

Determinants of the Capital Structures of European SMEs

GRAHAM C. HALL

Manchester Business School,

Booth Street West, Manchester, M15 6PB, England

PATRICK J. HUTCHINSON

School of Accounting, Finance and Entrepreneurship,

University of New England, Armidale, NSW 2351, Australia.

NICOS MICHAELAS

Head of Research & Analysis Department, Lefkoniko Stockbrokers Ltd.

5 Costi Palama, 3rd Floor, 1096 Nicosia, PO Box 23582, 1684 Nicosia, Cyprus

Address for correspondence: Graham Hall, Manchester Business School, Booth Street West, Manchester M15 6PB, England.

e-mail: G.Hall@man.mbs.ac.uk

RUNNING TITLE: EUROPEAN SMES' CAPITAL STRUCTURE DETERMINANTS

Determinants of the Capital Structures of European SMEs

ABSTRACT

The aim of this paper is to examine the degree to which the determinants of SMEs' capital structures differ between European countries. The study is based on data for four thousand SMEs, five hundred from each of eight European countries. Regressions were run using short-term and long-term debt as dependent variables and profitability, growth, asset structure, size and age as independent variables. A key feature of this paper is the use of restricted and unrestricted regressions to isolate the country-effect from the firm-specific-effect. The results show that variations are likely to be due to country differences as well as firm-specific ones.

Keywords: capital structure, debt, SMEs, country-effect, firm-specific-effect

Determinants of the Capital Structures of European SMEs

1. INTRODUCTION

An important question in finance is the extent to which financial behaviour is affected by country-specific factors. There has been a great deal of research in the area of international accounting and finance. This has included work on capital structure (Remmers et al., 1974; Rajan and Zingales, 1995; and Prasad et al., 1996), and on the international differences in capital structure norms (Aggarwal, 1981), the effect of national culture on the capital structure of firms (Park, 1998), and the relationship between capital structure and ownership and governance structures (Kester, 1986; and Thompson and Wright, 1995). These studies have covered countries in the European Union (Prasad et al., 1996), the USA and Japan (Kester, 1986), the "G-7" countries (Rajan and Zingales, 1995) and others (Park, 1998). The studies have derived hypotheses from various sources such as Hofstede's classification of national culture using the dimensions of Power Distance, Uncertainty Avoidance, Individualism-Collectivism and Masculinity-Femininity (Hofstede, 1980). Another theory is premised on differences, especially in corporate governance, between English speaking countries with a tradition of liberalism and capitalism, and other countries that result in differences in capital structure (Thompson and Wright, 1995).

The results of the above research have been mixed in terms of establishing consistent differences between countries in the influences on their capital structures. A reason for this could be that whilst capital structures vary from country to country this might be due to variations in the determinants of capital structure, that operate at the firm level, rather than

real differences between countries. For example, firms in a particular country may have higher debt levels than another but this may be because they include a higher proportion of newer firms that need to borrow more. This is similar to the argument proposed by Myers (1984) that differences in capital structure between firms in different industries are likely to be due to firm-specific attributes rather than industry differences.

A major gap in the research has been in the consideration of international differences in capital structures and their determinants for small and medium sized enterprises (SMEs). This may be due to several reasons but one must almost certainly be lack of data for unlisted firms. The lack of research using SME data is a significant gap because it is likely that capital structures of SMEs, that have no stock market listing, will demonstrate greater inter-country variability than will large firms. Unlike listed firms, SMEs will not have access to international capital markets and not be subject to international scrutiny and norms.

Research on capital structure has considered the relative merits of pecking order theory versus static trade-off theory (Shyam-Sunder and Myers, 1999; and Watson and Wilson, 2002), pecking order theory and the managerial hypothesis (Griner and Gordon, 1995) and agency and tax considerations (Walsh and Ryan, 1997). A related issue is how well the pecking order theory explains dividend policy (Adedeji, 1998). The determinants of capital structure for UK firms have been investigated by Bennett and Donnelly (1993), Ozkan (2001) and, for UK SMEs by Chittenden et al. (1996) and Jordan et al. (1998). The aim of this paper is to build on previous research by looking at differences in capital structure for European SMEs in a way that will establish whether any differences are due to country-specific factors or to differences between countries in firm-specific factors.

Our hypotheses with regard to individual determinants of SME capital structure are identified below. The hypothesis with regard to international differences is, in the null form, that national differences have no direct effect on SME capital structure. That is to say differences in SME capital structures between countries are due to firm-specific variations in determinants not country-specific ones. The section that follows will develop our hypotheses and explain our choice of variables, with reference to relevant literature, and discuss their relationship with capital structure. In subsequent sections we present descriptive data on all variables, describe our method of analysis and present our results and conclusions.

2. DEVELOPMENT OF HYPOTHESES

In the seminal work of Modigliani and Miller (1958) the values of firms would be unaffected by their capital structure. When corporation taxes and the tax deductibility of interest payments are taken into account (Modigliani and Miller, 1963), firms maximise their values by maximising the use of debt. The “static trade-off” theory (Myers, 1984) modifies the latter by trading-off the benefits of debt against the costs from the increased likelihood of bankruptcy resulting from higher levels of debt.

The Pecking Order Theory (POT) was first proposed by Myers (1984), drawing on the work of Jensen and Meckling (1976) on agency theory, Myers and Majluf (1984) on information asymmetry and of Ross (1977) on signalling theory. Its particular relevance to small and medium sized firms has been emphasised by Ang (1991), Holmes and Kent (1991) and Cosh and Hughes (1994). The thrust of POT is that firms will have a preference (pecking) order for different types of finance, reflecting their relative costs with the ranking being: retained profits, debt and external equity. This, in turn, reflects the relationship of the firms with their different suppliers of capital in terms of agency, information asymmetry and signalling

considerations.. Problems arise in raising debt capital but even more in raising external equity hence its being ranked last. However, Shyam-Sunder and Myers (1999) do not claim that the POT is the whole story and point out that actual financing decisions reflect many motives, forces and constraints.

Information asymmetry and signalling costs play a large part in borrowing and lending decisions and will be lower the less arms length the relationship between banks and their business customers and will be higher the greater the tradition of secrecy, even duplicity, of business decision-makers in their attitude towards outsiders to their firms. Both factors may vary between countries. Moreover, even the reliance on banks for external finance may vary with the size of countries' informal capital markets. In societies in which loans and equity can be readily raised from friends and relatives there will be less need to look to banks for finance and, therefore, to face the costs associated with principal-agent relationships.

Variables which have been included in previous empirical studies (Chittenden et al., 1996; Jordan et al, 1998; and Ozcan 2001) and which can be used for an inter-country comparison are profitability, growth, asset structure, size and age. With regard to profitability, it is assumed that internally generated funds are preferred to externally generated funds and so profitability will be negatively correlated with the amount borrowed by firms in both the long and short-term. In other words, a firm which can generate more earnings will borrow less, all things being equal (Adedeji, 1998).

Growth is likely to put a strain on retained earnings and push the firm into borrowing. However, as Myers (1977) has argued, growth opportunities can produce moral hazard situations and small-scale entrepreneurs have an incentive to take risks to grow. The benefits

of this growth, if realised, will not be enjoyed by lenders who will only recover the amount of their loans, resulting in a clear agency problem which will be reflected in increased costs of long-term debt which can be mitigated by increased use of short-term debt.

The willingness of banks to provide long-term debt will be constrained by the possibility that it will not be recovered. As argued above principal-agent relationships may differ between countries but, nevertheless it would be surprising if increases in collateral were not welcomed by lenders within even cultures in which the nature of principal-agent relationships were of the most benign form. Hence our expectation is firstly that the amount of long-term debt will be correlated to asset structure (the proportion of assets that are fixed) that can be provided as collateral. And secondly, on the assumption that the length of loan is likely to be matched to the length of life of assets used as collateral (Myers, 1977), that long-term debt will be increased at the expense of short-term where long-term assets are available.

With regard to size, because much of the data which small firms will supply to banks, in their applications for loans, will not be readily verifiable the problem of information asymmetry that they face will be particularly acute. Even in the absence of this asymmetry, lending to small firms will represent a significant risk because of the strong negative correlation between firm size and the probability of insolvency (Berryman, 1982). This is partly the result of the limited portfolios of management skills suggested by Hall (1995) and partly the result of the attitudes of financial institutions towards small firms. Because of these factors, and because of the fixed transaction costs of securing long-term debt, we would expect smaller firms to have more problems raising long-term debt and so long-term debt would be positively related to firm size. In the absence of long-term debt, smaller firms would make more use of short-term debt and so this would be negatively related to size.

With regard to age, our hypothesis is that the older a firm is, the more it is able to accumulate funds and the less it will need to borrow either long-term or short-term. In other words, a new firm will not have had time to retain funds and may be forced to borrow. Consequently age is likely to be negatively related to both short-term and long-term debt.

To summarise; if there were no country-specific influences on capital structure we would expect the following hypothesis to be not rejected and the strength of relationships to be uniform across countries:-

H_{1a} profit will be negatively related to long-term debt

H_{1b} profit will be negatively related to short-term debt

H_{2a} growth will be negatively related to long-term debt

H_{2b} growth will be positively related to short-term debt

H_{3a} asset structure will be positively related to long-term debt

H_{3b} asset structure will be negatively related to short-term debt

H_{4a} size will be positively related to long-term debt

H_{4b} size will be negatively related to short-term debt

H_{5a} age will be negatively related to long-term debt

H_{5b} age will be negatively related to short-term debt

3. METHODOLOGY

Our study is based on financial data for four thousand, incorporated SMEs, five hundred each from eight countries: Belgium, Germany, Spain, Ireland, Italy, Netherlands, Portugal and the UK. An SME was defined as having fewer than 200 employees. The data were supplied by Dun and Bradstreet for 1995. Because of variation in lags in reporting for the various countries, the complete set of data for all countries was not available until several years later. The year involved (1995) was the same for all countries and corresponds to the period reported for several, complementary studies recently published in this journal (Jordan et al., 1998; Ozkan, 2001; and Watson and Wilson, 2002).

All of the variables used in the study are based on book value in line with the argument by Myers (1984) that book values are proxies for the value of assets in place. Following Remmers et al. (1974), the two dependent variables were:

- Short Term Debt Ratio (STD) = short-term debt to total assets
- Long Term Debt Ratio (LTD) = long-term debt to total assets

Short-term debt is defined as the portion of the company's total debt repayable within one year. This includes bank overdraft, bank loans payable within a year and other current liabilities. Long-term debt is the company's total debt repayable beyond one year. This includes long-term bank loans and other long-term liabilities repayable beyond one year such as directors' loans, hire purchase and leasing obligations. Total debt has not been considered since others (Van der Wijst and Thurik, 1993; and Chittenden et al., 1996) have shown that total debt masks two opposite effects for long-term and short-term debt for some of the

explanatory variables; in this study these would be asset structure, size and growth. Our explanatory variables were:

| | | |
|-----------------|---|--|
| Profitability | = | ratio of pre-tax profits to sales turnover |
| Growth | = | percentage change in sales turnover in the previous three years |
| Asset Structure | = | ratio of fixed assets to total assets |
| Size | = | total assets (pounds sterling equivalent) |
| Age | = | 1995 (date of survey) less the year of incorporation |

The use of fixed assets as a measure of collateral can be disputed since it does not capture the use of private collateral provided by the owner, which has been shown by Reid and Jacobson (1988) to be the most important source of collateral for smaller companies. However, they also showed that fixed assets were commonly used as collateral and certainly fixed assets would appear empirically to be strongly related to capital structure (Chittenden et al., 1996; and Jordan et al., 1998).

The correlation matrix did not suggest a high degree of first order collinearity between the explanatory variables. In any case multi-collinearity produces estimates that are inefficient but unbiased (Maddala, 1988 p 226-27). This inefficiency reduces with sample size and a sample of 4,000 would seem likely to provide sufficient degrees of freedom for this inefficiency to be fairly minimal, as is suggested by the generally low standard errors in our results.

The statistical methods closest to those applied in this paper are cross-sectional analyses of the determinants of debt ratios: Kester (1986), Friend and Lang (1988), Chittenden et al.

(1996), Michaelas et al. (1999) and Hall et al. (2000). These cross-sectional analyses have generally been set up as linear regression models with a leverage measure (usually total debt to book value of assets) as the dependent variable. Explanatory data apart from age have been drawn from income statements and balance sheets. We use regression analysis to test the hypotheses discussed above by means of employing various independent variables, which are regressed against the two measures of leverage.

To determine whether there is any country effect an F test was applied to the difference in the residual sum of squares (RSS) of a restricted and an unrestricted model. In the former our dependent variables were regressed against profitability, growth, asset structure, size and age. The unrestricted model included these variables and both country constant dummies and country slope dummies for each of the explanatory variables, an addition of seven constant and thirty-five slope dummies. Establishing for which variables their impact on long-and/or short-term debt varied between countries was achieved through comparison of the RSS of the unrestricted model with that of five restricted models in which the dummies of each variable were omitted respectively. The F test takes the form (Gujurati, 1995):

$$F = \frac{(RSS_R - RSS_U) / m}{(RSS_U) / (n - k)}$$

Where: RSS_R = Residual Sum of Squares in the Restricted Models

RSS_U = Residual Sum of Squares in the Unrestricted Models

m = number of linear restrictions

n = number of observations

k = number of variables in the unrestricted model

4. RESULTS

(i) Leverage ratios and values of determinants

Table I shows that the proportion of total assets consisting of short-term debt was between 45 and 50 per cent for most countries with Italy (63%) and Germany (38%) the outliers. Greater variability was displayed with respect to long-term debt, with Germany the most heavily reliant (28%), and the Netherlands (2%) hardly at all.

Table I
Average Leverage Ratios Across Countries

| Country | Leverage: Short Term Debt | Leverage: Long Term Debt |
|-------------|------------------------------|-----------------------------|
| Belgium | 44.81% | 14.11% |
| Germany | 38.22% | 28.46% |
| Spain | 49.79% | 15.45% |
| Ireland | 47.51% | 12.25% |
| Italy | 62.96% | 14.53% |
| Netherlands | 46.32% | 2.06% |
| Portugal | 48.00% | 11.78% |
| UK | 48.31% | 9.74% |

One-Way Analysis of Variance

| <i>F</i> -Statistic | 37.673* | 97.644* |
|---------------------|---------|---------|
|---------------------|---------|---------|

* Significant at 0.05 level of confidence

Table 2 provides details of the variables we hypothesise will influence the levels of short-run and long-term debt. Considerable variation is apparent, from Table 2, in the determinants of

capital structure for the European SMEs. German SMEs have a bigger average size and age. Portugese SMEs have a higher average level of fixed assets. Irish SMEs were the most profitable and UK SMEs the most rapidly growing.

Table 2
Determinants Of Capital Structure Across Countries

| Country | Profitability | Growth | Asset Structure | Size | Age |
|------------------------------|---------------|---------|-----------------|------------|---------|
| Belgium | 7.8% | 10.8% | 31.7% | 3,063,004 | 18.4 |
| Germany | 4.2% | 12.5% | 30.7% | 71,445,342 | 42.9 |
| Spain | 5.2% | 31.0% | 25.2% | 6,683,198 | 18.8 |
| Ireland | 10.0% | 36.8% | 32.5% | 27,763,204 | 28.9 |
| Italy | 5.8% | 22.6% | 19.8% | 3,042,932 | 18.9 |
| Netherlands | 4.0% | 12.5% | 30.1% | 27,447,229 | 23.4 |
| Portugal | 4.1% | 25.9% | 56.3% | 5,837,425 | 27.8 |
| UK | 5.4% | 39.4% | 33.4% | 4,141,520 | 29.0 |
| One-Way Analysis of Variance | | | | | |
| <i>F</i> -Statistic | 32.715* | 19.224* | 73.502* | 115.526* | 95.002* |

* Significant at 0.05 level of confidence

In Table 3 we report the results from the two completely restricted models (LTD and STD). Our hypotheses are that profitability will be negatively related to LTD and STD. Our results in Table 3 are consistent with the latter but whilst the coefficient in the LTD model is negative it is of negligible statistical significance. Similarly the positive and highly significant coefficient on growth in the STD model is consistent with our hypothesis but its

counterpart in the LTD model is positive rather than negative (but lacks statistical significance). Contrary to the theorising, age is positively related to LTD but is not significant. Otherwise the signs are as hypothesised and the coefficients statistically significant. Asset structure and size would appear to be positively related to LTD and negatively to STD, and age negatively related to STD.

Table 3
Completely Restricted Models

| Model 1: LTD Model | | | | | Model 2: STD Model | | | | |
|---------------------------|----------|-------|----------|--------|---------------------------|----------|-------|----------|--------|
| Variable | Std. | | | | Variable | Std. | | | |
| | <i>B</i> | Error | <i>t</i> | Sig. | | <i>B</i> | Error | <i>t</i> | Sig. |
| Profitability | -0.042 | 0.043 | -0.972 | 0.331 | Profitability | -0.411 | 0.060 | -6.862 | 0.000* |
| Growth | 0.003 | 0.006 | 0.568 | 0.570 | Growth | 0.042 | 0.008 | 5.511 | 0.000* |
| Asset Structure | 0.153 | 0.011 | 13.818 | 0.000* | Asset Structure | -0.303 | 0.015 | -19.781 | 0.000* |
| Size | 0.001 | 0.000 | 8.455 | 0.000* | Size | -0.001 | 0.000 | -5.866 | 0.000* |
| Age | 0.001 | 0.000 | 0.565 | 0.572 | Age | -0.001 | 0.000 | -6.077 | 0.000* |
| Constant | 0.082 | 0.007 | 11.983 | 0.000* | Constant | 0.649 | 0.009 | 68.900 | 0.000* |
| R^2 | 0.099 | | | | R^2 | 0.185 | | | |
| Adjusted R^2 | 0.098 | | | | Adjusted R^2 | 0.184 | | | |
| <i>F</i> -Statistic | 59.222 | | | 0.000 | <i>F</i> -Statistic | 122.063 | | | 0.000 |
| Regression Sum of Squares | 8.097 | | | | Regression Sum of Squares | 31.804 | | | |
| Residual Sum of Squares | 73.370 | | | | Residual Sum of Squares | 139.814 | | | |

* Significant at 0.05 level of confidence

(ii) Country-specific versus firm-specific effects

We can see from tables 1, 2 and 3 that there is variation in LTD and STD between countries and variation in the determinants between countries. What is not so obvious is whether the differences in capital structure are due to differences in determinants or are due to other,

Table 4*F*-Test: Comparing Restricted and Unrestricted Models

| LTD Models | RSS_R | RSS_U | F | Critical F | Result |
|--|---------|---------|---------|---------------|-------------------------------|
| Dropping Profitability Dummies | 60.067 | 59.497 | 4.68* | 1.88 | Profitability effect varies |
| Dropping Growth Dummies | 59.811 | 59.497 | 2.58* | 1.88 | Growth effect varies |
| Dropping Asset Structure Dummies | 61.879 | 59.497 | 19.57* | 1.88 | Asset structure effect varies |
| Dropping Size Dummies | 59.783 | 59.497 | 2.35* | 1.88 | Size effect varies |
| Dropping Age Dummies | 60.151 | 59.497 | 5.37* | 1.88 | Age effect varies |
| Dropping All Dummies (Totally Restricted Model) | 73.370 | 59.497 | 113.99* | 1.88 | Country effects vary |
| STD Models | RSS_R | RSS_U | F | Critical F | Result |
| Dropping Profitability Dummies | 127.167 | 124.644 | 9.90* | 1.88 | Profitability effect varies |
| Dropping Growth Dummies | 124.867 | 124.644 | 0.87 | 1.88 | Growth effect constant |
| Dropping Asset Structure Dummies | 126.151 | 124.644 | 5.91* | 1.88 | Asst structure effect varies |
| Dropping Size Dummies | 125.155 | 124.644 | 2.00* | 1.88 | Size effect varies |
| Dropping Age Dummies | 126.132 | 124.644 | 5.84* | 1.88 | Age effect varies |
| Dropping All Dummies (Totally Restricted Model) | 139.814 | 124.644 | 59.50* | 1.88 | Country effects vary |

Where $m = 8$; $n = 3,951$; $k = 40$.

The *F*-statistic follows the *F* distribution with m , $(n-k)$ degrees of freedom: $F_{(0.05)(8, 3911)} = 1.88$

* Significant at 0.05 level of confidence

country-specific, factors. The results in Table 4 address this. Table 4 shows that when the RSS of the restricted LTD model is compared to that of the unrestricted model, the resulting F -statistic of 113.99 is highly significant. The same can be said of the comparison between the restricted and unrestricted STD models (F -statistic = 59.50). Hence it would seem safe to conclude that differences in average long and short-term debt are not simply a reflection of difference in average levels of our explanatory variables. The nature of the relationship for all but one of the variables (growth for STD) varies between countries.

(iii) Country differences

Having established that the differences between countries cannot all be explained by differences in the determinants of capital structure, it is useful to consider, further, the variations between countries. Tables 5 and 6 show the results for the individual eight countries for LTD and STD. From Table 5, LTD, it can be seen that, for profitability, Belgium and Portugal have statistically significant results consistent with the hypothesis for profitability whilst other countries do not. This suggests that in these countries SMEs rely a great deal on internally generated funds. For growth, no countries have statistically significant results in the hypothesised direction. The only significant result for growth, for Spain, is in the opposite direction to that hypothesised. For all countries, asset structure is positively and significantly related to LTD. The strongest relationship is for the UK, Belgium, Spain and Italy. In these countries, in particular, the availability of collateral seems to be very important in raising LTD. The results for size, are in the hypothesised direction and significant for Spain, the UK and the Netherlands. This suggests that in these countries size matters when it comes to raising LTD. For age, only the UK has a significant result consistent with that hypothesised and Spain has a significant result in the opposite direction

and the rest are not significant. This suggests that SMEs in the UK rely on their own resources by accumulating internal funds.

From Table 6, STD, it can be seen that, for profitability, the UK, Italy, Germany and Belgium have statistically significant results as hypothesised. This suggests that, in these countries, profitable SMEs rely more on retained profits. For growth, the UK, Portugal and Italy have statistically significant results in line with the hypothesis. This implies that in these countries lenders are less concerned about moral hazard for short-term lending. Asset structure is statistically significant for all countries, in the hypothesised direction, with the strongest correlations for Spain and the UK. This strongly confirms the notion that SMEs and their lenders "match" short-term assets to STD because long-term assets have been pledged for LTD. For size, whilst most of the results are in the hypothesised (negative) direction the relationship is only statistically significant for Spain and the Netherlands. Spain, the UK and Italy have significant results, in the hypothesised direction, for age again suggesting reliance on internally generated funds for the UK.

Overall, the country that seems to best fit the hypotheses, for both LTD and STD but particularly the latter, is the UK followed by Spain and Italy. Whether a good fit with the hypotheses is desirable is debatable since this paints a picture of what might normally be considered market imperfections. That is to say, firms have to rely on their own resources and are only able to borrow if they have collateral. This is a far cry from the notion of resources flowing to where they make the best return that in turn implies an emphasis on profitability and growth.

Table 5
Regression Estimates – (Independent Regressions: Country by Country)
Dependent Variable: Long-Term Debt to Total Assets

| Country | Profitability | Growth | Asset Structure | Size (Total Assets) | Age | Constant | Adj. R^2 | F-Stat |
|-------------|-----------------------------|----------------------------|----------------------------|---|--|----------------------------|------------|---------|
| Belgium | -0.297 (0.020) [-2.758]* | 0.024 (0.019) [1.292] | 0.329 (0.032) [10.356]* | 5.6×10^{-10} (0.000) [1.003] | 2.1×10^{-4} (0.001) [0.331] | 0.056 (0.020) [2.758]* | 0.231 | 26.163* |
| Germany | 0.150 (0.174) [0.861] | -0.025 (0.036) [-0.706] | 0.111 (0.049) [2.284]* | 1.5×10^{-10} (0.000) [1.192] | 3.9×10^{-4} (0.001) [1.072] | 0.210 (0.023) [9.193]* | 0.028 | 2.672* |
| Spain | -0.219 (0.119) [-1.833] | 0.041 (0.012) [3.413]* | 0.322 (0.033) [9.797]* | 9.7×10^{-10} (0.000) [3.486]* | 0.002 (0.001) [2.444]* | 0.035 (0.017) [1.979]* | 0.223 | 26.670* |
| Ireland | 0.094 (0.130) [0.726] | -0.006 (0.018) [-0.354] | 0.291 (0.058) [4.982]* | 3.9×10^{-10} (0.000) [1.486] | -9.3×10^{-4} (0.001) [-1.442] | 0.019 (0.034) [0.553] | 0.315 | 9.660* |
| Italy | 0.014 (0.090) [0.154] | -0.013 (0.012) [-1.122] | 0.280 (0.033) [8.379]* | 1.3×10^{-9} (0.000) [1.385] | 1.1×10^{-3} (0.001) [1.720] | 0.069 (0.016) [4.440]* | 0.156 | 17.998* |
| Netherlands | 0.063 (0.122) [0.516] | -0.006 (0.020) [-0.311] | 0.062 (0.029) [2.148]* | 3.0×10^{-10} (0.000) [2.213]* | 5.4×10^{-4} (0.000) [1.329] | -0.015 (0.017) [-0.870] | 0.058 | 2.499* |
| Portugal | -0.491 (0.193) [-2.546]* | 0.004 (0.015) [0.248] | 0.073 (0.021) [3.346]* | 1.9×10^{-10} (0.000) [0.557] | 5.4×10^{-4} (0.001) [0.976] | 0.069 (0.021) [3.237]* | 0.038 | 3.784* |
| UK | 0.139 (0.062) [2.234]* | 0.003 (0.007) [0.457] | 0.291 (0.020) [14.600]* | 2.3×10^{-9} (0.000) [2.656]* | -1.4×10^{-3} (0.000) [-5.261]* | 0.026 (0.012) [1.861] | 0.328 | 48.327* |

(Standard Error) [*t*-statistic]

*Significant at 0.05 level of confidence

Table 6
Regression Estimates – (Independent Regressions: Country by Country)
Dependent Variable: Short-Term Debt to Total Assets

| Country | Profitability | Growth | Asset Structure | Size (Total Assets) | Age | Constant | Adj. R^2 | F-Stat |
|-------------|-----------------------------|---------------------------|-----------------------------|---|--|----------------------------|------------|---------|
| Belgium | -0.312 (0.145) [-2.153]* | 0.025 (0.027) [0.904] | -0.351 (0.046) [-7.579]* | 5.9×10^{-10} (0.000) [0.729] | -7.0×10^{-5} (0.001) [-0.750] | 0.586 (0.030) [19.675]* | 0.116 | 12.021* |
| Germany | -0.741 (0.192) [-3.853]* | 0.056 (0.039) [1.415] | -0.365 (0.054) [-6.783]* | -1.6×10^{-10} (0.000) [-1.114] | -7.3×10^{-4} (0.000) [-1.843] | 0.560 (0.025) [22.220]* | 0.220 | 17.320* |
| Spain | 0.158 (0.170) [0.932] | 0.021 (0.017) [1.250] | -0.444 (0.047) [-9.497]* | -1.3×10^{-9} (0.000) [-3.204]* | -4.4×10^{-3} (0.001) [-5.144]* | 0.683 (0.025) [27.511]* | 0.249 | 31.772* |
| Ireland | -0.368 (0.038) [-1.345] | 0.024 (0.038) [0.627] | -0.419 (0.123) [-3.406]* | 4.6×10^{-11} (0.000) [0.083] | -9.5×10^{-4} (0.001) [-0.702] | 0.642 (0.072) [8.908]* | 0.100 | 3.092* |
| Italy | -0.563 (0.142) [-3.978]* | 0.042 (0.019) [2.227]* | -0.385 (0.052) [-7.348]* | -1.4×10^{-9} (0.000) [-0.963] | -3.5×10^{-3} (0.001) [-3.556]* | 0.799 (0.025) [32.486]* | 0.177 | 20.724* |
| Netherlands | 0.805 (0.297) [2.714]* | 0.029 (0.049) [0.596] | -0.524 (0.070) [-7.534]* | -6.7×10^{-10} (0.000) [-2.003]* | 3.9×10^{-4} (0.001) [0.404] | 0.653 (0.041) [15.821]* | 0.403 | 17.327* |
| Portugal | 0.504 (0.262) [1.921]* | 0.047 (0.021) [2.291]* | -0.207 (0.029) [-7.175]* | -8.5×10^{-10} (0.000) [-1.836] | 4.2×10^{-4} (0.001) [0.562] | 0.572 (0.029) [19.784]* | 0.135 | 11.840* |
| UK | -0.869 (0.099) [-8.810]* | 0.062 (0.011) [5.503]* | -0.296 (0.032) [-9.379]* | -1.6×10^{-9} (0.000) [-1.169] | -1.9×10^{-3} (0.000) [-4.657]* | 0.667 (0.019) [34.626]* | 0.328 | 48.216* |

(Standard Error) [*t*-statistic]

* Significant at 0.05 level of confidence

5. SUMMARY AND CONCLUSIONS

The above analysis shows that there are variations in both SME capital structure and the determinants of capital structure between the countries surveyed. The hypotheses appear to hold up reasonably well as overall explanations with that for collateral being the strongest and that for growth being the weakest (consistent with Jordan et al., 1998). However, it becomes clear that the hypotheses do not explain everything in terms of SME capital structure since there are variations in the effects of the determinants on capital structure between countries. The variations could well be due to differences in attitudes to borrowing, disclosure requirements, relationships with banks, taxation and other national economic, social and cultural differences. These, in turn, are likely to be related to different levels of agency, information asymmetry and signalling costs between countries. Further research can provide more explanations by considering additional country-specific variables that determine SME capital structure.

REFERENCES

- Adedeji, A. (1998), "Does the Pecking Order Hypothesis Explain the Dividend Payout Ratios of Firms in the UK?", *Journal of Business Finance and Accounting*, Vol. 25, pp. 1127-55.
- Aggarwal, R. (1981), "International Differences in Capital Structure Norms: An Empirical Study of Large European Companies", *Management International Review*, Vol. 1, pp. 75-88.
- Ang, J.S. (1991), "Small Business Uniqueness and the Theory of Financial Management", *Journal of Small Business Finance*, Vol. 1, pp. 1-13.
- Berryman, J. (1982), "Small Business Failure and Bankruptcy: A Survey of the Literature",

European Small Business Journal, Vol. 1, pp. 47-59.

Bennet, M. and R. Donnelly (1993), "The Determinants of Capital Structure: Some UK Evidence", *British Accounting Review*, Vol. 25, pp. 43-59.

Chittenden, F., G. Hall and P. Hutchinson (1996), "Small Firm Growth, Access to Capital Markets and Financial Structure: Review of Issues and an Empirical Investigation", *Small Business Economics*, Vol 8, pp. 59-67.

Cosh, A. and A. Hughes (1994), "Size, Financial Structure and Profitability," in A. Hughes, and D.J. Storey (eds) *Finance and the Small Firm* (London: Routledge), pp. 18-63.

Friend, I. and L. Lang (1988), "An Empirical Test of the Impact of Managerial Self-interest on Corporate Capital Structure," *Journal of Finance*, Vol. 43, pp. 271-81.

Griner, E. H. and A. Gordon (1995), "Internal Cash Flow, Insider Ownership and Capital Expenditure: A Test of the Pecking Order and Managerial Hypotheses", *Journal of Business Finance and Accounting*, Vol. 22, pp. 179-99.

Gujarati, D.N (1995), *Basic Econometrics* (New York: McGraw Hill).

Hall, G. (1995), *Surviving and Prospering in the Small Firm Sector* (London: Routledge).

Hall, G., P. Hutchinson, and N. Michaelas (2000), "Industry Effects on the Determinants of Unquoted SMEs' Capital Structure", *International Journal of the Economics of Business*, Vol. 7, pp. 297-312.

Holmes, S. and P. Kent (1991), "An Empirical Analysis of the Financial Structure of Small and Large Australian Manufacturing Enterprises", *Journal of Small Business Finance*, Vol. 1, pp. 141-54.

- Hofstede, G. (1980), *Culture's Consequences: International Differences in Work-related Values* (Beverly Hills, CA: Sage Publications).
- Jensen, M. and W. Meckling (1976), "Theory of the Firm: Managerial Behaviour, Agency Costs and Ownership Structure", *Journal of Financial Economics*, Vol. 3, pp. 305-60.
- Jordan, J., J. Lowe and P. Taylor (1998), "Strategy and Financial Policy in UK Small Firms", *Journal of Business Finance and Accounting*, Vol. 25, pp. 1-27.
- Kester, C. W. (1986), "Capital and Ownership Structure: a Comparison of United States and Japanese Manufacturing Corporations", *Financial Management*, Vol. 15, pp. 5-16.
- Maddala G.S. (1988), *Introduction to Econometrics* (New York: Macmillan).
- Michaelas, N., Chittenden, F. and Poutziouris, P, 1999, "Financial Policy and Capital Structure Choice in UK SMEs: Empirical Evidence from Company Panel Data," *Small Business Economics*, 1999, 12, 113-130.
- Modigliani, F. and M. Miller (1958), "The Cost of Capital, Corporation Finance and the Theory of Investment", *American Economic Review*, Vol. 48, pp. 61-97.
- Modigliani, F. and M. Miller (1963), "Corporate Income Taxes and the Cost of Capital: a Correction", *American Economic Review*, Vol. 53, pp. 433-43.
- Myers, S.C. (1977), "Determinants of Corporate Borrowing", *Journal of Financial Economics*. Vol. 5, pp. 147-76.
- Myers, S.C. (1984), "The Capital Structure Puzzle", *Journal of Finance*, Vol. 39, pp. 575-92.
- Myers, S. and N.S. Majluf (1984), "Corporate Financing and Investment Decisions When

- Firms Have Information that Investors Do Not Have", *Journal of Financial Economics*, Vol. 13, pp. 187-221.
- Ozcan, A. (2001), "Determinants of Capital Structure and Adjustment to Long Run Target: Evidence from UK Company Panel Data", *Journal of Business Finance & Accounting*; Vol. 28, 175-98.
- Park, H. (1998), "The Effect of National Culture on the Capital Structure of Firms", *International Journal of Management*, Vol. 15, pp. 204-11.
- Prasad, D., G.D. Bruton and A.G. Merikas (1996), "An Empirical Study of the Capital Structure of Industries in the European Community", *Journal of International Financial Markets, Institutions and Money*, Vol. 6, pp.125-40.
- Rajam, R.G. and L. Zingales (1995), "What Do We Know About Capital Structure? Some Evidence from International Data", *The Journal of Finance*, Vol. 50, pp.1421-60.
- Reid, G.C. and L.R. Jacobsen (1988), *The Small Entrepreneurial Firm* (The David Hume Institute, Aberdeen University Press).
- Remmers, L., A. Stonehill, R. Wright and T. Beekhuisen (1974). "Industry and Size as Debt Ratio Determinants in Manufacturing Internationally", *Financial Management* (Summer), pp. 24-32.
- Ross, G.C. (1977), "The Determinants of Financial Structure: the Incentive Signalling Approach", *Bell Journal of Economics and Management Science* (Spring), pp. 23-40.
- Shyam-Sunder, L. and S.C. Myers (1999), "Testing Static Tradeoff Against Pecking Order Models of Capital Structure", *Journal of Financial Economics*, Vol. 51, pp.219-44.

Thompson, S. and M. Wright (1995), "Corporate Governance: The Role of Restructuring Transactions", *The Economic Journal*, Vol. 105, pp. 690-703.

Van der Wijst, N. and R. Thurik (1993), "Determinants of Small Firm Debt Ratios: An Analysis of Retail Panel Data", *Small Business Economics*, Vol. 5, pp. 55-65.

Walsh, E.J. and J. Ryan (1997), "Agency and Tax Explanations of Security Issuance Decisions", *Journal of Business Finance and Accounting*, Vol. 24, pp. 943-61.

Watson, R. and N. Wilson (2002), "Small and Medium Size Enterprise Financing: A Note on Some of the Empirical Implications of a Pecking Order", *Journal of Business Finance and Accounting*, Vol. 29, pp. 557-578.

RUNNING HEAD (AUTHORS' SURNAMES):

HALL, HUTCHINSON AND MICHAELAS

RUNNING HEAD (TITLE):

EUROPEAN SMES' CAPITAL STRUCTURE DETERMINANTS

First published in *Journal of Business Finance & Accounting*, volume 31, issue 5-6 (2004).

Published by Blackwell Publishing Ltd. Copyright © 2004 Blackwell Publishing Ltd.

The definitive version is available at www.blackwell-synergy.com