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Some Evidence on the Uniqueness of Initial Public Debt Offerings

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ABSTRACT

Debt initial public offerings (IPOs) represent a major shift in a firm's financing policy by both extending debt maturity and altering the public-private debt mix. In contrast to findings for seasoned debt offerings, we document a significantly negative stock price response to debt IPO announcements. This result is consistent with debt maturity and debt ownership structure theories. The equity wealth effect is negatively related to the offer's maturity, and positively related to the degree of bank monitoring. We find that firms with less information asymmetry and firms with higher growth opportunities experience a less adverse stock price response.

The decision to access the public debt market for the first time represents a major change in a firm's financing policy. An initial public debt offer alters the firm's debt structure in two significant ways. Not only does this policy choice affect the firm's debt ownership structure, by altering its mix of public relative to private debt, but it also extends the average debt maturity of the firm substantially. This study provides empirical evidence on the validity of some important debt structure theories by focusing on the information content of initial public debt offers (debt IPOs).

Two major strands of theories have evolved in the literature. The debt ownership choice theories model corporate choice of private and public debt mix (see, e.g., Fama (1985), Diamond (1991a), and Rajan (1992)), while the other set of theories models corporate debt maturity choice (Easterbrook (1984), Flannery (1986), and Kale and Noe (1990)). A number of recent studies empirically test some of the predictions of these models (Barclay and Smith (1995), Guedes and Opler (1996), Houston and James (1996), Johnson (1997), and Stohs and Mauer (1996)).

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The drastic changes that accompany the initial infusion of public debt provide an ideal setting to test some of the implications of debt ownership and debt maturity choice theories. Based on existing theoretical models, our empirical tests relate the wealth effect from the announcement of initial public debt offerings to the role of bank monitoring, debt maturity choice, bank information monopolies, information asymmetry, and the firm's growth opportunities.

The study makes several contributions to the growing empirical evidence in the debt structure choice literature. First, an initial public debt issue presents an ideal experiment to study the significance of a change in the *nature* of debt. This opportunity arises because one of the most dramatic changes in a firm's private-public debt mix typically occurs at the initial infusion of public debt capital. Viewed as arm's-length debt, publicly placed debt can result in a firm receiving lower levels of monitoring than that which typically accompanies bank debt financing. In comparison to private debt, the greater informational asymmetry between public debtholders and stockholders produces adverse incentive effects, such as the underinvestment and asset substitution problems (see, e.g., Fama (1985), Berlin and Loeys (1988), and Diamond (1991a)). Therefore, in contrast to bank loan agreements which typically engender a positive stock price response,[1] initial public debt offers, in general, should convey a negative signal to the stock market.

Second, an initial public debt issue also provides an ideal opportunity to investigate the impact that extending debt maturity has on firm value. The debt maturity choice models predict a negative relation between the maturity of the debt and firm quality (Flannery (1986) and Kale and Noe (1990)). Easterbrook (1984) arrives at the same conclusion by reasoning that high quality firms reduce their agency cost of monitoring by issuing shorter maturity debt. Since public debt typically has longer maturity than bank debt, as documented by James (1987), a decision to lengthen the maturity of the firm's debt through an initial public debt offering should emit a negative signal about the firm's expected performance.

A similar conclusion can be reached based on the model presented in Myers (1977). An implication of Myers' model is that firms issue long maturity debt if they do not have growth options to exercise. This is a corollary to Myers' underinvestment problem, which states that firms with growth options will not issue long maturity debt in order to avoid committing the firm to share the benefits of exercising those options with debtholders.

In contrast to the negative stock price response predicted above, Rajan's (1992) bank information monopoly argument suggests that the introduction of public debt would have a positive stock price response because the firms would benefit from the diversification of their debt sources and hence be less subject to bank hold-up problems. The signaling models of Ross (1977) and Heinkel (1982) also predict a positive stock price response based on the premise that increased leverage is a signal of firm quality.

[1] Several studies document a significant positive stock price response to bank loan agreements (see, e.g., James (1987) and Lummer and McConnell (1989)).

Another contribution of this study is that our research design employs an incremental approach that allows us to test both the robustness of some of the extant models of debt maturity choice and debt ownership structure theories. In this context, Barclay and Smith (1995) state in their conclusion that "[M]ore powerful tests of the signaling hypotheses may come from examining the variation in debt maturity *at issuance*." A majority of previous empirical studies examine variation in debt structure across all of the firms' outstanding liabilities, using the balance-sheet approach. A prominent exception is Guedes and Opler (1996), who examine the maturity of *incremental* debt issues. They underscore the fact that some signaling theories are best tested using the incremental approach. Although the balance-sheet approach adopted by prior studies is informative, our empirical tests based on the incremental approach provide better evidence on the robustness of extant theories. The strength of this approach is further enhanced by the fact that, for the firms in our sample, this debt offering is their first public debt offer. This decision is an important turning point for a firm's capital acquisition policy, which has signaling implications with theoretical underpinnings in the debt ownership structure and debt maturity choice literature. Finally, this is the first study to identify the characteristics of firms that are more likely to undertake a debt IPO.

Using a comprehensive sample of initial public debt offers spanning a 24-year period, we find that issuing firms are small in size and tend to gain access to the public debt market shortly after going public (within four years). With the median issue size being 28 percent of firm assets, the bond IPO increases firm leverage significantly. Furthermore, the debt offer is equivalent to one-and-one-half times the amount of bank loan commitments available to the firm. Besides increasing firm leverage, we document that the bond IPO also increases the firm's debt maturity structure as the average maturity of 12 years is greater than that of a typical bank loan.

The primary finding of this study is that debt IPO announcements convey a negative signal to the stock market. Various robustness tests show that the negative stock price response is invariant to the default risk (bond's rating), the industry in which the offering firm operates (industrial versus financial), change in leverage, and the purpose of the bond offer. Specifically, our finding of a significant negative stock price response contrasts with the majority of previous research results on the announcement effects of seasoned straight debt offers, with the exception of Gilson and Warner (1997).[2] Therefore, our analysis documents that bond IPOs are fundamen-

[2] Predominantly, previous studies document that the wealth reaction to announcements of straight debt offers is not statistically different from zero (see, e.g., Eckbo (1986), James (1987), and Shyam-Sunder (1991)). A few studies document small, marginally significant, negative abnormal returns at debt issuance (Dann and Mikkelson (1984) and Mikkelson and Partch (1986)). Gilson and Warner (1997) find a significantly negative stock price response for a sample of junk bond offers, where the proceeds are specifically used to repay bank debt.

tally different from seasoned bond offers. Our finding also contrasts sharply with previous studies that document a positive relation between the change in leverage and stock price response (see Smith (1986) for a literature survey).[3]

The finding of a significant negative stock price response is consistent with debt ownership theories premised on information superiority of banks over public debtholders (see Campbell and Kracaw (1980) and Fama (1985)). The negative stock price response is also in support of the signaling theories of debt maturity choice that are based on asymmetric information (see, e.g., Kale and Noe (1990), Flannery (1986), and Myers (1977)). Thus, the increased monitoring cost and the lengthening of debt maturity are possible explanations for the adverse price response to the debt IPO announcement.

A probit analysis of our sample firms vis-à-vis a matched control sample of firms with no debt reveals that larger firms and firms with significant financing needs are more likely to choose to introduce public debt financing into their capital structure. These results show similarities between firms that decide to go public, as in Pagano, Panetta, and Zingales (1998), and firms that decide to undertake a debt IPO.

We find that firms experiencing an increase in bank monitoring, due to the bond IPO, are less adversely affected by the public debt offer, which implies that a change in debt ownership structure has important wealth implications for stockholders. Consistent with various debt maturity choice theories, the analysis indicates that the equity wealth change at offer announcement is negatively related to the maturity of the offer.

Cross-sectional analysis indicates that, among the firms that undertake a debt IPO, older firms are impacted less adversely by the announcement, which suggests that these firms are associated with less information asymmetry. This finding is also consistent with Diamond's (1991a) reputation-building argument. The adverse effect of the debt IPO announcement also seems to be ameliorated for firms with higher growth prospects, lending support to Rajan's (1992) bank information monopoly theory and Diamond's (1991b) conjecture premised on the benefits of increased financing flexibility afforded to high growth firms by the introduction of public debt.

The rest of the paper is organized as follows. The next section presents the relevant theories and develops the hypotheses. Section II describes the data and discusses the sample. Empirical results are presented in Sections III and IV. Conclusions are drawn in Section V.

[3] Numerous studies document a negative stock price response at announcements of (i) seasoned equity offers (e.g., Mikkelson and Partch (1986)), (ii) conversion-forcing calls of convertible bonds (Mikkelson (1981) and Datta and Iskandar-Datta (1996)), and (iii) exchange offers of debt for equity or preferred stock (Masulis (1983)). Further, Masulis (1980, 1983) documents the impact of leverage-increasing transactions on security prices, and Mikkelson (1981) provides evidence on leverage-reducing transactions.

I. Theory and Testable Hypotheses

A. Theories of Debt Ownership Structure and Monitoring

The decision to access the public debt market for the first time results in a major change in the firm's private-public debt mix. This move by the firm entails a restructuring of its borrowing sources by reducing the firm's reliance on bank debt. Financial intermediation theories, emphasizing the difference between inside debt and arm's-length debt, concentrate on the role of banks in producing information. As inside claimants, banks and other intermediaries have access to information about the firm that is not available to outside claimants, who rely mainly on public information.

Information superiority of banks over public debtholders is a well-established notion in the current literature. Campbell and Kracaw (1980), and Fama (1985) argue that banks have a comparative cost advantage in monitoring loan agreements and enforcing restrictive covenants, which helps reduce the adverse selection and moral hazard costs of new financing. Empirically, James (1987), and Lummer and McConnell (1989) document that the existence of bank credit agreements emits a positive signal to the stock market. Recently, Datta, Iskandar-Datta, and Patel (1999) document that the existence of bank cross-monitoring is beneficial because it significantly reduces the at-issue yield spreads for initial public debt offers. Shockley and Thakor (1992) conclude that bank loan commitments provide a positive signal about a firm's creditworthiness. Since publicly placed debt could result in less monitoring than inside debt, introducing public debt to the firm's capital structure can increase the firm's agency costs. This reasoning leads us to propose the following hypotheses.

HYPOTHESIS 1A: *The greater informational asymmetry associated with initial public debt offers increases the firm's agency costs, which should result in a negative stock price effect.*

HYPOTHESIS 1B: *Firms that introduce public debt to reduce bank debt should be more adversely affected, because investors expect lower future monitoring by banks.*

B. Theories of Debt Maturity Choice

Compared to bank debt, public debt issues are typically of longer maturity. As such, issuing public debt for the first time is expected to result in a significant lengthening of the firm's average debt maturity.[4] Theory suggests that such an action provides a signal that should have an adverse impact on stockholders. Under asymmetric information, Flannery (1986) and Kale and Noe (1990) argue that, since long-term debt is more sensitive to

[4] For example, the majority of private debt for our sample firms has a maturity of five years or less; the average maturity of public bond IPOs is nearly 12 years. Lummer and McConnell (1989) report that the term to maturity of bank agreements is five to six years.

firm value, long-term debt can potentially be more mispriced than short-term debt. Therefore, high quality firms are more likely to issue less undervalued short-term debt, and low quality firms are more likely to issue more overvalued long-term debt.

Easterbrook (1984) argues that the agency costs of monitoring are lower if the firm commits to periodic evaluations, by issuing short-term debt, in the capital market. This lower agency cost is due to the fact that accessing the capital market by issuing new securities triggers a review of the firm and its prospects on a regular basis.

Further, an implication of Myers' (1977) model is that firms issue long maturity debt if they do not have growth options to exercise. This is a corollary to Myers' underinvestment problem, which is based on the premise that if firms have growth options then they do not issue long maturity debt to eschew the problem of committing the firm to share the benefits of exercising these options with debtholders. Empirical studies on debt maturity choice show that firms with more growth options issue relatively more short-term debt (Barclay and Smith (1995)), and that long-term debt is more likely to be used by larger firms with relatively poor growth opportunities (Stohs and Mauer (1996)). Barclay and Smith document that the investment opportunity set faced by the firm is an important factor in the debt maturity choice decision, but Stohs and Mauer conclude that investment opportunities play only a small role in this decision.

Each of the debt maturity arguments discussed above predicts a negative stock price response, since public debt is typically of longer maturity than bank debt. The negative signal is expected to be further magnified for our sample firms because they typically have a short public track record, and, therefore, there is more information asymmetry about these firms as compared to the average firm undertaking a debt maturity extension. The lower amount of information available to investors about these firms implies that debt mispricing (and thus maturity) is expected to play a larger role in their financing decisions. Based on the collective prediction of the signaling models of debt maturity choice we propose the following hypothesis.

HYPOTHESIS 2: *The significant extension of debt maturity that typically accompanies the introduction of arm's-length debt to the firm's capital structure has negative information content, and therefore an adverse stockholder wealth effect is expected. Further, the longer the maturity of the debt offer, the more negative the stock price response*.

C. Information Asymmetry, Reputation Building, and Firm Age

We contend that firms with longer public existence have less information asymmetry associated with them. Therefore, cross-sectionally, older firms are expected to be less adversely affected by the introduction of public debt into their capital structure. This prediction is also consistent with Diamond (1991a), where firms typically begin their debt acquisition by borrowing

monitored-type debt, such as bank financing. As a firm repays bank loans and builds a sufficient track record of nondefault, its reputation allows it to borrow directly in public markets without monitoring. Older, high reputation firms use public debt because their reputation, established over time, implies that they avoid risky behavior even in the absence of monitoring. Diamond also contends that the reputation of firms with access to public debt substitutes for bank monitoring. This reasoning leads us to propose the following hypothesis.

HYPOTHESIS 3: *Firms with longer public existence, and thus with less information asymmetry as well as greater opportunity to accumulate debt-related reputational capital, are expected to experience a less adverse stock price response to the debt IPO announcement.*

D. Growth Opportunities and Bank Information Monopolies

Cross-sectionally, the stock price response to debt IPO announcements is expected to be less adverse for firms with higher growth prospects. Introduction of public debt can render some benefits to the firm. For example, the ability to access public debt markets expands the firm's opportunity set for debt capital. Accessing the public bond market can, therefore, ameliorate the hold-up problem that may occur if the firm depends solely on bank borrowing, especially if the firm borrows from only one bank. Rajan (1992) argues that there are costs to bank financing because of bank information monopolies. He shows that a firm borrowing from multiple sources would circumvent a bank's ability to extract a surplus from that firm. Thus, for firms with higher growth prospects, accessing the public debt market, which broadens and diversifies the firm's financing options, could mitigate the hold-up problem associated with bank information monopoly. Diamond (1991b) argues that the ability to access capital from both private and public sources confers flexibility and interest cost savings. The above two arguments predict the following:

HYPOTHESIS 4: *Firms with greater growth prospects are expected to experience a less adverse stock price response to the introduction of public debt in their capital structure.*

COROLLARY TO HYPOTHESIS 4: *High growth firms that reduce their reliance on bank debt after the bond IPO should benefit more from the diversification of the firm's debt financing sources through the bond IPO.*

II. Sample Formation and Data Description

A. The Sample Formation Process

A comprehensive sample of initial public offers of corporate straight bonds made during the 24-year period from 1971 to 1994 is obtained from the Securities and Exchange Commission's Registered Offerings Statistics (ROS)

tape, and from the Securities Data Company. The sample is then cross-checked with *Moody's Manuals* to verify that the firms did not have any preexisting public straight debt outstanding. During the study period, 233 firms made an initial public offer of straight debt.[5]

The offers made by these firms are then screened using the following criteria. The exact date of the first announcement of the initial public bond offer must be identifiable. The ROS tape and Securities Data Company are used to obtain the registration date of the issue, and the Dow Jones News Retrieval Service is searched to determine the first announcement date. The offer announcement should not be confounded by any other announcement from the firm, such as earnings or dividend announcements, or other concurrent financing. Unit offerings composed of debt and common stock are also deleted. Further, common stock return data must be available on the University of Chicago's Center for Research in Security Prices (CRSP) master tapes. The final sample consists of 143 initial public straight debt offerings. More than 83 percent of these offerings are made by industrial firms, and the remaining offers are made by financial firms.

B. General Sample Description

Table I presents the frequency distribution for initial public offers of straight debt by offer year, bond rating, subordination status, and the length of time between the initial public offer of equity (SIPO) and the initial public offer of straight debt (BIPO). The results indicate a wide range in the number of initial public bond offers through time, from no observations in 1972, 1974, and 1975, to highs of 15 in 1985 and 1986. Not surprisingly, nearly 43 percent of the offers are rated below investment grade, with a Standard and Poor's rating of BB or lower; another 21 percent are not rated. This finding contrasts sharply with that for seasoned offers of straight bonds. For example, Mikkelson and Partch (1986) report that 81 percent of seasoned bond offers are investment grade. Additionally, for our sample, 75 of the 128 offerings with identifiable seniority status are subordinated.

B.1. Asset Size

The data in Panel D of Table I and Panel A of Table II show that firms gain access to the public debt market shortly after going public. The average (median) time between initial public offer of equity and the first public bond offer is 6.69 (3.79) years. It is notable that for all firms in our sample, the equity IPO precedes the debt IPO. Rows 2 and 3 of Table II, Panel A, indicate that initial public offers of straight debt are typically made by smaller firms, where the median book value of total assets is $256.48 million and the median market value of equity is $159.87 million. The size of our sample

[5] Previous studies indicate that the percentage of IPO firms issuing public bonds is very small (see, e.g., Helwege and Liang (1996)).

Table I

Frequency Distribution of Debt IPOs by Issue Year, Bond Rating, Subordination Status, and the Time between the Stock IPO and the Bond IPO

A sample of initial public offers of corporate straight bonds made during the 24-year period, 1971 to 1994, is obtained from the Securities and Exchange Commission's Registered Offerings Statistics (ROS) tape, and from Securities Data Company. The sample is then cross-checked with *Moody's Manuals* to verify that the firms did not have any preexisting public straight debt outstanding. These offers are then screened to ensure that the registration and announcement dates are known and that the announcement of the debt IPO is not confounded by any other announcement by the firm, such as earnings or dividend announcements, or other concurrent financing. Unit offerings composed of debt and common stock are also deleted. Further, common stock return data must be available on the CRSP master tapes. The final sample consists of 143 initial public straight debt offerings.

Panel A: Frequency Distribution of Initial Public Bond Offers by Offer Year

Year	Frequency	Percentage	Year	Frequency	Percentage
1971	1	0.70	1985	15	10.49
1973	1	0.70	1986	15	10.49
1976	2	1.40	1987	11	7.69
1977	4	2.80	1988	6	4.20
1978	8	5.60	1989	3	2.10
1979	3	2.10	1990	2	1.40
1980	6	4.20	1991	6	4.20
1981	3	2.10	1992	14	9.79
1982	10	6.99	1993	14	9.79
1983	7	4.90	1994	2	1.40
1984	10	6.99			

Descriptive Variables	Frequency	Percentage
Panel B: Frequency Distribution by Standard & Poor's Bond Ratings		
AA	3	2.10
A	17	11.89
BBB	19	13.29
BB	14	9.79
B or lower	47	32.87
Not rated	30	20.97
Unavailable	13	9.09
Panel C: Type of Debt Issue		
Secured	2	1.40
Nonsubordinated	53	37.06
Subordinated	75	52.45
Unavailable	13	9.09
Panel D: Time in Years from Stock IPO to Bond IPO		
Lag ≤ 1	37	25.87
$1 <$ Lag ≤ 5	40	27.97
$5 <$ Lag ≤ 10	36	25.17
$10 <$ Lag	30	20.98

Table II

Descriptive Statistics of Offering Firms and their Bond IPOs

The financial variables are collected from *Moody's Manuals* and COMPUSTAT tapes for the fiscal year preceding the initial public offering of the bond (BIPO). The offering variables are obtained from the Securities and Exchange Commission's *Registered Offerings Statistics* tape and verified from *Moody's Manuals* and *Standard and Poor's Bond Guide*. The maturity of some bond IPOs is unavailable.

Panel A: Descriptive Statistics

Variables	Mean	Median	Minimum	Maximum
Time from stock IPO to bond IPO (in years)	6.69	3.79	0.02	65.90
Book value of total assets (in $millions)	897.58	256.48	4.08	25,247.10
Market value of common stock (in $millions)	380.92	159.87	3.27	9038.41
Total debt/total assets	38.07	36.05	0.00	95.07
Current liabilities/Total debt	72.59	77.32	6.08	100.00
Amount of offering (in $millions)	85.49	70.45	0.72	530.00
Amount of offering as percentage of:				
Bank loan commitment prior to BIPO	150.47	97.62	2.86	1,000.00
Book value of total assets	46.10	27.81	0.17	511.11
Market value of common stock	75.67	48.27	1.11	389.16
Book value of total debt	208.43	66.83	0.19	3855.65

Panel B: Maturity Distribution of Sample Debt IPOs

Maturity Distribution (years)	Frequency	Percentage
$2 < \text{maturity} \leq 5$	6	5.1
$5 < \text{maturity} \leq 10$	73	61.9
$10 < \text{maturity} \leq 19$	34	28.8
$19 < \text{maturity} \leq 30$	5	4.2

Panel C: Relation between Maturity and Standard and Poor's Rating

Maturity Distribution (years)	AA	A	BBB	BB	B or lower	Unrated
$0 < \text{maturity} \leq 5$	0	0	3	0	0	2
$5 < \text{maturity} \leq 10$	1	12	10	10	27	12
$10 < \text{maturity} \leq 19$	1	1	4	4	12	11
$19 < \text{maturity} \leq 30$	1	2	1	0	0	1
Total	3	15	18	14	39	26

firms is somewhat smaller than that documented by Helwege and Liang (1996) for a sample of firms issuing public straight debt subsequent to an equity IPO.[6]

[6] The difference in asset size could result from the fact that some of Helwege and Liang's (1996) sample is composed of second and third public debt offerings. Further, their sample is composed of only 22 straight bond offers made by 13 firms.

B.2. Capital Structure

Rows 4 and 5 of Panel A (Table II) show that, prior to the bond IPO, total debt for the firms in our sample averages about 38 percent of total assets, with 72.6 percent of debt consisting of current liabilities. The fact that long-term debt accounts for about 27 percent of total debt implies that long-term debt is about 10 percent of total assets. In contrast, long-term debt constitutes a larger proportion of total assets for firms issuing seasoned debt.

The median amount of the initial public debt offer is $70 million, which is closer to the average size of an equity IPO than the average size of a seasoned bond offer. Eckbo (1986) and Mikkelson and Partch (1986) report average seasoned bond offer sizes of $180 million and $152 million, respectively; Michaely and Shaw (1994) report an average equity IPO size of $32 million. For our sample, the median issue size is 28 percent of the book value of assets, 48 percent of the market value of equity, and 67 percent of the book value of total debt prior to the offer. A typical firm is able to raise funds, through the public debt issuance, equivalent to one-and-one-half times the amount available from bank loan commitments. These statistics suggest that bond IPOs have a significant impact on a firm's leverage and thus result in a major change in the debt ownership structure. In contrast, seasoned bond offers have a much smaller impact on leverage.[7]

B.3. Maturity

The mean (median) maturity of bond IPOs is 12 (10) years, with a minimum of two years and a maximum of 30 years. The average term to maturity of our sample debt IPOs is similar to the maturity of seasoned offers (12.2 years) documented by Guedes and Opler (1996). Further, more than 90 percent of the bond IPOs have a maturity of between six and 19 years (see Panel B of Table II).

In Panel C of Table II, we cross-tabulate the term to maturity and the bond's rating. A large majority (80 percent) of sample debt issues with maturity between 20 and 30 years are offered by investment grade firms. This figure is comparable to the 78.6 percent obtained by Guedes and Opler (1996) for a sample of mostly seasoned straight debt offers issued between 1982 and 1993. Also, about three-quarters of our sample issues with maturity between six and 19 years are junk grade bonds. This finding is consistent with the notion that only high quality firms are able to acquire long-term financing, and low quality borrowers participate mostly in the medium range of the maturity spectrum. The results corroborate the findings of Guedes and Opler, who show that investment-grade debt issues are at opposite ends of the debt maturity spectrum. Further, the maturity of the debt issues in our sample does not extend beyond 30 years. The fact that a majority of

[7] For seasoned debt offers, the average issue size in Eckbo (1986) is approximately 15 percent of total debt; in Mikkelson and Partch (1986), it is about 30 percent of the market value of equity.

firms engaging in bond IPOs did not access the over-20-year segment of the bond market, along with the observation that none of these firms are AAA-rated, supports Diamond's (1991a) argument of a moral hazard problem.

B.4. Bank Loan Commitment

We identify the presence of bank debt and the characteristics of the initial public debt offers from the long-term debt schedule in the long-term debt section in *Moody's Manuals*. If this information is incomplete in *Moody's Manuals*, we examine the firm's annual reports. We follow Johnson's (1997) method of classifying debt as bank debt only if it is identified as such according to SEC disclosure regulations. For sample firms, the average bank loan commitment increased from $128.61 million in the year prior to the bond IPO to $155.87 million in the year after the offer.

Our sample firms reduced reliance on bank debt as a proportion of total debt only slightly, from 32.99 percent to 31.55 percent (not reported in the table). However, when we examine the group of firms that had a bank relationship, represented by some form of bank debt, prior to the public debt issue, we observe that this subset of firms significantly decreases the proportion of bank debt from 62.31 percent to 43.79 percent.

C. Comparison Analysis

To gain insight into why firms decide to introduce public debt into their capital structure for the first time, we conduct univariate and probit analyses using a control sample. For each debt IPO made by our sample firms, we randomly select a control firm from all firms in the COMPUSTAT database with no long-term debt in the year of the bond IPO.[8] Further, we require that the control firm belongs to the same industry group (i.e., industrial or financial) as the corresponding sample firm.

C.1. Univariate Analysis

Table III presents the univariate results comparing the salient descriptive statistics for our sample firms and their controls. We focus on median values, as they are least affected by outliers and by the inherently skewed nature of financial variables.

Table III indicates that our sample firms are significantly larger than the control firms in terms of book value of total assets, sales, and market value of equity. Being larger, the sample firms seem to have more tangible, and therefore collateralizable, assets, the presence of which reduces the risk to the lender. This finding is consistent with the evidence of a positive relation between leverage and firm size in Rajan and Zingales (1995) for firms in the United States and several G-7 countries. This result also supports the view

[8] Because the COMPUSTAT database does not distinguish between public and private long-term debt, control firms have neither public nor private debt in their capital structure.

Table III

Salient Descriptive Characteristics for Firms Making Bond IPOs and for Matched Control Firms

The 143 sample firms issued an initial public offer of straight debt between 1971 and 1994. For each debt IPO made by our sample firms, we randomly select a control firm from a set of all firms in the COMPUSTAT database with no long-term debt in the year of the bond IPO. The control firms also belong to the same industry group (industrial or financial) as the corresponding sample firm. Book value of total assets, annual sales, and market value of equity are measured at fiscal year-end prior to the offer. Growth in assets and growth in sales are measured using fiscal year-end values for the year of the offer and the year prior to the offer. The market-to-book ratio is the ratio of the sum of the book value of debt and the market value of equity to the sum of the book value of debt and the book value of equity. This ratio is also calculated at fiscal year-end prior to the offer. Capex/Total Assets is the ratio of capital expenditures to book value of total assets at fiscal year-end prior to the offer. Wilcoxon signed-rank test is used to compute the *p*-values for the difference in medians.

Characteristics	Sample Median	Control Median	*p*-Value for Differences in Medians
Book value of total assets (in $millions)	256.48	11.87	0.000
Sales (in $millions)	191.33	9.85	0.000
Market value of equity (in $millions)	159.87	21.47	0.000
Asset growth (%)	19.55	5.10	0.001
Sales growth (%)	15.90	5.60	0.009
Market-to-book ratio	1.35	1.62	0.089
Capex/Total assets (%)	7.07	3.63	0.001

that smaller firms find public debt too costly, as it entails underwriting, filing, registration, and legal fees, as well as bond rating fees. Issuance costs of public debt offerings do not increase proportionally with the size of the debt offer, which renders these expenses larger for smaller firms.

We use three variables to serve as proxies for the firm's need for financing: growth in sales, growth in total assets, and the ratio of capital expenditures to total assets. All three variables are measured in the pre-offering year. The choice of these proxies is based on the rationale that the faster a firm grows, the higher will be its financing needs. Table III indicates that our sample firms grow significantly faster than their controls in the year prior to the bond IPO, suggesting a greater need for capital than the control firms. We document that the sample firms have capital expenditures, used as a proxy for financing need, that are significantly larger than nonissuing firms.

As we propose earlier, a corollary of Myers' (1977) contention is that firms that access the public debt market are likely to have lower expected future growth opportunities than firms that rely primarily on internal equity capital. Following Myers' suggestion, we use the ratio of the quasi-market value of assets (market value of equity and book value of total debt) to the book value of assets as a proxy for expected future growth opportunities. Table III shows that in the year prior to the bond IPO, the median value of the market-

to-book ratio for our sample firms is significantly lower than that for the control firms. This finding is consistent with the evidence of a negative relation between expected future growth opportunities and leverage documented by Rajan and Zingales (1995) and Jung, Kim, and Stulz (1996).

C.2. Probit analysis

It is possible that the conclusions drawn from the univariate analysis may be clouded by the interrelatedness of some of the variables (e.g., between firm size and market-to-book ratio), therefore we estimate a probit model of the probability of accessing the public debt market. Based on the discussion in the prior section, we estimate the following model:

$$\Pr(\textit{Bond IPO}) = \mathrm{F}(\textit{Asset size, Sales, Growth, Capex, Market-to-book}), \quad (1)$$

where *Bond IPO* is a variable that equals one if the firm decides to access the public debt market and equals zero if it does not, and F(.) is the cumulative distribution function of a standard normal variable. We use two proxies for firm size, *Asset size* and *Sales*. *Asset size* is defined as the natural logarithm of the book value of total assets, and *Sales* is measured as the natural logarithm of revenues. Both variables are measured as of the fiscal year-end preceding the offer. *Growth* is the change in sales, measured using fiscal year-end values for the year of the bond IPO and the year preceding it. The capital expenditure variable, *Capex*, and *Market-to-book* are as defined earlier. Table IV reports the maximum likelihood estimates of several probit models.

Not surprisingly, the size of the firm, whether defined in terms of *Asset size* or *Sales*, is a significant determinant of the decision to undertake a bond IPO. Also corroborating the univariate results, Models 2 and 3 show that *Growth* and *Capex*, the proxies for the firm's financing needs, are significant factors in predicting a firm's choice to issue a debt IPO.[9] These two findings are similar to the results obtained by Pagano et al. (1998), who examine the issue of why firms go public.

[9] One potential source of concern may arise due to the possibility that some firms in the control group could issue public debt, but choose not to. However, this issue is difficult to address because, unlike the decision to go public with a stock IPO, where listing requirements need to be met, there are no explicit, objective criteria for issuing a bond IPO. Hence, we are unable to segment the sample of nonissuers into firms that could issue public debt, but chose not to, from those that could not. Given that firm size emerges as a determining factor for issuing a bond IPO in our analysis, we use a crude measure to check whether control firms could issue public debt, based on their size, by comparing sample firm size with that of their matched control firm. We find that only eight control firms are larger than their matched sample firm, indicating that the selection issue is not a major concern for our sample. Additionally, to the extent that our control sample includes some firms that can make a debt offering but choose not to issue a debt IPO, our results will be biased against finding significance between issuing and control firms.

Table IV

Determinants of the Decision to Issue a Straight Debt IPO

A probit model estimates the impact of the listed variables on the probability of issuing straight debt publicly for the first time. The estimation method is maximum-likelihood. The dependent variable is one for the 143 sample firms that issued an initial public offer of straight debt between 1971 and 1994, and zero for control firms. For each of the sample firms, a control firm is randomly selected from the set of all firms on the COMPUSTAT database with no long-term debt in the year of the bond IPO. The control firms also belong to the same industry group (industrial or financial) as the corresponding sample firm. Asset size is the natural logarithm of the book value of total assets at fiscal year-end prior to the bond IPO. Sales is the natural logarithm of revenues at fiscal year-end prior to the bond offer. Growth is the change in sales measured using fiscal year-end values for the year of the bond offer and the year prior to the offer. Capex is the ratio of capital expenditures to total assets at fiscal year-end prior to the offer. The market-to-book ratio is the ratio of the sum of the book value of debt and the market value of equity to the sum of the book value of debt and the book value of equity. The pseudo-R^2 is the likelihood ratio calculated as $R^2 = 1 - \log L/\log L_0$, where $\log L$ is the maximized value of the log-likelihood function and $\log L_0$ is the log-likelihood computed with just an intercept term. (p-values are reported in parentheses below the corresponding coefficient estimates.)

Independent Variables	Model 1	Model 2	Model 3
Intercept	0.3137	−2.7363	−2.4577
	(0.02)	(0.00)	(0.00)
Asset size		0.4876	
		(0.00)	
Sales			0.4216
			(0.00)
Growth		1.5736	1.5624
		(0.00)	(0.00)
Capex		6.3868	6.5602
		(0.00)	(0.01)
Market-to-book	−0.1186	0.0275	0.0455
	(0.03)	(0.66)	(0.53)
Pseudo-R^2	0.297	0.638	0.623

One finding that diverges from the univariate results relates to the market-to-book ratio. Although the market-to-book ratio is statistically significant in Model 1 in which no other variables are included, it is statistically insignificant in the full models (Models 2 and 3), possibly because the size variable may be capturing the information provided by growth opportunities, since larger firms tend to have lower market-to-book ratios and vice versa. The probit results indicate that, after controlling for the size and financing needs of a firm, the market-to-book ratio has no predictive power. In summary, larger firms and firms that have undertaken significant investments prior to the debt offer are more likely to choose bond IPO financing. These results show similarities between firms that decide to go public, as in Pagano et al. (1998), and firms that decide to undertake a debt IPO.

Table V
Standardized Daily Stock Excess Returns (SER) around Debt IPO Announcements

This table reports the standardized daily portfolio stock excess return, *z*-statistics, and percentage of firms with positive excess return for a sample of firms that made their first public straight debt issue between 1971 and 1994. The market model is used to obtain stock excess returns, where the market model parameters are estimated using daily stock returns from +61 to +261 days after the debt IPO announcement day (day 0).

Event Period	SER (%)	*Z*-statistic	Percentage Positive
0	−0.80***	−3.19	37.76
0,+1	−0.86**	−2.43	37.06
−1,+1	−0.99**	−2.29	35.66
−30,−2	−0.10	−0.08	47.55
+2,+30	−1.40	−1.04	48.25

*** and ** denote significant difference at the 1 and 5 percent levels, respectively.

III. Empirical Findings

A. Wealth Change at the Announcement of Initial Public Straight Debt Offers

Standard event study methodology is used to examine the stock price response to announcements of initial public offers of straight debt. The market model parameters are estimated using daily stock returns from day +61 to day +261, where the announcement date is defined as day 0 (Dow Jones News Retrieval date), and the market is the equally weighted index on the University of Chicago's CRSP tapes. The post-announcement period is used to estimate the market model parameters due to inadequate return data for some firms prior to the offer announcement.[10]

Table V presents daily stock excess returns surrounding announcements of initial public straight debt offers for the full sample of 143 bond IPOs. The announcement day (day 0) negative stock price response of −0.80 percent is statistically significant at the 1 percent level. The sign test also indicates a significant decline in wealth on the announcement date. The two-day (0,+1) and three-day (−1,+1) cumulative excess returns around the announcement date of −0.86 percent and −0.99 percent, respectively, are also statistically significant. For our sample firms, the average two-day wealth decline trans-

[10] We also estimate the abnormal returns using an estimation period of $t - 231$ to $t - 31$. For the subset of firms with available stock returns in the pre-issue estimation period, the results are similar to those when using a post-issue estimation period. The average two-day abnormal return is −0.87 percent, whereas the three-day cumulative excess return is −0.99 percent. Both figures are statistically significant at the 1 percent level.

lates into an equity wealth loss of about $3.6 million. As a percentage of the issue size, the wealth decline is nearly 6.35 percent. The announcement period stock price response contrasts with the results in the literature for seasoned public straight debt offers and for Eurobond offers. Previous studies of seasoned public straight debt offers find zero to marginally negative stock price responses. For example, Mikkelson and Partch (1986) document a wealth change of −0.23 percent, with a z-statistic of −1.40, and Eckbo (1986) reports a price response of −0.11 percent, which is also statistically insignificant. On the other hand, Kim and Stulz (1988) find that Eurobonds are associated with significantly positive abnormal stock returns. They attribute these results to the ability of firms with a "reputation for low default risk to exploit temporary financing opportunities."

The finding of a significant negative stock price response to bond IPO announcements is consistent with debt ownership theories premised on information superiority of banks over public debtholders (see Campbell and Kracaw (1980), and Fama (1985)). Thus, the increased monitoring cost associated with the introduction of public debt is one explanation for the adverse price response to the debt offer announcement. This explanation is consistent with Hypothesis 1A, which predicts that information asymmetries associated with bond IPOs should result in a negative valuation effect.

The negative stock price response also supports the signaling theories of debt maturity choice based on asymmetric information. These theories predict that lengthening the firm's debt maturity structure is a negative signal (Hypothesis 2) (see, e.g., Flannery (1986) and Kale and Noe (1990)). Additionally, the overall negative response to long maturity debt issuance is in support of a corollary of Myers' (1977) model that would lead the market to interpret the maturity-extending issuance as a signal of poor growth opportunities.

It is important to note that our overall finding of negative price response to initial public debt offers runs counter to the empirical regularity reported in previous studies, which find a positive relation between stock price response and change in leverage. Our primary result does not support the predictions of Ross (1977) and Heinkel (1982), that leverage-increasing transactions should be received positively by the market.

Further, the results in Table V indicate no abnormal return during the 29-day pre- or post-issue period.[11] This finding contrasts with the pre-issue declines in wealth documented in Marsh (1982) and Bayless and Chaplinsky (1991) for seasoned public debt offers. If poor preannouncement stock price performance increases the probability of a debt offer, then our finding of no abnormal return prior to the offer announcement is consistent with the notion that initial public offers of straight debt are less anticipated than seasoned offers of debt.

[11] The cumulative excess return over days −250 to −2 and days −60 to −2 are also statistically insignificant.

B. Robustness Tests

To establish the robustness of our finding that there is a significant negative stock price response to initial public bond offer announcements, we conduct further analysis.

B.1. Price Response at Second and Third Straight Debt Offer Announcements

One way to ensure that our sample firms are not atypical is to examine whether the stock price response to seasoned bond offers made by our sample firms is essentially similar to that obtained by previous studies. Specifically, we examine the stock price response to the first and second public straight bond offers following the bond IPO. Of the 143 firms issuing straight bond IPOs, 39 firms engaged in a second public offer of straight debt prior to 1995, and 17 firms issued straight debt publicly for a third time prior to 1995. These 56 straight bond offers following the bond IPO are essentially seasoned debt offers.[12]

Panel A of Table VI presents the results for the announcement day stock price reaction for the second and third public straight debt offers. For firms issuing their second public debt offer, the average abnormal return on the announcement date is not significantly different from zero. Moreover, our finding for the third public straight debt offer is similar to that obtained for the second bond offer. These results, related to seasoned bond offers made by our sample firms, are consistent with the evidence presented in some prior studies of seasoned bond offers (see Eckbo (1986), James (1987), and Shyam-Sunder (1991)). These findings, and the negative price response to debt IPO announcements, indicate that bond IPOs, which significantly alter the debt ownership and debt maturity structures, are substantially different in nature from seasoned offers of straight debt.

B.2. Repeat Issuers versus Nonrepeat Issuers

To address the possibility that firms that are repeat issuers may differ from firms that do not subsequently issue public debt, we estimate the stock price response at the first debt issue announcement for firms that make subsequent debt offers (Table VI, Panel B). The robustness of the results obtained for the full sample are maintained, as we find that the debt IPO announcement day excess return is significantly negative for repeat and nonrepeat issuers. The abnormal announcement day stock returns are -0.82 percent (z-statistic $= -2.31$) and -0.76 percent (z-statistic $= -2.17$) for firms that undertake second and third debt offers, respectively.

[12] For our sample firms, the mean (median) time between the bond IPO and the next bond offer is 3.49 years (2.67 years) while the mean (median) time between the second and third bond offers is 2.80 years (2.33 years).

Table VI

Standardized Event Day Stock Excess Returns around Bond IPO Announcements, 1971–1994

The market model is used to obtain stock excess returns (SER) where the market model parameters are estimated using daily stock returns from +61 to +261 days after the offering announcement day. Investment grade issues are those that are rated BBB or above, the junk grade category consists of issues rated BB or below and nonrated issues. Firms that increase (decrease) in leverage are defined as those that experienced a leverage increase (decrease) of more than two percentage points from the year prior to the bond IPO to the year after the offering. Firms that had no change in leverage across the year of the bond offering are defined as those with a post-offering leverage that is within two percentage points above or below the pre-offering leverage.

Subsample Type	Number	SER (%)	*Z*-statistic	Percentage Positive
Panel A: Abnormal Stock Returns at the Second and Third Bond Offering Announcement				
Firms that made:				
Second bond offering	39	0.18	0.45	51.28
Third bond offering	17	0.26	0.51	64.71
Panel B: Abnormal Stock Returns at the Debt IPO Announcement				
Repeat and nonrepeat issuers:				
Nonrepeat issuers	104	−0.793***	−3.62	37.50
Repeat issuers (2nd offer)	39	−0.819**	−2.31	38.46
Repeat issuers (3rd offer)	17	−0.756**	−2.17	35.29
Bond rating:				
Investment grade	39	−1.07***	−3.82	28.21
Junk grade	91	−0.64**	−2.29	41.76
Purpose of the offering:				
Capital expenditure	24	−1.33***	−3.02	25.00
Repayment of bank debt	38	−0.83**	−2.35	39.47
Repayment of other debt	36	−0.79*	−1.68	36.11
General funding	11	−0.10	−0.12	36.36
Impact of BIPO on leverage:				
Leverage increased after BIPO	75	−0.85***	−3.45	34.67
Leverage did not increase after BIPO	31	−1.06**	−2.09	38.71
Leverage decreased after BIPO	28	−0.39	−0.79	39.29
Prior long-term debt				
Firms with no prior long-term debt	44	−0.85***	−3.47	25.00
Firms with prior long-term debt	99	−0.78***	−2.83	42.42
Takeover attempt				
Subject to takeover attempt	9	−1.52*	−2.12	22.22
Not subject to takeover	134	−0.72***	−3.56	38.06
Firm industry:				
Industrial firms	119	−0.81***	−3.33	36.97
Financial firms	24	−0.76***	−2.80	41.67

***, **, and * indicate significant difference at the 1, 5, and 10 percent levels, respectively.

Next, we examine firm and debt offer characteristics of repeat and nonrepeat issuers. Although repeat public debt issuers tend to be larger, in terms of mean assets ($1129 million versus $900 million), and older, as measured by the elapsed time between stock IPO and bond IPO (7.86 years versus 6.32 years), these differences are statistically insignificant at conventional levels. Moreover, the mean offer size ($79.8 million versus $87.84 million) and maturity (12.81 years versus 11.68 years) of the initial debt offer for the two subsamples are not statistically different. The only difference we detect between the two groups is that repeat offerers have a larger proportion of higher quality, investment grade, bonds. At the time of the bond IPO, more than 42 percent of firms making a second debt offer have an investment grade bond rating, but only 17.7 percent of firms that do not make further debt offers during our sample period belong in that category. Therefore, we conclude that repeat issuers are essentially similar to those that do not make subsequent public debt issues during our sample period.

B.3. Stock Price Response and Default Risk of Debt IPO

Given that our sample is predominantly composed of junk issues, it is conceivable that our result is driven by these offers. To examine this possibility, we estimate the stock abnormal returns for the subsamples of speculative (BB or lower and nonrated issues) and investment grade (BBB or better) offers separately. As shown in Panel B of Table VI, the announcement period abnormal stock return is negative and significant for both subsamples. The announcement day stock price response for investment grade offers is -1.07 percent ($z = -3.82$); the comparable figure for speculative grade issues is -0.64 percent ($z = -2.29$). This finding clearly shows that the adverse stock price response is not associated with the default risk of the issue. In contrast, findings of prior studies on seasoned bond offers document that the stock price response to both speculative and junk issues is not significantly different from zero (Eckbo (1986), Mikkelson and Partch (1986), and Shyam-Sunder (1991)).[13]

Heretofore, only Gilson and Warner (1997) document a significantly negative stock price response at announcements of junk bond offers. However, since their sample of bond offers is restricted to junk bonds with the specific intent to repay bank debt, it is not clear whether the negative response they observe results from the fact that the issues are of lower grade or because of the offerers' intention to reduce bank borrowing. For example, James (1987) finds that seasoned bond offers (speculative and investment grade combined) issued to repay bank debt result in a significant decline in stockholder wealth. This leads us to examine the price response to debt IPO announcements by the stated purpose of the offer.

[13] We reclassify our sample bond offers according to Eckbo's (1986) classification of Aaa–Aa in one group and Baa and lower in another group. The results in Table VI are maintained with the new classification method.

B.4. Stock Price Response to Debt IPO by Purpose of the Offer

To ensure that our results are not due to the purpose of the offer, we reestimate the stock excess return for our sample bonds by the purpose of the offering. We categorize the sample into four groups, based on the main purpose of the offer: capital expenditure, repayment of bank debt, repayment of other debt, and general funding purposes.

Panel B of Table VI documents a negative and significant stock price response for all categories, except for the general funding purpose, for which the response is insignificant. The announcement day abnormal returns for the four subsamples are as follows: for the capital expenditure subsample, -1.33 percent ($z = -3.02$), for the repayment of bank debt subsample, -0.83 percent ($z = -2.35$), for the repayment of other debt subsample, -0.79 percent ($z = -1.68$), and for general funding purposes subsample, -0.10 percent ($z = -0.12$). In summary, the negative stock excess return that we observe cannot be attributed to the bond's default risk or to the purpose of the offer.

B.5. Price Response and Leverage Issues

Although, on average, bond IPOs result in an increase in leverage, not all sample firms experience a change in their debt levels. Examination of the subset of firms that experience no change in financial leverage allows us to observe what we consider to be the "pure IPO effect." To do this, we subdivide the sample into three subsets, based on whether the firm experiences an increase, a decrease, or no change in leverage. We define leverage as total debt to total assets.[14] Firms that increase leverage are defined as those firms with a post-offering leverage that is greater than the pre-offering leverage by more than two percentage points. Firms that decrease leverage are defined as those with a post-offering leverage that is more than two percentage points less than the pre-offering leverage. Firms that had no change in leverage across the year of the bond offering are those with a post-offering leverage that is within two percentage points above or below the pre-offering leverage.[15]

The results in Panel B of Table VI indicate that the stock price response for firms where the bond IPO has no leverage implications is a significant -1.06 percent. Similarly, the abnormal stock return for firms that experience an increase in leverage is also negative (-0.85 percent), and significant. Even though the mean stock excess return is insignificant for firms where post-IPO leverage declines, nearly 61 percent of these firms experience negative stock excess returns. The data show that the negative stock wealth effect is robust and invariant to whether the bond IPO results in a change in leverage.

[14] The results for the abnormal stock returns are essentially maintained when we define leverage as long-term debt to total assets.

[15] We redo the analysis using a three percent cutoff criterion. The results are qualitatively very similar to those presented above.

Further, to examine the benefits of debt, we partition the sample into those firms that had long-term debt prior to the bond IPO and those that did not.[16] If debt confers benefits, we should find that firms without prior debt should experience a less adverse stock price reaction at the bond IPO announcement. The findings in Panel B of Table VI indicate that both groups of firms experience negative and significant stock price response at the offer announcement. Specifically, the abnormal stock return for the group of firms without debt in the pre-offering year, −0.85 percent, is slightly larger than that for firms with debt, −0.78 percent. In summary, the results based on leverage change presented in Table VI indicate that the stock price response is not driven by whether the firm had prior long-term debt in its capital structure, nor by whether the bond IPO results in a change in leverage.

B.6. Price Response to Takeover Defense Related Debt Offers

It is conceivable that our finding of a significant negative stock price reaction to debt IPO announcements is due to firms introducing public debt in their capital structure to fend off takeover attempts. This possibility presents a viable argument, especially in light of the fact that our sample period includes some years in which there was a lot of corporate control activity in the United States. To determine whether the debt IPOs are acquisition-related, we search Lexis/Nexis for all news items over the 12-month period surrounding the offer announcement (six months prior and six months after the announcement). As Panel B of Table VI shows, nine of the 143 sample firms had a takeover or merger offer made during the 12-month period. Although the announcement day stock excess return for these firms, −1.52 percent, is larger than that for firms not subject to takeovers, −0.73 percent, both returns are statistically significant.

B.7. Price Response to Debt IPOs for Industrial and Financial Firms

Finally, in the last two rows in Panel B of Table VI, we partition the sample by the two main industry groups, financial and industrial, and re-estimate the stock excess returns. Both of these subsamples experience significant negative stock price reactions. The announcement day excess return for financial firms is −0.76 percent, which is significant at the 1 percent level, and the comparable figure for industrial firms is −0.81 percent, which is also significant (z statistic = −2.8).

Overall, the robustness tests conducted in this section solidify our conclusion that debt IPO announcements elicit a significant reduction in shareholder wealth. The negative signal conveyed to the market by such offer announcements indicate that they are fundamentally different from seasoned bond offers.

[16] We use long-term debt rather than total debt since all sample firms had some form of short-term liabilities in their capital structure prior to the bond IPO.

IV. Multivariate Regression Analysis

In this section, we use multivariate cross-sectional analysis to examine whether changes in ownership structure and debt maturity structure can explain the wealth effect observed at bond IPO announcements. The dependent variable in the regression model is the two-day stock excess return (SER). The *t*-statistics are calculated using White's (1980) correction for heteroskedasticity. The ordinary least squares regression estimates are presented in Table VII.

To test the debt maturity choice hypothesis (Hypothesis 2), we include the maturity of the bond offer (*Maturity)* as an independent variable in Models 2, 7, and 8. This variable is expected to have a negative sign. In support of this hypothesis and consistent with Myers (1977), Flannery (1986), Kale and Noe (1990), and Barclay and Smith (1995), the results reveal that the equity wealth change at offer announcement is inversely related to the maturity of the offering. The coefficients of the maturity variable are significantly negative in all three models. Specifically, this result implies that increasing the bond's maturity from 10 to 20 years results in an additional percentage point decline in stock excess return.

We test Hypothesis 1B, which proposes that firms reducing bank debt by introducing public debt are more adversely affected due to lower future bank monitoring, by using two variables: *Creditchg* and *Commitchg*. *Creditchg* is a dummy variable that assumes a value of one if the firm experiences an increase in its bank loan commitment across the offer year, and zero otherwise.[17] We also construct a continuous variable, *Commitchg*, which is defined as the change in loan commitment across the year of the offer as a percentage of total assets measured at the end of the year prior to the debt IPO.

As expected, the coefficients of these two variables are positive and statistically significant. These results document that firms that change the nature of their debt composition by introducing public debt into their debt structure, while simultaneously experiencing a reduction in bank monitoring, are typically affected more adversely by the debt offer. Thus, a decrease in bank monitoring, whether initiated by the borrower or the bank, is interpreted as a negative signal when the firm issues public debt for the first time. Conversely, firms that experience an increase in bank monitoring, which can be seen as a positive signal about their creditworthiness to capital market participants, are less adversely affected at the first public debt offer announcement. Our results are consistent with Lummer and McConnell (1989), who find that loan revisions, and not credit agreements per se, serve as an influential mechanism for transmitting information.[18]

[17] Several studies show that loan commitments address agency costs, and thus provide more effective monitoring than actual bank loans (see Boot, Thakor, and Udell (1987) and Boot and Thakor (1991)).

[18] Following James and Wier (1990), we partition the sample based on whether or not the firm has an existing bank borrowing relationship prior to the public debt offer. We find that firms with a banking relationship prior to the debt offer experience a larger decline in wealth than those without a banking relationship. However, the difference in wealth decline between these subsamples is not statistically significant.

Table VII

Ordinary Least Squares Regressions Explaining Announcement Period Stock Excess Returns for Bond IPOs, 1971–1994

The independent variables are defined as follows: *Age* denotes the natural logarithm of one plus the time between the firm's stock and bond IPOs; *Maturity* is the years to maturity of the bond offering; *Creditchg* takes a value of one if the firm experiences an increase in the bank loan commitment over the year of the public offering, and zero otherwise; *Commitchg* is the change in bank loan commitments as a percentage of total assets between years −1 and 0; *Mkt/bk* is the market value of equity plus the book value of debt divided by book value of total assets at year-end prior to the offer; *Intangible* is the ratio of intangible assets to total assets at year-end −1; *Rating* takes a value of 6 for AA rated bonds, 5 for A rated bonds, etc.; *Assets* is the natural logarithm of total assets for fiscal year-end −1; *Levchg* represents the change in the firm's financial leverage across the year of the offering; and *Industry* assumes a value of one if the firm is a financial firm and zero otherwise. The *t*-statistics are computed using White's (1980) correction. (*p*-values are reported in parentheses below the corresponding coefficient estimates.)

Independent Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Intercept	−0.006	0.009	0.002	0.001	−0.016	−0.002	−0.004	0.002
	(0.51)	(0.95)	(0.86)	(0.92)	(0.11)	(0.79)	(0.74)	(0.86)
Age	0.004						0.004	0.004
	(0.06)						(0.04)	(0.05)
Maturity		−0.001					−0.001	−0.001
		(0.04)					(0.07)	(0.08)
Creditchg			0.009				0.006	0.009
			(0.05)				(0.10)	(0.05)
Commitchg				0.014				
				(0.07)				
Mkt/bk					0.006		0.004	
					(0.04)		(0.05)	
Intangible						0.033		0.103
						(0.03)		(0.09)
Maturity * Intangible								−0.000
								(0.94)
Creditchg * Intangible								−0.090
								(0.03)
Rating	0.000	0.000	0.002	0.001	0.000	0.001	0.001	0.001
	(0.85)	(0.95)	(0.29)	(0.55)	(0.88)	(0.76)	(0.65)	(0.61)
Assets	−0.002	−0.002	−0.003	−0.002	−0.001	−0.002	−0.002	−0.003
	(0.30)	(0.34)	(0.10)	(0.23)	(0.68)	(0.30)	(0.21)	(0.10)
Levchg	0.001	0.000	−0.003	−0.002	−0.000	0.002	−0.003	−0.004
	(0.74)	(0.97)	(0.42)	(0.52)	(0.97)	(0.67)	(0.48)	(0.37)
Industry	0.005	0.005	0.010	0.005	0.007	0.006	0.012	0.013
	(0.49)	(0.48)	(0.22)	(0.54)	(0.33)	(0.39)	(0.16)	(0.11)
Adjusted R^2	0.039	0.042	0.053	0.034	0.062	0.047	0.132	0.181
Number of observations	127	126	115	115	126	127	107	107

We include the age variable in Models 1, 7, and 8, to test whether older firms, with less information asymmetry, are less adversely affected by the debt IPO announcement (Hypothesis 3). The variable, *Age*, is defined as the

natural logarithm of one plus the elapsed time between the firm's stock IPO and its bond IPO. The age variable can also proxy for firm reputation in testing Diamond's (1991a) prediction based on his reputation-building argument. Consistent with the information asymmetry argument and Diamond's reasoning, the coefficients of the age variable are significantly positive (with *p*-values less than or equal to 0.06). This result suggests that bond IPOs undertaken by older firms, with less information asymmetry and presumably with more reputational capital, are received less negatively by the stock market. Based on the results from Models 1, 7, and 8, for a firm that has just gone public, delaying the bond IPO an additional year ameliorates the negative stock price response to the debt IPO announcement by 0.28 percent.

To examine whether firms with greater growth prospects experience less adverse stock price response to the debt IPO announcement, we include two proxies for growth opportunities: (i) the market-to-book ratio (*Mkt/bk)* as defined earlier in Section II, and (ii) the ratio of intangible assets to total assets (*Intangible)* at year-end prior to the bond IPO. Both of these variables are significantly positive, lending support to our Hypothesis 4. This result is also consistent with Rajan's (1992) bank information monopoly argument, where high growth firms, presumably with more acute hold-up problems, would benefit from the diversification of the firm's debt sources. Therefore, our finding that high growth firms are less adversely affected by the debt IPO announcement is consistent with Rajan's premise. The significant positive coefficients of this variable appears to be inconsistent with Myers' (1977) argument that high growth firms should experience a more adverse response.

Rajan (1992) also proposes that issuing public debt can be particularly beneficial for high growth firms if doing so provides a substitute for bank debt (see the Corollary to Hypothesis 4). We test this conjecture in Model 8 using an interaction term between the growth variable, *Intangible*, and the change in monitoring dummy variable, *Creditchg*. The coefficient of this interaction term should be negative. We find support for Rajan's conjecture, as the coefficient is significantly negative with a *p*-value of 0.03. The results imply that high growth firms that have an increase in bank loan commitment are more adversely affected by the public debt issue because they are not substituting away from bank debt. When we replace the above interaction term with one based on *Mkt/bk* and *Creditchg*, the result is maintained (not reported in the table for parsimony).

In Model 8, we include an interaction term between *Maturity* and one of our proxies for growth opportunities, *Intangible*, to examine whether, compared to short maturity debt, a longer debt maturity is worse for firms with high growth options. This cross-product term, however, is found to be statistically insignificant.

Larger firms presumably have less information asymmetry than smaller firms. Because of greater information availability, larger firms are expected to have lower monitoring costs. Based on this line of reasoning, we expect bond IPOs undertaken by larger firms to be received less negatively by the stock market. To test this argument, we include the natural logarithm of the

book value of total assets (*Assets)* at fiscal year-end prior to the bond IPO as a control variable in all models. Our results fail to support this argument, as this variable is consistently insignificant in all models. This result, however, could be due to the fact that asset size is correlated with other variables in the models, such as the bond's rating, the age of the firm, and its market-to-book ratio.

We also examine Ross's (1977) prediction that increased use of debt financing is a signal of firm quality. We use the change in financial leverage (total debt/total assets) across the year of the debt offer (*Levchg)* to capture the increased use of debt financing, and predict that the change in leverage should be positively related to abnormal returns. However, our results indicate that this variable is unrelated to announcement period abnormal returns. This finding is inconsistent with Ross' prediction, but corroborates the findings of Dann and Mikkelson (1984), among others, for seasoned straight debt offers.

In another configuration of the models, we incorporate the size of the offering relative to the firm's assets (not reported). This variable could be viewed as the possible impact the bond IPO has on the firm's leverage. Similar to Eckbo's (1986) results, our analysis fails to uncover any systematic relation between the announcement period wealth effect on common stock and the relative size of the debt IPO.[19] Although the coefficient on this variable is consistently positive in all eight models, it is statistically significant at the 10 percent level in only one model.

We include the bond's rating as a control variable in all regressions. *Rating* is a categorical variable that takes a value of six when the bond is rated AA, five if the bond's rating is A, etc. Consistent with the results presented in an earlier section, rating is insignificant in all models.[20] Our finding corroborates previous empirical results obtained for seasoned bond issues (see, e.g., Eckbo (1986), James (1987), and Shyam-Sunder (1991)).

We also include a dummy variable, *Industry*, to control for the two industry groups in our sample. This variable takes a value of one for financial firms, and zero otherwise. Industry is insignificant in all models, indicating that the abnormal returns to debt IPO announcements by financial firms are similar to those made by industrial firms. This result corroborates our robustness test, in the previous section, which indicates that the negative stock price response is robust to the type of the industry in which the issuer belongs. We also reestimate all eight models restricting the sample to industrial firms only. The results are similar to those obtained for the full sample presented in Table VII.

[19] We also examine whether the stated purpose of the offering affects announcement period abnormal returns. We find that the negative market reaction to announcements of new bond offerings is unrelated to the purpose of the offering.

[20] We reestimate the regressions using a set of dummy variables (instead of the categorical variable) to represent the bond's rating. None of the dummy variables is significant.

V. Summary and Conclusions

This study examines the information content of a major structural shift in a firm's debt acquisition policy to provide empirical evidence on the validity of some important debt structure theories. Using a sample of debt IPOs made between 1971 and 1994, we document that debt IPO announcements convey a negative signal to the stock market. Robustness tests show that the negative stock price response is invariant to the default risk of the issue, the effect of the debt IPO on leverage, the industry in which the offering firm operates (industrial versus financial), and the purpose of the bond offer. Additionally, the price reaction at the announcement of the second and third public bond offers are not different from zero. Therefore, our analysis documents that bond IPOs are fundamentally different from seasoned bond offers. Further, we find that larger firms with financing requirements, indicated by capital expenditures and growth in assets and sales, are more likely to choose bond IPO financing.

Our primary finding of a significant negative stock price response to debt IPO announcements lends support to the predictions of (a) the asymmetric information models of debt maturity choice, and (b) debt ownership structure models premised on greater monitoring costs associated with public debt as compared to bank debt. Our finding that sample firms experiencing a simultaneous reduction in bank monitoring are affected more adversely by the public debt offer suggests that a change in debt ownership structure has important wealth implications for stockholders. Consistent with various debt maturity choice theories, the analysis indicates that the equity wealth change at offer announcement is negatively related to the maturity of the offer.

We also find that older firms suffer less adversely from debt IPO announcements. This result is consistent with the notion that there is less information asymmetry associated with older firms. This result is also consistent with Diamond's (1991a) reputation-building argument. We also document that firms enjoying higher growth opportunities suffer less adversely from the announcement. This finding lends support to Rajan's (1992) bank information monopoly theory and Diamond's (1991b) conjecture that the firm's ability to access capital from both private and public sources confers financial flexibility. Therefore, high growth firms, facing more acute hold-up problems, benefit from the increased financing flexibility afforded by the introduction of public debt, and hence they experience less adverse stock price response. Similar to Dann and Mikkelson's (1984) findings for convertible debt issues, our analysis is unable to lend support for Ross's (1977) signaling model that asserts that leverage increasing transactions are "positive news" events.

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