Financing large debt:
syndicated loans versus corporate bonds

Yener Altunbaş,[a] Alper Kara[b] and David Marqués[c*]

Abstract

The period after the introduction of the euro coincided with a historical expansion in those markets where large amounts of corporate funding are raised, namely the syndicated loan and the corporate bond markets. In this paper, we use a novel and large sample of euro area non-financial corporations to analyse the financial determinants of choice between syndicated loans and corporate bonds. We find that financing by means of syndicated loans is the choice of larger firms with greater financial leverage and (verifiable) profits and higher liquidation values. Firms preferring financing through corporate bonds tend to have higher levels of short-term debt but are perceived to have more growth opportunities by markets.

[a]   Bangor Business School, Bangor University (e-mail: Y.Altunbas@bangor.ac.uk).

[b]   Corresponding author: Loughborough University Business School, LE113TU, United Kingdom (e-mail: a.kara@lboro.ac.uk; tel.: +44 1509 228808).

[c]   European Central Bank, Kaiserstrasse 29, 60311 Frankfurt am Main, Germany (e-mail: david.marques@ecb.int; tel.: +49 69 1344 6460).

1. Introduction

Debt is a major source of external financing for large European firms. In 2007, corporate bonds and syndicated loans made up 94% of all public funds raised in the European capital markets, while public equity issuance accounted for only 6%. In recent years, developments in the corporate bond market have attracted considerable attention, particularly in the light of the market's spectacular development in the aftermath of the introduction of the euro. At the same time, the syndicated loan market has also developed, albeit more progressively, currently accounting for around one-third of borrowers' total public debt and equity financing. Unquestionably, syndicated loans are the main alternative to direct corporate bond financing: In both markets, firms can tap the financial markets to raise large amounts of funds with medium and long-term maturities.

Today, many of Europe's largest firms use corporate bonds and syndicated loans extensively and, often, simultaneously to finance their investments. In this paper, we investigate the factors that influence European firms' marginal choice of issuing debt between these two sources of funding. Building on Denis and Mihov (2003), we concentrate on incremental financing decisions. This focus allows us to link the choice of debt market to the specific characteristics of firms measured prior to the financing decision.

From a theoretical perspective, corporate financing decisions are characterised by agency costs and asymmetric information problems. This would include the decision of whether to obtain direct financing via the corporate bond market or financing from banks through the syndicated loan market (Amaro de Matos (2001)).[1] In the case of financing through the syndicated loan market, the theory of financial intermediation has placed special emphasis on the role of banks in monitoring and screening borrowers, which is costly for banks. However, it also has its advantages because the substantial investment that banks make in funding borrowers, as well as the longer-

---

[1] This runs contrary to the Modigliani-Miller (1958) assumptions, which resulted in the "irrelevance hypothesis" regarding corporate financing decisions.

lasting nature of such relationships, increases the benefits to banks of information acquisition (Boot and Thakor (2008)).

In the case of funding via the corporate bond market, the monitoring of borrowers by many creditors, as is the case in the corporate bond market, could lead to unnecessary costs and free-riding problems. Namely, it would be easier for corporate bond market investors than for syndicated loans to replicate the investment strategies of investors incurring monitoring and screening costs. For this reason, the logic of banks as delegated monitors of depositors (Diamond (1984)) would also apply to the syndicated loan market, where banks (or uninformed lenders) participating in the syndication delegate most of the screening and monitoring to an agent bank (or informed lender) (see Homstrom and Tirole (1997) and Sufi (2007)). Therefore, certain lead banks could obtain lending specialisation in specific sectors or geographical areas and act as delegated monitors of participating banks.

There is extensive theoretical literature concerned with the coexistence of bank lending and direct bond financing (Besanko and Kanatas (1993), Hoshi et al. (1993), Chemmanur and Fulghieri (1994), Boot and Thakor (2000), Holmstrom and Tirole (1997) and Bolton and Freixas (2000)). In this respect, contemporary theory of financial intermediation tends to emphasise that banks and markets compete, so that growth in one is at the expense of the other (Allen and Gale (1997) and Boot and Thakor (2008)). Recent literature suggests that there are also potential complementarities between bank lending and capital market funding (Diamond (1991), Hoshi et al. (1993) and Song and Thakor (2008)). Most of these results are also directly applicable to the comparison of funding via syndicated loans as opposed to funding through the corporate bond market.[2]

There is also some literature on how firms make their choices between alternative debt instruments. It compares public debt (i.e. corporate bonds) with bilateral bank loans, rather than with the syndicated market, and links the choice of debt instrument to factors such as economies of scale, transaction costs, the possibility of future debt renegotiation (involving inefficient liquidation) and the mitigation of agency costs as a result of banks' monitoring skills (Johnson (1997), Krishnaswami et al. (1999), Cantillo and Wright (2000), Esho at al. (2001) and Denis and Mihov (2003)).

Here, we consider syndicated loans to be a separate asset class and draw a distinction between them and ordinary bilateral loans. This paper starts by focusing on the financial determinants of borrowing via the syndicated loan market. It then compares this method of financing with the main alternative: the corporate bond market. The development of the corporate bond market has been spectacular in the wake of the introduction of the euro and, as such, has been extensively analysed in the literature (see Biais et al. (2006) and De Bondt and Marqués-Ibáñez (2005)). On the other hand, the European syndicated loan market has attracted far less research attention.

In this paper, we argue that the syndicated loan market is the most powerful substitute to the bond markets in terms of size and maturity of the funds provided. Our main objective is to contribute to the literature on firms' marginal financing choices by comparing both instruments directly. Prior empirical studies document the relationships between the use of corporate bond financing and firms' attributes, such as size, leverage, financial stress, liquidity, growth opportunities and profitability (Houston and James (1996), Johnson (1997), Krishnaswami et al. (1998), Cantillo and Wright (2000) and Denis and Mihov (2003)). Building on this literature, we investigate how the financial characteristics of firms influence the choice between raising funds in the syndicated loan market and raising funds directly via the corporate bond markets. Our findings also aim to show whether recent developments in syndicated loan markets have triggered convergence between these two alternative debt markets in terms of the drivers for firms to tap these markets for funds.

We use a unique dataset, compiled from four different data providers, which includes 2,460 syndicated loan and bond transactions issued by 1,377 listed non-financial corporations in the euro area between 1993 and 2006. In the empirical analysis, we model firm's financial attributes (e.g. size, leverage, financial stress, liquidation value and growth indicators), observed prior to the debt issue, as the primary determinant of debt choice.

The rest of the paper is organised as follows: Section 2 briefly introduces the syndicated loan market ,while Section 3 reviews the literature on the determinants of firms' financing choices. Section 4 describes the data sources, provides descriptive

---

[2] Theoretically, these models would have the additional complication of the structure of the syndication arrangement.

statistics and explains the empirical methodology used in our analysis. The results of our estimations are presented and discussed in Section 5. Section 6 concludes.

2. The syndicated loan market

What are syndicated loans and what makes them different from bilateral loans? A typical syndicated loan is issued to a single borrower jointly by a group of lenders. These lenders are usually banks, but they can also include other financial institutions. Mandated by the borrower, a lead bank (or banks) promotes the loan to potential lenders that are interested in taking exposure in certain corporate borrowers. The lead arranger provides probable participants with a memorandum including borrower-specific information. Usually each participant funds the loan at identical conditions and is responsible for its particular share of the loan; it therefore has no legal responsibility for other participants' shares. Overall, syndicated loans lie somewhere between relationship loans and public debt, where the lead bank may have some form of relationship with the borrower – although this is less likely to be the case for banks participating in the syndicate at a more junior level.

Recent developments in the syndicated loan market have made a clearer distinction between syndicated loans and bilateral bank loans. One significant change is the growth in the regulated and standardised secondary market during the 1990s, which has supplied significant amounts of liquidity to the syndicated loan market. Another major factor has been the rising number of syndicated loans rated by independent rating agencies. As a result of stronger secondary market activity, combined with independently rated syndicated loans, there has been a greater recognition of these assets by institutional investors as an alternative investment to bonds (Armstrong, 2003). Certainly, recent changes in the syndicated loan market – including its volume, its capacity to provide sizable medium and long-term funding and increased transparency – have shifted the syndicated loan market closer to the corporate bond market and further away from bilateral bank lending.

3. Determinants of firms' financing choices

Three main arguments are commonly used to explain firms' choices of financing when deciding between public (bonds) and private (bank loans) debt. The flotation costs argument posits that the use of public debt entails substantial issuance costs, including a large fixed-cost component (Blackwell and Kidwell (1998) and Bhagat and Frost (1986)).[3] Accordingly, relatively small public debt issues would not be cost efficient and firms would only tap public capital markets when issuing large amounts of debt to benefit from economies of scale. This is documented by empirical studies that show a positive relationship between the use of public debt financing and a firm's size (Krishnaswami et al. (1999), Denis and Mihov (2003), Esho et al. (2001) and Houston and James (1996)).

The renegotiation and liquidation hypothesis argues that borrowers with a higher ex ante probability of financial stress are far less likely to borrow publicly. This is because it is more difficult to renegotiate the terms of debt agreements effectively with a myriad of bond holders than with a single bank or small group of lenders (Chemmanur and Fulghieri (1994) and Berlin and Loeys (1988)). Likewise, lenders in public debt markets are unable to distinguish, owing to information asymmetry and free-rider problems, between the optimality of liquidating or allowing the project to continue. If such situations are reflected on the debt contracts in the form of harsh covenants, they may, in turn, result in the premature liquidation of profitable projects. Empirical evidence indeed suggests a negative relationship between the issuance of public debt and proxies for borrowers' financial stress (Cantillo and Wright (2000), Denis and Mihov (2003) and Esho et al. (2001)).

The *information asymmetry* hypothesis suggests that a firm's choice of debt market is related to the degree of asymmetric information the firm is exposed to. Information asymmetries result in problems of moral hazard between shareholders and debt holders, including possible asset substitution and underinvestment (see Jensen and Meckling (1976) and Myers (1977)). Owing to such problems, a firm faces higher

---

[3] The issuance of public debt requires substantial fees to be paid to the investment banks underwriting the debt securities. In addition, there are other payments, such as those relating to filing, legal, printing and trustee fees.

contracting costs in the public markets, as lenders who are unable to monitor the firm's activities will demand higher returns for risks generated by information asymmetries. Indeed, part of early banking theory focuses on private lenders as more efficient and effective monitors (Diamond (1984), Fama (1985) and Boyd and Prescott (1986)). As a result, firms with greater incentive problems arising from information asymmetries are expected to borrow privately given banks' ability to monitor borrowers' activities and to mitigate moral hazard (see Diamond (1984 and 1991)). Such monitoring is typically achieved in privately placed debt by incorporating restrictive covenants, agreements that are not in standard use in public issues (Smith and Warner (1979)). Hence, Krishnaswami et al. (1999) and Denis and Mihov (2003) report that firms that are potentially more exposed to problems of moral hazard have lower proportions of public debt in their financing choices.

There are only a handful of empirical studies describing why some firms prefer to borrow from public debt markets while others rely on private debt (most of these are mentioned above).[4] Moreover, these studies rarely incorporate syndicated loans as a debt choice in their analysis. Denis and Mihov (2003) and Houston and James (1996) examine firms' choices of bank debt, non-bank private debt and public debt. Cantillo and Wright (1997) and Krishnaswami et al. (1999) define only two debt options. Both studies classify public debt as "any publicly traded debt" and private debt as "any other debt in a firm's books that is not publicly traded". It is not clear whether syndicated loans are included in their dataset and, if so, under which of the two debt categories. To our knowledge only Esho et al. (2001) includes syndicated loans in their paper examining incremental debt financing decisions of large Asian firms in international bond and syndicated loan markets. However, their main focus is international debt issues and the analysis is limited to Japan and other (emerging) Asian countries in which syndicated loans are not a major source of corporate financing (see Altunbas et al. (2006) for further details).

As mentioned above, recent developments, such as the establishment of secondary markets, the introduction of loan ratings and the rising interest from institutional investors, have helped make the distinction between syndicated loans and bilateral lending significantly clearer. These developments have, in turn, led the market to

grow exponentially. Currently, syndicated loans are the only alternative to bond financing for large firms on account of the size and maturity of the funds that can be provided. This paper aims to build on the existing literature on firms' financing decisions and, for the first time, compare the choice of the direct corporate bond market with that of its most direct competitor: the syndicated loan market. Another major novelty is that we consider a European environment. This is in contrast to the bulk of previous empirical evidence on firms' financing decisions, which tend to be overwhelmingly based on US data (Denis and Mihov (2003), Houston and James (1996), Cantillo and Wright (1997) and Krishnaswami et al. (1999)). This European dimension is interesting for two main reasons. First, it coincides with the introduction of the euro, which created a largely integrated market for the financing of very large firms. Second, in the euro area, it also coincides with the development of the corporate bond market and of intense growth in the syndicated loan market.

Although syndicated loans are a large and increasingly important source of corporate finance, literature on syndicated loans is generally limited, albeit growing. Research in this area focuses, in general, on lenders' incentives to syndicate loans (Simons (1993), Dennis and Mullineaux (2000) and Altunbas et al. (2005)) and the impact of information asymmetries on the formation of the syndicate structure (Lee and Mullineaux (2004), Jones et al. (2005), Bradley and Roberts (2003), Mullineaux and Pyles (2004), Esty and Meggison (2003) and Sufi (2007)). Syndicated loan announcements have also been used to evaluate possible bank certification effects on the market value of a firm (Meggison et al. (1995), Preece and Mullineaux (2003), Lummer and McConnell (1989) and Billett et al. (1995)). There is also evidence on the pricing of syndicated loans in relation to lender characteristics and the borrower's default risk (Hubbard et al. (2002), Coleman et al. (2006), Thomas and Wang (2004), Angbazo et al. (1998) and Altman and Suggitt (2000)). Yet again, almost all of the research on syndicated loan markets is overwhelmingly centred on the US market and published papers providing evidence based on European data are very limited.[5] Moreover, as indicated, existing evidence does not offer a comparison with the

---

[4] This is in contrast with the extensive theoretical and empirical literature on firms' capital structure (Tirole (2007)).

[5] Recent interesting exceptions are Steffen and Wahrenburg (2008) and Bosch (2007).

corporate bond market, which is, however, the most obvious benchmark candidate for the syndicated loan market.[6]

---

[6] Thomas and Wang (2004) is an exception looking at price convergence.

4. Data and methodology

The sample includes information on 1,377 listed non-financial firms with their head offices in the euro area and covers the period 1993-2006. We construct our dataset by combining data from four different commercial data providers: Thomson One Banker, Dealogic Loanware, Dealogic Bondware and Eurostat. In constructing the dataset, using Loanware and Bondware we first identify the firms that borrowed through syndicated loans and/or issued bonds during our sample period. Both databases provide extensive individual deal-by-deal information on all public corporate bond issues and syndicated loans granted. We obtain information on borrowers' characteristics from their balance sheets and profit and loss accounts through Thomson One Banker. Lastly, we use Eurostat to obtain official statistics on macroeconomic data.

We subdivide the firms in our sample among four categories, according to their borrowing record within the sample period. Firms are allocated to categories based on whether they issued: (I) only syndicated loans, (II) only bonds, (III) both syndicated loans and bonds in different years, and (IV) both syndicated loans and bonds at least once within the same year. Sample characteristics are reported in Table 1.

Borrowers that used the syndicated loan market only are, on average, larger than those that borrowed exclusively through bond markets. In contrast, firms using only corporate bond financing have lower current profits but are better valued by the market, invest more, carry less financial leverage and have higher levels of debt maturing in the short term (debt maturing in less than one year). In other words, they would seem to be smaller firms with a strong growth potential. Likewise, as expected, firms tapping these two markets (*Categories III and Category IV*) are much larger than firms that use only one of the instruments. With an average size of USD 9.9 billion, firms in *Category IV* have the borrowing needs and are large enough (i.e. normally better known by lenders) to be able to use both the bond and syndicated loan markets extensively. Between 1993 and 2006, these 164 firms issued 175 syndicated loans and 311 bonds in different years, and there were 288 instances in which these firms borrowed both from bond and loan markets simultaneously within the same year (576 issues).

Table 1: Sample characteristics

	Firms categorised according to choice of debt issuance			
	Category I: *syndicated loans only*	Category II: *bonds only*	Category III: *syndicated loans and bonds, but in different years*	Category IV: *syndicated loans and bonds at least once during the same year*
Number of firms	159	890	164	164
Number of loans issued	226		249	175
Number of bonds issued		1219	280	311
Number of joint issues within the same year				288
Variables (means reported)				
Size (million USD)	2,159	1,427	4,239	9,924
Debt to total assets (%)	30.97	21.38	29.60	28.93
Short-term debt to total debt (%)	40.05	49.28	37.41	34.74
Fixed assets to total assets (%)	32.12	18.95	30.68	28.69
Market to book value	2.40	3.26	2.84	2.93
Return on assets (%)	4.58	3.31	5.09	4.44
Sales growth (%)	16.57	36.18	18.12	18.46
Capital expenditure to total assets (%)	7.81	9.38	8.13	7.16
Current ratio (%)	1.48	2.11	1.41	1.28

To investigate how European firms' choose between corporate bond and syndicated loan financing, we link firms' choices of debt to firms' attributes observed prior to a new issue. Building on the theoretical literature, we focus on firms' financial characteristics that reflect factors such as debt renegotiation, inefficient liquidation concerns, transaction costs and information asymmetries. Specifically, we model the choice of debt market as follows:

$$\text{Choice of debt}_{i,t} = \beta_0 + \sum \beta_i \text{Borrower financial characteristics}_{i-t} + \sum \beta_j \text{Sector dummies}_j + \sum \beta_k \text{Year dummies}_k + \sum \beta_m \text{Macroeconomic variables}_m + \varepsilon_{i,t}$$

We start by considering firms that issue either corporate bonds or syndicated loans in a given year. To do this, we employ a discrete dependent variable representing the debt choice of the firm. *Choice of debt* is a binary variable that takes the value of 1 if the firm issues a corporate bond and 0 if it decides upon a syndicated loan. We also include in the estimation those observations where firms issued both syndicated loans *and* bonds within the same year. Hence, in this alternative specification, we also extend our dependent variable to host the third option of *joint issuance*. The underlying unit of observation is debt issuance within a specific year and a firm's

financial attributes one year prior to the issuance. To control for unobserved heterogeneity, we estimate a logistic model with random effects.[7]

We aim to account for the following characteristics of firms: *corporate leverage, financial stress, liquidation value, profitability, liquidity, market-to-book value, sales growth, technology expenditure and size. Corporate leverage* (defined as the ratio of total debt to total assets) measures the impact of current debt level on the choice of instrument for the new debt issue. Firms with higher leverage may already have a good reputation in the market and may be able to issue public debt more easily (Denis and Mihov (2003)). On the other hand, they could have a higher financial risk and renegotiation may be more complicated if using public debt (Chemmanur and Fulghieri (1994) and Berlin and Loeys (1988)). This argument is possibly stronger for the ratio of short-term debt to total debt (debt maturing in less than one year), which can be interpreted as a more immediate proxy for *financial stress* (Esho et al. (2001) and Diamond (1991)).

The *liquidation value* of the borrowing firm is proxied by using the fixed-to-total assets ratio. A larger proportion of fixed assets tends to be tangible (more visible to outside creditors) and can act as collateral. Therefore, in case of a default, the probability of recovering the debt will be higher for creditors. *Profitability* is measured as the return on assets (the ratio of earnings before interest, taxes and depreciation to a firm's total assets). This measure of profitability does not take into account developments in the liability structure of the firm already included in debt leverage ratios. From a lender's perspective, a firm's ability to pay back its debt is related to its visible ability to generate income. Hence, profitable firms are also more likely to take advantage of this visible signal of their ability to generate revenues and issue public debt rather than syndicated loans (Denis and Mihov (2003)). The c*urrent ratio* offers a proxy for a firm's resources relative to its debt in the short term.

Contracting costs due to underinvestment and asset substitution are higher in the case of firms with more growth options. We use *market-to-book value* to gauge the growth potential of the firm (Smith and Watts (1992) and Barclay and Smith (1995)).

---

[7] Owing to a lack of variation in the discrete dependent variable that leads to a great loss of observations, we use random effect estimates throughout the study. A correlation matrix is presented in the appendix for a visual inspection of multicollinearity. To control for heteroscedasticity we use robust standard errors for multinomial logistic models.

Expected future growth increases a firm's market value relative to its book value, since intangible assets – such as expectations of future profits – are not included in the book value of assets. We also account for expected future growth through s*ales growth,* measured as the annual percentage change of sales in respect of the previous year. Sales growth measures tangible past growth performance (or growth), while the market-to-book value is a forward-looking measure reflecting investors expectations' for the firm.

Market-to-book value and the *size* of a firm can also measure information asymmetries and proxy for associated incentive problems.[8] To lower such costs, firms may choose to borrow from banks that are equipped with monitoring facilities to mitigate moral hazard (Boot and Thakor (2008)). We employ a *natural log of total assets* to capture the effect of size on debt choice. Strong investment in technology measured via *technology expenditure* (relative to total assets) is also expected to be related to information asymmetries. Firms with high technology expenditure are less likely initially to tap the public debt markets owing to high monitoring and screening costs for lenders and strategic confidentiality reasons (Barclay and Smith (1995) and Hoven-Stohs and Mauer (1996)).

We control for country conditions including regulation and competition effects with a set of country dummies. Countries in our dataset include Belgium, Germany, Ireland, Greece, Spain, France, Italy, Luxembourg, the Netherlands, Austria, Portugal and Finland. As debt and financing composition is also very sector-specific, we control for sector and industry factors through dummies for (i) high-tech & telecommunications, (ii) construction, (iii) business services, (iv) manufacturing, (v) transport and (vi) utilities. Finally, we account for macroeconomic conditions using two macroeconomic indicators to control for business cycle (change in GDP) and interest rate (one-year money market rate) developments.

---

[8] See Smith and Watts (1992), Barclay and Smith (1995), Krishnaswami et al. (1999), Esho et al. (2001) and Denis and Mihov (2003).

5. Data and methodology

5.1   Binomial specifications

We construct our estimations progressively, starting from the simplest specification. We focus first on all the listed companies that tapped into only one type of debt, whether bonds or syndicated loans, during the period of study (Category I and Category II firms). For that, we use binomial logistic regressions to link 1,049 firms' choice of debt market for 1,445 debt issues to their financial attributes observed the year prior to the issue. These estimates are presented in Table 2 (see the second column) marked as Model 1. Subsequently, the same estimation method is extended to include also the normally larger firms that used both instruments during the period of study, but not in the same year, i.e. Categories I to IV are included excluding those observations from Category IV where firms' borrowed in the form of both bonds and loans (joint issuance) within the same year (see Model 2 in Table 2). This exercise yields a total of 1,377 firms and 2,460 debt issuances.[9] The signs and significance of the coefficients do not differ across the two models.

5.1.1 Financial leverage and credibility

More leveraged euro area firms tend to issue debt in the syndicated loan market. It seems that firms with a higher level of distress are more likely to chose syndicated loans owing to the greater ability of banks to screen and monitor borrowers (Boot and Thakor (2008)). Prior empirical studies by Houston and James (1996), Johnson (1997), Krishnaswami et al. (1999), Cantillo and Wright (2000) and Denis and Mihov (2003) interpret high financial leverage as a reputational factor, while Esho et al. (2001) argues that higher leverage signals financial distress and reports a negative association between the issuance of public debt and financial leverage.

---

[9] For further details see Table 1. The total number of cases of debt issuance (2,460) by all firms equals the sum of loans and bonds listed in the rows titled "*Number of loans issued*" and "*Number of bonds issued*" in Table 1.

5.1.2 Renegotiation and liquidation concerns

European firms with higher levels of fixed assets are more likely to borrow from the syndicated loan market. Fixed assets are indeed easier to pledge in the event of syndicated loan borrowing than borrowing via the public markets. Fixed assets, however, can also be interpreted as a proxy for liquidation value (Esho et al. (2001) and Johnson (1997)). Compared with syndicated loans, bonds usually involve a larger number of investors, which makes it difficult to renegotiate the terms of a debt contract, as consensus is needed. Indeed, lenders in public debt markets are less able than banks to distinguish, on account of information asymmetries, between the optimality of liquidating or allowing the project to continue (Berlin and Loeys (1988)). This is often reflected in the debt contracts of corporate bonds in the form either of covenants that are too harsh (which may result in the premature liquidation of profitable projects), or of covenants that are too lenient (which may allow unprofitable projects to continue). In the case of syndicated loans, more stringent monitoring also helps to lower inefficient liquidation processes, as the creditors have more accurate information on the characteristics of borrowers. Overall, as the value of project liquidation falls, the benefit of efficient liquidation of unprofitable projects drops and firms are more likely to use public debt, thereby lowering monitoring costs (Esho et al. (2001)).

Table 2: Binomial logistic regressions predicting firms' choices of debt in the alternative syndicated loan and bond markets [a, b]

This table reports the estimates of random effect binomial logistic regressions predicting firms' choices of debt in the alternative syndicated loan and bond markets. The binary dependent variable takes the value of 1 if the firm issues a bond and 0 if it borrows from the syndicated loan market. In Model 1, we include those firms that issued only one type of debt, whether bonds or syndicated loans, during the period of analysis (Category I and Category II). In Model 2, we use all firms (Categories I to IV), but exclude those observations of *joint issuance* within the same year by Category IV firms. Financial leverage is measured by the ratio of total debt to total assets. Financial stress is equal to the ratio of short-term debt to total debt. Liquidation value is measured by the ratio of fixed assets to total assets. Profitability is measured by the return on assets. Current ratio is measured by dividing current assets by total current liabilities. Market-to-book ratio is the book value of assets minus the book value of equity plus the market value of equity. Sales growth is the year-on-year percentage growth in sales. Size is measured by the total assets of a firm. Asset turnover is calculated by dividing total sales by total assets. GDP growth is the year-on-year percentage change in GDP. The interest rate is the one-year money market rate.

	Model 1	Model 2
Dependent variable: choice of debt market	**Bond = 1, Syndicated loan = 0**	**Bond = 1, Syndicated loan = 0**
Financial leverage	-0.0413[†]	-0.0244[†]
	(0.0096)	(0.0052)
Financial stress	0.0145[§]	0.0049[‡]
	(0.0057)	(0.0030)
Liquidation value	-0.0247[†]	-0.0132[†]
	(0.0085)	(0.0045)
Profitability	-0.0226	-0.0240[†]
	(0.0164)	(0.0094)
Current ratio	0.2795	0.2438[§]
	(0.1824)	(0.1013)
Market-to-book value	0.0902[§]	0.1028[§]
	(0.0433)	(0.0254)
Sales growth	0.0027	0.0023
	(0.0021)	(0.0013)
Size of firm	-0.3892[†]	-0.2318[†]
	(0.0867)	(0.0443)
Technology expenditure	0.0421[†]	0.0300[†]
	(0.0138)	(0.0079)
GDP growth	-5.6350	2.2909
	(9.8898)	(4.0334)
Interest rates	-0.3898[§]	-0.1706[‡]
	(0.2042)	(0.1035)
Sector dummies	Yes	Yes
Year dummies	Yes	Yes
Country dummies	Yes	Yes
Number of observations	1,445	2,460
Number of firms	1,049	1,377

[a] [†, §,] and [‡] indicate 1%, 5% and 10% significance levels respectively.

[b] Standard errors are given in brackets.

5.1.3 Growth options

European firms' market-to-book value is positively related to the probability of issuing debt in the bond market. A higher market-to-book value indicates risk-adjusted investors' expectations on the future cash flows of the firms. Overall, European firms are better valued by equity markets and also tend to prefer public

funding via the corporate bond markets. Therefore, syndicated loan markets stand as an alternative for bond markets when the borrowers are not so highly valued by the market, as more in depth knowledge of the borrower is warranted.[10]

We find that profitability increases firms' likelihood of tapping syndicated loan markets. This is contrary to Denis and Mihov (2003), who report that profitable firms are more likely to issue public debt. Creditors participating in syndicated lending deals deem profitability to be a measurement of a firm's ability to pay back its debt by generating income.

Our results also suggest that higher capital expenditure leads to public debt funding by European firms. As with the market-to-book value, this probably captures the impact of the potential growth options through new investments. In other words, those firms with higher and visible capital investment spending, signalling further growth, prefer public debt markets. This explanation runs counter to the use of investment as a proxy to measure the concerns of information leakage on the choice of debt market. This literature hypothesises that firms with significant investment, in particular R&D investment, will have disclosure concerns. These firms may therefore prefer debt with fewer counterparties (i.e. syndicated or unilateral loans) as creditors. Indeed, using a direct proxy for R&D expenditure, earlier studies document a positive relationship between this variable and the use of bilateral bank debt (Denis and Mihov (2003) and Barclay and Smith (1995)). This latter explanation is likely to apply to the private unilateral bank but is probably less relevant in the case of the syndicated loan market.

5.1.4   Size of firm and flotation costs
Our findings for listed companies are twofold. Firstly, we find that larger firms are more likely to issue debt in the syndicated loan markets than the corporate bond market. Secondly, when including a larger sample with smaller firms from the larger dataset (see Table 4; this is discussed further in Section 5.4), the results show that size is positively related to the probability of issuing debt in *both* the corporate bond and syndicated loan markets. Therefore, syndicated loans seem to be the instrument of choice at the extreme where firms are very large. Here, the flexibility and the faster and relatively simple issuance process of arranging a syndicated loan may also play an

---

[10] Growth in sales (a backward-looking growth indicator) is also found to increase the likelihood of

important role. Likewise, for very large loans, syndicated loans seem to be the preferred option, as participating banks are probably valuing the accumulated credit in-depth knowledge on a specific borrower or sector from the lead bank[unclear?].

These findings complement previous empirical results for the issuance of corporate bonds, which showed that scale factors played a role due to legal admistrative and other more fixed costs when issuing public debt (Bhagat and Frost (1986), Smith (1986), Blackwell and Kidwell (1988), Krishnaswami et al. (1999), Denis and Mihov (2003) and Esho et al. (2001)).

5.1.5 Information asymmetries and choice of syndicated loans

Agency costs associated with moral hazard problems may be mitigated by active monitoring by lenders (Diamond (1984 and 1991)). In the case of European firms, we report a positive relationship between the level of short-term debt and the possibility of borrowing through bond markets. A higher ratio of short-term to total debt may expose the firm to more intensive scrutiny by potential creditors and a higher bankruptcy risk. Regarding the latter, this result could indicate that firms with a very high level of risk may have to resort to private debt arrangements (Cantillo and Wright (2000), Chemmanur and Fulghieri (1994) and Blackwell and Kidwell (1988)). Alternatively, the pressure of short-term debt may be more optimal for financial markets if it increases the short-term pressures and monitoring on the borrower.

Information asymmetries are also expected to be higher in firms with more uncertain growth options. As indicated earlier, it seems that syndicated loan market participation is more related to actual and tangible accounting profits, while corporate bond market issuance seems to be more related to the forward-looking expectations reflected in the market-to-book value.

5.2 Multinomial specification

To scrutinise the data further, we use a multinomial specification in which we transform the dependent variable *choice of debt* to comprise the option of *joint issuance*. This would include bond and only syndicated loan issues. For this, to the previous sample we add those observations where a firm issues both a syndicated loan

---

borrowing from bond markets, but only in Model 3.

and a corporate bond within the same year (Categories I to IV). In this specification, there are 288 joint issues by 164 firms in Category IV, which includes the largest firms of the sample (see Table 1). Given their size, the financing needs of these firms are much higher than in the case of other firms. They also have the ability and established credibility to raise debt simultaneously in both markets within the same year. By making *joint issuance* the normalised alternative in our estimations, we aim to capture the behaviour of these very large firms when they are facing specific financial conditions. Since they can easily access both markets, they may opt to borrow only from a particular market at certain times depending on their financial state.

The results are presented in Table 3 (see the last column in particular). The coefficient of a firm's size confirms that larger firms are more likely to use both markets simultaneously. Firms with high financial leverage are more likely to borrow simultaneously from both markets, rather than tapping only the bond markets. The possibility of facing financial stress limits the firms' ability to finance their activities from both markets simultaneously. Hence, a higher amount of shorter-term debt forces large firms to choose one of the alternative debt markets.

Our findings on liquidation value and market-to-book value, set out in Section 5.1, continue to hold in the multinomial specifications. In the case of European firms, a higher project liquidation value increases the likelihood of borrowing through the syndicated loan markets, compared with a simultaneous use of both markets. On the other hand, growth potential leads to a choice of financing through the issuance of bonds.

Table 3: Multinomial logistic regressions predicting firms' choices of issuing debt in the alternative syndicated loan and bond markets [a, b]

This table reports the estimates of multinomial logistic regressions predicting firms' choices of debt. The dependent variable is defined as the three alternatives of issuing a bond, issuing a syndicated loan and issuing both simultaneously within a year. **Joint issuance is the base outcome.** Financial leverage is measured by the ratio of total debt to total assets. Financial stress is equal to the ratio of short-term debt to total debt. Liquidation value is measured by the ratio of fixed assets to total assets. Profitability is measured by return on assets. Current ratio is measured by dividing current assets by total current liabilities. Market-to-book ratio is the book value of assets minus the book value of equity plus the market value of equity. Sales growth is the year-on-year percentage growth in sales. Size is measured by the total assets of a firm. Asset turnover is calculated by dividing total sales by total assets. GDP growth is the year-on-year percentage change in GDP. The interest rate is the one-year money market rate.

Dependent variable: choice of debt market. Joint issuance is the base outcome.	Model 3	
	Bond	**Syndicated loan**
Financial leverage	-0.0146†	0.0039
	(0.0055)	(0.0059)
Financial stress	0.0177†	0.0128†
	(0.0038)	(0.0040)
Liquidation value	0.0048	0.0131†
	(0.0046)	(0.0047)
Profitability	-0.0080	0.0163
	(0.0103)	(0.0112)
Current ratio	0.4458†	0.2383
	(0.1385)	(0.1469)
Market–to–book value	0.0431§	-0.0522
	(0.0238)	(0.0330)
Sales growth	-0.0001	-0.0023
	(0.0011)	(0.0017)
Size of firm	-0.4509†	-0.3159†
	(0.0411)	(0.0425)
Technology expenditure	0.0041	-0.0193§
	(0.0071)	(0.0086)
GDP growth	6.9428	6.4946
	(6.4585)	(6.4420)
Interest rates	-0.0260	0.1225
	(0.1651)	(0.1724)
Sector dummies	Yes	Yes
Year dummies	Yes	Yes
Country dummies	Yes	Yes
Number of observations	2,748	
Number of firms	1377	
Prob > chi2	0.000	
Pseudo R2	19.3	

[a] †, §, and ‡ indicate 1%, 5% and 10% significance levels respectively.

[b] Standard errors are given in brackets.

5.4 Larger sample with smaller firms

In previous sections, the focus was on firms that are large and credible enough to be able to access public bond and/or the syndicated loan markets. In fact, our analysis includes only those observations where a firm issues a certain type of debt successfully.

Hence, we enlarge the dataset by incorporating those firms and year observations in which firms do not tap any debt market to comprise 3,626 firms with 24,423 observations. Compared with the previous sample, we add a further 2,228 listed non-financial European firms to the sample. These firms did not issue any debt in either the bond or the syndicated loan markets between 1993 and 2006. Overall, they are relatively smaller than the original sample with a mean asset size of USD 791 million. The ability of smaller firms to borrow from these segments of the credit markets may be limited owing to the size of their financing needs. They could also lack the credit quality, which will reflect in their financial status.

We assume that these firms have been financing themselves either through bilateral bank loans or other types of private debt.[11] In this specification, the dependent variable *choice of debt* takes the value of 0 if the firm does not issue any debt, 1 if it receives a syndicated loan, 2 if it issues a bond and 3 if it taps both debt markets simultaneously within the same year. We run a multinomial logistic regression with random effects using all observations, with no debt issuance being the base outcome. Table 4 displays the results[12].

---

[11] Ideally the analysis could have given better results if we had had the opportunity to include bilateral loans and other private debt incurred by the firms in our sample. However, owing to data unavailability we rely only on the findings of previous studies.

[12] To check for robustness we ran similar regressions with our original sample of 1,377 firms by including the years in which they do not issue any debt. We find that firms' characteristics affecting the choices of alternative debt options (bond, loan or both within the same year) are similar. This is due to the fact that the differences between the alternative choices are only present at marginal levels after the firms tap the market. However, these unreported findings only capture the characteristics affecting the firms' decision of whether to borrow (via any of the three options) or not to borrow (no issuance) at all.

Table 4: Multinomial logistic regressions predicting firms' choices of issuing debt in the alternative syndicated loan and bond markets – large sample [a, b]

This table reports the estimates of multinomial logistic regressions predicting firms' choices of debt. The dependent variable is defined as the four alternatives of no issuance, issuing a bond, issuing a syndicated loan and joint issuance (issuing both simultaneously within a year). **No issuance is the base outcome.** Financial leverage is measured by the ratio of total debt to total assets. Financial stress is equal to the ratio of short-term debt to total debt. Liquidation value is measured by the ratio of fixed assets to total assets. Profitability is measured by return on assets. Current ratio is measured by dividing current assets by total current liabilities. Market-to-book ratio is the book value of assets minus the book value of equity plus the market value of equity. Sales growth is the year-on-year percentage growth in sales. Size is measured by the total assets of a firm. Asset turnover is calculated by dividing total sales by total assets. GDP growth is the year-on-year percentage change in GDP. The interest rate is the one-year money market rate.

Dependent variable: choice of debt market	Model 4		
	Bond	**Syndicated loan**	**Simultaneous issue**
Financial leverage	$0.0031^{\ddagger}$	$0.0233^{\dagger}$	$0.0234^{\dagger}$
	(0.0017)	(0.0026)	(0.0042)
Financial stress	$-0.0055^{\dagger}$	$-0.0127^{\ddagger}$	$-0.0262^{\ddagger}$
	(0.0010)	(0.0020)	(0.0036)
Liquidation value	$-0.0210^{\dagger}$	$-0.0066^{\dagger}$	$-0.0180^{\dagger}$
	(0.0018)	(0.0025)	(0.0036)
Profitability	-0.0027	$0.0189^{\dagger}$	0.0011
	(0.0024)	(0.0054)	(0.0092)
Current ratio	$0.1010^{\dagger}$	$-0.1348^{\S}$	$-0.4236^{\dagger}$
	(0.0144)	(0.0602)	(0.1326)
Market-to-book value	$0.0766^{\dagger}$	0.0092	$0.0476^{\dagger}$
	(0.0058)	(0.0163)	(0.0167)
Sales growth	$0.0028^{\dagger}$	$0.0016^{\S}$	$0.0022^{\S}$
	(0.0003)	(0.0008)	(0.0010)
Size of firm	$0.3101^{\dagger}$	$0.5215^{\dagger}$	$0.7777^{\dagger}$
	(0.0147)	(0.0203)	(0.0332)
Technology expenditure	$0.0336^{\dagger}$	$0.0092^{\ddagger}$	$0.0244^{\dagger}$
	(0.0022)	(0.0051)	(0.0064)
GDP growth	1.8743	1.9730	-2.0649
	(1.9497)	(2.3907)	(6.5654)
Interest rates	-0.0581	0.0900	-0.0754
	(0.0446)	(0.0597)	(0.1858)
Sector dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
Country dummies	Yes	Yes	Yes
Number of observations	24,423		
Number of firms	3605		
Prob > chi2	0.000		
Pseudo R2	17.86		

[a] $\dagger$, $\S$, and $\ddagger$ indicate 1%, 5% and 10% significance levels respectively.

[b] Standard errors are given in brackets.

The signs and significance of the estimated coefficients for financial leverage, financial stress, liquidation value, sales growth and technology expenditure do not vary across the two alternative debt markets. Larger firms are more likely to borrow from syndicated loan and bond markets, as larger issues will be cost efficient when

issuance costs are considered. It is also probably easier for a larger firm to raise external financing on top of bilateral debt arrangements.

Therefore, it is more likely that smaller and medium-size firms meet their financing needs through private debt and bilateral bank loans. Firms with greater financial leverage are less likely to tap both markets. A high ex ante probability of financial stress forces them to refrain from both markets due to renegotiation concerns. Perhaps a choice of debt instrument with a single creditor (i.e. private finance or bilateral bank loans) will increase a firm's possibility to renegotiate the terms of debt agreement effectively. Our findings also show that concerns about inefficient liquidation discourages firms from raising finance in the syndicated loan and bond markets. Variables signifying the growth potential of a firm are generally positively related to the probability of using the bond and syndicated loan markets.

The two variables displaying different signs in estimated coefficients are current ratio and profitability: firms with high growth options measured by sales or the market-to-book value are more likely to use the bond markets.[13] Results also show that a higher level of current assets is attached to the preference of bond markets.

Overall, the results obtained in this section show that the motivation to use the syndicated loan markets is not different from that to use the bond markets when the larger sample with smaller firms is included. When syndicated loans are considered as a part of the debt options spectrum for all firms, regardless of size, the motivation of firms tapping these two alternative markets is found to be broadly similar. This result vouches for the need to consider both external financing alternatives (syndicated loans and corporate bonds) when considering the determinants of external financing.

---

[13] In the literature, variables for growth options are also used to measure asymmetric information related to moral hazard and agency costs.

6. Conclusions

In the euro area, the syndicated loans market has developed rapidly during the last thirty years and today represents one-third of total debt and equity financing. We analyse the financial determinants of choice between corporate bonds and syndicated loans for a sample of 2,460 new debt issues by 1,377 listed euro area non-financial firms during the period 1993-2006. Our paper contributes to the literature on determinants of debt choice in two dimensions. First, unlike prior studies, we distinguish syndicated loans from ordinary bilateral loans and define it as a separate asset class. Second we provide evidence from euro area firms.

The results indicate that for firms in the euro area, the choice of syndicated loans over bond financing is positively related to a firm's size, financial leverage, profitability and the level of fixed relative to total assets. We find that firms preferring bond financing carry higher levels of short-term debt, which probably provides more extensive market monitoring but has more growth opportunities. Previous authors provide evidence that firms borrowing through public debt markets are larger, more profitable, more highly levered and have fewer growth opportunities than firms that rely primarily on bank financing. These findings suggest that in the pecking order, firms firstly borrow from banks until they establish the credibility to obtain financing from public bond markets.

Comparing the debt choice of European firms – the bond market or the syndicated loan market – we present new evidence. Firms that are larger, more profitable, more highly levered, with a higher proportion of fixed to total assets and fewer growth options prefer syndicated loans over bond financing. Our findings do not contradict previous studies, as these rarely looked at syndicated loans and often categorised them as part of bilateral bank loans. We argue that, in the debt pecking order, syndicated loans are the preferred instrument on the extreme end where firms are very large, have high credibility and profitability, but fewer growth opportunities.

Our findings also provide some evidence to the discussion of whether the recent developments (i.e. the development of a regulated and standardised secondary market and independently rated loan issues) in syndicated loan markets have triggered convergence between bond and syndicated loan markets from the perspective of a firm's choice of debt. The results presented reveal that, in the euro area, the

motivation of very large firms tapping these markets are not alike and financial features that lead to a particular choice of debt market are different. However, when considered as part of the debt options spectrum for all firms, regardless of size, the motivation of firms tapping these two alternative markets is found to be similar.

References

Allen, F., and D. Gale, 1997. Financial markets, intermediaries, and intertemporal smoothing. *Journal of Political Economy*, 105 (3), pp. 523-46.

Altman, E. I., and H.J. Suggitt, 2000. Default rates in the syndicated loan market: A mortality analysis. *Journal of Banking and Finance*, 24, pp. 229-253.

Altunbaş, Y., B. Gadanecz and A. Kara, 2006. *Syndicated loans: a hybrid of relationship lending and publicly traded debt*. New York: Palgrave Macmillan Studies in Banking and Financial Institutions Series.

Altunbaş, Y., B. Gadanecz, and A. Kara, 2005. Key factors affecting internationally active banks' decisions to participate in loan syndications. *Applied Economics Letters*, 12, pp. 249–53

Amaro de Matos, J., 2001. *Theoretical foundations of corporate finance*, Princeton: Princeton University Press.

Angbazo, L. A., J. Mei and A. Saunders, 1998. Credit spreads in the market for highly leveraged transaction loans. *Journal of Banking and Finance*, 22(10-11), pp. 1249-82.

Armstrong, J., 2003. *Syndicated loan market: developments in the north american context*. Bank of Canada Working Paper, 2003-15

Barclay, M., and C. Smith, 1995. The maturity structure of corporate debt. *Journal of Finance*, 50, pp. 609 – 31.

Berlin, M. and J. Loeys, 1988. Bond covenants and delegated monitoring. *Journal of Finance*, 43, pp. 397 – 12.

Bhagat, S., and P. Frost, 1986. Issuing costs to existing shareholders in competitive and negotiated underwritten public utility equity offerings. *Journal of Financial Economics*, 15, pp. 233-59.

Billet, M., M. Flannery and J. Garfinkel, 1995. The effect of lender identity on a borrowing firm's equity return. *Journal of Finance*, 50, pp. 699-18.

Blackwell, D., and D. Kidwell, 1988. An investigation of cost differences between sales and private placements of debt. *Journal of Financial Economics*, 22, pp. 253-78.

Bolton, P., and X. Freixas, 2000. Equity, bonds and bank debt: capital structure and financial market equilibrium under asymmetric information. *Journal of Political Economy*, 108, pp. 324–51.

Boot, A. W. and A. V. Thakor, 2008. The accelerating integration of banks and markets and its implications for regulation. *Amsterdam Center for Law & Economics*, Working Paper No. 2008-02.

Boot, A.W. and A. V. Thakor, 2000. Can relationship banking survive competition? *Journal of Finance*, 55 (2), pp. 679-13.

Bradley, M. and M. Roberts, 2003. *The structure and pricing of corporate debt covenants*. Duke University: Working paper

Bosch, O., 2006. *Information asymmetry and the pricing of private debt – evidence from European syndicated loans*. Goethe University Frankfurt: Working Paper.

Boyd, J., and E. Prescott, 1986. Financial Intermediary-coalitions. *Journal of Economic Theory*, 38, pp. 211-32.

Cantillo, M., and J. Wright, 2000. How do firms choose their lenders? An empirical investigation. *Review of Financial Studies*, 13, pp. 155-89.

Chemmanur, T., and P. Fulghieri, 1994. Reputation, renegotiation, and the choice between bank loans and publicly traded debt. *Review of Financial Studies*, 1, pp. 475-506.

Coleman, A.D.F., N. Esho and I.G. Sharpe, 2006. Do bank characteristics influence loan contract terms. *Journal of Financial Services Research*, 30 (2), pp. 177-98.

Denis, D., and V. Mihov, 2003. The choice among bank debt, non-bank private debt and public debt: Evidence from new corporate borrowings. *Journal of Financial Economics*, 70, pp. 3 – 28.

Dennis, S. and D. Mullineaux, 2000. Syndicated loans. *Journal of Financial Intermediation*, 9, pp. 404-26.

Diamond, D. 1984. Financial intermediation and delegated monitoring. *Review of Economic Studies*, 51, pp. 393-414.

Diamond, D. 1991. Monitoring and reputation: The choice between bank loans and directly placed debt. *Journal of Political Economy*, 99, pp. 689–21.

Esho, N., Lam, Y., I.G. Sharpe, 2001. Choice of financing source in international debt markets. *Journal of Financial Intermediation*, 10, pp. 276– 305.

Esty, C.B. and W.L. Megginson, 2003. Creditor rights, enforcement, and debt ownership structure: Evidence from the global syndicated loan market. *Journal of Financial and Quantitative Analysis*, 38 (1), pp 37-59.

Fama, E. 1985. What's different about banks? *Journal of Monetary Economics*, 15, pp. 29-39.

Holmstrom, B., and J. Tirole, 1997. Financial intermediation, loanable funds and the real sector. *Quarterly Journal of Economics*, 112, pp. 663-91.

Hoshi, T., A. Kashyap and D. Scharfstein, 1993. *The choice between public and private debt: An analysis of post-deregulation corporate financing in Japan*, NBER Working Papers 4421, National Bureau of Economic Research, Inc.

Houston, J. and C. James 1996. Bank information monopolies and the mix of private and public debt claims. *Journal of Finance*, 51, pp. 1863 – 1890.

Hoven-Stohs, M., D. Mauer 1996. The determinants of corporate debt maturity structure. *Journal of Business*, 69, pp. 279–312.

Hubbard, G.R., N.K Kuttner, and D.N. Palia, 2002. Are there bank effects in borrowers' costs of funds? Evidence from a matched sample of borrowers and banks. Journal of Business, 75 (4), pp. 559-81.

Jensen, M., and W. Meckling, 1976. Theory of the firm: managerial behaviour, agency costs, and ownership structure. *Journal of Financial Economics*, 3, 305-360.

Jones, J., W. Lang and P. Nigro, 2000. *Recent trends in bank loan syndications: Evidence for 1995 to 1999*. Economic and Policy Analysis Working Paper 2000-10, Comptroller of the Currency Administrator of National Banks.

Johnson, S. A., 1997. An empirical analysis of the determinants of corporate debt ownership structure. *Journal of Quantitative Analysis*, 32, pp. 47-69.

Kanatas, G. and D. Besanko, 1996. The regulation of bank capital: Do capital standards promote bank safety? *Journal of Financial Intermediation*, 5, pp. 160-183.

Krishnaswami, S., P. Spindt, and V. Subramaniam, 1999. Information asymmetry, monitoring, and the placement structure of corporate debt. *Journal of Financial Economics*, 51, pp. 407-34.

Lee, S.W. and D. J. Mullineaux, 2004. Monitoring, financial distress, and the sturcure of commercial lending syndicates. *Financial Management*, 33, pp.107-30.

Lummer, S.L. and J.J. McConnel, 1989. Further evidence on the bank lending process and the capital market response to bank loan agreements. *Journal of Financial Economics*, 25, pp. 99-122.

Meggison, W., A. Poulsen and J. Sinkey, 1995. Syndicated loan announcements and the market value of the firm. *Journal of Money, Credit and Banking*, 27, pp. 457-75.

Modigliani, F. and M. H. Miller, 1958. The cost of capital, corporation finance and the theory of investments. *American Economic Review*, 48 (3), pp. 261-297.

Mullineaux, D. and M. Pyles 2004. *Constraints on loan sales and the price of liquidity*, Working paper, University of Kentucky.

Myers, S., 1997. Determinants of corporate borrowing. *Journal of Financial Economics*, 25, pp. 99-122.

Preece, D. and D. Mullineaux, 1996. Monitoring, loan renegotiability and firm value: The role lending syndicates. *Journal of Banking and Finance*, 20, pp. 577-593.

Simons, K., 1993. Why do banks syndicate loans*? New England Economic Review, Federal Reserve Bank Boston*, pp. 45-52.

Smith, C. 1986. Investment Banking and the Acquisition Process. *Journal of Financial Economics*, 15, pp. 3-29.

Song, F., and A.V. Thakor, 2008. *Financial system architecture and the co-evolution of banks and capital markets*. Working paper, Pennsylvania State University.

Smith, C., and R. Watts 1992. The investment opportunity set and corporate financing, dividend, and compensation policies. *Journal of Financial Economics*, 32, pp. 263–292.

Sufi, A., 2007. Information asymmetry and financing arrangements: evidence from syndicated loans. *Journal of Finance*, 17(2), pp. 629- 668.

Steffen, S. and M. Wahrenburg 2008. *Syndicated loans, lending relationships and the business cycle*. Goethe University Frankfurt, Working paper.

Thomas, H. and Z. Wang, 2004. The integration of bank syndicated loan and junk bond markets. *Journal of Banking and Finance*, 28 (2), pp. 299-329

Thomson Financial, Global Capital Markets Report 2007. Available at: http://www.thomson.com/cms/assets/pdfs/financial/league_table/debt_and_equity/4Q2006/4Q04_DE_PR_Global_Capital_Markets.pdf.

Tirole, J., 2006. *The theory of corporate finance*, Princeton and Oxford: Princeton University Press.

APPENDIX

Table 5: Correlation matrix

This table reports correlations between independent variables. Financial leverage is measured by the ratio of total debt to total assets. Financial stress is equal to the ratio of short-term debt to total debt. Liquidation value is measured by the ratio of fixed assets to total assets. Profitability is measured by return on assets. Current ratio is measured by dividing current assets by total current liabilities. Market-to-book ratio is the book value of assets minus the book value of equity plus the market value of equity. Sales growth is the year-on-year percentage growth in sales. Size is measured by the total assets of a firm. Asset turnover is calculated by dividing total sales by total assets GDP growth is the year-on-year percentage change in GDP. The interest rate is the one-year money market rate.

	Financial leverage	Financial stress	Liquidation value	Profitability	Current ratio	Market-to-book value	Sales growth	Size of firm	Technology expenditure	GDP growth	Interest rates
Financial leverage	1.00										
Financial stress	-0.18	1.00									
Liquidation value	0.26	-0.22	1.00								
Profitability	-0.11	-0.07	0.04	1.00							
Current ratio	-0.34	-0.08	-0.19	0.03	1.00						
Market-to-book value	-0.06	0.00	-0.12	0.08	0.01	1.00					
Sales growth	-0.04	0.00	-0.09	-0.05	0.05	0.10	1.00				
Size of firm	0.11	-0.20	0.16	0.18	-0.17	-0.05	-0.02	1.00			
Technology expenditure	0.04	-0.09	0.14	0.06	-0.02	0.10	0.16	-0.01	1.00		
GDP growth	0.05	-0.06	0.09	0.11	-0.07	0.03	0.01	0.03	0.03	1.00	
Interest rates	-0.01	0.04	0.09	0.05	-0.01	-0.05	0.01	0.05	0.03	0.16	1.00