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Liquidity Risk and Capital Structure of Companies in Latin America

pp. 22-37

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ABSTRACT **Objective.** To explore the relationship between liquidity risk and the capital structure of Latin American companies. **Methodology.** With a sample of 135 companies (Brazil, Chile and Mexico), panel data were used to analyze various models that considered, among other variables, six liquidity risk indices, two of which included a new factor: the free-float. The study period covers from 2010 to 2019. **Results.** The level of indebtedness and capital risk in Latin America companies present a mixed relationship (direct and inverse). **Conclusions.** Latin American companies have their own characteristics for decision-making about capital structure.

KEY WORDS Liquidity risk, capital structure, free-float, emerging markets, Latin America.

Riesgo de liquidez y estructura de capital de las empresas en América Latina

RESUMEN **Objetivo.** Explorar la relación entre el riesgo de liquidez y la estructura de capital de las empresas latinoamericanas. **Metodología.** Con una muestra de 135 empresas (Brasil, Chile y México) se analizan diversos modelos con datos de panel que consideran, entre otras variables, seis índices de riesgo de liquidez; en dos de ellos se incorpora un nuevo factor: el *free-float*. El período de estudio abarca desde 2010 hasta 2019. **Resultados.** Existe una relación mixta (directa e inversa) entre el nivel de endeudamiento y el riesgo de capital en las empresas de América Latina. **Conclusiones.** Las empresas latinoamericanas tienen características propias en la toma de decisiones sobre la estructura de capital.

PALABRAS CLAVE riesgo de liquidez, estructura de capital, *free-float*, mercados emergentes, América Latina.

Risco de liquidez e estrutura de capital das empresas na América Latina

RESUMO **Objetivo.** Explorar a relação entre o risco de liquidez e a estrutura de capital das empresas latino-americanas. **Metodologia.** Utilizando uma amostra de 135 empresas (Brasil, Chile e México), analisamos vários modelos com dados de painel que consideram, entre outras variáveis, seis índices de risco de liquidez; em duas delas incorporamos um novo fator: o *free-float*. O período de estudo foi de 2010 a 2019. **Resultados.** Existe uma relação mista (direta e inversa) entre o nível de endividamento e o risco de capital nas empresas latino-americanas. **Conclusões.** As empresas latino-americanas têm características próprias na tomada de decisões sobre a estrutura de capital.

PALAVRAS CHAVE risco de liquidez, estrutura de capital, *free-float,* mercados emergentes, América Latina.

Introduction

Studies have been developed that analyze how companies define their capital structure for several decades. However, the answers and theories are still far from reaching an agreement. An example of the above is demonstrated in the various studies on the two classical theories of capital structures: trade-off theory —TOT— (Miller, 1977; Modigliani and Miller, 1958, 1963) and pecking order theory —POT— (Myers, 1984; Myers and Majluf, 1984).

On the other hand, based on the seminal article by Baker and Wurgler (2002), on market timing theory in capital structure, a theory is outlined that, far from reaching conclusions, allows us to open new lines of investigation, such as those referring to the incorporation of liquidity risk, as the latter is constituted as a proxy for stock market activity and a factor in the profitability of shares.

Capital structure theories (TOT and POT) predict an inverse relationship between stocks' liquidity and the level of leverage of companies. According to the TOT, a company with liquid shares has lower costs of issuing shares, which means that financing in this way is more engaging than financing through debt (Nadarajah et al., 2018). Likewise, according to the hierarchical order theory, financing through debt is much less sensitive to information. Simultaneously, through the issuance of shares, it is much more sensitive to the problem of adverse selection (Dang et al., 2019).

This article investigates the relationship between Latin American companies' capital structure and liquidity risk, the latter captured by the different measures generally used, plus some new ones.

The study considers a non-probabilistic sample of companies from Brazil, Chile and Mexico. In this, six different liquidity measures were used, based on the different stock markets' trading activity. Some measures correspond to new proposals based on the number of shares of a company that can be traded on a stock exchange and are not part of the controlling shareholders' ownership: free-float. It was estimated that incorporating this factor in the indices may allow the liquidity risk of the shares to be better captured.

Given the empirical evidence, it would be expected that Latin American companies present greater stock market liquidity due to lower capital costs or due to information asymmetry, which would lead to proposing the following hypothesis:

H0: Latin American companies that present lower levels of leverage reflect high liquidity in their shares. That is, there is an inverse relationship between liquidity and leverage.

Therefore, the objective of this work is to measure whether there is a significant relationship between the liquidity of the shares and their level of leverage, considering a sample of Latin American companies.

Moreover, it will be possible to check if the countries that make up the study present the exact relationship between liquidity and leverage or correspond to each region's particular characteristics.

Theoretical framework

For more than five decades, the characteristics and determinants of the TOT and the POT have been researched, the methodologies and the results are diverse; the work in the French market of Adair and Adaskou (2015) concludes that both theories slightly explain the behavior of SMEs concerning the indebtedness. Very different from the study made by Chen (2004) in the Chinese stock market, where these theories did not explain the preferences of indebtedness of companies; in contrast, other work found evidence in the POT (Bhama, Jain and Yadav, 2015). Ardalan (2017) makes a critical analysis of the TOT, and reformulates the assumptions, concluding that the structure of capital is relevant. For Brazil, there is evidence of the POT (Zeidan, Galil and Shapir, 2018).

More recently, from the Baker and Wurgler (2002), the relationship of the capital structure with the stock markets has been researched. Many studies do not find evidence that the companies determine their capital structure based upon the market timing theory (Mahajan and Tartaroglu, 2008; Zavertiaeva and Nechaeva, 2017). But others

find indeed favorable evidence (Arosa, Richie and Schuhmann, 2015; Chen et al., 2013).

There are several studies on liquidity risk, some of them have found a positive relationship between liquidity risk and shareholding profitability (Bradrania, Peat and Satchell, 2015), other study with the number of shareholders (Chia, Lim and Goh, 2020), and others concerning its relationship with the value of companies (Pombo and Taborda, 2017). However, several pioneering works study the impact or relationship between liquidity and capital structure. Here are some relevant investigations in this regard.

Erwan (2001) exposes evidence that the liquidity of the assets increases the debt capacity of the companies, this study's significant research examines the impact of asset liquidity on stock values (corporate securities) and financing decisions. Another work uses three different liquidity measures and points out that increases in leverage are associated with decreases in equity liquidity and decreases in leverage, which, in turn, are associated with increases in liquidity (Lesmond, O'Connor and Senbet, 2008).

A third study uses various measures of liquidity risk and reveals that companies with more liquid stocks have lower leverage and prefer equity financing when raising capital (Lipson and Mortal, 2009). Another research, using panel data for companies listed on the New York Stock Exchange —NYSE—, shows a relationship between high liquidity and low leverage (Frieder and Martell, 2006).

A study carried out on a group of companies in Thailand (Udomsirikul, Jumreornvong and Jiraporn, 2011) is pioneering and essential for emerging economies, given the significant differences between these capital markets and developed markets such as the United States. The sample considered companies listed on the Stock Exchange of Thailand for the period 2002-2008, adding up a total of 707 annual observations. The authors highlight that a characteristic of Thai companies in the presence of a high percentage of family companies (35 %), unlike developed economies. This work concludes that companies with greater liquidity have less leverage in their capital structures.

In another case, for a group of Pakistani companies not belonging to the financial sector, during the period 2000-2013, it was determined that market liquidity becomes significant and that it is negatively related to the financing decisions of companies (Rashid and Mehmood, 2017), which is indicative of the fact that companies with more liquid stocks prefer equity financing over new debt issuance. These authors suggest that companies tend to issue more shares when their shares are more liquid, which reduces their leverage ratio.

Meanwhile, in the Australian market for the period, 2001 to 2013, with 9855 annual observations, an inverse relationship between liquidity and leverage is revealed (Nadarajah et al., 2018). Along the same lines, for a sample of 165 Indonesian companies, during the 2006-2016 period, the results show that the shares' liquidity negatively affects the leverage of the companies (Juliana and Thayogo, 2019).

Using quarterly observations between 1995 and 2014 in companies from 37 countries, including developed and emerging markets, which also include Brazil, Chile, Colombia and Mexico, strong evidence of the inverse relationship between liquidity and leverage is revealed, especially in developed markets (Hanselaar, Stulz and van Dijk, 2019).

Also, these authors indicate that the stock market's liquidity affects the cost of issuing these and that companies take this fact into account when deciding whether and when they will issue shares. A similar result to the previous one obtained the study of Dang et al. (2019) in their work carried out on 41 countries of emerging and developed economies during 2000-2010. These authors concluded that highly liquid companies tend to have lower levels of leverage. Countries with a robust institutional environment are more likely to develop a weaker (negative) relationship between liquidity and leverage. This latest work includes five emerging Latin American economies (Argentina, Brazil, Chile, Mexico and Peru).

A study carried out by ElBannan (2017), analyzing ten emerging economies of the Middle East and North Africa —MENA—, during the period 2006-2014, taking into account 154 companies and 1386 annual observations, investigates how

liquidity affects capital structure decisions of family businesses. According to the balance sheet, the existence of a positive relationship between liquidity and the leverage ratio is concluded: this result is contrary to the evidence provided by other studies.

Methodology

This study considers a non-probabilistic sample of 135 companies corresponding to three Latin American countries (45 companies from Brazil, 44 companies from Chile, and 46 companies from Mexico). It considers data of the period between January 2010 and December 2019.

The selection criteria for these companies consist of non-financial companies, with an average stock market presence above 50 % and a free-float above 10 %, intending to obtain a representative sample size and, in turn, avoiding companies with low presence and free-float.

The Economatica database is used as a source of information, which provides financial information on companies in three periods: quarterly, monthly and daily. This research works specifically with quarterly parameters. A quarterly data panel is built, and the different models detailed below are applied.

On the other hand, the data analysis considers two analyses: the first of them provides results for each country separately and the second consolidated analysis with the region. The most common methods are used to perform analysis with panel data, such as those with fixed effects —FE— and random effects —RE—. Both methods were evaluated with the Hausman test.

The regression model used is the following:

$$Lev = \alpha + \beta_1 TamV + \beta_2 Tang + \beta_3 MgEBIT + \beta_4 MgNeto + \beta_5 PVL + \beta_7 LIQ + \varepsilon$$

The results, meanwhile, presented problems of heterogeneity, new correlation, heteroscedasticity and autocorrelation. These problems can be solved with estimators as feasible generalized least squares —FGLS— or panel-corrected standard errors —PCSE—. Beck and Katz (1995), demonstrated that the standard errors of PCSE are more accurate than those of FGLS. Due to this reason, many works in the discipline have used PCSE in their panel estimates, and it is the one used here.

Two dependent variables have been used: the debt index or leverage, calculated as the total gross financial debt over the total assets (Lev1) and the debt over the debt plus market capital (Lev2). The following are used as (independent) capital structure variables: Company size, estimated as a natural logarithm of total sales —TamV—; the tangibility of assets, which is estimated as tangible assets over total assets —Tang—; the margin over EBIT —MgEBIT—; and the price over book value —PVL—.

The LIQ variable is the liquidity risk measure used, which is part of the independent variables.

Five liquidity risk measures are used, which are detailed below. Those referred to in points 1 to 4 have been used in previous studies, while the indices presented in point 5 correspond to a new index proposal. This new proposal includes the free-float variable (not previously used in this type of measurement). The measures and their respective models are set out below:

1. Amihud's illiquidity measure (Amihud, 2002), used in most studies of liquidity risk:

$$ILLIQ_{it} = \frac{1}{D_{it}} \sum_{d=1}^{D_{it}} \frac{\left| R_{itd} \right|}{V_{itd}}$$

2. The modified turnover, used by several authors (ElBannan, 2017; Lipson and Mortal, 2009; Udomsirikul, Jumreornvong and Jiraporn, 2011), who calculate it:

$$MT_{it} = \frac{NST_{i,m,t}}{N_{i,m,t} x VOLATILY_{i,m,t}}$$

Another way to calculate it is (Rashid and Mehmood, 2017):

$$MT_{it} = \frac{1}{M_{it}} \sum_{i=1}^{M_{it}} \frac{NST_{i,m,t}}{N_{i,t} x VOLATILY_{i,t}}$$

3. The share turnover measure, whose estimate is (ElBannan, 2017):

$$SHTRN_{it} = \frac{1}{D_{it}} \sum_{t=1}^{D_{it}} \frac{NST_{i,m,t}}{N_{i,t}}$$

4. The modified liquidity measure, used by several authors (ElBannan, 2017; Rashid and Mehmood, 2017):

$$MLi_{it} = \frac{\sum_{t} V_{i,m,t}}{\sum_{t} \left| R_{itd} \right| x VOLATILY_{i,t}}$$

5. Finally, the new measures proposed are share turnover on and the illiquidity ratio, all with the incorporation of the free-float variable:

$$SHTRNFF_{it} = \frac{1}{D_{it}} \sum_{t=1}^{D_{it}} \frac{NST_{i,m,t}}{FF_{i,t} x N_{i,t}}$$

$$ILLIQFF_{it} = \frac{1}{D_{i,m,t}} \sum_{d=1}^{D_{it}} \frac{\left| R_{i,m,t} \right|}{FF_{i,m,t} x N_{i,t}}$$

Where:

R_{itd} is the profitability of asset i on day d of month t respectively.

V_{itd} is the trading volume of asset i on day d of month t respectively.

D_{it} are the number of days that the stock is traded within month t.

Max_{it} is the number of transaction days in month i.

$NST_{i,m,t}$ is the number of shares traded in the period.

$N_{i,t}$ is the number of shares available (outstanding).

$VOLATILITY_{i,t}$ is the volatility of the company's earnings in year t. It is defined as the absolute difference between the annual percentage change in earnings before interest and taxes —EBIT— and the average of this change during the study period.

$FF_{i,t}$ X is the free-float, consistent in the percentage of shares that can be traded in the financial market, which is not stably held by shareholders.

Results

The descriptive statistics and total correlation matrix for Latin America are shown in Tables 1 and 2, respectively, to privilege the results.

Table 1. Descriptive Statistics in Latin America

Variable	Obs.	Average	Desv. Est.	Min	Max
Lev1	5198	30.42939	17.9365	0	164.7229
Lev2	5198	31.38979	22.0513	0	98.0047
TamV	5198	14.12888	2.233307	0	18.80224
Tang	5198	0.303645	0.2339011	0	0.9308636
MgEBIT	5198	19.62808	175.7836	-4681.864	8298.849
PVL	5198	2.573743	2.943411	-10.84204	35.89773
ILLIQ	5198	0.0257149	1.211413	0	80.58635
MT	5198	0.4336659	9.289631	0	648.6027
SHTRN	5198	0.0030364	0.0201369	0	0.9533335
ML	5198	8347326	2.58E+08	0	1.83E+10
SHTRNFF	5198	0.0076331	0.0808766	0	3.55621
ILLIQFF	5198	1.19E-07	6.81E-07	0	0.0000327

Source: author's own elaboration.

Table 2. Correlation matrix in Latin America

	Lev1	Lev2	TamV	Tang	MgEBIT	PVL	ILLIQ	MT	SHTRN	ML	SHTRNFF	ILLIQFF
Lev1	1											
Lev2	0.6732	1										
TamV	0.1096	0.164	1									
Tang	0.0318	0.0171	0.1962	1								
MgEBIT	0.0389	0.0148	-0.0539	-0.0303	1							
PVL	0.0875	-0.3125	0.1111	-0.051	0.0014	1						
ILLIQ	-0.0164	-0.0105	-0.0168	0.0085	-0.0009	-0.0107	1					
MT	-0.0126	-0.0176	-0.0017	-0.0251	0.0021	0.0206	-0.001	1				
SHTRN	0.0097	0.0467	0.0228	-0.0647	0.0025	0.0507	-0.0028	0.1386	1			
ML	-0.0138	-0.0203	0.0112	-0.0134	0.0029	0.0068	-0.0007	0.9675	-0.0016	1		
SHTRNFF	0.005	0.0366	0.0198	-0.0495	-0.0014	0.049	-0.0016	0.1514	0.9774	-0.0011	1	
ILLIQFF	-0.0126	0.002	-0.0226	-0.0374	-0.0031	0.0053	-0.003	0.0487	0.324	-0.0036	0.3376	1

Source: author's own elaboration.

The results shown in Tables 3 to 10 correspond to those obtained by the regression models, with panel data using the PCSE methodology; with a total of six models, in each of them a liquidity risk variable (index) is incorporated.

Tables 3 and 4 show that the coefficients of the variables: tangibility of assets —Tang—, utility —gEBIT— and price over book value —PVL— were statistically significant. On the other hand, size —TamV— was not significant when the

dependent variable is debt according to balance (Lev1). Regarding the coefficients of the liquidity risk measures, no index was significant, which is a sign that there is no relationship between liquidity risk and capital structure in the Chilean market.

Table 3. Panel data regression results (PCSE) in Chile, dependent variable Lev1

Variable	m1pcse	m2pcse	m3pcse	m4pcse	m5pcse	m6pcse
TamV	-0.84678081	-0.86044734	-0.47955662	-0.86127167	-0.69483314	-0.81441163
Tang	30.75295***	30.884284***	27.691731***	30.799444***	29.442817***	30.632553***
MgEBIT	-.00935512*	-.00935747*	-.00922653*	-.00934564*	-.00923204*	-.00927203*
PVL	-2.0206428***	-2.0221686***	-1.9226028***	-2.0451511***	-2.008771***	-2.0181279***
ILLIQ	0.01315867					
MT		0.0148469				
SHTRN			-285.67199			
ML				2.71E-08		
SHTRNFF					6.7723595	
ILLIQFF						1480872.8
_cons	33.805463***	33.945277***	30.040945***	34.001281***	32.19006***	33.23383***
N	1750	1750	1750	1750	1750	1750
r2	0.10009641	0.10027112	0.09662113	0.10059077	0.09779865	0.10050784

Note: *p<0.05; **p<0.01; ***p<0.001.

Source: author's own elaboration.

Table 4. Panel data regression results (PCSE) in Chile, dependent variable Lev2

Variable	m1pcse	m2pcse	m3pcse	m4pcse	m5pcse	m6pcse
TamV	1.1159623*	1.1168821*	1.3065599**	1.1304081*	1.1311423*	1.126225*
Tang	26.357685***	26.513954***	23.733377***	26.04605***	25.791639***	26.020722***
MgEBIT	-.02102052**	-.0210066**	-.02141328**	-.02102844**	-.02113186**	-.02106096**
PVL	-6.9662689***	-6.9471189***	-6.9064983***	-6.979763***	-6.8531051***	-6.974135***
ILLIQ	0.01505259					
MT		-0.98901294				
SHTRN			-506.70429			
ML				9.45E-09		
SHTRNFF					-193.56961	
ILLIQFF						-445018.45
_cons	20.154638**	20.128469**	18.884835**	20.085158**	20.350327**	20.201999**

Variable	m1pcse	m2pcse	m3pcse	m4pcse	m5pcse	m6pcse
N	1750	1750	1750	1750	1750	1750
r2	0.31516894	0.31709991	0.31523899	0.31458747	0.31678561	0.31436189

Note: *p<0.05; **p<0.01; ***p<0.001.

Source: author's own elaboration.

The Mexican market results (Tables 5, 6) show differences with those obtained for the Chilean market. First, when the dependent variable is Lev1, only the PVL is significant in all models. On the other hand, when the dependent variable is Lev2, almost all the variables are statistically significant. Second, several liquidity risk variables are significant, showing a direct relationship between the level of indebtedness and liquidity risk.

Table 5. Panel data regression results (PCSE) in Mexico, dependent variable Lev1

Variable	m1pcse	m2pcse	m3pcse	m4pcse	m5pcse	m6pcse
TamV	0.60111133	0.63527105	.73572378*	0.63538906	.6842848*	0.61628303
Tang	5.2339838	5.8660696	4.9237445	5.8666934	5.0499221	7.9775441*
MgEBIT	0.00194262	0.00190153	0.00211023	0.00190156	0.00205136	0.0017686
PVL	.45903043*	.44540922*	.4441558*	.44527656*	.43949742*	.45912114*
ILLIQ	170.75879*					
MT		-0.00726214				
SHTRN			-766.03672			
ML				-2.45E-10		
SHTRNFF					-307.67711	
ILLIQFF						9163654.9
_cons	17.477437***	17.267005**	17.04503**	17.265273**	17.595386**	16.104862**
N	1704	1704	1704	1704	1704	1704
r2	0.04007449	0.02571928	0.03173691	0.02570961	0.0288876	0.03102027

Note: *p<0.05; **p<0.01; ***p<0.001.

Source: author's own elaboration.

Table 6. Panel data regression results (PCSE) in Mexico, dependent variable Lev2

Variable	m1pcse	m2pcse	m3pcse	m4pcse	m5pcse	m6pcse
TamV	2.0982815***	2.2613334***	1.9289756***	2.2614121***	2.0391897***	2.1025505***
Tang	-8.0059282**	-5.7659349*	-3.7986106	-5.7668134*	-4.6712403	-6.8695282*
MgEBIT	.00673318**	.00677443**	.00611803**	.00677449**	.00617864**	.00621637**

Variable	m1pcse	m2pcse	m3pcse	m4pcse	m5pcse	m6pcse
PVL	-1.6770764***	-1.6191999***	-1.6069191***	-1.6192809***	-1.5715752***	-1.4520734***
ILLIQ	289.60973***					
MT		-0.00409572				
SHTRN			2447.3271***			
ML				-1.47E-10		
SHTRNFF					1293.7257***	
ILLIQFF						50143305***
_cons	6.0157526	3.6362582	4.8619217	3.6357153	3.2879416	2.624969
N	1704	1704	1704	1704	1704	1704
r2	0.1356606	0.11466867	0.16177644	0.11467064	0.16539659	0.16388845

Note: *p<0.05; **p<0.01; ***p<0.001.

Source: author's own elaboration.

For Brazil (Tables 7, 8), some differences are observed in the results, if the dependent variable is Lev1 or Lev2. For the first, the MgEbit and PVL variables are significant. In the case of the liquidity risk variables, only the Amihud index estimated based on the free-float (ILLIQFF) is significant and inverse. When the dependent variable is Lev2, all the variables are significant, except the tangibility of the assets, for the liquidity risk measures, Amihud (ILLIQ) and stock turnover (SHTNR) resulted in a direct and significant relationship; but the Amihud measure estimated based on the free-float (ILLIQFF) and the modified liquidity measure were significant, but with an inverse relationship. Therefore, contradictory results are obtained in what corresponds to the Brazilian market.

Table 7. Panel data regression results (PCSE) in Brazil, dependent variable Lev1

Variable	m1pcse	m2pcse	m3pcse	m4pcse	m5pcse	m6pcse
TamV	0.80161446	0.80750968	0.84355198	0.82370043	0.83670093	0.68035878
Tang	3.7515966	3.7459432	3.7008069	3.805468	3.7102732	3.5485114
MgEBIT	-.03164368***	-.03126608***	-.03120099***	-.03141806***	-.03115973***	-.03189784***
PVL	.20237762*	.19857707*	.2055803*	.20565308*	.20182665*	.19739554*
ILLIQ	-15.200068					
MT		0.0620766				
SHTRN			9.2687949			
ML				-4.09E-09		
SHTRNFF					2.3320502	
ILLIQFF						-499547.5***
_cons	17.777247**	17.631674**	17.047657**	17.433962**	17.1835**	19.754938**

Variable	m1pcse	m2pcse	m3pcse	m4pcse	m5pcse	m6pcse
N	1715	1715	1715	1715	1715	1715
r2	0.03882401	0.03953433	0.04047516	0.03932715	0.0405319	0.04405378

Note: *p<0.05; **p<0.01; ***p<0.001.

Source: author's own elaboration.

Table 8. Results of panel data regression (PCSE) in Brazil, dependent variable Lev2

Variable	m1pcse	m2pcse	m3pcse	m4pcse	m5pcse	m6pcse
TamV	3.6991298***	3.6963732***	3.7903342***	3.8955022***	3.7429478***	3.6536646***
Tang	1.174005	0.99265579	0.98048432	0.68091442	1.0425003	0.74219624
MgEBIT	-.05140728***	-.05272814***	-.05180984***	-.05329223***	-.05179076***	-.05361169***
PVL	-1.216957***	-1.224569***	-1.2173735***	-1.234811***	-1.2303844***	-1.2358909***
ILLIQ	147.3597***					
MT		-0.06600415				
SHTRN			37.524039**			
ML				-1.074e-08*		
SHTRNFF					7.8127393*	
ILLIQFF						-438111.85
_cons	-18.10775	-17.838056	-19.601717	-20.636779*	-18.739665	-17.000914
N	1715	1715	1715	1715	1715	1715
r2	0.14617308	0.13935456	0.15155449	0.14583084	0.14769693	0.14198929

Note: *p<0.05; **p<0.01; ***p<0.001.

Source: author's own elaboration.

When considering all Latin American companies, it is observed that the variables of size —TamV— and tangibility of assets —Tang— are significant, within the liquidity risk variables; the Amihud measure, estimated based on the free-float (ILLIQFF), result in an inverse and significant relationship (Table 9). On the other hand, it is seen that a large part of the variables is significant (Table 10), and the variables of liquidity risk and asset turnover (SHTRN and SHTRNFF) are significant with a direct relationship with the capital structure of the companies.

Table 9. Panel data regression results (PCSE) in Latin America, dependent variable Lev1

Variable	m1pcse	m2pcse	m3pcse	m4pcse	m5pcse	m6pcse
TamV	0.66869901*	0.66861792*	0.66765413*	0.66868708*	0.66868748*	0.66393556*
Tang	11.726811***	11.740235***	11.778487***	11.745094***	11.768983***	11.687297***

Variable	m1pcse	m2pcse	m3pcse	m4pcse	m5pcse	m6pcse
MgEBIT	0.00169456	0.00169455	0.00169219	0.00169458	0.00169384	0.00169254
PVL	0.14769137	0.14776953	0.1486918	0.14750067	0.1467596	0.14569133
ILLIQ	0.02745619					
MT		-0.0053283				
SHTRN			7.6242151			
ML				-2.73E-10		
SHTRNFF					2.2902542	
ILLIQFF						-395457.24***
_cons	16.146928***	16.146117***	16.119887***	16.143949***	16.119546***	16.283005***
N	5169	5169	5169	5169	5169	5169
r2	0.03400855	0.03404011	0.03424422	0.0340914	0.03433781	0.03468611

Note: *p<0.05; **p<0.01; ***p<0.001.

Source: author's own elaboration.

Table 10. Panel data regression results (PCSE) in Latin America, dependent variable Lev2

Variable	m1pcse	m2pcse	m3pcse	m4pcse	m5pcse	m6pcse
TamV	2.3766292***	2.3766141***	2.3720662***	2.3765349***	2.376868***	2.3736945***
Tang	5.3115828***	5.3247831***	5.3712832***	5.3033294***	5.3617965***	5.2825563***
MgEBIT	.00641212***	.00641241***	.0064003***	.00641168***	.00640974***	.0064121***
PVL	-1.6983141***	-1.6980471***	-1.6953255***	-1.6990009***	-1.7023412***	-1.6988664***
ILLIQ	0.03307222					
MT		-0.00547971				
SHTRN			38.131212***			
ML				-2.12E-10		
SHTRNFF					8.0795531**	
ILLIQFF						-282115.33
_cons	-0.1002586	-0.10198488	-0.17086318	-0.09148699	-0.16529936	-0.01057483
N	5169	5169	5169	5169	5169	5169
r2	0.11483243	0.11484531	0.11849499	0.11483823	0.11752607	0.11504448

Note: *p<0.05; **p<0.01; ***p<0.001.

Source: author's own elaboration.

Conclusions

It is known that in Latin American countries, access to information is limited, difficult to obtain or of low quality. Due to this, in large part of the studies and research on liquidity risk in this region, historical information is used on the stock market transactions carried out, and few studies use information related to the price range (bid-ask), book of purchase and sale orders, among others. This study was not exempt from this difficulty, especially regarding access to free-float statistics, which prevented the incorporation of companies from other countries in the region.

The results obtained on the classical variables are most favorable to previous studies on capital structure, such as size, tangibility and utility. This situation is characteristic of studies trade-off and pecking order theories. However, for the liquidity risk variables, the results appear diverse by country and by region. However, they indicate a relationship between liquidity risk and the financing structure of Latin American companies. This relationship is mixed: in Chile, there is no relationship; in Mexico, a direct relationship (positive), and in Brazil, it is mixed; that is, some indices have an inverse relationship (negative) and others direct (positive).

In general, the liquidity risk measures showed different results in the various models. This result is in line with other conclusions, according to which there are multiple factors, measures, and models of the effects of liquidity risk on shareholder profitability.

In most studies on liquidity risk, the Amihud ratio (ILLIQ) shows favorable and significant results. However, the results presented here do not indicate it as a measure that has an effect or impact in explaining Latin American companies' capital structure since the results in Mexico and Brazil provided a direct relationship. This situation becomes an invitation to carry out new studies in this line.

For Mexican companies, the significant liquidity risk variables show a direct relationship: the higher the level of liquidity, the higher the level of leverage. Mixed results were presented for Brazilian companies. Two out of five significant liquidity risk variables show an inverse relationship between liquidity and leverage; the latter is in line with previous results. For the group of Latin American companies, the results are also mixed, making it difficult to show a trend.

Given the results, these show that Latin American companies have their characteristics about making capital structure decisions. These, in general, are not in the same line of results obtained in previous studies in developed and emerging economies. However, Brazil's case shows some results according to the evidence in the literature: that is, companies with high levels of liquidity have lower leverage.

There is diverse literature that supports the premium for liquidity risk. However, no studies relate to liquidity risk as a factor that affects decisions to increase shares and/or equity (market timing theory). Accordingly, it would be interesting to expand the studies along this line, covering more countries in the region and reducing the control variables. Another line could consist of developing analyzes by economic sectors and if they have a prevalence in liquidity and how companies make decisions about their capital structures.

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