DOES SHORT TERM DEBT AFFECT PROFITABILITY? EVIDENCE FROM THE ROMANIAN LISTED COMPANIES

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Abstract

This study aims at providing new empirical evidence on the influence of debt (both on short and long term) on corporate profitability, with application to the Romanian companies listed on the Bucharest Stock Exchange. Panel data are analyzed for 50 companies belonging to different fields of activity during 2003-2014 using a fixed effect regression model. After we control for size, growth, liquidity, and tangibility of assets, the results reveal that short-term debt has a negative influence on corporate profitability.

Keywords: profitability, debt, Bucharest Stock Exchange, panel data

JEL Classification: C33, G30, G32

1. Introduction

There is a large body of corporate finance literature that has focused on the channels through which the company profitability might be enhanced. The relationship between leverage (or capital structure) and performance was early and well documented [12]. A positive relationship between the two would lead to the idea that companies with better access to debt would be more privileged in terms of efficiency. A negative relationship on the other hand is explained by the appearance of bankruptcy costs that overcome the benefits of tax shields [5],[9]. Regardless the nexus between debt financing and firm performance, the evolution of firms' indebtedness is of importance not only at firm level, it has serious implications on macroeconomic level as well. Financial access of the corporate sector might amplify the shocks to the economy [2]. The research topic is therefore important, especially in the context of the recent financial crisis, triggered also by excessive indebtedness. Central and Eastern European countries do not make an exception.

The rest of the paper is organized as follows. Section 2 describes the main theoretical and empirical literature that has approached the relation between leverage and firm performance. Section 3 presents the database, the methodological background for our analysis, the model and estimation approach. Section 4 discusses the results. Section 5 concludes.

2. Theoretical and empirical background

In the literature the connection between capital structure and performance was proved to function in both directions, as a reverse causality. The trade-off theory, one of the most important capital structure theories, alongside pecking order, explains both directions of causality. According to [13], the benefits of the tax shield derived from the interest paid on debt financing lead to a positive influence of the leverage on firm performance. The disciplining effect of debt might also bring a positive effect of leverage on performance. Having less free cash-flow on their disposal, the managers of highly leveraged firms should be motivated to perform. However, the agency conflicts between managers and shareholders may lead to underinvestment and a negative influence of the leverage on the firm performance [6],[17]. Highly leveraged firms will be charged with a higher cost of capital, which will lead to an adverse effect on firm performance.

Most of the papers tested empirically one or the other direction of influence. Despite several decades of research, there is still no consensus and there is also a lack of empirical evidence as far as concerns the relationship between debt financing and corporate performance in Central and Eastern European countries.

Along the time, the importance of leverage for the firm profitability has attracted much debate and mixed empirical findings. We summarized in a chronological order the most recent empirical papers that have had such an approach, with application on European samples (Table no. 1).

Table no. 1 – Review of the empirical literature

Author/s	Sample	Analysis period	Methodology	Results
Schiantarelli and Sembenelli (1999)	**Italian** and **UK** firms	1976-1991 (UK) 1977-1990 (Italy)	GMM estimation	Positive relationship between long term debt and medium term performance
Baum et al. (2006)	**German** industrial firms	1988-2000	GMM estimation	Firms that rely more heavily on short-term liabilities are likely to be more profitable.
Weill (2008)	Manufacturing firms from 7 European countries: **Belgium, France, Germany, Italy, Norway, Portugal, Spain**		Stochastic Frontier Approach	Effect of leverage on corporate performance vary across countries (positive for 5 countries), and depends on particular institutional factors of each country
Margaritis and Psillaki (2009)	**French** manufacturing firms	2002-2005	DEA analysis	Higher leverage associated with increased efficiency
Nunes et al. (2009)	**Portuguese** firms		GMM estimation	Negative effect of leverage on profitability
Kebewar (2013)	**French** service sector	1999-2006	GMM estimation	The debt ratio has no effect on corporate profitability
Gabrijelcic et al. (2013)	**Slovenian** firms	2001-2011	Fixed-effect model	Negative effect of leverage on profitability
Chandrapala and Knápková (2013)	**Czech** firms	2004-2008	Fixed-effect model	Negative relationship between leverage and profitability
Vătavu (2014)	**Romanian** listed companies	2003-2012	GMM estimation	Negative relationship between leverage and profitability
Močnik and Širec (2015)	**Slovenian** fast-growing firms	2008-2009	GMM estimation	Profitability negatively related with firm size and leverage ratio, but positively to labor costs

Source: realized by author

The majority of the papers which focused on quantifying the connection between debt and profitability used panel data analysis, with GMM estimation technique, but their results are contradictory. While some papers find no significant connection between the two variables [8], others notice a negative effect of the debt, resulting in lower efficiency for the firms ([3],[4],[11],[14],[18]), while a third category finds empirical support for a positive relationship ([10],[15]), especially when leverage is proxied by the short term debt when the liability structure is taken into consideration ([1]).

3. Data and methodology

3.1 Data

In 2015, on the regulated market of the Bucharest Stock Exchange (BSE), were traded 82 companies. The companies were structured by BSE into Premium and Standard category, beginning with 2015. Within the Premium category we can find only 22 companies, with a free float market capitalization of over 40 million euro in the last three trading months.

The final sample of the companies resulted after using three deletion filters. First, we have excluded from the beginning the companies belonging to the financial sector, given the specificity of their activity. Secondly, we have excluded all the companies that were suspended from trading, due to insolvency or other legal issues. Lastly, we have excluded those companies for which there was no available data for the considered period. It resulted in a sample of 50 companies, belonging to different fields of activity.

The dataset employed in this paper covers the 2003-2014 period. The source of data is represented by the annual financial statements provided by companies on the BSE website, alongside with information provided by Tradeville, one of the main financial services intermediaries on the Romanian capital market. However, the final database was put together manually, computed and constructed by us. Descriptive statistics for the sample are shown in the Table no. 2.

Table no. 2 - Descriptive statistics for the sample

	ROA	STD	LTD	SIZE	GROWTH	TANG	RC
Mean	0.033506	0.276429	0.086153	11.44388	0.202709	0.559088	2.843073
Median	0.030573	0.225086	0.035772	11.37901	0.076127	0.565528	1.579292
Maximum	0.414328	1.060570	2.366523	16.78644	5.749506	0.984082	47.83720
Minimum	-0.364181	0.004197	-6.52E-06	6.893657	-0.667472	-0.237784	-0.506328
Std. Dev.	0.073403	0.196506	0.153722	1.515643	0.558023	0.210067	4.358486
Skewness	-0.272202	1.045936	6.670491	0.906336	5.835442	-0.243885	5.602770
Kurtosis	6.897668	3.877377	85.74155	5.250150	47.64370	2.724184	43.75579
Jarque-Bera	382.6873	127.1422	173555.0	206.2888	52610.71	7.758286	44143.88
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.020669	0.000000
Sum	19.86889	163.9224	51.08892	6786.219	120.2063	331.5389	1685.942
Sum Sq. Dev.	3.189674	22.85994	13.98924	1359.927	184.3427	26.12391	11245.87
Observations	593	593	593	593	593	593	593

3.2 Methodology

Our research approach intends to assess the relation between debt and profitability of the company, having in consideration the companies listed on the Romanian capital market. In statistical notation, the model can be described as it follows:

$$ROA_{i,t} = \alpha_0 + \alpha_1 STD_{i,t} + \alpha_2 LTD_{i,t} + \alpha_3 Size_{i,t} + \alpha_4 Growth_{i,t} + \alpha_5 Tang_{i,t} + \alpha_5 LR_{i,t} + \varepsilon_{i,t} \quad (1)$$

where $ROA_{i,t}$ is the dependent variable, the profitability of the company, proxied by the return on assets, measured as the annual net earnings divided by its total assets, $STD_{i,t}$ and $LTD_{i,t}$, the independent variables, which account for the indebtedness of the company, and are computed as the ratio between total short-term debt, respectively total long-term debt and total liabilities. We are using also some control variables such as: $Size_{i,t}$, the size of the company, proxied by the natural logarithm of total sales, $Growth_{i,t}$, which proxies the growth opportunities and is computed as the variation of total assets, $Tang_{i,t}$, tangibility, measured as the ratio of tangible assets divided by the total assets of

the firm, as well as $LR_{i,t}$, the liquidity ratio, which is computed as the ratio between current assets and current liabilities and $\varepsilon_{i,t}$ is the error term.

The research hypothesis we formulate is:

H_0 : *Does the increase of the short-term debt generate a higher profitability for the company?*

From a methodological point of view, we will first run an OLS model regression. The major problem with the pooled OLS model is that it does not distinguish between the companies, ignoring the heterogeneity or individuality that may exist among these. An individual-specific effects model allows for heterogeneity across companies.

The main question is whether the individual-specific effects are correlated with the regressors. If they are correlated, then we will have a fixed-effects model and if they are not, we will deal with a random effects model. We will apply Hausman-Test to check which model (Fixed Effect or Random Effect model) is more appropriate.

4. Results

Table no. 3 reports the estimates of the performance equation. We present the estimates of the panel data with OLS (1), fixed effects (2), random effects (3), and the corrected fixed effect model (EGLS). After running the Hausman test we could not obtain a significant P-value (p<5 %), therefore, we rejected the null hypothesis, that Random Effects model is more appropriate.Then, we used Wald test to see whether the Pooled Regression Model or Fixed effect model is more appropriate. It pointed out again that the fixed effect model is more appropriate.

Table no. 3 – Econometric results

VARIABLES	(1) OLS Panel least squares	(2) FE Fixed effect	(3) EGLS Random effect	(4) EGLS Fixed effect
Short-term debt	-0.1520***	-0.0673***	-0.1082***	-0.0887***
	(0.0184)	(0.0245)	(0.0211)	(0.0201)
Long-term debt	-0.0433**	-0.0246	-0.0338*	-0.0243
	(0.0182)	(0.0191)	(0.0180)	(0.0156)
Size	0.0039**	0.0118***	0.0054*	0.0077***
	(0.0018)	(0.0045)	(0.0028)	(0.0027)
Growth	0.0163***	0.0146***	0.0144***	0.0107***
	(0.0049)	(0.0045)	(0.0044)	(0.0026)
Tangibility	-0.1374	-0.1704***	-0.1478**	-0.1658***
	(0.0159)	(0.0248)	(0.0198)	(0.01954)
Liquidity	-0.0019**	-0.0017**	-0.0016**	-0.0016***
	(0.0007)	(0.0007)	(0.0007)	(0.0003)
Observations	593	593	593	593
Number of companies	50	50	50	50
R-squared	0.1672	0.4172	0.1121	0.4853
Adj. R-squared	0.1587	0.3576	0.1031	0.4326
DW-stat	0.9096	1.2634	1.1293	1.3377
Hausman-test			21.5694	
Prob			0.0014	

Note: Standard errors in parantheses
***p<0.01, **p<0.05, *p<0.1
Source: realized by author

The results of the econometric analysis outline that:

- *Short term debt is negatively related to firm profitability. Long term debt, although is negatively related with the profitability, is not statistically significant.* The negative effect of debt could be explained by the agency costs theory of [7], according to which shareholders are likely to engage in riskier projects, given the fact that the earnings belong to them, while potential losses are to be shared with the debtholders. As their behavior is anticipated by the debtholders, they will be charged with a higher cost of capital, that would impede on taking advantage of the attractive investment oppotunities, which will finally lead to an adverse effect on firm performance. It seems that excessive debt decreases the profitability of the firm and increases financial distress costs; as far as concerns the liabilities structure, the short term debt and not the long term one is the part of the

debt that exercises a significant influence on the corporate profitability. Unlike the results provided by [1], the influence of short term debt on profitability is a negative one;

- *Size is positively related with firm profitability.* The positive effect was likely to appear due to the fact that larger firms are expected to diversify better their products and production activities, face better the competition and are better managed. In the same time, larger firms can also experiment economies of scale and can have cheaper access to capital,which both have a positive effect on profitability;

- *Growth is positively associated with firm profitability.* This results is consistent with the theory that states that firms with high growth rates are able to contribute more to the profitability of the company by taking advantage of the realized investment;

- *Tangibility is negatively related to firm profitability.* Although, in the literature, tangibility has been often positively related to profitability, given the fact that higher fixed assets will serve as a larger collateral, our results point emphasize the negative effect of tangibility. A possible explanation could come from the fact that a large volume of tangible assets can reduce the investment opportunities, decreasing the volume of required liquidity;

- *Liquidity is negatively related to firm profitability.* This result can be explained also by the existence of agency conflicts between shareholders and managers. The latter ones tend to invest in projects meant to increase their reputation and leave the firm to grow beyond an optimal level.

5. Conclusions and further research

In this paper, we analyzed the connection between non-financial firms' profitability and debt (both short and long term), after controlling for the size of the company, growth opportunities, the tangibility of the assets and liquidity. We tested this relationship by using a sample of 50 companies listed on the Bucharest Stock Exchange for the 2003-2014 period. The hypothesis we checked was that short indebtedness has a positive influence on the firms' profitability. We found instead strong empirical support for a negative relationship between short term debt and profitability. In other words, the higher the extent the short term debt is used, the lower the profitability of the firm. Our results are consistent with the most recent empirical studies with application on Central and Eastern European countries obtained by [3], [4], [11], [18] and are in contradiction with some studies that relate positively the profitability with the short term debt ([1]).

Future research might shed light on the potential differences that might appear from a sectorial analysis (having in consideration the field of activity in which the companies operate). More determinants of profitability could be taken also into consideration since the value of R^2 is rather small (0.48), which implies that there are more important factors which have not been included in the model and the robustness of the model could increase.

6. References

[1] **Baum, C., Schäfer, D. & Talavera, O.** (2006). The effects of short-term liabilities on profitability: the case of Germany, DIW Berlin, German Institute for Economic Research, Discussion Paper nr. 635, available at:http://www.diw.de/documents/publikationen/73/diw_01.c.44833.de/dp635.pdf

[2] **Bernanke, B. S., Gertler, M. & Gilchrist, S.** (1999).The financial accelerator in aquantitative business cycle framework, Handbook of Macroeconomics, in: J. B. Taylor & M. Woodford (ed.), Handbook of Macroeconomics, edition 1, volume 1, chapter 21,(pp. 1341-1393)

[3] **Chandrapala, P. & Knápková, A.** (2013). Firm-specific factors and financial performance of firms in the Czech Republic, *ActaUniversitatis et SilviculturaeMendelianaeBrunensis*, vol. LXI, no.7, 2183-2190

[4] **Gabrijelcic, M., Herman, U. & Lenarcic, A.** (2013). Debt financing and firm performance before and during the crisis: micro-financial evidence from Slovenia, available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2338637

[5] **Harris, M. & Raviv, A. (1991).** The Theory of Capital Structure, *Journal of Finance,* 46, 297-355

[6] **Jensen, M.** (1986). Agency Costs of Free Cash Flow, Corporate Finance and Takeovers, *American Economic Review*, 76, 323–339.

[7] **Jensen, M., & Meckling, W.** (1976). Theory of the firm: Managerial behaviour, agency costs and ownership structure. *Journal of Financial Economics*, 3, 305-360

[8] **Kebewar, M.** (2013). The effect of debt on corporate profitability: evidence from French service sector. *Brussels Economic Review*, vol.56 (1), 43-59

[9] **Kraus, A. & Litzenberger, R.H.** (1973). A State Preference Model of Optimal Financial Leverage, *Journal ofFinance*, September 1973, 911-922

[10] **Margaritis, D. & Psillaki, M.**(2010). Capital structure, equity ownership and firm performance, *Journal of Banking & Finance,* 34(3), 621–632.

[11] **Močnik, D. & Sirec, K.** (2015). Determinants of a fast-growing firm's profits: empirical evidence from Slovenia, *Scientific Annals of the Alexandru Ioan Cuza University of Iasi, Economic Sciences*, 62 (1), 37-54

[12] **Modigliani, F. & Miller, M. H.** (1958). The Cost of Capital, Corporate Finance and the Theory of Investment, *American Economic Review*, 48, 261-97.

[13] **Modigliani, F., & Miller, M.H.** (1963). Corporate income taxes and the costof capital: a correction. *American Economic Review, 53*, 433-43

[14] **Nunes, P.J.M., Serrasqueiro, Z.M. & Sequeira, T.N.** (2009). Profitability in Portuguese service industries: a panel data approach. *The Service Industries Journal* 29, 693-707

[15] **Schiantarelli, F. & Sembenelli, A.** (1999). The maturity structure of debt: Determinants and effects on firms' performance? Evidence from the United Kingdom and Italy, Policy research working paper series, The World Bank

[16] **Stierwald, A.** (2010). Determinants of Profitability: An Analysis of Large Australian Firms, Melbourne Institute Working Paper Series wp2010n03, Melbourne Institute of Applied Economicand Social Research, The University of Melbourne

[17] **Stulz, R.M.** (1990). Managerial discretion and optimal financing policies, *Journal of Financial Economics*, 26, 3–27

[18] **Vătavu, S.** (2014). The determinants of profitability in companies listed on the Bucharest Stock Exchange, *Annals of the University of Petrosani, Economics*, 14 (1), 329-338.

[19] **Weill, L.** (2008). Leverage and corporate performance: does institutional environment matter?, *Small Business Economics, 30 (3), 251-265*