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ANALYSIS OF APPROACHES TO CAPITAL STRUCTURE: A Literature Review

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ABSTRACT

This study analyzes 124 papers published in major national and international journals in the Business Management field about capital structure over the last six years (2009-2014). The aims of this paper are to investigate the current stage of research and to identify new directions of study in a topic that is considered the most controversial in corporate finance. The main studies are concentrated in five journals that cover the greatest volume of research. Empirical analysis (with representative samples and long-time series) is a prominent tool, which makes regression analysis the prominent technique, while leaving space for analysis of developed markets. New horizons in this field are related to the use of the theory of real options and theoretical gaps existing in traditional perspectives of Pecking order, Trade off and Agency, focusing on the analysis of emerging markets or specificities that contribute to the expansion of theoretical applications.

Keywords: *Bibliometry; Indebtedness; Pecking order Theory; Trade off Theory; Agency Theory.*

1. INTRODUCTION

The frontier of empirical research of capital structure incorporates three study approaches: i) decisions regarding capital structure on the *cross-section* level; ii) the factors that determine changes in the structure of capital over time; and iii) research that investigates the consequences of indebtedness in the corporation's scope (Parsons & Titman, 2009).

Polarization between the traditional perspectives of capital structure based on *Trade off Theory* and on *Pecking order Theory* has enabled new approaches in the understanding of corporations' capital structure through innovation in used variables, analysis models and sampling characteristics (Graham & Leary, 2011).

Notwithstanding, the topic's tradition in corporate finance, whose seminal formalization is credited to research by Modigliani and Miller (1958 and 1963), the empirical results in literature are ambiguous (Feld, Heckemeyer, & Overesch, 2013).

The absence of theoretical consensus in the field of corporate finance creates a great amount and diversity of studies and scope for analysis. This statement can be observed through a simple search on the Scopus database with the term "Capital Structure" in the fields of "Business" and "Economics" which will result in more than 3,100 papers, if 'papers' only are highlighted.

This situation brings a challenge to the researchers in the area, especially those approaching the subject area as a state of art, bearing in mind that an independent bibliography survey can arduously complicate both the approach and the understanding of this area of study.

Recent efforts in literature review about capital structure were undertaken, in which research carried out by Tudose (2012), Graham and Leary (2011) and Parsons and Titman (2009) were highlighted. In Brazil, there has been an emphasis on the systemisation of frinancial research through bibliometric studies, for instance Leal, Almeida and Bortolon (2013) and Camargos, Silva and Dias (2009) and in topics like Behavioral Finance (Vieira & Pereira, 2009), Corporate Governance (Ribeiro *et al.*, 2014) and CAPM (Araújo, Oliveira, & Silva, 2012). Concerning research in Brazil about Capital Structure only one bibliometric study was found and it was written by Coelho *et al.* (2013), however, the sample of international periodicals used by the authors did not compute any important results in the Finance area due to the adopted strategy of applying only the outdated criteria of Qualis/CAPES of 2009. In addition, the aim of the proposed study was to identify the most used theories by national researchers.

Accordingly, this study takes as its starting-points two considerations: i) what is the state of art of the capital structure topic? ii) What are the directions for new research in the area?

Aiming to answer these questions, the following objectives for this research were determined: 1) Identify the main theoretical approaches that reinforce the topic; 2) Indicate the most published periodicals about the topic; 3) Characterize the most conducive authors; 4) Identify the most relevant papers to the researched area; and 5) Reveal the opportunity windows of research in the area.

In order to find motivations for this study and meet the aforementioned objectives, a bibliometric analysis was applied for the period of 2009 to 2014 in the periodicals qualified in the current Qualis/CAPES System as A1 and A2 (2014).

Thus, this research can be placed in a theoretical scope not reached by existing literature, as it attempts to relate the topic developed in Brazil to the one accomplished overseas, as well as, considering a wider and more recent sample of the study conducted by Coelho *et al.* (2013).

Therefore, 110 international and 14 national papers were collected and analyzed. It is expected that the results of this study will contribute to the formulation of new research in the discipline of corporate finance, collating literature for new researchers in the field and assisting in the teaching of finance, specifically graduation courses such as Business Management, Accounting, Economics and Production Engineering.

The paper will begin by presenting the theoretical basics of the main approaches about capital structure before looking at the most prominent characteristics of research. In the third section, the methodological procedures will be presented, as well as the characteristics of the researched papers. The fourth section presents the analysis of the research associated with the anticipated objectives. The final considerations examine the implications of this study and for future research. Bibliographic references conclude the study.

2. THEORETICAL FOUNDATION

Capital structure concerns the composition of funding sources of a corporation, including the share of owned resources and those owned by third parties (Damodaran, 2001). This study has been developed utilising the work of Modigliani and Miller (1958) – "The cost of capital, corporation finance and the *Theory* of investment", with the discussion focussing on the existance or otherwise of a great capital structure, which still stands by after several decades (Ibrahimo & Barros, 2009).

In the seminal work of Modigliani and Miller (1958), when market conditions are perfect and simplified, the authors conclude that capital structure is irrelevant to the determination of the corporation value (Kayo & Kimura, 2011). Since then, new theoretical horizons have developed, which include consideration real market conditions and agents of behaviour (Bastos & Nakamura, 2009).

After the pressupositions of Mondigliani and Miller, the approaches that polarize the discussion regarding the determining factors of corporate capital structure were *Trade off Theory* and the *Pecking order Theory* (Myers, 1984), (Graham & Harvey, 2001). These theories bring the evolution of other important elements for the analysis of the organization of sources of funding in a corporation: i) influence of income tax in financial expenses (Myers, 1977); the coct of bankruptcy (Titman, 1984), iii); agency costs (Jensen & Meckling, 1976) iv) the assymetry of information (Stulz, 1990) and the v) prioritization of the sources of funding (Myers & Majluf, 1984).

2.1 The theory of Irrelevancy - Modigliani and Miller

The theory of irrelevancy of capital structure for corporation value, published in 1958 by Franco Modigliani and Merton Miller (M&M) is considered a milestone in modern corporate finance (Damodaran, 2001) (Graham & Harvey, 2001) (Feld, Heckemeyer, & Overesch, 2013).

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The innovative perspective of the authors opposed traditional thinking that assumed a great importance to funding according to the differences in variations of cost of equity and different levels of indebtedness (Myers, 1977). The formalization of the convential thinking previous to M&M can be evidenced by the work of Durand (1952) that for some authors is considered a pioneer in the studies of capital structure (Santos, Pimenta Jr., & Cicconi, 2009).

The propositions of M&M were analysed, initially considering an economic environment without taxation on revenue and with full market efficiency (Kayo & Kimura, 2011). Consideration under these propositions led to the conclusion that the values of a corporation cannot be associated to cost of debt an therefore, debt policy (Ibrahimo & Barros, 2009).

Thus, the value of a organization should represent the value of its assets, by calculating the values of free cash flows, in such a way that the increases in indebtedness do not influence the effect on weighted average cost of capital (Damodaran, 2001).

In order to support the premise of irrelevancy, M&M demonstrated that the debt cost will not vary based on the amount of leverage, because if it occurred, there would be a possibility of leverage from external parties. Nevertheless, the cost of equity would have a positive and linear correlation with the level of indebtedness, based on finantial risk, so, assuming a third party has a cost of capital lower than the equity capital, this would result in a higher cost of net equity (Modigliani & Miller, 1958)

After criticism to the model, M&M published a new paper in1963 recognising the importance of the deductibility of finantial expenses in the calculation of income tax(Modigliani & Miller, 1963). However, the premises associated with the perfect market and the rationality of agents, were criticised in the previous decades and this resulted in the emergence of *Trade off Theory* and *Pecking order Theory* (Ibrahimo & Barros, 2009).

2.2. Trade off Theory

Trade off theory stated that corporations should aim for a capital structure high in indebtedness, which would comply with the possibility of finding a level where cost of capital is minimised (Hovakimian & Li, 2011).

An organization that does not apply third parties capital in the composition of its capital structure would present a cost of funding equal to net entity value (Damodaran, 2001). In the assumption of third parties capital, its weighted average cost of capital (WACC) will decrease as the tax benefit reduces the effective cost of debt and by the presumption that the third parties cost of capital is lower than the equity capital, the corporation would substitute a more costly source of finance to a cheaper one (Wu & Yue, 2009).

Therefore, there would be a limit , due to the possibility of bankruptcy costs(Graham & Harvey, 2001). These costs are reflected on the rates of return that are required by the creditors and investitors based on the economic and corporate characteristics of the business and market liquidity (Forte, Barros, & Nakamura, 2013).

Bankruptcy costs occur at different stages. In the beginning they are associated with the organization’s low liquidity, which requires greater involvement of short term loans, penalty payment and default interest and expenses with negotiation with creditors, suppliers and loss of market confidence. At a later stage, bankruptcy costs consist of legal fees, losses from sales of fixed assets, loss of clients and revenue, reduction in the operational cycle and, with indirectly, the increase in working capital and relationships between shareholders and the market (Damodaran, 2001) (Kayo & Kimura, 2011) (Titman, 1984).

2.3. Pecking order Theory

Pecking order Theory created by Myers and Majuf (1984), was developed through the foundations of the theory of assimetry of information, which acknowledges that managers have different information (privileged) regarding company perspectives than that available to investors and information assimetry therefore does not allow the investors to evaluate the true value of the securities of the organization (Graham & Leary, 2011)

Contrary to *Trade off Theory*, *Pecking Order Theory* suggests that organizations do not pursue a great level of indebtedness and that capital sructure is a cumulative result of the hierarchy of preferences of funding throughout time (Damodaran, 2001).

The order of preferences of the sources or hierarchy of capital follows the premise that organizations have as main source of resources their retained earnings, free from transaction costs and rely on indebtedness and\ the issuance of shares, in this order, only if the requirements of investiment are superior to the accumulation of retained profits. The result of these assumptions is that the distribution rate of the dividends that should be kept at reasonable levels, to avoid the exhaustion of reserve of retained earnings (Kayo & Kimura, 2011).

The reluctance to issue new share capital is due mainly to sub-pricing by the market, due to the asymmetry of information between the potential investors and organization's managers in relation to cash flows expected from the organization's assets. This asymmetry would take the corporation to a loss of value for the current shareholders if a new share issue was approved, as new valuations would not be correctly considered by the market, causing a sub evaluation of the new shares and consequently a wealth transfer from the old shareholders to the new ones (Graham & Harvey, 2001).

A balance between equity and third parties capitals occurs when the value of tax incentives of the debt resulting from additional interests is exactly compensated by the additional costs of possible financial difficulties. Thereby, the organizations should substitute the equity capital for third party capital and vice-versa aiming to maximize its value and find an aspired capital structure (Parsons & Titman, 2009).

2.3.1. Theory of agency costs

The theory of agency costs or theory of agency was consolidated from the paper of Jensen and Meckling (1976). By this theory, for the first time, it was cited that agency problems are caused by conflicts of interest that are installed in all business activities between individuals, occurring or not in hierarchical situations between the main party and the agent (Paligorova & Xu, 2012).

In the study of Jensen and Meckling (1976), two forms of agency costs were identified. The first one is denominated agency cost of equity capital and refers to the conflict of interest between managers and shareholders, in which managers make decisions based on their own interests and not on maximizing shareholder wealth.

The second form of agency cost of debt, generated by the conflict between debtors and shareholders mainly in situations of financial difficulties, where the shareholders tend to self-regard and substitute low risk investments for higher risk investments in order to obtain a greater return rate, even if it affects the organization's value. This practice increases default risk, but the shareholder risk is divided with the debtor (Damodaran, 2001).

For Harris and Raviv (1991), agency costs theory can be decisive in the capital structure of the corporation and it has been one of the most important tools in examining the implications about organizational financing. Accordingly, agency costs can vary for each stage of organization's life cycle, in which, literature points to two situations: i) when there is *overinvestment*, the typical situation in consolidated and cash-generating corporations, in which businessmen can assume projects of lower net present value (NPL), and *underinvestment* when the management do not implement projects of economical viability due to risk and shortage of own resources (Damodaran, 2001) (Wang, 2011).

3. METHODOLOGICAL APPROACH

In order to achieve the objective of this study, which is a literature review of the capital structure topic, the research method used was bibliometrics.

The term bibliometrics was introduced by Allan Pritchard, in his paper Statistical Bibliography or Bibliometrics, published in 1969, conceptualized as "all the studies that try to quantify the processes of written communication" (Guedes & Borschiver, 2005).In the beginning, bibliometrics analysis was used to measure books in terms of quantity of words, editions and copies. With time, the study of other types of documents like journal papers was developed, while allocating to the study of productivity of authors and citations (Muniz Jr., Maia, & Viola, 2011).

Ferreira (2010) presents three examples of bibliometrics: Bradford, Lotka and Zipf. In this study, the orientation proposed by Bradford (1948) was used to analyze the productivity of journals for a certain topic (Vanti, 2002). The study was therefore not restricted to only identifying elements associated to productivity like number of papers, citations, effective authors, etc, but also to qualitative analysis of papers for guidance according to the state of art of the topic, the opportunities of future research and the comparation between research interest nationally and internationally.

In these terms, the restriction of Bradford (1948) was important in demonstrating that in all areas there are relatively few periodicals and fewer still that are both highly productive and representative, in which are concentrated the main body of studies.

In order to define the universe of periodicals to be researched, the classification of journals in Brazil was used: WebQualis CAPES/ MEC (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior, Ministério da Educação do Brasil) in areas of Management, Accounting and Tourism. This classification stratifies the periodicals in eight descending levels of importance (A1, A2, B1, B2, B3, B4, B5 and C).

In the areas of Management, Accounting and Tourism there are more than 1900 registered periodicals, considering the criteria of the area and the stratums A1 and A2 should represent in maximum 25% of the total of registered periodicals (CAPES, 2013). To compute the level A1 the periodicals should present impact factor JCR >1 or H Scopus >20, which is more favorable, for level A2 it is computed the periodicals with factor JCR minimum of 0.2 and maximum of 1 or impact factor H Scopus higher than 4 and lower or equal to 20. The national journals Brazilian Business Review, Brazilian Administration Review, Gestão & Produção, Organizações & Sociedade, RAC, RAE, RAUSP and Revista de Contabilidade & Finanças were classified from the stratum B1 to A2 according to the relevance of these periodicals to the area (CAPES, 2013).

All the journals registered on these stratums were individually accessed in their respective search systems by the occurrence of the terminology "estrutura de capital" or "capital structure" in the *title*, in the *abstract* or in the *key-words* was used as criteria of paper selection

The period from January 2009 to March 2014, was applied, totaling five complete years of analysis. There is no orientation to the minimum and maximum time to be used and therefore, the choice of applying this period was simply a choice by the authors to limit the most recent published papers about the topic to evidence the most preeminent journals and the papers about the topic.

The conclusion of the research resulted in 124 papers in 24 individual journals, consisting of 5 Brazilian and 19 foreign publications, according to the details on Table 1.

Table 1 - Journals in the sample and the number of published articles

Number	**Sampled journals**	**Number of articles**	**Qualis/Capes**	
1	*Applied Economics*	2	A1	International
2	*Applied Economics Letters*	3	A1	International
3	*Applied Financial Economics*	8	A1	International
4	*Economic Modelling*	3	A1	International
5	*Economics Letters*	4	A1	International
6	*Emerging Markerts Review*	2	A1	International
7	*Journal of Banking and Finance*	21	A1	International
8	*Journal of Business Reasearch*	4	A1	International
9	*Journal of Corporate Finance*	25	A1	International
10	*Journal of Economics and Business*	3	A1	International
11	*Quantitative Finance*	1	A1	International
12	*The Quartely Review of Economics and Finance*	6	A1	International
13	*Transportation Research. Part E: Logistics and Transp. Review*	1	A1	International
14	*Corporate Governance*	2	A2	International
15	*Finance Research Letter*	4	A2	International
16	*International Journal of Managerial Finance*	3	A2	International
17	*International Journal Theoretical and Applied Finance*	2	A2	International
18	*International Review of Financial Analysis*	14	A2	International
19	*The Europen Journal of Finance*	2	A2	International
	Subtotal	110		19
20	*Brazilian Administration Review*	2	A2	National
21	*Brazilian Business Review*	1	A2	National
22	RAE - Revista de Administração de Empresas	2	A2	National
23	RAUSP-e	1	A2	National
24	Revista Contabilidade & Finanças (Online)	8	A2	National
	Subtotal	14		5
	Total	**124**		**24**

Source: Authors

In reflection of the quantity of published titles in the topic and aiming to present a broader analysis of the publication's characteristics, the following elements were assumed for bibliometrics analysis: quantity of publications, period of occurrence, ranking of authors, authorship composition and citations. The research regarding bibliometrics principles presents quantitative analysis concerning volume of publications, ranking of authors, authorship composition and citations. In addition, the following items were addressed in a qualitative form: the main theoretical lines used and the most employed methods and research structures.

Nevertheless, it is highlighted that this paper does not exhaust the topic, as the time limit for the justification is subjective; other expressions related to capital structure, like funding policies, might have been excluded from the paper sampling if they did not discuss the approached subject area. In addition, the Qualis/CAPES classification does not consider all the journals in the world, although it is recognized that there are several important journals classified in a stratum inferior to the sample (B1).

It is understood that these remarks limit the scope of the research but do not invalidate it; on the contrary, it allows new approaches in order to develop knowledge about scientific production of the capital structure topic.

4. ANALYSIS OF RESULTS

In respect of the definition of capital structure in Corporate Finance, it is observed on Table 1 that the periodicals of broader scopes like 'Economics and Management' have published papers in this area. It should be stressed that papers in *Journal Corporate Finance, Journal of Banking and Finance*, *International Review of Financial Analysis* and *Applied Financial Economics*, concentrated internationally nearly 62% of all samples and that the Contabilidade & Finanças journal by itself represents 57% of the topic's publication in Brazil. All papers presented on Table 1 were sought to verify the evolution of the topic's research throughout the period. Table 2 presents the quantity of papers published by period during the whole period of analysis.

Table 2 - Number of articles published per year in the sampled journals

Journals	**Articles published per year**						**Total**
	2009	**2010**	**2011**	**2012**	**2013**	**2014**	
Applied Economics					1	1	2
Applied Economics Letters			1		1	1	3
Applied Financial Economics			1	5	2		8
Economic Modelling	1		1			1	3
Economics Letters	1		1	1	1		4
Emerging Markerts Review				1	1		2
Journal of Banking and Finance	3	3	5	4	5	1	21
Journal of Business Reasearch		2			1	1	4
Journal of Corporate Finance	1	3	5	6	6	4	25
Journal of Economics and Business	1	1	1				3
Quantitative Finance	1						1
The Quartely Review of Economics and Finance	2	1	1		1	1	6
Transportation Research. Part E: Log. and Transp. Review					1		1
Corporate Governance		1		1			2
Finance Research Letter		1	1		2		4
International Journal of Managerial Finance		1				2	3
International Journal Theoretical and Applied Finance		1		1			2
International Review of Financial Analysis		3	6	1	1	3	14
The Europen Journal of Finance				1	1		2
Subtotal	10	17	24	20	25	16	110
Brazilian Administration Review					2		2
Brazilian Business Review		1					1
RAE - Revista de Administração de Empresas	2						2
RAUSP-e	1						1
Revista Contabilidade & Finanças (Online)	4	1	1	2			8
Subtotal	7	2	1	2	2	0	14
Total	**17**	**19**	**25**	**22**	**27**	**16**	**124**

Source: Authors

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Despite Capital Structure being one of the oldest and most debated subjects in Finance, there has been growth in the number of research papers in international periodicals, with particular focus on three main journals in terms of quantity of papers, with research in the topic in all the years, including 2014.

From the other side, there is a drop in the absolute quantity of published papers in Brazil about Capital Structure and this tendency occurs if the analysis is related to the participations of the Brazilian production in the analyzed calculation.

The result for the Brazilian case may be skewed, as there is only one journal in the Accounting and Finance area in the countries classified in the higher stratum.

Regarding journal representativeness, the Impact Factor (Table 3) of the journals that presented more than four published papers in the period was calculated. Considering only papers computed with their respective citations pointed by Scopus and Google Scholar, the last system being the widest one; it was used in order to include the citations of national journals that were still not registered in the Scopus database.

Table 3 – Ranking of Surveyed Reviews

Stratum	**Journals**	**Scopus**	**Google**
A1	*Journal of Corporate Finance*	4,64	23,44
A1	*Economics Letter*	4,50	18,25
A1	*Journal of Banking and Finance*	3,33	25,76
A2	*Internacional Review of Financial Analysis*	2,69	9,08
A1	*The Quartely Review of Economics and Finance*	2,50	18,00
A2	*Finance Research Letter*	0,75	1,25
A1	*Applied Financial Economics*	0,13	1,25
A2	Revista Contabilidade & Finanças	-	11,00

Source: Authors

The four most important journals in terms of quantity of papers also include a greater amount of citations, having as reference the Scopus system, a factor that confirms their importance for the current development of Capital Structure studies.

The Brazilian journal 'Contabilidade & Finanças' did not present citations in the Scopus database during the period of research (October 2014); however, the Impact Factor of Google was high, which confirms its importance to the area in Brazil.

In relation to the composition of authorship of the analyzed studies, Table 4 shows that research groups undertake the most important studies in the area with at least two authors, taking into consideration that only one author published only 20% of the papers.

Table 4 - Composition of the authorship of the sampled articles

Composition	**One author**	**Two authors**	**Three authors**	**Four or more authors**	**Total**
Number of articles	25	54	36	11	126
%	20%	43%	29%	9%	100%

Source: Authors

It is understood that the theoretical complexity of the topic, the necessity of utilizing advanced quantitative methods, as well as the construction of a relevant database, requires a research group capable of integrating efforts and knowledge for the analysis of results.

Another important variable in bibliometrics studies is the identification of effective and productive authors in the analyzed sample. In order to evidence the most productive authors, the research was based on researchers with more than one publication among the periodicals in the sampled period. Board 1 displays the authors by surname, with more than one published paper and their respective journals.

Board 1 – List of authors with more than one publication in the period associated with review

Journals	2009	2010	2011	2012	2013	2014
Applied Economics					Dang.	
Applied Financial Economics			Funchal; Imad	Imad,		
Journal of Banking and Finance			Kayo			
Journal of Business Reasearch		González			González	
The Quartely Rev. Econ. and Fin	Leef	Leef				
Finance Research Letter		Agliardi; Koussis			Agliardi; Koussis	
Intern. Journal of Manag. Finance						Portal; Zani
Intern. Rev. of Financial Analysis					Dang	Dang
The Europen Journal of Finance				Koussis		
Brazilian Administration Review.					Nakamura	
Revista Contabilidade & Finanças	Nakamura; Kayo		Funchal	Portal; Zani		

Source: Authors

The international authors with more than one publication within the same periodical, all had multiple publications appearing on more than one occasion. This happened to Nicos Koussis, on *Finance Research Letter* in 2010 and 2013; with Viet Anh Dang on *International Review of Financial Analysis* in 2013 and 2014; Cheng Few Lee, *The Quarterly Review of Economics and Finance* 2009 and 2010; and with Maximiliano González, on *Journal of Business Research* in 2010 and 2013.

Despite the quantity of researched international papers that have overtaken the nationals, the amount of productive national authors is considerable. Six productive international authors and five national authors were taken - four of these had publications on principal international journals. Table 5, relates authors with more than two papers with their respective academic affiliations.

Table 5 – List of the most prolific authors

Ranking	Authors	Affiliation	Number of articles published
1º	Nicos Koussis	*Frederick University of Cyprus*, Cyprus	3
	Viet Anh Dang	*University of Manchester*, United Kingdom	3
2º	Bruno Funchal	FUCAPE *Business School*, Brazil	2
	Cheng Few Lee	*The State University of New Jersey*, USA	2
	Eduardo Kazuo Kayo	Universidade de São Paulo, Brazil	2
	Elettra Agliardi	*University of Bologna*, Italy	2
	Imad Moosa	*RMIT University*, Australia	2
	João Zani	UNISINOS, Brazil	2
	Márcio Telles Portal	UNISINOS, Brazil	2
	Maximiliano González	*Universidad de los Andes*, Colombia	2
	Wilson Toshiro Nakamura	Universidade Presbiteriana Mackenzie, Brazil	2

Source: Authors

Particular attention is drawn to the amount of publications of these authors that is relevant to the period and the journal's representativeness, which suggests that theses authors coordinate research groups on the subject within the scope of the research.

Notwithstanding, Table 6 brings together the most cited sampled papers and therefore can be considered useful in the Capital Structure subject in the analyzed period.

Table 6 – Recent Articles more fruitful in Capital Structure

Review	Article Title (year)	Authors	Scopus	Google
Journal of Banking and Finance	Capital structure, equity ownership and firm performance (2010)	Margaritis ; Psillaki	22	149
Journal of Corporate Finance	Macroeconomic conditions and capital structure adjustment speed (2010)	Cook ; Tang	20	110
Journal of Corporate Finance	In search of conclusive evidence: How to test for adjustment to target capital structure (2011)	Hovakimian; Guangzhong Li	19	54
Economic Letter	Taxation and capital structure choice: evidence from a panel of German multinationals (2009)	Buettner; Overesch; Schreiber; Wamser	18	69
Journal of Corporate Finance	Determinants of corporate borrowing: A behavioral perspective (2009)	Hackbarth	16	86
Journal of Business Research	Ownership and capital structure in Latin America (2010)	Céspedes; González; Molina	16	59
Quantitative Finance	A two-part fractional regression model for the financial leverage decisions of micro, small, medium and large firms (2009)	Ramalho; Silva	16	57
The Quartely Rev. Econ. and Fin	Determinants of Capital Structure Choice: A Structural Equation Modeling Approach (2009)	Chang; Alice Lee; Cheng Lee	12	68
Intern. Rev. of Financial Analysis	Capital structure, dividend policy, and multinationality: *Theory* versus empirical evidence (2010)	Aggarwal; Kyaw	11	38

Source: Authors

Even though the papers are recent, there are a relevant number of citations in these 10 papers that throughout this study, presented an average lower than four years in age of publication. Among the sample, 63 papers presented citations in the Scopus database, totalizing 319 references. The ten papers listed on Table 7 represent 50% of total citations of the total sample, which validates their relevance.

In the combination between authors with higher quantity of published papers in the period and the most useful papers, the researcher Cheng F. Lee of The State University of New Jersey is identified as the preeminent in the area for this period.

Intending to identify the state of art in research about capital structure, the ten most useful studies in the subject were chosen (Table 6) as well as the eight most recent studies published in the major journals in 2014 (Table 3). The two most recent papers published by national journals, in this case the *Brazilian Administration Review*, were analyzed further. Board 2 brings an abstract of the papers analysis.

In the selected sample, 17 studies are characterized as empirical, while 3 are theoretical, due to the fact that two are among the most cited papers and one as the most recent. These studies bring a new approach of analysis of

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corporate capital structure through the incorporation of managerial flexibility in the process of decision-making, a perspective developed in the theory of real options (Dixit & Pindyck, 1994).

The empirical studies display methodological similarities, which are highlighted as follows:

i) Representative samples or at the level of quantity of organizations and/or in country range
In this group an average sample superior to 31 thousand corporations was ascertained, which consisted of studies that presented samples lower than one thousand organizations. These studies sought to differentiate the research based on regional or local specificity (Ebrahim *et al.*, 2014) (Céspedes, González, & Molina, 2010), based on the proposition of specific problems such as a financial crisis (Carvalhal & Leal, 2012) or the influence of the form of remuneration of employees (Bhagat & Bolton, 2014). In this case, the studies are the most recent and not necessarily the most useful ones.

ii) The selected studies approach long time-periods
It is verified on Board 1 that the empirical studies seek the association to wider samples over long periods of time. Only two studies did not bring this perspective: Margaritis and Psillaki (2010) and Ramalho and Silva (2009), because they worked with techniques that are mostly used for *cross section* analysis. The average analyzed period between the studies is of 14 years. Thus, it can be established that the comprehension of the determinants and effects of corporate capital structure should consider the time factor.

iii) The focus of analysis is the developed countries within the EU, Japan & USA
Excluding Brazilian studies, only two papers presented other contexts (Latin America and Malaysia). In the total sample, it is possible to verify other contexts (South Africa, Brazil, China, Japan, Pakistan, Nigeria, Russia, Singapore, and Indonesia); therefore, Europe, Canada and the USA are the main investigated regions, being where the most important researchers live and they have more organizations and historical data.

iv) Regression analysis incorporating panel data is the dominant technique in studies of the subject area.
An analysis with regression is the main research technique used, besides this, Data Envelopment Analysis, Structural Equations, Simultaneous Equations and Fractional Regression are also used in empirical studies. Therefore, there are a large number of variations in the specification of empirical models, as well as in the construction of variables, which is in line with the evidences of Graham & Leary (2011). In addition, the researchers have used different methods and structures of analysis in order to increase the knowledge of estimators and the adjustments of the model (Ramalho and Silva, 2009).

There is also an interest of recording variations of adjustment in capital structure, highlighting the speed that the organizations reorganize their sources of funding. Accordingly, the regression technique incorporating panel date is a useful tool as it is able to combine data in cross-section temporal series, besides enabling an analysis by different methods (linear, non-linear, fractional, weighted average, dynamic, among others).

v) Absence of convergence between the theoretical ideas
Capital structure is perhaps the main "puzzle" of Corporate Finance. There is also a tendency in empirical studies to validate a great structure of debt, even if it is dynamic, according to *Trade off Theory*. However, Pecking *order Theory* presents strong results in certain scenarios (Kayo and Kimura, 2011), like in Brazil (Forte, Barros and Nakamura, 2012) and Portugal (Ramalho and Silva, 2009).

Thus, studies have aimed to expand traditional analysis of the determinants of structure as the conventional variables of profitability, growth, size, risk and tangibility. These studies have attempted to observe more subtle elements such as tax purposes (Feld, Heckemeyer and Overesch, 2011); differences in the composition of debt in multinational companies regarding local markets (Dewaelheyns and Hulle, 2012); institutional stability of markets (Cho *et al.*, 2014); influence of managers' remuneration (Lin, Chou and Wang, 2012); markets with credit restrictions (Lucey and Zhang, 2011); differences in family-owned organizations and other organizations (González *et al.*, 2013).

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Board 2 – Features 20 articles selected for analysis

More articles cited sample								
Review	**Title of articles**	**Authors**	**Study**	**Year**	**Sample**	**Country**	**Tecnique**	**Theory**
Journal of Banking and Finance	Capital structure, equity ownership and firm performance	Margaritis ; Psillaki	Empirical	2003-2005	6.146	France	DEA	*Cost Agency*
Journal of Corporate Finance	Macroeconomic conditions and capital structure adjustment speed	Cook ; Tang	Empirical	1977-2006	124.466	USA	Fit model with panel data	*Trade off*
Journal of Corporate Finance	In search of conclusive evidence: How to test for adjustment to target capital structure	Hovakimian; Guangzhong Li	Empirical	1970-2007	132.665	USA	Fit model with panel data	*Trade off*
Economic Letters	Taxation and capital structure choice: evidence from a panel of German multinationals	Buettner; Overesch; Schreiber; Wamser	Empirical	1996-2003	5.000	Germany	Regression with panel data	*Taxation*
Journal of Corporate Finance	Determinants of corporate borrowing: A behavioral perspective	Hackbarth	Theoretical	n.a.	n.a.	n.a.	Real Options in Capital Structure Model based on gain	*Cost Agency*
Journal of Business Research	Ownership and capital structure in Latin America	Céspedes; González; Molina	Empirical	1996-2005	806	7 Latin American countries	Regression with panel data	*Trade off*
Quantitative Finance	A two-part fractional regression model for the financial leverage decisions of micro, small, medium and large firms	Ramalho; Silva	Empirical	1999	4.692	Portugal	fractional regression	*Pecking order*
The Quartely Rev. Econ. and Fin	Determinants of Capital Structure Choice: A Structural Equation Modeling Approach	Chang; Alice Lee; Cheng Lee	Empirical	1988-2003	13.887	USA	structural equation	*Pecking order*
Intern. Rev. of Financial Analysis	Capital structure, dividend policy, and multinationality: *Theory* versus empirical evidence	Aggarwal; Kyaw	Empirical	1996-2005	24.292	USA	Regression with panel data and simultaneous equations	*Cost Agency*
Journal of Corporate Finance	Underinvestment, Capital Structure and Strategic Debt Restructuring	Pawlina	Theoretical	n.a.	n.a.	n.a.	Theory Options	*Cost Agency*

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Papers Published in 2014 in Top International reviews

	Articles	Authors	Study	Year	Sample	Country	Technique	Theory
Journal of Corporate Finance	Creditor Rights and Capital Structure: Evidence from International Data	Cho, Ghoul; Guedhami; Suh	Empirical	1991-2010	151.855	48 contries	Regression with panel data	*Trade off and Cost Agency*
Journal of Corporate Finance	Financial crisis and bank executive incentive compensation	Bhagat; Bolton	Empirical	2000-2008	14	USA	Regression with panel data	*Agency Theory*
Journal of Corporate Finance	Credit lines and leverage adjustments	Lockhart	Empirical	1996-2006	5.054	USA	Regression with panel data	*Trade off*
Journal of Corporate Finance	Do Markets Anticipate Capital Structure Decisions?	Andres; Cumming; Karabiber; Schweiser	Empirical	1989-2008	30.474	USA	Regression with panel data	*Asymmetric information*
Journal of Banking and Finance	Corporate tax aggression and debt	Lin, Tong e Tucker	Empirical	2006-2011	1.500	USA	Regression with panel data	*Trade off*
Intern. Rev. of Financial Analysis	Dynamic capital structure and political patronage: The case of Malaysia	Ebrahim; Girma; Shah; Williams	Empirical	1998-2009	751	Malaysia	Regression with panel data	*Trade off / Pecking order and the effect government*
Intern. Rev. of Financial Analysis	Asymmetric Adjustment toward Optimal Capital Structure: Evidence from a Crisis	Dang; Kim; Shin	Empirical	2002-2012	6.232	USA	Regression with panel data	*Trade off*
Intern. Rev. of Financial Analysis	European Integration and Corporate Financing	Muradoğlu; Onay; Phylaktis	Empirical	1996-2009	5.795	European Union	Regression with panel data	*Trade off*
The Quartely Rev. Econ. and Fin	Product–market flexibility and capital structure	Sarkar	Theoretical	n.a.	n.a.	n.a	Opções	*Trade off / Cost Agency*
BAR	The World Financial Crisis and the International Financing of Brazilian Companies	Carvalhal e Leal	Empirical	2004-2009	192/246	Brazil	Logistic regression with panel data	*Pecking order*
BAR	Determinants of the Capital Structure of Small and Medium Sized Brazilian Enterprises	Forte; Barros; Nakamura	Empirical	1994-2006	19.000	Brazil	Dynamic panel with panel data (GMM)	*Pecking order*

Note: n.a. – Not Applicable.
Source: Authors

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5. FINAL CONSIDERATIONS

Considering the limitations of bibliometrics involving choices that restrict the analyzed papers, the computed sample is representative and relevant to discuss the current stage of literature that approaches the Capital Structure topic.

According to the Theory of Irrelevance of Capital Structure (Modigliani and Miller, 1958), the questions that involve causes and effects that determine the level and composition of debt in corporations in one of the most controversial problems in Corporate Finance.

Besides the difficulty in obtaining theoretical congruence, there are also several theoretical-practices that should be explored aiming a greater elucidation. The big variety of research scope in this topic, researchers and markets highlight that the topic has importance in all continents; therefore, there is prominence of research in developed countries, followed by emerging countries and regions, which due to their particularities, in special, the imperfections of the market, unveil several opportunities of research.

A new theoretical direction for research in the area that involves the use of theory of real options as a way of incorporating the flexibility of managers in the creation of debt of corporations facing the integration of new information and opportunities in the market is observed. The recent proposition of studies and theoretical models in the main journal suggests that empirical research contribute to the validation of the presuppositions and or in its development.

The influence and importance of Capital structure in the economic sustainability of corporations can be observed through the presence of papers about the topic in periodicals with wider scope that the areas financial and economic. Therefore, the main studies and the most important journals are concentrated in these areas and must be referenced by the initiators of the subject area. Accordingly, there is a need of a greater number of national journals in higher stratums of the WebQualis system in the Finance area, since there are researchers in the country with international insertion, including, Brazilian research published in international periodicals.

Thus, new means of publication can help to leverage the research in the country, as well as promote national researchers in the international field. Notwithstanding, actions that increase the quality and visibility of national periodicals must be accelerated aiming to access international manuscripts and increase the impact factor of these journals, endorsing them overseas as references.

Among the characteristics of empirical research pointed in this study, the importance of research involving wide samples both in the time and direction sense is acknowledged. Thus, it is necessary to have a plan and strategies that make the construction of a database feasible, which sometimes requires the combination of different sources of research. This condition brings institutional implications for the emerging markets where the achievement of secondary data is sometimes difficult considering the limitation of statistical data. In this sense, it is important that the Area of Management in Brazil, by means of its representations, such as ANPAD (National Association of Post-Graduation in Management), Management Area, Accounting and Tourism of CAPES and the Brazilian Society of Finance together with governmental organs reinforce the importance of expanding research conducted by IBGE, IPEA, among others. As instance, the PIA-company (Industrial Research – organization) is highlighted due to its significant coverage (>120.000 companies), but with limited financial data.

In time, the greatest quantity of studies in the area involving more than one researcher demonstrates the importance of collaborative projects that integrates different competencies for the analysis of results, which includes the determining domain of econometric techniques. The use of regression models including panel data is the most applied method in all its approaches; yet, there is many opportunities for research involving non-parametric methods or even the use of structural equation modeling.

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