International Research Journal of Finance and Economics
ISSN 1450-2887 Issue 162 July, 2017
http://www.internationalresearchjournaloffinanceandeconomics.com

A Combined Assessment of Capital Structure Determinants in a Developing Economy

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Abstract

The study investigates the determinants of capital structure in a developing economy considering the pecking order and the tradeoff theory. It uses data from two hundred and ten Ecuadorian firms from the top thousand companies of 2013. The independent variables chosen, according to data availability and literature review, are tangibility measured by fixed assets over total assets; profitability measured by return on assets (ROA); and firm size measured by logarithm of sales. However, some of these regressors were dividedto select the best ratio combination and obtain a more robust model. The dependent variable, leverage, is measured using total debt ratio. The cross-sectional ordinary least square (OLS) multivariate regression concludes that there is a statistically positive relationship between firm size and leverage as stated by both theories. However, tangibility and profitability are statistically negative related with debt level. Although in our research profitability fits the pecking order pattern, tangibility does notrespond properly to both theories.These findings are compared and contrasted against other authors' research following the same trend. We theorize that Ecuadorian firms combine both theories when deciding their capital structure. Moreover, the variable growth is found to be not statistically significant in this market. However, the variable non-debt tax shield was omitted from the model due to the lack of information.

Keywords: Capital structure, Pecking order theory, Tradeofftheory, Leverage, Firm size, Profitability, Tangibility.
JEL Code: G32

Introduction

Capital Structure Theories

Among the literature of capital structure, authors have not yet reached a conclusion of the optimal debt level that a company should have. Research aims to explain the behavior of companies about this topic, leading to several theories. Some of these theories have been evaluated with empirical research.

The first theory about capital structure was developed by Modigliani and Miller (1958). The authors proposed that firms' value will not be affected by the capital structure chosen. This was under the assumption of absence of bankruptcy costs, tax shields, transactions costs, information asymmetries

and brokerage. The capital structure irrelevance proposed by the M&M theory was based in the fact that investors will just consider profits that the firm will generate from expected cash flows and they will not consider how assets are financed. However, this was not applied in practitioner terms due to relevant factors not considered by the theory. According to Frank and Goyal (2008), the importance of the theory does not explain the optimal capital structure but it does show the relevance of financing decisions in firms' value.

The M&M theory was then used as the foundation for agency theory explaining the impact that agent's behavior has in businesses' financial structure. Thetradeoff theory was developed by Kraus and Litzenberger(1973). Nevertheless, it was based in another study made by Modigliani and Miller (1963), in which they incorporated income tax benefit, as a correction, to their first proposition of capital structure irrelevance. M&M assumed that a company should be completely leveraged as the optimal capital structure. Authors omitted the costs of debt (i.e. extreme case bankruptcy) in validating their conclusion.

However, Kraus and Litzenberger(1973) followed the previous propositionconsidering the cost of bankruptcy. Tradeoff theory suggeststhe optimal capital structure as the combination of debt and equity, which will increase the tax shield benefits without increasing even more distressful financial costs. The firm will choose a leverage level,balancingcosts of bankruptcy and benefits of paying taxes. Kraus and Litzenberger(1973) were the first to include these market imperfections in capital structure study. Paying taxes is considered an advantage since the interests paid are tax deductible. The company will decrease its income tax liability and the after-tax operating earnings will increase, making debt less expensive than the use of equity financing (Atiyet, 2012). Nevertheless, having high levels of debt also puts the company in disadvantage due to financial distress costs. The company will be more dependent on bank lenders and their financial policies. According to Jensen and Meckling (1976), besides the tax deduction benefits the agency costs will also be reduced by issuing debt. Since the cash flow available will be limited, managers won't be allowed to misuse cash in poor investment decisions.

Myers (1984)stated the importance of the information asymmetry. The author criticizedtradeoff theory based on its limited assessment of a dichotomy to finance assets (liabilities and issuing shares). However, he pointed out another alternative, which is internal financing (retained earnings). Due to this shortcoming, Myers (1984) and Majluf(1984)came up with the idea of pecking order theory. It presented a hierarchy of funding sources arranged according to the information asymmetry. It established that firms will prefer to use retained earnings over liabilities, short-term debts over long-term ones and debt over equity, because of the asymmetry of information between company and investors. A profitable firm will prefer to use internal financing, then it will choose some debts, and finally it will consider issuing shares. This order considers the benefits gained from employing internal funds. These internal funds can be either retained earnings,which avoid debts that will increase the costs of borrowing, or an optimal working capital. It requires good management of the collection and payment float for the company to cut costs and gain profits (Sagner, 2011).

Baker andWurgler(2002), in their market timing theory, focus on the capital market and the right time of issuing shares. It is assumed that a firm will issue equity over debt when its shares are highly pricedin the market and itwill repurchase shares when the price is low. This theory heavily depends in historic data. The company will profit when they sell past low-priced shares, or when they purchase past high-priced shares. In this theory time is an important factor for considering the capital structure as well as the position of the firm within the capital market. A firm with low share prices will be more leveraged than a firm with high market valuation. However, some empirical studies have shown that this theory is only applicable for periods of two or three years and after those periods the theory reverses its course(Kaya, 2014; Alti, 2006;Huang and Ritter, 2009).

The purpose of this paper is to find the relationship between selected financial indicators,which are the determinants[1] of capital structure of two hundred and ten of the top Ecuadorian enterprises, and the level of leverage that they have chosen to maintain. Financial information of the year 2013 was

[1] These represent the independent variables in the model.

considered, due to availability of information. We believe this research will provide a guideline for future companies' capital structure decisions. Finally we theorize plausible venues for selecting the level of leverage.

Literature Review

In the study ofdeterminants of capital structure some of the findings are prone towards tradeoff theory while others are related with pecking order theory. Nevertheless, there are some differences that are explained by political, economic and institutional frameworks in which the studies were developed.

Kumar andBodla(2014) concentrated on the determinants of capital structure of Indian firms. They picked two periods for the study from 1991 to 1998 and from 1999 to 2007. The authors' research determined that collateral value of assets and non-debt tax shield were positively related with leverage level. However, cost of borrowing, size of organizations and liquidity were negatively related with the ratio of debt over equity.

On the same subject,Al Aniand Al Amri (2015) made a study based on Omani industrial companies, which were divided into chemical, construction and food sectors. The coefficients of tangibility and firm size variables were significant at 5% in the food sector. These variables had a positive relation with the level of debt. In the construction sector, the correlation between tangibility and the dependent variable (leverage ratio: total liabilities to total assets) was negative at 5%. Contrary to growth, profitability, firm size and risk which were insignificant at 5%. In the chemical sector, profitability was positively correlated with leverage at 5%, whereas firm size and risk had a negative correlation at 5%. The results diverge from Kumar andBodla (2014), who found a negative relationship between profitability and leverage for chemical companies in India. Al Aniand Al Amri (2015) determined that chemical companies in Omani will get more indebtedif they present small size, low risk and high profits.

Ali Channar, BaiMaheshwariandAbbasi(2015), conducted a study on themanufacturing and service industries of Pakistan from 2010 to 2012. The regressors studied were growth, profitability, size, tangibility and effective tax rate. Manufacturing organizations in Pakistan have a negative significant relationship at 1% between growth and level of debt. Additionally, Myers (1984) and Kumar andBodla(2014) have also determined that profitability and leverage are negatively related at 5%. Also, tangibility had a significant negativerelation to debt.However, firm size and effective tax rate are insignificant at 5%. Thus, these determinants should not be considered for the model of capital structure in the Pakistani manufacturing industry. Service industries have a significant positive correlation at 1% between firm size and the dependent variable (leverage level), while tangibility is negatively correlated at 5%. The other regressors are insignificant at 5%.

DungThuyThi, Diaz-Rainey andGregoriou(2014)studied 116 non-budgetary listed Vietnamese companieswithin the period 2007 to 2011. The control variablesused were profitability, tangibility, size, growth opportunity, liquidity and a variable describing state owned companies. Theirresults confirm the negative relationship of leverage and profitability. The same type of relationship is applied for liquidity. In contrast, growth and state-ownership are positively related with the level of leverage.Tangibility has a negative effect on short term leverage. However, this variable shows a positive relation with long term loans. The collateral, provided by the level of tangibility,represents a tool to manage and decrease credit risk. In this manner, supervisors will prefer long term loans, as opposed to short term indebtedness. In Vietnamese organizations there is a positive relation between firm size andthe level of debt, as bigger firms have less data asymmetry issues.

Capital structure applicability has been discussed by KomeraandLukose P.J. (2015)inIndian firms assessing pecking order theory. The period studiedwas from 1992 to 2011. It demonstrated that Indian firms don't apply this theory as expected. According to the evidence found, the pecking order was not applied for those firms that have higher asymmetric information problems. The coefficients of

the pecking order explained that only 38.28% of the budgetary shortfall of Indian firms was secured by issuing obligations.

Similarly to Indian firms, Iquiapaza, Amaral, and Borges De Araújo(2008)studied size, profitability and growth ofBrazilian companiesand determined that these were not prone towards pecking order theory. However, only non-profitable small organizations with lower proportions of growth present a weak adherence toIquiapaza'*set al.* research. Bigger, profitable and development prone companies tend to cover their deficiency by issuing equity. The authors explain the results by presenting the idea of a new theory from the combination of the tradeoff and the pecking order. Likewise, they recognize the effect of managers in deciding the capital structure. Company representatives have a tendency to issue equity when the investor'seagerness for profit is in accordance to the organization's objectives; otherwise they chosedebt financing.Correa, Cruz Basso and Nakamura (2013)narrow down the research in the Brazilian market concentrating in large organizations and how their level of debt is related with the tradeoff and the pecking order theory. The results show a negative effect of profitability, tangibility (of assets – collateral) and the level of indebtedness. However, the level of risk was positively correlated. The negative relationship between profitability and leverage was the primordial finding which suggests that largeBrazilian organizations were more prone to pecking order model than tradeoff theory.

The Foster and Young (2013) study compares if the determinants of developed countries are the same in emerging markets. For this investigation they performed tests in India, Indonesia, Korea (Rep), Malaysia, Thailand, Argentina, Brazil, Chile, Mexico and Peru. They discovered that the determinants for developed nations can be likewise applied for developing markets. The correlation between profitability and indebtedness for developing countries is negative as it is in developed nations. Risk does not consider any impact in the capital structure in emerging markets as it does in developed ones. Firm sizeis positively related with leverage in both markets. Moreover, Fernández(2005)focused on data from a developing country. Her investigationshowed the presence oftradeoff theoryin Chilean organizations rather than the pecking ordertheory. Lucrative firms were found to issue more liabilities, demonstrating a positive relation between profitability and leverage. Moreover, debt was inversely related with non-debt tax shields.

Determinants

Based on theoretical implications of capital structure, the following determinants of capital structure were chosen to be analyzed in this paper.

Non-debt tax shield ratio

DeAngelo and Masulis(1980) concluded that by increasing the level of non-debt tax shields, the latter could replace the benefit gained by tax deductions. It was explained that a firm that is able to manage other kinds of deductions, such as amortizations, depletion, allowances and investment tax credit, will not chose debt over other sources of funding. In this case, the tradeoff theory implies a negative relationship between the level of leverage and non-debt tax shields.

Profitability

Profitability might be perceived as a dichotomic independent variable. This variable might increase or decrease leverage, depending on the perspective of the capital structure theory employed. From the standpoint of tradeoff theory, profitable firms should have more debt(Fama and French, 2002). This is explained by the reduction of financial distress costs that profitable companies gain. Additionally, tax shield benefits induce firms to issue more debt. Also, Jensen (1986) mentioned that the use of debt enforces discipline, since firms must honor their liabilities on a periodic basis, compromising the free cash flow.

Nevertheless, according to the pecking order theory, firms choose their financial sources by a hierarchy defined by the asymmetry of information. Profitable companies will have retained earnings that will allow them to diminish their debt level and reduce the asymmetric information costs (Myers, 1984). Psillaki and Daskalakis(2009) and Jain(2015)also support thenegative relationship between profitability and leverage.

Size

Pecking order theory literature states thatfirms' size may follow an ambiguous relationship with leverage. On one side it could be negatively related since greater firms are able to have more retained earnings; thus, debt is diminished. However, larger firms also experience less information asymmetry between managers and creditors. Therefore, debt cost is lower,providing firms an incentive to acquire more debt (Myers, 2003; 1984).

Firm size variable, in tradeoff theory,is positively related with debt. Large firms tend to be more diversified resulting in lower default risk and lower debt costs(interest rate). Moreover, these companies have more tangible assets, which could be used as collateral reducing the cost of borrowing (better credit rating). This is supported by Öztekin(2015)and Psillakiand Daskalakis(2009)who concluded that larger firms will have more debt, since their costs of borrowing are lower than for small firms. Furthermore, small companies are prone to have greater agency costs of debt (between shareholders and bondholders)(Jiraporn, Chintrakarn, Kim &Liu, 2013). Shareholders of those firms tend to be large and powerful, which gives them control over investment decisions. They will consider only their interests. Thus, informational asymmetries increase between them and creditors (Harris & Raviv, 1991).

Tangibility (Collateral)

Tangible assets are used as collateral for issuing debts. The previous reduce costs of financing, information asymmetries and agency costs of debt (creditors and shareholders) (Degryse &Goeij, 2012). A firm with augmented tangible assets will have a better score in their financial analysis leading to a reduction in their costs of borrowing. Therefore, tradeoffconsiders that firms with more tangible assets will encourage them to issue more debt. The same positive relationship is found inpecking order theory.

Growth

Firms who are expected to grow will increase their agency costs, as well as their bankruptcy costs. Tradeoff theory considers a negative relationship between growth and leverage. The agency theory explains that debtholders will be more prone to experience default risk when shareholders engage in riskier projects in order to grow(Myers, 1977). It is also established that firms with future growth opportunities do not need the discipline that debt requires. However, pecking order theory states that there is a positive relationship between growth opportunities and debt. Firms with higher chances to grow will require more funds and when internal financing is no longer available the best option is to issue debt.

Methodology

Sample size

The sample size of this study was 210 companies carefully chosen according to data availability. The data base comes from the topone thousand companiesin 2013, as stated bySuperintendence of

Companies[2]. The criteria for the latter considered the average of assets, equity, sales and income. The companies belong to different industries, detailed in Table #1 including: agriculture, oil and gas, manufacturing, electricity, construction, trade, transportation, hospitability, communication, real state, professional services, management services, health and other services.

Table 1: Number of companies per industry

Industry	Number of firms
Agriculture	14
Oil andgas	27
Manufacturing	80
Electricity	2
Construction	10
Trade	44
Transportation	9
Hospitality	3
Communication	7
Real Estate	7
Professional services	3
Management services	1
Health	2
Other Services	1
Total	**210**

Measurement of Variables

Dependent Variable

This investigation uses leverage measuredby total debt ratio (TDR).

Independent Variables

The research used profitability, growth, firm size and tangibility as the independent variables, shown in Table #2. These belong topecking order theory and tradeofftheory. The regressor non-debt tax shield was not used due to insufficient data provided bySuperintendence of Companies.

Definition of Variables

Table 2: Definition of variables

Variables	Measurement
Total Debt Ratio (TDR)	Total Liabilities / Total Assets
Profitability	1. ROA (Net income / Total Assets) 2. ROE (Net income / Total Equity)
Growth	1. % Change in Sales (2013 – 2014) 2. % Change in Assets (2013 – 2014)
Firm Size	1. Ln(Sales) 2. Ln(Assets)
Tangibility	Fixed Assets / Total Assets

Theoretical Expected Signs of Independent Variables

In each of the two capital structure theories, tradeofftheory and pecking order theory, the independent variables present different expected signs in relation with the dependent variable which is leverage, measured as total debt ratio. The relationship of the regressors with the leverage ratio is shown in the Table #3.

[2] Superintendence of companies monitors and regulates non-financial companies performance

Table 3: Theoretical expected signs of independent variables

Independent Variables	Expected Signs	
	Tradeoff Theory	Pecking order Theory
Profitability	+	-
Growth	-	+
Firm size	+	+/-
Tangibility	+	+

Specification of Model

The multivariate regression analysis used ordinary least squares (OLS). Specifically,cross sectional research was employed because of lack of data from the official source. The significance level employed was five percent (α). Concordantly, the confidence level is ninety five percent. After running several iterations we selected the following variables for our model.

$$Leverage = \beta 1 + \beta 2 * Tangibility + \beta 3 * Profitability + \beta 4 * Firm\ Size + \beta 5 * Growth \quad (1)$$

The regressors in Equation 1 show the generalized econometric model. The ratios for each one of the indicators are explained in Table #2.

Results

Table #4 shows the results of the correlation matrix of all independent variables.These variables do not present a significant correlation with the dependent variable (leverage). We tested the independent variables for collinearity using the variance inflation factor. The coefficient is less than ten; this reveals the absence of collinearity (Wooldridge, 2009).

Table 4: Correlation matrix

	Leverage	*Tangibility*	*ROA*	*ROE*	*% Δ IN SALES*	*% Δ IN ASSETS*	*LN(SALES)*	*LN(ASSETS)*
Leverage	1	-0.23268312	-0.25537965	0.27023779	0.13638233	0.10453052	0.1686072	0.1511528
Tangibility	-0.23268312	1	0.13022228	-0.03820947	-0.13930178	-0.07469467	0.01805628	0.03176397
ROA	-0.25537965	0.13022228	1	0.72048642	-0.11615249	-0.04331008	0.21386189	0.13094695
ROE	0.27023779	-0.03820947	0.72048642	1	-0.06588437	0.01006318	0.28791576	0.22638577
% Δ IN SALES	0.13638233	-0.13930178	-0.11615249	-0.06588437	1	0.60447026	0.03117394	-0.04435129
% Δ IN ASSETS	0.10453052	-0.07469467	-0.04331008	0.01006318	0.60447026	1	-0.07756938	-0.14131755
LN(SALES)	0.1686072	0.01805628	0.21386189	0.28791576	0.03117394	-0.07756938	1	0.91984221
LN(ASSETS)	0.1511528	0.03176397	0.13094695	0.22638577	-0.04435129	-0.14131755	0.91984221	1

Previous to the ordinary least square analysis, a matrix containing eight different combinations representing the exogenous variables is depicted in Table #5;it shows four independent variables:tangibility, profitability, growth and firm size; the last three variables have two different ratiosfor the same regressor.Table #6 reveals the different combinations presenting the coefficient values and the R^2 for each of them. The P-values of the T test provides enough statistical evidence to infer that the coefficients estimators for the ratios oftangibility, profitability and firm size are different than zero. However, for the variable growth the results didn't pass the mentioned test. Similarly, when firm sizeis combined with ROE (as the ratio of profitability) it fails the test as well. Theresultsdemonstrate a statistical insignificance of the variable growth and ROE.

Table 5: Plausible combinations

LEVERAGE		TANGIBILITY		PROFITABILTY		GROWTH		FIRM SIZE
1 LV (TL/TA)	=	TAN (FA/TA)	+	ROA (NI/TA)	+	% Δ SALES	+	LN(SALES)
2 LV (TL/TA)	=	TAN (FA/TA)	+	ROA (NI/TA)	+	% Δ SALES	+	LN(ASSETS)
3 LV (TL/TA)	=	TAN (FA/TA)	+	ROA (NI/TA)	+	% Δ ASSETS	+	LN(SALES)
4 LV (TL/TA)	=	TAN (FA/TA)	+	ROA (NI/TA)	+	% Δ ASSETS	+	LN(ASSETS)
5 LV (TL/TA)	=	TAN (FA/TA)	+	ROE (NI/TE)	+	% Δ SALES	+	LN(SALES)
6 LV (TL/TA)	=	TAN (FA/TA)	+	ROE (NI/TE)	+	% Δ SALES	+	LN(ASSETS)
7 LV (TL/TA)	=	TAN (FA/TA)	+	ROE (NI/TE)	+	% Δ ASSETS	+	LN(SALES)
8 LV (TL/TA)	=	TAN (FA/TA)	+	ROE (NI/TE)	+	% Δ ASSETS	+	LN(ASSETS)

Table 6: Results and combinations matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	-0,178308967***	-0,170***	0,173***	-0,172***	-0,176***	-0,185***	-0,186***	-0,195***	-0,195***
Tangibility (FA/TA)	[0,057366458]	[0,058]	[0,058]	[0,057]	[0,058]	[0,058]	[0,058]	[0,058]	[0,058]
	-0,843557673***	-0,819***	-0,741***	-0,838***	-0,762***				
ROA (NI/TA)	[0,199785272]	[0,201]	[0,199]	[0,199]	[0,198]				
						0,255***	0,259***	0,240***	0,246***
ROE (NI/TE)						[0,071]	[0,070]	[0,071]	[0,070]
		0,047	0,059			0,079*	0,085*		
%Δ Sales		[0,043]	[0,043]			[0,043]	[0,043]		
				0,082	0,092*			0,081	0,088
%Δ Assets				[0,055]	[0,056]			[0,056]	[0,056]
	0,044963973***	0,044***		0,046***		0,019		0,022*	
Ln(Sales)	[0,012700099]	[0,013]		[0,013]		[0,013]		[0,013]	
			0,037***		0,039***		0,020		0,023*
Ln(Assets)			[0,012]		[0,012]		[0,013]		[0,013]
	0,155667387	0,147	0.029	-0,186	-0,071*	0,190	0,162	0,141	0.125
Constant	[0,223895789]	[0,224]	[0,221]	[0,224]	[0,223]	[0,229]	[0,224]	[0,231]	[0,228]
Observations	210	210	210	210	210	210	210	210	210
Degrees of Freedom	206	205	205	205	205	205	205	205	205
R-squared	0.15697268	0.402	0.149	0.166	0.153	0.147	0.149	0.142	0.143
Adjusted R-squared	0.14469558	0.162	0.133	0.150	0.136	0.130	0.132	0.125	0.126
Robust standard errors in brackets									
	*significant at 10%; **significant at 5%; ***significant at 1%								

The model provides two plausible combinations. The only difference between them was the ratio used for firm size; logarithmof sales and assets. The latter ratios are commonly used by all the authors indistinctly. The regression analysis concludes that the most accurate ratio for firm size was logarithmof sales,since the adjusted R square was higher (0,145). Equation 2 shows the generic regression form:

$$\frac{Total\ Liabilities}{Total\ Assets} = \beta 1 + \beta 2 * \frac{Fixed\ Assets}{Total\ Assets} + \beta 3 * \frac{Net\ Income}{Total\ Assets} + \beta 4 * Ln(Sales) \quad (2)$$

The value of leverage is represented by total liabilities over total assets; tangibility is determined by the ratio of fixed assets over total assets; profitability is the result of net income over total assets (ROA); and firm size is achieved by the logarithm of sales.

A new correlation matrix is presented in Table#7showing that the independent variables (tangibility, ROA, logarithmof sales) are not significantly related with the dependent variable (leverage).

Table 7: Correlation matrix of the model

	Leverage	*Tangibility*	*ROA*	*LN(SALES)*
Leverage	1	-0,23268312	-0,25537965	0,1686072
Tangibility	-0,23268312	1	0,13022228	0,01805628
ROA	-0,25537965	0,13022228	1	0,21386189
LN(SALES)	0,1686072	0,01805628	0,21386189	1

Table 8: OLS statistics

Adjusted R square	0.1446956	**F Test**	1.07E-07	
Standard Error	0.1756371			
Observations	210			
	Coefficients	**Std. Error**		**P-Values**
Intercept	-0.15566739	0.22389579		0.48767143
Tangibility (FA/TA)	-0.17830897	0.05736646		0.00214787
ROA (NI/TA)	-0.84355767	0.19978527		3.63E-05
LN (Sales)	0.04496397	0.01270010		0.00049383

Table #8 depicts the non-corrected for heteroscedasticity and autocorrelation results. It shows 206 degrees of freedom from the regression. The confidence intervals for the regressors of Equation 3 were as follows: the coefficient of β1 presents a confidence interval from -0,29 to -0,07; the confidence interval in which the coefficient of β2 ranges, goes from -1,24 to -0,45; and the confidence interval of β3 goes from 0,02 to 0,07. Since P- values from Table #8are statistically significant, we reject $H_{0:}\ \beta = 0$ in favor of $H_{1:}\ \beta \neq 0$.

$$\frac{Total\ Liabilities}{Total\ Assets} = \underset{0.1988}{-0{,}156} - \underset{0{,}064971}{0{,}178} * \frac{Fixed\ Assets}{Total\ Assets} - \underset{0{,}204542}{0{,}844} * \frac{Net\ Income}{Total\ Assets} + \underset{0{,}011152}{0{,}045} * Ln(Sales) \quad (3)$$

Due to cross sectional methodological restrictions,we are not able to infer causality with the proposed model in equation 3. Therefore, this estimation provides a correlation between the independent variables and the regressand.

Table 9: HAC Newy-West residuals correction

Ordinary Least Square method				
Dependent Variable: LEVERAGE				
Observations	210			
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
INTERCEPT	-0.155667	0.198836	-0.782893	0.4346
FIRM SIZE	0.044964	0.011152	4.031902	0.0001
ROA	-0.843558	0.204542	-4.124136	0.0001
TANGIBILITY	-0.178309	0.064971	-2.744459	0.0066
F Test	0	**Adjusted R-squared**		0.144696

Table #9 shows the corrected residuals using HAC Newy-West. This method fixes the heteroscedasticity and autocorrelation present in Table #8.

Discussion

The research considered profitability as the variable of interest, due to the importance it is placed on this metric by entrepreneurs and managers. We analyzed the change in the coefficient of ROA; regressing leverage against the control variable gradually adding control variables: tangibility and size. Interestingly,the absence of stability in the variable of interest gives us reasons to believe that there might be an omitted variable.

Equation 3 reveals that profitability is correlated with leverage and vice versa.This is supported under the tradeoff theory according to Fama and French (2002).Firms are encouraged to have more debt, due to reduced financial distress costs, and the advantagesof tax shields induce companies tohave more debt. Thus, we have reasons to believe there might be endogeneity.

The study reveals patterns in terms of the capital structure of Ecuadorian firms. Profitability prone companies tend to avoid incurring in leverage. Big companies increase their debt levels. Tangibility of assets does not represent an assurance for companies to get indebted. The variable´s coefficients, significance and implications are discussed below:

Profitability Ratio

The results of the study present a negative relationship between profitability (measured as ROA) and leverage. This is consistent with the pecking order theory implying that profitable firms will chose to use internal financing, as retained earnings, instead of getting indebted. Thus, the asymmetry of information does play a major role in the capital structure decisions for Ecuadorian firms. The negative result is consistent with Psillaki and Daskalakis(2009),Jain(2015), Myers (1984) and Hossain and Hossain(2015);on the other hand, the findings ofFama and French (2002) and Jensen (1986) are opposed, demonstrating a positive relationship.

Firm Size

Firm size presents a positive correlation with the level of leverage. The result confirms the prediction of the tradeoff theory. While in the literature of the pecking order theory, firm size could be positively or negatively related with leverage. In the case ofEcuadorian firms, the positive impact of firms' size in the capital structure decisionis confirmed. Therefore, large companies increase their debt levels due to the reduction of information asymmetry between managers and creditors.

Moreover, our results confirm the applicability of tradeoff theory in Ecuadorian firms,since the cost of borrowing is smaller for large firms while the opposite is true for small firms. This premise is based on the capacity of bearing risks that large corporations have. The Ecuadorian banking system will be more willing to lend money to large companies than to small ones. The latter will be issued with a greater interest rate because of its size and risk. This positive relation is consistent with Öztekin(2015) and Psillaki and Daskalakis(2009).

Tangibility

The negative coefficient of this variable within the econometric model isnot in accordance to both theories of capital structure. Ecuadorian firms have a negative relationship between the level of tangibility and the level of debt. However, contrary to Allen (1995), Michaelas et al. (1999), Amidu(2007) and Degryseand Goeij(2012),and according toHossain and Ali (2012) and Hossain and Hossain(2015),companies with a lower level of tangible assets incur more information asymmetry problems, as explained by the pecking order theory. When these companies run out of internal financing funds, their equity will be reduced because of the information asymmetry increasing the need of debt financing. This explains the negative relationship found between level of tangibility and the level of debt. Another explanation is provided by Grossman and Hart (1982), Abdullah (2001) and Sheik and Wang (2010), suggesting firms with fewer tangible assets and more asymmetry information problems should use debt as a tool to control managerial activities, due to the manager's tendency to consume in excess.

Conclusions and Recommendations

This study identifies the determinants of capital structure of Ecuadorian firms and the predominant theory. The data sample includes210 companies taken from the top one thousand Ecuadorian firms, according to Superintendence of Companies,in 2013. The industries taken into consideration were: agriculture, oil andgas, manufacturing, electricity, construction, trade, transportation, hospitality, communication, real estate, professional services, management services, health and other services. The study applied a multivariate regression analysis using the OLS.

There were three final regressors in the model, which explained the dependent variable (total debt ratio). These were selected according to extant literature, previous research and data availability. The results provide enough statistical evidence to demonstrate that Ecuadorian firms follow the pecking order theory when considering profitability, due to the negative relationship with leverage level. The variable firm size also supports the mentioned theory as well as the tradeoff theory since it positively affects the debt ratio. However, tangibility does not behave as expected by both theories. It presents a negative relationship with debt levels.

This study has depicted the way companies have determined their capital structure. Furthermore, the research represents a tool for financial managers when deciding their capital structure. The level of leverage will depend on the level of profitability, firm size and tangibility of each firm. These three variables could be used as the determinants of financial managers' decisions.

The research has opened a gateway for further investigations on this topic; although our model lacks heteroscedasticity and collinearity;the presence of omitted variables and endogeneity require a more robust, enhanced data set to reframe the scope of the econometrical analysis. Thus, we recommend further research in this subject implementing panel data to correct these abnormalities.

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