liquidity demands. The liquidity hypothesis emphasizes pervasive trading frictions in the financial market, which make investors prefer more liquid stocks. To satisfy such liquidity needs of investors, CEOs may decide to pay out dividends. As a result, this liquidity consideration is more pronounced for stocks that are infrequently traded, for which investors might either have to wait a long time before the execution of trade or agree with a potentially lower price. In fact, Dong et al. (2005) shows that retail investors prefer dividends, partly because of the smaller costs of cashing in dividends compared to the transaction costs in selling stocks. Banerjee et al. (2007) present empirical evidence

supporting this liquidity hypothesis for the U.S. market. Moreover, Griffin (2010) documents international evidence arguing for the liquidity predictions in Canada, Mexico, and Brazil.

With regard to the Korean financial market, empirical evidence for the liquidity hypothesis appears inconclusive. On the one hand, Kim (2016) supports the liquidity hypothesis in the Korean financial market. He adopted the turnover rate of each individual stock as the representative measure of stock liquidity, and reported a negative correlation between stock liquidity and dividend payout propensity. On the other hand, other recent studies pointed out that the empirical work of Kim (2016) missed to control the life-cycle aspect of firm and argued low explanatory power of the stock liquidity hypothesis in the Korean financial market.

3. Hypothesis and Empirical Methods

3.1. Empirical Hypothesis

As discussed above, the liquidity hypothesis has the following testable implications:

<H0> The measures of stock liquidity are negatively correlated with dividend payout propensity.

To put it another way, a firm is more likely to pay out dividends if its stock is less liquid. Such a firm tries to satisfy the liquidity demand of investors; making dividends payments is a way of doing so. It is because dividend payments provide an opportunity for an investor to receive cash without transactions in the financial market.

3.2. Empirical Strategy

This study investigates the sample of retail firms listed in the KOSPI and KOSDAQ markets from 1990 to 2015. The WISEfn database is used to obtain financial statements of the sample firms. To consider the life cycle of firm, the firm year-observations with negative equity values are excluded. Each firm characteristic variable is winsorized at a 1% level to minimize the effect of outliers. To properly represent the effect of stock liquidity, we also exclude the sample firm-year observations with less than 30 trading days for each calendar year. The entire sample consists of 570 firm-year observations.

Our analysis incorporates four different types of stock liquidity proxy variables by following Banerjee et al. (2007). The first one is the stock turnover rate, which is the ratio between shares traded and shares outstanding (TURNit). This measure is used as the representative proxy variable for stock liquidity in Benerjee et al. (2007) and Kim (2016). Next, the illiquidity measure of Amihud (2002) is also considered; this measure is calculated as the average ratio between the absolute daily return and daily dollar volume (ILLIQit). The third measure captures the effect of non-trading day of an individual stock in the financial market. The measure is calculated as the proportion of days with zero traded volume over the whole trading day (NOTRDit). As this measure increases, the liquidity of stock decreases. The last measure is the annual traded volume of the stock (VOLit).

<Table 1> Liquidity Measures and Expected Signs

Measure	Definition	Sign
TURN	Common Shares Traded/ Common Shares Outstanding	Negative (-)
ILLIQ	Annual Average: Absolute Return/Trading Volume	Positive (+)
NOTRD	The proportion of no trading days for each year	Positive (+)
VOL	Logarithm of Price x Common Shares Traded	Negative (-)

<Table 1> reports the definition of liquidity measures and their predicted sign of correlations with dividend payout propensity. The turnover rate and volume must show negative correlations with dividend payout propensity if the liquidity hypothesis holds. In contrast, the liquidity hypothesis predicts that the Amihud measure of illiquidity and the proportion of non-trading days must be positively correlated with dividend payout propensity.

Our empirical model is described as follows:

$$DVit = \text{logit}(\beta 0 + \beta 1 Liquidityit + \beta 2 Stock\_pit + \beta 3 MBit + \beta 4 SALEGit + \beta 5 ROAit + \beta 6 Levit + \beta 7 CASHit + \beta 8 RE/TEit + \varepsilon it). \quad (1)$$

The dependent variable is dividend payout propensity DVit, which indicates whether an individual firm makes dividend payments or not for the fiscal year t. The variable, DVit, is set to one if the firm pays dividends and equals to zero for all other cases. This proxy variable is a standard one in the literature. Because of the binary structure of our dependent variable, we employ the logistic regression models to estimate equation (1) rather than the ordinary least square method.

The independent variables include our liquidity measures defined above, LIQUIDITYit and other firm characteristic variables. The first set of control variables represents the size, growth opportunities, and profitability of individual firms in the determination of dividend payouts. For a given fiscal year t and for each individual firm i, the firm size variable (STOCK_Pi,t) is the percentage of firms from the KOSDAQ and KOSPI markets with market capitalization smaller than

the firm i's market capitalization. This firm size variable is predicted to show a positive correlation (+) with dividend payout propensity because large size firms are more likely to have poor investment opportunities as highlighted in Miller & Modigliani (1961). The firm's future growth opportunities are captured by the market to book asset ratio variable (MBit) and the sales growth rate (SALEGit) as well. A higher growth in sales and a greater market value indicate large cash flow generation opportunities in the future and these variables are complementary to each other. We also expect negative coefficients (-) on these variables. The market value of firm is equal to total assets less book equity value plus market equity value. We subtract the previous period's sales from this period's sales and divide this value by the previous period's sales to construct the measure of sales growth rates. The return on asset (ROAit) is the ratio between earnings before interest and tax (EBIT) to the total book assets. The signaling theory argues a positive (+) correlation of the ROA variable with dividend payout propensity (Bhattacharya, 1979). The next two variables account for the effects of a firm's financing conditions on its dividend payout decisions. A huge book leverage ratio points to a significant interest burden to the firm, which restricts the payments of dividends. Large accumulated cash holdings implies the firm's strong cash saving incentives, which suggests a lower dividend payout propensity. Hence, the existing theories predicts negative signs (-) on the book leverage ratio (LEVit) and cash-asset ratio (CASHit). We also take account of the life cycle theory of firm by incorporating the retained earnings to total equity ratio in the logit model (RE/TEit). DeAngelo et al. (2006) argue a positive relation (+) between this RE/TE ratio and dividend payout probability.

The definition of the firm characteristic variables and their expected signs are summarized in <Table 2>.

<Table 2> Variable Definition and Expected Sign

Variables	Definition	Sign
DV	Equal to 1 if the firm pays cash dividend and 0 otherwise	N.A.
STOCK_P	The percentage of firms in the KOSPI and KOSDAQ markets with market capitalization smaller than the firm's market capitalization	Positive (+)
MB	(Total assets -Book Equity+ Market Equity)/Total Assets	Negative (-)
SALEG	(Sales (t) – Sales (t-1))/Sales (t-1)	Negative (-)
ROA	Earnings before Interest and Tax/ Total Assets	Positive (+)
LE	Total Debt Obligations/ Total Assets	Negative (-)
CASH	Cash and Cash Equivalents/Total Assets	Negative (-)
RE/TE	Retained Earnings/Common Equity	Positive (+)

4. Empirical Results

4.1. Summary Statistics and Correlation Analysis

<Table 3> provides the summary statistics for our variables of interests. The table reports the mean and standard deviation of each firm level variable for the entire retail firm-year observations, the retail firms listed in the KOSPI market, and the firms listed in the KOSDAQ markets. <Table 1> and <Table 2> describe the construction of these firm characteristic variables.

<Table 3> Descriptive Statistics (N=570)

Market	ALL (N=570)		KOSPI (N=339)		KOSDAQ (N=231)	
Variables	Mean	S.D.	Mean	S.D.	Mean	S.D.
DV (%)	0.58	0.49	0.71	0.46	0.31	0.46
TURN	4.59	9.02	3.02	6.46	6.89	11.44
ILLIQ	35.19	190.97	11.71	43.86	69.63	292.21
NOTRD (%)	1.85	7.16	1.49	5.86	2.38	8.71
VOL	5.44	1.85	5.54	1.88	5.30	1.79
STOCK_P (%)	48.28	28.81	55.59	28.44	37.55	25.88
MB	1.24	0.76	1.08	0.55	1.47	0.94
SALEG (%)	22.00	89.77	10.28	54.34	39.20	122.87
ROA (%)	0.36	15.47	4.09	10.43	-5.12	19.55
CASH (%)	16.78	17.56	11.80	12.87	24.10	20.70
LEV (%)	50.98	22.81	54.35	21.57	46.04	23.71
RE_TE (%)	-0.05	0.98	0.13	0.75	-0.31	1.19

Note: See <Table 1> and <Table 2> for the definition of variables. Mean and S.D. point to the sample average and standard deviation.

The results of <Table 3> are in line with the existing literature. Most of all, the firms in the KOSDAQ market are smaller ones with better investment opportunities. While the retail firms listed in the KOSDAQ market have smaller market capitalization (see STOCK_P), these firms have a greater market-to-book asset ratio (MB) and larger sales growth rate (SALEG). Next, the retail firms listed in the KOSDAQ market is young and has lower propensity of dividend payouts. Both of the retained earnings to total equity ratio and the proportion of dividend paying out firms are smaller for the firms listed in the KOSDAQ market.

<Table 4> Correlation Coefficients (N=570)

Corr.	DV	TURN	ILLIQ	NOTRD	DVOL	STOCKP	MB	ROA	SALEG	CASH	LEV	RE/TE
DV	1.00											
TURN	-0.37	1.00										
ILLIQ	-0.11	-0.06	1.00									
NOTRD	-0.09	0.06	0.44	1.00								
VOL	0.17	0.15	-0.34	-0.34	1.00							
STOCK_P	0.52	-0.27	-0.14	-0.11	0.60	1.00						
MB	-0.20	0.07	-0.08	0.01	0.26	0.10	1.00					
ROA	0.46	-0.36	0.04	-0.02	0.08	0.40	0.01	1.00				
SALEG	-0.09	0.00	-0.01	0.04	0.04	0.05	0.54	-0.02	1.00			
CASH	-0.15	0.07	-0.08	-0.09	0.06	-0.08	0.15	-0.12	0.09	1.00		
LEV	-0.04	-0.03	0.20	0.22	-0.16	-0.02	-0.10	0.05	-0.03	-0.43	1.00	
RE/TE	0.53	-0.47	-0.04	-0.13	0.09	0.44	0.05	0.67	0.02	-0.04	-0.15	1.00

<Table 4> documents the pair-wise correlation coefficients among the firm characteristic variables used in our empirical analysis. This correlation table provides a broad view on the validity of the liquidity hypothesis for the Korean retail industry. <Table 1> and <Table 2> contain the detailed information about the construction of variables.

The correlation results of <Table 4> partly support the liquidity hypothesis. For instance, the pairwaise correlation coefficient between the turnover rate and dividend payout variable is –0.37, which is in line with the liquidity hypothesis. However, both of the Amihud's illiquidity measure and the proportion of non-trading day are negatively correlated with a firm's dividend payout propensity, which argues against the liquidity hypothesis. The positive correlation between trading volume and dividend payout variable is inconsistent with the liquidity hypothesis as well.

The life-cycle theory appears to have greater explanatory power in the determination of dividend payout for the Korean retail firms. The correlation between the RE/TE ratio variable and dividend payout propensity is almost 0.53, which is quite substantial. The size of market capitalization also has strong explanatory power as well, which also supports the life-cycle theory of firms; firms with large market capitalization tends to be older firms.

4.2. Logit Model

In this section, we estimate multivariate logit models to test the validity of the liquidity hypothesis for the Korean retail industry.

In <Table 5>, we report the estimation results of equation (1) for the entire sample. It documents the estimated coefficients and z-statistics (in parenthesis) for the four types of stock liquidity measures developed above. As illustrated, a firm's profitability, size, market to book ratio, RE/TE ratio, cash holdings, and leverage ratios are used as control variables. The marks of *, **, and *** indicate statistical significance at the 90%, 95%, and 99% levels, respectively.

<Table 5> Multivariate Logit Model Estimation: All

Model	(1)	(2)	(3)	(4)
TURN	-0.109***			
	(-3.4)			
ILLIQ		-0.002**		
		(-2.1)		
NOTRD			0.003	
			(0.2)	
VOL				-0.065
				(-0.8)
STOCK_P	0.029***	0.028***	0.030***	0.032***
	(5.8)	(5.6)	(6.0)	(5.2)
MB	-0.593**	-0.533**	-0.525**	-0.488**
	(-2.5)	(-2.2)	(-2.2)	(-2.1)
SALEG	0.001	0.000	0.000	0.000
	(0.3)	(0.2)	(0.2)	(0.2)
ROA	0.157***	0.153***	0.156***	0.156***
	(3.8)	(3.7)	(3.8)	(3.9)
CASH	-0.026***	-0.028***	-0.028***	-0.027***
	(-3.1)	(-3.1)	(-3.2)	(-3.1)
LEV	-0.016**	-0.014**	-0.017**	-0.017***
	(-2.5)	(-2.1)	(-2.5)	(-2.7)
RE/TE	1.916***	2.515***	2.342***	2.315***
	(5.0)	(5.7)	(5.7)	(5.7)
Intercept	0.164	-0.329	-0.291	-0.080
	(0.3)	(-0.7)	(-0.6)	(-0.1)
N	570	570	570	570
pseudo R^2	0.496	0.489	0.481	0.482

<Table 5> argues for the liquidity hypothesis if we use the turnover rate as our liquidity measure. The coefficient on the turnover rate is –0.109 and statistically significant at 99% level. Such a negative correlation is exactly in line with the liquidity hypothesis. A higher turnover rate implies more

active trading and accordingly, points to a greater stock liquidity.

This finding is consistent with Kim (2016) whose analysis suggests that the liquidity hypothesis holds very well in terms of turnover rate. Considering the fact that his result does not properly control the life-cycle theory of a firm, our negative correlation seems to more strongly support the liquidity hypothesis. In fact, recent empirical studies show a limited explanatory power of the turnover rate in the Korean financial market after controlling for the RE/TE ratio.

<Table 5> also shows that the liquidity hypothesis does not hold well when we adopt the other three measures of liquidity. For instance, the Amihud measure of illiquidity shows even a significantly negative coefficient with dividend payout propensity. The proportion of non-trading day and the volume of trading do not show statistically significant relationship with the retail firms' dividend payout propensities. This finding is well aligned with recent empirical studies, which show that the liquidity hypothesis has only limited explanatory power for all four measures defined as above.

<Table 6> Multivariate Logit Model Estimation: the KOSPI market

Model	(1)	(2)	(3)	(4)
TURN	-0.106**			
	(-2.5)			
ILLIQ		0.004		
		(1.4)		
NOTRD			0.032	
			(1.2)	
VOL				-0.165
				(-1.4)
STOCK_P	0.019***	0.020***	0.019***	0.024***
	(3.2)	(3.3)	(3.2)	(3.3)
MB	-0.472	-0.232	-0.319	-0.105
	(-0.6)	(-0.3)	(-0.4)	(-0.1)
SALEG	0.004	0.001	0.001	0.001
	(1.1)	(0.4)	(0.4)	(0.5)
ROA	-0.026	-0.041	-0.043	-0.038
	(-0.6)	(-0.9)	(-0.9)	(-0.8)
CASH	-0.077***	-0.078***	-0.080***	-0.077***
	(-3.9)	(-4.0)	(-4.0)	(-3.9)
LEV	-0.032***	-0.032***	-0.032***	-0.034***
	(-3.1)	(-3.1)	(-3.1)	(-3.1)
RE/TE	6.289***	7.105***	7.234***	6.859***
	(5.0)	(5.9)	(5.9)	(5.6)
Intercept	2.405**	1.672*	1.834*	2.386**
	(2.5)	(1.8)	(1.9)	(2.2)
N	339	339	339	339
pseudo R^2	0.479	0.467	0.469	0.469

Next, we analyze whether our findings are influenced by the types of stock exchange market. This analysis is closely associated with recent empirical evidence of Griffin (2010). He shows that the negative correlation between stock liquidity measure and dividend payout propensity is more pronounced for small/less profitable firms. As shown in <Table 3>, the retail firms listed in the KOSDAQ market are smaller and less profitable compared to the firms listed in the KOSPI market, which provides an opportunity to investigate the robustness of Griffin (2010)'s findings.

<Table 6> documents the estimation results of equation (1) for the retail firms listed in the KOSPI market. The table includes the estimated coefficients and corresponding z-statistics (in parenthesis) for the four different types of stock liquidity measures discussed above. A firm's profitability, size, market to book ratio, RE/TE ratio, cash holdings, and leverage ratios are controlled for the estimation as in <Table 6>. The marks of *, **, and *** indicate statistical significance at the 90%, 95%, and 99% levels, respectively.

<Table 6> also supports the liquidity hypothesis when we employ the turnover rate as the liquidity measure. The coefficient on the turnover rate is –0.106, which is statistically significant at 95% level. This negative correlation is consistent with the liquidity hypothesis. A larger turnover rate indicates more active trading and thus points to a greater stock liquidity.

Similar to the results of <Table 5>, the table suggests that the liquidity hypothesis does not apply well when we adopt the other three measures of liquidity. Even for the all of the estimated coefficients are statistically insignificant. These insignificant coefficients are not consistent with the predictions of the liquidity hypothesis as well.

The findings of <Table 6> are in line with the existing studies. For instance, Kim (2016) shows the significance of turnover rate measure in explaining dividend policy for the firms listed in the KOSPI market, which is consistent with our finding. In recent studies, the explanatory power of the three other measures turns out weak even for the KOSPI market, consistent with our findings.

<Table 7> reports the estimation results of equation (1) for the retail firms listed in the KOSDAQ market. It reports the estimated coefficients in equation (1) and corresponding z-statistics (in parenthesis) for the four different types of stock liquidity measures. Similar to the above tables, a firm's profitability, size, market to book ratio, RE/TE ratio, cash holdings, and leverage ratios are controlled for the estimation. The marks of *, **, and *** indicate significance at the 90%, 95%, and 99% levels, respectively.

<Table 7> Multivariate Logit Model Estimation: the KOSDAQ market

Model	(1)	(2)	(3)	(4)
TURN	-0.105			
	(-1.4)			
ILLIQ		-0.001		
		(-1.1)		
NOTRD			-0.013	
			(-0.5)	
VOL				0.090
				(0.6)
STOCK_P	0.037***	0.036***	0.036***	0.032**
	(3.4)	(3.1)	(3.2)	(2.5)
MB	-0.694*	-0.697	-0.680	-0.699*
	(-1.7)	(-1.6)	(-1.6)	(-1.7)
SALEG	0.001	0.001	0.001	0.001
	(0.5)	(0.6)	(0.6)	(0.6)
ROA	0.225***	0.229***	0.231***	0.230***
	(3.5)	(3.6)	(3.7)	(3.7)
CASH	-0.007	-0.008	-0.008	-0.009
	(-0.6)	(-0.7)	(-0.7)	(-0.8)
LEV	-0.025**	-0.020*	-0.024*	-0.025**
	(-2.1)	(-1.7)	(-1.9)	(-2.1)
RE/TE	1.900***	2.347***	2.239***	2.268***
	(2.7)	(3.4)	(3.4)	(3.4)
Intercept	-1.006	-1.459*	-1.363*	-1.590
	(-1.1)	(-1.8)	(-1.7)	(-1.6)
N	231	231	231	231
pseudo R2	0.560	0.557	0.552	0.552

<Table 7> limitedly supports the liquidity hypothesis even if we employ the turnover rate as the liquidity measure. The coefficient on the turnover rate is -0.103, which is quantitatively similar to the previous estimation results. Yet, this coefficient is not statistically significant unlike the results of <Table 2> and <Table 3>.

The results of <Table 7> do not support the liquidity hypothesis as well when we use the other three measures of stock liquidity. For all of three logit estimations, the coefficients on stock liquidity measures are statistically insignificant. However, this finding is consistent with the analysis of Lee and Yoon (2017) for the entire Korean financial market, which argues against the liquidity hypothesis.

Our empirical findings in the KOSPI and KOSDAQ financial markets are not well aligned with international evidence. Griffin (2010) documented that the negative relationship between stock liquidity measures and dividends payout propensity is more significant for small/less profitable firms in the international financial markets. Considering the fact that the firms listed in the KOSDAQ market are small and less profitable, our finding is inconsistent with the finding of Griffin (2010).

<Table 8> Multivariate Logit Model Estimation: Conglomerate Firms

Model	(1)	(2)	(3)	(4)
TURN	-0.156			
	(-1.3)			
ILLIQ		0.002		
		(0.3)		
NOTRD			0.056	
			(1.0)	
VOL				-0.185
				(-0.7)
STOCK_P	0.034**	0.035**	0.034**	0.040**
	(2.4)	(2.4)	(2.4)	(2.4)
MB	-2.045	-1.890	-1.981	-1.767
	(-1.5)	(-1.4)	(-1.4)	(-1.4)
SALEG	0.019*	0.022***	0.022***	0.022***
	(1.9)	(2.8)	(2.7)	(2.8)
ROA	0.031	0.049	0.066	0.054
	(0.3)	(0.4)	(0.4)	(0.5)
CASH	-0.028	-0.028	-0.029	-0.031
	(-1.1)	(-1.0)	(-1.0)	(-1.1)
LEV	-0.022	-0.022	-0.024	-0.026
	(-1.1)	(-1.2)	(-1.3)	(-1.2)
RE/TE	5.953**	6.157***	6.112**	6.151***
	(2.4)	(2.7)	(2.4)	(2.9)
Intercept	2.266	1.402	1.592	2.368
	(1.1)	(0.7)	(0.8)	(0.9)
N	202	202	202	202
pseudo R2	0.505	0.487	0.493	0.490

Now, we turn to examine whether the categorization of conglomerate (“Chaebol”) and non-conglomerate firms affect the estimation results. Conglomerate firms have a large internal financing market, which may potentially affects their dividend payout policies. On the contrary, non-conglomerate firms tend to be small and less profitable, which potentially emphasizes the importance of stock liquidity consideration in determining dividend policy.

In <Table 8>, we document the estimation results of equation (1) for the conglomerate retail firms. The table includes the estimated coefficients and corresponding z-statistics (in parenthesis) for the four different types of stock liquidity measures. The profitability, size, market to book ratio, RE/TE ratio, cash holdings, and leverage ratios are controlled for this estimation. The marks of *, **, and *** point to statistical significance at the 90%, 95%, and 99%

levels, respectively.

<Table 8> very restrictively supports the liquidity hypothesis even with the turnover rate as the liquidity measure. The coefficient on the turnover rate is –0.156, which is larger than the average estimate of –0.106 reported in <Table 5>. Yet, this coefficient is not statistically significant unlike the results of <Table 2> and <Table 3>. Hence, we can conclude that the estimation results only very weakly argue for the liquidity hypothesis.

The results of <Table 8> argue against the liquidity hypothesis as well when we adopt the other three measures of stock liquidity as the independent variable. For all of the following estimation using Amihud's illiquidity, the proportion of non-trading day, and trading volumes, we are not able to find any statistically significant relationships.

<Table 9> Multivariate Logit Model Estimation: Non-conglomerate Firms

Model	(1)	(2)	(3)	(4)
TURN	-0.086***			
	(-2.9)			
ILLIQ		-0.001*		
		(-1.9)		
NOTRD			-0.003	
			(-0.2)	
VOL				-0.070
				(-0.8)
STOCK_P	0.020***	0.018***	0.019***	0.022***
	(3.0)	(2.7)	(3.0)	(2.9)
MB	-0.466**	-0.398*	-0.394*	-0.356
	(-2.1)	(-1.8)	(-1.8)	(-1.6)
SALEG	0.000	0.000	-0.000	-0.000
	(0.1)	(0.0)	(-0.0)	(-0.0)
ROA	0.147***	0.142***	0.145***	0.144***
	(3.5)	(3.3)	(3.5)	(3.5)
CASH	-0.023**	-0.024**	-0.024**	-0.023**
	(-2.3)	(-2.4)	(-2.4)	(-2.3)
LEV	-0.017**	-0.014*	-0.017**	-0.018**
	(-2.3)	(-1.9)	(-2.2)	(-2.4)
RE/TE	1.658***	2.256***	2.091***	2.055***
	(4.2)	(4.9)	(4.8)	(4.8)
Intercept	0.243	-0.202	-0.158	0.078
	(0.5)	(-0.4)	(-0.3)	(0.1)
N	368	368	368	368
pseudo R^2	0.389	0.384	0.374	0.375

In <Table 9>, we show the logit model estimation results of equation (1) for the non- conglomerate retail firms. The table contains the estimated coefficients and corresponding z-statistics (in parenthesis) for the four different types of stock liquidity measures. A firm's profitability, size, market to book ratio, RE/TE ratio, cash holdings, and leverage ratios are included in the set of independent variables. The marks of *, **, and *** point to statistical significance at the 90%, 95%, and 99% levels, respectively.

The results of <Table 9> support the liquidity hypothesis when we adopt the turnover rate as the liquidity measure. The coefficient on the turnover rate is –0.086, which is slightly smaller than that of an average firm. This coefficient is statistically significant at 99% level consistent to the findings of <Table 2> and <Table 3>. Such a large explanatory power is in line with the result of Kim (2016).

The results of <Table 9>, however, still argue against the liquidity hypothesis when we consider the other three measures of stock liquidity. For both of the following estimations using the proportion of non-trading day, and trading volume, we are not able to find any statistically significant relationships. When we examine the Amihud measure of illiquidity, the coefficient turns out significantly positive, in contrast to the predictions of the liquidity hypothesis.

Our empirical findings in the analysis of conglomerate and non-conglomerates are in line with international evidence. Griffin (2010) documented that the negative relationship between stock liquidity measures and dividends paid is more significant for small/less profitable firms. While we do not report the detailed results here, non-conglomerate retail firms tend to be small and less profitable compared to conglomerate firms. Such statistically significant relationship observed in the non-conglomerate firms is in line with the findings of Griffin (2010).

Finally, we control the influence of East Asian crisis of 1997 by dividing our sample into two periods: before and after the East Asian crisis. This crisis changed a firm's financial policy such as introducing the 200% requirement for debt to equity ratio and consequently a firm's dividend payout policy. For this purpose, we examine the sample period before 2000 and after 2000 separately.

<Table 10> documents the logit estimation results of equation (1) for the sample period before 2000. The table reports the estimated coefficients and corresponding z-statistics (in parenthesis) for the four different types of stock liquidity measures. An individual firm's profitability, size, market to book ratio, RE/TE ratio, cash holdings, and leverage ratios are controlled for the estimation. The marks of *, **, and *** point to significance at the 90%, 95%, and 99% levels, respectively.

<Table 10> Multivariate Logit Model Estimation: Before 2000

Model	(1)	(2)	(3)	(4)
TURN	-0.289**			
	(-2.2)			
ILLIQ		-0.004***		
		(-3.2)		
NOTRD			-0.012	
			(-0.6)	
VOL				0.049
				(0.2)
STOCK_P	0.020**	0.025***	0.025***	0.024***
	(2.4)	(3.1)	(3.2)	(2.7)
MB	-0.466	-0.380	-0.201	-0.246
	(-0.6)	(-0.5)	(-0.3)	(-0.4)
SALEG	0.004	0.001	-0.000	-0.000
	(0.9)	(0.2)	(-0.1)	(-0.0)
ROA	0.141*	0.043	0.075	0.077
	(1.7)	(0.5)	(1.0)	(1.0)
CASH	-0.041	-0.010	-0.015	-0.017
	(-1.2)	(-0.4)	(-0.5)	(-0.6)
LEV	-0.068*	-0.020	-0.031	-0.032
	(-1.8)	(-1.0)	(-1.6)	(-1.6)
RE/TE	3.949*	8.473***	5.228**	5.130**
	(1.8)	(2.8)	(2.3)	(2.2)
Intercept	5.102	0.176	1.002	0.891
	(1.5)	(0.1)	(0.6)	(0.4)
N	127	127	127	127
pseudo R^2	0.397	0.419	0.343	0.342

<Table 11> Multivariate Logit Model Estimation: After 2000

Model	(1)	(2)	(3)	(4)
TURN	-0.131***			
	(-2.9)			
ILLIQ		-0.001		
		(-0.7)		
NOTRD			-0.223*	
			(-1.9)	
VOL				-0.037
				(-0.3)
STOCK_P	0.037***	0.035***	0.035***	0.037***
	(5.4)	(5.0)	(5.1)	(4.1)
MB	-0.853***	-0.760***	-0.761***	-0.732***
	(-3.1)	(-2.7)	(-2.8)	(-2.6)
SALEG	-0.001	-0.001	-0.001	-0.001
	(-0.8)	(-0.8)	(-0.6)	(-0.8)
ROA	0.173***	0.179***	0.185***	0.179***
	(3.6)	(3.6)	(4.0)	(3.7)
CASH	-0.028***	-0.032***	-0.033***	-0.031***
	(-2.7)	(-3.0)	(-3.0)	(-2.9)
LEV	-0.023**	-0.025**	-0.026**	-0.026**
	(-2.2)	(-2.5)	(-2.5)	(-2.6)
RE/TE	1.912***	2.475***	2.385***	2.411***
	(4.5)	(5.1)	(4.9)	(5.1)
Intercept	0.203	-0.117	-0.026	-0.054
	(0.3)	(-0.2)	(-0.0)	(-0.1)
N	443	443	443	443
pseudo R^2	0.569	0.555	0.558	0.554

<Table 10> supports the liquidity hypothesis with the turnover rate as our liquidity measure. The coefficient on the turnover rate is –0.289, which is larger than that of an average firm. This coefficient achieves the statistical significance at 95% level. Such a significant explanatory power of stock liquidity measure is in line with the result of Kim (2016).

The results of <Table 10>, however, still undermine the validity of liquidity hypothesis when we examine the other three measures of stock liquidity. For both of the estimations analyzing the proportion of non-trading day, and trading volume, the coefficients are statistically insignificant. When we examine the Amihud measure of illiquidity, the coefficient becomes significantly positive, inconsistent with the prediction of the liquidity hypothesis.

<Table 11> includes the logit estimation results of equation (1) for the sample period after 2000. The table documents the estimated coefficients and corresponding z-statistics (in parenthesis) for the four different types of stock liquidity measures. A firm's profitability, size, market to book ratio, RE/TE ratio, cash holdings, and leverage ratios are controlled for the estimation. The marks of *, **, and *** point to significance at the 90%, 95%, and 99% levels, respectively.

The results of <Table 11> are in line with those of <Table 10>. Even though we change the sample period to control the effect of East Asian Crisis of 1997, the turnover rate still supports and the other three measures do not support the validity of liquidity hypothesis. To be specific, the coefficient on the turnover rate measure is significantly negative in line with the liquidity hypothesis. Yet, we are not able to find any supporting evidence for the liquidity hypothesis by investigating the illiquidity measure of Amihud, the proportion of non-trading day and trading volume measure.

5. Concluding Remarks

This paper examines whether the liquidity hypothesis of dividend policy applies well for the Korean retail industry.

For this purpose, four different types of liquidity measures are employed for each firm-year observation. We use the logit model to analyze how a firm's stock liquidity affects its dividend payout decisions. This logit model controls for other firm characteristics such as the life-cycle aspect of a firm. For a comprehensive analysis, we estimate the logit model for the entire sample of retail firms, the retail firms listed in the KOSPI/KOSDAQ markets, and the conglomerate/ non-conglomerate firms. Sub-sample period analysis is conducted as well to account for the effect of East Asian financial crisis and subsequent changes in financial market regulations such as the 200% debt to equity ratio rule.

We find a number of interesting results. Most of all, the liquidity hypothesis is valid for the Korean retail industry when we use the turnover rate as our stock liquidity measure. Moreover, the turnover rate variable has statistically more significant coefficients when we examine the retail firms listed in the KOSPI market and the non-conglomerate firms. Yet, we find no empirical evidence supporting the liquidity hypothesis when we use the three other measures of stock liquidity.

This work contributes to the literature by presenting new empirical evidence in testing the liquidity hypothesis. Most of all, this is the first study that examines the liquidity hypothesis for the Korean retail industry. Our empirical analysis suggests that the validity of the liquidity hypothesis is inconclusive for the Korean retail industry. On the one hand, our analysis using the measure of turnover rate provides supporting evidence for the liquidity hypothesis in line with Kim (2016). On the other hand, our analysis based on the other three measures generally does not support the liquidity hypothesis as pointed out in recent empirical studies. These findings enrich the branch of international studies investigating the significance of the liquidity hypothesis in the international market such as Griffin (2010).

More concrete economic analysis is required for why the tests for the liquidity hypotheses provide mixed results. To be specific, the use of different stock liquidity measures show even contrasting results in our analysis. This mixed results are in line with the findings of Kim (2016) in the Korean financial market. Considering this prevailing inconsistency, future researches may test whether these widely used proxy variables for the stock liquidity measures apply well for the Korean financial market or not. We leave this question for future researches.

References

Banerjee, S., Gatchev, V. A., & Spindt, P. A. (2007). Stock Market Liquidity and Firm Dividend Policy. *Journal of Financial and Quantitative Analysis, 42*(2), 369-397.

Bhattacharya, S. (1979). Imperfect Information, Dividend Policy, and "The Bird in the Hand" Fallacy. *Bell journal of economics, 10*(1), 259-270.

DeAngelo, H., DeAngelo, L., & Stulz, R. M. (2006). Dividend Policy and the Earned/Contributed Capital Mix: A Test of the Life-Cycle Theory. *Journal of Financial economics, 81(2*), 227-254.

Denis, D. J., & Osobov, I. (2008). Why Do Firms Pay Dividends? International Evidence on the Determinants of Dividend Policy. *Journal of Financial economics, 89*(1), 62-82.

Dong, M., Robinson, C., & Veld, C. (2005). Why Individual Investors Want Dividends. *Journal of Corporate Finance, 12*(1), 121-158.

Easterbrook, F. H. (1984). Two Agency-Cost Explanations of Dividends. *The American Economic Review, 74*(4), 650-659.

Griffin, C. H. (2010). Liquidity and Dividend Policy: International Evidence. *International Business Research, 3*(3), 3-9.

Jensen, M. C. (1986). Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers. *The American Economic Review, 76*(2), 323-329.

Kim, J. W. (2016). The Effects of Stock Liquidity on the Firm's Dividend Policy in Korean Stock Market. *Korean Corporation Management Review, 69*(0), 25.

Kim, S. S., & Lee, J. H. (2016). The Marginal Value of Cash and Agency Conflicts in Korean Firms. *The Journal of Asian Finance, Economics and Business, 3*(4), 5-16.

Miller, M. H., & Modigliani, F. (1961). Dividend Policy, Growth, and the Valuation of Shares. *The Journal of Business, 34(*4), 411-433.

Miller, M. H., & Rock, K. (1985). Dividend Policy under Asymmetric Information. *The Journal of Finance, 40*(4), 1031-1051.

Muhammad, H., Shah, B., & ul Islam, Z. (2014). The Impact of Capital Structure on Firm Performance: Evidence from Pakistan. *Journal of Industrial Distribution & Business, 5(*2), 13-20.

Singh, T., Mehta, S., & Parmar, V. (2016). Developing Relationship between Investors Psychology and Financial Decision Making. *East Asian Journal of Business Economics, 4*(2), 28-47.