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Leverage and Returns in Three Countries of Southern European Region*

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Abstract:

This paper aims to investigate the impact of leverage on stock returns in three southern European countries, members of the Euro zone, Greece, Italy and Portugal from 2000 to 2010. The portfolio level analysis is performed both on a full sample basis and on an industry basis. The main contribution of our work is that we enhance the capital structure studies by broadening the limited work that has been accomplished on the base of leverage as an explanatory variable of returns. At the industry level analysis, a significant positive leverage effect is isolated only at Consumer Goods and Health Care industries in Italy and at Industrial sector in Portugal. In Greece, the industry effect of leverage is almost negligible.

Key Words: *Asset Pricing, Fama-French, Leverage, Industry, Beta, Price Earning Ratio, Book-to-Markets Ratio, Size, Momentum, Market Risk Premium, Milan Stock Exchange*

JEL Classification*: G11, G12, G32*

1. Introduction

This paper aims to shed light on the propositions put forward by Modigliani and Miller (1958, 1963) in their seminal work concerning the relationship between firm value and the financing decision. Debt is one of the principle sources of financial risk. Rational, risk-averse investors should demand a leverage premium, indicating an expected positive relationship between firm's leverage and stock returns.

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The vast majority of the studies in the area of capital structure investigate either the determinants of leverage or the existence of on optimal capital structure. Also, there are a few studies that examine the relationship between leverage and stock returns, with contradictory results, mainly in the USA and UK market oriented economies.

The aim of the present paper is to provide additional empirical evidence in the relationship between leverage and stock returns, which up to know has attracted limited attention in the literature. In doing so, we treat leverage as an independent factor, in line with previous work (Hamada, 1969; Bhandari, 1988; Korteweg, 2004; Dimitrov and Jain, 2006; George and Hwang, 2010), and examine whether leverage is an asset pricing factor that can explain stock return variability. Furthermore, we perform our analysis both on a full sample basis and on an industry basis in order to investigate if the impact of leverage on stock returns varies as to the firm's industry classification, since, industry class is generally considered as an important risk factor.

By using leverage as an independent factor the results of the present study can be converted to a practical tool, that is to say a successful investment (leverage) strategy. It is an aspect where limited work has been undertaken, and to the best of our knowledge it is the first to be undertaken in the Continental European, bank-oriented environment. The completely different politico-economical, legal, and institutional framework (the arm's length system of USA and UK vs. the control-based system of Continental Europe, Drobetz and Pensa 2007) the few previous studies have been carried out, justify the necessity of further exploration of the above relationship. Thus, the main objective of the present paper will be investigated with the use of a dataset from Greece and Italy, i.e. two countries from Continental Europe that has a bank oriented economy, contributing by this way the necessary accumulation of non-US and non-UK research.

The importance of country specific characteristics on the capital structure theme has been emphasized in the literature (Rajan and Zingales, 1995; Psillaki and Daskalakis, 2009; Oztekin, 2009; Brounen et al., 2006; Andritzky, 2003; Alves and Ferreira, 2011). Specifically, Antoniou et al. (2008) examined firms operating in capital market oriented economies and bank oriented economies and concluded that the capital structure decision of a firm is not only the product of it's own characteristics, but also the result of the environment and traditions in which it operates. Jong et al. (2008,) give evidence that creditor right protection, bond market development and GDP growth rate have a significant influence on capital structure issues, highlighting the importance of country–specific factors in the corporate finance field. Moreover, literature on the corporate governance issues suggest that there may be strong differences in corporate objectives between the "Anglo-American' and the Continental European Financial systems-the maximization of shareholders vs. the maximization of all stakeholders objective", Bancel and Mittoo (2004).

Furthermore, the objective of the present paper will be tested in a different market environment as Greece and Italy have differentiating characteristics from other countries of the Eurozone. Specifically, the above mentioned countries, while members of the Euro zone, have a medium stock market compared to other European stock exchanges in terms of market capitalization, number of firms listed and turnover volume.

Besides, the Greek, Italian and Portugal legal system is different from that of the Anglo-Saxon countries. For instance the American-British legal systems are based on common law. The Greek, Italian and Portuguese legal system (like the French, Spanish and German) is based on code law traditions (Antoniou et al., 2008; Alves and Ferreira, 2007). Furthermore, Greece, Italy and Portugal like Spain, and Ireland constitute a group of European countries which are in the middle of a debt crisis cyclone that threatens the European solidarity, the euro-monetary unity, the stability of the foreign exchange rate of the euro and last but not least the cleavage of the global economy. These economies have attracted international investors' attention and fear. The above-described institutional, economic, and legal environment in Greece, Italy and Portugal contains many idiosyncrasies that are not observable in other developed markets that make the investigation of the relationship between leverage and stock price performance very interesting.

In summary, the main contributions of this study are: a) We enhance the capital structure studies by broadening the limited work that has been accomplished on the base of leverage as an explanatory variable of returns, b) we use the leverage-mimicking factor, that has been applied before by Sivaprasad and Muradoglu (2010), in three countries of southern Europe with many idiosyncrasies and a debt crisis evolving, c) we provide evidence on the relationship between industry classification and the impact of leverage on stock returns and d) by focusing on the role of leverage as a strategic investment instrument or a separate risk factor, we cast light on a notion that has been ignored by the vast majority of European CEOs[3].If a return premium can be extracted from this research, a strategic instrument can be arisen.

The rest of the paper is organised as follows: Section 2 presents the literature review; section 3 describes the data collection and sample selection; section 4 details the methodology of the study; Section 5 presents the empirical results. Finally, Section 6 presents the conclusions.

2. Literature Review

MM argued that financing decisions do not matter in perfect capital markets, as the total value of a firm is the same irrespective of the debt equity ratio. However,

[3] Bancel et al. (2004, pp.13) "There is little evidence that debt is used for strategy or tactical reasons. For example, the support for issuing short term debt to capture higher returns for shareholders or for reducing the chance that firm will undertake risky projects is almost negligible"

in the real (imperfect) financial world, capital structure does matter as it is one of the key corporate decisions that affect the performance of firms, so investment decisions can not be independent from financial ones. However, limited studies that examine the relationship between leverage and returns have been undertaken with contradictory results.

Masulis (1983) showed that change in leverage is positively related to change in stock returns. He studied daily stock returns of all companies that have gone through pure capital structure changes. Bhandari (1988) provided evidence that leverage has a significant positive effect on expected common stock returns. His returns were adjusted for inflation. He controlled for idiosyncratic risk through size and beta. Fama and French (1992, 1996, 1999, 2002) and George and Hwang (2006) found that leverage based on book values is associated with lower average returns, while leverage based on market is associated with higher returns.

Korteweg (2004) found a negative relationship between leverage and returns. His work was also based on pure capital structure changes. Dimitrov and Jain (2006) revealed a negative effect of leverage changes on stock returns as well as on earnings-based measures of performance. Nissim and Penman (2003) also spotted a negative effect of leverage on profitability. They found that the portfolios with the lowest financial leverage perform better than portfolios with high financial leverage. They also found a negative effect of total leverage on future returns. Penman et al. (2007) found that returns are inversely related to leverage. They break-down the book-to price effect into two components, which represent the operating and financial risk respectively.

Sivaprasad and Muradoglu (2010) proved that capital structure is value relevant for equity investors, though the effect doesn't always move towards the same direction. They found different effects of leverage on returns at different levels of analysis. Muradoglu and Sivaprasad (2009) also proved an inverse relationship between book leverage and risk free, average portfolio returns. Gomes (2009) argues that the link between leverage and returns is more complex. It usually depends on the investment opportunities available to the firm. In the presence of financial market imperfections, leverage and investment are generally correlated so that high levered firms are also mature firms with relative more (safe) book assets and fewer (risky) growth opportunities. He concludes that investment and financing strategies must be examined jointly under the presence of financial frictions in the real markets world.

Garlappi and Yan (2011) show a hump-shaped relationship between default probabilities and expected returns and a momentum profits concentration among high credit-risk firms with significant expected shareholder recovery upon financial distress. They consider that the presence of potential shareholder recovery upon financial distress alters the risk structure of equity (non-linear dependence of equity beta) and causes the expected return to be hump-shaped in default probabilities. This non-monotonic relationship between risk and default probability in turn leads to hump-shaped value premia with respect to default probability.

George and Hwang (2010) argued that the negative relation between leverage and returns, found by the most researchers, (the so called distress risk puzzle) is not a market mispricing. They stated that the idea that equity risk is increasing in leverage relies on the frictionless markets assumption that makes investment and financing decisions separable, i.e. firms' capital structure choices are unrelated to asset risk. It is possible that market friction leads low leverage firms to have greater exposure to systematic risk, which dominates the amplification effect of leverage on equity risk. In this case, expected returns to low leverage firms will indeed be exposed to greater systematic risk than high leverage firms.

3. Data Collection and Sample Derivation

The sample used in the empirical tests consists of all non-financial companies listed on the Athens Stock Exchange (ASE), Borsa Italiana S.p.A (Milan Stock Exchange) and NYSE Euronext Lisbon from 1998/12-2009/3 for Greece and 2000/12 to 2010/3 for Italy and Portugal. Stock prices, index market prices, market capitalization, accounting data of the sample firms and risk-free rates of return are sourced from the Bloomberg Professional Database. The number of sample firms ranges from 163 in 1999 (139-49 in 2000)[4] to 224 in 2009 (227-59 in 2010), resulting in 28.524 (20,340-5.712) monthly observations similarly for Greece and Italy-Portugal respectively. All non-financial companies listed in year 2009 (2010) are included in the initial sample. Also, firms delisted from the ASE, MSE and Euronext Lisbon each year between 1999 and 2009 (2000 and 2010) are identified and consequently added to the initial sample. Companies that have changed name under the selected period are identified and treated as a single unit. Moreover, companies that either merged or are acquired over the study period are treated as a new unit following the event[5]. By this way, a selection bias towards historically successful firms is limited to a great extent. Listed companies, which have been under suspension for more than 50% of year t, are excluded from the final sample. Moreover, firms with no available financial information for book, market equity or leverage for at least twelve months in a row are not included in the sample either. Financial data is necessary for the construction of fundamental variables for the various portfolios of each year of the research period. Following Fama and French (1992), we also exclude companies with negative BE/ME ratios at 12/31 of year t–1. Last but not least, stock prices are adjusted for dividends and stock splits.

4. Methodology

[4] In parenthesis the Italian and Portuguese data is recorded.

[5] The number of firms that are de-listed, renamed, merged etc. each year is negligible (below ten). These firms are not used into the calculation of the HLMLL (leverage) factor, and since our analysis is not a panel one but a time series approach, we consider that there is no impact on the results arising from the different number of sample firms we have each year.

The present paper involves the performance of a step–wise regression analysis of the excess (ERim) returns of the sample stocks against the returns of five risk factors, i.e. market risk premium (MRPm), size (SMBm), value (HMLm), momentum (WMLm) and leverage (HLMLLm). The step–wise regression analysis approach will help us to observe the change in the explanatory power of the independent variables (i.e. statistical significance and numerical value of the parameters). Specifically, the following models will be tested: i) a univariate model involving the leverage risk factor, ii) a two factor model with the market risk premium added to the leverage risk factor, iii) the Fama and French Three Factor Model with the leverage factor, and iv) a five factor model involving all risk factors:

$$ERim = \alpha i + li\ HLMLLm + e\ i,t \quad (1)$$
$$ERim = \alpha i + bi\ MRPm + li\ HLMLLm + ei,t \quad (2)$$
$$ERim = \alpha i + bi\ MRPm + si\ SMBm + h\ i\ HMLm + li\ HLMLLm + ei,t \quad (3)$$
$$ERim = \alpha i + li\ HLMLLm + si\ SMBm + hi\ HMLm + bi\ MRPm + wi\ WMLm + ei,t \quad (4)$$

where:
αi = intercept
bi, si, hi, li = regression coefficients for portfolio i on a given explanatory variable
εim = Error term

The analysis is applied on: a) a full sample level and b) an industry level. The full sample level analysis involves the estimation of all 4 regression models for both: a) one portfolio consisting of all stocks and b) four portfolios where leverage is used as the criterion to allocate stocks[6]. At the industry level analysis the sample stocks are first allocated into 9 industries (Technology, Oil & Gas, Basic Material, Consumer Goods, Consumer Services, Health Care, Industrials, Telecommunications, Utilities) based on the Bloomberg Industry Classification and then the analysis involves the estimation of all 4 regression models for each industry separately.

4.1 Dependent Variable

In order to construct the four levered portfolios, for both the full sample level and the industry level analysis, all stocks at the end of December of each year t from 1999 to 2009 (2000 to 2010) are ranked on leverage and divided into four leverage groups (portfolio L1 consists of the low levered firms, while portfolio L4 consists of the high levered firms). A broad definition of Leverage is used (Total

[6] All statistical tests were also performed with eight leverage portfolios in order to check if our results are dependent on the number of portfolios. The findings for the eight levered portfolios are not different from those of the four portfolio analysis and are not presented here due to space considerations. The results can, however, be requested from the authors.

debt to Total Assets), in order to capture the substitutability between the various forms of debt (Schwartz, 1959). Having formed the four leverage portfolios we calculate their monthly logarithmic returns [ln(pt-1/pt)] and then we subtract the return of the 12 month (Greek, Italian and Portuguese) Government Treasury Bill adjusted on a monthly basis, in order to arrive at their excess returns from April of year t to March of year t+1. The excess returns on the four portfolios from April 1999 (2001) to March 2009 (2010) are the dependent variables in the time–series regressions. We use the excess return of the levered portfolio, in order to find out whether the mimicking portfolios capture common risk factor in returns associated with debt levels.

The monthly returns on the four portfolios are equal–weighted, as proposed by Lakonishok et al. (1994) and Sivaprasad and Muradoglu (2010). We choose to use equal weight portfolios due to the idiosyncrasies of the Greek, Italian and Portuguese Stock market, which are dominated, in terms of market capitalization, by a few very large companies as compared to the majority of the medium to small sized companies, providing more unbiased results. The calculation of monthly equal weighted excess returns for each portfolio starts at the end of April of year t in order to make sure that the financial statements of fiscal year t-1 are available to investors and thus avoid look–ahead bias. Moreover, the four portfolios are rebalanced each year of the selected period allowing for companies to move freely across portfolios depending on the ranking of their leverage.

4.2 Independent Variables

The market risk premium was calculated as the monthly logarithmic return of a market portfolio in excess of the risk–free rate for the period from April 1999 (2001) to March 2009 (2010). The market return is proxied by the the Athens Stock Exchange (ASE) General Index for Greece, the FTSE MIB Index for Italy and the PSI20 index for Portugal.[7] As a risk–free asset the return of the 12–month (Greek, Italian and Portuguese) government Treasury bill was used.

In order to calculate the returns of the SMB, HML, HLMLL and WML risk factors all stocks, at the end of March of each year t from 1999 to 2008 (2001 to 2009) were ranked: a) on size (capitalization) and allocated into two size groups (small and large), b) on their book equity to market equity ratio (BEt-1/MEt-1) at 31/12 of year t-1 and divided into three BE/ME groups (30% of stocks are allocated to the low BE/ME portfolio, 40% to the medium BE/ME portfolio and 30% to the high BE/ME portfolio), c) on their average monthly return of the previous year, from the highest to the lowest, and allocated into three momentum portfolios ("winner" portfolio is defined as the top 30% stocks with the highest last year average return, "loser" portfolio is defined as the bottom 30% stocks and the "medium" portfolio is defined as the middle 40% stocks), and d) on their leverage

[7] Detailed description of the indexes and eligibility criteria can be found at www.ase.gr , www.borsaitaliana.it and www.euronext.com

ratio at 31/12 of year t-1 and allocated into two leverage portfolios (Low and High). As a result, we form thirty six stock portfolios at the intersection of the two size, three BE/ME, three momentum and two leverage deciles.

The SMB factor is a portfolio that is long on small sized stocks and short on big sized stocks and is neutral on the momentum, value and leverage effect. The HML factor is a portfolio that is long on high BE/ME stocks and short on low BE/ME stocks and is neutral on the momentum, size and leverage effect. The WML factor is a portfolio that is long on winner stocks and short on loser stocks and is neutral on the size, value and leverage effect. The HLMLL factor is a portfolio that is long on high leverage stocks and short on low leverage stocks and is neutral on the size, momentum and value effect.

It must be noted that the portfolio construction procedure for the calculation of the risk factors returns was performed with annually rebalancing frequencies and the stocks within the portfolios were equally weighted. The annual rebalancing was adopted because the book value and the leverage of the sample firms is available once a year, at the end of each calendar year, thus, making the HML and HLMLL factors inconsistent if intra-annual balancing was followed.

Finally, all the necessary tests (Breusch-Godfrey Serial Correlation LM, Durbin-Watson, Ramsey reset, omitted variable, sample selection, heteroskedasticity, multicollinearity) that ensure that the OLS procedure yields to best linear unbiased (BLUE) estimators have been applied. Furthermore, our econometric models lacks of Endogeneity as indicated by the Hausman test.[8]

5. Empirical Results

The empirical results on the full sample level showed that the average portfolio leverage, for Greece, Italy and Portugal, respectively is as follows: of portfolio L1: 2.97%, 6.7% and 17.76%, of portfolio L2:17.3%, 20.52% and 33.29%, of portfolio L3: 31.46%, 31.17% and 43.51% and of portfolio L4:47.50%, 44.87% and 9.71%. In the same sequence, the average monthly return of portfolios L1, L2, L3 and L4 is : – 0.0144, -0.0379 and -0.035; -0.0148,-0,03729 and -0.032; -0.018, -0.03726 and -0.030; and finally -0,017, -0.0377 and -0.038, indicating a very low variability on portfolios' average returns, due to their leverage based ranking and a inverted humped shaped relationship.

The descriptive statistics of the explanatory variables (Table 1) show that all risk factors except the market risk premium have a mean and median value that marginally deviates from zero. Furthermore, the Augmented Dickey –Fuller test for unit root results indicate that our variables are stationary (Io).

[8] The results of the statistical tests are not reported due to space considerations; however, they can be requested from the authors.

Table 1. Descriptive Statistics of Explanatory Variables

	MRP	SMB	HML	WML	HLMLL
Panel A: Italy					
Mean	-0.034103***	-0.000510	-0.000430*	0.000850***	-0.000001
Median	-0.0243	-0.0014	-0.0005	0.0012	0.0000
Maximum	0.1567	0.0156	0.0112	0.0070	0.0082
Minimum	-0.2146	-0.0102	-0.0072	-0.0069	-0.0087
Std. Dev.	0.0629	0.0043	0.0025	0.0025	0.0033
Skewness	-0.4537	1.0094	1.0940	-0.2589	-0.2859
Kurtosis	3.9673	5.3157	7.8349	3.5102	3.3282
Jarque-Bera	7.9163**	42.4713***	126.7362***	2.3781	1.9557
Probability	0.0191	0.000	0.000	0.3045	0.3761
Sum	-3.6831	-0.0551	-0.0464	0.0918	-0.0089
Sum Sq. Dev.	0.4234	0.0020	0.0007	0.0007	0.0011
ADF	-3.89***	-9.109***	-8.922***	-10.046***	-7.355***
Observations	108	108	108	108	108
Panel B: Greece					
Mean	-0.000427	-0.000778**	-0.008982	-0.000000	-0.007939
Median	-0.000779	-0.000625	0.000485	-0.001141	0.000373
Maximum	0.022702	0.009627	0.173545	0.026147	0.038187
Minimum	-0.012407	-0.014841	-0.330641	-0.024924	-1.000000
Std.Dev.	0.004425	0.004219	0.079103	0.008265	0.091846
Skewness	1.282966	-0.876531	-0.820570	0.770211	-10.63348
Kurtosis	9.086487	4.960525	4.682594	4.747383	115.3499
Jarque-Bera	218.1466***	34.58441***	27.62230***	27.13124***	65373.96***
Probability	0.000000	0.000000	0.000001	0.000001	0.000000
ADF	(-9.51)***	(-9.26)***	(-9.63)***	(-9.46)***	(-10.99)***
Observations	120	120	120	120	120
Panel C: Portugal					
Mean	-0.000503	-0.000431	-0.032771***	-0.000320	0.000726
Median	-0.000204	-0.000296	-0.026263	-0.000698	0.000454
Maximum	0.021910	0.018578	0.076320	0.039745	0.022414
Minimum	-0.046504	-0.015261	-0.282191	-0.024057	-0.009090
Std. Dev.	0.008258	0.006334	0.061276	0.011042	0.004643
Skewness	-1.302908	0.015386	-1.206808	0.503830	1.059963
Kurtosis	11.00632	3.501361	5.725679	4.484081	6.756975
Jarque-Bera	319.0115***	1.135392	59.64690***	14.48043***	83.74024***
Probability	0.000000	0.566830	0.000000	0.000717	0.000000
ADF	-10.71027***	-11.76688***	-7.062573***	-9.659475	-12.93406***
Sum	-0.054289	-0.046511	-3.539252	-0.034556	0.078412
Sum Sq. Dev.	0.007297	0.004293	0.401760	0.013046	0.002306
Observations	108	108	108	108	108

Notes: The table reports the monthly summary statistics for all explanatory factors of the research model. HLMLL is the realized return on a portfolio that is long on high levered stocks and short on low levered stocks. MRP is the market risk premium. SMB is the realized return on a portfolio that is long on small sized firms and short on big sized firms. HML is the realized return on the portfolio that is long on high BE/ME stocks and short on low BE/ME equity stocks. WML is the realized return on the portfolio that is long on winner stocks and short on loser stocks. *, **, *** used for the mean test, Jarque-Bera (JB) test and for the Augmented Dickey Fuller (ADF) test denote, respectively, significance at the 10%, 5%, and 1% significance level.

5.1 Full Sample Level

5.1.1 One factor model

The empirical results of the one factor model (Table 2), involving the leverage risk factor, are approximately the same for Greece and Italy and showed a

positive relationship (except for L1 portfolio for Italy) between stock returns and leverage, both on the levered portfolio and the all stocks basis. However, (except for portfolio's L4 coefficient, which appears to be high, positive and significant in Italy) both the regression model and the rest coefficients are not significant, limiting the importance of the findings. In Portugal, however, returns increase in leverage only at the high debt levels. At the low debt levels, returns decrease in leverage. This non monotonic relationship is statistical and economic significant almost in all cases. The very low coefficient of determination indicates that leverage cannot explain by itself the cross-section of stock returns.

Table 2. One Factor Model on a Full Sample Basis

$ER_{im} = a_i + l_i\, HLMLL_m + e_i$						
Portfolio	**a**	**l**	**R^2 adj.**	**DW**	**F stat.**	**Prob.F**
Panel A: Italy						
(1)	-0.037980 (-5.68)***	-0.622162 (-0.30)	-0.0085	1.50	0.091606	0.762738
(2)	-0.037243 (-5.72)***	0.634682 (0.32)	-0.008480	1.40	0.100302	0.752091
(3)	-0.036994 (-5.62)***	3.218135 (1.59)	0.014062	1.44	2.526072	0.114957
(4)	-0.037364 (-5.74)***	4.839581 (2.42)**	0.043317	1.48	5.844785	0.01733**
ALL	-0.037395 (-5.78)***	2.01756 (1.01)	0.0003	1.43	1.030707	0.312304
Panel B: Greece						
(1)	-0.0137 (-1.01)	1.3876 (0.42)	-0.0056	1.59	0.3326	0.5651
(2)	-0.1375 (-1.28)	2.4730 (0.84)	-0.0000	1.78	0.9892	0.3219
(3)	-0.0160 (-1.39)	5.5198 (1.49)	0.0273	1.59	4.3498	0.0391**
(4)	-0.0150 (-1.33)	5.2707 (1.41)	0.0258	1.70	4.1529	0.0437**
ALL	-0.0146 (-1.35)	3.6628 (1.13)	0.0090	1.63	2.1373	0.1464
Panel C: Portugal						
(1)	-0.03579 (-5.72)***	-2.09453 (-2.75)***	0.0058	1.52	7.6061	0.00685***
(2)	-0.03225 (-5.73)***	0.4745 (0.69)	-0.0048	1.31	0.482	0.488
(3)	-0.02853 (-3.31)***	2.91864 (2.05)***	0.13	1.16	16.4826	0.00009***
(4)	-0.03664 (-6.16)***	3.57872 (4.95)***	0.18	1.59	24.5329	0.00000***
ALL	-0.0333 (-4.35)***	1.21934 (1.18)	0.025	1.16	3.7732	0.0547**

Notes: The table reports the results of the one factor model regression. ERim is the realized monthly return in excess of the risk free rate of the 4 levered and the all stocks portfolios, calculated from April 1st of the year following the announcement of the leverage ratios. HLMLLm is the realized monthly return on a portfolio that is long on high leveraged stocks and short on low levered stocks. Total number of observations are 120 for Greece and 108 for Italy and Portugal respectively. *, ** and *** denote statistical significance at the 10%, 5% and 1% level, respectively and t-statistics are in parentheses.

5.1.2 Two Factor model

The empirical results of the two factor model (Table 3), involving the leverage risk factor and the market risk premium, showed an increased explanatory power of the model as indicated by the adjusted coefficient of determination. Furthermore, HLMLL turned out to be a significant risk factor in the last two high leverage deciles both for Greece and Italy with a positive and big in magnitude coefficient. However, the coefficient is negative in the two low levered portfolios (L1 and L2) for Italy. The results for Portugal results are approximately the same as those of the previous model.

Table 3. Two Factor Model on a Full Sample Basis

$ER_{im} = a_i + b_i MRP + l_i HLMLL + e_i$							
Panel A: Italy							
P/F	**a**	**b**	**l**	**R^2 adj.**	**DW**	**F stat.**	**Prob.F**
(1)	-0.005576 (-1.45)	0.953867 (17.70)***	-2.128902 (-2.05)**	0.75	1.83	156.811	0.000***
(2)	-0.004689 (-1.39)	0.958251 (20.20)***	-0.878983 (-0.96)	0.80	1.98	204.188	0.000***
(3)	-0.003695 (-1.14)	0.98020 (21.51)***	1.669796 (1.90)*	0.82	1.98	238.271	0.000***
(4)	-0.005580 (-1.53)	0.935587 (13.94)***	3.361716 (3.41)***	0.77	2.12	178.0992	0.000***
ALL	-0.004885 (-1.50)	0.956976 (20.93)***	0.505907 (0.57)	0.80	1.98	221.579	0.000***
Panel B: Greece							
P/F	**a**	**b**	**l**	**R^2 adj.**	**DW**	**F stat.**	**Prob.F**
(1)	-0.004099 (-0.59)	1.129433 (13.12)***	0.262646 (0.17)	0.59	1.57	86.39	0.0000***
(2)	-0.00352 (-0.51)	1.196186 (13.96)***	1.281618 (0.83)	0.62	1.76	98.76	0.0000***
(3)	-0.00549 (-0.72)	1.236920 (12.97)***	4.287848 (2.51)***	0.60	1.66	89.36	0,0000***
(4)	-0.00459 (-0.63)	1.223787 (13.37)***	4.051840 (2.48)***	0.61	1.69	94.62	0,0000***
ALL	-0.00442 (-0.63)	1.196581 (13.7)***	2.470988 (1.58)	0.61	1.65	96.57	0.0000***
Panel C: Portugal							
P/F	**a**	**b**	**l**	**R^2 adj.**	**DW**	**F stat.**	**Prob.F**
(1)	-0.01234 (-2.32)***	0.7420 (9.22)***	-3.81689 (-6.39)***	0.47	2.15	49.29	0.0000***
(2)	-0.00516 (-1.56)	0.85699 (17.20)***	-1.51473 (-4.1)***	0.73	2.4	148.88	0.0000***
(3)	-0.0009 (-0.24)	0.87434 (15.4)***	0.88909 (2.11)***	0.73	2.04	145.167	0.0000***
(4)	-0.01661 (-3.051)***	0.63374 (7.69)***	2.10766 (3.45)***	0.47	2.13	48.59	0.0000***
ALL	-0.00875 (-2.78)***	0.777 (16.32)***	-0.58371 (-1.65)	0.72	2.14	139.95	0.0000***

Notes: The table reports the results of the MRP plus the leverage factor model regression. ERim is the realized monthly return in excess of the risk free rate of the 4 levered and the all stocks portfolios, calculated from April 1st of the year following the announcement of the leverage ratios. MRP is the realized monthly return of the market and leverage risk premium. HLMLLm is the realized monthly return on a portfolio that is long on high leveraged stocks and short on low levered stocks. Total number of observations are 120 for Greece and

108 for Italy and Portugal respectively. *, ** and *** denote statistical significance at the 10%, 5% and 1% level, respectively and t-statistics are in parentheses.

5.1.3 Fama and French three factor plus leverage model

The next model involves the regression of the three factors of the Fama and French model plus the HLMLL leverage factor model against the excess returns of the sample stocks (Table 3). The regression equation overall was statistically significant, as indicated by the F-statistic. The alpha intercept was negative at all leverage deciles and on the full sample level.

The coefficients of the market risk premium, size and value factor are positive almost in all cases and all investigated countries. Furthermore, MRP effect is very significant at all leverage quartiles as far as at the full sample. Size effect is also statistically and economically significant for almost all quadrants similarly in Greece and in Italy. However, in Portugal size is a statistically insignificant factor. The HML factor is significant at the majority of cases in Greece, where as in Italy and Portugal is significant at the low debt levels quartiles (L2 and L1, respectively)

The results for the leverage factor for Italy and Portugal are similar with those we extract from the previous model. On the contrary for Greece we observe a change in the sing and in the direction of the significance of the leverage coefficient. It becomes negative and significant in the first two low leverage quartiles (from positive and significant in the high leverage quartiles presented in the previous model). Furthermore, we evidenced an even higher coefficient of determination, which means that the explanatory power of the model increased as we included the additional risk factors.

Table 4. Fama-French 3 Factor + Leverage factor Model on a Full Sample Basis

$$ER_{im} = a_i + b_i MRP + s_i SMB + h_i HML + l_i HLMLL + e_i$$

Panel A: Italy

P/F	a	b	s	h	l	R^2 adj.	DW	F stat.	Prob.F
(1)	-0.0045 (-1.18)	0.9534 (17.36)***	1.4114 (1.70)*	-0.6337 (-0.44)	-1.5065 (-1.38)**	0.76	1.79	80.42	0.0***
(2)	-0.0035 (-1.10)	0.9843 (21.19)***	2.3098 (3.29)***	2.3158 (1.90)*	-0.4728 (-0.51)	0.82	1.92	115.31	0.0***
(3)	-0.0023 (-0.74)	0.9929 (22.16)***	2.2804 (3.36)***	0.6590 (0.56)	2.3679 (2.66)***	0.84	1.94	132.56	0.0***
(4)	-0.0042 (-1.53)	0.9481 (18.50)***	2.1956 (2.83)***	0.6751 (0.50)	4.0265 (3.96)***	0.79	2.14	96.16	0.0***
ALL	-0.0036 (-1.16)	0.9697 (21.32)***	2.0493 (2.97)***	0.7540 (0.63)	1.1037 (1.22)	0.82	1.95	120.26	0.0***

Panel B: Greece

P/F	a	b	s	h	l	R^2 adj.	DW	F stat.	Prob.F
(1)	-0.00924 (-2.15)***	1.061304 (11.29)***	6.07389 (7.06)***	3.134748 (1.43)	-3.60848 (-2.19)***	0.82	1.87	132.76	0.0000***
(2)	-0.00878 (-1.93)*	1.126554 (14.62)***	6.25906 (6.08)***	3.181474 (1.66)	-2.71459 (-1.77)*	0.84	1.96	162.94	0.0000***
(3)	-0.01233 (-2.2)**	1.143972 (14.16)***	5.49199 (4.68)***	5.502308 (2.49)***	1.170124 (0.50)	0.80	1.90	120.14	0,0000***

Table 4. Fama-French 3 Factor + Leverage factor Model on a Full Sample Basis (cont'd)

P/F	a	b	s	h	l	R^2 adj.	DW	F stat.	Prob.F
(4)	-0.01052 (-1.82)*	1.144227 (13.63)***	5.83516 (4.68)***	4.212307 (1.90)*	0.505006 (0.20)	0.81	2.10	129.35	0,0000***
ALL	-0.01022 (-2.11)	1.119014 (14.15)***	5.91501 (5.68)***	4.007709 (1.99)**	-1.16198 (-0.61)	0.83	1.95	150.09	0.0000***
Panel C: Portugal									
P/F	**a**	**b**	**s**	**h**	**l**	**R^2 adj.**	**DW**	**F stat.**	**Prob.F**
(1)	-0.0101 (-1.88)	0.8294 (9.24)***	0.1683 (0.26)	2.77157 (2.59)**	-2.92668 (-4.70)***	0.52	2.40	30.28	0.0000***
(2)	-0.0051 (-1.46)	0.8506 (14.52)***	0.11152 (0.26)	-0.6280 (-0.90)	-1.6739 (-4.12)***	0.73	2.44	73.94	0.0000***
(3)	-0.0015 (-0.40)	0.8699 (13.13)***	-0.4116 (-0.86)	1.2544 (1.59)	1.15338 (2.51)***	0.73	2.07	73.60	0,0000***
(4)	-0.014 (-2.46)***	0.7176 (7.58)***	0.4953 (0.72)	1,.5047 (1.33)	2.7057 (4.12)***	0.49	2.16	26.62	0,0000***
ALL	-0.0077 (-2.36)***	0.8169 (15.01***	0.0909 (0.23)	1.2256 (1.89)	-0.18536 (-0.49)	0.73	2.12	74.96	0.0000***

Notes: The table reports the results of the Fama and French plus the leverage factor model regression. ERim is the realized monthly return in excess of the risk free rate of the 4 levered and the all stocks portfolios, calculated from April 1st of the year following the announcement of the leverage ratios. MRP is the realized monthly return of the market and leverage risk premium. SMBm is the realized monthly return on a portfolio that is long on small sized stocks and short on high sized stocks. HMLm is the realized monthly return on a portfolio that is long on high BE/ME stocks and short on low BE/ME stocks. HLMLLm is the realized monthly return on a portfolio that is long on high leveraged stocks and short on low levered stocks. Total number of observations are 120 for Greece and 108 for Italy and Portugal respectively. *, ** and *** denote statistical significance at the 10%, 5% and 1% level, respectively and t-statistics are in parentheses.

5.1.4 Five factor model

The final model involved the regression of the excess returns of the levered portfolios against the four factors of the model proposed by Carhart (1997) plus the leverage factor. The empirical results showed (Table 4), once again that the overall regression is statistically significant, indicating that the risk factors used in the model explain the return of the sample stocks. Furthermore, the adjusted R2 of the regression model is higher than the preview ones, indicating that the inclusion of the HLMLL leverage mimicking factor improves the explanatory power of the model.

Table 5. Carhart Four Factor + Leverage Factor Model on a Full Sample Basis

$ER_{im} = a_i + b_i MRP + s_i SMB + h_i HML + w_i WML + l_i HLMLL + e_i$									
Panel A: Italy									
P/F	**a**	**b**	**s**	**h**	**w**	**l**	**R^2 adj.**	**DW**	**F stat.**
(1)	-0.0043 (-1.23)	0.903 (11.89)***	1.032 (1.20)	-0.776 (-0.43)	-2.343 (-1.47)	-1.161 (-1.07)	0.75	1.81	65.25***
(2)	-0.0035 (-1.08)	0.974 (17.42)***	2.232 (3)***	2.286 (1.87)*	-0.481 (-0.32)	-0.402 (-0.42)	0.81	1.92	91.47***
(3)	-0.002 (-0.69)	0.951 (17.79)***	1.959 (2.75)***	0.538 (0.46)	-1.984 (-1.42)	2.660 (2.93)***	0.83	1.95	107.49***
(4)	-0.0041 (-1.14)	0.9127 (11.19)***	1.924 (2.63)***	0.573 (0.40)	-1.67 (-1.05)	4.274*** (3.94)	0.78	2.12	77.22***
ALL	-0.003 (-1.11)	0.935 (17.18)***	1.786 (2.47)**	0.655 (0.55)	-1.621 (-1.14)	1.343 (1.45)	0.82	1.94	96.75***
Panel B: Greece									
P/F	**a**	**b**	**s**	**h**	**w**	**l**	**R^2 adj.**	**DW**	**F stat.**
(1)	-0.008 (-2.07)**	1.049 (11.17)***	5.868 (6.70)***	3.699 (1.66)	0.107 (5.21)***	-2.082 (-2.08)**	0.82	1.78	110.55***
(2)	-0.008 (-1.82)*	1.109 (14.92)***	5.967 (5.71)***	3.982 (2.14)**	0.152 (7.84)***	-2.431 (-1.663)*	0.86	1.80	143.86***
(3)	-0.011 (-2.11)**	1.124 (14.29)***	5.158 (4.32)***	6.417 (2.95)***	0.174 (5.73)***	1.494 (0.67)	0.81	1.76	105.06***
(4)	-0.009 (-1.73)*	1.124 (13.85)***	5.50 (4.33)***	5.129 (2.36)**	0.175 (5.33)***	0.829 (0.35)	0.83	1.91	114.33***
ALL	-0.009 (-2.10)**	1.102 (14.29)***	5.623 (5.29)***	4.807 (2.42)**	0.153 (6.17)***	-0.879 (-0.48)	0.85	1.80	131.31***
Panel C: Portugal									
P/F	**a**	**b**	**s**	**h**	**w**	**l**	**R^2 adj.**	**DW**	**F stat.**
(1)	-0.00816 (-1.72)	0.78493 (8.00)***	0.62372 (0.99)	1.63212 (1.47)	-3.8150 (-3.61)***	-2.8079 (-5.36)***	0.58	2.15	30.92***
(2)	-0.0044 (-1.35)	0.8347 (14.42)***	0.2745 (0.79)	-1.03583 (-1.52)	-1.3655 (-2)***	-1.6314 (-2.73)***	0.74	2.40	61.93***
(3)	-0.0009 (-0.24)	0.856 (12.90)***	-0.2686 (-0.55)	0.8966 (1.1)	-1.1978 (-1.59)	1.190676 (2.60)***	0.74	2.09	60.28***
(4)	-0.0133 (-2.33)**	0.7012 (7.37)	0.6638 (0.95)	1.008 (0.92)	-1.4113 (-1.31)	2.7497 (4.19)***	0.49	2.18	21.79***
ALL	-0.0067 (-2.49)**	0.79419 (13.53)***	0.3233 (0.90)	0.644 (0.90)	-1.9474 (-2.90)***	1.343 (1.45)	0.76	2.16	67.85***

Notes: The table reports the results of the Carhart plus the leverage factor model regression. ERim is the realized monthly return in excess of the risk free rate of the 4 levered and the all stocks portfolios, calculated from April 1st of the year following the announcement of the leverage ratios. MRP is the realized monthly return of the market and leverage risk premium. SMBm is the realized monthly return on a portfolio that is long on small sized stocks and short on high sized stocks. HMLm is the realized monthly return on a portfolio that is long on high BE/ME stocks and short on low BE/ME stocks. HMLm is the realized monthly return on a portfolio that is long on high BE/ME stocks and short on low BE/ME stocks. HLMLLm is the realized monthly return on a portfolio that is long on winner stocks and short on loser stocks. Total number of observations are 120 for Greece and 108 for Italy and Portugal respectively. *, ** and *** denote statistical significance at the 10%, 5% and 1% level, respectively and t-statistics are in parentheses.

The above results once again verified the significant role of MRP and SMB factors in explaining stock returns. The coefficients of the market risk premium and

SMB, are statistically significant in most of the cases and remain stable in terms of sign and magnitude as in the previous regression models for Greece, and Italy alike. Size effect remains an insignificant factor in Portugal.

From the above tables, it is shown that the value effect is significant in most cases in Greece and insignificant in Italy and Portugal almost in all cases. Furthermore, in Greece the loading of the momentum factor is positive and very significant, whereas in the rest countries, turns to be negative -insignificant in Italy but significant at the low debt portfolios and at the full sample in Portugal.

So, Greek as well as Italian investors do take under consideration the market risk premium and the size effect in discriminating between levered companies. In the Portuguese market although market risk premium is a factor of great importance, like in the above pair countries, size is not (statistically and economically) a significant investors-guide variable. Besides, the value effect is important in Greece whereas it's almost negligible in Italy and Portugal. In conclusion, a lucrative momentum strategy is traced only in Greek market.

The leverage mimicking factor HLMLL is negative in the first two (low leverage) quartiles, while it changes sign and becomes positive in the remaining two quartiles of high levered firms, in all countries, revealing that the relationship between leverage and returns is negative for the low levered firms and positive for the high levered ones. However, the statistical and economical significance are placed in the low debt portfolios in Greece (in which we spot significant, negative and big in magnitude leverage coefficient) and in high debt portfolios in Italy (in which we isolate very significant, positive and big in magnitude leverage coefficient). In Portugal, the abovementioned relationship is significant in all quartiles. The high levered firms earn considerable superior returns in Italy and Portugal. A 1% increase in leverage-at the L4 decile- is associated with a 4.27 % increase in returns in Italy and a 2.75% in Portugal respectively.

A delicate hint, about a non monotonic relation between book leverage and risk-free excess returns, is given. This is in line with Garlapi et al. (2011) who isolate in a simple equity valuation model the amplifying effect of leverage on the book-to-market effect and empirically show a hump-shaped relationship between default probabilities and expected returns and a momentum profits concentration among high credit-risk firms with significant expected shareholder recovery upon financial distress. They consider that the presence of potential shareholder recovery upon financial distress alters the risk structure of equity (non-linear dependence of equity beta) and causes the expected return to be hump-shaped in default probabilities. This non-monotonic relationship between risk and default probability in turn leads to hump-shaped value premia with respect to default probability and predicts a concentration of momentum profits among firms with poor credit quality.

Thus, our work reveals that, financial flexibility is a considerable investment-guide factor, in southern European region. Leverage is a risk factor that is priced and investors do demand greater returns for the companies with lower financial flexibility (the high leverage firms). The results are in line with related

surveys (Bancel et al.; 2004, Brounen et al.; 2006), according to which, financial flexibility is the most important factor influencing the debt policy of European managers.

The negative coefficient of the leverage factor, found at the Low Levered quartiles, has been spotted by several researchers, which have named this phenomenon "distress risk puzzle". George et al. (2010) argued that the negative relation between leverage and returns is not a market mispricing. They suggest that equity risk is increasing in leverage relies on the frictionless markets assumption that makes investment and financing decisions separable. It is possible that market friction leads low leverage firms to have greater exposure to systematic risk, which dominates the amplification effect of leverage on equity risk. In this case, expected returns to low leverage firms will indeed be exposed to greater systematic risk than high leverage firms. Working on this base they empirically proved that the "puzzle" can be explained by a rational model, albeit one with market frictions.

Caskey et al. (2010), having confirmed the "anomalous" finding of Penman et al. (2007), attribute the in question negative relation to market inefficiency. They argue that the market does not seem to fully understand the information contained in excess leverage about future fundamentals (especially investments) and under-levered firms earn superior risk adjust returns. We find that in the Italian and Portuguese market, the information contained in leverage is integrated in stock prices and investors of high levered firms earn superior returns.

5.2 Industry Level

5.2.1 One factor model

The empirical results of the one factor model (Table 5) involving the leverage risk factor, show a positive (but insignificant in most cases) relationship between stock returns and leverage, almost in all industries, for all countries. Nevertheless, the very low coefficient of determination indicates that leverage cannot explain by itself the cross-section of industry stock returns.

Table 6. One Factor Model on an Industry Basis

$ER_{im} = a_i + l_i\, HLMLL_m + e_i$						
Panel A: Italy						
Industry	**a**	**l**	**R^2 adj.**	**DW**	**F stat.**	**Prob.F**
Basic Materials	-0.0341 (-4.22)***	4.1714 (1.68)*	0.020	1.44	2.809	0.097*
Consumer Goods	-0.0386 (-6.11)***	3.0545 (1.57)	0.013	1.37	2.4693	0.119
Consumer Services	-0.0448 (-5.61)***	1.1677 (0.47)	-0.007	1.55	0.226	0.635
Health Care	-0.02617 (-4.21)***	6.2845 (3.16)***	0.082	1.39	10.585	0.00***
Industrials	-0.03170 (-5.32)***	2.3902 (1.31)	0.0065	1.27	1.703	0.194
Oil and Gas	-0.0275 (-4.82)***	2.2203 (1.27)	0.0055	1.73	1.593	0.209

Table 6. One Factor Model on an Industry Basis (cont'd)

Industry	a	l	R^2 adj.	DW	F stat.	Prob.F
Technology	-0.0473 (-5.19)***	-1.3037 (-0.47)	-0.0073	1.73	0.216	0.642
Telecoms	-0.0490 (-4.57)***	-0.1406 (-0.04)	-0.0094	1.87	0.001	0.966
Utilities	-0.0332 (-6.10)***	2.2557 (1.34)	0.0075	1.66	1.812	0.181
Panel B: Greece						
Industry	**a**	**l**	**R^2 adj.**	**DW**	**F stat.**	**Prob.F**
Basic Materials	-0.014147 (-1.32)	3.76757 (1.16)	0.011	1.67	2.349	0.127
Consumer Goods	-0.01862 (-1.55)	4.5596 (1.22)	0.013	1.97	2.6377	0.107
Consumer Services	-0.01346 (-1.05)	2.3493 (0.81)	-0.003	1.58	0.663	0.417
Health Care	-0.01255 (-1.96)	4.25111 (1.43)	0.0087	1.61	2.055	0.154
Industrials	-0.0171 (-1.51)	2.1449 (0.84)	-0.0025	1.92	0.699	0.4046
Oil and Gas	-0.0046 (-0.49)	-0.72735 (-0.34)	-0.0075	2.19	0.118	0.731
Technology	-0.0229 (-1.83)	3.9742 (1.40)	0.0081	1.75	1.969	0.163
Telecoms	-0.0099 (-0.77)	3.0596 (1.07)	0.0012	1.85	1.138	0.288
Utilities	-0.0052 (-0.61)	0.0163 (0.09)	-0.0106	1.68	7.73E-05	0.993
Panel C: Portugal						
Industry	**a**	**l**	**R^2 adj.**	**DW**	**F stat.**	**Prob.F**
Basic Materials	-0.030232 (-5.01)***	1.647924 (2.25)**	0.04	1.5	5.07	0.02638**
Consumer Goods	-0.034737 (-5.52)***	-0.031037 (-0.04)	-0.009	2.1	0.001	0.967636
Consumer Services	-0.030055 (-3.8)***	0.178201 (0.19)	-0.009	1.7	0.034	0.852276
Industrials	-0.037826 (-4.85)***	3.561080 (3.76)***	0.11	1.5	14.14	0.000***
Oil and Gas	-0.019903 (-1.01)***	4.877997 (1.61)	0.04	1.9	2.61	0.114196
Technology	-0.037536 (-4.55)***	1.210286 (1.3)	0.004	1.7	1.45	0.230094
Telecoms	-0.035562 (-4.49)***	1.907004 (2)**	0.03	1.4	3.94	0.049731*
Utilities	-0.032468 (-5.2)***	2.337049 (3.08)***	0.07	1.4	9.51	0.0026***

Notes: The table reports the results of the one factor model regression on an industry basis. ERim is the realized monthly return in excess of the risk free rate of each industry portfolio, calculated from April 1st of the year following the announcement of the leverage ratios. HLMLLm is the realized monthly return on a portfolio that is long on high leveraged stocks and short on low levered stocks. Total number of observations are are 120 for Greece and 108 for Italy and Portugal respectively. *, ** and *** denote statistical significance at the 10%, 5% and 1% level, respectively and t-statistics are in parentheses.

5.2.2 Five factors model

The results of the final five factor model the industry level reveal that the above paradigm can explain a large proportion of returns volatility, as indicated by the adjusted R2 of the regression model in all countries, which is quite high. The alpha coefficient is negative but insignificant for the most industries.

The coefficient of the market risk premium is positive and statistically significant for all industries in Greece, Italy and Portugal, as well (Table 8). The SMB, is also positive, almost for all industries, in the three countries but statistically significant only for four industries in Italy, for six in Greece and two in Portugal. The HML coefficient is positive but insignificant for the majority of industries in Greece and Italy. In Portugal, we detect a statistical and economical significant value effect, in Technology industry (which is generally considered as a low levered sector, with great investment opportunities).The momentum factor exhibited a mixed sign across the industries in Italy and is negative and statistical significant in only three cases. In Portugal, past period's price performance is also negative, almost in all industries and very significant in four of them whereas in Greece is positive almost in all cases and very significant in six industries.

Table 7. Carhart and Leverage Five Factors Model on an Industry Basis

$ER_{im} = a_i + b_i MRP + s_i SMB + h_i HML + w_i WML + l_i HLMLL + e_i$									
Panel A: Italy									
Industry	**a**	**b**	**s**	**h**	**w**	**l**	**R^2 adj.**	**DW**	**F stat.**
Basic Materials	-0.003 (-0.05)	1.094 (6.55)***	4.167 (3.54)***	6.057 (2.42)**	3.467 (1.09)	2.366 (1.28)	0.57	1.98	28.808***
Consumer Goods	-0.0065 (-1.95)*	0.929 (16.09)***	1.996 (2.6)**	2.504 (1.98)*	-0.647 (-0.43)	1.993 (2.03)**	0.79	2.06	80.590***
Consumer Services	-0.002 (-0.76)	1.023 (11.95)***	0.702 (0.85)	-1.994 (-1.16)	-6.764 (-3.956)***	1.244 (1.12)	0.82	1.98	100.83***
Health Care	-0.0034 (-0.62)	0.692 (7,35)***	0.078 (0.06)	2.958 (1.44)	-0.581 (-0.23)	4.811 (3)***	0.47	1.87	19.897***
Industrials	-0.002 (-0.66)	0.887 (14.95)***	2.344 (2.97)***	2.331 (1.79)	1.133 (0.73)	1.261 (1.25)	0.75	1.74	63.758***
Oil & Gas	-0.003 (-0.87)	0.751 (9.83)***	0.5781 (0.57)	0.472 (0.28)	2.218 (1.11)	0.803 (0.62)	0.54	2.25	26.419***
Technology	-0.002 (-0.37)	1.091 (14.19)***	1.514 (1.04)	-3.759 (-1.17)	-6.346 (-2.59)**	-0.802 (-0.50)	0.71	2.08	54.209***
Telecoms	-0.0008 (-0.11)	1.152 (9.19)***	-0.86 (-0,5)	-4.275 (-0.89)	-8.813 (-2.89)***	-0.115 (-0.05)	0.61	1.91	34.333***
Utilities	-0.006 (-1.94)*	0.741 (12.19)***	2.907 (3.59)***	0.439 (0.33)	0.251 (0.16)	2.027 (1.96)	0.68	2.10	46.798***

Table 7. Carhart and Leverage Five Factors Model on an Industry Basis (cont'd)

Panel B: Greece

Industry	a	b	s	h	w	l	R^2 adj.	DW	F stat.
Basic Materials	-0.009 (-1.85)	1.048 (12.29)***	4.135 (3.57)***	6.290 (3.26)***	0.191 (7.98)***	0.528 (0.30)	0.80	2..21	93.42***
Consumer Goods	-0.0155 (-2.08)**	1.0271 (13.11)***	6.7739 (4.95)***	5.9619 (1.86)*	0.1419 (4.27)***	-0.5761 (-0.20)	0.71	2.33	58.72***
Consumer Services	-0.008 (-1.18)	1.1432 (9.20)***	5.4824 (4.01)***	5.6594 (1.66)	0.224 (7.40)***	-2.0422 (-0.83)	0.69	1.84	54.84***
Health Care	-0.0065 (-0.84)	1.2311 (11,86)***	4.6218 (2.24)**	5.7111 (2.02)**	0.1719 (5.59)***	0.4116 (0.15)	0.68	1.85	52.03***
Industrials	-0.009 (-1.37)	1.160 (11.97)***	4.144 (2.96)***	1.8139 (0.62)	0.1095 (4.46)***	-1.7751 (-0.86)	0.68	2.14	52.21***
Oil & Gas	0.002 (0.37)	0.80585 (8.33)***	-1.6829 (-1.37)	0.059 (0.26)	-0.00831 (-0.10)	-0.313 (-0.16)	0.37	2.5	15.21***
Technology	-0.0159 (-2.06)**	1.1708 (11.9)***	4.6534 (3.72)***	3.6956 (1.56)	0.1861 (2.24)**	-0.0977 (-0.05)	0.64	2.11	44.11***
Telecoms	0.0036 (0.27)	0.9998 (4.44)***	0.1788 (0,06)	-6.8706 (-1.49)	0.0113 (0.23)	1.0242 (0.21)	0.30	1.53	11.01***
Utilities	0.001 (0.20)	0.8269 (12.19)***	0.2642 (0.19)	3.429 (1.58)	0.55288 (0.67)	0.68752 (0.40)	0.66	1.55	37.87***

Panel C: Portugal

Industry	a	b	s	h	w	l	R^2 adj.	DW	F stat.
Basic Materials	-0.0053 (-1.01)	0.7273 (8.25)***	0.328 (0.50)	-0.4376 (-0.40)	-2.129 (-2.14)***	0.0769 (0.12)	0.50	2	22.57***
Consumer Goods	-0.0073 (-1.34)	0.7578 (8.32)***	3.2655 (4.89)***	1.7515 (1.56)	-2.6735 (-2.6)***	0.6045 (0.96)	0.48	2.4	21.31***
Consumer Services	-0.0082 (-0.97)	0.6646 (4.7)***	0.59801 (0.58)	3.455 (1.98)***	-1.8025 (-1.13)	0.2871 (0.29)	0.21	2.09	6.75***
Industrials	-0.0087 (-1.19)	0.8850 (7.27)***	-0.0308 (-0.03)	0.639 (0.47)	-1.71869 (-1.25)	1.81729 (2.17)***	0.47	2.12	20.35***
Oil & Gas	0.0357 (1.86)*	1.3760 (5.30)***	1.50202 (0.89)	0.0489 (0.014)	4.18473 (0.98)	-0.96382 (-0.35)	0.44	2.18	7.20***
Technology	-0.0021 (-0.32)	0.91618 (8.22)***	1.50709 (1.85)*	-5.008 (-3.65)***	-5.7381 (-4.56)***	-1.6883 (-2.20)***	0.56	2.23	28.35***
Telecoms	-0.00108 (-0.21)	1.08956 (12.77)***	-0.14546 (-0.23)	-1.4041 (-1.34)	-2.59177 (-2.69)***	-1.06586 (-1.81)*	0.73	2.09	57.83***
Utilities	-0.00531 (-1.02)	0.80442 (9.28)***	0.51432 (0.81)	-1.26533 (-1.19)	-1.49654 (-1.53)	0.34326 (0.58)	0.57	2.07	29.23***

Notes: The table reports the results of the Fama and French plus the leverage factor model regression on an industry level. ERim is the realized monthly return in excess of the risk free rate of each of the industry portfolios, calculated from April 1st of the year following the announcement of the leverage ratios. MRP is the realized monthly return of the market and leverage risk premium. SMBm is the realized monthly return on a portfolio that is long on small sized stocks and short on high sized stocks. HMLm is the realized monthly return on a portfolio that is long on high BE/ME stocks and short on low BE/ME stocks. HMLm is the realized monthly

return on a portfolio that is long on high BE/ME stocks and short on low BE/ME stocks. HLMLLm is the realized monthly return on a portfolio that is long on winner stocks and short on loser stocks. Total number of observations are 120 for Greece and 108 for Italy and Portugal respectively. *, ** and *** denote statistical significance at the 10%, 5% and 1% level, respectively and t-statistics are in parentheses.

The empirical results for the leverage factor in the three countries reveal an insignificant relation between leverage and returns for most industries. Italian Health Care and Basic Materials and Portuguese Industrials are the only industries with positive, big in magnitude and statistical significant coefficients. Furthermore, we spot a negative and significant leverage effect in Portuguese Technology and Telecommunication industry. Andritzky et al. (2003), included Technology and Telecommunications in a group of young or risky industries which are anticipated to have lower debt levels. It's notable that in Italy, Health Care, is the second higher levered industry after Utilities (30.65% and 30.81% respectively) and Telecommunication and Technology are among the lowest levered industries in all countries.

The results from the industry level analysis are in line with those of the full sample level, in which we find negative but insignificant relation between leverage and returns at the low levered deciles and positive and statistical significant for the high levered deciles. Nevertheless, the results for Health Care Industry may be influenced by the small number of Italian companies in the sample. The same holds for the Portuguese sector analysis.

6. Conclusions, Policy Implications and Suggestions for Further Research

The present paper aimed to investigate the relation between leverage and stock returns, both at a full sample level and an industry level. Regression analysis was employed in a Greek, Italian and Portuguese database to address the controversy in the results of the earlier empirical studies.

It is shown that the market risk premium keeps the scepters of significance among the traditional idiosyncratic risk factors. The size risk factor has a positive and statistically significant relationship with stock returns similarly in Greece and Italy. Unexpectedly, in Portugal, size is not a significant risk factor. The momentum and value risk factors have in most cases an insignificant relation (negative the first and positive the second) with equity returns in Italy. In Portugal the aforementioned variables follow the same sign pattern with the difference that momentum effect is very significant at the low leverage quartiles, as well as at the full sample. On the contrary, in Greece, both value and momentum effects on returns are positive and significant.

The leverage risk factor presents also a strong - positive (statistically significant in Italy and Portugal) relationship with stock returns, at the medium and high levered deciles and a negative (statistically and economical significant in

Greece and Portugal) relationship with stock returns, at the low and medium levered deciles, in all investigated countries. Our results overall are in line with the findings from the literature (Arditti, 1967; Hall et. al., 1967; Fama and French, 1992; Kortweg, 2004; Dimitrov and Jain, 2008; George and Hwang, 2010; Penman, 2007; Sivaprasad & Muradoglu, 2007, 2010).

The industry level analysis results are approximately the same as those from the full sample level. The market risk premium and size factor had a positive and statistically significant relationship with stock returns. For the leverage factor, the results reveal a positive but insignificant relation with excess returns for most industries. Italian Health Care and Basic Materials and Portuguese Industrials Sectors are the only industries with positive, big in magnitude and statistical significant coefficients. Finally, Portuguese Technology and Telecommunications industries appear a negative and significant leverage coefficient.

Our results indicate that in the Southern European Region, leverage is a risk factor that is priced, although in a different way, among the three investigated countries. We find that in the Italian and Portuguese market, the information contained in leverage is integrated in stock prices and investors of high levered firms earn considerable superior returns.

In order to further investigate and validate the relationship between leverage and stock returns we should extent the sampling period and expand the research to other European countries. Furthermore, one could consider integrating additional macro and micro variables into the research model. Besides, one could examine stock behavior according to the distinction between short-term and long-term debt. Finally, one could work on the quasi-concept of investigating the explanatory power of leverage on the human capital's cost based on some recent results which reveal a significant impact of leverage on employees' payment.

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