

Capital Structure, Short Run Policy, And Performance Of Listed Manufacturing Firms In Greece ⁽¹⁾

John Ananiadis, Aristotle University of Thessaloniki, Greece
Nikos C. Varsakelis, Aristotle University of Thessaloniki, Greece

ABSTRACT

Assuming the national culture and the legal tradition of Greece, this paper addresses two questions. First, does the capital structure affect performance in the same way as in the mature economies? Second, does the short run financial policy of the firm affect the performance and under what circumstances? We apply a panel data analysis using data from the Athens Stock Exchange to test for these questions.

1. INTRODUCTION

Managers decide the capital structure to achieve long- run maximization of firm's value. Recent empirical literature found, using data from developed economies, that high debt to equity positively contributes to the firm's value since debt restricts managers to act in the interests of shareholders. However, do managers operating in different cultural, legal and financial contexts act in the same way, as the literature suggests for developed countries?

Majumbar (1997), Chhibber and Majumbar (1999), and Majumbar and Chhibber (1999), examining Indian manufacturing firms, found that the debt to equity ratio is negatively related to economic performance of the firms because of the Indian financial context.

Greece belongs to the Mediterranean cultural cluster (Hofstede, 1984), with high uncertainty avoidance characterizing its work-related culture. The Greek legal system belongs to the German civil law family and reflects this cultural characteristic. Given the national culture and the commercial law, this paper addresses two questions. First, does capital structure affect profitability in Greece in the way literature suggests? Second, does short run financial management affect profitability? We apply a panel- data analysis using data from the Athens Stock Exchange to offer satisfactory answers to these questions. Our sample consists of 130 manufacturing firms for which complete data are available for the examination period, 1995-2000.

The rest of the paper is organized as follows. The second part discusses the literature and sets the hypotheses. The third part gives the empirical results and the discussion. The fourth part concludes and gives some policy implications. Finally, the fifth part offers some suggestions for future research.

2. THEORETICAL BACKGROUND

Modigliani and Miller (1958) theorem states that leveraged firms do not increase their market value relative to non-leveraged firms in perfect markets. For this reason, capital structure is neutral to firm's economic performance. Following the publication of the M-M theorem, and considering the violations of the perfect markets assumption, a significant part of literature accepts that capital structure may have non-neutral effects on firm's performance. Modigliani and Miller (1963) consider that the introduction of taxes may affect the impact of capital structure on market value as far as interest payments are tax deductibles.

Agency cost theory and its empirical evidence, so far, assumes that the equity/ debt ratio negatively correlates to smaller performance, because of inefficient monitoring of the managers' actions. This monitoring refers to total liabilities, financial and operating, because operating debt also plays an informational role, a signal of profitability and value (Nissim and Penman, 2003). This correlation should not be monotonic since at high levels of debt relative to equity, debt implies an agency cost of outside debt (including higher expected bankruptcy costs or financial distress) arising from conflicts between debt holders and shareholders (Berger and Bonaccorsi di Patti, 2002).

This correlation, however, is conditional on national cultural, legal and financial context. The legal system, through the bankruptcy and reorganization laws, deals with procedures that unfold in the case of failure to pay back debt. These procedures are part of the commercial law in civil law legal traditions. According to La Porta et al. (1998), the German-civil-law family, Greece is member of this family, is strongly pro-creditor. Since the banking system has played a dominant role in the Greek economy, from the early years of the Greek state in early 19th century, commercial law accommodates and protects mainly the banks than the borrowers. More specifically, Greek commercial law prevents managers from unilaterally getting protection from creditors. Creditors' protection relies on liquidation than in reorganization and, in addition, secured creditors, and this is the case of banks, have the right to foreclose on their property when the claim matures and not when the borrower defaults (Houghton and Atkinson, 1993, as cited in La Porta et al., 1998). Even, in the case of reorganization, the old management does not stay unless the senior creditor chooses to do so. Therefore, debt finance increases the exposure to the risk of bankruptcy, both for the firm and the manager (reputation, salaries, etc.). Hence, managers feeling uncomfortable in high uncertainty situations, such as implied by the high bankruptcy cost, will be more efficient with high equity to debt ratio. Finally, in an environment characterized by high uncertainty avoidance, where the banking system exhibits the above idiosyncrasies, shareholders' monitoring on managers is more intensive than banks' monitoring. Therefore, we expect managers of firms with high equity to debt ratio to be more performance oriented.

Thus, we posit the following hypothesis:

Hypothesis 1 Due to high uncertainty avoidance and the pro-creditor legal system, we expect firm's higher equity to debt ratio to lead to higher return on assets.

Working capital management is part of the short run policy of the firm. Deloof (2003) finds that the components of working capital, inventories and accounts - receivable and payable, are strictly related with profitability. Net- working capital, the difference between current assets and current liabilities over total assets, roughly measures the company's potential reservoir of cash. A higher net-working capital affects the firm's profitability for two reasons. First, if current liabilities are low, relative to current assets, the firm gains in creditworthiness, leading suppliers to offer either low prices or better terms of payment (i.e. lower interest or longer maturity). Second, a higher net-working capital may stimulate sales because firm could offer better credit terms to customers.

Thus, we posit the following hypothesis:

Hypothesis 2 The higher the net-working capital ratio the higher the return on assets.

Inventory management is component of working capital management. Inventories turnover is the cost of products and services sold over inventories. Quick renewal of inventories, with small orders, leads to an unattractive credit policy from suppliers. In addition, the low level of inventories may lead to frequent shortages either of raw material or ready products, (DeLoof, 2003). Hence, low inventories may lead to loss of customers or /and to inappropriate pricing policy to customers.

Thus, we posit the following hypothesis:

Hypothesis 3 The lower the inventory turnover ratio, the higher the return on assets.

Finally, we include some control factors for their influence on business profitability. Most of the empirical studies use size as one of the factors affecting business profitability. Returns and economies of scale explain its significance. We use two alternative measures for the firm’s size, in this study, the logarithm of sales and the logarithm of book-value equity.

The way management exploits the invested capital to create sales and profits represents the managerial and marketing skills. Total assets turnover defined as sales to total assets, to a significant degree, is a measure of managerial and marketing skills.

3. EMPIRICAL RESULTS AND DISCUSSION

Following the discussion of the previous section, we derive equation (1) which is the model for the firm *i* in the year *t*:

$$ROA_{it} = a_{it} + b_{1t}NWC_{it} + b_{2t}OL_{it} + b_{3t}S_{it} + b_{4t}INV_{it} + b_{5t}LEV_{it} + b_{6t}ETL_{it} + u_{it} \tag{1}$$

where *i* stands for firms and *t* for time. All ratios are calculated using book-values, since book-values are good proxies for the values of assets in place (Myers, 1984; Hall, et al. 2004). The variables used are:

ROA, return on assets or investment, is the ratio of earnings before interest and taxes (EBIT) to total assets ⁽²⁾.

NWC, net- working capital, is the current assets minus current liabilities over total assets ratio.

OL, total assets turnover, is sales to total assets.

S, size of the firm, is the logarithm of the volume of sales or the logarithm of the book-valued equity.

INV, inventory turnover, is the ratio of cost of goods sold to inventories.

ETL, capital structure, is the ratio of the book-valued equity to total liabilities. We use the book value instead of market value of equity because there is evidence that managers think in book-values (Titman and Wessels, 1988). Moreover, market value includes both tangible and intangible assets. Stakeholders, such as bondholders, are interested in getting their money back. Intangible assets may vanish in case of bankruptcy. Tangible assets only remain for liquidation (collaterals). Therefore, bondholders use book- value of equity instead of market value.

LEV is the product of net- working capital ratio to total leverage over total assets ratio. As Nissim and Pennan (2003) note, total liabilities consist of operating liabilities (i.e. accounts payable) and financial liabilities (i.e. bank loans). The financial liabilities raise cash for operations while operating liabilities arise from operations. Companies that have high total liabilities to total assets ratio probably have potential to pursue short- term financial policy in sales and purchases. DeLoof and Jeger (1996), as reported in DeLoof (2003), found that firms, which face a shortage of cash, might reduce investment in accounts receivable. Hence, the access to credit either from financial institutions or from suppliers, contributes to the working capital management. Firms may invest to accounts receivable by offering credit to customers increasing that way their sales, which may finally lead to higher profitability. Therefore, the product of the net working capital to the ratio of total liabilities over total assets (LEV in our data set) is a proxy for the synergetic effects of total liabilities on net working capital ⁽³⁾. Taking the partial derivative of equation (1) with respect to NWC we get:

$$\frac{\partial ROA}{\partial NWC} = b_1 + b_5 \frac{TL}{TA} \tag{2}$$

In equation 2, the coefficient *b₁* measures the direct impact of NWC on the return on assets and the rest measures the synergetic effect of total liabilities to total assets with net-working capital.

The constant term a_i is the individual effect or individual heterogeneity for the firm i . The u_{it} are the idiosyncratic errors or disturbances because they change across time as well as across firms. The key issue is the correlation between a_i and the observed explanatory variables. If the correlation between a_i and the explanatory variable is zero, that is $Cov(x_{it}, a_i) = 0, t = 1, 2, \dots, T$, then the random effect is appropriate. On the other hand, if this correlation is statistically significant then fixed effect estimation is the appropriate procedure (Wooldridge, 2001).

3.1 Data

We use data for 130 manufacturing companies, listed in the Athens Stock Exchange, for the period 1995-2000. The sample firms are the most important manufacturing firms of Greece. The data are from the financial statements of the individual firms as reported by the Athens Stock Exchange.

Table 1
Summary Statistics

	Mean	Std. Dev	Minimum	Maximum
ROA	0.119	0.129	-2.037	0.699
LNSAL	17.058	1.249	12.713	21.903
LNBVE	16.674	1.287	12.509	21.741
NWC	0.202	0.194	-0.403	0.812
OL	0.861	0.400	0.016	2.614
ETL	0.310	0.888	-2.643	4.591
INV	10.286	117.157	0.106	3072.629

Table 1 presents the summary statistics. The mean percentage of the return on assets is 11.9% with a maximum of 69.9%. The average net working capital is 20.2% of the total assets. It is worth noting that it ranges from -40.3% to 81.2%, which means that some firms having negative net working capital, faced difficulties to finance their sales policy. On the other hand, some firms by exhibiting a net working capital ratio close to 80%, almost four times the sample’s average, may also applied wrong financial policy. The average inventory turnover was 10.2 times. However, it is interesting that some firms followed a very high turnover, having actually no inventories. The average equity to debt ratio is 31%, that is Greek listed firms finance their assets using one quarter equity and three quarters debt. However, there are firms with high equity and firms with very high indebtedness. The average sales to total assets ratio is 0.86, which means that the total assets turnover is less than one. Voulgaris, et al. (2004) estimated the same ratios for a sample of large Greek companies, listed in the Athens Stock Exchange and non-listed. If we compare those ratios with our estimations we see that the average in net-working capital and the return on assets of our sample is higher than those in Voulgaris et.al.(2004), while the sales to total assets and inventories are lower than those estimated by Voulgaris et al.(2004). These differences may firstly attributed to firms’ effect. Secondly, since the time span of our sample covers the period 1995-2000, different from the examination period of Voulgaris et al. (2004), time may also explain this difference. It is also worth noting that DeLoof (2003) estimated the days of inventories for Belgian firms to 46.6, which is closer to our estimations.

Table 2
Correlation Matrix

	LNSAL	LNBVE	NWC	OL	ETL	INV
LNSAL						
LNBVE	0.82					
NWC	0.002	-0.091				
OL	0.25	-0.21	0.15			
ETL	-0.048	0.35	0.55	-0.24		
INV	-0.006	-0.002	0.008	0.019	0.056	

Table 2 presents the Pearson correlation coefficients. Since the correlation coefficients are less than 0.5, it indicates non-existence of multicollinearity.

3.2 Empirical Results And Discussion

Table 3 presents the empirical estimations. We present the panel estimations with fixed and random effects and pooled OLS. The reported F- statistic under the fixed effect estimation suggests that the pooled OLS estimation is not appropriate in dealing with the data of our sample. The Hausman- test suggests that the hypothesis of correlation between the individual effects with the disturbance term is not statistically valid and therefore, the random effect procedure is more appropriate.

Table 3
Dependent Variable: ROA

Independent Variables	Fixed Effects (1)	Random Effects (1)	Pooled OLS (1)	Fixed Effects (2)	Random Effects (2)	Pooled OLS (2)
LNBVE	0.125 (1.391)	0.193 (0.365)	-0.00173 (0.472)			
LNSAL				-0.009 (0.914)	-0.0002 (0.058)	-0.0027 (0.739)
NWC	0.0315 (0.669)	0.0715* (1.687)	0.1225*** (2.861)	0.0384 (0.823)	0.0731* (1.728)	0.1219*** (2.853)
OL	0.1098*** (5.224)	0.1004*** (6.678)	0.1014*** (8.277)	0.094*** (5.202)	0.0992*** (6.644)	0.1047*** (8.071)
LEV	0.1037*** (2.638)	0.0986*** (2.754)	0.1032*** (2.821)	0.109*** (2.784)	0.0997*** (2.795)	0.1028*** (2.828)
ETL	0.0296*** (2.744)	0.0244*** (2.815)	0.0181** (2.386)	0.0362*** (3.863)	0.0255*** (3.138)	0.0174** (2.419)
INV	-0.0003 (0.610)	-0.0011** (2.519)	-0.0017*** (4.682)	-0.0003 (0.632)	-0.0011** (2.505)	-0.0017*** (4.629)
Constant			0.1426** (2.418)		0.1355* (1.628)	0.1558*** (2.681)
R2-adj.	0.56	0.22	0.24	0.56	0.22	0.24
LM-heteroscedasticity	0.685 (p=0.408)	0.0626 (p=802)	0.0161 (p=0.899)	0.854 (p=355)	0.105 (p=0.745)	0.0265 (p=0.87)
F-test(a,b=a _i ,b)	5.4132 (p=0.000)			5.3704 (p=0.000)		
Hausman Test		$\chi^2(7)=10.859$ (p=0.1449)			$\chi^2(7)=9.966$ (p=0.1905)	

Note: t-statistic in parentheses

* statistically significant at the 0.01 level , ** statistically significant at the 0.05 level , *** statistically significant at the 0.001 level ,

Although most of the previous studies have identified the size of the firm as a significant factor in explaining the variation of profitability, our empirical findings do not support those findings. It supports, however, Glancey(1998) who also found that size does not affect performance. This finding could be because the sample firms are large and the variability of the size variable is relatively small.

The estimated coefficient of sales to total assets ratio is statistically significant and has the theoretical sign. Thus, the efficient exploitation of the invested capital affects positively the return on assets.

The coefficients of the net working capital (NWC) and the synergetic effect (LEV) determine the total effect of the working capital management on performance. The estimated coefficients are both significant and

positive. This result is similar to that found in DeLoof and Jeger (1996). The estimated coefficient of the LEV is positive and close to 0.1. Financial leverage may lead to better operating performance and a higher ROA. According to these findings whenever financial leverage increases by one percent the impact of the net working capital on ROA increases by 10%. This result is plausible since the lack of own working capital is one of the major problems that Greek firms usually face. Thus, the access to credit, from financial institutions or suppliers, improves their efficiency and leads to higher profitability.

The estimated coefficient of the inventory turnover (INV) is statistically significant and has a negative sign. Firms, which follow a low inventory management, high inventory turnover, risk their sales volume since some customers may find difficult to be served due to low inventories. Therefore, high inventories turnover may lead to lower sales and consequently to low profitability.

The estimated coefficient of equity to debt ratio is statistically significant and positive. This result is similar to that found by Gleason et al (2000) for European retailers, Majumbar, and Chibber (1999) for domestic and foreign firms in India. The positive coefficient of the equity to debt ratio suggests that firms with higher equity than debt are more profitable than firms, which financed their assets with debt. The following reasons explain this finding. First, the Athens Stock Exchange exhibited a rapid increase during the examination period. An explosion in savings' flows to stock market followed this increase to stock market due to the expected positive prospects. Thus, the cost of financing through new equity was lower than the cost of debt issuing. The issuance of new equity, in almost all cases, did not significantly change the equity structure and consequently the management of the firms. Thus, the risk from issuing new equity was considered lower than the risk from new debt (bankruptcy cost, etc.). Therefore, firms, which proceeded to restructuring of their capital structure by increasing equity relative to debt, were rewarded with an increase in returns on assets.

Second, contrary to the agency cost hypothesis, financial institutions in Greece do not monitor management actions to secure debt repayment. Private and public banks do not relate the firm's performance with the security of the loan. They prefer the real estate guarantee. Therefore, debt is not related to better monitoring but to higher bankruptcy cost.

Finally, Voulgaris et al.(2002;2004) found a negative impact of net profits/sales ratio on total debt/ total assets ratio. The authors argue that large firms prefer retain earnings than debt as a source of financing assets. Our findings as far as the sign of the relation are similar to those found by Voulgaris et al. (2002; 2004). However, we believe that the causality is *vice versa*. Firm's management could not consider capital structure as a strategic aim or even objective *per se*. Capital structure is a strategic variable in the process to achieve the optimum firm's value in the end. Hence, the causality between profits and capital structure is one way from, capital structure to long run profits. Obviously, many empirical studies have recognized critical factors that affect capital structure and profits are among them (according to pecking order theory of Myers (1984)). However, we should not forget that the management considers these factors in order to determine the optimum capital structure with the criterion of the achievement of maximum long run profits.

4. CONCLUSIONS AND IMPLICATIONS

Using contemporary data, this paper investigated the relationship between capital structure, short run financial management and profitability. The analysis covered 130 industrial firms listed in the Athens Stock Exchange, the stock market of Greece, for the period 1995-2000.

Our findings, with respect to the impact of capital structure on returns on assets, are similar to those found in countries with financial sector similar the Greek one. One reason that explains this result is the culture of high uncertainty avoidance national culture and the pro-creditor commercial law. In such a case, managers consider that the bankruptcy cost or financial distress, for the firm and themselves, is high. In order to minimize these costs they choose low debt/high equity. A second reason is the restructuring of the capital structure in favor of equity in times of stock exchange expansion, because of the lower total cost of issuance new equity relative to debt. Since the stakeholders had better monitor the listed firms and since the banking sector has no incentive to monitor the debtor

due to the bankruptcy laws, managers are induced to apply better management and they are rewarded with higher returns on assets.

The net- working capital management has a positive impact on the returns on assets. Financial leverage intensifies this positive effect. Again, the cultural context explains this result. Short run policies bear less uncertainty than the long run ones. Therefore, managers are more willing to finance their working capital using leverage instead of debt for long run investments. Therefore, the impetus provided by the financial leverage on working capital improves the firm's profitability.

Finally, inventories management seems to play a significant role in the explanation of profitability. Our empirical findings show that high inventories turnover may lead to lower sales and consequently to low profitability.

Concluding, our results seem to be similar to those found by other authors for countries with different institutional setting, e.g. India, and different cultural setting, for example, Gleason et al. (2000). Our findings support the view that the theoretical and empirical findings concerning the role of capital structure on profitability in the industrial countries, may not necessarily hold in different settings.

5. SUGGESTIONS FOR FUTURE RESEARCH

Our findings differentiate from previous findings in developed economies with different cultural and social context. The national accounting methods applied so far have prevented the comparison between firms in different countries. The adoption of International Accounting Standards, at least by the OECD countries, provides the opportunity to test theories using data from firms in different social and cultural contexts.

NOTES

- (1) An earlier version of this paper was presented at the 9th International Conference of the Economic Society of Thessaloniki. We express our gratitude to T. Kessapidou for helpful comments. The usual disclaimer applies.
- (2) We also used the return on equity as a measure of profitability as a robust check. The results were similar to those found using returns on assets.
- (3) For methodology on synergetic effect, see Zinnes et al. (2001)

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