CAPITAL STRUCTURE OF THE ARGENTINA AND CHILE STOCK EXCHANGES FROM 2007 TO 2016

ESTRUTURA DE CAPITAL NAS BOLSAS DE VALORES DA ARGENTINA E CHILE DE 2007 A 2016

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ABSTRACT

Objective: The present research consists of analyzing the behavior of the determinants of the capital structure of Argentine and Chilean companies between 2007 and 2016.
Method: To achieve the purpose of this study, the following methodological characteristics were used: a) quantitative approach; b) research typologies were used: bibliographic, documentary, exploratory and explanatory; c) ten-year period (2007 to 2016) of Argentine and Chilean companies considering the financial reports extracted from the Economática database software; d) four statistical tools: 1) analysis; 2) Pearson correlation; 3) variance inflation factor (VIF); 4) panel data regression and tool-related tests.
Main results: The results show that Chilean companies have higher long-term and costly long-term indebtedness; Argentine companies with total, short-term and onerous short-term debt. Argentine companies have high averages in tangibility, return on assets, income tax, tax savings and profit volatility; Chilean companies have high averages in current liquidity, return to shareholders, growth in sales and assets, and market-to-book.
Relevance/originality: The study focuses on two South Ameri-

can countries, Argentina and Chile, where there is a gap in the literature regarding studies related to these two markets when it comes to capital structure determinants.
Theoretical/methodological contributions: The findings also lead us that Argentine and Chilean companies are more prone to the pecking order theory. Other indebtedness variables and their determinants are suggested in future research, in addition to the speed of indebtedness adjustment.
Keywords: Trade Off Theory. Pecking Order Theory. Indebtedness. Determinants of Capital Structure. Panel Data Regression.

RESUMO

Objetivo: A presente pesquisa consiste em analisar o comportamento dos determinantes da estrutura de capital de empresas argentinas e chilenas entre 2007 a 2016.
Método: Para atingir a finalidade deste estudo, foram utilizadas as seguintes características metodológicas: a) abordagem quantitativa; b) tipologias de pesquisa foram utilizadas a bibliográfica, documental, exploratória e explicativa; c) período de dez anos (2007 a 2016) de empresas argentinas e chilenas considerando os relatórios financeiros extraídos do software de banco de dados Economática; d) quatro ferramentas estatísticas: 1) análise; 2) correlação de Pearson; 3) fator de inflação de variância (VIF); 4) regressão de dados em painel e testes relacionados à ferramenta.
Principais resultados: Os resultados evidenciam que empresas chilenas têm maiores endividamentos de longo prazo e oneroso de longo prazo; empresas argentinas com endividamentos total, curto prazo e oneroso de curto prazo. As empresas argentinas possuem altas médias em tangibilidade, retorno do ativo, imposto de renda, economia fiscal e volatilidade do lucro; as chilenas possuem altas médias em liquidez corrente, retorno aos acionistas, crescimento das vendas e do ativo e, market-to-book.
Relevância/originalidade: O estudo foca em dois países sul-americanos, Argentina e Chile, onde se encontra uma lacuna na literatura acerca de estudos relativos a estes dois mercados quando se trata de determinantes da estrutura de capital.
Contribuições teóricas/metodológicas: Os achados também nos conduz que empresas argentinas e chinelas estão mais propensas

à teoria de pecking order. Sugerem-se em futuras pesquisas outras variáveis de endividamento e de seus determinantes, além da velocidade de ajuste do endividamento.
Palavras Chave: Teoria de Trade Off. Teoria de Pecking Order. Endividamento. Determinantes da Estrutura de Capital. Regressão de Dados em Painel.
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INTRODUCTION

The innumerable research done to try to exhaust the issue of capital structure is endless, and, due to some variables, this issue will always be in evidence. In other words, the ways of data collection and independent variables will be chosen according to an econometric model, the econometric tools used, the types of companies, the legal characteristics of the accounting-financial field, among others.

In addition, in competitive and fine markets, it is possible to identify different forms of leverage and corporate strategies. So, "how do companies choose their capital structure?" (Myers, 1984). Very little is known about the capital structure, and it is not known how companies choose debts and equity.

Myers (1984), then, referring to Fischer Black's "The Dividend Puzzle" text, asks: "What can the corporation do about dividend policy? We do not know". And he completes: "I will begin by asking:' How do companies choose their capital structures? '. Again, the answer is: ''We don't know".

Titman and Wessels (1988) analyzed the explanatory power of some variables on capital structure. For Kochhar (1997), the "possession of strategic assets is a necessary condition for a sustained competitive advantage".

1.1. Justification

The way managers combine sources of financing is an important decision for the company's financial and strategic context. The capital structure refers to the way in which companies use the sources

of origin, either their own or third parties, to apply in assets and in activities that demand them.

Among the issues addressed by the theory of corporate finance, the part related to the capital structure is one of the most complex and controversial. Despite having a series of theoretical and empirical research, this issue does not have a prompt and unanimous response on what is the best or most appropriate capital structure for an organization (Myers, 1984; Bradley, Jarrell & Kim, 1984; Titman & Wessels, 1988; Altman, 1984; Brennan, & Schwartz, 1985), and for one person.

From the article by Modigliani and Miller (1958), researchers analyze the factors that affect the capital structure of companies (Chen & Zhao, 2006; Myers, 1977; Titman & Wessels, 1988; Berger, Ofek, & Yermack, 1997; Berlingeri, 2006; Copeland, Weston & Shastri, 2005; Modigliani & Miller, 1963). In a world without disagreements, the capital structure is irrelevant to the conception of the company's value and, therefore, there should be no preference for a certain type of capital structure (Modigliani & Miller, 1958). However, in the real world, each company can opt for a different degree of leverage (Choi, Saito, & Silva, 2015; Bessler, Drobetz, & Kazemieh, 2011; Durand, 1959).

Therefore, the rationale for this study is to evaluate the capital structure of the companies listed on the stock exchanges of Argentina and Chile, in the period from 2007 to 2016.

1.2. Research problem

The observation of the identified elements, constant in the theories that discuss capital structure and in the investigated authors, allowed us to formulate the following research problem: **What is the behavior of the determinants of the capital structure of companies listed on the stock exchanges of securities of Argentina and Chile, on the prism of the financial theories of pecking order and trade-off, in the period from 2007 to 2016?**

1.3. Objectives

Overall objective:

The general objective of this research is to compare the beha-

vior of determinant variables of the capital structure of companies listed in the stock exchanges of Argentina and Chile, considering the specific factors of the companies. In this way, the institutional aspects (number of employees and open units) and economic aspects (market niche, actions in internal and external markets) will not be evaluated; the analysis will be limited, just, to the specific factors of the company.

Specific objectives:

a) Test the relationship of the independent variables with some types of indebtedness in Argentina and Chile stock market companies;

b) Select the independent variables to be tested in the study;

c) Analyze the behavior of variables of the determinants of the capital structure of companies listed on the stock exchanges of Argentina and Chile, under the capital structure theories: Trade-off and Pecking Order.

1.4. Hypothesis

The formulation of the hypotheses of this research was based on the theoretical reference, through the reading of empirical studies already carried out. To start, Booth et al. (2001) and Bastos and Nakamura (2009) empirically distinguished that the hypotheses between theoretical currents have proved a difficult task. In many situations, the behavior of one variable can be explained by one theory, pray by another. In addition, theoretical currents are conflicting in seeking explanations for the behavior of some variables.

Through this discussion, it was possible to construct two hypotheses, one related to the return of shareholders and the other to the return of company assets. They are:

Hypothesis 1: The relationship between return to shareholders and indebtedness indicators is negative.

Hypothesis 2: The relationship between return on assets and debt indicators is negative.

Hypothesis 3: The relationship between asset growth and indebtedness indicators is positive.

Hypothesis 4: The relationship between sales growth and indebtedness indicators is negative.

Hypothesis 5: The relationship between tangibility of assets and debt indicators is positive.

Hypothesis 6: The relationship between current liquidity and debt indicators is negative.

Hypothesis 7: The relationship between the level of income tax payment and indebtedness indicators is negative.

2. LITERATURE REVIEW

Studies related to the capital structure exist decades ago and aim to explain what determines the composition of the sources of financing of the institutions for the realization of investments, that is, what determines the participation of own capital and third parties in its capital structure.

The synopsis of the proposals of Modigliani and Miller affirm that the value of the company is independent of its capital structure and that the return to the shareholder grows in function of the indebtedness. The third proposal, published in 1961 by the researchers, states that, for the shareholder, the receipt or not of dividends is indifferent (Bhattacharya, 1988; Brealey, Myers & Allen, 2010; Frank & Goyal, 2003; Zavala & Salgado, 2019; Ramos Júnior, Santos, Gaio, Stefanelli, & Passos, 2019; Mendonça, Martins, & Terra, 2019; Mamede, Jardim, Nakamura, Jones, & Nakamura, 2019; Demirgüç-Kunt, Peria & Tressel, 2020.

The propositions and theses of Modigliani and Miller (1958; 1961), on capital structure and dividend policy, permeate almost all aspects of the financial economy to the present day. The authors present the idea that, considering certain internal and external conditions to the company, "the capital structure has no influence on the value of the company; According to these authors, the cost of capital would remain unchanged, regardless of the financing composition used by the company (Albuquerque, 2013, p. 20).

2.1. Theory set test: trade-off versus pecking order

Two theoretical trends predominate in the explanations about capital structure decisions: pecking order and trade-off. The explanations about them are considered concurrent and diverge in several

points, as presented in the review made in the previous sections.

In the investigation of Fama and French (2002), the predictions shared in the theory of pecking order are confirmed, that is, they are more profitable and companies with less investments have higher dividend payments.

2.2. *Research on determinants of capital structure in different economies*

Studies that analyze the relationship between institutional and economic variables, in addition to the financing structure of companies, are increasingly expanding researchers' understanding of what external factors are associated with the capital structure of companies and are associated In different environments. These variables are based on works such as those of Titman and Wessels (1988) and Harris and Raviv (1991), which present a series of factors that serve as empirical evidence for behavior based on theories of pecking order and trade-off.

Rajan and Zingales (1995) analyzed determinants of capital structures in companies in the G7 countries, and identified that the levels of indebtedness between these countries are very similar and that the analyzed company variables follow the expected theoretical pattern; Regarding the size of the company and the effect of taxes on indebtedness, inconclusive evidence was obtained. In addition, the authors concluded that there is a significant influence of institutional factors in financing decision-making and suggested the development of future research for a clearer explanation of this behavior.

Thus, Booth et al. (2001) analyzed the determinants of capital structure in 11 emerging economies, comparing them with the developed G7 economies based on data from Rajan and Zingales (1995).

The research by Gungoraydinoglu and Oztekin (2011) analyzed 15,177 companies from 31 countries, between 1991 and 2006. In this study, the authors verified that macroeconomic variables directly explained 22% of the variations in the indebtedness of firms and, indirectly, the 12% of that variation, when applied as moderates or enhancers of company variables.

Lucey and Zhang (2011) also analyzed the financing behavior of companies in developing economies, with a database of 4,477

companies from 24 developing countries, between 1995 and 2007, including the financial integration of those economies, which presented a sign contrary to that expected in the development of the stock market.

3. METHODOLOGY

The present empirical research completed, as methodological features, the following steps: period of analysis and accounting--financial data; method, methodological approach, nature and research strategies; and analysis and variable tools.

3.1. Period of analysis and accounting-financial data

This research proposal covers the period from 2007 to 2016, whose data were extracted from the Economic system, especially from the balance sheets and the statements as results of the years, relating to the open capital companies listed in the scholarships of Argentina and Chile, the annual financial statements closed in December of each year being considered, with a duration of ten years for the analysis.

The classification of companies in the sectors was also extracted from the Economática database, which served to compose the sample of Argentine and Chilean companies. The choice of annual accounting-financial reports was given in relation to the seasonality of some companies.

3.2. Variables, analysis tools and econometric models

This section will present the variables (dependent and independent), the analysis tools proposed in the research and the econometric models used.

3.3. Variables

All variables, dependent and independent, used in performing econometric tests were defined based on the theoretical reference. Data on the specific factors of the companies were collected directly from the Economica software, in the fourth quarter of 2017, which provides both accounting and market data. Therefore, it is primary

data. These data include the economic-financial variables of open companies. The quarterly data come from equity balances, statements of income for the year and market information available in the database itself.

The variables that make up this study are presented in Table 1 and 2, which state their names, acronyms and calculation formulas:

Table 1. Dependent variables

Research Variable	Initials	Formula
Total indebtedness	ET	$\frac{\text{Current liabilities + Non-current liabilities}}{\text{Total active}}$
Short term indebtedness	ECP	$\frac{\text{Current Liabilities}}{\text{Total active}}$
Long-term indebtedness	ELP	$\frac{\text{Non-current liabilities}}{\text{Total active}}$
Onerous financial indebtedness to Short term	EOCP	$\frac{\text{Debentures and short-term financing}}{\text{Assets at book value}}$
Expensive financial indebtedness to long-term	EOLP	$\frac{\text{Debentures and long-term financing}}{\text{Assets at book value}}$

Table 1. Dependent variables.
Source: Prepared by the author.

The dependent variables presented in Table 1 represent the indebtedness indicators and were used in the panel data regression models in the execution of this study. They were based on readings from previous research.

Table 2. Independent variables

Research Variable	Initials	Formula
Current liquidity	LC	$\frac{\text{Current assets}}{\text{Current Liabilities}}$
Tangibility	TANG	$\frac{\text{Active fixed assets + Stores}}{\text{Total active}}$
Return to investors	ROE	$\frac{\text{Net profit}}{\text{Net equity}}$
Return on investment	ROA	$\frac{\text{EBIT}}{\text{Total active}}$
Sales Growth	CVD	$\frac{\text{Net income}_{t} (-)\text{Net income}_{t-1}}{\text{Net income}_{t-1}}$

Asset growth	CAT	$\frac{\text{Total active}_{t}\ (-)\text{Total active}_{t-1}}{\text{Total active}_{t-1}}$
Income tax payment level	IR	$\frac{\text{Value of income tax}}{\text{EBIT}}$
Fiscal Economy	EF	$\frac{\text{(Depreciation + Amortization)}}{\text{EBITDA}}$
Profitability	PROF	$\frac{\text{EBITDA}}{\text{Total active}}$
Growth expected by the market value differential	MTB	$\frac{\text{Asset Market Value}}{\text{Book value of assets}}$
Business risk measured by profit volatility	RSK	$\frac{\text{(Standard Deviation EBIT - Media)}}{\text{Net Operating Income}}$

Table 2. Independent variables.
Source: Prepared by the author.

The independent variables presented on Table 2 represent the determining factors for the capital structure and were used as explanatory variables in the panel data regression models in the execution of this study. They were based on the readings of previous research and will have the possibility of pointing out if there is any relation and significance to the econometric model. In addition, if there is significance, we will analyze what is its relationship with indebtedness, that is, if it is positive or negative.

The market value of the asset was calculated according to Rajan and Zingales (1995), where the market value of the asset is (almost) equal to the asset minus the net asset book value. The market value of the net worth was obtained from the Economic system, being equal to the price of the closing of the action times the total shares of the company.

The data of these independent variables were extracted from the balance sheets and income statements of the years under study, from January 2007 to December 2016, with annual periodicity of the Economática software.

3.4. Analysis tools

Four tools were used for the analysis of this study. The first is the descriptive analysis of the data by means of the average and

the standard deviation of each dependent and independent variable of each country (Argentina and Chile). The second is Pearson's correlation, whose idea is to evaluate the existence or not of correlation between two variables. If there is a high correlation between two variables (from 0.7 or 70%), it means that these variables are influencing the final result of the model. Correlation values may vary between -1 and +1 (correlation between -100% and + 100%).

The third data analysis tool is the Variance Inflation Factor (VIF). The use of the VIF is to know if there are multicollinearity problems. This tool varies between 0 and 1, promoting the idea that, if it is greater than 1, there is multicollinearity. Finally, the fourth tool is the regression of panel data and test derivatives (from F de Chow, Hausman and LM from Breusch-Pagan).

Three types of tests were performed using panel data regression: (1) Chow's F test assesses the adequacy of the panel test for the variables presented; (2) Hausman's evaluates the fixed and random variables of the test; and (3) the one of LM of Breusch-Pagan serves for validation of the test.

3.5. Econometric Models

The application of the econometric models was made from this general equation:

$$E_{it} = \beta_0 + \beta_{1i} LC\_{it} + \beta_{2it} TANG_{it} + \beta_{3it} ROE_{it} + \beta_{4it} ROA_{it} + \beta_{5it} CVD_{it} + \beta_{6it} CAT_{it} + \beta_{7it} IR_{it} + \beta_{8it} EF_{it} + \beta_{9it} MTB_{it} + \beta_{10it} RSK_{it} + \mu_{it}$$

Equation (1)

Each study variable is represented by the respective acronyms:

Ei: represents the dependent variables that deal with the indebtedness of companies

LC_it: represents the independent variable of current liquidity

TANGIT: represents the independent tangibility variable

ROEit: represents the independent variable of return to shareholders

ROAit: represents the independent variable of return on investment

CVDit: represents the independent variable of sales growth

CATIT: represents the independent variable of asset growth

IRit: represents the independent variable of income tax pay-

ment level

EFIT: represents the independent fiscal economy variable

MTBit: represents the independent market-to-book variable

RSKit: represents the independent business risk variable

$_{it}$: represents that the variables are used for all the proposed linear multiple regression models of panel data: POLS, Fixed effects and Random effects.

t: represents the time.

Finally, in the next chapter the results of research and analysis based on information on the correlation matrix of the variables are presented, signs of the variables and validation of the assumptions of the regression models of data in the panel.

4. RESULTS AND DISCUSSIONS

This chapter will present and analyze the results obtained in this investigation.

To begin, the first step, described in section 4.1, sought to examine the relationship between historical market values and capital structure of companies listed on the stock exchanges of Argentina and Chile, with the aim of identifying the possible behavior of the average level of indebtedness and the standard deviation of the variables studied between 2007 and 2016.

The second step, described in section 4.2, sought to test the intensity and the sense of the relationships between the variables by means of Pearson's correlation coefficient, together with the Variance Inflation Factor, to identify possible multicollinearity problems.

4.1. Descriptive statistics of the variables

The Table 3 presents the average level of indebtedness and the standard deviation of the variables studied, between 2007 and 2016, in the two countries analyzed.

Table 3 - Descriptive statistics of the variables

Variable	Argentina		Chile	
	Average	Average Standard Deviation	Average	Average Standard Deviation
Panel A - Dependent Variables				
ET	0.536*	0.187	0.385	0.175
ECP	0.339*	0.169	0.161	0.094
ELP	0.197	0.157	0.224*	0.141
EOCP	0.045*	0.050	0.023	0.031
EOLP	0.018	0.026	0.109*	0.136
Panel B - Independent Variables				
LC	1.339	0.711	4.204*	31.613
TANG	0.543*	0.237	0.488	0.257
ROE	0.038	0.449	0.082*	0.206
ROA	0.092*	0.091	0.074	0.127
CVD	0.720	8.132	49.572*	1440.375
CAT	0.479	5.444	11.979*	393.817
IR	0.411*	1.710	0.132	1.414
ECND	1.186*	8.665	0.513	3.531
MTB	0.490	0.707	0.726*	1.276
PLD	0.008*	0.548	-13.334	95.079

Table 3. Descriptive statistics of the variables.
Source: Research data.
Ps.: (*) higher averages.

The data from panel A reveal, on average, in the period from 2007 to 2016, between Argentina and Chile, the following results, in relation to the characteristics of indebtedness (dependent variables) in those countries:

- Chile has the lowest average, around 38.5%;

- The country with the highest average short-term debt is Argentina, with 33.9%; Chile has the lowest average short-term debt, around 16%;

- For long-term, burdensome short and long-term borrowings; Argentina has the lowest average long-term and long-term borrowings, with 19.7% and 1.8%, respectively; Chile marked presence with the lowest average only in onerous short-term indebtedness, with 2.3%.

Regarding the behavior of independent variables, in which they represent the determining variables of the capital structure, the results reported in panel B of table 1 were:

- While in Argentina, companies have the highest average variables that determine capital structure (Tangibility, ROA, Income Tax Payment Level, Fiscal Economy and Business Risk); Chilean companies have four variables that determine the capital structure

with the highest averages (Current Liquidity, ROE, Sales and Asset Growth);

- Current Liquidity, which translates as the capacity that companies have in liquidating their short-term debts using short-term assets, had greater prominence in Chile, totaling, on average, 4.2, that is, for each unit monetary short-term debt (obligations);

- Companies in Argentina aim to have 54% of tangible assets, that is, more than in Chile and, especially;

- Regarding the indicators of return to partners and entrepreneurship, Chilean companies had a higher average with the ROE of 8.2%, and Argentine companies averaged 9.2% with the ROA;

- If Chilean companies had the highest averages with Sales Growth and Asset Growth;

- In relation to taxes, Argentine companies have the highest averages with the variables Income Tax Payment Level and Fiscal Economy (respectively, 41% and 118%); Chilean companies, 51% for the second variable (being the lowest average);

- For the market-to-book variable, the companies with the highest averages were the Chilean ones, followed by the Argentine ones;

- The companies with the lowest business risks are Chilean companies, although with a very small average; Argentine companies have the highest averages in this regard.

4.2. Relationship between the variables

Before presenting and evaluating panel data, the advantages of this method should be clarified. The data, as seen in Table 3, is in a cross-section and, in the econometric literature, is known as panel data, or also as longitudinal data. As an advantage, according to the simple calculation of Pearson's correlation, they allow the evaluation of the data between them, in addition to the influence of their relationships for the final result of the analysis, since it allows the evaluation of the explanatory variables on the dependent variable along of the period studied (Wooldridge, 2010).

Therefore, Table 3 presents the relationship between the 15 variables and their correlations for each country analyzed in the investigation (Argentina and Chile). Wooldridge (2010) also comments

on the advantage of using this method to observe possible omitted variables. So, this preliminary analysis, before the final evaluation, aims to present these possible variables and thus increase the accuracy of the analysis, as Cameron and Trividi (2005) did.

The panel data presented in Table 3 offers a relationship between several data on different lines, the first line is the constants. These constants are different for each country evaluated and for each factor of each country, for example, the gap begins with the accounting indebtedness, where the ET constant is 0.920 for Argentina and 0.322 for Chile; all with the same degree of freedom of 0.01. That is, for each ET factor the percentage of Argentina 92% and Chile only 32.2%.

The Breusch-Pagan, F de Chow and Hausman tests were performed on the variables dependent on total indebtedness, short-term indebtedness and long-term indebtedness. Only the Hausman test in Chile had random effects, and Argentina had fixed effects.

At the base of the panel are the values of R2, which is the square of Pearson's correlation and adjusted R2, called R2a, which presents the correlation adjustment for the number of samples used in the Johnson and Wichern analysis (1998). It is noted that the value of ET for Argentina has a strong correlation, close to 75%, while for Chile the correlation is weak (17.5%).

Thus, panel data offers a wide possibility of analysis of various factors in the econometric analysis, which converges with the advantages presented above.

Table 4 - Pearson Correlation and Variance Inflation Factor Test

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	VIF	
Panel A – Argentina																	
ET (1)	1	0,615**	0,533**	0,010	-0,072	-0,493**	-0,207**	-0,332**	-0,164**	-0,027	-0,067	0,005	-0,010	-0,160**	0,064		
ECP (2)		1	-0,340**	0,223**	-0,106*	-0,303**	-0,271**	-0,156**	-0,033	-0,073	-0,085*	0,072	-0,004	-0,062	0,049		
ELP (3)			1	-0,227**	0,027	-0,262**	0,044	-0,229**	-0,159**	0,046	0,011	-0,071	-0,008	-0,124**	0,023		
ECPF (4)				1	0,386**	-0,083	0,064	0,049	-0,063	-0,011	0,032	0,080	0,044	0,072	-0,038		
ELPF (5)					1	0,107*	0,076	0,115**	0,078	0,177**	0,069	-0,045	-0,051	0,126**	0,064		
LC (6)						1	-0,201**	0,167**	0,141**	0,108*	0,048	-0,013	-0,027	0,222**	-0,022	0,891	1,122
TANG (7)							1	-0,078	-0,144**	-0,081	-0,015	-0,092*	-0,011	-0,114**	-0,080	0,917	1,090
ROE (8)								1	0,477**	0,022	0,028	-0,023	-0,003	0,099*	-0,041	0,758	1,320
ROA (9)									1	0,073	0,030	-0,057	-0,082	0,088*	-0,146**	0,731	1,367
CRESCDV (10)										1	0,453**	-0,007	-0,009	-0,001	-0,010	0,781	1,280
CRESCAT (11)											1	-0,015	-0,008	-0,040	-0,009	0,792	1,263
NPGIR (12)												1	0,295**	0,004	0,025	0,902	1,109
ECND (13)													1	-0,036	-0,001	0,905	1,105
MTB (14)														1	-0,037	0,937	1,067
PLD (15)															1	0,965	1,036
Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**	**(13)**	**(14)**	**(15)**	**VIF**	
Panel B – Chile																	
ET (1)	1	0,593**	0,844**	0,328**	0,550**	-0,156**	0,405**	-0,078**	0,015	0,007	-0,011	-0,060*	0,073**	-0,113**	0,232**		
ECP (2)		1	0,069*	0,316**	0,051	-0,130**	0,139**	0,065*	0,150**	-0,013	-0,020	-0,037	0,064*	0,031	0,193**		
ELP (3)			1	0,196**	0,648**	-0,106**	0,409**	-0,140**	-0,080**	0,018	-0,001	-0,050	0,048	-0,161**	0,139**		
ECPF (4)				1	0,509**	-0,060*	0,127**	-0,044*	-0,052**	-0,026	-0,023	-0,007	-0,016	-0,076**	0,085**		
ELPF (5)					1	-0,049	0,217**	-0,117**	-0,082**	-0,028	-0,024	-0,074**	0,045	-0,105**	0,069*		
LC (6)						1	-0,139**	-0,217**	-0,117**	-0,003	-0,002	-0,005	-0,012	-0,009	-0,223**	0,869	1,151
TANG (7)							1	0,020	0,071*	0,037	0,043	0,015	0,056*	0,073**	0,244**	0,915	1,093
ROE (8)								1	0,809**	-0,006	-0,005	0,207**	-0,096**	0,415**	0,102**	0,275	3,632
ROA (9)									1	-0,002	-0,006	0,013	-0,015	0,499**	0,236**	0,258	3,879
CRESCDV (10)										1	0,141**	0,005	0,016	-0,011	0,004	0,978	1,022
CRESCAT (11)											1	0,001	0,001	-0,014	0,004	0,978	1,022
NPGIR (12)												1	-0,522**	0,014	0,010	0,647	1,545
ECND (13)													1	-0,021	0,020	0,721	1,388
MTB (14)														1	-0,014	0,727	1,376
PLD (15)															1	0,806	1,241

Table 4. Pearson Correlation and Variance Inflation Factor Test.
Source: Prepared by the author (research data).
Ps.: (*) The correlation is significant at the 0.05 level; (**) The correlation is significant at the 0.01 level.

Based on the findings in Table 4, Pearson's correlation between the variables presupposes the existence of a relationship between the determining factors of the capital structure and the levels of accounting and financial indebtedness. On the other hand, for the Argentine companies, three indicators did not present a significant correlation with the levels of indebtedness, they are: the Income Tax Payment Level (NPGIR), Fiscal Economy (ECND) and Business Risk Measured by the Volatility of Benefits (PLD). Finally, for Chilean companies, the variables Growth of Sales (CVD) and Growth of Assets (CAT) did not expose a significant correlation with any level of indebtedness.

The results of the Pearson correlation show that there is no high degree of correlation between the levels of accounting and financial indebtedness and the determining factors of the capital structure

(correlation greater than 85%), indicating that there are no high multicollinearity problems that may affect the results of the panel data regression model with the variables used. In addition, the VIF values shown in Table 4 also indicate the absence of multicollinearity, since the highest VIF value found was 3,879, and only VIF values greater than 10 indicate multicollinearity problems among the variables (Gujarati & Porter, 2011). In this way, the determinants of the capital structure selected in this study are able to explain the levels of indebtedness of the companies listed on stock exchanges in Argentina and Chile.

For the realization of panel data regression, according to Fávero et al. (2009, p. 383), "some tests are used to define the best panel data model (POLS, fixed effects or random effects)". Thus, it was carried out: the Chow F test, to verify if the intercept is the same (POLS) or different (fixed effects) for all the croos-sections; the Breusch-Pagan LM test, to find out if the variance of the residues that reflect the individual differences is equal (POLS) or different (random effects) from zero; and the Hausman test, to compare the results of the fixed effects model with that of random effects (Fávero et al., 2009). The tables with the results of these three tests are presented in the appendices of this investigation. Table 4 shows the results of the panel data regression.

Table 5 - Panel data regression results

Panel A - Accounting Indebtedness						
Variables	**ET**		**ECP**		**ELP**	
	Argentina	**Chile**	**Argentina**	**Chile**	**Argentina**	**Chile**
Constant	0,920*	0,322*	0,689*	0,125*	0,246*	0,213*
LC	**-0,124***	**-6,39E-04***	**-0,134***	**-3,55E-04***	0,001	**-2,89E-04***
TANG	**-0,397***	**0,155***	**-0,350***	**0,078***	-0,041	**0,053***
ROE	**-0,073***	**-0,085***	**-0,056***	-0,017	-0,019	**-0,062***
ROA	**-0,172****	-0,033	0,052	0,031	**-0,212***	**-0,091***
CVD	**1,49E-03****	-2,23E-06	-3,93E-04	**-2,23E-06****	**1,85E-03***	-2,74E-08
CAT	-1,32E-03	**-8,1E-06**	-3,72E-04	-9,37E-08	-8,93E-04	-7,49E-06
IR	6,40E-04	-0,002	1,36E-03	-0,001	-1,21E-03	-0,001
ECND	-1,32E-04	-1,09E-03	-2,28E-04	3,14E-04	6,16E-05	-1,50E-03
MTB	**0,032***	**-0,0002**	**0,034***	8,42E-04	-0,004	1,69E-03
PLD	0,014	2,46E-04*	0,001	**1,55E-04***	0,011	**1,02E-04***
R²	**0,763**	**0,181**	**0,802**	**0,729**	**0,067**	**0,850**
R² Adjusted	**0,727**	**0,175**	**0,772**	**0,692**	**0,049**	**0,829**

Panel B - Financial indebtedness				
Variables	**ECPF**		**ELPF**	
	Argentina	**Chile**	**Argentina**	**Chile**
Constant	0,090*	0,052*	0,034*	0,242*
LC	**-0,038***	-4,04E-05	**-0,007***	**-2,17E-04****
TANG	0,015	**-0,051**	-0,014	**-0,241***

ROE	0,005	-0,009	0,003	**-0,066****		
ROA	**-0,056****	-0,017	0,032	-0,086		
CDV	-5,83E-05	-6,38E-07	**6,19E-04***	-3,15E-06		
CAT	2,86E-04	-4,37E-07	-4,05E-05	-6,88E-06		
NPGIR	1,47E-03	-0,001	-5,97E-05	-0,005		
ECND	1,43E-04	-1,43E-04	-7,70E-05	-5,95E-04		
MTB	0,002	-2,11E-03	**-0,005****	1,33E-05		
PLD	-0,004	**3,13E-05***	**0,006***	**9,72E-05****		
R²	**0,626**	**0,323**	**0,774**	**0,479**		
R² Adjusted	**0,568**	**0,230**	**0,745**	**0,407**		

Table 5. Results of panel data regression.
Source: Prepared by the author (research data).
Ps.: (*) The correlation is significant at the 0.01 level; (**) The correlation is significant at the 0.05 level.

Table 5 shows the determinants that most strongly influence the levels of indebtedness of companies. They are: Current Liquidity (LC), Tangibility (TANG), Return to Shareholders (ROE), Return of Assets (ROA), Sales Growth (CRESCDV), Growth of Assets (CRESCAT), Market-To- Book (MTB) and Business Risk Measured by Volatility of Benefits (PLD). This is close to the results obtained in other research in the area, such as Delcoure (2007), Nakamura et al. (2007), Bastos, Nakamura and Basso (2009), Nunkoo and Boateng (2010), Correa, Basso and Nakamura (2013) and Póvoa and Nakamura (2015). The analysis of the results is presented in the next section.

The variables of Return to Shareholders (ROE) and Return of Assets (ROA) indicated a negative relationship for the levels of accounting and financial indebtedness. These results strongly confirm the H1 hypothesis, that the relationship between return to shareholders and debt indicators is negative, and H2, that the relationship between return on assets and debt indicators is negative. Similar results are verified in the investigations of Delcoure (2007), Nakamura et al. (2007), Bastos, Nakamura and Basso (2009), Bastos and Nakamura (2009) and Correa, Basso and Nakamura (2013), in addition to confirming the theory of pecking order.

According to the theory of pecking order, "[...] companies with higher growth rates, which demand more resources than they can

generate, would tend to look outside the company for those resources necessary for expansion" (Correa, Basso & Nakamura, 2013, p. 110), that is, there should be a positive relationship between growth and debt levels. However, growth opportunities can be seen as intangible assets, thus, "[...] the use of debts would be limited for those companies, which suggests that growing companies should be less indebted" (Correa, Basso & Nakamura, 2013, p. 110), that is, there would be a negative relationship, corroborating with the trade-off theory. Thus, the H3 hypothesis, that the relationship between asset growth and debt indicators is positive, is confirmed for total indebtedness. For the H4 hypothesis, that the relationship between sales growth and indebtedness indicators is negative, short-term indebtedness was found in Chilean companies. The findings were also found in the studies of Bastos, Nakamura and Basso (2009) and Bastos and Nakamura (2009).

The results for the Market-to-Book (MTB) variable, in relation to debt levels, were positively and negatively significant for Argentine companies and not significant for Chilean companies. The negative relationship was also found by the studies of Nakamura et al. (2007) and Nunkoo and Boateng (2010). In addition, the positive and negative relationship was presented by the investigations of Bastos, Nakamura and Basso (2009) and Bastos and Nakamura (2009). For the pecking order theory, a positive and negative signal is expected for the relationship between MTB and indebtedness (Bastos & Nakamura, 2009). This ambiguous relationship, according to Bastos, Nakamura and Basso (2009, p. 69), occurs because companies with higher MTBs "[...] need funds that are often not sufficiently generated by retained benefits or, then, they can have a higher return, depending, therefore, on less debt ".

In relation to Tangibility (TANG), there was a negative and significant relationship with the levels of accounting and financial indebtedness for Argentine companies, corroborating the theory of pecking order and rejecting the H5 hypothesis for these two countries. This finding reflects that the managers of Argentine companies, when the composition of tangible assets exerts a strong influence, seek to issue less external debts, as they are less prone to problems of asymmetric information (Myers, 1984).

For Chilean companies, the relationship between Tangibility (TANG) and accounting indebtedness was positive, and for financial indebtedness it was negative, corroborating the theory of trade-off and pecking order, respectively. The findings for the accounting indebtedness allow to accept the H5, of which the relation between tangibility of the assets and the indicators of indebtedness is positive. The studies by Delcoure (2007) and Nunkoo and Boateng (2010) also found a positive relationship. Thus, Chilean companies with high levels of tangibility assume relatively more debts, since tangible assets end up helping companies to incur debts (Titman & Wessels, 1988), since they are less prone to delinquency (Rajan & Zingales, 1995).

The Current Liquidity Index (LC) presented a negative relationship for the levels of indebtedness of the three countries analyzed, supporting the hypothesis regarding the theory of pecking order. Given these results, it can be said that Argentine and Chilean companies that have better liquidity are less prone to the use of external financing. The findings induce the acceptance of the H6 hypothesis, that the relationship between current liquidity and debt indicators is negative. This result goes against the findings of Nakamura et al. (2007), Bastos and Nakamura (2009), Bastos, Nakamura and Basso (2009) and Póvoa and Nakamura (2015). Thus, managers of companies with greater liquidity prefer to transform company assets into internal financing, because they are less expensive (Myers & Rajan, 1998), due to the greater financial slack in the retention of internally generated funds (Ozkan, 2001).

Finally, some relevant variables lack empirical confirmations, such as the Income Tax Payment Level (NPGIR) and the Fiscal Economy (ECND). These variables, according to trade-off theory, should present significant results, however, for this study, they were unfinished.

5. CONCLUSIONS

The capital structure issue has been thoroughly investigated over more than sixty years, and seems far from exhausted. In each investigation, small advances are consolidating a set of new knowledge (Myers, 1984).

To define a time base, in the last ten years, research related to the capital structure is broadening the perspectives of new research areas and deepening issues that seemed to be on the edges of exhaustion. Two important works in this regard are: Lemmon, Roberts and Zender (2008) and Frank and Goyal (2009), which review aspects related to capital structure determinants. It is perceived that, in fact, there is a consensus regarding the determinants of capital structure, together with the question that the two main theories of capital structure (trade-off theory and pecking order theory) are not antagonistic, as the initial works, but complementary, suppose, and this new vision has been defended by various authors in recent years.

This research sought to analyze some determinants of the level of indebtedness of open capital companies in the stock exchanges of Argentina, and Chile, in the light of the two main theories on the subject. The analyzes were performed based on data obtained from the financial statements of the open capital companies in the stock exchanges of these countries, in the period from 2007 to 2016. Static and dynamic tests were performed using the panel data model.

The study sought to empirically analyze what are the primary factors that determine the degree of indebtedness of companies belonging to developing countries in Latin America. Through panel data, more robust evidence was sought. In fact, the study revealed that there are specific company factors that are relevant and protected by well-founded theories. These factors are widely used in empirical research, which generally have the same conclusions.

The analyzed data reveal that, in the period from 2007 to 2016, among these countries short-term financial indebtedness, Chile has the lowest level, and for the long term, Argentina predominates. Regarding accounting indebtedness, there is a predominance of long--term debts, with the exception of Argentina, in which the short-term

one predominates. Finally, for burdensome financial indebtedness, there is a predominance of expensive long-term debts, except for Argentina, where short-term ones predominate.

The limitations of this research, as in the others, should be commented to improve further future research, which may deviate from these limitations. First, the limitation was of an econometric order. Panel data can generate several estimation and inference problems, based on cross section data (heterocedasticity) and time series (autocorrelation). Data in static panel were used in this study, which do not allow analyzing the dynamics of debt adjustment over time in view of a supposed metal capital structure.

As for the methods used, dynamic panel data can be used, which may present new evidence, such as the speed of adjustment of the level of accentuation towards an optimal capital structure goal, and if such speed is influenced by macroeconomic and institutional issues . Suggestions for future research, therefore, cover the use of Panel Data to analyze other factors that may influence indebtedness, mainly taxes and dividends, as well as a deeper analysis of factors that may influence the speed of adjustment. towards the target level.

The comparison of results between the various studies that address the capital structure of companies demonstrates the use of a great diversity of proxies, with the intention of measuring certain indicators. Thus, future work could also find out if the proxies used in the main studies really measure what they intend to measure.

Finally, future research could address the influence of the cost of capital in the composition of the debt matrix of the companies listed on the stock exchanges of Argentina and Chile.

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