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Corporate governance and capital structure in the periods of financial distress. Evidence from Greece

Abstract

This study examines the relationship between corporate governance and capital structure employing data from the Athens Stock Exchange for the period 2005-2014. This period encompasses the sovereign debt crisis erupted in Greece at the end of 2009 and still continues to hit households and businesses alike. The results from the panel regression analysis signify the role of corporate governance structures in determining the capital structure of the Greek listed firms. In particular, the empirical results reveal a negative impact of board size on debt levels, which is weakened during the debt crisis period. In contrast, the presence of outside directors provides the appropriate certification to use more debt. Finally, growth opportunities and profitability are the two firm-specific factors which effect was weakened during the financially-constraint period.

Keywords: corporate governance, capital structure, Athens Stock Exchange, panel data.
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Introduction

Since the seminal study of Modigliani and Miller (1958) who asserted that the valuation of a company is independent from its capital structure, several studies have been conducted across the world. However, the Modigliani-Miller proposition was based on a world without taxes and other market frictions, which is far from being the actual business environment. Thus, the existence of taxes in the real world motivated several scholars to delve into the effects of taxes on firm value. The focus of the initial research was the impact of tax shield of interest expenses emanated from debt financing. The result of this extensive research was the evolution of the pecking order theory (POT) and the trade-off theory (TOT) which both attempted to reveal the determinants of capital structure leading to some extent to contradictory results.

The criticism on POT and TOT was that both theories have been put forward without taking into account corporate governance systems that affect corporate decisions regarding capital structure, dividend distribution, etc. The role of corporate governance as a system of structuring, operating and controlling a company has been magnified in cases of separation between ownership and management. At the same time, several corporate scandals have been brought to the light in the last two decades (e.g., WorldCom, Enron, Parmalat and Xerox), thus, initiating policy makers to design corporate governance mechanisms in an attempt to combat fraudulent practices and protect shareholders and investors alike.

As a natural response to instances of stock price manipulation and fraudulent practices occurred in the Greek capital market, the Hellenic Capital Markets Commission in cooperation with the Greek Ministry of Finance introduced the Corporate Governance Law 3016/2002 in May of 2002, which, for the first time, required the Greek listed companies to adopt a set of governance rules. In particular, the Corporate Governance Law set the minimum number of directors in the board to be three and 1/3 of the board members should be non-executive. Moreover, at least two of the non-executive board members should be independent. Finally, the Corporate Governance Law 3016/2002 required all listed firms to have an internal audit scheme.

The Corporate Governance Law 3016/2002 was considered as the minimal market intervention to set the rules of governing listed companies in Greece, however, with doubtful outcome. At the same time, the outbreak of the credit crunch found the Greek listed firms and the local financial system unprepared. Very soon the global financial crisis hit the Greek economy leading to dramatic decrease in wages, corporate profits, bank deposits and the value of household and business assets. Greek banks were excluded from the interbank market and the bank lending was limited and costly. The capital constraints imposed by the markets led almost 100 listed firms to delist from the Athens Stock Exchange and the rest of companies still struggling to survive. Under these harsh financial conditions, the capital structure of the Greek companies is alleged to have been altered since 2010 when the

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first austerity measures were imposed and the connection between the local financial system and the international financial markets was disrupted. Therefore, the investigation of the capital structure of the Greek listed firms calls for further research in order to detect the consequences of the debt crisis on the sources of finance.

The current study contributes to the pertinent literature by examining the capital structure determinants in a period 2005-2014 that covers much of the ongoing debt crisis inflicting Greece. The bulk of prior research concerning capital structure has been conducted before the outbreak of the global credit crunch, where economic conditions were favorable and investors' interest increasing. Hence, we are motivated to bring new evidence to the field by comparing the capital structure determinants in bear and bull market periods. Moreover, this study attempts to delve into the effects of corporate governance mechanisms on capital structure. Optimal corporate governance practices are alleged to exert influence on the strategic decisions of a company, such as external financing, that are taken at board level. Therefore, corporate governance structures with regards to board size, board composition and auditing schemes may have direct impact on capital structure decisions. So far, the relationship between corporate governance and capital structure has rendered mixed results implying that optimum corporate governance structures may differ from firm to firm and from market to market.

The rest of this paper is as follows: the first section presents the pertinent literature; the second section describes the dataset and methodology; the third section presents the empirical results; and, finally, the last section contains the concluding remarks.

1. Prior literature

1.1. Corporate governance factors. Pfeffer and Salancick (1978) were the first who showed that there is a significant relationship between capital structure and board size. However, Abor (2007) proved that this significant relationship is positive. In contrast, Berger et al. (1997) found that corporations which have many members on their board, in general, have low gearing levels. They assumed that a large board size tends to put pressure on management to pursue low leverage in order to increase firm performance. In Greece, Dasilas and Papasyriopoulos (2015) verified the negative effect of board size on total and short-term debt. Similarly, we expect a negative association of board size with debt levels.

The effect of outside directors (independent and non-executive board members) on capital structure has been well recognized in prior studies. In specific, Wen et al. (2002) found a negative relationship between outside directors and leverage. They attributed this negative relationship to the fact that better company monitoring is achieved when more outside directors are in the board of directors. This results in lower leverage to avoid the performance pressures linked with commitments to pay back large amounts of cash (Jensen, 1986). Morellec et al. (2012) asserted that board independence is negatively related to agency costs, since more independent directors provide stronger monitor of management. On the other hand, Pfeffer and Salancick (1978) found that a high proportion of outside directors is associated with high leverage supporting the idea that independent directors help firms to raise more debt through the reduction of information asymmetry, the enhancement of a firm's status and the recognition and exploitation of all available resources. Jensen (1986), Berger et al. (1997) and Abor (2007) also found a positive relationship between debt levels and outside directors.

The relationship between duality and capital structure has rendered mixed results. In particular, Fama and Jensen (1983) found a positive but non-significant relationship between duality and capital structure. Moreover, Abor (2007) found that there is a significantly positive relationship between duality and leverage. However, Forsberg (2004) asserted that firms with a two-tier leadership structure (non-duality) are more likely to employ the optimal amount of debt in their capital structures than firms with single-tier structure (duality). Therefore, we cannot predict the sign of the relationship between duality and leverage.

It is widely known that the certification provided by auditors signifies the reliability of financial reports. In the wake of Arthur Andersen collapse as one of the Big 5 audit companies, the remaining well-recognized auditors (i.e., KPMG, Ernst & Young, Deloitte and PWC) consist of the so-called Big 4s. These Big 4 auditors are alleged to apply stringent accounting and auditing rules when servicing their clients, thus, minimizing the possibility of coalition and fraudulent practices between auditors and clients. Therefore, Big 4s help audited firms to easily access external finance and increase debt levels. Dasilas and Papasyriopoulos (2015) found a positive effect of auditing provided by Big 4s on debt verifying assertions that Big 4 auditors are considered to provide higher audit quality than their non-Big 4 counterparts. Therefore, a positive relationship between firms audited by Big 4s and leverage is expected.

1.2. Firm-specific factors. According to Jensen (1986), the agency costs emanated from the

separation between management and ownership are also determinants of capital structure. Shareholders empower managers to properly run the firm in order to maximize firm's wealth and shareholders benefits. However, very often managers may take suboptimal corporate decisions in order to serve their own interests which may jeopardize firm value. To reduce this conflict of interest between shareholders and managers, Jensen (1986) suggests the increase of managers' ownership. The alignment of interests between shareholders and managers could lead to the increase of debt and the decrease of the firm's equity.

On the other hand, the phenomenon of "zero" debt firms leads to an alternative theory called "pecking order theory (POT)". Myers and Majluf (1984) introduced the POT based on the idea that managers have privy information vis-à-vis shareholders. The POT assumes that there is no specific level of debt that leads to the maximization of firm value. Managers with inside information regarding the value and the risk of the firm try to avoid projects with negative NPV. To achieve that, they prefer to finance the new projects with retained earnings. If these are not enough, a new debt is issued. The issue of new shares is considered a last resort by managers. This financing hierarchy is the essence of the POT.

Based on the above two theories, a gamut of firm-specific factors have been found to influence capital structure. The most prominent firm-specific determinant of capital structure is firm size, as measured by total assets, sales or market capitalization. The study of Friend and Lang (1988) was the first that revealed a positive relationship between firm size and debt levels. The authors attribute this positive relationship to the large size of some companies and their ability to diversify their operations and assets compared to small firms. This diversification leads to lower earnings volatility and indirect bankruptcy costs, allowing firms to utilize more debt (Degryse et al., 2012). Rajan and Zingales (1995) asserted that large firms are generally well-established with good performance. This helps them in reducing their reliance on debt and, therefore, a negative relationship between firm size and leverage is expected. Likewise, Abor (2007) found that there is a negative relationship between profitability and leverage. The results suggest that higher profits increase the level of internal financing. Therefore, firms that generate more internal funds generally tend to avoid debt. It is worth mentioning that both the POT and TOT predict a positive relationship between firm size and leverage. Therefore, a positive association between firm size and leverage is anticipated.

Asset tangibility as measured by the proportion of fixed assets to total assets is another factor that has been found to affect capital structure. Both the POT and TOT conjecture a positive relationship between asset tangibility and leverage. The rationale behind this positive relationship has to do with the use of tangible assets as collateral for more debt, especially long-term one. Collateral reduces agency problems and, therefore, mitigates information asymmetry problems (Degryse et al., 2012). Degryse et al. (2012), Mateev et al. (2013) and Dasilas and Papasyriopoulos (2015) stated that asset structure may have different effects on short-term and long-term debt. In particular, they refer to the study of Ortiz-Molina and Penas (2006) who argued that collateral and maturity are substitutes for reducing agency problems and found a negative relationship between tangibility and short-term debt and a positive relationship between tangibility and long-term debt. Similar relationships are expected in the present study.

The most arguable determinant of capital structure remains profitability, as measured by ROA, ROE or net profit margin (NPM). According to the TOT, a positive relationship between profitability and debt is expected, since profitable firms are less likely to bankrupt, enjoy low cost of debt and, thus, greater tax savings are associated with more debt. However, the POT predicts a negative relationship between profitability and debt. Degryse et al. (2012) argued that high levels of profitability are related with more internally-generated cash flow to finance investments and, therefore, with less need to raise additional debt. Prior Greek evidence is mixed. Psillaki and Daskalakis (2009) and Noulas and Genimakis (2011) found a positive relationship between profitability and leverage, while Dasilas and Papasyriopoulos (2015) found a negative relationship between profitability and leverage.

Growth opportunities have been alleged to affect debt levels. In specific, Myers (1977) was the first who proved that firms with growth opportunities are inclined to have low debt levels. However, the POT contends that there is a positive relationship between growth opportunities and leverage. In fact, firms with growth opportunities are more likely to raise new funds than firms without potential growth. Moreover, firms that grow are more likely to experience a strain on their internal funds and more likely to resort to external finance, preferably debt (Mateev et al., 2013). Consequently, we cannot formulate a clear relationship between growth opportunities and leverage.

Another variable that is alleged to affect capital structure is the age of a company from its establishment. According to the POT, the number of

years of operation helps firms to accumulate significant amount of retained earnings to finance investments, thus, minimizing the need for external finance. Noulas and Genimakis (2011) and Dasilas and Papasyriopoulos (2015) also tested the effect of company age on capital structure of the Greek listed firms and found a negative relationship. Similarly, we expect a negative relationship between the number of years of operation and leverage.

Baxter (1967) argued that a firm should not use more debt than the point, where the cost of debt becomes larger than the tax advantage. He also asserted that when firms increase their debt, they also increase their chance of bankruptcy due to the demand of larger risk premium from investors. Moreover, Miller (1977) demonstrated that even in the presence of taxes, the irrelevance theory may hold under certain conditions. DeAngelo and Masulis (1980) made an attempt to extent and generalize Miller's (1977) differential personal tax model by taking into account the existence of non-debt tax shields (NDTS) such as depreciation deductions and investment tax credits. They found that each firm has its own optimal capital structure where value is maximized. According to their study, to optimize their capital structure, firms have to take into account the tax benefits and agency and bankruptcy costs and try to hold these three in equilibrium. López-Gracia and Sogorb-Mira (2008) supported DeAngelo and Masulis' (1980) substitutability hypothesis, that is, non-debt tax deductions substitute for the tax shield benefits of debt and, therefore, a negative relationship between the firm's debt and non-debt tax shields was found. In contrast, Bathala et al. (1994) found a positive relationship between leverage and non-debt tax shields. Therefore, there is no clear indication regarding the sign of the relationship between leverage and NDTS.

2. Research design

2.1. Sample. We test the relationship between corporate governance and capital structure employing data from the Greek listed firms for the period 2005-2014. This period is further split into two sub-periods covering the pre-debt crisis period (2005-2009) and the debt crisis period (2010-2014). To form our final sample, we excluded firms belonging to the financial sector as well as utilities. Moreover, we excluded firms for which the financial year was different from the calendar one and lacked sufficient data. The above criteria rendered a final sample of 203 listed firms. Data for corporate governance were hand-collected by the annual reports, while fundamentals were extracted from Bloomberg.

2.2. Methodology. A strand of studies has employed three proxies to measure capital structure (see Rajan and Zingales, 1995; Psillaki and Daskalakis, 2009; Degryse et al., 2012; Dasilas and Papasyriopoulos, 2015). The most commonly used capital structure measure is the total debt ratio (DR), defined as the ratio of total liabilities to total assets. The other two capital structure ratios are the short-term ratio (SDR) defined as the short-term debt scaled by total assets and the long-term ratio (LDR) defined as the long-term debt scaled by total assets. The effect of corporate governance on capital structure is measured by four variables: (i) Board size measured by the logarithm of board members, (ii) Outside directors, that is the proportion of independent and non-executive directors in board, (iii) Duality taking the value of one when the positions of CEO and chairman are held by the same person and zero otherwise and (iv) Auditor which takes the value of one for firms being audited by Big 4s and zero otherwise. We also include firm-specific variables that have been used by prior studies to construe capital structure. These are: (i) Firm size measured by the logarithm of total assets, (ii) Tangibility which is the ratio of fixed assets to total assets, (iii) Profitability measured by the return on assets (ROA), that is, the earnings before interest and taxes scaled by total assets, (iv) Growth proxied by Tobin's Q which is the market value of equity divided by the book value of assets, (v) Age measured by the logarithm of the number of years of firms' operation and (vi) Non-debt tax shields (NDTS) which is the ratio of annual depreciation to total assets.

Following previous capital structure studies (e.g., Psillaki and Daskalakis, 2009; Dasilas and Papasyriopoulos, 2015), we employ panel data regressions to test the relationship between corporate governance, firm-specific factors and capital structure. In particular, we regress the three leverage measures (TDR, LDR, SDR) against the aforementioned independent variables using the Ordinary Least Squares (OLS) and controlling for year and industry effects. The general form of the model is as follows:

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 X_{it} + ... + \beta_n X_{it} + \varepsilon_{it}$$

$i = 1, ..., N, t = 1, ..., T,$

where i denotes the firm (cross section dimension) and t denotes time (time series dimension). Therefore, Y_{it} is the dependent variable of pooling N cross sectional observations and T time series observations, and X_{it} are the independent variables pooling N cross sectional observations and T time series observations. To check for differences in the capital structure determinants between pre-debt and

debt crisis periods, we regress the above model by interacting all independent variables with a crisis dummy that takes the value of 1 in the debt crisis period (2010-2014) and 0 in the pre-debt crisis period (2005-2009).

3. Empirical results

3.1. Regression results. Table 1 reports the results for the impact of the corporate governance and firm-specific factors on capital structure. We observe that the coefficient of size is positive in all regressions and statistically significant at the 1% level. This result is in line with the predictions of the POT and TOT suggesting that as the firm size increases, the use of debt is facilitated, since more assets can be utilized to take on more debt. On the other hand, the asset structure of the Greek listed firms is associated with less (more) total and short-term debt (long-term debt) corroborating prior evidence which claimed that high amounts of fixed assets can be used as collateral for taking more long-term loans. Similar results were found by Noulas and Genimakis (2011) and Dasilas and Papasyriopoulos (2015) employing data from Greece. According to the POT, profitability is negatively associated with leverage, since higher profits (and consequently more retained earnings) reduce the need for external financing. Our results are congruent with this prediction, as shown by the negative coefficient of profitability in all regressions. Moreover, our results are consistent with the prior Greek evidence found by Psillaki and Daskalakis (2009) and Noulas and Genimakis (2011).

Growth opportunities, as measured by Tobin's Q, have a negative and statistically significant impact on long-term debt. Similar finding is observed in Dasilas and Papasyriopoulos (2015) who attributed this negative link between growth and long-term debt in the high ownership concentration characterized the majority of the Greek listed firms where the major shareholder, often the founder of the company (or its family), prefers to provide the necessary funds to finance the expansion of his firm rather than resort to debt financing or new equity issuance. The negative relationship between growth opportunities and debt is also found by Psillaki and Daskalakis (2009) who employed Greek data. The number of years of operation (age) seems to be negatively related with debt, as it is shown in all regressions, though statistically significant in three of them. This result is in line with the POT according to which older firms can use prior retained earnings to finance investments, thus, minimizing the need for external finance. Similar result was found by Noulas and Genimakis (2011). Finally, NDTS display an insignificant effect on all debt measures similar to those found by Dasilas and Papasyriopoulos (2015).

When looking at the corporate governance factors, we observe a negative and statistically significant relationship between board size and all debt measures. This finding is in line with Berger et al. (1997) who also found that firms run by wide boards tend to take on less debt. More recently, Dasilas and Papasyriopoulos (2015) verified the negative effect of board size on total and short-term debt. As expected, the proportion of outside directors is positively linked with debt levels. This result implies that the strong presence of independent directors helps firms to raise more debt through the reduction of information asymmetry, the enhancement of a firm's status and the recognition and exploitation of all available resources. Jensen (1986), Berger et al. (1997) and Abor (2007) also found a positive relationship between debt levels and outside directors. Moreover, the results show that unitary leadership structures (duality) are associated with less total and long-term debt. Finally, the coefficient of auditor is negative and statistically significant when the dependent variable is TDR. This result is not a surprise, since the great majority of the Greek listed firms are being audited by SOEL which is the local leader in auditing services in Greece and few companies opt for Big 4s.

Table 1. Panel regression results

	TDR	TDR	LDR	LDR	SDR	SDR
Intercept	0.447***	0.431***	-0.104***	-0.105**	0.578***	0.579***
	(6.88)	(5.87)	(-2.58)	(-2.26)	(9.40)	(8.28)
Size	0.102***	0.145***	0.055***	0.070***	0.042***	0.074***
	(8.97)	(10.76)	(7.74)	(8.26)	(3.89)	(5.75)
Tangibility	-0.477***	-0.471***	0.076***	0.081***	-0.543***	-0.541***
	(-15.86)	(-15.89)	(4.04)	(4.35)	(-19.09)	(-19.15)
Profitability (ROA)	-0.013***	-0.013***	-0.002***	-0.001***	-0.011***	-0.011***
	(-20.25)	(-20.13)	(-3.95)	(-3.77)	(-18.58)	(-18.44)
Growth	-0.008	-0.007	-0.025***	-0.022***	0.011	0.012
	(-0.78)	(-0.64)	(-3.72)	(-3.23)	(1.11)	(1.12)

Table 1 (cont.). Panel regression results

	TDR	TDR	LDR	LDR	SDR	SDR
Age	-0.044***	-0.030***	-0.009	-0.005	-0.039	-0.031***
	(-3.61)	(-2.51)	(-1.20)	(-0.60)	(-3.45)	(-2.70)
NDTS	0.064	-0.106	0.147	0.114	-0.169	-0.288
	(0.32)	(-0.53)	(1.17)	(0.90)	(-0.89)	(-1.51)
Board		-0.155***		-0.032**		-0.133***
		(-6.05)		(-1.99)		(-5.45)
Outside		0.164***		-0.016		0.148***
		(3.87)		(-0.61)		(3.66)
Duality		-0.026**		-0.030***		0.003
		(-2.01)		(-3.69)		(0.28)
Auditor		-0.034**		-0.016		-0.021
		(-2.04)		(-1.56)		(-1.31)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	1,589	1,589	1,589	1,589	1,589	1,589
Adjusted R-squared	0.325	0.350	0.085	0.099	0.340	0.355
F-statistic	52.03***	46.06***	10.86***	10.14***	55.53***	47.07***

Notes: The dependent variables are: (i) the total debt ratio (TDR) which is defined as the total debt to total assets, (ii) the long-term debt ratio (LDR) which is defined as the long-term debt to total assets, (iii) the short-term debt ratio (SDR) which is defined as the short-term debt to total assets. The independent variables include: (i) Firm size which is measured by the logarithm of total assets, (ii) Tangibility which is calculated as the ratio of fixed (tangible) assets to total assets, (iii) Profitability which is proxied by the return on assets (ROA), that is, the earnings before interest and taxes scaled by total assets, (iv) Growth opportunities proxied by Tobin's Q which is the market value of equity divided by the book value of assets, (v) Age which is the logarithm of the number of years of firms' operation, (vi) NDTS which is the ratio of annual depreciation to total assets, (vii) Board which is measured by the logarithm of the number of board members, (viii) Outside which is measured by the proportion of independent and non-executive board members, (ix) Duality which is a dichotomous variable that takes the value of 1 when the same person holds the CEO and chairman positions and 0 otherwise, (x) Auditor which is a dummy variable that takes the value of 1 when one of the Big 4 auditing companies is the main auditor and 0 otherwise. T-statistics are in parentheses. *. ** . *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

The main contribution of the current study is the investigation of the relationship between corporate governance and capital structure during the crisis period. Table 2 reports the results from six regressions where all independent variables are interacted with a dummy variable that captures pre and debt crisis periods. As in Table 1, we find that firm size is positively associated with all debt measures displaying a significant coefficient at the 1% level in all regressions. Comparing the effect of firm size in the pre-debt and debt crisis period, we observe that this is not altered significantly between the two periods. Tangibility displays the same negative (positive) sign against TDR and SDR (LDR). However, the interaction of tangibility with the crisis dummy is statistically insignificant implying that the impact of the asset structure on debt is the same between the two periods. Profitability is still negatively linked with all debt measures, though its effect is weaker during the crisis period. This result is anticipated in the sense that profitability was severely inflicted during crisis years where the majority of the Greek listed firms undergo considerable losses and the use of retained earnings was less likely to occur. Growth opportunities are associated with less long-term debt as displayed by the negative coefficient in regressions 3 and 4. Moreover, the economic downturn prevalent in Greece since 2009 has adversely affected the growth opportunities of the Greek listed firms. Table 2 also reveals that as companies become more mature, the need for external financing is less. Nonetheless, the lack of debt financing is more evident during financially-constraint periods. Finally, NDTS seem to play weaker role in explaining short-term debt during the debt crisis period.

Looking at the interactions of crisis dummy with corporate governance variables, we see that the effect of board size on debt is weaker during the crisis period, while that of outside directors is stronger for the same period. At the same time, the leadership structure and auditors exert the same impact on all debt measures regardless of the period under examination. In sum, the above evidence suggests that the consequences of the debt crisis necessitated for more transparency and control offered by outside directors for companies seeking debt financing.

Table 2. Panel regression results in the pre-crisis and debt crisis periods

	TDR	TDR	LDR	LDR	SDR	SDR
Intercept	0.462***	0.444***	-0.112***	-0.111***	0.599***	0.596***
	(7.19)	(6.10)	(-2.74)	(-2.36)	(9.88)	(8.62)
Size	0.104***	0.138***	0.065***	0.079***	0.035**	0.061***
	(6.14)	(6.95)	(6.05)	(6.15)	(2.18)	(3.21)
Tangibility	-0.498***	-0.499***	0.089***	0.092***	-0.582***	-0.584***
	(-11.56)	(-11.74)	(3.24)	(3.37)	(-14.30)	(-14.46)
Profitability (ROA)	-0.008***	-0.008***	-0.002***	-0.002***	-0.006***	-0.006***
	(-6.60)	(-6.58)	(-2.48)	(-2.39)	(-5.29)	(-5.25)
Growth	-0.005	-0.003	-0.025***	-0.023***	0.016	0.017
	(-0.35)	(-0.23)	(-3.05)	(-2.74)	(1.34)	(1.37)
Age	-0.021	-0.011	-0.021**	-0.019*	-0.007	0.001
	(-1.31)	(-0.68)	(-2.07)	(-1.80)	(-0.48)	(0.04)
NDTS	0.421	0.321	0.068	0.074	0.258	0.165
	(1.56)	(1.20)	(0.40)	(0.43)	(1.01)	(0.65)
Board		-0.090**		-0.033		-0.067**
		(-2.52)		(-1.45)		(-1.97)
Outside		0.077		-0.027		0.080
		(1.29)		(-0.70)		(1.41)
Duality		-0.034*		-0.013		-0.024
		(-1.84)		(-1.11)		(-1.36)
Auditor		-0.038		-0.012		-0.032
		(-1.53)		(-0.77)		(-1.35)
Size*crisis	-0.010	0.001	-0.018	-0.016	0.006	0.013
	(-0.44)	(0.01)	(-1.24)	(-0.92)	(0.27)	(0.51)
Tangibility*crisis	0.038	0.059	-0.025	-0.020	0.070	0.085
	(0.64)	(1.01)	(-0.66)	(-0.53)	(1.26)	(1.54)
Profitability*crisis	-0.007***	-0.006***	0.000	0.000	-0.007***	-0.007***
	(-4.74)	(-4.54)	(0.50)	(0.51)	(-5.24)	(-5.05)
Growth*crisis	-0.104***	-0.102***	-0.006	-0.003	-0.104***	-0.102***
	(-4.03)	(-3.95)	(-0.35)	(-0.20)	(-4.26)	(-4.19)
Age*crisis	-0.038	-0.030	0.026*	0.029*	-0.057**	-0.055**
	(-1.58)	(-1.26)	(1.71)	(1.89)	(-2.55)	(-2.43)
NDTS*crisis	-0.623	-0.75*	0.168	0.066	-0.765**	-0.781**
	(-1.57)	(-1.90)	(0.66)	(0.26)	(-2.05)	(-2.09)
Board*crisis		-0.106**		0.002		-0.109**
		(-2.11)		(0.07)		(-2.28)
Outside*crisis		0.149*		0.024		0.111
		(1.79)		(0.45)		(1.40)
Duality*crisis		0.006		-0.032*		0.042*
		(0.25)		(-1.94)		(1.77)
Auditor*crisis		0.011		-0.006		0.023
		(0.33)		(-0.31)		(0.72)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	1,589	1,589	1,589	1,589	1,589	1,589
Adjusted R-squared	0.350	0.375	0.085	0.098	0.369	0.384
F-statistic	41.73***	33.89***	7.99***	6.96***	45.16***	35.20***

Notes: The dependent variables are: (i) the total debt ratio (TDR) which is defined as the total debt to total assets, (ii) the long-term debt ratio (LDR) which is defined as the long-term debt to total assets, (iii) the short-term debt ratio (SDR) which is defined as the short-term debt to total assets. The independent variables include: (i) Firm size which is measured by the logarithm of total assets, (ii) Tangibility which is calculated as the ratio of fixed (tangible) assets to total assets, (iii) Profitability which is proxied by the return on assets (ROA), that is, the earnings before interest and taxes scaled by total assets (iv) Growth opportunities proxied by Tobin's Q which is the market value of equity divided by the book value of assets, (v) Age which is the logarithm of the number of years of firms' operation, (vi) NDTS which is the ratio of annual depreciation to total assets, (vii) Board which is measured by the logarithm of the number of board members, (viii) Outside which is measured by the proportion of independent and non-executive board members, (ix) Duality which is a dichotomous variable that takes the value of 1 when the same person holds the CEO and chairman positions and 0 otherwise, (x) Auditor which is a dummy variable that takes the value of 1 when one of the Big 4 auditing companies is the main auditor and 0 otherwise, (xi) crisis is a dummy that takes the value of 1 during the debt crisis period (2010-2014) and 0 in the pre-debt crisis period (2005-2009). T-statistics are in parentheses. *. ** . *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Conclusions

The relationship between capital structure and corporate governance mechanisms has attracted much less attention compared to the classical determinants of capital structure. So far, the empirical results are mixed, thus, leaving the topic open for further research. The current study tries to re-examine the determinants of capital structure from a market that has undergone a prolonged depreciation of assets and a disruption from international financial markets.

Concerning the firm-specific determinants of capital structure, we find evidence that is consistent with the predictions of the pecking order theory. In specific, the size of the company is positively related with leverage, while tangibility, profitability and age are negatively related with total debt levels. Corporate governance variables are also significant determinants of capital structure. In specific, the number of board members is associated with less debt no matter short or long-term. In contrast, the proportion of outside directors is positively linked with more debt implying that, as the number of independent and non-executive board members increases at board level, additional debt is guaranteed to be used appropriately by companies. Regarding the leadership structure, the results show that duality deters companies from using more debt. Finally, the auditing service provided by Big 4s does not seem to offer the appropriate certification to use more debt. This result can be attributed to the low presence of Big 4s in the Greek market, where local leaders have the biggest market share in auditing services.

Regression analysis reveals that the negative effect of board size is less evident during the crisis period, while that of outside directors is stronger for the same period. The effect of leadership structure and auditing on debt levels seems unaltered in the pre- and debt crisis period. Finally, the consequences of debt crisis on capital structure are more evident when looking at the profitability and growth opportunities whose effects have weakened in the period between 2010 and 2014.

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