

Research article

The Study Effect of Liquidity on Capital Structure Decisions in the Tehran Security Exchange

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Abstract

This study empirically investigates the effect of liquidity on capital structure decisions. The three variables, the modified liquidity ratio, the Modified turnover and illiquidity of the company were considered in order to examine this relationship. The research data is collected from 50 firms in the Tehran Security Exchange (TSE) during 2005-2012. The statistical technique is used to examine the assumption of multiple regressions. In order to examine the hypotheses, data is collected from the annual reports of the companies using official bulletins of the Tehran stock exchange, mainly, through Novin software, Tadbir Pardaz software, and stock sites such as www.rdis.ir. The results indicate that by varying the ratio of corporate profits, illiquidity of the company modified turnover, and ratio of net property has a positive and significant relationship with financial leverage company.

Key words: financial leverage, illiquidity, modified liquidity ratio, modified turnover, the Tehran Security Exchange

INTRODUCTION

Capital structure in a business entity includes cashes supplied through debt and equity. The origin and composition of the two types of capitals will supply financial consistency and the capability to pay the long-term liability of the company. Companies which finance through the common stocks are more attractive for investors and creditors because they do not have any claims prior to the common stocks. However, long-term liability and the outstanding stock can create leverage for the structure of a company and improve the return of owner equity.

The novel theories of financial structure were posed in late 1950s and precisely after the publication of the famous paper written by Modigliani & Miller (1958) and the presentation of irrelevance proposition. They presupposed in their theory that every company has a certain set of expected cash flows. When a company identifies a certain ratio of its liabilities and equities to finance its assets, it is trying to make decisions about how to divide cash flows mentioned among different investors. Also it is supposed that since the accessibility amounts of investors and companies to financial markets are the same, investors can supply all financial needs of the company (amount isn't important) and liquidate all unwanted liabilities for which the company has responsibility. Regarding the presuppositions above, Modigliani & Miller (1958) concluded that the liabilities and capital structure of a company do not affect its market value (Alinezhad & Taghizadeh, 2012).

According to pecking order theory which is resulted through the studies carried out by Myers & Majluf (1984), there is not any optimal debt ratio and firms will try to supply financially without paying attention to optimal capital structure and only will consider the predetermined pecking order. In this theory, firms can finance through internal and external cash resources. It should be noted here that the internal cashes are in priority and external cashes will be used only when the internal ones are not enough. In this case debt issuance will be preferred to stock issuance. In other words, in pecking order theory, when the internal cash flows of a company are not enough to invest and pay the cash profit, firms issue debts and stocks never are issued unless the company is forced to issue debts with high interest rates and the financial crisis' cost is high (Sunder & Myers, 1999). Thus, we can describe pecking order theory of a company's finance as: the first choice of the managers is using internal cashes (accumulated profit), then low-risk debt bonds and finally stock issuance (Alinezhad & Taghizadeh, 2012).

Liquidity has been extensively studied, particularly in the market microstructure literature. The liquidity of a firm's equity is related to the ease with which a firm can raise external capital through a stock offering; less liquid stocks tend to have higher issuance costs and thus a higher cost of equity (Westonet al., 2005; Hennessy and Whited, 2005). Therefore a question arises that, are firms with more liquid equity more motivated to issue equity than those with less liquid equity? and also, are capital structure choices likely influenced by liquidity?

Capital structure and liquidity

It is clear that liquidity is a major concern for those who trade shares and those who create, manage or regulate trading infrastructure. A growing body of research suggests that liquidity has a much broader relevance. Stoll and Whaley (1983) first note that stock transaction costs need to be taken into account when valuing equity investments and argue that this may explain the higher required rate of return on small stocks, which are relatively illiquid. Amihud and Mendelson (1986) provide a formal model where transaction costs, like a tax, increase required rates of return for equity investments. They note that this effect can explain a substantial fraction of firm valuations. Looking just at issuance costs, Butler et al. (2005) find that investment banking fees are lower for more liquid firms. These issuance costs must be acknowledged when raising equity through external financing and are an implicit cost of external equity. A number of other studies provide evidence consistent with a significant effect of liquidity on expected returns. Taken together, this body of research suggests a link between liquidity and the cost of equity. To motivate a link between liquidity and capital structure, therefore, requires a link between the cost of equity and capital structure. This is most clearly articulated in the many papers that develop trade-off theories of capital structure those based on the initial work by Modigliani and Miller (1958, 1963). These theories essentially argue that an optimal capital structure is determined by trading the net cost of equity against the net cost of debt where the net cost of debt is principally determined by the debt tax shield. Variables that would reduce the net cost of equity, such as increased liquidity, would therefore induce a greater reliance on equity financing. In many ways our motivation parallels Green and Hollifield (2003). They note that the ability to defer capital gains provides an advantage to equity that lowers the cost of equity. They proceed to demonstrate that this approach can provide a balance between

the cost of debt and the cost of equity that yields reasonable capital structure predictions. In effect, rather than arguing that the tax advantage of debt is lower than originally believed, they argue that the advantages of equity are actually higher. We simply note that enhanced liquidity, as noted in Amihud and Mendelson (1986), also lowers the cost of equity. In our tests, we explore whether greater equity liquidity, which reduces the relative advantage of debt financing, leads to relatively lower usage of debt. Of course, the trade-off theory we outline above is not a complete description of all relevant issues and there is reason to question whether a liquidity effect exists or, if it does, whether it is of appreciable magnitude. For example, as equity market liquidity increases, the liquidity of debt may also be increased. This would attenuate any relative preference for equity. Similarly, as spreads increase, equity investors may trade less and this would attenuate the effect of the transaction cost on the cost of equity these traders experience in equilibrium. In fact, it is hard to imagine any theoretical model so fully articulated that there remains no room for doubt (one way or another) regarding the hypothesized relation. Thus, it is all the more imperative that we conduct an empirical study of the relation between liquidity and capital structure—one that provides insight into the economic, as well as statistical, importance of the relation.

Furthermore, even the existence of an optimal or target capital structure has been questioned. The principal alternative is that capital structure represents the simple accumulation of individual capital raising choices. The most common theoretical framework for these is the pecking order theory of Myers and Majluf (1984). This theory suggests that due to adverse selection, firms will prefer internal equity financing over debt, and debt over external equity. We note that for our purposes, one can also motivate the relation between liquidity measures and capital structure using pecking order arguments. Specifically, the adverse selection conditions that drive pecking order preferences may be reflected in trading costs to the extent that asymmetry between market participants is correlated with asymmetry between managers and the market. Under this interpretation, higher liquidity would imply lower adverse selection and possibly more equity. A prediction that is observationally equivalent to the trade-off theories we have discussed. We do note, however, that a number of studies suggest that pecking order theories, who secularly demarcated preferences leave no room for concerns other than information asymmetry, are not sufficient to explain all capital structure choices (Fama and French, 2005; Leary and Roberts, 2008). Aghaee & et al (2010) studied the effect of investment opportunities and the resources of financial supply on the policies of dividends. This research was carried out regarding 34 firms accepted in Ghanaian Stock Exchange during the years between 1990 and 2006. To estimate the multi-variable linear model, panel data with fixed effects 'method has been utilized. The findings of their research showed that the investment opportunities have a negative effect on dividends' policy. Also the resources of financial supply of a company have a little effect on a firm's dividends' policy and most probably profitable companies divide more profits among their stockholders. Prasit Udomsirikul & et al (2011) explore the impact of liquidity on capital structure decisions. They showed Firms that enjoy more liquid equity experience a lower cost of equity and may be more motivated to adopt more equity and less debt in their capital structure. Also document that Thai firms with more liquid equity are significantly less leveraged. Tongkong, (2012) study, that reviewed " Key factors influencing capital structure decision ". He showed that Positively related to firm size and growth of the company's financial leverage. Also the profitability and financial leverage of the company is negative. Sinai & et al (2012) studied the effect of growth opportunities on the relationship between capital structure, dividends and ownership structure of firm value. Thus, 110 companies were selected to be investigated during the time period between 2004 and 2008. The research results showed that there is a meaningful relationship between capital structure (leverage) and dividends with firm value. If there are some growth opportunities, this relationship is meaningful and negative. But without growth opportunities, the relationship is meaningful and positive. Also the results showed that there is a non-linear and meaningful relationship between ownership structure and firm value and growth opportunities have a meaningful effect on this relationship.

Research Hypotheses

Considering that the basic aim of this study is to analysis the effect of liquidity on capital structure decisions the research hypotheses are classified as follow:

The main Hypotheses

H₁: There is a significant relationship between financial leverage and illiquidity of the company.

H₂: There is a significant relationship between financial leverage and the modified turnover.
 H₃: There is a significant relationship between financial leverage and the modified liquidity ratio.

Secondary hypotheses

H₁: There is a significant relationship between financial leverage and Firm's size.
 H₂: There is a significant relationship between financial leverage and ratio of corporate profits.
 H₃: There is a significant relationship between financial leverage and ratio of net property.

Variables Definitions

Dependent variable

Financial leverage: The financial leverage measure for each firm is based on the book value of debt and assets. While the theory of capital structure suggests that financial leverage should be measured in market value terms, most empirical works tend to use book value rather than market value, mainly because book values are more objective. In addition, a survey by Stonehill et al. (1974) showed that those financial managers tend to think in terms of book-value rather than market-value ratios when discussing financial leverage (Jermias, 2008).

Independent variables

Illiquidity of the company (ILLIQ_{i,t}): Amihud's (2002) illiquidity or ILLIQ, is defined as the daily ratio of absolute stock return to trading volume in Thai baht which is averaged over a certain period.

$$ILLIQ_{iy} = \frac{1}{Diy} \frac{\sum_{tzt} |RiYd|}{VOL Diy}$$

where "Riyd" the return on stock i on day d of year y, "VOL Diy" is the respective daily volume in baht, and "Diy" is the number of days when data are available for stock i in year y. Amihud's (2002) illiquidity can be implicitly interpreted as the daily price response associated with one baht of trading volume. It can serve as a rough measure of the daily price impact of the order flow. ILLIQ measures how much one baht of trading volume causes absolute price change.

Modified turnover (MT_{i,t}): The modified turnover (MT) can be defined as the ratio of the monthly number of shares traded to the total number of shares outstanding divided by the volatility of earnings.

$$MT_i = \frac{VOL_{i,t}}{N_{i,t} * VolATILITY}$$

VOL_{i,t} is the monthly number of share traded, N_{i,t} is the total number of shares outstanding, and VOLATILITY is the volatility of earnings, defined as the absolute difference between the annual percentage change in earnings before interest and taxes (EBIT) and the average of this change over the sample period. We use the firm-year average for this measure.

The modified liquidity ratio (MLR_{i,t}): is defined as the ratio of the sum of daily trading volume to the sum of absolute stock return divided by the volatility of earnings.

$$mlR_1 = \frac{\sum_t Vol_{i,t}}{\sum_t |R_{i,t}| * VolATILITY}$$

Vol_{i,t} and R_{i,t} are the daily volume and daily stock returns respectively. VOLATILITY is the volatility of earnings, defined as the absolute difference between the annual percentage change in earnings before interest and taxes

(EBIT) and the average of this change over the sample period. Moreover, we use the natural log of this variable in this study.

Control variables:

Firm's size (SIZE_{i,t}): it is the natural logarithm of total assets.

ratio of net property (TANG): the ratio of net property, plant, and equipment to total assets is used as a proxy for tangibility . .

ratio of corporate profits (PROF): The ratio of earnings before interest and taxes (EBIT) to total assets is used as a proxy for profitability .

Methods of Data Analysis

In this study, the multiple regressions are used for data analysis. Initial data was inserted in Excel spreadsheet and SPSS software was applied to analyze the data statistically .Also Rahavard Novin software, Tadbir Pardaz software ,stock organization library and stock sites such as www.rdis.ir and www.irbourse.com were used.

Research Method and Regression Model

Considering that the aim of this study was to examine the effect of liquidity on capital structure decisions Company of listed in Tehran Stock Exchange First of all variables in the model study in a multiple regression model tested general form it is as follows:

$$LEV_{i,t} = \alpha_0 + \alpha_1 ILLIQ_{i,t} + \alpha_2 MT_{i,t} + \alpha_3 MLR_{i,t} + \alpha_4 SIZE_{i,t} + \alpha_5 TANG_{i,t} + \alpha_6 PROF_{i,t} + \epsilon_{i,t}$$

Sample Selection

The sample was chosen from the firms listed on the Tehran stock exchange (TSE), from 2005 to 2012, using the following criteria:

- 1). Firms were listed in TSE during 2005-2012.
- 2). Data was available for all the years under the study.
- 3). The companies didn't have changed the fiscal year for the period studied.
- 4). Banks, Insurance and Investment firms were not considered in this study.

Regarding the conditions above and the limitations, 50 companies were chosen from among firms listed in Tehran Stock exchange.

Data Analysis

Pearson Correlation Coefficient and Multivariate Regression were used to analyze data.

Ho= Data is normal

H1= Data is abnormal

Table 2: One-sample Kolmogorov-Smirnov Test

		DIV
N		400
Normal parameters ^{a,b}	Mean	.7266
	Std. Deviation	1.04241 50

Most Extreme Differences	Absolute	.074
	Positive	.074
	Negative	-.070
Kolmogorov-Smirnov Z		1.212
Asymp. Sig. (2-tailed)		.106

- a. Test distribution is normal.
- b. Calculated from data.

Following the table (II), Sig = 0.106 > 0.05. Thus results show that data is normal.

Testing Results of the hypothesis:

Table 3: Variables Entered

Model	Variables Entered	Adjusted R Square	Durbin-Watson	Method
1	MLR	0.584		Step wise
2	PROTit	0.634		Step wise
3	ILLIQ	0.674		Step wise
4	MT	0.742		Step wise
5	TANGit	0.842	1.817	Step wise

A total optimum model was used to predict the financial leverage based on **liquidity**. We entered variables into the model respectively. 5 models were defined and finally the last model (5) including 5 variables was defined as an optimum model for predicting the performance. As a result, the regression model came as the followings:

$$LEV_{i,t} = \alpha_0 + \alpha_1 MLR_{i,t} + \alpha_2 PROTit_{i,t} + \alpha_3 ILLIQ_{i,t} + \alpha_4 MT_{i,t} + \alpha_5 TANG_{i,t} + \epsilon_{i,t}$$

Table 4: Excluded Variables

model	Variable	Beta In	t	Sig	Partial Correlation	Vif
1	SIZEit	-5.843	-2.128	.034	-.121	1.002

As it is seen, SIZE_{it}, significance level is equal to .034 > 0.05, therefore, this variable was not entering the model.

Presenting total optimum model based on model 3 (T-test)

Optimum model was model 5, which had a more determination coefficient than the previous ones. In fact, when most variables were beside each other, they could present a more precise prediction of the financial leverage therefore, the optimum model was 5.

Table 5: Coefficients of model 5

Model5	Unstandardized Coefficients		Standardized Coefficients	t	Sig	VIF
	B	Stl. Erro	Beta			
Constant	0.692	0.20		34.314	0.000	
MLR	-0.016	0.010	-.072	21.889	0.000	2.756
PROTit	3.507	0.221	.768	-21.382	0.000	3.669
ILLIQ	0.003	0.567	.017	18.915	0.000	4.268
MT	32.69	0.145	.008	17.842	0.004	5.451
TANGit	0.008	.039	.007	19.62	0.046	6.321

The optimal regression model was written as the following:

$$LEV_{i,t} = 0.692 - 0.016 MLR_{i,t} + 3.507 PROT_{i,t} + 0.003 ILLIQ_{i,t} + 32.69 MT_{i,t} + 0.008 TANG_{i,t} + \epsilon_{i,t}$$

According to the statistical results of the hypothesis to test the research, ratio of corporate profits, illiquidity of the company Modified turnover, and ratio of net property are positive and have a significant impact on the financial leverage while the modified liquidity ratio impact is negative and significant. So if the dividend is based on a proportion of permanent earning, it can be argued that increasing the ratio of corporate profits, illiquidity of the company Modified turnover, and ratio of net property, the financial leverage will increase. Meanwhile, based on Table (3) the results of tests, suggest that, six independent variables of the study have a significant relationship with the financial leverage ($F = @ . /000$), which together offer a 84% ($AdjR^2 = (0.842)$) Explains the behavior of the dependent variable.

Conclusion

This study empirically investigates the effect of liquidity on capital structure decisions. The three variables, the modified liquidity ratio, the modified turnover and illiquidity of the company were considered in order to examine this relationship. According to the statistical results of the main hypotheses to test the research, illiquidity of the company and modified turnover, are positive and have a significant impact on the financial leverage while the modified liquidity ratio impact is negative and significant. Thus, it can be claimed that the increase in, liquidity of the company and modified turnover would increase the financial leverage. These results are consistent with the results of the, Prasit Udomsirikul & et al (2011) study, that reviewed "Liquidity and capital structure: The case of Thailand" were not experimental results of their research. It says that Thai firms with more liquid equity are significantly less leveraged.

And it also the results of Secondary hypotheses show that ratio of corporate profits and ratio of net property are positive and have a significant impact on the financial leverage . Thus, it can be claimed that the increase in , ratio of corporate profits and ratio of net property would increase the financial leverage. These results are consistent with the results of the, Supa Tongkong ,(2012) study, that reviewed " Key factors influencing capital structure decision " were not experimental results of their research. He showed that Positively related to firm size and growth of the company's financial leverage. Also the profitability and financial leverage of the company is negative.

References

- [1] Aghaee, M.A Shakeri, A. (2010), using ratios of liquidity, cash flow and accrual accounting in predicting future operating cash flow of companies listed in Tehran Stock Exchange, Journal of Financial Accounting, Second Year, No. 5, pp. 1-16.
- [2] Amihud, Y., Mendelson, H., 1986. Asset pricing and the bid–ask spread. Journal of Financial Economics 17,223–249.
- [3] Alinezhad, S.M. Taghizadeh. Kh.V. (2012), An overview of the theory of capital structure, the first National Conference on Noor Azad University.
- [4] Butler, A.W., Grullon, G., Weston, J.P., 2005. Stock market liquidity and the cost of issuing equity. Journal of Financial and Quantitative Analysis 40 (2), 331–348.
- [5] Fama, E.F., French, K.R., 2005. Financing decisions: who issues stock. Journal of Financial Economics 76 (3), 549–582.
- [6] Green, R., Hollifield, B., 2003. The personal-tax advantages of equity. Journal of Financial Economics 67,175–216.
- [7] Hennessy, C.A., Whited, T.M., 2005. Debt dynamics. Journal of Finance 71 (3), 1129–1165
- [8] Jermias, J., (2008) “The relative influence of competitive intensity and business strategy on the relationship between financial leverage and performance”, The British Accounting Review, Vol. 40, pp. 71–86.
- [9] Leary, M.T., Roberts, M.R., 2008. The pecking order, debt capacity, and information asymmetry. Unpublished working paper, Available at SSRN: /<http://ssrn.com/abstract=555805S> .
- [10] Modigliani, F., Miller, M.H., (1958). "The cost of capital, corporation finance, and the theory of Investment." American Economic Review 53, 433- 443.
- [11] Modigliani, F., Miller, M.H., 1963. Corporate income taxes and the cost of capital: a correction. The American Economic Review 53 (3), 433–443.
- [12] Myers S.C., and N.S. Majluf (1984), "Corporate Financing and Investment Decisions When Firms Have Information that Investors Do Not Have", Journal of Financial Economics, 13 (2);
- [13] Prasit , U. Seksak , J(2011) “Liquidity and capital structure: The case of Thailand” , Journal of Multinational Financial Management, No.21, pp.106-117
- [14] Sinai, HA. Solgi, M. Mohammadi, K. (2012), The effect of growth opportunities on the relationship between capital structure, dividends, ownership structure and firm value, Journal of Financial Accounting, Third, Fourth Issue, pp. 78-102.

[15] Stoll, H.R., Whaley, R., 1983. Transaction costs and the small firm effects. *Journal of Financial Economics* 12, 1153–1172.

[16] Supa Tongkong ,(2012) “Key factors influencing capital structure decision”, *procedia –social and Behavioral Sciences* 40(2012) 716-720

[17] Weston, J., Butler, A., Grullon, G., 2005. Stock market liquidity and the cost of issuing equity. *Journal of Financial and Quantitative Analysis* 40, 331–348.