2005

Contracting Costs and the Window of Opportunity for Straight Debt Issues;

Sudha Krishnaswami
University of New Orleans

Devrim Yaman
Western Michigan University

Contracting Costs and the Window of Opportunity for Straight Debt Issues

Sudha Krishnaswami[*]
Department of Economics & Finance
College of Business Administration
University of New Orleans
New Orleans, LA 70148
(504) 280-6488
skrishn1@uno.edu

Devrim Yaman
Department of Finance & Commercial Law
Haworth College of Business
Western Michigan University
Kalamazoo, MI 49008
(269) 387-5749
devrim.yaman@wmich.edu

[*] *Corresponding author*.

We thank Jennifer Bethel, Ranjan D'Mello, Anurag Gupta, Mike Rozeff, Ajai Singh, Erik Sirri, Venkat Subramaniam, Oranee Tawatnuntachai, seminar participants at Babson College, Case Western Reserve University, SUNY-Buffalo, and the University of New Orleans for their comments and suggestions. All errors remain our responsibility.

Contracting Costs and the Window of Opportunity for Straight Debt Issues

Abstract

We analyze whether fluctuation in economy-wide factors cause time-series variation in the contracting costs of moral hazard, adverse selection, and financial distress, and so create windows of opportunity for firms to issue debt. Using the announcement period abnormal returns as one measure of the overall contracting costs of debt issues, we specifically study whether economy-wide factors affect the impact of firm-specific measures of contracting costs on the abnormal returns. We find that debt issues are more costly in periods of higher interest rates and in industry downturns. When we partition the impact of each issue- and firm-specific measure of contracting costs across high and low levels of each economy-wide variable, we find that only the measures of agency cost become significant in general, but issue-specific measures of financial distress also become relevant in subsamples.

JEL classification: G32; G30

Key words: Straight debt; Contracting costs; Moral hazard; Financial distress; Adverse selection

1. Introduction

The empirical literature on the stock price reaction to debt issue announcements has documented differing results. Eckbo (1986), Mikkelson and Partch (1986), and Shyam-Sunder (1991) find no significant stock price reaction, Dann and Mikkelson (1984) and Pilotte (1992) find a negative stock price reaction to announcements of straight debt issues, and Mikkelson and Partch (1986) report a significant negative stock price reaction in a subsample of completed debt offerings. Researchers have gone on to analyze the impact of issue- and firm-specific measures of moral hazard, adverse selection, and financial distress costs on the abnormal returns around debt issue announcements.[1] Again, the evidence is mixed. Most of these factors do not affect the stock price reaction. Thus, the results cast some doubt on the significance of agency and financial distress costs in the debt issue decision.

An underlying premise in the extant studies is that the impact of these costs on the stock price reaction remains constant across different time periods. If there is inter-temporal variation in the costs causing the firm-specific factors to affect the abnormal returns across different time periods differently, not controlling for the variation may average out the impact of the factors. In this paper, we examine whether fluctuation in economy-wide factors give rise to variation in the contracting costs of moral hazard, adverse selection, and financial distress, and so provide windows of opportunity when it may be favorable for firms to issue debt. Using interactions of the firm-specific and economy-wide factors, we go on to analyze whether the impact of the issue- and firm-specific factors on abnormal returns varies across different windows of the economy-wide factors.

The incremental contributions of our research are three-fold. First, using a large and recent sample of straight debt issued by industrial firms, we document the abnormal returns around straight debt announcements in order to measure the net cost (or benefit) of a debt issue to the equity holders of a firm. Second, we control for possible time-series variation in measures

[1] Factors studied include bond ratings (Eckbo, 1986; Mikkelson and Partch, 1986; Shyam-Sunder, 1991; Pilotte, 1992), stated use of the proceeds (Dann and Mikkelson, 1984; Eckbo, 1986; Mikkelson and Partch, 1986), tax shields (Eckbo, 1986), and growth options in the investment opportunity set of the firms (Pilotte, 1992; Patel, 2000).

of contracting costs by using economy-wide factors. There have been a number of studies that highlight the importance of controlling for time-series heterogeneity in the contracting costs when studying security issuance decisions (Shleifer and Vishny, 1992; Choe, Masulis, Nanda, 1993; Gertler and Hubbard, 1993; Bayless and Chaplinsky, 1996; Pulvino, 1998; Levy, 2001; Korajczyk and Levy, 2003). Because macroeconomic factors such as interest rates, industry performance, economic growth, and the level of information asymmetry in the market affect cash flows, the type and quality of the investment opportunity set, risk perceptions, and the probability of default, they can potentially capture the time-series variation in the costs that arise due to moral hazard, adverse selection, and financial distress. Finally, including interactions of the firm-specific measures and economy-wide factors allows us to study which cost elements are affected by adverse conditions.

We use the stock price reaction around debt issue announcements as our primary metric of the overall costs associated with debt issues. Because the contracting costs of moral hazard, adverse selection, and financial distress also affect the yield on a firm's debt, we use debt yield as an alternative measure of debt issuance costs. Both debt yield and the abnormal returns represent a measure of the net contracting costs of issuing debt, but the abnormal returns measure includes both the direct and indirect costs and benefits of debt to shareholders in addition to any yield effects. Debt yield, on the other hand, is affected only by factors that are relevant to bondholders, and does not incorporate indirect effects of debt on shareholder value.[2]

We document a significant negative stock price reaction to debt issues in a sample of 1862 straight debt issues by 917 firms during the period 1983 - 1998. We then go on to analyze the direct impact of issue- and firm-specific measures of contracting costs of moral hazard, adverse selection, and financial distress on the abnormal returns, while controlling for the economy-wide variables that may influence these costs. Our results reiterate the evidence in the

[2] For instance, the yield on a new debt issue may not capture any wealth transfers from the old debtholders of the firm to the shareholders, when a levered firm issues substantial additional debt. Also, issuing debt may mitigate manager-shareholder agency conflicts (Jensen, 1986; Harvey, Lins, and Roper, 2001) and may further be associated with strategic product market effects that benefit the shareholders of the firm (Brander and Lewis, 1986; Maksimovic, 1988), but their effect may only be partially reflected in debt yields.

extant literature that none of the issue- and firm-specific measures is significant. However, we find that the abnormal returns are affected negatively by interest rates and positively by industry performance. This evidence lends credence to the implications of Shleifer and Vishny (1992) and Choe, Masulis, and Nanda (1993) that cash flows, and the type and quality of the investment opportunity set deteriorate during periods of high interest rates and during industry downturns so that the moral hazard and financial distress costs become relevant for the debt issue decision. We find no evidence that contracting costs due to adverse selection affect the abnormal returns suggesting perhaps that adverse selection is a bigger problem for more information sensitive securities such as equity than for debt.

Next, we include interactions of the issue- and firm-specific factors with each economy-wide factor, to study whether the impact of the firm-specific measures of the contracting costs on abnormal returns varies across different windows of the economy-wide variables. Our objective here is to discern which, if any, firm-specific elements are affected by adverse conditions of the economy. Our evidence suggests that only agency cost related firm-specific measures are substantially affected. Specifically, the coefficient of the market-to-book ratio (a measure of the growth opportunities in the firms' investment opportunity set) is negative and significant during periods of low interest rates and economic upturns, but becomes positive and significant during periods of high interest rates and economic downturns. Thus, the argument that more growth opportunities increase the contracting costs of underinvestment and risk-shifting for debt issuers seems to be relevant only during favorable economic conditions. During adverse economic conditions, the value of being able to finance profitable growth opportunities seems to outweigh any agency costs associated with debt.

The other firm-specific measure of agency problems, excess cash flow, is positive and significant during industry upturns, suggesting that debt serves to mitigate free cash flow tendencies during upturns. However, during industry downturns, the paucity of profitable investment opportunities increases the probability that firms with excess cash flow will overinvest in unprofitable investments. The coefficient of excess cash flow becomes negative

and significant in downturns. Finally, we repeat our interaction analysis for a subsample of debt issues that constitute new financing for the issuers (and not refinancing of existing debt). We find that issue-specific measures of financial distress become significant for this subsample, in addition to the agency cost measures.

2. The impact of economy-wide factors on the contracting costs of debt

Economy-wide factors such as interest rates, industry performance, economic growth, and information asymmetry in the market affect cash flows, the type and quality of the investment opportunity set, risk perceptions, and the probability of default, thereby potentially causing time-series variation in the contracting costs of moral hazard, adverse selection, and financial distress. This variation in the contracting costs could give rise to windows of opportunity for firms when it may be more favorable to issue securities. For instance, in analyzing seasoned public equity issues, Bayless and Chaplinsky (1996) show that there are periods of lower market-wide adverse selection costs, when it is more favorable for firms to issue equity than at other times. They report that a typical issuer foregoes $13 million in equity value by issuing in an unfavorable time period. In this paper, we study whether these economy-wide factors substantively affect the overall value impact of issuing straight debt for firms.

2.1. Impact of interest rates

Taggart (1977) and Marsh (1982) document that interest rate timing is a major determinant in the debt-equity choice of companies.[3] Issuing debt during periods of high interest rates increases the likelihood of financial distress and hence the expected distress-related costs associated with debt. We would, therefore, expect to see higher debt yields and lower abnormal returns when debt is issued during periods of high interest rates.[4]

[3] Empirical evidence in White (1974), Solnik and Grall (1975), Pruitt and Gitman (1991) and Graham and Harvey (2001) bear out this fact. 66.6% of the managers surveyed by Pruitt and Gitman (1991) indicate that current interest rates influence their financing decisions. Also, White (1974) finds that 25% to 40% of long-term debt issues are timed to take advantage of relatively low long-term interest rates. Similarly, Solnik and Grall (1975) show that during the period 1965-1973, the volume of Eurobonds issued by U.S. companies increased in interest rate declines.

[4] The poor abnormal returns during periods of high market interest rates may be somewhat mitigated by the favorable signaling effects of debt outlined in Ross (1977) and Leland and Pyle (1977).

We use the yield on 10-year Treasury bonds as of the filing month of the straight debt issue, deflated by the change in the Consumer Price Index to reflect the level of market interest rates.[5] The yields are obtained from the Federal Reserve Bulletin. We also use the nominal yield as an alternative measure of market interest rates. To classify periods into high and low interest rates we first obtain 3-month moving averages of the interest rates, and then rank the moving averages into quartiles. Then, we assign the interest rate in each month into one of the four quartiles. Finally, if three consecutive months of interest rates are classified into the highest (lowest) quartile, we define those three months as periods of high (low) interest rates. Months that are not ranked either high or low periods are classified as normal.

2.2. Impact of economic growth and industry performance

Choe, Masulis, and Nanda (1993) argue that there are fewer and poorer quality investment opportunities during *economic* downturns compared to upturns, and hence higher probability of distress associated with debt issued in downturns. Shleifer and Vishny (1992) argue that expected distress costs are higher for firms during *industry* downturns due to increased asset illiquidity during these periods. Their argument stems from the fact that it is usually companies in the same industry that bid the highest price for assets during liquidations, and the costs of financial distress will be higher when the bidding firms themselves are not performing well.[6] In addition to expected distress costs being higher during downturns, Choe, Masulis, and Nanda (1993) and Eisfeldt (2004) argue that adverse selection costs are counter-cyclical and hence higher during market downturns. These arguments imply a higher debt yield and lower abnormal returns to debt issued during economic and industry downturns relative to upturns.

We use two measures of economic performance, economic growth and economic activity. Economic growth is measured using annual growth in real GNP, where the GNP figures are obtained from the Federal Reserve Bulletin, and real GNP is measured in 1996 dollars. Because our regressions include both GNP growth rates and interest rates, two

[5] We use 10-year T-bond yields for the classification because the median debt maturity in our sample is 10 years.
[6] Pulvino (1998) shows that bankruptcy costs increase during downturns for firms in the airline industry.

potentially correlated variables, we orthogonalize GNP growth and interest rates and use the residuals from this regression as our measure of economic growth.[7] This measure enables us to capture the impact of economic performance on the debt issue decision that is incremental to the impact of interest rates. We use the Chicago Fed National Activity Index as our metric of economic activity.[8] This index is a broader metric of current overall economic activity and inflationary pressure in the economy than just GNP. The index is calibrated so that a positive index reading corresponds to economic growth above the trend and a negative reading implies economic growth below the trend. We apply the same method as with interest rates on the measures of economic performance to classify into upturns and downturns.

Industry performance is captured using two measures, industry returns and adjusted industry returns. For each debt-issuing firm, the median stock return of the industry in the year of the debt filing is used as one measure of industry performance. We use all firms in the same 3-digit SIC code as the issuing firm to define the industry. Because this measure may simply reflect the profitability of the industry, our second metric of industry performance is the percentage difference between the median industry return in the year of the debt filing and the median of the industry returns in the three years prior to the filing. Thus, this is a measure of abnormal performance in the industry. Using industry returns, we classify periods into upturns (downturns) if the median industry return in the filing year and in the year prior are positive (negative). Using the adjusted industry performance measure, we classify periods into upturns (downturns) if the adjusted performance is positive (negative).

2.3. Impact of information asymmetry

Bayless and Chaplinsky (1996) argue that the level of information asymmetry in the

[7] The orthogonalization is achieved by regressing real GNP growth rates on contemporaneous real interest rates, and using the residuals from this regression. We choose to regress GNP growth rates on interest rates in the orthogonalization because Estrella and Hardouvelis (1991) argue that real interest rates drive GNP growth. Because high real interest rates affect investment levels, it would decrease real output, which in turn reduces GNP growth rates.

[8] The index is a weighted average of 85 existing monthly indicators of national economic activity. The 85 economic indicators are drawn from five broad categories of data – output and income, employment, consumption, and manufacturing. More information about the index can be obtained from www.chicagofed.org.

market varies through time, and periods of low information asymmetry occur when "events known by both managers and investors dominate firm value." A similar argument is presented in Choe, Masulis, and Nanda (1993) and Eisfeldt (2004) who argue that there is time-series variation in adverse selection costs. Higher adverse selection costs make it unfavorable to issue external securities during periods of high information asymmetry. Thus, debt issued during periods of higher information asymmetry will carry higher debt yield and the abnormal returns will be lower during periods of high information asymmetry.

Because it is the most information sensitive security and because equity issues convey unfavorable information to the market, Bayless and Chaplinsky (1996) argue that firms will choose to issue equity predominantly during periods of low information asymmetry. Hence, as documented in Bayless and Chaplinsky (1996) and Choe, Masulis, and Nanda (1993), aggregate equity volume in the economy is an indicator of the level of information asymmetry in the market.[9] The Federal Reserve Bulletin provides monthly reports of the aggregate dollar volume of equity issued by all firms in the economy in nominal dollar terms. We use this estimate deflated by the monthly Consumer Price Index as one measure of market-wide information asymmetry. As an alternative measure we use the nominal aggregate equity volume scaled by the value of the CRSP equal-weighted index. Again, we apply the same method as with interest rates to classify our sample period into intervals of high and low information asymmetry, where periods of high equity volume correspond to periods of low information asymmetry.

3. The interaction of economy-wide and issue- and firm-specific factors

Extant literature has studied several issue- and firm-specific characteristics that may influence the debt issuance decision. If macroeconomic factors cause time-series variation in contracting costs, they could affect the impact of the issue- and firm-specific factors on the debt

[9] It could be argued that high equity volume might simply reflect "hot" markets when other macroeconomic conditions are favorable for equity issue so that equity prices are high during these periods. However, Bayless and Chaplinsky (1996) show that periods classified as hot versus cold using equity prices and general macroeconomic conditions in the market do not coincide with the periods of high equity volume. They conclude that aggregate equity volume contains information regarding time-varying adverse selection costs, and is not just a manifestation of hot equity markets.

yields and abnormal returns. Therefore, in our analysis of issue- and firm-specific factors, we also include interactions of these variables with the economy-wide factors.

Seniority of the offering: Senior debt is higher than other classes of debt in the priority structure of securities, and so the expected liquidation costs and other financial distress costs are likely to be lower for senior debt than for other debt (Barclay and Smith, 1995b). Thus, debt yield is expected to be lower and abnormal returns are expected to be higher for senior debt than for subordinated debt. Abnormal returns are also expected to be higher due to wealth transfer from existing junior bondholders to shareholders when firms issue senior debt (Masulis, 1980; Dann, 1981; Choe, Masulis, and Nanda, 1993). We capture seniority using a dummy variable taking the value of one for non-subordinated debt and zero otherwise.

During high interest rate periods and economic and industry downturns, financial distress costs are worsened so that, the lowering of the distress costs through senior debt could become especially valuable. Alternatively, the effect of worsening market conditions could outweigh any benefits from issuing senior debt. Therefore, the positive impact of seniority on abnormal returns could become more or less pronounced during these periods.

Bond Rating: Bond rating not only captures the riskiness of the firms that issue debt, but also any additional risk specific to the issue itself. So, lower is the bond rating, higher will be the yield on the bond, and lower will be the announcement returns to the debt issue. To analyze the impact of riskiness, we use an indicator variable, Speculative Grade, that takes a value of one for issues rated speculative grade by Moody's (below Baa) and zero otherwise. The higher likelihood of default on lower rated bonds would be especially pronounced during periods of industry and economic downturns and during periods of high interest rates.

Growth Opportunities: Myers (1977), Smith and Watts (1992), and Froot, Scharfstein, and Stein (1993) suggest that higher growth opportunities increase the contracting costs associated with the underinvestment and risk shifting in debt issues. Their agency cost argument implies a positive relation between growth opportunities and the yield on the debt, and a negative relation between growth opportunities and the stock price reaction to the debt issue. Additionally, Myers (1977)

argues that the underinvestment problem is more severe in periods of high interest rates, and Jung, Kim and Stulz (1996) suggest that high growth firms have more to lose in the event of bankruptcy. To the extent that the likelihood of financial distress is higher during high interest rate periods, and industry and economic downturns, the negative relation between growth opportunities and abnormal returns will be more pronounced during these periods.

In contrast, Ambarish, John, and Williams (1987) argue that for firms where information asymmetry is primarily about the future investment opportunities (growth firms) rather than about the assets in place, new security issues signal positive information about the value of the growth opportunities. Their model predicts a positive relation between growth opportunities and the abnormal returns and a negative relation between growth opportunities and debt yield. We measure growth opportunities using the market to book ratio for each firm measured at the end of the fiscal year prior to the debt announcement year. The market value of the firm is defined as the book value of total assets minus the book value of equity plus the market value of equity.

Bankruptcy costs: Titman (1984) and Titman and Wessels (1988) suggest that the costs of financial distress are higher for firms with unique products since their liquidation costs are likely to be high. Following Titman and Wessels (1988) and Fisher, Heinkel, and Zechner (1989), we represent expected bankruptcy costs with an indicator variable taking the value one for firms in the machinery and equipment industry (SIC code between 3400 and 3999) and zero otherwise. This variable captures the costs incurred during distress but does not measure the probability of being in distress. So, we use the interest coverage ratio as an alternate variable to capture the impact of the probability of distress. Interest coverage ratio is defined as the ratio of EBIT to interest expense, and is calibrated so that higher ratios correspond to lower probability of distress. We expect debt yield to be increasing and abnormal returns to be decreasing with increasing bankruptcy costs or probability, and the relations to be more pronounced during periods of high interest rates and downturns.

Excess Cash Flow: Jensen (1986) suggests that debt serves as a bonding device to reduce free cash flow problems that occur when managers have cash flows in excess of what is necessary to

finance profitable investment opportunities. We would therefore expect to see a positive relation between excess cash flow and the price reaction to debt issues, and a negative relation between excess cash flow and debt yield. We measure excess cash flow as (Operating income before depreciation-Capital expenditures-Change in NWC-Net taxes-Change in deferred taxes)/Total assets in the fiscal year prior to the announcement year.

During industry or economic downturns, two opposing effects come into play – the worsening of free cash flow problems due to the paucity of profitable investment opportunities, and the strengthening of the benefit of debt as a bonding mechanism. The relative magnitudes of the two effects determine the impact of the variable on abnormal returns during downturns.

Intended use of the proceeds: Miller and Rock (1985), Myers and Majluf (1984), and Ross (1977) predict a stock price reaction to debt issues only when the debt issued constitutes new financing. Therefore issues offered to refinance previously issued debt should not result in a significant stock price reaction. We use an indicator variable taking the value of zero for debt issued to refinance existing debt and one for other purposes. While Miller and Rock (1985) and Myers and Majluf (1984) predict this variable to have a negative influence on the stock price reaction to debt issues, Ross (1977) predicts a positive influence.

Registration Type: We control for the type of registration used in the issue through an indicator variable that is one for shelf registered offerings and zero otherwise.[10] Postponing issuing securities through shelf registrations increases the uncertainty surrounding the issue and thus increases the adverse selections costs related to the issue. These costs would worsen during periods of high market-wide information asymmetry. We would therefore expect lower abnormal returns to shelf-registered debt during periods of higher information asymmetry.

Size of the offering: Miller and Rock (1985) argue that unexpected external financing reveals that the actual earnings of the firm are lower than expected earnings. Therefore to the extent that the

[10] Rule 415 that regulates shelf registrations of securities mandates that only firms satisfying a size requirement, whose debt has investment grade rating, and who have not defaulted on any claims during the preceding three years are eligible to shelf register their securities (Shyam-Sunder, 1991). Thus, shelf registered offerings are typically made by large, safe firms with little information asymmetry, and so debt issues by these firms may not convey much

size of the issue represents unanticipated amount of financing, it should have a negative impact on the stock price reaction to debt financing and a positive impact on the debt yield. We measure the size of the issue as the principal amount issued measured relative to the total assets of the firm. All firm-specific variables are measured at the end of the fiscal year prior to the announcement date.

4. Data and empirical results

4.1. Sample characteristics

The data consists of seasoned, public straight debt issues completed during the period 1983 to 1998 by companies trading on the NYSE, AMEX, and Nasdaq. We require that all issues have filing dates recorded in the *Securities Data Corporation* (SDC) database and data be available for the issuing firms on the Center for Research in Security Prices (CRSP) database. We eliminate debt issues by utilities and financial companies since the motivations for debt issues by these companies may be regulation related (i.e., to show evidence of cost of capital), and since there may be implicit government subsidization of the distress costs for these firms. The sample consists of 1862 debt issues made by 917 industrial firms. Table 1 shows the annual distribution of the issues. The minimum number of debt filings in the sample in any given year is 33 (in 1983) and the maximum number of filings is 222 (in 1992).

Table 2 presents the descriptive statistics for the data. The mean (median) value of total assets of the firms in our sample is $9,414 ($2,825) million. The median size of the debt offering is $200 million and it is 8.37% of total assets. The firms in our sample have on average 33.66% of their total assets financed through debt. The sample consists of mostly intermediate to long-term bonds with a median maturity of 10 years. The average yield on the debt issues in our sample is 8.26%. Panel B indicates that over 79% of the debt issues in the sample are subordinated debt. The Moody's ratings for the debt issues in our sample indicate that about 64% of the issues are rated investment grade. The predominant stated use of the debt proceeds is

---

information. If shelf registrations serve to certify firm type to the market, we would expect positive abnormal returns and lower debt yields to shelf registered debt.

debt refinancing (43%), while the next highest use is for general corporate purposes (33%). Also a majority (63%) of the issues are registered through shelf registration.

4.2. Abnormal returns

We measure abnormal returns using the event study methodology of Dodd and Warner (1983). We estimate a market model over a 255-day period ending 46 days before the announcement of the debt issue. The CRSP value-weighted index is used as a proxy for the market. Similar to Clark, Dunbar, and Kahle (2004) and Jagdeesh, Weinstein, and Welch (1993), we use the filing date provided by SDC as the announcement date for the debt issues.[11]

Table 3 summarizes the abnormal returns over different time intervals around the filing date for the full sample of debt issues. We obtain a significant mean (median) two-day cumulative abnormal return of -0.197% (-0.216%) in the event window (0,+1). The mean cumulative abnormal returns in the event windows (-1,0), (0), and (-1,+1) are -0.151%, -0.122%, and -0.225% respectively. These abnormal returns are very similar to the returns in Dann and Mikkelson (1984), and Mikkelson and Partch (1986).

4.3. Impact of economy-wide factors on straight debt issues

4.3.1. Univariate comparisons

In this section, we compare the abnormal returns to debt issues between high and low levels of the economy-wide factors. In panel A of Table 4, we partition the sample into debt issue announcements made in periods of high and low interest rates. The univariate results indicate that the average abnormal return is not significantly different from zero in low interest rate periods, while the return is significantly negative in high interest rate periods. Further, the difference in the mean abnormal returns between the two interest rate periods is statistically significant at the 5% level. A similar pattern extends to medians. The results indicate that the

[11] Some debt issues may be announced prior to the filing date. Therefore, as a robustness check, we also obtain the actual announcement dates from the *Wall Street Journal* (WSJ). Obtaining announcement dates from WSJ is complicated by the fact that since 1985, the *Journal* reports only offering information (and not announcement information) in their "new security issues" column. Only about 4% of our sample of debt issues had announcements

median firm incurs an additional 0.44% loss in its abnormal returns by issuing debt in periods of higher nominal interest rates than in periods of lower nominal interest rates.

The univariate evidence on the impact of industry performance on abnormal returns indicates that the abnormal returns are significantly negative during industry downturns while they are not different from zero during upturns. Furthermore, panel B indicates that the difference in abnormal returns across the two periods is statistically significant at the 1% level when we use the adjusted industry returns measure to capture industry upturns and downturns. A comparison of the abnormal returns across periods of high and low economic performance in panel C of the table reveals that the abnormal returns do not differ across upturns and downturns. Thus, economic performance does not seem to directly affect the abnormal returns at debt issue.

Panel D presents the results of the analysis of the influence of information asymmetry on the stock price reaction to debt issues. Using both real and standardized aggregate equity volumes to classify high and low periods of information asymmetry, we find that the abnormal returns are not different from zero during periods of low information asymmetry. During periods of high information asymmetry the abnormal returns are significantly negative. Thus, our preliminary results indicate that adverse selection costs in debt issues are not an important factor during periods of low information asymmetry, but may become important during periods of high information asymmetry. However, the difference is not significant.

4.3.2. Regression results

In this section, using multivariate OLS regressions, we study the impact of the issue- and firm-specific factors on the abnormal returns and debt yield while controlling for the economy-wide factors. The objective of this analysis is to investigate whether economy-wide variation in contracting costs have a direct impact on the overall value effect of debt issues. The results are presented in Table 5. In panel A of the table, the dependent variable is the cumulative abnormal return in the event window (0,+1), and in panel B, the dependent variable is the debt yield.

---

in the *Journal*, and in virtually all cases, the *Journal* announcement date either coincided with or was after the SDC filing date. We also found no references to the debt issues on *Lexis-Nexis* prior to the filing date.

In utilizing separate OLS regressions for analyzing abnormal returns and debt yields, the assumption is that debt yield is not endogenous to the abnormal returns. However, given that the abnormal returns around debt issues represent an overall measure of contracting costs, and the debt yield is a measure of the direct cost of debt, debt yield may endogenously determine abnormal returns. Thus, a better representation of our model of contracting costs would be a recursive system of equations, with debt yield determined by the economy-wide, issue-specific, and firm-specific variables, and abnormal returns in turn determined by debt yield, some of the economy-wide factors, and the issue- and firm-specific variables. As Greene (2000) points out, such a "fully recursive model may be consistently estimated using equation-by-equation ordinary least squares." Therefore, in regressions 1 and 2 of panel A we estimate the abnormal returns equation without controlling for the potential endogeneity of abnormal returns and debt yield, while in regressions 3 and 4 of panel A we control for the endogeneity by using debt yield in place of interest rates. The debt yield equation is separately estimated in panel B of the table.

From panel A of Table 5, it may be seen that consistent with the prior literature, none of the issue- and firm-specific variables, except seniority of the issue, is significant in determining abnormal returns. However, two of the economy-wide variables, interest rates and industry performance, are significant suggesting that these factors directly affect the overall cost of issuing debt. The interest rate variable is negative and significant at the 10% level of significance. This is consistent with the implications of Taggart (1977) and Marsh (1982) that issuing debt during high interest rate periods exacerbates financial distress costs. Industry performance is positive and significant, suggesting that debt issuance costs are lower during industry upturns than during downturns, perhaps due to better industry-specific investment opportunities and increased asset liquidity (Shleifer and Vishny, 1992). Economic performance is not consistently significant. The significance of industry performance and the lack of significance of economic performance may indicate that the industry specific components of financial distress costs and agency costs are more relevant to the debt issue decision than are the economy wide components. Finally, we do not find a statistically significant relation between

the level of information asymmetry and the abnormal returns. Thus, our results indicate that adverse selection costs are not an important determinant of debt issuance costs.

Comparing the abnormal returns regressions in panel A and the yield regressions in panel B highlights an important difference in the influence of the issue- and firm-specific variables. In sharp contrast with the results in panel A, all of the issue- and firm-specific variables except the measure of bankruptcy costs, are strongly significant in the yield regressions in panel B of Table 5. For instance, the negative coefficient of growth opportunities in the yield regressions is consistent with Ambarish, John, and Williams' (1987) argument that debt yields are lower for high growth firms since debt issues signal valuable future growth opportunities for the firm, and is counter to the agency cost of debt argument in Myers (1977) and Smith and Watts (1992). The negative coefficient of the excess cash flow variable is consistent with Jensen's (1986) argument that debt serves to mitigate the free cash flow problem.

All four economy-wide variables are important determinants of the yield on debt, and with the predicted signs. Debt yields are higher during periods of higher interest rates, poor economic growth, poor industry profitability, and high information asymmetry. However, measures of current economic activity, and abnormal industry performance are not significant in determining debt yields. Overall, the results in Table 5 suggest that interest rates and industry profitability are relevant for both debtholders and shareholders, while economic growth and adverse selection seem to be significant only in determining debt yields.

The evidence in Table 5 indicates that while the issue- and firm-specific variables are relevant for bondholders in determining bond yields, they are not relevant in determining the overall costs for the shareholders from the debt issue. One possible explanation for this may be that financial distress costs and the contracting costs due to moral hazard and adverse selection are primarily important for shareholders only during adverse market conditions. To this end, we study the interaction between the economy-wide variables and the issue- and firm-specific

variables in the next section.[12]

4.4. Interaction between economy-wide and issue- and firm-specific factors

In regressions 1 through 4 of Table 6, we include interactions of firm-specific variables with each economy-wide factor to measure the differential impact of these variables across different periods of the economy-wide factors. For instance, in regression 1 we include the firm-specific factors along with their interactions with a high interest rate indicator variable. The dependent variable is the cumulative abnormal return in the event window (0,+1). In these regressions, the coefficient of the firm-specific variable (the main effect) measures the impact of the firm-specific variable on abnormal returns during low interest rate periods, and the coefficient of the interaction term measures the incremental impact of the firm-specific variable on abnormal returns in high interest rate periods over low interest rate periods. In regressions 2, 3, and 4, the interactions are with an indicator of economic downturn, industry downturn, and high information asymmetry, respectively.

Firm-specific agency cost measures, specifically growth opportunities and excess cash, are the variables that predominantly show variation across the different economy-wide periods. In regressions 1 and 2, the coefficient of growth opportunities is negative and significant in low interest rate periods and economic upturns, suggesting that debt issuance is associated with significant agency costs during these periods, but the coefficient becomes positive and significant (coefficient is –0.902+1.020 = 0.118 in regression 1) in periods of high interest rates and in economic downturns. This result is consistent with the arguments of Ambarish, John, and Williams (1987) that issuing debt is a signal of valuable future growth opportunities for firms and the market associates a higher value to this signal in high interest rate periods and downturns. The willingness of firms to issue debt in these periods (when financial distress costs are high and investment opportunities deteriorate) to finance their growth opportunities must

[12] The variation in the impact of the firm-specific factors on debt issue costs has been generally ignored in the literature. An exception is Harvey, Lins, and Roper (2001). The authors analyze the costs and benefits of debt in emerging markets where agency problems are likely to be extreme. They argue that the impact of debt is more discernable in these firms because moral hazard and adverse selection problems are most severe.

indicate that the firms believe the growth opportunities to be especially valuable. No other variable is significant in regression 1 while registration type becomes significant in regression 2. The positive coefficient for registration type suggests that shelf registration is associated with higher abnormal returns than traditional registration.

In regression 3 of Table 6, excess cash flow, our measure of free cash flow problems becomes significant. The coefficient of this variable is positive and significant in industry upturns, suggesting that debt serves as a bonding device in these periods. However, in industry downturns, it is negative and significant (coefficient is 13.898-13.924 = - 0.026) suggesting that issuing debt is not sufficient to mitigate the free cash flow problems in periods when good investment opportunities are scarce.[13] Interest coverage ratio becomes positive and significant in industry downturns, suggesting that coverage strength of a firm is especially valuable in industry downturns when cash flows become tighter and distress costs worsen.

Finally, in regression 4, use of proceeds becomes significant in periods of high information asymmetry. The positive coefficient of this variable in periods of high information asymmetry is consistent with Ross' (1977) argument that debt is a positive signal of future profitability, but our evidence indicates that it is a positive signal only in periods of high information asymmetry when all external securities are faced with high adverse selection costs.

4.5. Specification checks

Lemmon and Zender (2001) study factors affecting the costs of debt in a sample of conservatively debt financed firms. They argue that these firms have a conservative capital structure because they must face very high costs of debt. Their analysis suggests that there may be certain subsamples of firms where the ability to detect the factors affecting the costs of debt is higher. We identify two such subsamples and repeat our main analysis for these subsamples to see whether we are able to discern other factors affecting the costs of debt.

[13] The fact that the excess cash flow variable becomes significant only when we partition based on industry performance and not on economic performance suggests that free cash flow problems are driven by the availability and quality of *industry-specific* investment opportunities and not on general economic conditions.

The subsamples analyzed are (i) debt issues with large issue sizes relative to total assets, (ii) debt issues that represent new financing (i.e., issues not used for refinancing).[14, 15] Larger debt issues could result in higher financial distress and agency costs and therefore have a higher marginal impact on shareholder value than smaller issues. In panel A of Table 7, we separately analyze debt issues with large issue size (issue size greater than sample median) to control for any issue-size related interactions. The results for this subsample are not substantially different from our overall results. If anything, the results are weaker in this subsample than in the general sample. So, there seems to be no indication that size of the issue imposes any additional strain on firms even during adverse conditions.

Theoretical researchers argue that contracting costs of debt become relevant only when debt constitutes new financing and not when it is issued solely to refinance existing debt (Myers and Majluf, 1984; Miller and Rock, 1985; Ross, 1977). Although we control for this effect in our general analysis using an indicator variable, because there is a capital structure change when debt constitutes new financing, even the impact of other firm-specific measures on abnormal returns may be different in the new financing subsample. Therefore, we repeat our interaction analysis on the subsample of debt issues where the issue constitutes new financing. These results are presented in panel B of Table 7. Several differences become immediately apparent in this subsample. As in the general sample, firm-specific agency costs measures, growth opportunities and excess cash flow, continue to show variation across different macroeconomic periods. But in addition to the measures of agency costs, issue-specific measures of financial distress become relevant for the subsample of leverage increasing firms.

For instance, seniority of the debt issue is not significant during periods of low interest rates, but even senior debt affects abnormal returns negatively in high interest rate periods. This result suggests that the increase in expected financial distress costs during periods of high

[14] We also separately analyzed the sample of debt issuing firms with the highest increase in debt due to the issue. The results were qualitatively similar to the results of the subsample of debt issues which constitute new financing.

[15] Another subsample we studied was of debt issues that are placed traditionally rather than through shelf registration. Because shelf registered issues may have some remaining uncertainty at filing because the securities may not be issued immediately, economic conditions at the time of the filing may not be as relevant for these issues

interest rates far outweighs any benefits to issuing senior debt in the subsample of leverage increasing debt issues. Debt rating becomes relevant during economic downturns. Speculative grade debt does not impose costs in periods of economic upturns, but the coefficient of the variable becomes negative during economic downturns suggesting that the deterioration in cash flow and investment opportunities during downturns is especially detrimental for firms that issue new amounts of risky debt.

5. Conclusion

In this paper, we analyze whether fluctuation in economy-wide factors cause time-series variation in the contracting costs of moral hazard, adverse selection, and financial distress, and so create windows of opportunity for firms to issue debt. Using the announcement period abnormal returns as one measure of the overall contracting costs of debt issues, we specifically study whether the level of interest rates, the performance of the industry, economic growth, and the level of information asymmetry in the market impact the debt issuance costs. We also analyze whether economy-wide factors affect the impact of firm-specific measures of contracting costs on the abnormal returns, by including interactions of the firm-specific measures and the economy-wide factors. Partitioning the impact of the firm-specific measures across different windows of the economy-wide factors provides insights into the cost elements that are affected and the manner in which they are affected across the different windows.

We document a significant negative stock price reaction to debt issues in a sample of 1862 straight debt issues during the period 1983-1998. Multivariate regressions that include issue- and firm-specific measures of contracting costs and economy-wide factors to capture the time-series variation in the contracting costs indicate that interest rates and industry performance directly affect the abnormal returns. These regressions also reiterate the evidence in the extant literature that none of the issue- and firm-specific factors affect the abnormal returns.

---

than for traditionally placed issues. The results of our analysis of the subsample of traditionally placed debt issues is very similar to the results in the general sample. So, we do not report them here.

When we partition the impact of each issue- and firm-specific measure of contracting costs across high and low levels of each economy-wide variable, one important result emerges. Only the measures of agency cost, growth opportunities and excess cash flow, become significant. Finally, when we repeat this analysis on a subsample of debt issues that constitute new financing for the firms (and are not used just to refinance old debt), in addition to agency cost measures, issue-specific measures of financial distress become relevant.

The results in our paper highlight the importance of controlling for time-series variation in the contracting costs of debt issuance. The adverse effects of agency problems and financial distress costs on the debt issue decision are either tempered or exacerbated by macroeconomic conditions. Market-wide adverse selection costs have very little impact on debt issues.

References

Ambarish, R., K. John, and J. Williams, 1987, Efficient signaling with dividends and investments, *Journal of Finance* 42, 321-343.

Barclay, M. and C. Smith, 1995a, The maturity structure of corporate debt, *Journal of Finance* 50, 609-631.

Barclay, M. and C. Smith, 1995b, The priority structure of corporate liabilities, *Journal of Finance* 50, 899-917.

Bayless, M. and S. Chaplinsky, 1996, Is there a window of opportunity for seasoned equity issuance? *Journal of Finance* 51, 253-278.

Brander, J. and T. Lewis, 1986, Oligopoly and financial structure: The limited liability effect, *American Economic Review* 76, 956-970.

Choe, H., R. W. Masulis and V. Nanda, 1993, Common stock offerings across the business cycle, *Journal of Empirical Finance* 1, 3-31.

Clark, J, C. Dunbar, and K. Kahle, 2004, The long-run performance of secondary equity issues: A test of the windows of opportunity hypothesis, *Journal of Business* 77, 575-603.

Dann, L.Y., 1981, Common stock repurchases: An analysis of returns to bondholders and stockholders, *Journal of Financial Economics* 9, 113-138.

Dann, L.Y. and W.H. Mikkelson, 1984, Convertible debt issuance, capital structure change and financing-related information, *Journal of Financial Economics* 13, 157-186.

Dodd, P. and J. Warner, 1983, On corporate governance: A study of proxy contests, *Journal of Financial Economics* 27, 401-438.

Eckbo, B.E., 1986, Valuation effects of corporate debt offerings, *Journal of Financial Economics* 15, 119-151.

Eisfeldt, A., 2004, Endogenous liquidity in asset markets, *Journal of Finance* 59, 1-29.

Estrella, A. and G. A. Hardouvelis, 1991, The term structure as a predictor of real economic activity, *Journal of Finance* 46, 555-576.

Fischer, E.O., R. Heinkel, and J. Zechner, 1989, Dynamic capital structure choice: theory and tests, *Journal of Finance* 44, 19-40.

Froot, K., D. Scharfstein, and J. Stein, 1993, Risk management: Coordinating corporate investment and financing policies, *Journal of Finance* 48, 1629-1658.

Gertler, M., and R. G. Hubbard, 1993, Corporate financial policy, taxation, and macroeconomic risk, *RAND Journal of Economics* 24, 286-303.

Greene, W., 2000, *Econometric Analysis*, 4th edition, Prentice Hall, NJ.

Graham, J., and C. Harvey, 2001, The theory and practice of corporate finance: Evidence from the field, *Journal of Financial Economics* 60, 187-243.

Harvey, C., K. Lins, and A. Roper, 2001, The effect of capital structure when expected agency costs are extreme, *Working paper*, Duke University, Durham, NC.

Jegdeesh, N., M. Weinstein, and I. Welch, 1993, An empirical investigation of IPO returns and subsequent equity offerings, *Journal of Financial Economics* 34, 153-175.

Jensen M., 1986, Agency costs of free cash flow, corporate finance, and takeovers, *American Economic Review* 76, 323-329.

Jung, K., Y. Kim and R. Stulz, 1996, Timing, investment opportunities, managerial discretion, and the security issue decision, *Journal of Financial Economics* 42, 159-185.

Korajczyk, R., and A. Levy, 2003, Capital structure choice: Macroeconomic conditions and financial constraints, *Journal of Financial Economics* 68, 75-109.

Leland, H., and D. Pyle, 1977, Informational asymmetries, financial structure, and financial intermediation, *Journal of Finance* 32, 371-387.

Lemmon, M., and J. Zender, 2001, Looking under the lamppost: An empirical examination of the determinants of capital structure, *Working paper*, University of Utah, Salt Lake City, UT.

Levy, A., 2001, Why does capital structure choice vary with macroeconomic conditions? *Working Paper*, University of California at Berkeley, CA.

Maksimovic, V., 1988, Capital structure in repeated oligopolies, *RAND Journal of Economics* 19, 389-407.

Marsh P., 1982, The choice between equity and debt: An empirical study, *Journal of Finance* 37, 121-144.

Masulis, R.W., 1980, The effects of capital structure change on security prices: A study of exchange offers, *Journal of Financial Economics* 8, 139-178.

Mikkelson, W. H. and M.M. Partch, 1986, Valuation effects of offerings and the issuance process, *Journal of Financial Economics* 15, 31-60.

Miller M.H. and K. Rock, 1985, Dividend policy under asymmetric information, *Journal of Finance* 40,1031-1051.

Myers, S., 1977, Determinants of corporate borrowing, *Journal of Financial Economics* 5, 147-175.

Myers, S. and N.S. Majluf, 1984, Corporate financing and investment decisions when firms have information that investors do not have, *Journal of Financial Economics* 13, 187-221.

Opler, T. and S. Titman, 1994, Financial distress and corporate performance, *Journal of Finance* 49, 1015-1040.

Patel, A., 2000, The causes and consequences of initial public straight debt offers, *Working paper*, Wake Forest University, Winston-Salem, NC.

Pilotte, E., 1992, Growth opportunities and the stock price response to new financing, *Journal of Business* 65, 371-394.

Pruitt, S.W. and L.J. Gitman, 1991, The interactions between the investment, financing, and dividend decisions of major U.S. firms, *Financial Review* 26, 409-430.

Pulvino, T., 1998, Do asset fire sales exist? An empirical investigation of commercial aircraft transactions, *Journal of Finance* 53, 939-978.

Ross, S.A., 1977, The determination of financial structure: the incentive-signaling approach, *Bell Journal of Economics* 8, 23-40.

Shleifer, A. and R. W. Vishny, 1992, Liquidation values and debt capacity: a market equilibrium approach, *Journal of Finance* 47, 1343-1366.

Shyam-Sunder, L., 1991, The stock price effect of risky versus safe debt, *Journal of Financial and Quantitative Analysis* 26, 549-558.

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

Solnik, B.H. and J. Grall, 1975, Eurobonds: Determinants of the demand for capital and the international interest rate structure, *Journal of Bank Research* 5, 218-230.

Taggart, R.,1977, A model of financing decisions, *Journal of Finance* 32, 1467-1484.

Titman, S., 1984, The effect of capital structure on a firm's liquidation decision, *Journal of Financial Economics* 13, 137-151.

Titman, S. and R. Wessels, 1988, The determinants of capital structure choice, *Journal of Finance* 43, 1-19.

White, W.L., 1974, Debt management and the form of business financing, *Journal of Finance*, 565-577.

Table 1
Distribution of the Debt Offerings

The sample consists of seasoned, public straight debt offerings completed during the period 1983-1998 by industrial companies trading on the NYSE, AMEX, and Nasdaq. We require that all issues have filing dates recorded in the Securities Data Corporation database.

Year of Filing	Number of Debt Offerings	Number of Firms
1983	33	32
1984	56	51
1985	99	90
1986	93	90
1987	53	53
1988	68	64
1989	83	69
1990	85	77
1991	126	110
1992	222	196
1993	207	192
1994	141	130
1995	163	154
1996	163	151
1997	170	155
1998	100	97
Total	1862	1711
	Total number of unique firms	917

Table 2
Descriptive Statistics on Firm and Issue Characteristics

The sample consists of seasoned, public straight debt offerings completed during the period 1983-1998 by industrial companies trading on the NYSE, AMEX, and Nasdaq. We require that all issues have filing dates recorded in the Securities Data Corporation (SDC) database.

Panel A presents the mean and median values of the continuous descriptive measures. Total assets are measured as current assets plus net property, plant, and equipment plus other noncurrent assets (intangible assets, deferred items, investments, advances, etc.) at the fiscal year end preceding the filing date. Total debt is the sum of long-term debt and debt in current liabilities at the fiscal year end preceding the filing date. Market to book ratio is the ratio of (book value of assets minus book value of equity plus market value of equity) to book value of assets. Excess cash flow is defined as (operating income before depreciation minus capital expenditures minus change in net working capital minus net taxes minus change in deferred taxes) and is measured in the fiscal year prior to filing year. Plant, property and equipment and Intangibles are both obtained from Compustat in the fiscal year end prior to the filing date, and are measured millions of dollars. Size of the debt issue is the principal amount of the debt issued, and is obtained from SDC. Maturity of debt issue is the number of years from offer date to final maturity. Debt yield is the specified yield on the debt on the filing date.

Panel B presents the number and percentage of observations included in each issue characteristic classification for the debt issues in our sample. Non-subordinated debt is debt that ranks above existing debt of the company in terms of security or collateral, and is obtained from the SDC database. Moody's rating of the issues, stated use of proceeds, and the type of registration are also obtained from the SDC database.

PANEL A: Continuous Variables

Descriptive Measure	Mean	Median
Total Assets ($ million)	9414.48	2825.23
Total Debt/Total Assets (%)	33.66	30.00
Market to Book Ratio	1.97	2.05
Excess Cash Flow ($ million)	1034.88	314.61
Excess Cash Flow/Total Assets (%)	11.92	11.72
Plant, Prop. & Equip./Total Assets (%)	43.89	40.66
Intangibles/Total Assets (%)	8.67	3.29
Size of debt issue ($ million)	316.61	200.00
Size of debt issue/Total Assets (%)	18.53	8.37
Maturity of debt issue (years)	13.59	10.00
Debt Yield (%)	8.26	7.57

Table 2 (continued)

PANEL B: Indicator Variables

Descriptive Measure	Classification	Number (%) of observations
Seniority of the issue	Non-subordinated	382 (20.52)
	Subordinated	1480 (79.48)
Moody's rating	Baa and above	1187 (63.75)
	Ba and below	628 (33.73)
	Not Rated	47 (2.52)
Use of Proceeds	General Corporate Purpose	609 (32.71)
	Debt Refinancing	806 (43.29)
	Investment & Acquisitions	89 (4.78)
	Other or No Purpose Stated	358 (19.22)
Registration type	Shelf	1173 (63)
	Traditional	689 (37)

Table 3
Cumulative Abnormal Returns around Debt Announcement Date

The sample consists of seasoned, public straight debt offerings completed during the period 1983-1998 by industrial companies trading on the NYSE, AMEX, and Nasdaq. We require that all issues have filing dates recorded in the Securities Data Corporation (SDC) database. We use the filing dates as the announcement date for the debt issues. The table presents the mean (median) cumulative abnormal returns for the full sample around the filing date of the debt issues. Abnormal returns are calculated using the market model parameters estimated over a 255 days ending 46 days before the filing of the debt issue. The CRSP value-weighted index is used in the market model to compute betas. Cumulative abnormal returns are obtained by averaging the abnormal returns over all securities for each day in the event window and summing them over the event window.

Event Window	Abnormal Returns (%)
(-3, +3)	- 0.289[b] (- 0.336)[a]
(-1, 0)	- 0.151[b] (- 0.283)[a]
(0)	- 0.122[b] (- 0.172)[a]
(0,+1)	- 0.197[b] (- 0.216)[a]
(-1, +1)	- 0.225[b] (- 0.266)[a]

[a, b, c] represent significance at the 1%, 5%, and 10% levels respectively.

Table 4
Univariate Analysis of the Abnormal Returns

The sample consists of seasoned, public straight debt offerings completed during the period 1983-1998 by industrial companies trading on the NYSE, AMEX, and Nasdaq. We require that all issues have filing dates recorded in the Securities Data Corporation (SDC) database. The table provides univariate analysis results for the two-day cumulative abnormal returns in the window (0,+1) around the filing date of the issue. Abnormal returns are calculated using the market model parameters estimated over a 255 days ending 46 days before the filing of the debt issue. The CRSP value-weighted index is used in the market model to compute betas.

Panel A presents the mean (median) abnormal returns for debt issues during periods of high and low levels of interest rates. We use the yield on 10-year Treasury bonds as of the filing month of the straight debt issue as our measure of nominal interest rates. This variable, deflated by the change in the Consumer Price Index is our measure of real interest rates.

Panel B presents the mean (median) abnormal returns for debt issues during periods of high and low levels of industry performance. Our first measure of industry performance is the median stock returns of the issuing firm's industry. The second measure of industry performance is the median industry stock returns adjusted by the median of the industry stock returns over the prior three years. We define a firm's industry as all firms with the same 3-digit SIC code as the issuing firm.

Panel C presents the mean (median) abnormal returns for debt issues during periods of high and low levels of economic performance. We use the monthly residuals from the regression of real GNP growth rates on real interest rates to measure economic growth. Real GNP is measured in 1996 dollars, and the real interest rate is defined as the nominal monthly 10-year T-bond yield deflated by the change in the monthly Consumer Price Index. The second measure of economic performance is the Chicago Fed National Activity Index.

Panel D presents the mean (median) abnormal returns for debt issues during periods of high and low levels of information asymmetry in the market. We use the aggregate real equity volume to capture market-wide information asymmetry. Real equity volume is defined as monthly dollar equity volume deflated by the monthly Consumer Price Index. Standardized equity volume is the nominal equity volume scaled by the CRSP equal-weighted index.

In panels A, C, and D, to classify periods into high and low levels of interest rates, economic performance, and information asymmetry, we first obtain 3-month moving averages each variable, and then rank the moving averages into quartiles. Then, we assign the variable in each month into one of the four quartiles. Finally, if three consecutive months of the variable are classified into the highest (lowest) quartile, we define those three months as periods of high (low) levels of the variable. Months that are not ranked either high or low periods are classified as normal. In panel B, using the first measure of industry performance, we classify periods as high (low) if the median industry returns in the filing year and the year prior are positive (negative). Using the second measure, we define industry performance as high (low) if the adjusted industry returns are positive (negative). We test the differences in means using the Wilcoxon's Signed Rank test and the differences in medians using the Median Scores test.

PANEL A: Abnormal Returns at High and Low Levels of Interest Rates

Variable	High (%)	Low (%)	Difference (%)
Nominal Interest Rates	- 0.581[b] (- 0.656)[a]	- 0.062 (- 0.214)[a]	- 0.519[b] (- 0.442)[c]
Real Interest Rates	- 0.581[b] (- 0.655)[a]	- 0.051 (- 0.202)[b]	- 0.530[b] (- 0.453)[c]

Table 4 (continued)

PANEL B: Abnormal Returns at High and Low Levels of Industry Performance

Variable	High (%)	Low (%)	Difference (%)
Industry Performance1	- 0.026 (- 0.168)	- 0.376[c] (- 0.450)[b]	0.349 (0.282)
Industry Performance 2	0.125 (0.005)	- 0.298[a] (- 0.314)[a]	0.420[a] (0.320)[a]

PANEL C: Abnormal Returns at High and Low Levels of Economic Performance

Variable	High (%)	Low (%)	Difference (%)
Real Economic Growth	- 0.077 (- 0.216)	- 0.312[b] (- 0.141)[c]	0.235 (- 0.075)
Economic Activity	- 0.422 (- 0.723)	- 0.256 (- 0.023)	- 0.170 (- 0.700)

PANEL D: Abnormal Returns at High and Low Levels of Market Information Asymmetry

Variable	High Info. Asymm. (%)	Low Info. Asymm. (%)	Difference (%)
Real Equity Volume	- 0.456[b] (- 0.240)[c]	0.009 (- 0.181)	- 0.465 (- 0.059)
Standardized Equity Volume	- 0.227 (- 0.331)[c]	- 0.192 (- 0.079)	- 0.035 (- 0.252)

[a, b, c] represent significance at the 1%, 5%, and 10% levels respectively.

Table 5
Regressions Relating Economy-wide, Issue-specific, and Firm-Specific Factors to the Debt Yield and the Abnormal Returns at Debt Issues

The sample consists of seasoned, public straight debt offerings completed during the period 1983-1998 by industrial companies trading on the NYSE, AMEX, and Nasdaq. We require that all issues have filing dates recorded in the Securities Data Corporation (SDC) database. The table presents the regression analysis of the influence of the economy-wide factors and the issue- and firm-specific variables on the debt yield and the abnormal returns around the filing date of straight debt issues. In Panel A, the dependent variable is the two-day cumulative abnormal return generated in the window (0,+1) around the filing date of the debt issues. Abnormal returns are calculated using the market model parameters estimated over a 255 days ending 46 days before the filing of the debt issue. The CRSP value-weighted index is used in the market model to compute betas. In Panel B, the dependent variable is the yield on the issued debt. The interest rates variable is the 10-year T-bond rate prevailing in the filing month deflated by the change in the monthly Consumer Price Index. Economic growth is measured as the residuals from the regression of real GNP growth rates on real interest rates, where real GNP is measured in 1996 prices, and real interest rate is the nominal 10-year T-bond yield deflated by the Consumer Price Index. Economic activity is the Chicago Fed National Activity Index. Equity Volume 1 is a measure of information asymmetry in the market, and is measured as the aggregate dollar volume of equity issued in the filing month deflated by the change in the Consumer Price Index. Equity Volume 2 is the nominal aggregate equity volume scaled by the value of the CRSP equal-weighted index in the filing month. Industry performance 1 is the median returns of the firm's industry in the filing year. Industry performance 2 is the median industry returns adjusted by the median of the industry returns over the prior three years. Issue size is the ratio of the principal amount issued to the total assets of the firm at the end of the fiscal year prior to filing date. Seniority is an indicator variable that takes the value of one for non-subordinated debt and zero otherwise. Use of proceeds is an indicator variable that takes the value zero for refinancing purposes and one otherwise. Speculative Grade is an indicator variable that takes a value of one for issues rated speculative grade (below Baa) by Moody's or unrated and zero otherwise. Registration type is an indicator variable takes the value of one for shelf registration and zero otherwise. Growth opportunities are measured using the Market-to-Book ratio of assets at the end of the fiscal year prior to filing date. Excess cash flow is measured as the ratio of (operating income before depreciation minus capital expenditures minus change in net working capital minus net taxes minus change in deferred taxes) to total assets in the fiscal year prior to the filing year. Bankruptcy cost is an indicator variable that takes the value of one for firms in the machinery and equipment industry (SIC code between 3400 and 3999) and zero otherwise. Interest coverage ratio is the ratio of EBIT to interest expense as of the fiscal year prior to the filing year. Debt yield 1 is the specified yield on the debt as of the filing date of the issue Debt yield 2 is the difference between the specified yield on the debt and the yield on similarly rated debt as of the fiscal year prior to the issue date. Heteroskedasticity adjusted t-statistics are in parentheses.

Table 5 (continued)

PANEL A: Dependent Variable is Abnormal Returns				
	Regression 1	*Regression 2*	*Regression 3*	*Regression 4*
Intercept	0.888 (0.64)	2.070 (1.41)	1.451 (0.97)	0.114 (0.13)
1-digit SIC		- 0.104 (- 1.21)		- 0.103 (- 1.19)
Issue Size	0.279 (0.49)	0.007 (0.52)	0.428 (0.67)	- 0.133 (- 0.38)
Seniority	1.031[b] (2.33)	- 0.008 (- 0.02)	0.907[c] (1.85)	0.002 (0.20)
Use of Proceeds	0.074 (0.24)	0.036 (0.12)	0.090 (0.28)	0.232 (0.75)
Speculative Grade	0.345 (0.82)	0.169 (0.39)	0.660 (1.43)	0.229 (0.52)
Registration Type	- 0.155 (- 0.41)	0.072 (0.19)	- 0.283 (- 0.69)	- 0.032 (- 0.08)
Growth Opportunities	- 0.042 (- 1.35)	- 0.170 (- 1.10)	- 0.050 (- 1.00)	- 0.112 (- 0.70)
Excess Cash Flow	- 1.587 (- 0.61)	4.320 (1.61)	- 2.428 (- 0.89)	4.116 (1.53)
Bankruptcy Costs	- 0.093 (- 0.24)		- 0.185 (- 0.47)	
Interest Coverage Ratio		0.013 (1.61)		0.010 (1.35)
Debt Yield 1			- 0.175[c] (- 1.70)	
Debt Yield 2				- 0.001 (- 0.28)
Interest Rates	- 0.180[c] (- 1.61)	- 0.231[c] (- 1.66)		
Economic Growth	8.960 (0.83)		15.281 (1.34)	
Economic Activity		0.255 (1.03)		0.399[c] (1.66)
Equity Volume 1	- 0.005 (- 0.57)		- 0.008 (- 0.89)	- 0.250 (- 0.89)
Equity Volume 2		- 0.386 (- 1.39)		
Industry Performance 1	1.134[c] (1.84)		1.156[c] (1.82)	
Industry Performance 2		0.043 (1.51)		0.048[c] (1.66)
R^2	0.0318	0.0307	0.0303	0.0238
N	711	527	711	533

[a, b, c] represent significance at the 1%, 5%, and 10% levels respectively.

Table 5 (continued)

PANEL B: Dependent Variable is Debt Yield		
Dependent Variable	*Debt Yield 1*	*Debt Yield 2*
	Regression 1	*Regression 2*
Intercept	3.492 (12.24)	0.019 (0.07)
1-digit SIC	- 0.015 (- 1.05)	- 0.021 (- 1.37)
Issue Size	0.596[a] (5.32)	0.570[a] (4.97)
Seniority	- 0.367[a] (- 3.56)	- 0.161 (- 1.50)
Speculative Grade	2.021[a] (22.32)	1.957[a] (20.89)
Registration Type	- 0.634[a] (- 7.47)	- 0.347[a] (- 3.92)
Growth Opportunities	- 0.145[a] (- 4.55)	- 0.064[b] (- 1.94)
Excess Cash Flow	- 1.749[a] (- 3.31)	- 1.538[a] (- 2.85)
Bankruptcy Costs	0.040 (0.61)	
Interest Coverage Ratio		- 0.002[a] (- 2.67)
Interest Rates	0.848[a] (31.60)	0.070[a] (2.76)
Economic Growth	- 6.283[a] (- 3.35)	
Economic Activity		0.023 (0.54)
Equity Volume 1	- 0.003[b] (- 2.21)	
Equity Volume 2		- 0.212[a] (- 4.41)
Industry Performance 1	- 0.341[a] (- 2.89)	
Industry Performance 2		- 0.005 (- 0.90)
R^2	0.8134	0.5810
N	1249	1168

[a, b, c] represent significance at the 1%, 5%, and 10% levels respectively.

Table 6
Differential Impact of the Issue- and Firm-specific Factors on the Abnormal Returns of Debt Issues Across Different Levels of the Economy-wide Factors

The sample consists of seasoned, public straight debt offerings completed during the period 1983-1998 by industrial companies trading on the NYSE, AMEX, and Nasdaq. We require that all issues have filing dates recorded in the Securities Data Corporation (SDC) database. The table presents the regression analysis of the differential impact of the issue- and firm-specific variables on the abnormal returns around the filing date of straight debt issues across different periods of the economy-wide variables. The dependent variable is the two-day cumulative abnormal return generated in the window (0,+1) around the filing date of the debt issues. Abnormal returns are calculated using the market model parameters estimated over a 255 days ending 46 days before the filing of the debt issue. The CRSP value-weighted index is used in the market model to compute betas. Issue size is the ratio of the principal amount issued to the total assets of the firm at the end of the fiscal year prior to filing date. Seniority is an indicator variable that takes the value of one for non-subordinated debt and zero otherwise. Use of proceeds is an indicator variable that takes the value zero for refinancing purposes and one otherwise. Speculative Grade is an indicator variable that takes a value of one for issues rated speculative grade (below Baa) by Moody's or unrated and zero otherwise. Growth opportunities are measured using the Market-to-Book ratio of assets at the end of the fiscal year prior to filing date. Excess cash flow is measured as the ratio of (operating income before depreciation minus capital expenditures minus change in net working capital minus net taxes minus change in deferred taxes) to total assets in the fiscal year prior to the filing year. Interest coverage ratio is the ratio of EBIT to interest expense as of the fiscal year prior to the filing year. Registration type is an indicator variable that takes the value of one for shelf registration and zero otherwise. The interaction variable D is the economy-wide indicator variable representing the different levels of the economy-wide variables. In regression 1, D takes the value of one for high interest rate periods and 0 for low interest rate periods. Periods of high and low interest rates are classified using the real interest rate variable. In regression 2, D takes the value of one for economic downturns and 0 for upturns. Economic downturns and upturns are classified using the Chicago Fed National Activity Index. In regression 3, D takes the value of one for industry downturns and 0 for upturns. Industry downturns and upturns are classified using the median industry returns adjusted by the median returns over the prior three years. In regression 4, D takes the value of one for periods of high information asymmetry and 0 for periods of low information asymmetry. Periods of high and low information asymmetry are classified using the aggregate real equity volume scaled by the value of the CRSP equal-weighted index. To classify periods into high and low levels of interest rates, economic performance, and information asymmetry, we first obtain 3-month moving averages of each variable, and then rank the moving averages into quartiles. Then, we assign the variable in each month into one of the four quartiles. Finally, if three consecutive months of the variable are classified into the highest (lowest) quartile, we define those three months as periods of high (low) levels of the variable. Months that are not ranked either high or low periods are classified as normal. We classify industry performance as high (low) if the median industry returns adjusted by the median returns over the prior three years are positive (negative). Heteroskedasticity adjusted t-statistics are in parentheses.

Table 6 (continued)

Interaction Variable D	*High Interest Rates*	*Economic Downturn*	*Industry Downturn*	*High Info. Asymmetry*
	Regression 1	*Regression 2*	*Regression 3*	*Regression 4*
Intercept	1.045 (0.89)	- 1.715 (- 1.09)	- 0.245 (- 0.35)	- 1.557 (- 1.27)
Industry SIC	- 0.038 (- 0.30)	0.091 (0.54)	- 0.122 (- 1.42)	0.072 (0.54)
Issue Size	- 0.234 (- 0.37)	1.508 (0.70)	- 0.203 (- 0.57)	- 0.542 (- 0.64)
Seniority	- 0.064 (- 0.06)	0.317 (0.27)	- 0.487 (- 0.82)	0.643 (0.84)
Seniority * D	-1.382 (- 1.32)	- 0.556 (- 0.48)	0.736 (1.14)	
Use of Proceeds	- 0.497 (- 0.51)	- 0.050 (- 0.05)	0.310 (0.63)	- 0.992 (- 1.56)
Use of Proceeds * D	0.929 (0.84)	0.429 (0.36)	- 0.161 (- 0.26)	1.786[b] (2.04)
Speculative Grade	0.130 (0.11)	1.355 (1.11)	- 0.386 (- 0.70)	0.989 (1.17)
Speculative Grade * D	0.206 (0.21)	- 0.982 (- 0.71)	0.891 (1.52)	- 0.888 (- 0.97)
Growth Opportunities	- 0.902[b] (- 2.53)	- 0.797[b] (- 2.62)	0.060 (0.22)	- 0.219 (- 1.06)
Growth Oppor. * D	1.020[b] (2.28)	0.926[b] (2.36)	- 0.094 (- 0.29)	
Interest Coverage Ratio	0.051 (0.67)	0.010 (0.31)	- 0.055 (- 1.62)	- 0.043 (- 1.23)
Interest Coverage * D	- 0.039 (- 0.51)	- 0.063 (- 1.24)	0.067[b] (1.94)	
Excess Cash Flow	- 1.125 (- 0.27)	9.780 (1.01)	13.898[a] (3.04)	10.256[b] (2.12)
Excess Cash * D		- 8.065 (- 0.66)	- 13.924[a] (- 2.60)	
Registration Type	0.080 (0.14)	1.444[c] (1.85)	- 0.005 (- 0.01)	0.990 (1.43)
Registration Type * D				- 0.967 (- 1.21)
R^2	0.0729	0.1605	0.0411	0.0750
N	253	95	534	193

[a, b, c] represent significance at the 1%, 5%, and 10% levels respectively.

Table 7
Specification Checks

The sample consists of seasoned, public straight debt offerings completed during the period 1983-1998 by industrial companies trading on the NYSE, AMEX, and Nasdaq. We require that all issues have filing dates recorded in the Securities Data Corporation (SDC) database. The table presents the regression analysis of the influence of the economy-wide factors and the issue- and firm-specific variables on the abnormal returns around the filing date of straight debt issues. The dependent variable is the two-day cumulative abnormal return generated in the window (0,+1) around the filing date of the debt issues. Abnormal returns are calculated using the market model parameters estimated over a 255 days ending 46 days before the filing of the debt issue. The CRSP value-weighted index is used in the market model to compute betas. In Panel A, we present the analysis for the subsample of debt issues with above median issue size. In Panel B, we present the analysis for the subsample of debt issues that constitute non-refinancings. Issue size is the ratio of the principal amount issued to the total assets of the firm at the end of the fiscal year prior to filing date. Seniority is an indicator variable that takes the value of one for non-subordinated debt and zero otherwise. Use of proceeds is an indicator variable that takes the value zero for refinancing purposes and one otherwise. Speculative Grade is an indicator variable that takes a value of one for issues rated speculative grade (below Baa) by Moody's or unrated and zero otherwise. Growth opportunities are measured using the Market-to-Book ratio of assets at the end of the fiscal year prior to filing date. Excess cash flow is measured as the ratio of (operating income before depreciation minus capital expenditures minus change in net working capital minus net taxes minus change in deferred taxes) to total assets in the fiscal year prior to the filing year. Interest coverage ratio is the ratio of EBIT to interest expense as of the fiscal year prior to the filing year. Registration type is an indicator variable that takes the value of one for shelf registration and zero otherwise. The interaction variable D is the economy-wide indicator variable representing the different levels of the economy-wide variables. In regression 1, D takes the value of one for high interest rate periods and 0 for low interest rate periods. Periods of high and low interest rates are classified using the real interest rate variable. In regression 2, D takes the value of one for economic downturns and 0 for upturns. Economic downturns and upturns are classified using the Chicago Fed National Activity Index. In regression 3, D takes the value of one for industry downturns and 0 for upturns. Industry downturns and upturns are classified using the median industry returns adjusted by the median returns over the prior three years. In regression 4, D takes the value of one for periods of high information asymmetry and 0 for periods of low information asymmetry. Periods of high and low information asymmetry are classified using the aggregate real equity volume scaled by the value of the CRSP equal-weighted index. To classify periods into high and low levels of interest rates, economic performance, and information asymmetry, we first obtain 3-month moving averages of each variable, and then rank the moving averages into quartiles. Then, we assign the variable in each month into one of the four quartiles. Finally, if three consecutive months of the variable are classified into the highest (lowest) quartile, we define those three months as periods of high (low) levels of the variable. Months that are not ranked either high or low periods are classified as normal. We classify industry performance as high (low) if the median industry returns adjusted by the median returns over the prior three years are positive (negative). Heteroskedasticity adjusted t-statistics are in parentheses.

Table 7 (continued)

PANEL A: Sub-sample of Above Median Issue Size

Interaction Variable D	*High Interest Rates*	*Economic Downturn*	*Industry Downturn*	*High Info. Asymmetry*
	Regression 1	*Regression 2*	*Regression 3*	*Regression 4*
Intercept	0.896 (0.52)	- 0.606 (- 0.22)	- 0.179 (- 0.16)	- 2.051 (- 1.08)
Industry SIC	- 0.089 (- 0.46)	0.580 (1.43)	- 0.209 (- 1.50)	0.158 (0.74)
Seniority	- 0.107 (- 0.06)	0.909 (0.44)	- 0.609 (- 0.70)	0.566 (0.56)
Seniority * D	- 1.693 (- 0.85)	- 2.045 (- 0.79)	0.571 (0.55)	
Use of Proceeds	- 1.413 (- 0.87)	- 1.640 (- 0.82)	0.625 (0.71)	- 0.912 (- 0.93)
Use of Proceeds * D	2.589 (1.42)	1.207 (0.47)	- 0.508 (- 0.45)	2.909[c] (1.89)
Speculative Grade	0.409 (0.25)	0.751 (0.39)	- 0.962 (- 1.09)	0.837 (0.64)
Speculative Grade * D	- 0.249 (- 0.18)	- 2.009 (- 0.86)	2.019[b] (2.24)	- 0.557 (- 0.43)
Growth Opportunities	- 1.015[b] (- 2.08)	- 0.847[c] (- 1.63)	- 0.125 (- 0.34)	- 0.552[b] (- 2.15)
Growth Oppor. * D	0.925 (1.44)	0.697 (1.11)	- 0.026 (- 0.06)	
Interest Coverage Ratio	0.058 (0.49)	- 0.008 (- 0.04)	- 0.067 (- 1.42)	- 0.050 (- 0.76)
Interest Coverage * D	- 0.045 (- 0.37)	- 0.046 (- 0.20)	0.080[c] (1.65)	
Excess Cash Flow	4.498 (0.77)	4.663 (0.36)	21.085[a] (2.95)	15.751[b] (2.11)
Excess Cash * D		3.448 (0.18)	- 19.731[b] (- 2.43)	
Registration Type	0.594 (0.62)	1.426 (1.09)	0.410 (0.63)	2.602[b] (2.25)
Registration Type * D				- 2.800[c] (- 1.81)
R^2	0.1260	0.4308	0.0751	0.1764
N	136	33	254	93

[a, b, c] represent significance at the 1%, 5%, and 10% levels respectively.

Table 7 (continued)

PANEL B: Sub-sample of Leverage Increasing Debt Issues

Interaction Variable D	*High Interest Rates*	*Economic Downturn*	*Industry Downturn*	*High Info. Asymmetry*
	Regression 1	*Regression 2*	*Regression 3*	*Regression 4*
Intercept	3.765 (2.02)	- 3.535 (- 1.78)	0.425 (0.45)	- 3.722 (- 1.93)
Industry SIC	- 0.170 (- 0.89)	- 0.055 (- 0.26)	- 0.074 (- 0.67)	- 0.016 (- 0.07)
Issue Size	1.568 (1.11)	1.330 (0.56)	0.132 (0.33)	3.306[b] (2.34)
Seniority	- 1.905 (- 1.22)	1.794 (1.18)	- 2.475[a] (- 2.67)	1.643 (1.30)
Seniority * D	- 2.898[c] (- 1.88)	0.252 (0.15)	1.663[c] (1.93)	
Speculative Grade	- 2.865[c] (- 1.76)	3.010[b] (2.03)	- 0.805 (- 0.99)	0.532 (0.36)
Speculative Grade * D	2.501[c] (1.70)	- 4.499[b] (- 2.05)	0.768 (0.88)	- 1.228 (- 0.81)
Growth Opportunities	- 1.138[a] (- 3.05)	- 0.803[b] (- 2.59)	- 0.132 (- 0.25)	- 0.630[b] (- 2.08)
Growth Oppor. * D	1.292[b] (2.31)	0.748 (1.05)	0.087 (0.15)	
Interest Coverage Ratio	0.013 (0.15)	- 0.008 (- 0.26)	- 0.004 (- 0.07)	0.074 (1.10)
Interest Coverage * D	0.006 (0.07)	0.018 (0.17)	0.022 (0.40)	
Excess Cash Flow	0.271 (0.05)	13.001 (1.44)	22.740[a] (3.38)	15.960[b] (2.41)
Excess Cash * D		- 12.726 (- 0.75)	- 21.787[a] (- 2.91)	
Registration Type	0.977 (1.02)	2.160[b] (2.63)	0.233 (0.42)	0.705 (0.63)
Registration Type * D				0.600 (0.66)
R^2	0.2168	0.3887	0.1096	0.1678
N	130	56	274	102

[a, b, c] represent significance at the 1%, 5%, and 10% levels respectively.