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Capital structure in medium-sized companies in Department of Boyacá, Colombia

La estructura de capital en las medianas empresas del departamento de Boyacá, Colombia

Estrutura de capital das médias empresas em departamento de Boyacá, Colombia

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Resumen

El estudio de la estructura de capital es uno de los tópicos financieros de mayor impacto, puesto que entre las teorías que intentan explicarla todavía no se ha llegado a un consenso sobre las determinantes y el comportamiento de las decisiones de financiamiento en las empresas. La investigación sobre el comportamiento de la estructura de capital en las empresas de tamaño medio y pequeño es un asunto aún más complejo, pues los modelos tradicionales son aplicables principalmente a empresas que se cotizan en los mercados de capitales o son de interés público.

Para este trabajo se seleccionaron las medianas empresas en el departamento de Boyacá en Colombia como población por estudiar, aplicando un modelo que se ha utilizado en casos similares en otros países; se demostró empíricamente la preferencia por la financiación con recursos propios antes que con deuda, la cual, a su vez, se prefirió por las empresas con mayor volatilidad en su rentabilidad y por las de mayor crecimiento.

Palabras clave: estructura de capital, medianas empresas, financiamiento.

Clasificación JEL: C33, G32, M21

Abstract

The study of capital structure is one of the financial topics of greatest impact, since among the theories that attempt to explain it, a consensus has not yet been reached on the determinants and the behavior of financing decisions in companies. Research on the behavior of capital structure in small and medium size companies is an even more complex issue, since traditional models are mainly applicable to companies that trade in capital markets, or public interest companies.

For this work, medium-sized companies in the Department of Boyacá in Colombia were selected as a study sample, applying a model that has been used in similar cases in other countries. The study empirically demonstrated a preference for self-financing over debt, which in turn was preferred by companies with higher volatility in profitability and those with better growth.

Keywords: capital structure, medium-sized companies, financing.

Resumo

O estudo da estrutura de capital é um dos assuntos financeiros de maior impacto, uma vez que entre as teorias que tentam explicar ainda não chegaram a um consenso sobre os determinantes e o comportamento das decisões de financiamento

das empresas. A pesquisa sobre o comportamento da estrutura de capital em tamanho médio e pequeno porte das empresas é uma questão mais complexa, uma vez que os modelos tradicionais são principalmente aplicáveis ao comércio nos mercados de capitais ou nas empresas de interesse público.

Para esse trabalho, empresas de médio porte foram selecionadas no Departamento de Boyacá, na Colômbia como população de estudo, a aplicação de um modelo que tem sido usada em casos semelhantes em outros países; empiricamente demonstrado preferência para financiamento de capital em vez de com a dívida, que por sua vez foi preferido por empresas com maior volatilidade da rentabilidade e de crescimento mais rápido.

Palavras-chave: Estrutura de capital, financiamento de médias empresas.

Introduction

The financing of companies has given rise to diverse topics of study, considering that it is the representation of the resources that support their existence and operation and also, because their origin, distribution, direction, and management depend, to a large extent, on their general performance. Additionally, the selection and appropriate combination of financing sources has been associated, among other things, with the generation of value as the fulfillment of the objective of the financial function of organizations.

In Colombia, around 99% of companies are micro, small, and medium-sized, while only 1% are large companies. That is why they play an important role as drivers of the economy, generators of employment, and applicants for financial market resources so as to achieve success in their business (Economic Commission for Latin America and the Caribbean ECLAC, 2011). The situation in the Department of Boyacá is similar as regards this distribution. According to data provided by the Corporate Information System Report (SIREM), around 98% are micro, small, and medium-sized companies versus 2% large companies.

Access to financial resources on the part of small and medium-sized companies is a complex matter. This is because there are barriers created by market dynamics that are not easily overcome, especially in the early years of a company's life. This can be either because of the quality of the accounting and financial data that they send to the market as a sign of their

strength, or because of the high risk that financing them implies, which drives up the price of the resources and reduces the possibilities of receiving external financing.

Furthermore, businesspeople in these types of organizations are frequently averse to getting into debt because they are unaware of the correct way of benefitting from this source of financing, and they consider that using their own resources is the best option. This limits their growth to the generation of said resources, by sacrificing the possibilities of growth and other advantages that debt can provide when well used.

It is observed that for the year 2010, in Colombian SMEs, the main sources of financing for investments were their own resources, with around 68% of the total, distantly followed by bank debt with approximately 13%; while for the general average of the country, use of their own resources was placed at 44% and bank loans were 21% (The World Bank & Internacional Finance Corporation, 2011).

In this study, medium-sized enterprises in the department of Boyacá were used as references, taking into account that, within the SME group, they are the ones with the best quality accounting and financial information. They are also in a phase of greater maturity and they have a more representative economic impact on the regional economy than micro and small enterprises do. Panel data for five years (2007-2011) was used. Models were applied to measure the determination in the total debt, the long term and the financial structure or ratio of debt/internal resources.

In the case of small and medium-sized companies, it is not feasible to apply traditional models that use capital market variables; consequently, some authors have developed and applied models with alternative variables, which are based on accounting information and on ratios construed from it.

The aim of carrying out this study is to learn the way in which companies have been financed, characterize their capital structure, and observe the main determinants of their financing decisions in accordance with variables and models that have been used in other countries (developed and developing countries), particularly for SMEs, so as to validate their conclusions or discard them, by means of empirical evidence.

REFERENCIAL FRAMEWORK

Theoretical framework

With the objective of adequately contextualizing this study, it is essential to start from the evolution of the concepts of capital structure, the theories that have tried to explain its behavior, and the empirical developments that have taken place. Consequently, the starting point is the seminal work of Miller and Modigliani, which dates from the 1950s, and is known as the dividend irrelevance theory by Miller and Modigliani (1958); the theory

that initiates the contemporary discussion on the topic.

The fundamental approach of Miller and Modigliani in their first theory is related to the irrelevance of the capital structure of enterprises in their value, that is to say that, independently of the distribution of financing sources, the value does not change in an ideal situation of perfect markets; an approach that went against the theses of traditional finances of the time.

In the following decade, the same authors formulated a second theory ((Miller & Modigliani, 1963), which constitutes a correction of their first version and, in which they consider that, in the presence of taxes, an alien condition in the ideal world of perfect markets, enterprises should take advantage of what they called a "tax shield of debt" or the advantages obtained by the deductablity of interest for tax purposes, which would imply the use of resources obtained as financial debt, a circumstance in which the capital structure would be relevant.

Later on, two main theories are developed, which explain differently the decision regarding capital structure: the trade-off theory and the pecking-order theory.

The trade-off theory (Bradley, Jarrell & Kim, 1984; (Frank & Goyal, 2008), concludes that, with time, an enterprise adjusts to an optimal capital structure which creates a perfect balance between bankruptcy costs and the tax shield of debt that Miller and Modigliani had spoken of in 1963. According to that theory, adjustment takes place within a different time frame for each enterprise.

The pecking-order theory (Myers, 1984; (Myers & Majluf, 1984) opposes the previous one. The authors criticized its explanatory capacity, given that, according to them, companies have set priorities when choosing financing sources: starting with their own resources and leaving the issuing of shares as a last resort, on the basis of information asymmetry (Shyam-Sunder & Myers, 1998).

On the other hand, the market timing theory explains capital structure according to the signals that the market gives to companies. Companies tend to issue stocks when they perceive favorable behavior in the market (Baker & Wurgler, 2002), and to rebuy their own shares when the market values are lower; situations which demonstrate a strong relationship between capital structure and the past behavior of the capital market.

Therefore, it is observed how the dilemma in the research of capital structure has focused on the pecking-order and trade-off theories, on models that seek to demonstrate the two theories empirically, with determinants and behaviors that have been associated with each theory, even though, more recently, some authors have suggested that they are not opposing, but rather complementary theories, and that by themselves, neither individually nor jointly, do they have a full explanatory capacity of the phenomenon of capital structure.

In this context, the trade-off theory is reformulated. That which by its nature is static, turns into a dynamic trade-off theory, which is attained over years and that for each company will have a different speed of adjustment, according to the observations of several authors (Dang, Kim & Shin, 2012), (Qian, Tian & Wirjanto, 2009), (Morellec, Nikolov & Schürnoff, 2012), (Boot & Thakor, 2011).

On the other hand, other authors have spoken of a non-observable effect that, with time, generates stable capital structures and that has not been explained by means of the models and determinants used until now. It is worth mentioning: the dividend irrelevance theory, with its second proposition where the debt tax effect is included, the pecking-order theory, the trade-off theory, and that of market signals, among others (Lemmon, Roberts & Zender, (2008; Leary, 2009).

Capital structure in SMEs

The study of capital structure, its behavior and determinants, has traditionally been dealt with for large companies, or those whose bonds are listed on the capital markets or are of public interest, among other reasons why there is more information available about their behavior and variables. This responds to the fact that, under these conditions, certain trends are easier to observe, which allow conclusions to be drawn with respect to financing decisions.

Nonetheless, in Colombia, as in many other countries, SMEs are the predominate type of company and, for them, access to sources of financing, such as issuing of debt (bonds) or shares, is limited. This is the result of the precarious development of capital markets, as well as the fact that neither venture capital funds nor angel investors, that sponsor small business initiatives with the objective of obtaining future profits, are common. These practices have not developed in Colombia due to institutional conditions, which are different from those of countries like the United States (Barona & Gómez, 2010, p. 88), where angel investors are a widespread alternative to propel entrepreneurship and business ideas.

Access to credit has been one of the most important limitations for SMEs in the country (Stephanou & Rodríguez, 2008). Based on a survey carried out by Fundes of 687 SMEs in 2003, access to financing was classed as the second biggest restriction (particularly for small, industrial, and startup companies) in the creation, development or diversification of their economic activities. Within the category of access to financing, credit conditions, mainly related to interest rates, payment deadlines, guarantee requirements, and loan adjudication processes, were seen as some of the most significant limiting factors (Stephanou & Rodríguez, 2008).

As regards the empirical study of capital structure in SMEs, there are examples, such as the case of the family-owned

SMEs in Mexico (Berumen, García & Domenge, 2012), where a model with determinants of capital structure or independent variables was used, such as company size, administrative planning and formal strategy, family control, age of the general manager, age of the company, and analysis variables of the capital structure, and what the dependents are, where any, debt, family loans, social capital, and accumulated utilities (financing from own resources) were taken into consideration. Equally, hypotheses that interrelate the variables of the model were used.

There it was concluded that the characteristics of the owners and managers, such as experience, financial expectations, risk aversion, their attitude towards control, as well as external micro and macro-economic, legal, and technological variables, etc., have an influence on financing decisions.

In the study of Forte, Barros and Nakamura (2013) the capital structure of small and medium-sized Brazilian companies was analyzed, using variables such as profitability, structure and asset growth, age, risk, growth, and non-debt tax shields. Relationships of a negative nature were found as regards profitability, age and risk, and a positive one regarding asset growth.

In the case of SMEs in Spain, an econometric model was used (Aybar-Arias, Casino-Martínez & López-Gracia, 2012) based on a dynamic trade-off hypothesis. The determinants applied were bankruptcy risk, growth opportunities, profitability, non debt tax shields, assest tangibility, product singularity, and business size. As dependent variables, market value or debt carrying value were used.

As a result of this study, it was found that the determinants of adjustment speed are related to the difference between the optimal debt and the observed debt, financial flexibility rates, growth opportunities, and business size, showing a partial adjustment of the model, mainly due to the characteristic variables of the companies that have established their relationship to capital structure (Aybar-Arias et al., 2012).

In the study of Psillaki and Daskalakis (2009), it was assessed whether the determinants of capital structure have their origin solely in the firm or if any exist in the country or the institutional environment. To this end, a comparison was made of small and medium-sized enterprises in Greece, France, Portugal, and Italy. Variables such as asset structure, business size, profitability, risk, and growth opportunities were used. It was concluded that the determinants which had statistacally significant relationships with the debt decisions originated in the companies, not in the institutional conditions.

Another example is the study carried out by Palacín-Sánchez, Ramírez Herrera and Di Pietro (2013) regarding the SMEs capital structure in different Spanish regions, the purpose of which, was to identify possible regional factors within the same country,

as determinants of financing decisions. It was concluded that the endogenous variables of the companies are those that represent statistically significant relationships, excluding differences associated with regional conditions within the same country. The variables that were empirically proved to have a relationship were: business size, asset structure, profitability, growth, and age.

Commercial activity in the department of Boyacá

The department of Boyacá is located in the Andean region, in the center-east of the country. It has a varied geography in that it has different temperature zones, and many economic activities are developed, mainly centered on the farming sector (cane sugar and potato crops, especially), mining, manufacturing, along with social, communal, and personal services (Ministry for Commerce, Industry and Tourism, 2012).

According to the Ministry for Commerce, Industry and Tourism (2012), in the economic profile of the department of Boyacá it is found that, for the year 2012 the department contributed 2.8% to the gross domestic product, and its GDP per capita was US$ 8,216, which was above the national average (Ministry for Commerce, Industry and Tourism, 2014).

As regards the complexity of the procedures required to open a business, the city of Tunja occupied the 22nd position out of 23 departmental capitals studied as regards level of complexity. This means that it was one of the cities where more paperwork was required when setting up a new business (Ministry for Commerce, Industry and Tourism, 2014).

The unemployment conditions of the department are reflected in the unemployment rate in the city of Tunja, its capital, which, since 2007, has consistently remained above the average of the departmental capitals of the country, at 11.9% for the year 2012 (National Administrative Department of Statistics (DANE), 2012; Ministry for Commerce, Industry and Tourism, 2014).

With regard to foreign trade, the department engages in a very low percentage of national exports (0.7 % of the total in 2012), of which 95.5% of the total for the department in 2012 came from the industrial sector (DANE, 2012).

As Boyacá is a region of Colombia, which is a country of micro, small, and medium-sized enterprises (MSME), as can be deduced from the SIREM database of the *Superintendencia de Sociedades (*Superintendency of Corporations), the largest in the country, in which 84% of the respondent companies are MSMEs, and within that group the proportion of small and medium-sized enterprises is almost the same, with 49% small and 48% medium-sized enterprises, with some micro companies (3%) also reported, the situation of the department is similar. However, there is a large number of

companies that do not report to this database, mainly micro and small, given that their examination escapes the activity of said entity. The criteria of business size in this article correspond to those included in Law 905 of 2004.

Statistical models

For the present study, the statistical method of analysis selected has been that of multiple linear regression, in three different models and with three different dependent variables. The first measured the total debt (liabilities) over the total assets (Aybar Arias et al., 2012; Psillaki & Daskalakis, 2009; Forte et al., 2013); the second, long-term debt (long-term liabilities or non-current liabilities) over total assets (Forte et al., 2013); and the third, which has been denominated financial structure, measures the proportion of the debt over internal resources (liabilities/equity):

1. Total debt

$$\text{Total debt} = \frac{\textit{Current liabilities + noncurrent liabilities}}{\textit{Total assets}}$$

2. Long-term debt

$$\text{Long-term debt} = \frac{\textit{Noncurrent liabilities}}{\textit{Total assets}}$$

3. Estructura financiera

$$\text{Financiera structure} = \frac{\textit{Total liabilities}}{\textit{Equity}}$$

Likewise, there have been defined as independent variables or determinants of the structure: risk, measured as the standard deviation or volatility of returns during the analyzed periods (Aybar-Arias et al., 2012; Forte et al. , 2013); the growth of the company, measured in terms of the comparative growth of yearly sales against the period immediately before (Macas-Nunes, Serrasqueiro, Nunes & Mendes, 2013; Aybar-Arias et al., 2012; Forte et al., 2013); a second reason for growth is the ratio of the variation in the total assets of each period, over the one immediately before; profitability, which is the ratio between the sales and the total assets; a second measurement of profitability, the return on equity (ROE), obtained from the ratio between the net income and the shareholder's equity (Aybar-Arias et al., 2012; Forte et al., 2013); the size as a natural logarithm

of the total assets (Forte et al., 2013); the asset structure, which is obtained from the ratio between the depreciation expenses of the period and the total assets (Forte et al., 2013); the non-debt tax shields (Aybar-Arias et al., 2012; Forte et al., 2013), which are the ratio between the depreciation expenses of the period and the total sales; and the tangibility of assets, which is the ratio between fixed assets (non-current) and total assets (Macas-Nunes et al., 2013; Aybar-Arias et al., 2012; Psillaki & Daskalakis, 2009). These indicators are detailed below:

1. Risk

$$\text{Risk} = \sigma \text{ Profitability}$$

2. Sales growth

$$\text{Sales growth} = \frac{Sales_t - Sales_{t-1}}{Sales_{t-1}}$$

3. Asset growth

$$\text{Asset growth} = \frac{Total\ assets_t - Total\ assets_{t-1}}{Total\ assets_{t-1}}$$

4. Profitability

$$\text{Profitability} = \frac{Net\ profit}{Equity}$$

5. Return on equity

$$\text{Return on equity} = \frac{Net\ profit}{Equity}$$

6. Business size

$$\text{Business size} = Ln\ Assets$$

7. Asset structure

$$\text{Asset structure} = \frac{Depreciation\ expenses}{Total\ assets}$$

8. Non-debt tax shields

$$\text{Non-debt tax shields} = \frac{Depreciation}{Sales}$$

The panel data used corresponds to a sample of 23 medium-sized businesses, out of the total for 2007 of 29 companies, whose financial statements are found on the SIREM database of the Superintendency of Corporations (SPSS), of which 6 were excluded for not submitting complete information during the period analyzed.

The companies are domiciled in the department of Boyacá for the period 2007-2011, and meet the criteria of the Law 905 of 2004, particularly in regard to the volume of total assets, which in this case is in the range of between 5,001 and 30,000 current legal minimum monthly salaries. This parameter was taken into consideration for the selection of the sample in the initial period (2007) and the sample remains consistent throughout the five years.

The descriptive statistics of the variables involved in the model are shown in Table 1.

In the first model, the dependent variable is the total debt, all the independent variables are included, and their results are shown in Table 2. A goodness of fit of 0.819 was found, in accordance with the coefficient R2, which indicates its explanatory capacity. The result detected in this coefficient indicates an improved goodness of fit as it comes nearer to 1.

Table 1. Descriptive statistics of the variables.

Descriptive statistics			
	Average	**Standar deviation**	**N°**
Total debt	0,502653529710079	0,227813653725725	23
Sales growth	0,350600648383734	0,989000610821130	23
Assets growth	0,190904955250379	0,159234979426692	23
Profitability	2,364971995697793	2,121487001264890	23
Return on equity	0,122091362626387	0,130054170494874	23
Size	15,611956277145028	0,530670940688165	23
Asset structure	0,020548431469226	0,020673190384137	23
Non-debt tax shields	0,012010088283481	0,012335349510545	23
Risk	0,386484701680191	0,248599882577948	23
Tangibility of assets	0,3857	0,21175	23

Source: SPSS, elaborated by the author.

Table 2. Summary of model 1.

Summary of the model [b]										
					Estadísticas de cambios					
Model	R	R Squared	Adjusted R-squared	Standard estimation error	Change in R-squared	Change in F	df1	df2	Sig. Change in F	Durbin-Watson
1	0,905[a]	0,819	0,693	,126153199458343	0,819	6,527	9	13	0,001	1,885
a. Predictors: (Constant), Asset tangibility, AvgSalesGrowth, Risk, AvgROE, AvgDeprExp, AvgLNAsset, AvgAssetGrowth, AvgNonDebtTaxShields, AvgProfitability										
b. Dependent variable: AvgTotalleverage										

Source: SPSS, elaborated by the author.

Table 3. Analysis of the variance of model 1.

ANOVA[a]						
Model		Sum of squares	gl	Root mean square	F	Sig.
1	Regression	0,935	9	0,104	6,527	0,001b
	Residual	0,207	13	0,016		
	Total	1,142	22			
a. Dependent variable: AvgTotalleverage						
b. Predictors: (Constant), Asset tangibility, AvgSalesGrowth, Risk, AvgROE, AvgDeprExp, AvgLNAsset, AvgAssetGrowth, AvgNonDebtTaxShields, AvgProfitability						

Source: SPSS, elaborated by the author.

Tabla 4. Coefficients of model 1.

Coefficients[a]						
Model		Non-estandarized coefficient		Standarized Coefficients	t	Sig.
		B	Standard error	Beta		
1	(Constant)	-0,564	1,052		-0,536	0,601
	AvgSalesGrowth	0,054	0,033	0,233	1,646	0,124
	AvgAssetGrowth	-0,245	0,227	-0,171	-1,075	0,302
	AvgProfitability	-0,025	0,052	-0,231	-0,473	0,644
	AvgROE	0,453	0,228	0,258	1,983	0,069
	AvgLNAsset	0,073	0,069	0,170	1,066	0,306
	AvgDeprExp	0,279	4,674	0,025	0,060	0,953
	AvgNonDebtTaxShields	3,414	5,042	0,185	0,677	0,510
	Risk	0,563	0,191	0,614	2,953	0,011
	AssetTangibility	-0,796	0,150	-0,740	-5,292	0,000
a. Dependent variable: AvgTotalleverage						

Source: SPSS, elaborated by the author.

According to the results of model 1, applied for the total debt, the variables that had an important relationship as determinants were the tangibility of the assets and the risk, in accordance with the test of statistical significance, as can be observed in Table 4. The relationship of the risk with total debt is positive whereas the tangibility has a negative relationship.

The results demonstrate that the increase of risk in companies, and therefore those that presented a higher level of risk, had a higher level of total debt. Given that the risk was measured as a standard deviation of the stability in its profitability, which means, those that consequently had a lower risk, also presented a lower level of debt against those which showed higher volatility.

Tabla 5. Summary of model 2.

Summary of the model 2[b]										
					Estadísticas de cambios					
Model	R	R-squared	Adjusted R-squared	Standard estimation error	Change in R-squared	Change in F	df1	df2	Sig. Change in F	Durbin-Watson
1	0,905[a]	0,768	0,608	0,065360717676557	0,768	4,785	9	13	,006	2,022
a. Predictors: (Constant),assetTangibility, AvgSalesGrowth, Risk, AvgROE, AvgDeprExp, AvgLNAsset, AvgAssetGrowth, AvgNonDebtTaxShields, AvgProfitability										
b. Dependent variable: AvgLTLeverage										

Source: SPSS, elaborated by the author.

The second model sought to explain the correlation between the variables and the determination of the long-term capital structure. To this end, long-term debt was used as an independent variable. This model also exhibited a considerable goodness of fit or explanatory capacity with a 0.768 coefficient of determination.

Tabla 6. Analysis of the variance of model 2.

ANOVA[a]						
Model		Sum of squares	gl	Root mean square	F	Sig.
1	Regression	0,184	9	0,020	4,785	0,006[b]
	Residual	0,056	13	0,004		
	Total	0,240	22			
a. Dependent variable: AvgLTLeverage						
b. Predictors: (Constant), AssetTangibility, AvgSalesGrowth, Risk, AvgROE, AvgDeprExp, AvgLNAsset, AvgAssetGrowth, AvgNonDebtTaxShields, AvgProfitability						

Source: SPSS, elaborated by the author.

Tabla 7. Coefficients of model 2.

Coefficients[a]						
Model		Non-standarized coefficients		Standarized coefficients	t	Sig.
		B	Standard error	Beta		
1	(Constant)	-0,281	0,545		-0,515	0,615
	AvgSalesGrowth	0,083	0,017	0,785	4,895	0,000
	AvgAssetGrowth	-0,035	0,118	-0,053	-0,295	0,772
	AvgProfitability	-0,014	0,027	-0,287	-0,520	0,612
	AvgROE	0,133	0,118	0,166	1,124	0,281
	AvgLNAsset	0,017	0,036	0,087	0,481	0,639
	AvgDeprExp	0,291	2,422	0,058	0,120	0,906
	AvgNonDebtTaxShields	1,498	2,613	0,177	0,573	0,576
	Risk	0,118	0,099	0,282	1,198	0,252
	Tangibility of assets	-0,004	0,078	-0,008	-0,051	0,960

Source: SPSS, elaborated by the author.

In the case of long-term debt, a statistically significant relationship was observed with the growth variable, measured from the comparative growth of sales from period to period, which showed a marked positive relationship. This indicates that the companies that had higher growth in terms of sales, exhibited, at the same time, a higher long-term debt. It is considered to be an important finding, since it indicates that companies which use the advantages provided by debt can achieve a higher level of growth, increase their results, and consolidate, due to the tax advantages of debt.

Tabla 8. Summary of model 3.

Resumen del modelo [b]										
					Estadísticas de cambios					
Model	R	R squared	Adjusted R-squared	Standard estimation Error	Change in R-squared	Change in F	df1	df2	Sig. Change in F	Durbin-Watson
1	0,896[a]	0,803	,666	0,72953	0,803	5,881	9	13	0,002	2,245
a. Predictors: (Constant), Tang.Assets, AvgSalesGrowth, Risk, AvgROE, AvgDeprExp, AvgLNAsset, AvgAsset-Growth, AvgNonDebtTaxShields, AvgProfitability										
b. Dependent variable: Fin_Str										

Source: SPSS, elaborated by the author.

In the third model, the financial structure was used as a dependent variable, the ratio between the total assets and the total equity. For this, the coefficient of determination showed a considerable goodness of fit of the model, as explanatory of the behavior of the debt structure of the companies. The ratio selected measures the proportion of external to internal resources in the financing of the operation of the companies.

Tabla 9. Analysis of the variance, model 3.

ANOVA[a]						
Model		Sum of squares	gl	Median Squared	F	Sig.
1	Regression	28,168	9	3,130	5,881	,002[b]
	Residual	6,919	13	,532		
	Total	35,086	22			
a. Dependent variable: Fin_Str						
b. Predictors: (Constant), Tang.Assets, AvgSalesGrowth, Risk, AvgROE, AvgDeprExp, AvgLNAsset, AvgAssetGrowth, AvgNonDebtTaxShields, AvgProfitability						

Source: SPSS, elaborated by the author

Tabla 10. Coefficients of model 3.

Coefficients[a]						
Model		Non-standarized coefficients		Standarized Coefficients		
		B	Standar error	Beta		
1	(Constant)	2,260	6,082		0,372	0,716
	AvgSalesGrowth	0,239	0,189	0,187	1,267	0,227
	AvgAssetGrowth	-1,223	1,315	-0,154	-0,930	0,369
	AvgProfitability	-0,232	0,303	-0,390	-0,765	0,458
	AvgROE	5,610	1,320	0,578	4,251	0,001
	AvgLNAsset	-0,059	0,396	-0,025	-0,148	0,885
	AvgDeprExp	-2,733	27,031	-0,045	-0,101	0,921
	AvgNonDebtTaxShields	26,428	29,160	0,258	0,906	0,381
	Risk	3,091	1,102	0,609	2,804	0,015
	Asset tangibility	-3,130	0,870	-0,525	-3,598	0,003
a. Dependent variable: Fin_Str						

Source: SPSS, elaborated by the author

In this model, it was found that the ROE (Return on equity) variables, risk, and asset tangibility had an important relationship as determinants of the dependent variable, the financial structure. The ROE maintained a positive relationship, which would show that those companies that had a higher return on equity, had a higher proportion of debt financing than with equity. The risk also had a positive relationship with the proportion of debt, which would indicate that companies with higher volatility in their profitability showed higher financing through external resources. And as regards the tangibility of assets, a negative relationship was found, which means that the companies that showed higher levels of fixed assets were financed to a lower extent by external resources or liabilities.

ANALYSIS OF THE RESULTS

The results obtained from the three models used, allow for the identification of some characteristics of the capital structure of medium-sized enterprises established in the department of Boyacá, apart from the determining factors in the selection of their sources of financing.

In Table 11 there is a comparison of the three models used, the determinants through which the behavior of the structure is explained, the nature of their relationships, and the coefficient of each of them within the equation of the model.

Tabla 11. Variables with a statistically significant relationship and tendency of the relationship.

VARIABLE	MODEL 1 Total debt	MODEL 2 Long-term debt	MODEL 3
Riesk	+ (0.614)	N/S	+ (0.609)
Tangibility of the assets	- (0.740)	N/S	- (0.525)
Growth (sales)	N/S	+ (0.785)	N/S
ROE	N/S	N/S	+ (0.578)
Coefficient R-squared	0.819	0.768	0.803

Source: SPSS, elaborated by the author

The models which had a better explanatory capacity of the phenomenon studied were models 1 and 3. They took total leverage and financial structure respectively as independent variables, given that these variables do not make a difference to the term of the liabilities. On the contrary, model 2, although it had a wide goodness of fit, only showed a statistically significant relationship for one variable

and it was the one that presented the lowest determination coefficient.

The results from model 2 can be explained on the basis of the low levels of long-term debt that these companies have. Also, said results can stem from the order of the preferences regarding financing sources, where equity is in first place with a proportion of 51% on average; short-term debt is in second place, with a rate of 43% on average; and finally long-term debt, with a 6% average.

In models 1 and 3, there is a positive relationship between risk and capital structure, taking into account the way in which the risk was calculated, from the volatility of profitability during the analyzed periods, its standard deviation. This implies, therefore, that the companies with less stability in their operational and financial performance, use more debt financing or that this increases in periods where there is instability in performance, that is to say, it would follow a tendency of increasing risk.

In these same models (1 and 3), the asset tangibility variable shows a negative relationship with the capital structure, which implies that where there is a lower volume of fixed assets, there are lower levels of debt, or that the debt was greater in those cases where a lower volume of non-current (fixed) assets were made available. In addition, the companies with higher levels of non-current assets are mainly financed by internal resources and this, despite having the possibility to offer more guarantees to financial institutions in order to obtain long-term financing.

In model 2, where the capital structure of long-term debt was measured, the main finding is the strong positive relationship of the growth of sales variable with this type of debt, a circumstance which confirms the favorable effect that longer term debt may bring about on the companies that use it.

As it was mentioned earlier, the least used source of financing has been long-term debt, as it was found that only 25% of the companies of the panel showed long-term debt equal to or higher than 10% of all their resource base, and the remaining 75% of the companies use very little or no long-term debt.

The type of relationship and its significance show the important effect of leverage as a contributing factor in the growth of companies. Moreover, it is constituted as a favorable sign as regards the financial situation of a company, given that it reflects the confidence of creditors in their ability to pay, and in their solidity, and stability on a longer timeline. Likewise, it confirms the hypothesis regarding decisions about capital structure, which have the capacity to generate value for the company, an affirmation made by Miller and Modigliani in their second proposition.

CONCLUSIONS

From the analysis of the different models used, the following conclusions are reached:

With respect to financing sources, firstly, companies preferred to finance themselves with their own resources, secondly, with short-term debt, and finally, they used long-term debt. This type of resource was only used representatively by 25% of the companies.

The variables of tangibility of the assets, risk, growth in sales, and return on equity were the only ones that showed a significant relationship with the determination of capital structure, according to the results of the different models applied.

The tangibility of assets showed a negative relationship with short-term debt and the proportion of debt/internal resources that for this study was called financial structure, which showed low use of debt when companies had a greater amount of property, installations, and equipment, despite having better guarantees to support their debts. In the studies carried out of large companies or companies that are listed on the stock exchange, the relation has mainly been positive, which shows different behavior in the financing of SMEs.

Risk had a positive relation to debt, which leads to the conclusion that the companies with greater variation in their profitability resorted to debt more as a financing source. In scenarios of higher risk, companies sought more to finance themselves with debt.

Growth in sales was positively related to long-term debt, a situation that demonstrated the advantages that indebtedness brings as a generator of value, a factor which favors the growth of the companies that use it most adequately.

Finally, it is important to highlight the possibility of furthering the research so as to develop areas of work that allow for the identification and solution of the problems of access to debt and capital as additional financing sources. This is a project that also involves actions on the part of the government, economic unions, the financial sector, businesspeople and entrepreneurs, in such way as to strengthen access to markets, remove barriers of all kinds, and foster the flexibility of the financing structures primarily for this type of company.

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APPENDIX 1
COMPANY SAMPLES

NIT	COMPANY NAME
800240258	ALBORAUTOS LTDA.
826002217	ALMACENES SERGO LTDA.
800022005	AUTOBUSES AGA DE COLOMBIA LTDA.
826000361	AUTOSERVICIO PARAÍSO S.A.
830092048	CASAGRO S.A.
800092661	COELCI LTDA.
800209179	COLOMBIANA DE ENCOMIENDAS S.A.
891855600	DISTRIBUIDORA DE COMBUSTIBLES EL SOL LTDA.
891857733	DISTRIBUIDORA TROPIBOY LTDA.
891855573	EMPRESA DE FOSFATOS DE BOYACÁ S.A.
891801951	FAMA S.A.
832000123	FERAUTOS LTDA.
820004492	INDUSTRIA DE LICORES DE BOYACÁ S.A. -C.I.
860053330	INMUNIZADORA DE MADERAS DEL ORIENTE LTDA.
891855774	INVERSIONES BOYACÁ LTDA.
820000187	INVERSIONES LA PRADERA LTDA.
891801193	INVERSIONES LADRILLOS MAGUNCIA S.A.
891855859	INVERSIONES Y PROMOCIONES LTDA.
800116325	JAIME PARRA P. Y CIA. LTDA.
891800215	NOGO BOYACÁ LTDA.
891856506	PRODUCTORA DE ALAMBRES S.A.
800188412	SANOHA LTDA. MINERÍA MEDIO AMBIENTE Y FORESTAL
820000045	SERVIAGROFINCA LTDA.
891857724	UNIÓN NACIONAL DE DROGUERÍAS LTDA.