The Irish Accounting Review (2005), Vol. 12, No. 1, 1–13

PRIVATE OR PUBLIC DEBT? DRIVERS OF DEBT PRIORITY STRUCTURE FOR UK FIRMS

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ABSTRACT

Literature on corporate financing structure has focused on the debt/equity decision with less attention devoted to debt issuance, particularly for UK firms. We examine debt ownership structure for UK FTSE 350 firms at 2001 year end, emphasising the relationship between debt structure and firm characteristics. Our decision choice model relates a variety of attributes to the probability that firms will choose to issue debt publicly rather than to the public debt ratio per se. Our results highlight the importance of firm size, credit quality and prior leverage in debt issuance decisions but offer little support for information asymmetry, adverse selection or reputational considerations. However, riskier firms appear to use more debt, contrary to our priors.

INTRODUCTION

Publicly quoted companies have a variety of financing options when they need to raise finance, be this for investment, working capital or restructuring purposes. They may choose to issue publicly traded equity or to raise debt finance, which may be public or private in nature. Traditionally, retained earnings have been the major source of finance in most industrial countries studied (Eckbo and Masulis, 1995). However, since approximately 1970 the trend has been towards increased use of securities markets to finance corporate activity. In that context, debt finance has been more popular than equity issuance - Eckbo, Masulis and Norli (2000) report that for their sample of NYSE/AMEX and NASDAQ firms, there was an average of 1.6 seasoned equity offerings (SEOs) and 2.3 debt offerings per firm. Denis and Mihov (2003) also document the predominance of debt as a financing source for US and UK industrials. Banks have been the dominant source of such external funding globally, although US public debt markets enjoy significant trading volume. In European markets, which are less liquid and have lagged developments in the US, firms have been less inclined to issue publicly quoted

debt than their US counterparts. Further, to the extent that public debt markets have deepened and developed, industrial firms tend to raise funding in their own domestic markets. The main players in Euromarkets are still governments and large multi-nationals, although companies increasingly source incremental finance by issuing public debt.

As a consequence of ever-deepening European public debt markets, the themes in the literature on corporate capital structure have broadened to address issues such as firm debt structure and maturity choice. Firms now have numerous sources of debt financing at their disposal, such as private bank loans and overdrafts, bills and notes, convertible bonds, subordinate loans, financial leases and hire purchase amongst others, though typically not all firms will exploit every financing source. The focus in the recent literature has been on how firms *choose* between public and private debt sources. A variety of theories have been proposed to explain the variation in debt ratios across firms. These theories suggest that, among other things, debt ownership structure should reflect demand for and supply of the variety of different debt instruments. Firm demand for a certain form of debt depends on a vast range of factors, the relative importance of such factors being largely firm-specific. The over-riding consensus in the literature indicates two specific influences on the debt financing decision, namely firm size (which in itself may proxy for factors such as information asymmetry and agency considerations) and credit quality. Therefore, ex-ante, we expect firm size and credit quality to feature as important influences in our analysis. However, given the recent bubble in equity prices globally and the subsequent reinvigoration of public markets for debt finance, it is possible that drivers of firms' debt decisions may be non-stationary. We also explore the potential of other factors such as information asymmetry, growth opportunities and pre-existing leverage to influence the debt mix decision. In summary, we seek here to re-investigate the factors affecting the choice of optimal debt mix for a sample of UK firms in the context of recent market movements and the global environment for fund raising. The principal aim of our analysis is to investigate empirically the determinants of the choice between public and private debt for UK FTSE 350 firms at year end 2001, arguably when the equity market bubble ended.

The remainder of the paper is structured as follows. The next section provides a brief review of the relevant literature in the area of debt choice specifically and discusses the main motivating theories for our empirical analysis. The third section describes the methodology employed in the study and the data collection procedures adopted. The fourth and penultimate section outlines the study results and places these in the context of the body of existing literature in the area. The final section summarises the main study findings and concludes.

LITERATURE REVIEW

Theories that motivate the public/private debt issuance decision

A variety of theories have been proposed to explain firms' choice of debt mix, contingent on a preference for debt vis-à-vis equity financing. Flotation costs are widely recognised as influencing the issuance decision for firms that have access to both public and private markets for debt-type funding. Direct debt flotation costs typically include investment banker, filing, advertising and legal/compliance fees, along with other transaction costs. Indirect costs relate largely to implications for security valuation of market perceptions of incremental funding announcements. Given these direct costs, a large element of which may be fixed in nature, it is likely that there are significant economies of scale in issuing public debt that may be enjoyed only by larger firms. This suggests that small firms will find the public debt markets to be relatively cost inefficient. A flotation cost hypothesis thus suggests that small firms will prefer private financing, while larger firms will be more likely to be able to afford public debt issuance (Lasfer, 1999).

There are also issues of reputation to consider for firms that seek to raise additional finance. Exploiting public markets for funding exposes a firm to the discipline of the market and publicly quoted debt securities are subject to similar, albeit less extensive, issues of information asymmetry and adverse selection as traded equities. We expect debt-type securities to be less price sensitive to firm-specific information than equity, but, nevertheless, firm fortunes and prospects and their history of credible information disclosure is likely to influence the market reaction to a firm's decision to issue debt publicly. In consequence, established firms that have built a strong reputation of quality are more likely to raise debt publicly, reputation preservation considerations being sufficient to provide incentives for accurate disclosure and avoidance of excessive risk; conversely, young firms will prefer to borrow privately (Diamond, 1991; Hooks, 2003).

Firms that operate under conditions of severe information asymmetry, due either to current market conditions or to the nature of their business activities, may confront an adverse selection problem when/if they wish to issue publicly traded securities. Markets find it difficult to "price" securities accurately when there is insufficient information pertaining to financial position and future prospects (Krishnaswami, Spindt and Subramaniam, 1999), and in the absence of the ability to differentiate quality, firms may have to issue securities at a price that reflects just average quality (Myers and Majluf, 1984). Such information problems are likely to be particularly severe for firms in financial distress, with high business risk, significant intangibles and/or growth options (Denis and Mihov, 2003). These firms typically suffer relatively high contracting costs of public issuance, particularly if they wish to safeguard proprietary information (Nakamura, 1993; Yosha, 1995). Pre-existing leverage is also likely to have a role to play in debt issuance. Debt commits firms to periodic interest and repayment cash outflows and firms that are highly levered are more prone to the costs of financial distress. Hoshi, Kashyap and Scharfstein (1993) argue that such firms confront higher agency related costs and require more intensive monitoring. In consequence, they

are expected to prefer private debt where significant stakeholders have incentives to, and can more easily engage in, active oversight.

Empirical evidence on factors influencing debt choice

Johnson (1997) defines three key determinants of debt choice: monitoring and information costs; the likelihood and costs of inefficient liquidation; and borrower personal incentives. He then examines the influence of these factors on debt structure for a sample of 847 US firms in 1989. He finds that use of public debt is positively related to firm size, age, the fixed asset ratio and leverage, and negatively related to earnings growth volatility. He discerns no significant market-to-book effect, which suggests that investment profitability is not an important influence on firms' choices between public and private debt. Public debt preference is reported to decrease with increases in credit risk, consistent with Diamond's (1991) theoretical progression, although his finding of a positive relationship between public debt use and leverage is inconsistent with that of Hoshi et al. (1993). Hooks (2003) emphasises the role of firm size in debt choice, defining bank debt concentration as the ratio of bank debt to total liabilities. Smaller, younger firms are more difficult for outsiders to observe because little public information is produced about them. Partitioning a sample of US corporations by size, Hooks documents evidence of a differential influence of recognised drivers of debt choice by firm size, consistent with her priors, and concludes that while the monitoring and screening role of banks in firm lending is important in an environment characterised by information asymmetry, the benefit of this role is significantly influenced by firm size. Houston and James (1996) focus centrally on information asymmetry in their analysis of a sample of 250 US firms, but report evidence that reliance on bank debt decreases as firm size increases, consistent with Hooks. Denis and Mihov (2003) apply an incremental analysis to the examination of 1,560 US new debt issues in 1995 and 1996, linking the borrowing decisions of the firm with variables measured just prior to the borrowing decision, including pre-existing leverage. Consistent with Hooks' size and Houston and James' information asymmetry hypotheses, they document evidence that public borrowers are significantly larger and have higher fixed asset ratios (FAR) than bank/non-bank private borrowers. Carey and Rosen (2000) document further evidence that information and risk have a role to play in debt structure choice and that riskier firms prefer private debt. This finding is consistent with Krishnaswami et al. (1999) who examine the debt decisions of 297 publicly traded US firms over the time period 1987–1993. They report that smaller, younger firms with smaller debt issue size and/or greater growth options rely more on private debt, and firms facing greater information asymmetries are also likely to exploit private financing. Interestingly, Denis and Mihov (2003) report no evidence of significant market to book ratio (growth) effects which we would expect to be significantly related to debt structure choice.

International evidence on the drivers of debt choice is largely consistent with the US empirical evidence detailed above. Esho, Lam and Sharpe (1999) examine the determinants of incremental debt financing decisions of large Asian firms from

ten different countries for the 10-year period 1989–1998, addressing specifically the flotation, agency cost and liquidation/renegotiation hypotheses, while Bhaduri (2002) speaks to the capital structure decisions of Indian industrials. Collectively, these authors' findings generally support the recognised drivers of debt issuance and indicate that, regardless of institutional differences of the markets they study, similar financing choice relationships apply. Lasfer (1999) examines the determinants of debt maturity and priority structure for 2,256 observations of UK quoted companies over the period 1984–1996, differentiating borrowings by type. Although his application of the ordinary least squares (OLS) methodology is potentially problematic, his findings nevertheless indicate significant differences in debt type across firm size categories, small firms relying more on leasing and bank loans, larger firms utilising more public bonds and convertibles. A more pertinent criticism of the Lasfer study is that it relates to a sample of relatively small firms that are unlikely to confront a realistic choice between public and private debt issuance.

In summary, the main body of empirical evidence relates to the pattern of debt issuance for US firms and indicates that use of public debt markets is determined by firm size and by agency, contracting and flotation cost considerations. Smaller firms, those confronting severe information asymmetries and/or with low credit ratings tend to utilise more private debt. Less research has been conducted into the pattern of debt usage outside the US, but such evidence as exists tends to be largely consistent with evidence relating to US markets. In this paper, we seek to explore in greater depth the debt mix and determinants of that mix for UK firms, adopting a decision choice model which seeks to explain and potentially predict which firms are more likely to issue debt publicly given an effective choice between private and public funding.

DATA AND METHODOLOGY

As discussed in the previous section, the main factors that have been found to influence debt mix are credit quality, firm size and reputation, information asymmetry, pre-existing leverage and firm prospects. In this study we utilise proxies for these effects which we relate to a firm's debt structure. Specifically we apply a LOGIT model which seeks to determine the factors that make the probability of public debt issuance more likely, given a firm's preference for debt and an effective choice between public and private debt for that firm. Our initial sample comprises all FTSE 350 listed firms at calendar year end 2001 on the basis that all such firms are sufficiently large to have an effective private/public debt choice. We remove financial firms (96) and those without long-term debt in their financing structure (20), as well as those without sufficient data observations at year end 2001 (60). Our final sample comprises 174 firms reflecting an attrition rate of about 50 per cent. We use the breakdown of debt as detailed in the Primark Extel News Cards as our basis for defining the dependent variable for our LOGIT model, coded 1 if firms have chosen to issue debt publicly and 0 otherwise. Given restrictions on data availability and our relatively small sample, we do not further

classify private debt into bank and non-bank sources. Thirty-one per cent (54) of sample firms had some form of public debt (debentures/convertibles/bills/commercial paper/notes) at year end 2001, 69 per cent (120) choosing only to issue debt privately. The main data source for our independent variables was DATASTREAM, from which we obtained data at 31 December 2001 for our sample firms in respect of bank borrowing with a maturity greater than one year; total loan capital; total net fixed assets; total assets; earnings before interest, depreciation, amortisation and tax; start date; sector/industry code and market to book ratio.

Our main research objective here is to explore the relationship between the probability that firms will choose to issue debt publicly and a number of attributes of those firms and/or the environment in which they operate. Econometrically, this relationship between debt issue choice and firm/market characteristics has been modelled through the application of a linear probability model. We adopt a different approach here. Our dependent variable represents the probability that a firm will choose to issue publicly rather than the public debt ratio per se. As such, this dependent variable is dichotomous and use of OLS or its variants would give rise to heteroskedasticity with the additional difficulty that the estimated conditional probabilities might fall outside the permitted range of (0,1). Thus we apply a LOGIT model here. Our justification for use of LOGIT over PROBIT derives from Cramer (1991) who recognises that the process by which individual variables alternate between two states may be random in nature. In our model y_i, the value of the dependent variable for sample firm i, is set equal to 1 if the firm has issued debt publicly and 0 otherwise. Under the assumptions of the LOGIT model the conditional probability of y_i being equal to 1, given the observed values of the independent variables, can be expressed as follows:

$$Prob[y_i = 1] = P_i = \frac{\exp(\boldsymbol{x}_i \beta')}{1+\exp(\boldsymbol{x}_i \beta')} \qquad (1)$$

The probability of y_i being equal to zero is $(1-P_i)$. Hence the likelihood function for the full sample can be expressed as:

$$L = \Pi_{yi=1} P_i \, \Pi_{yi=0} \, (1-P_i) \qquad (2)$$

The maximum likelihood estimate of the vector, β, is generated by maximising the log of L over the parameter space. The standard numerical LOGIT procedure in LIMDEP was used to estimate the parameter vector (Greene, 2000, Ch. 19).

Our LOGIT model is specified as follows, the variables being informed by theoretical developments discussed in the previous section:

$$Y_i = \beta_0 + \beta_1 ASSETS + \beta_2 AGE + \beta_3 MTB + \beta_4 FAR + \beta_5 LEV + \beta_6 EGVOL + \varepsilon_i$$

Where Y_i	=	1 if the firm issues debt publicly and 0 otherwise
β_i	=	coefficient on independent variable i
ASSETS	=	book value of total assets less short and long-term liabilities
AGE	=	number of years since incorporation
MTB	=	market to book ratio, defined as the book value of total assets less the book value plus market value of equity, scaled by the

book value of total assets

FAR = fixed asset ratio, defined as net property, plant and equipment scaled by total assets

LEV = leverage, defined as long-term debt divided by book value of total assets

EGVOL = earnings growth volatility, defined as the standard deviation of first differences in earnings before interest, taxes, depreciation and amortisation (t_{-5}, t_{-1}) and

ε_i = the error term

ASSETS proxies for firm size. We expect larger firms to be more likely to issue debt publicly and, in consequence, expect a positive size effect in our model, consistent with the flotation costs hypothesis. AGE proxies for reputation following Diamond (1991), who views credit rating as a main driver of the feasibility of public issuance. We expect older, more established firms to find it easier to borrow publicly and in consequence anticipate that AGE will be positively signed in our model. MTB proxies for firms' future prospects/growth options as MTB is popularly perceived to be a forward looking market ranking tool. Yosha (1995) argues that firms with high quality projects will prefer to avoid public debt because it involves both high costs of information disclosure and potential loss of competitive advantage relative to rivals. Nakamura (1993) argues that average default risk to private bondholders is typically high, so such lenders have greater incentives to write and enforce restrictive bond covenants. Thus firms with substantial growth options should benefit from lower contracting costs by selecting private debt financing. We expect a negative effect of MTB in our model, consistent with this contracting costs/growth options hypothesis.

Denis and Mihov (2003) suggest that private debt with its associated monitoring and screening benefits is likely to be more attractive for firms with higher levels of information asymmetry, and find that firms without substantial tangibles (those with lower fixed asset ratios) tend to borrow privately. Thus we expect our proxy for asymmetric information FAR to be positively signed in our model. Hoshi et al. (1993) argue that highly leveraged firms require bank monitoring because they have little equity at stake. However, Johnson (1997) finds evidence to the effect that more levered firms tend to have higher public debt usage, possibly because firms exploit economies of scale in public debt issuance and raise larger amounts of debt when they access capital markets. The relation between pre-existing leverage and public debt usage is arguably an empirical one, but we are attracted to Johnson's rationale and ex-ante we expect LEV to be positively signed in our decision choice model.

The theoretical literature reflects a consensus view that credit quality importantly informs the debt structure decision, firms with higher credit quality and ratings being able to exploit public markets at lower cost and thus being less dependent on the monitoring benefit of private debt provision. Following Carey, Prowse, Rea and Udell (1993), we utilise a metric based on the volatility of earnings growth as a proxy for credit risk, measured over the four years preceding the sample year 2001. We expect firms with lower earnings growth volatility (i.e. less

credit risk) to choose to issue debt publicly, suggesting a negative coefficient on EGVOL in our model consistent with this credit risk hypothesis. Rajan (1992) argues that managerialism may be influential in public debt issuance, managers with low equity ownership seeking to avoid the scrutiny of public markets by issuing debt privately. We recognise however that all 174 firms in our final sample are constituents of the UK FTSE 350 index with substantial external ownership ratios, so that managerial ownership is likely to be below that level where control exerts a significant influence on debt issuance. We report Chi-square and Pearson p-values as measures of goodness of fit for our LOGIT model while significance of differences in means (medians) for our descriptors is based on the t-test (Mann-Whitney test).

RESULTS

TABLE 1: DESCRIPTIVE STATISTICS FOR PUBLIC AND NON-PUBLIC DEBT ISSUERS FOR UK FTSE 350 NON-FINANCIAL FIRMS AT 31 DECEMBER 2001

Variable	Public debt issuers (n=54)		Private debt issuers (n=120)		Difference	
	Mean	Median	Mean	Median	Mean	Median
ASSETS (£m)	10985.37	2333.00	1953.75	1011.07	– 9031.62[b]	– 1242.7[a]
AGE (years)	40.69	19	32.76	19	– 7.93	0
MTB	1.281	0.785	1.387	0.915	0.107	0.0400
FAR	0.3973	0.4032	0.3084	0.2245	– 0.0889[b]	– 0.0849[b]
LEV	0.3248	0.3214	0.2816	0.2714	– 0.0432	– 0.0501
EGVOL	0.0704	0.0431	0.0508	0.0284	– 0.0196	– 0.0123[b]

Variables are as defined in the Data/Methodology section. Difference metrics for the mean (median) are the t-test (Mann-Whitney test) statistics respectively

[a,b,c] indicate significance at the one per cent, five per cent and ten per cent levels respectively

Table 1 reports summary descriptors and their differences for our samples of firms that have (do not have) public debt outstanding at calendar year end 2001. Firms that rely on private debt are typically smaller, and significantly so, than those that access public debt markets. Equally, these privately financing firms tend to have lower fixed asset ratios, which is consistent with asymmetric information theories of debt choice. Analysis by industry reveals that a significantly greater proportion of our public debt issuers derives from manufacturing rather than service sectors, which we would expect given their scope for asset collateralisation. There appears to be little evidence based on these descriptors that firms that issue debt publicly are either significantly older, more highly levered, of poorer credit quality or have

greater growth options than firms that choose only to issue debt privately. Our preliminary analysis shows that public debt is mainly used by large companies with high gearing, suggesting that there are barriers (such as high fixed costs) associated with raising debt publicly. For the sample of 54 companies that use both debt forms, mean public (private) debt is £539 million (£3.033 billion), which suggests a mean public (private) leverage ratio of 4.9 per cent (27.6 per cent) respectively. Clearly, private debt is relatively more important for these large firms. Interestingly, there is no significant difference in mean leverage ratios for these firms (32.5 per cent) vis-à-vis the sample that only issue privately (28.16 per cent). However, mean public and private debt are significantly positively correlated for the former at the five per cent level, suggesting that public and private debt may be complements, consistent with Johnson (1997). Univariate analysis, however, takes no account of potentially important interaction between variables. **Table 2** presents results for our decision choice model together with test statistics for goodness of fit of the model and coefficient significance.

TABLE 2: LOGIT REGRESSION ESTIMATES OF THE DETERMINANTS OF DEBT ISSUANCE CHOICE FOR UK FTSE 350 NON-FINANCIAL FIRMS AT 31 DECEMBER 2001 (N=174)

Independent Variable	Expected Sign	β Coefficient	SE	P-Value
Constant		– 2.7957	0.5859	0.000
ASSETS (£m)	+	2.0734×10^{-7}	5.4061×10^{-8}	0.000[a]
AGE (Years)	+	0.003128	0.005293	0.555
MTB	–	– 0.0299	0.1254	0.811
FAR	+	0.7705	0.7239	0.287
LEV	+	1.8680	0.9428	0.048[b]
EGVol	–	5.867	2.982	0.049[b]
Chi-square (p-value)	170.282	(0.415)[a]		

Variables are as defined in the Data/Methodology section of the paper.
[a,b,c] indicate significance at the one per cent, five per cent and ten per cent levels respectively

Chi-square (goodness of fit) measures indicate that the model captures well the determinants of debt placement choice for our sample of non-financial FTSE 350 firms. Turning to the specific explanatory variables, ASSETS, our proxy for firm size, is significant at the one per cent level which is consistent with our priors, the extant literature and flotation cost hypotheses. Clearly, larger firms find it more economical to produce the information required by public securities markets and are more likely to find public debt issuance cost efficient and to be able to exploit economies of scale therein than smaller firms. The finding is also consistent with anecdotal evidence of a relatively greater appetite for funding to expand activities

or engage in acquisitive activity by larger firms. Arguably, this is the most important and unambiguous result we obtain. The coefficient on AGE is insignificant and suggests that firm reputation is not an important driver of debt choice for our sample of UK firms, which is inconsistent with the evidence of Johnson (1997) for US markets. It is possible, however, that AGE does not proxy well for firm credibility as regards financial disclosures and transparency of operations, albeit it is the recognised metric for firm reputation. FAR proxies for the extent of information asymmetry confronting a firm, and is appropriately signed but insignificant in our model, offering little support for theories of the influence of information asymmetry and adverse selection on debt choice for UK firms, inconsistent with the literature in this regard. Again, we recognise that accurate proxies for the extent of information problems are not obvious and we admit the existence of potentially stronger metrics here, such as earnings growth or price volatility.

EGVOL, which we utilise to proxy for credit risk, is indeed significant in our model, but positively signed, which is contrary both to our priors and to evidence of Johnson (1997), Carey et al. (1993) and Carey and Rosen (2000), who report significantly negative credit risk/quality effects. It appears that for our sample of UK firms, use of public debt markets is greater by firms with higher credit risk as measured by earnings growth volatility, and is the most surprising result we report. It is, however, consistent with Diamond (1991), who argues that low-rated/higher credit risk firms may utilise public debt markets if costs of default and/or lost reputation are outweighed by the benefits of avoiding closer monitoring associated with private financing. We are unable to further test this effect through use of a bond rating metric as data on historic credit ratings for UK companies is not readily available. However, if we assume that EGVOL is a reasonable proxy for credit risk and if financing decisions are contemporaneous for our sample firms, the positive effect we report may be one manifestation of the downturn in equity markets that occurred around the period of our study. At this time many firms, particularly those with intangibles such as growth options, would not have found equity an attractive funding mechanism. Similarly, the credit squeeze concurrent with falling markets is likely to have been manifest in restrictions on the availability of private (bank) debt. Thus, large growth firms may have turned instead to public debt markets to raise finance for investment purposes, and investors seeking superior returns may have been prepared to take on board more bond/credit risk in exchange for higher returns in such markets. If the benefits of exploiting growth options for these firms outweighed the effects of beneficial monitoring and negative earnings volatility (credit risk) factors, it is likely that public debt markets would have represented an attractive source of funds for large firms, firms that did not confront severe information asymmetries and/or firms without prohibitively large credit risk.

It is also possible that in UK markets there is sufficient information in the public domain about the larger firms that tend to access public debt markets and/or that they do not find information disclosure requirements associated with public debt issuance, typically fewer than in US markets, to be prohibitive. In such

an environment, costs of raising debt publicly and any adverse selection effects of perceptions of (moderate) credit quality may be outweighed by the positive investment effects that are facilitated by being able to exploit increasingly liquid markets for corporate debt. This is arguably the case when one considers evidence of Slovin, Sushka and Lai (2000) to the effect that seasoned equity issuance, particularly by the Rights Offering approach, has been associated with significantly negative announcement effects for UK firms. A further potential rationale for this perverse result lies in agency/managerial theories of corporate financing. Firms with high earnings growth volatility may seek to avoid the monitoring and control effects of private debt issuance and may instead prefer to suffer the indirect costs of raising debt publicly in exchange for the freedom to pursue relatively unrestricted investment/payout/operational policies. The absence of any significant MTB effect here, which is, however, consistent with both Johnson (1997) and Denis and Mihov (2003) who also fail to uncover a significant relation between growth opportunities and debt choice, runs contrary to this latter argument. Finally, we report a positive and significant LEV effect for our UK sample, as expected and consistent with both Johnson (1997) and Houston and James (1996). It suggests that more highly geared firms raise substantial amounts of funding to optimise economies of scale in issuance when they do access public debt markets and/or that such firms may have exhausted cost effective private debt sources when they issue debt publicly. This latter argument is consistent with our finding of a positive and significant correlation between public and private debt for our sample of firms that exploit both debt forms, as discussed earlier.

TABLE 3: PEARSON CORRELATION COEFFICIENTS FOR INDEPENDENT VARIABLES (N = 174)

	ASSETS	AGE	MTB	FAR	LEV
AGE	0.057 (0.456)				
MTB	– 0.040 (0.602)	0.007 (0.929)			
FAR	0.003 (0.972)	0.011 (0.887)	– 0.182 (0.016)[b]		
LEV	– 0.125 (0.101)	– 0.133 (0.079)[c]	– 0.177 (0.019)[b]	0.277 (0.000)[a]	
EGVOL	– 0.048 (0.525)	0.185 (0.014)[b]	0.180 (0.018)[b]	– 0.081 (0.290)	– 0.063 (0.406)

P-values for correlation coefficients are in parentheses
[a,b,c] indicate significance at the one per cent, five per cent and ten per cent levels respectively

When we examine our data more closely, it is evident and theoretically plausible that several of our explanatory variables are significantly correlated. **Table 3** reports Pearson cross correlations for the independent variables in our analysis. Clearly, MTB is significantly related to FAR, LEV and EGVOL, which may be influencing some of the results we report above. When we remove MTB from our analysis, our model results are qualitatively and quantitatively unchanged, indicating that our earlier inclusion of this metric did not distort our research findings in any important way. However, when we remove both MTB and LEV

from our analysis, on the basis of a significant correlation between our leverage metric and both FAR and AGE, this more parsimonious model yields a significant FAR relation, which is consistent with evidence of Denis and Mihov (2003). UK FTSE 350 firms facing less (more) severe information asymmetries are more (less) likely to raise debt publicly, as we would expect.

SUMMARY AND CONCLUSIONS

Our exploration of the drivers of public debt issuance is based on a decision choice model that seeks to explain and potentially predict which firms will utilise public debt markets contingent on an effective choice between public and private debt issuance. This approach differs from much of the extant empirical literature which examines debt mix for samples of firms that may not confront an effective public debt issue option. Specifically, our analysis contributes to the evidence in respect of the UK market in two respects. Earlier evidence of Lasfer (1999) fails to consider that smaller firms may have no effective access to public fixed income markets, nor do we consider the effects of pre-existing leverage or credit quality on debt choice. Our analysis suggests that the most important influences on debt choice for UK FTSE 350 firms are firm size, pre-existing leverage and earnings growth volatility, our proxy for credit quality. In general, companies that choose to issue public debt tend to be larger, older, more leveraged and have lower levels of asymmetric information.

We consider our finding that sample firms which choose to issue public debt had more volatile earnings growth, suggesting higher risk, to be surprising in light of theoretical developments in the area and the extant literature. This issue merits further research. Ideally we will seek to obtain a published credit rating metric for our sample firms. We plan also to examine the timing of public debt issues for our sample to determine whether this reported effect is period specific. Alternatively, the effect may be independent of the recent downturn in equity markets and attributable in greater measure to characteristics of large UK firms that access public fixed income markets. Such a determination would be insightful in making comparisons with other markets such as the US where a significantly negative relation between public debt issuance and credit quality has been the norm. Finally, we note that our cross-sectional analysis provides only a snapshot of surviving firms at a point in time. This realisation suggests the need for future investigation of some sources of firm attrition and survival metrics. It will, perhaps, offer greater insight into the dynamics of debt structure choice and its influence, if any, on firm longevity.

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