

# **The Choice Among Bank Debt, Non-Bank Private Debt and Public Debt: Evidence From New Corporate Borrowings\***

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# **The Choice Among Bank Debt, Non-Bank Private Debt and Public Debt: Evidence From New Corporate Borrowings**

## **Abstract**

Using a sample of 1,560 new debt financings, we examine the choice among bank debt, private, non-bank debt, and public debt. We find that the primary determinant of the choice of debt source is the credit quality of the issuer. Firms with the highest credit quality borrow from public sources, firms with medium credit quality borrow from banks, and firms with the lowest credit quality borrow from non-bank private lenders. Although most prior studies do not distinguish between bank and non-bank private debt, our findings indicate that non-bank private debt plays a unique role in accommodating the financing needs of firms with low credit quality. In addition, we find some evidence that the choice of debt source is influenced by managerial discretion.

## 1. Introduction

Debt financing is the predominant source of new external funds for U.S. corporations. For example, flow of funds data from the Federal Reserve System indicate that net new issues of equity have been negligible over the past two decades.<sup>1</sup> In other words, external financing has come almost exclusively from new corporate borrowings. New debt financing comes from three primary sources: banks, non-bank private lenders, and public debt offers. We provide evidence on the choice among these alternative sources of debt financing.

Previous studies hypothesize that private debt financing has a significant advantage over public debt in terms of monitoring efficiency, [e.g., Diamond (1984), Boyd and Prescott (1986), and Berlin and Loyes (1988)], access to private information [Fama (1985)], and the efficiency of liquidation and renegotiation in financial distress [Chemmanur and Fulghieri (1994) and Gertner and Scharfstein (1991)]. However, Rajan (1992) argues that private lenders can also negatively affect the borrower by extracting rents and distorting management incentives.

Prior empirical studies by Houston and James (1996), Johnson (1997), Krishnaswami, Spindt and Subramaniam (1998), and Cantillo and Wright (2000) document a positive relation between the use of public debt financing and firm characteristics such as size, leverage, age, and amount issued. However, these studies differ in their findings about the effects of the proportion of fixed assets to total assets and the market-to-book ratio on the source of debt.

We extend the literature on debt choice in several ways. First, we use an incremental approach that analyzes the determinants of new debt issues.<sup>2</sup> The incremental approach allows

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<sup>1</sup> See Board of Governors of the Federal Reserve System (2000).

<sup>2</sup> A similar incremental approach is used by Hovakimian, Opler and Titman (2001), who study the debt-equity choice, by Jung, Kim and Stulz (1995), who examine external financing decisions, and by Guedes and Opler (1996), who study the determinants of debt maturity.

us to link borrowing decisions of the firm with variables measured just prior to the borrowing decision; to investigate the borrowing decisions of firms that have no debt outstanding at the time of issuance; and to compare characteristics of different types of debt financing. On the other hand, although the incremental approach is well-suited to testing theories that rely on time-variation in firm characteristics, it is not as well-suited to testing theories that relate the mix of debt to the firm's asset mix. Moreover, an incremental borrowing decision might represent a temporary deviation from the firm's optimal mix of debt claims. For these reasons, our findings should be viewed as complementing those from studies of the existing mix of debt claims.

Second, unlike most prior studies, our empirical analysis distinguishes between bank and non-bank private debt. This distinction is important since we show that non-bank private debt is an economically important financing source. Moreover, non-bank private loans exhibit substantially different characteristics than bank loans.

Third, we provide direct evidence on the role of credit quality in the choice of debt source. Although several theoretical studies predict an association between credit quality and the choice between public and private debt, with the exception of Blackwell and Kidwell (1988) there is, to our knowledge, little empirical evidence on this issue. Moreover, as noted above, the prior theory typically does not distinguish between bank and non-bank private debt. We argue, however, that non-bank private debt is particularly well-suited to serving the needs of debt issuers with poor credit quality.

Finally, we provide evidence on the role of managerial discretion in the choice of debt instrument. Recent studies by Stulz (1990) and Berger, Ofek, and Yermack (1997) point towards a more prominent role for managerial discretion in capital structure decisions. Because of their more concentrated holdings and superior access to information, private lenders are more likely to

constrain managerial discretion than public lenders. Hence, the managerial discretion hypothesis predicts that, all else equal, managers will seek to avoid this constraint by issuing public debt. We argue, however, that managers with high equity ownership will be less likely to avoid the constraints of private debt because (i) their ownership stake gives them the incentive to choose the security that maximizes value, and (ii) higher ownership insulates managers from constraints imposed by debtholders. Thus, under the managerial discretion hypothesis, we expect a negative relation between managerial equity ownership and the likelihood of public debt issues.

Our sample consists of 1,560 new debt financings completed by 1,480 public companies in 1995 and 1996. We find that incremental debt choices are linked with prior financing decisions. Firms with public debt outstanding are likely to issue public debt in their marginal financing choices. Conversely, those firms that have not established a reputation in the credit markets predominantly choose to issue bank debt.

Controlling for the firm's existing mix of debt claims, we find that the primary determinant of the choice of debt instrument is the credit quality of the issuing firm. Public borrowers are larger firms, have a higher proportion of fixed assets-to-total assets, a higher credit rating, and are more profitable than both bank and non-bank private lenders. Conversely, firms that borrow from non-bank, private lenders tend to be the poorest performers, have the lowest credit rating, and the highest ex-ante probability of default. These findings are not driven by firms with no debt at the time of issuance and continue to hold if we restrict the sample to larger firms who, presumably, have access to public debt markets. In contrast, we find only weak evidence that debt choice is related to managerial ownership.

Our findings suggest that firms with the highest credit quality borrow from public sources, firms with medium credit quality borrow from banks, and firms with the lowest credit

quality borrow from non-bank private lenders. The results for high quality and medium quality firms are broadly consistent with the predictions of models based on information asymmetry, borrower's reputation, and efficient renegotiation. These models differ, however, in their predictions for firms with the lowest credit quality. Our findings indicate that the market for private, non-bank debt, which has been largely ignored in the prior literature, complements bank and public sources of borrowing by accommodating firms with the lowest credit and project quality.

The remainder of the paper is organized as follows. In section 2, we develop hypotheses from the various theories about the determinants of debt choice and summarize the prior empirical evidence. In section 3, we describe the data and the empirical methodology. Section 4 presents our primary results. Section 5 concludes.

## **2. Theory, Prior Evidence, and Empirical Predictions**

In this section, we briefly summarize the existing theory, extend that theory to account for managerial discretion considerations, and review the existing evidence.

### *2.1. Public vs. Private Debt*

Prior theory examines the debt choice in the context of information asymmetry, efficient renegotiation of debt claims, and the agency costs of debt. For the most part, this theory does not distinguish between bank and non-bank private debt.<sup>3</sup>

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<sup>3</sup> Two exceptions are Campbell and Kracaw (1980) and Fama (1985). Contrary to Leland and Pyle (1977), Campbell and Kracaw suggest that any information producer with a sufficiently large position in the market can resolve the moral hazard problem. This would include both bank and non-bank private lenders. In contrast, Fama (1985) argues that banks have an advantage in monitoring because of their ongoing relationship with the borrowing firm. James (1987) reports evidence consistent with the view that banks provide unique services not available from other lenders.

*Information asymmetry.* Leland and Pyle (1977), Diamond (1984), Fama (1985) and Boyd and Prescott (1986) hypothesize that banks and other private lenders are more efficient and effective monitors than “arm’s-length” investors. Hence, firms with a higher degree of information asymmetry will borrow privately, while firms with lower information asymmetry prefer public debt. In contrast, Diamond (1991) and Rajan (1992) predict a non-monotonic relation between firm quality and debt source. Like the models above, they predict that the highest quality firms issue public debt, while medium quality firms borrow from banks. However, they argue that, for low quality firms, the costs of bank monitoring outweigh the benefits. Hence, these firms issue public debt.

According to Myers (1984), firms facing high costs of asymmetric information will use external funds only when internally generated funds are not available. If external funds are required, the firm will issue the “safest” security first – the one whose value changes least when inside information is revealed to the market – first debt, and only as a last resort, equity. Because private debt is more informed through monitoring and screening, and is usually senior [Welch (1997)] and collateralized [Rajan and Winton (1995)], we hypothesize that it will be a safer instrument than arm’s length debt, holding constant the degree of information asymmetry between the firm and the outside market. Thus, firms with higher levels of asymmetric information, and higher probability of default, will issue private debt before public debt. As the degree of asymmetric information decreases, the scale of safety becomes less important, and the debt choice for firms with lower asymmetry will be determined by other factors – e.g., transactions costs, the flexibility of covenants [Gilson and Warner (1998)], credit quality [Diamond (1991)], and the possibility of rent extraction by banks [Rajan (1992)].

*Efficiency of renegotiation and liquidation.* Berlin and Loyes (1988) and Chemmanur and Fulghieri (1994) derive predictions about the sources of borrowing as a function of the borrower's prior probability of default and the lender's ability to make an efficient liquidation decision: firms with both high and low credit rating are hypothesized to use public debt, while firms with intermediate rating use bank loans. The existing regulatory setting also gives higher flexibility of renegotiation to banks and other private lenders than to publicly held debt, suggesting that it is optimal for borrowers with higher ex-ante probability of distress to borrow privately. To comply with the Trust Indenture Act of 1939, firms must receive the unanimous consent of public bondholders to alter any of the material terms in the bond indenture. This can cause severe holdout problems for publicly traded bonds, which tend to be held by many investors. Gilson, John and Lang (1990) document a higher likelihood of private (and presumably less costly) restructuring for firms that hold a higher proportion of bank debt to total debt.

*Agency costs of underinvestment.* Myers (1977) hypothesizes that firms financed with risky debt sometimes forego investment in valuable projects, thereby reducing firm value. He suggests that maintaining a "continuous, intimate and flexible relationship" [Myers (1977), p. 159] with the lender can mitigate this underinvestment problem. It is more likely that a firm can achieve such a relationship with banks and other private lenders than with public debtholders, because private debtholders are much more concentrated and face fewer free-rider problems than public debtholders. This suggests that firms with higher future growth opportunities will prefer bank and other private debt to public debt.

*Managerial discretion.* Because of their concentrated holdings and access to information, banks and other private lenders have the ability to exert much greater influence and

pressure on management than public debtholders. We hypothesize that managers with low equity ownership stakes will seek to avoid this scrutiny by issuing public debt rather than private debt.<sup>4</sup> In contrast, we expect that managers with high equity ownership stakes will be more likely to issue private debt for two reasons. First, their ownership stake gives them the incentive to choose the security that maximizes value. Hence, if private debt is optimal, managers with high ownership are more likely to make that choice than managers with low ownership. Second, managers with high ownership have greater control within the firm. This insulates them from external pressures of debtholders.

## 2.2. *Bank vs. non-bank private debt*

Bank debt and non-bank private debt differ in terms of the concentration and identity of debtholders, regulatory requirements, maturity, and placement structure. A substantial portion of private debt is placed under SEC Rule 144A. This regulation allows companies to market debt directly to private institutional investors rather than going through the more time-consuming public securities issuance process. Kwan and Carleton (1995) describe private, non-bank loans as tightly held and relatively illiquid. In addition, private, non-bank loans tend to have lower flotation costs than public issues and have custom-designed covenants.

Debt issues under Rule 144A thus appear to combine some features of both bank loans and low-grade public debt. As such, they may be well suited to serving the needs of debt issuers with poor credit quality. Recall that the models of Diamond (1991) and Rajan (1992) predict that the costs of bank monitoring outweigh the benefits for low quality firms. Because Rule

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<sup>4</sup> Alternatively, following the intuition of Zwiebel (1996), low ownership managers might choose the closer monitoring and more restrictive bank debt as a credible signal of their commitment to optimal investment policy. Our prediction implicitly assumes that managers do not have the incentive to provide such a signal.

144A issuers are generally able to avoid the direct day-to-day influence of a bank, they are able to avoid most of these costs.<sup>5</sup> At the same time, however, because ownership of 144A debt issues is more concentrated than that of public debt issues, Rule 144A issues potentially offer greater flexibility of renegotiation in default. Thus, the benefits of private debt emphasized by Berlin and Loyes (1988) and Chemmanur and Fulgheri (1994) are retained. Finally, Carey, Post and Sharpe (1998) speculate that bank regulators may discourage banks from making loans to firms with low credit quality by requiring large loan loss reserves for these loans.

Based on these arguments, therefore, we hypothesize that the riskiest firms, having lowest project quality and highest probability of bankruptcy will be the most likely candidates for private, non-bank debt financing. These firms are likely to have limited access to both bank credit and to the public debt market, and are more likely to have demand for the speed of issuance that Rule 144A accommodates.<sup>6</sup>

### 2.3. *Prior empirical evidence*

Houston and James (1996), Krishnaswami, Spindt, and Subramaniam (1999), and Cantillo and Wright (2000) examine the cross-sectional determinants of the mix of public and private debt. For the most part, these studies emphasize the importance of growth opportunities, but also study the impact of the cost of asymmetric information, flotation costs, and number of bank relations on debt choice. The evidence suggests that larger firms, firms with larger issue sizes, and more profitable firms use public debt. The evidence is mixed on the impact of growth

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<sup>5</sup> See Gilson and Warner (1998). This feature can also be important for firms with valuable research and development projects who may prefer to avoid sharing that information with a bank for competitive reasons. Moreover, such illiquid and intangible assets offer poor collateral. Hence, these firms may be screened out by banks.

<sup>6</sup> Of course, riskier firms with the lowest credit quality may not be candidates for debt financing at all. All of our hypotheses are conditional on the firm issuing some type of debt.

opportunities on debt choice. Krishnaswami et al. (1999) and Cantillo and Wright (2000) document a positive relation between growth opportunities and the use of private debt. However, Houston and James (1996) report a negative relation for firms with a single bank relationship.

None of the above studies distinguishes between bank and non-bank private debt. To our knowledge only James (1987), Johnson (1997) and Carey, Post, and Sharpe (1998) make this distinction. James (1987) reports differences in the stock price reaction to announcements of bank loans and private placements. He does not, however, explore the determinants of the type of security issued. Johnson's (1997) study focuses on the proportions of each debt type in the capital structure while Carey et al. (1998) examine only differences between loans from banks and those from finance companies. Finally, there is little evidence on the role of credit quality and none on the role of managerial discretion in debt choice. Although not the focus of their study, Blackwell and Kidwell (1988) report that issuers of private placements have a higher default-risk index than issuers of public bonds. However, they do not examine determinants of the choice of debt instrument and do not consider bank loans.

### **3. Sample Description**

#### *3.1. Sample selection*

Public companies disclose material changes in their financing to the SEC. According to attorneys with the SEC's Division of Corporation Finance, if these financing events are significant enough to warrant a filing, they are typically accompanied by a press release. We search the *Dow Jones Interactive* newswires in the libraries "Financing Agreements" and "Private Placements" for announcements of debt financing agreements or private debt

placements in 1995 and 1996. We also use a variety of keywords to search for debt issue announcements outside of these two libraries. Similar to James (1987) and Lummer and McConnell (1989), we include announcements of new credit facilities as well as renewed and renegotiated facilities. We do not restrict the sample to firms that have access to public debt markets. Indeed, one of the goals of our study is to identify those factors that determine access to debt markets. Later, however, we do examine whether our findings are robust if we exclude smaller firms that are less likely to have access to public markets.

From the press releases, we collect information on the borrower's identity, amount and type of the loan, maturity of the loan, interest rate, collateralization, whether the loan is new, renewed, extended, or increased, the intended purpose of the financing, and the identity of the lender. From the *Investment Dealers' Digest*, we obtain data on the issuance date, amount issued, maturity, coupon, price, yield, rating, agent, and call provisions for new public and 144A debt issues. We exclude warrants, convertible debt, announcements by non-U.S. firms, and those made by financial firms (SIC codes 6000 to 6799).

This approach yields an initial sample of 2,338 new debt financings. After aggregating debt issues of the same type by the same firm within a calendar year, we are left with a final sample of 1,560 debt financings by 1,480 companies.<sup>7</sup> Of the 1,560 financings, 530 are public debt issues, 740 are bank loans, and 290 are private debt placements. Our sample debt financings represent 9.3% of the 16,736 firm-years reported on COMPUSTAT in 1995-1996 (excluding firms in SIC codes 6000-6799). By way of comparison, James (1987) reports 207 debt issues in a sample of 3,000 firm-years (6.9%) between 1974 and 1983, while Mikkelsen and

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<sup>7</sup> This is a more relevant issue for the public debt issues, where firms sometimes have several different issues within a month, or even on the same day. The results reported throughout the paper remain qualitatively similar if we aggregate such issues within a month, or if we do not aggregate them at all.

Partch (1986) report 468 debt issues in a sample of 3,213 firm years (14.6%) between 1972 and 1982.<sup>8</sup>

One concern with our sample selection process is that we might miss some financing events because they do not trigger the SEC requirement for disclosure. The SEC requires disclosure of financing whenever there is a significant acquisition or disposition of assets. Although this seems likely in the case of public debt issues and non-bank private debt issues, many bank loan renewals, small bank loans, and events in which a firm negotiates but does not draw down a new bank loan may be excluded from our dataset.

To examine this possibility, we cross-check our public debt issues and non-bank private debt issues with the new issues reported in Security Data Corporation's (SDC) New Issues database. We find that our sample represents over 80% of the public debt issue volume reported in the SDC database for the same time period. In addition, the average proceeds, maturity, and yield-to-maturity for the sample public issues are quite similar to those of the SDC population. Thus, our sample of public issues appears to be representative of the population of public issues.

Our sample non-bank private debt offerings represent 41% of the private and 144A placements on the SDC database. Thus, there appear to be a large number of private placements that are not reported, perhaps because they are small. Consistent with this conjecture, we find that the median issue size for the sample private placements exceeds \$70 million, while the median issue size for all private placements reported on SDC is only \$60 million.

It is much more difficult to discern how many bank loans are overlooked by our sampling procedures. However, following Hadlock and James (2002), we can provide indirect evidence

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<sup>8</sup> James (1987) collects public announcements of debt financing from the *Wall Street Journal*, while we use broader sources of public announcements. Mikkelson and Partch's sample includes only NYSE and AMEX firms, which are larger, and presumably more likely to issue external debt.

on this issue by comparing the bank loans in our sample with those in Carey, Post, and Sharpe (1998). Carey, Post and Sharpe (1998) examine loan agreements reported in the Loan Pricing Corporations's Dealscan database. Over the years 1987 to 1993, they report a median loan size of \$25 million for firms listed on Compustat. By contrast, our median bank loan size is \$60 million.

Thus it appears that that our sampling procedure does indeed exclude smaller bank loans and private placements. If public debt issues entail higher fixed costs, the exclusion of smaller private debt issues will cause us to understate the importance of scale economies in the choice of debt instrument. We are unaware of any other bias that this imparts on our cross-sectional results, however.

### *3.2. Characteristics of new debt issues*

Table 1 reports characteristics of the new debt issues. The total amount of debt raised by the sample firms is \$349.9 billion. Public debt accounts for \$162.3 billion, bank debt \$151.3 billion, and private debt \$36.4 billion. Public and bank debt markets provide approximately the same amount of financing, while private debt sources (bank and non-bank) combined account for more than half of the dollar amount of all new debt.

The sample debt issues are quite large. The median amount issued is approximately \$120 million. This is 24 percent of the book value of total assets as of the end of the previous fiscal year, 15 percent relative to the firm's market value, and 89 percent relative to existing debt. The last number is actually downward biased, since we cannot compute the ratio in those cases in which the firm has no debt outstanding at of time of issuance.

Not surprisingly, public borrowers tend to issue greater amounts of debt: the median amount issued is \$200 million, versus \$60 million for bank borrowers, and \$78.5 million for private, non-bank borrowers.<sup>9</sup> This difference in issue size is consistent with firms issuing greater amounts to take advantage of economies of scale in public security issues.<sup>10</sup> When comparing the relative issue sizes, however, the amount borrowed relative to total assets is lowest for public borrowers (median ratio 9%), and highest for bank borrowers (37%), with private, non-bank borrowers (26%) in between (all differences are significant at the 1% confidence level). Thus, although smaller in absolute size than public debt issues, bank and non-bank private debt borrowings are economically important financing events for the borrowing companies.

The maturity of the new issues ranges from 1 year to 100 years. The median maturity of the new debt is 8.7 years, and more than five percent of the debt matures in more than 30 years. The median maturity of public debt issues is 10 years, while the median maturity is 8.2 years for private, non-bank debt, and 3 years for bank borrowings. The average yield for the new issues is 8.36% (median = 7.58%), and the median credit rating (only for the rated public and 144A issues) is “BBB”. Yields are higher for private, non-bank borrowers (average = 9.40%) than for either public debt issuers (average = 8.24%) or bank borrowers (average = 7.14%).

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<sup>9</sup> Our measure of issue size for bank borrowings will overstate the actual amount borrowed in some cases. We record the amount of the line of credit issued, as opposed to the amount initially drawn down.

<sup>10</sup> For other evidence on the flotation costs of public and private debt issues, see Blackwell and Kidwell (1988), Carey et al. (1993), and Krishnaswami et al. (1999).

### *3.3. Existing mix of debt claims*

If firms manage towards an optimal mix of debt claims, it is likely that the new borrowing decision will be linked with the firm's existing debt mix. In table 2, we provide evidence on this issue. From Securities Data Corporation's (SDC) New Issues database, we collect all public and private placement debt issues prior to the new issue. SDC coverage of public debt begins in 1973, while private placement coverage begins in 1980. Based on each issue's original maturity, we estimate whether that debt is still outstanding at the time of the new issue.<sup>11</sup> We then divide the sample issuers into five categories; (i) those with no debt outstanding (67 firms), (ii) those with debt outstanding but no prior public or private placement debt issues (794 firms). We assume that the outstanding debt is bank loans in this case. (iii) those with public debt but no non-bank private debt outstanding (250 firms), (iv) those with non-bank private debt outstanding but no public debt (164 firms), and (v) those with both public and private, non-bank debt outstanding (285 firms).

This analysis yields several observations. First, bank debt appears to be the dominant choice of debt security for firms that either have no debt outstanding or that have no public debt outstanding. Among the 67 firms with no debt currently outstanding, 48 (72%) use bank borrowings for their new issue. Similarly over 50% of the firms with no public debt outstanding employ bank debt for their new debt issue.

Conversely, if a company has public debt outstanding, it is highly likely to issue public debt in its marginal financing choice. Among the 250 firms with public debt outstanding, 157

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<sup>11</sup> Alternatively, we could examine the footnotes to the financial statements and attempt to identify the mix of debt in the firm's current capital structure. However, our examination of financial statements indicated that it is often extremely difficult to distinguish between public and private debt using this data. The difficulty is particularly acute for non-bank private debt. Given the high cost of collecting this data for 1,560 firms, we chose instead to estimate the existing debt mix by examining the history of past debt issues. This approach is admittedly imperfect, but at a minimum, it allows us to examine whether marginal financing decisions are related to past decisions.

(63%) use public debt for their marginal borrowing. Similarly, among the 285 firms with both public and non-bank private debt outstanding, 184 (65%) use public debt for their marginal borrowing.

Finally, even if a company has employed non-bank private debt in the past, it is not likely to do so again for its marginal financing decision. Of the 164 firms with non-bank private debt outstanding, but no public debt outstanding, only 33 (20%) issue non-bank private debt in their marginal financing decision. Eighty-seven of the 164 firms (53%) issue bank debt. Of the 285 firms that have both public debt and non-bank private debt outstanding, only 22 firms (7%) issue non-bank private debt for their marginal financing; 184 (65%) of these firms issue public debt. However, these data must be interpreted with caution. Recall that our data sources identify only 41% of the private placements reported on the SDC database. If the unidentified private placements systematically occur in firms that previously issued non-bank private debt, our data will understate the conditional probability of non-bank private debt issuance.

These financing patterns indicate that marginal financing choices are linked with prior financing decisions and are broadly consistent with the “life cycle” prediction of Diamond (1991). Diamond’s model predicts that new borrowers will borrow primarily from banks in order to establish a credit reputation. Once such a reputation is established, a firm is more likely to borrow from public debt sources. By contrast, there is no clear pattern evident for non-bank private debt issues. These issues appear to represent deviations from normal financing patterns. This is consistent with the issuance of non-bank private debt being limited to special situations.

In table 3, we report descriptive statistics for a number of factors that have previously been hypothesized as cross-sectional determinants of the debt mix. For each of the five categories of existing debt mix described in table 2, we report median values for each

characteristic as of the fiscal year ending just prior to the new debt issue.<sup>12</sup> We obtain financial data from COMPUSTAT'S Industrial, Full Coverage and Research files for the year preceding the new debt issue. We also collect insider stock ownership data from the Disclosure database and from proxy statements.

Like previous authors, we find that firms with public debt outstanding are larger, more profitable, more highly levered, have a higher proportion of fixed assets relative to total assets, have longer maturity debt and have fewer growth opportunities (as measured by the market-to-book ratio) than firms that rely primarily on bank financing (i.e. those with no prior public or private debt issues).<sup>13</sup>

The last column of table 3 reports the coefficient of variation for each characteristic over the five years preceding the sample debt financing. It is clear that most of the firm characteristics that are hypothesized to affect the choice of debt exhibit substantial time-series variation. This is potentially problematic for testing the determinants of the mix of debt in corporate capital structures. If firms maintain target private-to-public debt ratios and adjust them continuously in response to changes in their economic environment, relating existing ratios to variables that describe contemporaneously that environment allows for a powerful test of the hypothesized determinants of the debt mix. However, as shown in table 1, new external financing announcements are large, discrete, and rare events. The infrequency and the magnitude of new debt issues suggests that a firm's mix of debt claims tends to be "sticky", with large changes occurring at discrete points in time. Relating current values of variables that have

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<sup>12</sup> Throughout the paper our results are qualitatively identical if we compare means instead of medians.

<sup>13</sup> Like Barclay and Smith (1995), we measure maturity as the proportion of debt maturing in more than three years. Our findings are robust to measuring maturity as the proportion of debt maturing in more than five years. Hadlock and James (2002), Houston and James (1996), and Krishnaswami, Spindt, and Subramaniam (1999) report similar differences in characteristics between firms with different mixes of public and private debt.

high time-series variation to an existing debt mix, which, on average, was determined several years earlier, lowers the power of tests of the determinants of debt choice.

By examining *new* debt issues, rather than the proportions of public and private debt in the firm's existing debt mix, our approach complements existing studies of debt choice by empirically linking the source of debt to hypothesized determinants that are measured immediately before the time of the financing decision. This approach thus potentially provides a more powerful test of existing theories of debt choice. Moreover, as noted earlier, an added advantage of the incremental approach is that it allows us to include in the analysis a number of firms that have no outstanding debt at the time of the decision. These firms are necessarily excluded from studies that examine the existing ratio of public to private debt.<sup>14</sup>

On the other hand, a limitation of the incremental approach is that marginal financing decisions might represent temporary deviations from the firm's optimal mix of public and private debt. For example, Hadlock and James (2002) suggest that overvalued firms might use bank loans, then repay the loans when the overvaluation is resolved. Our analysis will reveal only the factors that are important in explaining incremental debt choices. As such, our findings should be viewed as complementing those from studies of the existing mix between public and private debt.

#### **4. Determinants of the Source of New Debt**

In this section we present univariate and multivariate analyses of the determinants of the source of new debt, and perform robustness tests.

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<sup>14</sup> Firms with no outstanding debt at the time of the new issue represent approximately 6 percent of the full sample. These firms are smaller than the "seasoned" debt issuers -- their median firm size is \$21 million versus \$413 million for the median of all issuers. However, the amounts that they issue are not trivial -- the median issue size is \$15

#### 4.1. *Univariate results*

Table 4 reports comparisons across the three types of new debt financing of variables that proxy for information asymmetry, project and credit quality, growth opportunities, and managerial ownership,

*Information asymmetry.* Consistent with the predictions of theories of debt choice based on information asymmetry, public borrowers are significantly larger than bank and non-bank private borrowers. The median public borrower has total assets of \$2,176 million, the median bank borrower has assets of \$145 million, and the median private, non-bank borrower has assets of \$220 million. Similar inferences are obtained when comparing other measures of firm size, such as the market value of capital, and net sales (not reported in the table).

Also consistent with theories based on information asymmetry, bank and other private borrowers have a significantly lower proportion of fixed assets to total assets than do public issuers. The median fixed assets ratio is 53% for public borrowers, 33% for bank borrowers, and 38% for other private borrowers. However, median research and development expenditures are not significantly different among the three types of borrowers.<sup>15</sup>

*Project and credit quality.* Public issuers are more profitable than firms that borrow from banks, while firms that borrow from private, non-bank sources are the least profitable. The median return on assets averaged over the three years prior to issuance is 13.5% for the public issuers, 11.2% for bank borrowers, and 11% for other private borrowers. The median return on assets for the year prior to issuance (not reported in the table) is 13.8% for the public issuers,

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million, which is 52 percent relative to book value of assets, and 23 percent relative to firm market value, both measured as of the end of last fiscal year prior to issuance.

12.0% for bank borrowers, and 10.8% for other private borrowers, all significantly different at the one percent level. The fraction of firms with high probability of default (Altman's (1977) Z-score < 1.81) is much higher for private, non-bank borrowers (20.8%) than for both bank (12.1%) and public borrowers (13.4%). The median interest coverage ratio for private, non-bank borrowers (3.04) is significantly lower than that of both bank (4.18) and public issuers (5.45).

Several other findings in table 4 suggest that public borrowers have higher credit quality, while non-bank, private borrowers have the lowest credit quality. First, a significantly greater proportion of the public borrowers have rated debt than do bank borrowers or non-bank private borrowers as of the fiscal year ending just prior to the sample debt issue. Seventy-three percent of the public issuers have a debt rating assigned by Standard and Poors, as reported by COMPUSTAT, while only twenty four percent of the bank and twenty six percent of the private borrowers do.

Second, the quality of the existing rating is much higher for the public issuers than for both bank and other private borrowers. Private, non-bank borrowers have the lowest quality rating. The median firm that issues public debt has a "BBB" debt rating (and a high of "AAA"), while the median private or bank borrower is not rated. The bank borrower with the highest rating is rated "AA", while among the private, non-bank borrowers the one with the highest rating is rated "A", just slightly higher than the *average* public borrower. Because the availability of credit rating might simply reflect whether the firm has public debt outstanding, rather than credit quality,<sup>16</sup> we also compare separately the firms with existing ratings. If we consider only the firms that do have credit ratings, the median public issuer has a rating of

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<sup>15</sup> Our inferences are identical if we treat missing R&D observations as zero or if we substitute the industry median value of R&D for missing values.

“BBB+” (high=“AAA”, low=“CCC+”), the median bank borrower has a rating of “BB-” (high=“AA”, low=“CCC+”), while the median private borrower is rated “BB-“ (high=“A”, low=“CCC-”). The three distributions are different from each other at the 1% confidence level.

Third, fifty-four percent of the public issuers have investment-grade rating, while only five percent of the bank borrowers and less than two percent of the private borrowers do, all significantly different at 1%. Again, if we do not consider the firms without existing rating, seventy-five percent of the public issuers have investment-grade rating, versus twenty percent of the bank borrowers, and only less than seven percent of the private borrowers, all significantly different at 1%.

Finally, if we consider the availability of commercial paper rating as an indicator of highest credit quality, more than forty percent of the public issuers have commercial paper rating, while this is true for only 2.6 percent of the bank borrowers, and 1.7 percent of the private borrowers.

*Growth opportunities.* Private borrowers have experienced higher growth of employees, capital expenditures, and sales than public borrowers over the three years preceding the debt issue. (The comparisons also hold for the one-year period). However, forward-looking measures of growth, such as the market-to-book ratio, and the industry market-to-book ratio, are not significantly different from each other.

*Managerial equity ownership.* Consistent with the managerial discretion hypothesis, bank and non-bank private borrowers have higher management stock ownership levels relative to

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<sup>16</sup> Even if that is the case, an argument could be made that not having issued rated debt previously, ceteris paribus, is indeed an indicator of lower credit quality, because reputation plays a very important role in establishing the firm’s creditworthiness.

public issuers: the median ownership is 19.3 percent for bank borrowers, 3.2 percent for public borrowers, and 18.1 percent for private borrowers.

#### 4.2. *Multivariate results*

To provide further evidence on the determinants of debt source in a multivariate setting, table 5 reports the results of multinomial logit regressions of the source of new debt on empirical proxies for information asymmetry, credit quality, growth opportunities, and managerial ownership. We also control for other potential determinants of debt source such as existing leverage and issue size.

The multinomial logit allows us to distinguish and derive simultaneous comparisons among the determinants of public, bank, and non-bank private debt. Columns (1) – (3) present the results for model 1 while columns (4) – (6) present the results for model 2. For each model, the first column analyzes the probability of issuing public debt relative to bank debt, the second column analyzes the probability of issuing non-bank private debt relative to bank debt, and the third column reports the contrasts for the probability of issuing public debt vs. non-bank private debt.

Firm size, measured by total assets, is significantly positively related to the probability of issuing public debt relative to both bank debt and other private debt. The fixed assets ratio is also positively related to the probability of selecting public debt. These findings support the hypothesis that firms with lower information asymmetry tend to issue public debt, while firms with higher degrees of information problems tend to borrow from banks and private creditors. Similarly, in untabulated regressions, we find that another measure of information asymmetry,

the ratio of research and development expenditures to sales, is negatively related to the likelihood of issuing public debt.

Our empirical proxies for credit and project quality are positively related to the probability of choosing public debt, and negatively related to the probability of choosing private, non-bank debt, relative to bank debt. Firms with an investment grade rating are more likely to issue public debt than firms without such a rating; conversely, firms that are not rated at all are less likely to issue public debt relative to firms with any rating. The higher-rated firms are also more likely to borrow from banks, relative to other private sources, controlling for the availability of rating. Similar results are obtained if the measures of credit availability and quality are discretized differently.

Profitable firms are also more likely to issue debt publicly, relative to both bank loans and other private debt. In unreported regressions, the same results are obtained using profitability one year prior to issuance; in that specification, profitable firms are also significantly more likely to borrow from banks than from other private lenders. Firms facing a high likelihood of bankruptcy, indicated by Altman's Z-score less than 1.81, are likely to borrow privately, consistent with the argument about the role of private lenders in renegotiations. The relations between the proxies for credit and project quality proxies and the debt source are robust to alternative specifications and indicate that these factors are important predictors of debt source.

We find little evidence of a significant relation between future growth opportunities and debt choice. The coefficient on market-to-book ratio is statistically insignificant in all models in table 4. Moreover, in untabulated regressions, we find mixed results using other growth measures. There is no relation between the likelihood of issuing debt and the industry market-to-

book ratio, and past growth rates of capital expenditures, sales and employees. However, as noted earlier, we do find a negative relation between R&D expenditures and the likelihood of issuing public debt. The weak relation between growth opportunities and debt choice is inconsistent with theories based on the agency costs of underinvestment and differs from some of the existing cross-sectional evidence.<sup>17</sup> One possible explanation for the insignificant relation between growth opportunities and debt choice is that firms resolve the underinvestment problem through the debt-equity choice, or by altering debt maturity, rather than debt source. This interpretation is supported by evidence in Johnson (2002).

There is also some evidence that managerial ownership is related to the debt choice in the multivariate setting. The probability of issuing public debt is negatively related to managerial ownership, even after controlling for the effect of firm size. However, managerial ownership is unrelated to the choice between bank debt and private, non-bank debt.

To gauge the economic importance of our multivariate findings, we calculate implied changes in the probability of issuing each type of debt for hypothetical changes in the determinants of debt source. The implied changes assume that each independent variable changes from its value at the 25<sup>th</sup> percentile to its value at the 75<sup>th</sup> percentile (or from 0 to 1 in the case of binary variables), while the other independent variables remain constant at their respective mean values. Implied changes in probability are calculated based on our estimates from model (1) of table 5.

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<sup>17</sup> Houston and James (1996) find a negative relation between use of bank debt and growth opportunities for firms with a single bank relation, and a positive relation between growth opportunities and use of bank debt for firms with multiple banking relations. Krishnaswami, Spindt and Subramaniam (1999) find a positive relation between growth opportunities and the use of private debt. Johnson (1997) finds no relation between the use of public debt and growth opportunities, a positive relation between use of private debt and growth opportunities, and a negative relation between the use of bank debt and growth opportunities.

The results, reported in table 6, confirm that the choice of debt instrument is most strongly linked with the credit quality variables. Implied changes in the probability of different debt types are very sensitive to credit rating and the probability of bankruptcy. For example, an investment grade rating increases the probability of a public debt issue from 0.19 to 0.79. In addition, the likelihood of a public debt issue is much higher if the issuing company has a higher proportion of fixed assets, and if it has higher leverage. These latter two findings are consistent with the view that fixed assets, which can be used as collateral, and a positive reputation in credit markets, as indicated by existing leverage, can help mitigate the effects of low credit quality. The results in table 6 also indicate that changes in firm size, issue size, and managerial ownership variables, while statistically significant, have relatively modest impacts on the implied probability of different debt sources.

### 4.3. *Sensitivity and Robustness Tests*

#### 4.3.1. Controlling for existing debt mix and maturity

Our findings in table 2 indicate that marginal financing choices are linked with prior financing decisions. Because the existing debt mix is correlated with many of the same firm characteristics that we include in our logit models, it is possible that our findings simply reflect this correlation. That is, the independent variables serve as proxies for the firm's target mix of debt instruments. If so, our logit models suffer from an omitted variables problem.

To address this issue, we control for the firm's existing debt structure by including two additional variables in the logit analysis: (i) a dummy variable equal to one if the firm has no public or non-bank private debt issues outstanding (i.e. bank-dependent firms), and (ii) the

proportion of existing debt maturing in more than three years.<sup>18</sup> The results, reported in models (1)-(3) of table 7 are consistent with our earlier findings in that the probability of a public debt issue is positively related to the proportion of debt maturing in more than three years and negatively related to the bank-dependent dummy variable. Also, consistent with our prior findings, the probability of non-bank private debt is unrelated to the firm's existing debt mix.

Importantly, the inclusion of the variables capturing the firm's existing debt mix does not affect the significance of the coefficients on the other independent variables. The probability of a public debt issue is still higher in firms with a higher fixed assets ratio and those with higher credit quality. The probability of a non-bank private debt issue remains negatively related to credit quality. We conclude, therefore, that incremental debt financings are linked with the firm's prior financing decisions and with the current credit quality of the borrowing firm.

#### 4.3.2. Access to public debt markets

Our empirical approach includes all debt issuers, regardless of firm size. As such, our tests do not discriminate between those situations in which companies choose private debt sources even though they have access to public debt markets, and those situations in which companies borrow privately because they do not have access to public debt markets. It is possible, therefore, that our main findings are driven by those cases in which companies do not have access to public debt markets.

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<sup>18</sup> Note that the inclusion of these variables forces us to exclude those firms with no debt outstanding at the time of the issue. In addition, our results are robust to defining the dummy variable to be equal to one if the firm has not made a prior public or non-bank private debt issue (as reported by SDC), and/or if we measure maturity using the proportion of debt maturing in 5 years. Further, similar results are obtained if instead of the "bank-dependent" dummy, we use two dummy variables to indicate separately prior issuance of public and non-private bank debt.

To examine whether our findings persist for those firms that have access to public debt markets, we examine the subsample of debt issuers for which the issuer's book value of total assets exceeds \$100 million.<sup>19</sup> Our assumption is that firms of this size all have access to public debt markets. Not surprisingly, this subsample contains a slightly higher fraction of public debt offers than does the full sample. Within this subsample of firms, there are 317 public debt issues, 299 bank borrowings, and 110 non-bank, private debt issues with sufficient data to estimate the multinomial logit models.

We re-estimate model (1) from table 5 and report the results in columns (4)-(6) of table 7. The results are similar to those for the full sample. That is, public debt issues are more common in larger firms, those with a high ratio of fixed assets, and those with higher credit quality. Private issuers, particularly non-bank private issuers, exhibit lower credit quality. Overall, these findings suggest that our main findings are not driven by small firms that do not have access to public debt markets.

#### 4.3.3. Issuers with No Debt Outstanding

Our methods allow us to include 67 firms that have no debt outstanding at the time of the issuance. As reported in table 2, these firms disproportionately issue bank debt. Of the 67 zero debt firms in the sample, 48 issue bank debt, 12 issue non-bank private debt, and only 7 issue public debt. Recall that although these firms are necessarily excluded from the logit models that control for the existing debt mix and maturity, our findings are qualitatively identical.

Consistent with the remainder of the sample, there are substantial differences in characteristics across debt type for the 67 zero-debt issuers. Specifically, public borrowers are

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<sup>19</sup> An alternative measure of access to public markets is issue size. Our findings are robust if we use a minimum issue size filter of \$50 million.

larger, have a higher proportion of fixed assets, spend less on R&D, and are more profitable than bank and non-bank private borrowers. (These results are not reported in a table.) All the differences between public, bank, and non-bank private borrowers for the 67 firms with no debt outstanding are consistent with the univariate differences for the full sample. In other words, although the zero-debt borrowers are disproportionately more likely to issue bank debt, this decision appears to be explained by the fundamental characteristics that determine the debt choice for firms in general.

#### *4.4. Discussion and related evidence*

When a firm decides to issue debt, it must simultaneously make decisions concerning several dimensions of the debt contract, including maturity, priority, convertibility, flexibility of renegotiation, and other contractual features. These characteristics of debt contracts systematically differ by the source of funding. For example, bank loans tend to be short maturity, high priority, and have more flexibility in the timing of borrowing and repayment. At the other extreme, public debt has longer maturity, low priority, and less flexibility. These observations raise the following question: To what extent does the demand for a particular debt source really just represent a derived demand for certain contractual features of the debt security?<sup>20</sup>

One way to begin addressing this issue is to explicitly model the demand for certain debt characteristics, then include the predicted value of that characteristic in the logit models predicting debt source. For example, some of the factors associated with debt source in our study are similar to the factors that are empirically associated with maturity structure in Guedes

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<sup>20</sup> We thank the referee for bringing this issue to our attention.

and Opler (1996). It is possible, therefore, that our findings for the choice of debt source are driven by debt maturity considerations. To address this issue, we conduct a two-stage analysis in which we first predict the maturity of new issues, then use the predicted maturity as an explanatory variable in the multinomial logit analysis of debt type. As independent variables, we use the variables found to be statistically significant predictors of maturity in Guedes and Opler (1996).<sup>21</sup> These include asset maturity, defined as  $(\text{Gross PPE}/\text{TA}) * (\text{Gross PPE}/\text{Depreciation})$ , an investment grade dummy variable, market-to-book ratio, log of sales, R&D/Sales, a utility industry dummy variable, net operating loss carryforwards scaled by sales, industry standard deviation of ROA growth, term premium, and interest rate volatility. This first-stage regression (not reported in a table) has substantial explanatory power, as indicated by an adjusted R-square of 0.26. However, when we re-estimate our multinomial logit tests including predicted maturity as an additional explanatory variable, our main results are unchanged. We conclude, therefore, that our findings on debt source are not driven by the maturity choice.

Of course, even if we control for maturity, the debt choice might still be driven by a demand for other debt characteristics such as priority and flexibility. However, several additional observations suggest that there is something unique about the debt source over and above the contractual features of the debt security. For example, although “bank-type” loans (i.e. those with similar maturity, flexibility, collateralization, etc.) can be made by both banks and other types of finance companies, Carey et al. (1993) report that 90% of all “bank-type” loans between 1987 and 1993 are made by commercial banks. Based on these findings, James and Smith (2000) conclude that banks have a comparative advantage in making loans with certain

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<sup>21</sup> While the sample in Guedes and Opler (1996) consists only of public debt issues, their main results remain unchanged when they adjust for the bias from the omission of private debt issues. We use the variables from that specification.

characteristics. These findings fit well with our finding that banks appear to play a special role in providing debt financing to firms with no credit reputation.

Similarly, Fenn (2000) reports that virtually all high-yield 144A private placements are subsequently registered for public sale within four to seven months. Once registered, these securities are essentially identical in terms of priority, maturity, and covenants to the privately placed securities. This suggests that at the time of issue, there is something particularly advantageous about private placements. Fenn (2000) argues that speed of issuance is the determining factor. This is consistent with our finding that firms issuing non-bank private debt are characterized by low credit quality. Presumably, these are firms with the greatest need for speed of issuance in order to avoid costly default. Interestingly, in untabulated results we find that, among those sample firms with public debt outstanding, those who choose to issue non-bank private debt have a substantially greater probability of default. Thirty-six percent of these non-bank private borrowers have an Altman's Z-score less than 1.81, as compared with 21% of the bank borrowers and 14% of the public debt issuers in this subsample.

Thus, although a large portion of the demand for a particular debt source undoubtedly stems from a demand for certain contractual features of the debt security (e.g. maturity, priority, flexibility), it appears that the benefits of a particular debt source extend beyond these contractual features.

## **5. Summary and Interpretations**

We analyze the determinants of the choice among public debt, bank debt, and non-bank private debt for a sample of 1,560 new debt financings by publicly traded firms during 1995-1996. Unlike prior studies on debt choice, we examine the choice of new debt, rather than the proportions of existing private and public debt. We also distinguish empirically between bank

and non-bank private debt, and include in our investigation firms that have no debt outstanding at the time of issuance.

Our findings indicate that the choice of debt instrument is most strongly linked with the credit history of the issuing firm and the current credit quality of the issuer. Firms with the highest credit quality exhibit a strong preference for public debt, while firms with credit ratings towards the middle of the spectrum borrow from banks, and those at the bottom of the credit rating spectrum borrow from non-bank private sources. This pattern broadly supports the model of Diamond (1991) in which borrowers with high credit ratings earn rents from their reputations with lenders. The existence of such rents is also consistent with Graham and Harvey's (2001) observation that managers place a high priority on maintaining their existing credit rating. At the other end of the spectrum, our findings suggest that non-bank private debt plays a unique role in accommodating the debt financing needs of firms with low credit quality.

Our findings raise several interesting questions for future research. First, although we distinguish between bank and other private debt, the latter category encompasses a variety of lending instruments, such as term loans, revolvers, and senior notes, which appear to be very different in terms of placement structure, maturity, and identity of lenders. Further investigation of these types of private debt could enhance our understanding of alternative debt sources. Second, it would be interesting to investigate whether the relations documented in this study have changed over time, perhaps with changes in the macroeconomic environment. Finally, it would be interesting to investigate empirically the relation between debt choice and firm value.

## References

- Altman, Edward I., 1977, *The Z-Score Bankruptcy Model: Past, Present, and Future*, (John Wiley & Sons, New York).
- Barclay, Michael J. and Clifford W. Smith, Jr., 1995, The Maturity Structure of Corporate Debt, *Journal of Finance* 50, 609-631.
- Berger Philip, Eli Ofek and David Yermak, 1997, Managerial Entrenchment and Capital Structure Decisions, *Journal of Finance* 52, 1411-1438.
- Berlin, Mitchell and Jan Loyes, 1988, Bond Covenants and Delegated Monitoring, *Journal of Finance* 43, 397-412.
- Blackwell, David and David Kidwell, 1988, An Investigation of the Cost Differences Between Public Sales and Private Placements of Debt, *Journal of Financial Economics* 22, 253-278.
- Board of Governors of the Federal Reserve System, 2000, *Flow of Funds Accounts of the United States*, Washington, D.C., 20551.
- Boyd, John and Edward C. Prescott, 1986, Financial Intermediary-Coalitions, *Journal of Financial Theory* 38, 211-232.
- Cantillo, Muguel and Julian Wright, 2000, How Do Firms Choose Their Lenders? An Empirical Investigation, *Review of Financial Studies* 13, 155-189.
- Campbell, Tim S. and William A. Kracaw, 1980, Information Production, Market Signalling, and the Theory of Financial Intermediation, *Journal of Finance* 35, 863-882.
- Carey, M., S. Prowse, J. Rhea, and G. Udell, 1993, The Economics of the Private Placement Markets: A New Look, *Financial Markets, Institutions, and Instruments* 2, 1-66.
- Carey, Mark, Mitch Post and Steven A. Sharpe, 1998, Does Corporate Lending by Banks and Finance Companies Differ? Evidence on Specialization in Private Debt Contracting, *Journal of Finance* 53, 845-878.
- Chemmanur, Thomas and Paolo Fulghieri, 1994, Reputation, Renegotiation, and the Choice Between Bank Loans and Publicly Traded Debt, *Review of Financial Studies* 7, 475-506.
- Diamond, Douglas W., 1984, Financial Intermediation and Delegated Monitoring, *Review of Economic Studies* 51, 393-414.
- Diamond, Douglas W., 1991, Monitoring and Reputation: The Choice Between Bank Loans and Directly Placed Debt, *Journal of Political Economy* 99, 689-721.

- Diamond, Douglas W., 1993, Seniority and Maturity of Debt Contracts, *Journal of Financial Economics* 33, 341-368.
- Fama, Eugene, 1985, What's Different About Banks?, *Journal of Monetary Economics* 15, 29-39.
- Fenn, George W., 2000, Speed of issuance and the adequacy of disclosure in the 144A high-yield debt market, *Journal of Financial Economics* 56, 383-406.
- Gertner, Robert and David Scharfstein, 1991, A Theory of Workouts and the Effects of Reorganization Law, *Journal of Finance* 46, 1189-1222.
- Gilson, Stuart C., Stuart, Kose John, and Larry H. P. Lang, 1990, Troubled Debt Restructuring: An Empirical Study of Private Reorganizations of Firms in Default, *Journal of Financial Economics* 27, 315-353.
- Gilson, Stuart C., and Jerold B. Warner, 1998, Junk Bonds, Bank Debt and Financing Corporate Growth, Harvard Business School, Working Paper.
- Graham, John R. and Campbell R. Harvey, 2001, The Theory and Practice of Corporate Finance: Evidence From the Field, *Journal of Financial Economics* (forthcoming).
- Guedes, Jose and Tim Opler, 1996, The Determinants of the Maturity of Corporate Debt Issues, *Journal of Finance* 51, 1809 – 1833.
- Hadlock, Charles J. and Christopher M. James, 2002, Do Banks Provide Financial Slack? *Journal of Finance*, forthcoming.
- Houston, Joel and Christopher James, 1996, Bank Information Monopolies and the Mix of Private and Public Debt Claims, *Journal of Finance* 51, 1863-1889.
- James, Christopher, 1987, Some Evidence on the Uniqueness of Bank Loans, *Journal of Financial Economics* 19, 217-235.
- James, Christopher and David C. Smith, 2000, Are banks still special? New evidence on their role in the capital-raising process, *Journal of Applied Corporate Finance* 13, 52-63.
- Johnson, Shane A., 1997, An Empirical Analysis of the Determinants of the Corporate Debt Ownership Structure, *Journal of Financial and Quantitative Analysis* 32, 47-69.
- Johnson, Shane A., 2002, Debt Maturity and the Effects of Growth Opportunities and Liquidity on Leverage, *Review of Financial Studies*, forthcoming.
- Jung, Kooyul, Kim, Yong-Cheol, and Rene Stulz, 1995, Timing, Investment Opportunities, Managerial Discretion, and the Security Issue Decision, *Journal of Financial Economics* 42, 159-185.

- Krishnaswami, Sudha, Paul A. Spindt and Venkat Subramaniam, 1999, Information Asymmetry, Monitoring and the Placement Structure of Corporate Debt, *Journal of Financial Economics* 51, 407-434.
- Kwan, Simon H. and Willard T. Carleton, 1995, The Role of Private Placement Debt Issues in Corporate Finance, Federal Reserve Bank of San Francisco, Working Paper.
- Leland, Hayne E. and David H. Pyle, 1977, Informational Asymmetries, Financial Structure, and Financial Intermediation, *Journal of Finance* 32, 371-387.
- Lummer, Scott L. and John J. McConnell, 1989, Further Evidence on the Bank Lending Process and the Capital Market Response to Bank Loan Agreements, *Journal of Financial Economics* 25, 99-122.
- Mikkelson, Wayne and Megan Partch, 1986, Valuation Effects of Securities Offerings and the Issuance Process, *Journal of Financial Economics* 15, 31-60.
- Myers, Stewart C., 1977, Determinants of Corporate Borrowing, *Journal of Financial Economics* 20, 293-315.
- Myers, Stewart C., 1984, The Capital Structure Puzzle, *Journal of Finance* 39, 575-592.
- Hovakimian, Armen, Tim Opler, and Sheridan Titman, 2001, The Debt-Equity Choice: An Analysis of Issuing Firms, *Journal of Financial and Quantitative Analysis* 36, 1-24.
- Rajan, Raghuram, 1992, Insiders and Outsiders: The Choice Between Informed and Arm's-Length Debt, *Journal of Finance* 47, 1367-1406.
- Rajan, Raghuram and Andrew Winton, 1995, Covenants and Collateral as Incentives to Monitor, *Journal of Finance* 50, 1113-1146.
- Stulz, Rene M., 1990, Managerial Discretion and Optimal Financing Policies, *Journal of Financial Economics* 26, 3-27.
- Welch, Ivo, 1997, Why is Bank Debt Senior? A Theory of Asymmetry and Claim Priority Based on Influence Costs, *Review of Financial Studies* 10, 1203-1236.
- Zwiebel, Jeffrey, 1996, Dynamic Capital Structure under Managerial Entrenchment, *American Economic Review* 86, 1197-1215.

**Table 1**

## Characteristics of new debt issues

Summary statistics of the characteristics for 1,560 new debt issues made by 1,480 publicly traded firms during 1995-1996. Firm market value is calculated as book value of total assets minus book value of equity plus market value of equity. Existing debt is the sum of the book values of short-term and long-term debt. Means are reported with medians in parentheses below.

	Full Sample (N=1,560)	Public Debt (N=530)	Bank Debt (N=740)	Private Non-bank Debt (N=290)
Total issue volume (\$ million)	349,942	162,259	151,287	36,396
Amount issued (\$million)	224.3 (120)	306.1 (200)	204.4 (60)	125.5 (78.5)
Amount issued / Firm total assets	0.79 (0.24)	1.18 (0.09)	0.59 (0.37)	0.59 (0.26)
Amount issued / Firm market value	0.32 (0.15)	0.24 (0.05)	0.35 (0.24)	0.43 (0.17)
Amount issued / Existing total debt	43.35 (0.89)	7.20 (0.34)	84.29 (1.42)	7.57 (1.00)
Maturity (in years)	10.60 (8.67)	15.63 (10.00)	3.97 (3.00)	8.35 (8.24)
New Debt Rating*	BBB	BBB	N.A.	B
Yield (in percent)	8.36 (7.58)	8.24 (7.47)	7.14 (6.96)	9.40 (9.56)

\*Only for public and 144A issues.

N.A. – not available

**Table 2****New Issues Partitioned By Prior Mix of Debt Claims**

The number (proportion) of new debt issues by prior debt financing. From Securities Data Corporation's (SDC) New Issues database, we collect all public and private placement debt issues in the 20 years prior to the new issue. Based on each issue's original maturity, we estimate whether that debt is still outstanding at the time of the new issue. We then divide the sample issuers into five categories; (i) those with no debt outstanding, (ii) those with debt outstanding but no prior public or private placement debt issues; (iii) those with non-bank private debt outstanding but no public debt, (iv) those with public debt but no non-bank private debt outstanding, and (v) those with both public and private, non-bank debt outstanding. Within each category, we report the number and fraction of new debt financings that are bank borrowings, public debt issues, and non-bank private debt issues. The sample includes 1,560 new debt issues made by 1,480 publicly traded firms during 1995-1996.

	No debt outstanding	No prior public or non-bank private debt issues outstanding	Prior non-bank private debt but no public debt outstanding	Prior public but no prior non-bank private debt outstanding	Prior public and non-bank private debt outstanding	Total
Bank debt	48 (0.72)	46 (0.58)	87 (0.53)	62 (0.25)	79 (0.28)	740 (0.47)
Public debt	7 (0.10)	138 (0.17)	44 (0.27)	157 (0.63)	184 (0.65)	530 (0.34)
Non-bank private debt	12 (0.18)	192 (0.24)	33 (0.20)	31 (0.12)	22 (0.07)	290 (0.19)
Total	67 (1.00)	794 (1.00)	164 (1.00)	250 (1.00)	285 (1.00)	1,560 (1.00)

**Table 3**

**Characteristics of Sample Firms Grouped by Prior Debt Mix.**

From Securities Data Corporation’s (SDC) New Issues database, we collect all public and private placement debt issues prior to the new issue. Based on each issue’s maturity, we estimate whether that debt is still outstanding at the time of the new issue. We then divide the sample issuers into five categories; (i) those with no debt outstanding, (ii) those with debt outstanding but no prior public or private placement debt issues; (iii) those with non-bank private debt outstanding but no public debt, (iv) those with public debt but no non-bank private debt outstanding, and (v) those with both public and private, non-bank debt outstanding. Within each category, we report median values (or proportions, where appropriate) for several characteristics hypothesized to affect the debt mix, in the year prior to issuance. Also reported are p-values from Kruskal-Wallis test for equality of location parameters across categories. In the last column, we report the median coefficient of variation for each characteristic over the five years preceding the new debt issue, for the full sample. The sample includes 1,560 new debt issues made by 1,480 publicly traded firms during 1995-1996. Investments is the amount of capital expenditures. Interest coverage ratio is Earning Before Interest, Taxes and Depreciation (EBITD) divided by Interest Expense. Book leverage is the sum of short-term and long-term debt, divided by total assets. Profitability is EBITD/TA. Altman’s Z-score is calculated as  $Z = 1.2 (\text{Working Capital}/\text{Total Assets}) + 1.4 (\text{Retained Earnings}/\text{Total Assets}) + 3.3 (\text{Earnings Before Interest and Taxes}/\text{Total Assets}) + 0.6 (\text{Market Value of Equity}/\text{Book Value of Liabilities}) + 0.999 (\text{Net Sales}/\text{Total Assets})$ . Market-to-book ratio is book value of assets minus book value of equity plus market value of equity, divided by book assets. Fixed assets ratio is the ratio of net Property, Plant and Equipment to total assets. Debt rating is the firm’s Standard & Poor’s senior debt. N.R. denotes “not rated”. N.D. stands for “not defined”.

Characteristic	No debt outstanding	No public or non-bank private debt issues outstanding	Prior non-bank private debt but no public debt outstanding	Prior public but no prior non-bank private debt outstanding	Prior public and non-bank private debt outstanding	p-values for equality across categories	Coefficient of variation (%)
Total assets (in \$ million)	21.10	126.21	605.33	1,638.22	3,459.08	0.00	23.9
Fixed Assets / TA	0.176	0.339	0.441	0.535	0.532	0.00	11.0
R&D expenditures / Sales	0.061	0.006	0.005	0.007	0.008	0.00	33.0
3-yr average EBITD/TA	0.073	0.110	0.130	0.128	0.131	0.00	15.4
Fraction with Altman’s Z < 1.81	0.049	0.133	0.100	0.157	0.196	0.02	17.9
Interest Coverage Ratio	8.394	4.306	4.972	4.250	4.607	0.01	43.1
Senior Debt Rating	N.R.	N.R.	N.R.	“BB”	“BBB”	0.00	3.4
Investments / TA	0.053	0.060	0.068	0.073	0.063	0.09	58.5
Investments growth – 3 years	0.402	0.141	0.173	0.080	0.115	0.81	150.3
Employee growth – 3 years	0.432	0.343	0.082	0.093	0.039	0.00	107.4
Sales growth – 3 years	0.414	0.697	0.352	0.276	0.209	0.00	91.1
Market-to-book ratio	1.654	1.181	1.045	1.058	0.963	0.00	13.8
Leverage, book	0.000	0.255	0.247	0.332	0.332	0.00	29.1
Insider stock ownership	0.218	0.219	0.106	0.070	0.025	0.00	N.A.
Debt maturing in more than 3 yrs / Total debt	N.D.	0.63	0.71	0.89	0.82	0.00	20.5

**Table 4****Univariate Comparisons**

Median values (or proportions, where appropriate) of selected key variables for a sample of 1,560 public debt issues, bank loans and private placements during 1995-1996. The significance of the difference in medians is determined using the Kruskal-Wallis test, and the significance of the differences in proportions is determined using the Wilcoxon rank-sum test. Fixed assets / TA is the ratio of Property, Plant and Equipment to total assets (TA). Profitability is the ratio of Earnings Before Interest, Taxes and Depreciation (EBITD) to total assets. Altman's Z-score is calculated as  $Z = 1.2 (\text{Working Capital}/\text{Total Assets}) + 1.4 (\text{Retained Earnings}/\text{Total Assets}) + 3.3 (\text{Earnings Before Interest and Taxes}/\text{Total Assets}) + 0.6 (\text{Market Value of Equity}/\text{Book Value of Liabilities}) + 0.999 (\text{Net Sales}/\text{Total Assets})$ . Interest coverage ratio is EBITD / Interest Expense. Sales growth is the relative change in sales over a three-year period. Market-to-book ratio is book value of assets minus book value of equity plus market value of equity. Book leverage is the sum of short-term and long-term debt, divided by total assets. Insider stock ownership is the number of shares owned by officers and directors, divided by the total number of shares outstanding. The existing senior debt rating of the issuing firms assigned by Standard and Poor's is obtained from COMPUSTAT. "N.R." denotes "not rated."

	Bank Borrowers N = 740	Private, non-bank Borrowers N = 290	Public Borrowers N = 530	p values for differences -- private vs. bank	p values for differences -- bank vs. public	p values for differences -- public vs. private
Total assets (in \$ million)	145	220	2,176	0.17	0.00	0.00
Fixed Assets / TA	0.329	0.376	0.532	0.09	0.00	0.00
R&D expenditures / Sales	0.007	0.008	0.010	0.78	0.31	0.49
3-yr average EBITD/TA	0.112	0.110	0.135	0.37	0.00	0.00
Fraction with Altman's Z < 1.81	0.121	0.208	0.134	0.00	0.58	0.02
Interest Coverage Ratio	4.18	3.04	5.45	0.05	0.00	0.00
Fraction of firms with senior debt rating	0.24	0.26	0.73	0.66	0.00	0.00
Senior debt rating	N.R.	N.R.	"BBB"	0.94	0.00	0.00
Senior debt dating, if rated	"BB-"	"BB-"	"BBB+"	0.00	0.00	0.00
Fraction with investment grade rating	0.05	0.02	0.54	0.01	0.00	0.00
Fraction with investment grade rating, if rated	0.20	0.07	0.75	0.01	0.00	0.00
Fraction with commercial paper rating	0.03	0.02	0.38	0.44	0.00	0.00
Investments growth – 3 years	0.142	0.290	0.074	0.12	0.51	0.02
Employee growth – 3 years	0.262	0.266	0.051	0.57	0.00	0.00
Sales growth – 3 years	0.532	0.417	0.244	0.58	0.00	0.00
Market-to-book ratio	1.150	1.034	1.064	0.03	0.24	0.14
Leverage, book	0.250	0.278	0.300	0.06	0.00	0.14
Debt maturing in more than 3 yrs / Total debt	0.702	0.722	0.824	0.18	0.00	0.00
Insider stock ownership	0.193	0.181	0.032	0.99	0.00	0.00



**Table 5****Multinomial Logistic Regressions Predicting Source of New Debt**

Estimates from multinomial logistic regressions predicting the source of 1,560 new corporate debt issues during 1995-1996. The normalized alternative is bank debt. The dependent variable in columns (1) and (4) is the log-odds ratio of the probability of issuing public debt relative to bank debt. The dependent variable in columns (2) and (5) is the log-odds ratio of the probability of issuing non-bank private debt relative to bank debt. Columns (3) and (6) report the contrasts (differences) of the relative probabilities of issuing public debt versus private, non-bank debt, resulting from the multinomial logistic regressions reported in columns (1) through (4). Total assets and amount issued are measured in billions of dollars. Market-to-book ratio is book value of assets minus book value of equity plus market value of equity. Fixed assets ratio is the ratio of Property, Plant and Equipment to total assets. Investment grade rating is an indicator variable, equal to one if the firms have existing debt rating of “BBB” or higher, zero otherwise. Not rated is an indicator variable, equal to one if the firm has no existing debt rating, zero otherwise. Altman’s Z-score is calculated as  $Z = 1.2 (\text{Working Capital}/\text{Total Assets}) + 1.4 (\text{Retained Earnings}/\text{Total Assets}) + 3.3 (\text{Earnings Before Interest and Taxes}/\text{Total Assets}) + 0.6 (\text{Market Value of Equity}/\text{Book Value of Liabilities}) + 0.999 (\text{Net Sales}/\text{Total Assets})$ . Profitability is defined as the average ratio of EBTID/TA over three years prior to issuance. Insider stock ownership is the number of shares owned by officers and directors, divided by the total number of shares outstanding. Book leverage is the sum of short-term and long-term debt, divided by total assets. Coefficients are reported with p-values in parentheses below.

Independent variable	Model 1			Model 2		
	Public vs. Bank	Non-Bank Vs. Bank	Public vs. Non-bank	Public vs. Bank	Non-Bank vs. Bank	Public vs. Non-bank
Intercept	-1.92 (0.00)	-0.49 (0.15)	-1.43 (0.00)	-1.98 (0.00)	-0.36 (0.32)	-1.62 (0.00)
Total Assets	0.14 (0.00)	0.01 (0.87)	0.13 (0.02)	0.14 (0.00)	0.02 (0.78)	0.12 (0.03)
Amount Issued	-1.12 (0.00)	-1.73 (0.00)	0.50 (0.43)	-1.47 (0.00)	-1.58 (0.01)	0.11 (0.86)
Market-to-Book Ratio	0.01 (0.95)	-0.02 (0.75)	0.03 (0.78)	0.06 (0.58)	-0.14 (0.19)	0.20 (0.16)
Fixed Assets Ratio	1.39 (0.00)	0.19 (0.59)	1.19 (0.00)	1.12 (0.00)	0.31 (0.40)	0.81 (0.07)
Investment Grade Rating	2.58 (0.00)	-1.21 (0.07)	3.79 (0.00)	2.45 (0.00)	-1.21 (0.07)	3.67 (0.00)
Not Rated	-0.52 (0.03)	-0.57 (0.02)	0.05 (0.85)	-0.52 (0.04)	-0.49 (0.05)	-0.03 (0.92)
Altman’s Z < 1.81	-0.17 (0.53)	0.65 (0.01)	-0.83 (0.01)			
Profitability				2.94 (0.00)	-0.68 (0.14)	3.61 (0.00)
Insider Ownership	-0.98 (0.04)	-0.53 (0.19)	-0.44 (0.42)	-1.44 (0.01)	-0.46 (0.15)	-0.58 (0.34)
Leverage, book	2.19 (0.00)	0.26 (0.59)	1.93 (0.00)	2.03 (0.00)	0.67 (0.19)	1.35 (0.02)
Observations	1,023			1,057		
Pseudo R-square	0.24			0.26		

**Table 6**

## Changes in Implied Probabilities

Estimates of changes in the implied probabilities of public debt, bank debt, private, non-bank debt issues. Implied probabilities are estimated using model (1) from Table 4. For each variable, the change in implied probability is estimated by assuming that the variable in question changes by an amount equal to the interquartile range for that variable, while all other variables remain constant at their average value. Binary variables are assumed to change from 0 to 1. The sample consists of 1,560 new corporate debt issues during 1995-1996. The unconditional probability of each debt type is based on the full sample of 1,560 new debt issues.

Variable	Assumed change in variable	Implied Changes in Probability		
		Public Debt	Bank Debt	Private Non-bank Debt
Total Assets (in \$ million)	1,588	0.043	-0.036	-0.007
Amount Issued (in \$ million)	210	-0.036	0.073	-0.036
Market-to-Book Ratio	0.78	0.002	0.001	-0.003
Fixed Assets Ratio	0.43	0.118	-0.103	-0.015
Investment Grade Rating	1	0.600	-0.413	-0.187
Not Rated	1	-0.083	0.133	-0.050
Altman's Z < 1.81	1	-0.067	-0.039	0.107
Insider Ownership	0.29	-0.052	0.059	-0.011
Leverage, book	0.27	0.119	-0.102	-0.016
Unconditional Probability		0.340	0.474	0.186

**Table 7****Robustness Tests**

Estimates from multinomial logistic regressions predicting the source of 1,560 new corporate debt issues during 1995-1996. The normalized alternative is bank debt. In columns (1)-(3), we control for existing debt structure and maturity. In columns (4)-(6), the sample is restricted to those issuers whose book value of total assets is greater than \$100 million.

Independent variable	Controlling For Existing Debt and Maturity			Assets > \$100 million		
	Public vs. Bank	Non-Bank vs. Bank	Public vs. Non-bank	Public vs. Bank	Non-Bank vs. Bank	Public vs. Non-bank
Intercept	-3.08 (0.00)	-0.81 (0.11)	-2.28 (0.00)	-1.91 (0.00)	-0.48 (0.25)	-1.43 (0.00)
Total Assets	0.11 (0.00)	0.04 (0.52)	0.07 (0.20)	0.16 (0.00)	0.04 (0.53)	0.12 (0.04)
Amount Issued	-1.35 (0.00)	-1.94 (0.01)	0.59 (0.43)	-1.87 (0.00)	-2.16 (0.00)	0.29 (0.67)
Market-to-Book Ratio	0.09 (0.38)	-0.03 (0.72)	0.12 (0.32)	0.06 (0.63)	-0.04 (0.78)	0.11 (0.54)
Fixed Assets Ratio	1.39 (0.00)	0.00 (0.99)	1.39 (0.01)	1.21 (0.00)	0.02 (0.97)	1.20 (0.02)
Investment Grade Rating	2.45 (0.00)	-1.10 (0.10)	3.55 (0.00)	2.75 (0.00)	-1.08 (0.11)	3.83 (0.00)
Not Rated	0.13 (0.67)	-0.49 (0.12)	0.62 (0.09)	0.00 (0.99)	-0.43 (0.11)	0.43 (0.14)
Altman's Z < 1.81	-0.07 (0.83)	0.67 (0.03)	-0.74 (0.05)	-0.18 (0.57)	0.29 (0.40)	-0.47 (0.21)
Insider Ownership	-0.82 (0.12)	-0.34 (0.49)	-0.48 (0.45)	-0.26 (0.60)	0.07 (0.89)	-0.32 (0.58)
Leverage, book	2.27 (0.00)	0.39 (0.68)	2.02 (0.01)	2.24 (0.00)	0.61 (0.35)	1.63 (0.02)
Proportion of debt maturing in > 3 years	1.43 (0.00)	0.44 (0.23)	0.99 (0.06)			
No Public or Private Debt Outstanding	-0.56 (0.04)	0.10 (0.73)	-0.66 (0.05)			
Observations	740			726		
Pseudo R-square	0.24			0.23		