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UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

THE LONG-TERM CONSEQUENCES OF DEBT ISSUANCE

A Dissertation

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

degree of

Doctor of Philosophy

By

VANCE P. LESSEIG
Norman, Oklahoma
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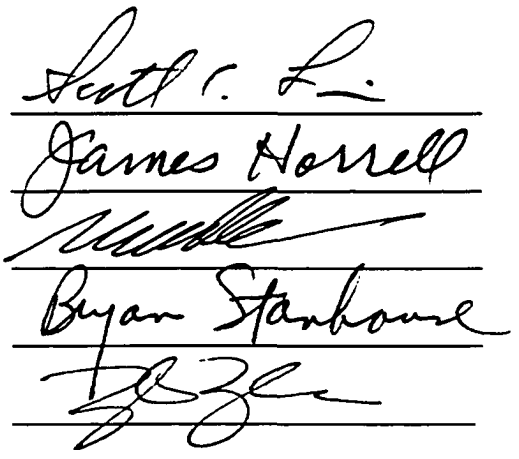
THE LONG-TERM CONSEQUENCES OF DEBT ISSUANCE

A Dissertation APPROVED FOR THE
DEPARTMENT OF FINANCE

BY



ABSTRACT

The Long-term Consequences of Debt Issuance

Recently, the long-term common stock performance of equity issuers has been examined with surprising results. Equity issuers, making either new or seasoned offers, earn significantly smaller returns compared to non-issuers for up to five years following the issue. This work addresses the long-term impact on investors of firms that choose to issue debt. Both the equity returns of the debt issuer as well as the returns of the new debt issue itself are examined. The results indicate that the securities of new debt issuers are not good investments. Both the stock of the debt issuer as well as the new debt itself fail to provide returns as high as their matched counterparts over periods up to five years after issuance. The returns on the new debt are significantly lower than those of existing debt even after careful matching on various debt characteristics. The duration and magnitude of the underperformance is related to the credit quality of the issue, and appears to be only partially explained by the new issue's liquidity.

In addition, the equity returns of debt issuers are significantly lower than those of non-issuing firms. The duration of the underperformance rivals that of new equity issuers although the magnitude is much less than that reported in studies of equity issuance. The magnitude of underperformance becomes larger when book-to-market value is used as a matching criterion.

I. *INTRODUCTION*

This study focuses on the long-term return consequences to debt and equity holders when the firm in which they are invested decides to issue new debt. The literature in finance abounds with comparisons of debt and equity. Differences in returns arising from the issuance of debt and equity have been analyzed at length, as well as the implications to the firm of using debt versus equity. Empirical work has been offered to examine the impact of issuing a particular type of security (Masulis (1980), Dann and Mikkelson (1984), Eckbo (1986), and Mikkelson and Partch (1986) among others), and theoretical work has attempted to explain the observed results (Jensen and Meckling (1974), Myers and Majluf (1984), Myers (1984), Jensen (1986), and others). However, most of the empirical work has focused on the announcement effect of a security issue on the existing equity of the firm[1]. Until recently little work has addressed the long-term effects of financing choice. Recent studies measure the long-term consequences for stockholders of firms that choose to issue equity, but to date few have examined those of debt issuance. The lack of research in this area is surprising because debt issuance is a major source of external capital for U.S. corporations and can obligate the firm for many years. It is possible that the frequency of debt issuance has led many researchers to

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[1] A review of the literature in this area is presented in Chapter II.

conclude that new issues will have no significant long-term effects on a firm or that new issues generally are not "new" information events.[2] However, long-term studies of equity issuance (Loughran and Ritter (1995) and Spiess and Affleck-Graves (1995)) have produced results indicating that stockholders suffer significant losses following external equity financing. The next logical question is whether this effect is present for debt issuers as well.

This study examines the long-term impact on debt and equity returns following a firm's issuance of new debt. One part of the analysis focuses on the returns of the new debt. The newly issued bonds are matched to existing bonds of similar characteristics and the returns of the two bonds are compared across a five-year period beginning with the issue date of the new bonds. The returns are analyzed to isolate and examine any differences between new and existing comparable bonds. Additionally, the stock returns of the debt-issuing firm are matched and compared to those of non-issuing firms. Similar to the studies of equity issuance, the returns of issuers and non-issuers are compared over a five-year period from the date of debt issuance. Tests are performed to analyze the return difference between the two types of firms. The debt and equity securities of the issuing firm are matched in a one-to-one fashion to those of non-issuers to avoid the long-term measurement biases examined by Barber and Lyon (1997).

Two recent studies examine the long-term consequences of seasoned equity issues (Loughran and Ritter (1995) and Spiess and Affleck-Graves (1995)). Each finds

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[2] See Bayless and Chaplinsky (1991) for a discussion on the predictability of security issuance.

up to five years of poor performance after issuance. These results seem to validate the observed announcement effects of equity issues, but it is difficult to imagine that the two findings would necessarily be driven by similar forces[3]. Various explanations exist for the announcement findings, but none seem valid for the results of the long-term studies. An important result of these studies is that while the announcement effect can be consistent with efficient markets, the long-term findings seem to contradict the argument for market efficiency. An interesting question is whether this long-term underperformance is strictly a characteristic of equity or is independent of security type. Analysis of the long-term effect of debt issuance will help to answer this question, and should provide additional insight into the sources of the equity return results.

This paper attempts to accomplish two primary objectives, the first is to examine the returns of new versus existing debt. As the new debt issue is matched on the basis of several characteristics, the only consistent difference between the new issue and its match is the time that each has been outstanding. Some work has examined the return implications of new and seasoned debt but those cases use limited samples and generally only one rating group. This work uses a much more comprehensive sample and observes relative performance across rating classes. The analysis shows that new debt issues

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[3] As mentioned, empirical studies of the market's reaction to financing choices have focused on the announcement effects of a particular type of issue. Most have found that equity reaction to a debt issue announcement is insignificant or slightly negative while for an equity issue the reaction is uniformly negative. Numerous explanations have been offered for these results including asymmetric information between managers and investors (Leland and Pyle (1977), Meyers and Majluf (1984), and others), market anticipation of debt issues (Chaplinsky and Hansen (1993)), and the benefit of increased leverage to shareholders (Galais and Masulis (1976)).

provide significantly lower holding-period returns than existing issues and that this difference increases as the default risk of the issue increases.

The second objective of this study is to compare the stock market's treatment of debt-issuing firms to that observed for equity issuers. The results show that the equity of debt issuers fails to perform as well as that of non-issuers. The level of underperformance is not as great as that reported for equity issuers, but is statistically significant for long periods of time. This work also indentifies and analyzes the factors that may be responsible for the underperformance.

This study provides a thorough examination of the total long-term market effect of a new debt issue, since the effect on the returns to the issuing firm's shareholders as well as the holders of the new debt are explored. No definitive examination of the complete long-term impact of a firm's issuance of debt has yet appeared in the literature. Not only does the study explore the overall effect of debt issuance, but also closely examines the impact of various debt and issuer characteristics.

The remainder of the study is organized as follows: Chapter II discusses some of the existing literature on debt and equity issues. Chapter III discusses the hypotheses describing and interpreting potential results. Chapter IV describes the data and procedures to be used in the study. Chapter V presents the results of the analysis, Chapter VI offers conclusions and possible implications of the study, finally Chapter VII offers some possible extensions and areas of future research in this area.

II. *LITERATURE REVIEW*

A) *The Empirical Evidence*

A.1). *Long-term Performance*

Ritter (1991) verifies that initial public stock offerings (IPO's) consistently underperform existing stocks. He also shows that this underperformance is present for five years after issuance. Loughran and Ritter (1995) show that seasoned equity offers exhibit this same woeful performance and that it also seems to exist for five years. This finding is also supported by the work of Spiess and Affleck-Graves (1995).

Loughran and Ritter (1995) select firms making seasoned equity offers (SEO's) from 1970 to 1990 and track the returns of the issues for five years after issuance. Daily returns are aggregated over the period and compared to a set of size-matched, non-issuing firms. After the first six months the underperformance of new issues ranges from about 6% to over 12% per year with a mean geometric difference of 8% per year for the entire 5-year period. In fact, the mean return for SEO's over the five years is roughly equal to the average Treasury Bill rate during the observation period. This degree of underperformance is comparable to the underperformance exhibited by IPO's in Ritter's 1991 study.

Closer examination of Loughran and Ritter (1995) yields other interesting results. Specifically, most of the SEO's in the sample occur after the firm experiences a significant increase in its equity value. This finding relates to an asymmetric information

argument since managers may believe the security is overvalued at the time of issuance[4]. Another finding of Loughran and Ritter (1995) is that the timing of the issue is a factor in its post-issuance performance. Issues made during periods of heavy equity issuance volume underperform to a greater degree than those issued when fewer SEO's are being made.

A large degree of the underperformance found by Loughran and Ritter (1995) is concentrated in smaller NASDAQ-listed firms. Again this may bolster the asymmetric information argument as these firms are generally less closely followed by analysts than are larger firms. The lack of close scrutiny may contribute to a wider gap of information between managers and outside investors (Korajczyk, Lucas, and McDonald (1991)).

Spiess and Affleck-Graves (1995) perform a similar analysis of SEO's and find results consistent with Loughran and Ritter (1995). They then create matching firms based on industry and on equity book-to-market ratios and find that underperformance of the issuing firms is less than when the firms are matched purely by size. However, the underperformance is still significant and equal in duration to that in Loughran and Ritter (1995).

Loughran and Ritter (1997) supports their earlier work by demonstrating that the profitability of seasoned equity issuers deteriorates after issuance. They show that while issuing firms outperform non-issuers for several operating measures prior to issuance,

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[4] A discussion of asymmetric information and its implications with regard to financing is presented later.

their performance measures consistently trail non-issuers after issuance. This finding coincides with their analysis of the equity returns of equity issuers.

As for long-term studies of the impact of debt issuance, little has been done. Hansen and Crutchley (1990) look at the long-term operating performance of firms before and after security issuance. They base their study on the Fama and Miller (1972) argument that firms raise money to offset a decline in earnings. This predicts a negative response to any security offering even without presupposing information asymmetry. However, if asymmetric information does exist, an unanticipated announcement is expected to have a more negative impact.

Hansen and Crutchley (1990) determine that earnings do indeed decline in connection with security offers and that the size of the offer is positively related to the size of the decline. All issuers suffer earnings declines in the year of the announcement but the decline is greater for firms offering debt. Earnings also decline for the four years after the announcement, but this decline is larger for equity issuers. The low earnings may indicate that the stock of new debt issuers will perform poorly relative to that of non-debt issuing firms, but perhaps not as poorly as the equity offers documented by both Loughran and Ritter (1995) and Spiess and Affleck-Graves (1995). Another interesting difference between equity and debt issuers is that earnings decrease prior to debt offers but *increase* prior to the issuance of equity[5]. This earnings pattern could result in

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[5] The finding of earnings decreases prior to debt issuance is consistent with the results of Titman and Wessels (1988) who find a negative relationship between past profits and debt levels.

different return performance for debt issuers than for equity issuers. The reduction in earnings prior to the debt issue could indicate that internal funds will be lacking and that the firm will likely raise money externally. Thus debt issuance may be considered to be a positive development relative to the firm choosing to issue equity. Equity issues after positive earnings could be a signal of overvaluation and lack of managerial confidence in future earnings. Therefore the returns of that firm's equity could be depressed as the market views future earnings of that firm with skepticism. In fact, Loughran and Ritter (1995) cite the pre-issue runup in the price of equity prior to SEO's as a potential indication of this overvaluation.

The stock price performance prior to issuance is supported by Chaplinsky and Hansen (1993) who discover poor stock price performance prior to debt issuance. In addition to a decline in ROA during the year prior to issuance, they note that the growth rate in assets increases, which indicates a substantial reduction in cash flows to the firm. Chaplinsky and Hansen point to these findings as evidence of the predictability of security issuance which justifies the insignificant announcement reactions for debt issues by the market.

A recent working paper by Spiess and Affleck-Graves (1996) addresses debt issuance and subsequent equity performance. They follow a procedure analogous to their 1995 study of seasoned equity issuance. They find that the equity returns of new debt issuers significantly underperform that of non-issuers and this underperformance is greater for firms issuing convertible rather than straight debt. Spiess and Affleck-Graves (1996) also find that neither debt rating, seniority, firm size, nor book-to-market ratio

have any significant impact on the degree of underperformance. In contrast to studies of seasoned equity issues, underperformance was not affected by the year of issuance and issuing firms did not experience significant equity price runups prior to issuance.

In their study, Spiess and Affleck-Graves (1996) select matching firms in a fashion similar to their study of equity issuance. No regulated utilities or financial firms are included in the sample. Matching firms cannot have issued debt or equity during the ten years around the debt issuance date. Matching firms are selected by minimizing the absolute difference between the size and book-to-market value ratios of the issuing and matching firms. Returns are computed as buy-and-hold returns of both the issuer and its match over a five-year post-issuance period. They find that the overall underperformance averages 17% for the five years after issuance. Straight debt issuers underperform non-issuers by an average of 8% while convertible issuers underperform by 39%. This is comparable to the Spiess and Affleck-Graves (1995) finding that equity issuers underperformed non-issuers by 42% over the five year post-issuance period. The findings of this study are more closely addressed in the hypothesis section of this paper.

A.2) *Announcement Effects*

Much of the previous empirical work in the area of debt issuance has focused on the announcement effects. Most have found negative, but insignificant results. Ekbo (1986) finds insignificant results while Mikkelson and Partch (1986) show significance only for completed offers of straight debt. However, they find that when debt is exchanged for common or preferred stock a positive reaction is generally observed.

Dann and Mikkelson (1984) find negative significance at the 10% level for straight debt offers. A somewhat unique result is reported by Masulis and Korwar (1986) who find that seasoned equity issues, when combined with a debt issue that increases the leverage of the firm, have a significantly positive impact on the announcement return. This finding contrasts with the announcement effects of pure equity issues that find uniformly negative results in each of the above studies.

Further evidence of the differential performance between debt and equity issues is shown by Dann and Mikkelson (1984) which finds that convertible debt issues result in significantly negative reactions at announcement. They also note that in surveys of managers, an issuance of convertible debt is generally made with the expectation of future conversion, indicating that an efficient market would view a convertible debt issue more like an equity than a debt issue.

Smith (1986) presents an excellent summary of the empirical work regarding security issuance and announcement effects. By aggregating the results of earlier work he reports that issuances of common stock by industrial firms result in a -3.14% announcement period return. Announcements of straight debt issues by industrial firms generate no significant effect on common stock prices, while the equity of a firm issuing convertible securities suffers a -2.07% return at announcement.

In contrast to market reactions to new issues, Masulis (1980) documents that exchange offers which increase the leverage position of the firm are accompanied with a positive stock price reaction at announcement. Consequently, leverage-reducing exchanges have negative stock reactions. A possible explanation for Masulis' findings is

the easily recognized purpose of an exchange offer. In other words, a new issue of debt can be motivated by a number of different things. But an exchange offer has one purpose and one direct result, to change the capital structure of the firm. Additionally, an exchange of debt for stock could not be considered a signal that the stock is overvalued. Thus any asymmetric information that is revealed can only be positive from the perspective of shareholders. One potential explanation for the largely insignificant announcement returns from new debt issues is that the potentially unclear purpose of a new issue may obscure the positive effect of any increase in leverage.

The potential importance of asymmetric information is provided by Chaplinsky and Hansen (1993) who demonstrate that the greater the asymmetric information between management and investors, the more negative the announcement effect. Specifically, when the issue is likely to be anticipated by the market the negative reaction is much smaller. However, "surprise" issues tend to experience more negative announcement returns.

A.3) *Debt Reaction to Equity Issuance*

Few studies have examined the reaction of the issuing firm's debt to new security announcements. One such study which focuses on bond price reaction to SEO's is that of Kalay and Shimrat (1987). They examine SEO's announcement effects on equity and bond prices. Their objective is to test the three main theories explaining the evidence that new equity issues depress stock prices. The first is the price-pressure hypothesis stating that an increase in the supply of a firm's stock naturally forces the price down,

given a downward-sloped demand curve for the stock. The second theory is the wealth redistribution hypothesis that says SEO's transfer wealth from stockholders to bondholders. This transfer is said to occur due to the reduction in leverage which makes debt less risky and thus more valuable. The third explanation is the information-release hypothesis based on asymmetric information and signalling discussed later in this section.

By comparing the reaction of both debt and equity to the SEO announcement Kalay and Shimrat (1987) attempt to determine which hypothesis is most valid. Their finding that bond prices also react negatively to the announcement supports the information-release hypothesis. The negative reaction of a firm's debt to a SEO indicates that a new debt issue may result in better long-term equity performance than that observed after a new equity issue. If information is the driving force behind the initial announcement reaction, debt is generally considered to provide a less negative signal. Additionally, as shown by Hansen and Crutchley (1990), earnings are not as poor for debt issuers over the four years after issuance as those of new equity issuers. However, neither of these studies examine the long-term returns of the new debt after issuance.

A.4) *New versus Seasoned Debt*

Two studies have looked specifically at the yield differences between new and existing (seasoned) bonds. Shiller and Modigliani (1979) compare average yields of new and seasoned Aaa bonds and find that new bonds provide significantly higher yields. Warga (1992) compares yields for portfolios of new Treasury notes and bonds with

duration-matched portfolios of existing government notes and bonds and finds that the existing securities provide higher returns. These seemingly contradictory findings, as Warga points out, are potentially explained by the different empirical approaches and the time periods examined in each study. Warga only finds significant results during the sample period of October 1982 to December 1988, but not prior to 1982. However, both studies are relevant because each seems to support potentially competing theories.

Shiller and Modigliani (1979) argue that tax implications cause the new bonds to pay a higher pre-tax yield. Their claim is that part of the return from holding a bond is the capital gain effect from the price appreciation (depreciation) of a bond purchased at a discount (premium). In their sample, seasoned issues tend to have lower coupons which cause them to sell at a discount. As the bonds approach maturity, the price approaches par producing a capital gain. This capital gain, while increasing the return, is taxed (or was taxed) at a lower rate. Thus, for the new bond to provide the same return after taxes, it has to pay a higher pre-tax return. Shiller and Modigliani verify this by observing the coupon spread, which is the difference between the actual yield and the coupon rate on the bond.

Warga (1992) matches new Treasury securities to existing Treasuries on the basis of duration. He forms portfolios from seasoned securities in four month duration intervals and matches the return to the most recently issued Treasury (referred to as "on the run"). For each matched set, the 30-day T-bill rate is subtracted, leaving the excess return for that maturity. In all, 10 pairs of portfolios are formed and for all 10 cases the

new securities exhibit lower returns, 7 of which are statistically significant. Warga explains this result by liquidity differences between new and seasoned Treasury issues. He concludes that after the securities are issued and purchased, they tend to be held for long periods. Over time, fewer are actually traded, making them less liquid. To further confirm this finding, he regresses age of the issue, the coupon rate, the amount issued, and the duration against the return differential. Of the four independent variables, only age is significant.

The idea that liquidity is priced in the bond market is not unique to Warga. Amihud and Mendelsen (1991) and Kamara (1994) compare the yields on maturity-matched Treasury Bills and Treasury Notes. Each claims that the T-bill market is more liquid than that for notes. Each also supports this claim by observing the transaction costs and bid/ask spreads for the two instruments. Both Amihud and Mendelsen (1991) and Kamara (1994) select a Treasury Bill and a Treasury Note with equal maturities of less than six months. The rationale for this cutoff is to equate the cash flows from each instrument. With only six months remaining the note no longer makes coupon payments (except with the maturity payment) and so is essentially a discount instrument, as is the T-bill. At this point the two instruments are virtually indistinguishable except for the markets in which they are traded.

Both studies find that the yield on notes is significantly higher than the matching T-bills. Kamara finds an average yield difference of 0.34%. Each also finds that transaction costs for notes are higher and that the bid/ask spread is larger, both

indications of reduced liquidity in the market for notes. To get a more perfect maturity match and to account for different maturity dates for notes and bills, Amihud and Mendelsen select two T-Bills for each note, one that matures just prior and the other just after the maturity date of the note. Still, each of the T-Bills has a lower yield than the note. The results of these studies indicate that investors require compensation for lower liquidity. Thus if Warga's argument that seasoned issues suffer from illiquidity holds for corporate issues as well, new debt issues may exhibit returns significantly different than those of existing issues.

B) *Theoretical Research*

This section discusses some of the relevant theoretical literature regarding financing decisions by firms and relates this literature to the present study. Specifically, work involving debt issuance and the rationale and implications of this decision is discussed. First debt valuation and characteristics of debt returns are discussed regarding their affect on this study. Then the concepts of agency costs and asymmetric information are reviewed with emphasis on their relation to a firm's decision to issue debt.

B.1) *Debt Valuation*

The market response to a firm's issue of debt depends on the value the market attributes to the new debt as well as the future implications of the issue to the firm.

Several models of debt valuation exist and most recognize the effect of stochastic interest rates and the potential of default. Two models in particular, Leland (1994) and Longstaff and Schwartz (1995) predict that riskier debt will display prices and returns that behave differently than those of safer debt. These predictions are confirmed in the findings of Fama and French (1993) and Kwan (1996) who discover that speculative grade bonds display return characteristics similar to those of equity. This finding is relevant in this study as the rating of the new issue is explicitly considered in the examination of long-run returns. These works also address the effect of the level of interest rates on the optimal amount and pricing of debt. Leland shows that at higher rates, higher firm leverage is preferred due to the increased tax savings. Longstaff and Schwartz show that credit spreads will be negatively related to interest rate levels, supporting the positive view of higher leverage during periods of higher interest rates. This study takes this idea into consideration by examining the relation between interest rate levels and the returns of the new debt issues.

B.2) *Market Imperfections and Debt Values*

Several theories have been advanced regarding capital structure to predict the effects of debt and equity issuances. Modigliani and Miller (1958) propose that, in the absence of taxes, the choice of debt or equity is irrelevant. When they consider taxes and

riskless debt, the addition of debt increases the value of the firm[6]. However, many assumptions are made to arrive at these results, such as the absence of bankruptcy, perfect information, and the absence of agency costs. Two of these imperfections, agency costs and asymmetric information have been offered as potential explanations and predictors of the impact of security issuance and are discussed in the following sub-sections.

B.2.1) *Agency Costs*

The concept of agency costs is first applied to questions of optimal financing by Jensen and Meckling (1976). Agency costs can arise whenever one party relies on another to perform actions that affect them. The two forms of agency costs most relevant to the question of financing are those associated with debt and those related to equity issuance.

The agency costs of issuing debt arise from the divergent goals of shareholders and debtholders. In the model of Galai and Masulis (1976) stock can be viewed as a call option on the assets of the firm. It is generally accepted under the Black-Scholes (1973) model that the value of an option increases with the volatility of the underlying asset. Thus stockholders have an incentive to increase the riskiness of the firm. Debtholders, on the other hand, not only do not benefit from this risk, they can see the value of their claim reduced. Chance (1990) models risky debt as riskless debt less a put option on the

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[6] Miller (1977) has shown that under certain conditions debt is irrelevant even in the presence of both corporate and personal taxes.

value of the assets of the firm. Under this formulation, increased risk of the firm increases the put value and reduces the value of the risky debt. The resulting agency cost of debt occurs because the goal of management is generally considered to be maximizing the wealth of shareholders, which can be to the detriment of debtholders.

The agency costs of issuing equity arise from the conflicts between management and shareholders when management does not act in the best interests of shareholders. One example of these costs is management's consumption of perquisites. If there are no outside shareholders the managers bear the full cost of perks and will therefore only consume them to the point where the benefit received equals the full cost. Once equity is sold to outsiders, management no longer pays the full cost of perks. They will then consume until the marginal benefit of the perk reaches their cost, which is less than the cost to the firm. Given the diminishing marginal utility of the benefit, this represents a loss of value to the firm and reduces the value of the equity claim, as shown by Jensen and Meckling (1976).

Jensen and Meckling (1976) also advance the idea that these agency costs determine the effects of different security issues on the value of the shareholders' claim. Public equity issues dilute the holdings of management and thus increase the agency costs between managers and shareholders. The increased agency costs in turn reduce the value of the firm, leading to a decrease in stock value. On the other hand, debt can reduce the agency costs between managers and shareholders, but increase the agency costs between managers and existing debtholders. This indicates that an issue of debt

could have a positive effect on the performance of the stock.

Jensen (1986) relates the idea of "free cash flow" to the question of financing. He argues that there is an agency cost to shareholders of having managers in control of the cash flows of the firm. Debt acts as a restraint on that freedom and reduces the agency costs involved. He points to exchange offers as evidence of his argument. Specifically, leverage-increasing offers reduce this free-cash agency cost and increase the value of the firm, while offers that decrease leverage in turn decrease the value of the firm. The rationale is that debt places more restrictions on cash than equity and reduces managers discretion with respect to use of cash. Jensen argues that this discipline of managers increases the value of the firm. Conversely he argues that *new* debt issues that do not replace equity or existing debt can reduce the value of the firm by increasing the free cash flow under the control of management thus increasing the associated agency costs[7].

Kim and Sorensen (1986) focus on agency costs to identify some of the characteristics that determine how firms make the financing decision. They cite the Jensen and Meckling argument that using debt tempts shareholders to invest in riskier projects. The increased risk for the firm increases the value of shareholder claims at the expense of creditors. Additionally, they test Myers' (1984) position that firms with greater business risk will use more debt financing.

Kim and Sorensen (1986) find that high operating risk, measured by variance of

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[7] See also Grossman and Hart (1982).

EBIT, is significant and positively related to a firm's proportion of debt financing. While this alone doesn't distinguish between the Myers (1984) and Jensen and Meckling (1976) explanations, Kim and Sorensen also find that firms with high proportions of equity ownership by insiders (above 25%) also tend to use more debt. However, Zingales (1998) argues that higher leverage impedes a firms ability to invest and remain competitive. Therefore this study may help shed some light on the market's perception of debt issuers and the leverage argument.

B.2.2) *Asymmetric Information*

The development of the ideas of asymmetric information and signalling between managers and investors has led to several theories about the implications of financing choice. Much of the work views the choice between debt and equity as a signal to investors about management's private information about the firm. In most models, the use of debt is viewed more positively than an equity issue, although the full impact of the signal depends on the type of information asymmetry assumed. A few of the models are presented below[8].

Leland and Pyle (1977) is among the earliest to propose that a firm's choice of debt or equity can serve as a signal of the management's beliefs regarding the value of the firm. They use the case of a sole proprietor deciding to raise funds externally. Since the

[8] A comprehensive review is presented in Harris and Raviv (1991).

owner/manager is expected to have better information regarding the quality of the firm, the decision about the degree of control the manager will retain is viewed as a signal about this private information. Specifically, they argue that the owner/manager will retain more control, and invest a higher proportion of his personal wealth in the firm, if he believes it to be of good quality, and that this retention will increase with the quality of the firm. Subsequent researchers have used this idea to show why a firm issuing debt is viewed more favorably by the market than a firm issuing equity (Downes and Heinkel (1982) and Ritter (1984) investigate the theory with respect to firms going public).

Myers and Majluf (1984) use the asymmetric information argument to describe the impact of security issuance. Myers and Majluf illustrate a scenario where the management of a firm has private information about the "true" value of the firm and its future cash flows. They then work to find the optimum type of external financing to seek under various types of private information.

Given that managers seek to maximize the wealth of existing shareholders, the choice of equity becomes a negative signal. Equity issuance is viewed as an attempt to dilute the effects of a negative future on current shareholders. In other words, new shareholders share in the negative impact on the stock price when the negative private information becomes public. Conversely, a debt issue is shown as an attempt to concentrate the price increase from a positive future on existing shareholders. The decision to issue debt could then be considered a forecast of future good news or, at least, no bad information. The latter is based on the belief that managers know that an equity

announcement will depress the stock price, thus without bad news to dilute they will not want to negatively affect existing shareholders by making an equity offer. This may partially explain the generally insignificant response to debt issuance.

Narayanan (1988) extends the Myers and Majluf (1984) model to the case where managers do not know the future cash flows of the firm with certainty. They do, however, know the true value of the firm's assets in place. Their choice of security type serves as a signal of this knowledge. Narayanan shows that debt issuance indicates favorable news for shareholders. His result is that firms will only issue equity when it is overvalued, or the "true value" of the assets is less than that perceived by the market. Debt is preferred by better firms because it prevents some, but not all, unprofitable firms from copying.

Heinkel (1982) proposes a financing model where the amount of debt selected signals the true value of the firm, which is unobservable by investors. Without this information asymmetry Heinkel shows that the choice of financing is irrelevant. Using the assumption of private information by managers, he achieves a separating equilibrium where high-quality firms issue more debt than low-quality firms. This result is comparable to that of Leland and Pyle (1977) but Heinkel allows the firm's debt to be risky[9].

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[9]A key assumption that provides his results is that firm quality and credit risk are positively related. In other words, high-quality firms have greater credit risk. Heinkel reconciles this seeming contradiction with the idea that equity and debt values trade-off against each other for investors. Specifically, if a firm's debt is overvalued, its equity

Miller and Rock (1985) model the signalling effect of dividends, but extend it to the financing choice by treating the decision to seek external financing as being analogous to "negative" dividends. They treat the dividend announcement as a signal to investors of the firm's future cash flow. Their argument is that the markets reaction to a dividend announcement is contingent upon investors' expectations of earnings relative to the firm's optimal investment, which is considered exogenous. If earnings are expected to be large relative to investment, a reduction in dividends (or similarly, an increase in external financing) causes investors to reassess earnings expectations and the market's reaction will be negative. Conversely, an increase in dividends or the use of internal financing, when earnings are expected to be relatively low, should be met favorably by the market.

Harris and Raviv (1990) model debt as a source of information for investors and a tool to discipline management. They hypothesize that debt provides information about current income as well as the quality of the firm. They predict that leverage will increase when management believes there is an increase in the liquidation value of the firm or a decrease in default costs. This increased leverage will in turn increase the value of the firm. Harris and Raviv further predict that debt *value* will also increase as liquidation

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will be undervalued and vice versa. Heinkel defines high-quality firms as those whose equity is currently undervalued and whose debt is thus overvalued. This overvaluation of debt makes it more likely that high quality firms will issue debt instead of equity. Heinkel admits that the validity of this assumption is an empirical question, and may be one that is difficult to test.

value and default costs become more favorable. This prediction, in turn with the prediction of higher leverage under the same conditions, hints that a new debt issue could outperform an existing issue. This possibility is addressed later in the paper.

Korajczyk, Lucas, and McDonald (1991) bolster the argument that informational differences between firms and investors affect reactions to equity issuance. They show that the timing of issuance is related to the timing of earnings announcements. Firms are more likely to issue shortly after these announcements. The timing is more pronounced among smaller, less closely followed firms, which tend to issue closer to earnings announcement dates than larger firms. The argument is that firms try to issue when information asymmetry is smaller, such as shortly after informative announcements.

Korajczyk, Lucas, and McDonald also find that the magnitude of the negative reaction at issuance is related to the time between an earnings announcement and issuance. They show that the longer the time between the two, the more negative the markets reaction to the issue. They argue that the relationship appears to be at least partially due to the increasing of information asymmetry as time between announcements increases.

Smith (1986) relates much of the empirical evidence and theoretical literature to reconcile the two. He approaches the relationship through the asymmetric information argument where security issues represent signals of expected availability of future cash flows. Therefore any security issuance is viewed as a sign of insufficient cash flows. Smith also posits that the market reaction represents only the unexpected portion of an

announcement. He argues that debt issuance is more easily anticipated due to the practice of replacing maturing debt issues. Further, since long-term debt is often issued to replace short-term loans, it is even more easily predicted, as shown by Marsh (1982). This argument represents an interesting and plausible explanation for the empirical results found with respect to announcement effects, but does not necessarily explain the long-term results of equity issuance.

An important work that ties much of the existing theoretical literature together is the Pecking Order Theory advanced by Myers (1984). He proposes that firms look toward internal sources of funding first. When these are insufficient for the firm's needs they look externally, utilizing debt first for the reasons discussed previously. This approach predicts that any announcement of external funding could be met negatively as a signal that internal funds are, or are expected to be, limited. Equity issues are predicted to have the largest negative response of all financing choices, as they are seen as a last resort of the firm seeking funds.

Perhaps the most comprehensive review of the theories and evidence regarding capital structure is provided by Harris and Raviv (1991). Here, competing theories are presented and the implications of each are discussed. Additionally, the results of various empirical tests are presented and compared. To summarize their findings, all of the existing theories predict equity issues to be the most poorly received by the market, although debt issues do not have completely clear implications. These expectations are consistent with the empirical evidence presented earlier.

III. *EMPIRICAL PREDICTIONS*

Various theories exist that predict how a firm will perform after making a security issue. The theories discussed in Chapter II uniformly predict that firms issuing equity will experience poorer performance[10]. This hypothesis is confirmed by reviewing the empirical evidence of equity issuance. However, there appears to be no clear consensus as to the effect of a new issue of debt on the issuing firm. Most theories point to a negative response, but to a lesser degree than for the equity issuer. Specifically Hansen and Crutchley (1990) and Miller and Rock (1985) argue that debt issuance is either a reaction to or a prelude of bad news for the firm. Myers (1984) Pecking Order posits that any security issuance is a negative signal by the firm, but he makes the argument that the decision to issue debt is less negative than an equity issuance (see also Smith (1986)). These theories are borne out by most studies of announcement-period returns of issuers, but are they valid predictors of long-term performance?

Other evidence argues that debt issuance is a positive move by the firm. Some evidence points to the value of increasing leverage on a firm's equity. When equity is viewed as a call option (Galais and Masulis (1976)) the addition of debt should increase the option's value. Additionally Jensen's free-cash flow argument also indicates that increasing debt can increase the value of the firm (Jensen (1986)).

This section addresses the various possible results that could occur in this study

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[10] An unusual theoretical counterpoint is presented in Cooney and Kalay (1993) indicating that stock prices could respond positively to an equity issuance announcement.

and various conclusions that can be drawn from them. The first portion will address the relative performance of the new debt, while the latter will examine the long-term effects on the equity of the issuer.

A) *Bond Performance*

Kwan (1996) finds significant positive correlation between a firm's equity returns and the returns on its (low grade) bonds. Therefore, any result discovered in the equity returns of a firm can be expected to be observed in low-grade bonds, but the effect on higher grade bond returns is unclear. Bond returns may therefore be related to the factors driving equity returns discussed previously. However, other factors may impact the bond returns that are unrelated to a firm's equity. These are addressed next, along with how these influences are controlled for in this study.

A.1) *Influences Biasing Excess Bond Returns Toward Zero*

It is conceivable that no significant difference can be found in the returns of new versus existing debt even if there are differences in equity performance. Blume, Keim, and Patel (1991) examine the returns of low-grade debt and find no significant difference in the returns of bonds of different ages. Although this finding appears analogous to this study, there are several differences. Their study divides bonds into two maturity classes: 10-15 and 15-20 years, and three age categories: less than 2, 2 to 5, and 5 to 10 years. The cross-matching of these categories creates six subgroups. Returns of each group are

averaged and tested for differences and the null hypothesis of equal means between the groups can not be rejected. They also test the individual bond returns and find no significant age effect. There are several important differences between this current study and that of Blume, Keim, and Patel. A primary difference is the classification of debt. Blume, Keim, and Patel use only low-grade debt rated below BBB. Also when computing the individual monthly abonormal bond return they subtract the return from an overall index of low-grade bonds. This market-adjusted return is then used in regressions involving the age of the issue. As mentioned previously, Barber and Lyon (1997) point out the potential bias in comparing returns to a market index when studying long-term returns. In contrast, this study matches each individual bond to one of the same rating that is at least five years older and has a comparable maturity date.[11] Additionally, both high and low-rated bonds are involved in this study to provide a more diverse sample[12]. It is expected that this technique will remove some of the potential measurement bias and provide a clearer picture of the relation between age and return for a bond.

Another factor biasing excess bond returns toward zero is the finite maturity of debt. As time to maturity decreases, the market price of the bond approaches par value

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[11] The rationale for matching the new bonds with seasoned issues is to insure that the benchmark return does not exhibit a 'liquidity' effect as documented by Amihud and Mendelson (1991). The matching criteria is described in greater detail in the procedures section.

[12] High and low-grade bonds will be examined separately as well as together due to potentially differing return characteristics.

and restricts price movement. This characteristic does not exist with equity and may make debt return differences difficult to find. The large sample size examined in this study and the longer initial maturity of most issues means that the typical maturity of the bond issue examined exceeds the time horizon analyzed (five years from issuance). This will minimize the convergence problem.

Another feature of debt is its lower average risk, relative to equity, which makes it less responsive to firm-specific events than equity. Thus, even if there is a difference in the issuer of new debt that is reflected in equity returns, it may not be reflected in the returns of its bonds. Fama and French (1993) find that default risk and the term structure are important determinants of high-grade bond returns. The sample studied herein includes both high and low-grade debt. With a large sample even these small effects should be identifiable.

Lower-rated debt has been observed to perform more like equity than less risky debt (Fama and French (1993) and Blume, Keim, and Patel (1991)) and to have returns with a closer correlation with equity returns (Kwan, 1996). Low-rated debt performance is therefore predicted to look more like equity return performance. The analysis controls for bond quality by using rating classes to separate issues.

A.2) *The Effect of Bond Life*

Due to the structure of a bond, its price behavior is quite different than that of equity and can make explanation difficult. This presents a dilemma for the analysis.

Bonds in the sample are matched by rating, callability, and maturity, thus they should have very similar yields to maturity. This yield to maturity assumes that the price of a premium or discount bond will steadily approach par value over time, thus any variation in the actual (realized) return will be due to unexpected price changes. For instance, if the newly issued bond initially outperforms its match (provides greater return), it is because its price increases relative to the match. But since each bond must reach par value at the same time, the only way the new bond price can increase faster is if it were lower to begin with or decreases relative to the match later in its life, which will reverse the relative performance of the new and seasoned bonds.

Incidents that increase the value of a bond will increase the return for that period but will result in the returns of future periods being smaller. Thus the timing of the differential performance is important in determining its cause. If a new bond outperforms seasoned issues over the entire observation period, the performance will likely be the result of the new bond being priced lower initially, reflecting a negative response to the new issue. If however, the positive performance is delayed, or reverses during the observed period, it is more likely to be the result of market reactions *after* issuance that affect the price of new issue. Consequently, if the new issues provide lower returns than seasoned issues over the entire period, it could be the result of a positive response at issuance which increases the value of the debt, causing a lower yield afterward. If the underperformance is delayed or is temporary, it may reflect negative

events that force the price lower after issuance.

A.3) *Higher Returns for New Debt*

Factors that depress the value of debt at issuance naturally lead to higher returns for bondholders over time. Given the results of new equity issues, there is certainly a strong possibility that new debt will be poorly received as well. The decision to issue debt for purposes other than refunding or replacing maturing debt can be considered negative in that the firm is stating it does not have adequate internal funds for its needs (Hansen and Crutchley (1990)). Additionally, the uncertainty of the new issue's true purpose may pull the price of the new bond downward, causing an increase in the observed return of the bond over time.

While some argue that increased leverage benefits the equity of debt issuers (Masulis and Korwar (1986) and others), this leverage could be detrimental to the new bond again depressing the price and increasing returns. Additionally, agency cost arguments (Jensen and Meckling (1976)), although benefiting equity, indicate that new debt increases agency problems between managers and debtholders. It thus seems possible that at the introduction of new debt the agency effect depresses the debt's value causing increased returns for the debtholder.

Finally, the Miller and Rock (1985) argument that issuance represents "negative dividends" implies that new debt would be poorly received by the market and see its initial price depressed.

Shiller and Modigliani's (1979) findings that new issues provide higher yields than existing issues are credited to the tax difference between ordinary income and capital gains. If this result holds for the corporate bonds in this study, there should be a marked difference in performance before and after the Tax Reform Act of 1986 which eliminated the differential treatment of capital gains.

A.4) *Lower Returns for New Debt*

Since new issuance of a security results in a new evaluation by the rating agencies, it could be inferred that there is less uncertainty in a new bond issue. Additionally, registration of the new issue causes the release of information by the issuing firm which could further reduce uncertainty. This reduction of uncertainty could cause a new bond to provide lower returns than an existing bond with the same rating. As the time from issuance increases, uncertainty about the "true" quality of the issue will increase. Such an event would be displayed by the new bond having lower returns than the existing bond for a short time after issuance but performing more equally afterward.

An additional factor that could lead to lower observed bond returns relates to the Harris and Raviv (1990) idea that new debt issues are made when managers see the firm being more valuable, or that bankrupcy is less costly. This is related to the asymmetric information argument of Leland and Pyle (1976) and Myers and Majluf (1984) that debt indicates a more positive future predicted by management. If it is the information release that drives the poor performance of new debt issues, it will be interesting to see if debt of

active issuers performs differently than that of infrequent issuers.

The liquidity effects of Treasury securities observed by Warga (1992) provide another potential explanation for lower returns from new debt. As his test was a direct comparison of new versus seasoned issues, it is analogous to this study. If seasoned Treasury issues suffer from illiquidity, it is certainly plausible, and even predictable, that seasoned corporate issues will perform poorly as well. If the liquidity effect is present, the observed returns on the new debt should be less than that on existing issues. An explicit test for possible liquidity differences between issues uses the size of the issue as a proxy for liquidity. However, the validity of this is certainly questionable considering the results of Crabbe and Turner (1995). They find no differences in yields between bonds with an average issue size over $100 million and medium-term notes with an average size of $5 million issued by the same firm. Given these results, an insignificant finding for issue size in the regression model will not necessarily discredit the argument of a liquidity difference between new and existing issues, it may only indicate that the size of the issue is not a good proxy for liquidity. Another test for liquidity effects is to examine the effect of the age difference between the new and seasoned bond. The rationale is that the older the matching bond the greater its relative illiquidity. Thus, if the return difference increases with the age disparity, the liquidity argument would seem much more valid.

If there is underperformance by the new debt issue and the difference appears to be liquidity driven, it will be interesting to test whether the degree of liquidity difference

is sensitive to the quality of the debt. In other words, if different quality debt is held by different investor types, their trading practices should influence the liquidity of an issue which could be seen in the return difference of various rating groups.

B) *Equity Performance*

One issue faced in the study of equity issuance is the question of market efficiency. The degree of underperformance by new equity issues does not appear consistent with markets that fully and correctly reflect new information (Fama (1970 and 1991)). This is offered by Spiess and Affleck-Graves (1995) as well as Loughran and Ritter (1995) as one possible explanation for their findings. As mentioned, the announcement effect can be considered in line with efficiency due to the information content of the announcement. Even the negative reaction on the issuance date is logical if the issue could have been canceled prior to issuance (Korajczyk, Lucas, McDonald (1991)). However, the long-run results are more difficult to explain. Efficient markets imply different results for announcement effects than for long-run performance. Specifically, for long-run performance to be affected by an event, a fundamental change in the firm must occur. If equity issuance results in an adverse change, it can be argued that the announcement effect associated with a new issue should in fact be more negative than is observed.

To validate the consistency of their findings Spiess and Affleck-Graves (1995) and Loughran and Ritter (1995) cite Ikenberry, Lakonishok, and Vermaelen's (1995)

evidence of abnormal *positive* long-term returns from share repurchases (essentially the opposite transaction). Spiess and Affleck-Graves propose that large information asymmetries or incorrectly measured risk changes may help explain the results found by all three works.

Loughran and Ritter (1995) mention the positive performance prior to issuance as an over-valuation by the market, which could be considered a sign of asymmetric information. However, both Loughran and Ritter (1995) and Spiess and Affleck-Graves (1995) admit that neither this over-valuation nor changes in risk are likely to explain the magnitude of underperformance they find. If the results of equity issuance can be explained, the reasons may be applicable to the possible impacts of debt issuance.

B.1) *The Implications of Equity Underperformance*

Numerous theories of optimal capital structure predict that internal funds are preferred to the seeking of outside financing (Myers (1984), Jensen and Meckling (1976), Myers and Majluf (1984), and others). For this reason and given the results of Spiess and Affleck-Graves (1996), the primary expectation is that the equity of debt-issuing firms will underperform that of non-issuers.

This finding would seem to refute one possible explanation of the long-term returns of equity issuers, that the increased equity base after an issue reduces the risk and expected return of a firm. Debt issues would not have this risk-reducing effect and could in fact increase the leverage and therefore the systematic risk of the firm if the debt to

equity ratio is increased by the issue.

The leverage effect does not, however, appear to be present in announcement effects for debt issuances. Dann and Mikkelson (1984) find that there is no difference in announcement effects of debt issuance when samples are separated as to the purpose of the issue. However, as mentioned, the purpose of a new issue is not always perfectly identifiable at announcement. In other words, even if debt is issued in response to an earnings decline as shown by Hansen and Crutchley (1990) and Chaplinsky and Hansen (1993), the purpose stated by the issuing firm will surely be something different, such as new investment, or have no stated purpose. Chaplinsky and Hansen (1993) document that debt issues without a stated purpose at issuance suffer a more negative announcement effect than other issues. Although it is not clear how these firms later used the debt proceeds, it may be possible that the market fully expects these funds to be used to cover earnings shortfalls.

Another explanation for poor equity performance can be obtained from Jensen (1986) who suggests that issuance of new debt (not used to replace equity or existing debt) can depress the value of the firm if it places *more* "free cash" under the control of management. His contention is that this additional cash increases the agency costs related to free cash flows. Thus Jensen's argument provides reason to expect at least some issuing firms to be outperformed by nonissuers. Equity underperformance by a debt issuer, given the performance of new equity issues, could give strong support to Jensen's argument.

B.2) *The Implications of Positive Equity Performance*

The negative announcement of equity issuance has been well documented and can be explained by several theories. The long-run poor performance of SEO's is more perplexing. One argument is that the increased equity base due to the offering has reduced the risk of the firm. Under the option-pricing valuation method of equity (Galais and Masulis (1976)), a reduction in the risk of the firm would reduce the value of the stock and its long-term return. This explanation would result in a different effect due to the issuance of debt. If the debt is not used to replace existing debt, and thus increases the leverage of the firm, it would in turn increase the risk of the firm. Under this scenario, long-term performance may actually be enhanced by the new issue. Therefore positive equity performance of a debt issuer could lend credence to the argument that the results of Loughran and Ritter (1995) and Spiess and Affleck-Graves (1995) are due to changes in the risk of the firm. However, these results would directly conflict with Spiess and Affleck-Graves (1996) and are therefore not expected.

B.3) *The Implications of Insignificant Equity Performance*

It is entirely possible that the equity of a debt issuer will not perform significantly different than that of a non-issuer. Given the relationship between announcement effects and the long-term results of equity issues, one could extrapolate a similar relation for debt issuance. Since both the announcement response and long-run returns of equity issues are significantly negative, while the announcement effect of debt issues is at most

marginally negative, it seems logical to expect that the long-term effect of debt issuance may well be insignificant. This is, of course, a naive approach but certainly a result that is not totally inconceivable considering the frequency of corporate debt issues relative to new equity issues. It is quite plausible that there is less "news" involved in a new debt offering. In fact Marsh (1982) and Bayless and Chaplinsky (1991) show that it is possible to predict most debt offerings using prior, publicly available information. If the poor performance of SEO's is an example of market inefficiency, this aberration may not be present due to the market's familiarity with debt issuance and the expectation of a coming issue. Thus, an insignificant result for the equity of debt issuers will not necessarily aid the explanation of the long-term equity results. It would certainly not discredit the argument of market inefficiency as an explanation cited by Loughran and Ritter (1995) and Spiess and Affleck-Graves (1995).

The results of Spiess and Affleck-Graves (1996) for straight debt issuers do not suggest a magnitude of underperformance to rival that of equity or convertible debt issues. The 7.94% mean difference between issuers and non-issuers over the five-year period is strongly significant using the Wilcoxon signed rank test (p=.0004), but is only significant at the 12% level using paired t-tests. However, the return difference for convertibles (39.22%) is strongly significant using either test as is the return difference for equity issuers.

C) *Effects of Firm Growth on Debt and Equity Performance*

Much of the previous discussion relates more closely to predicting operating performance as opposed to actual equity or debt return performance. Loughran and Ritter (1997) attempt to reconcile the findings of seasoned equity's post-issue return performance by examining the operating performance of SEO firms. While a total examination of the operating performance of debt issuers is beyond the scope of this work,[13] part of the Loughran and Ritter (1997) analysis does have implications for this study, and it is quite relevant in light of the asymmetric information discussion. Specifically Loughran and Ritter (1997) investigate whether post-issue performance is a function of the pre-issue growth in sales as well as growth in capital expenditures of the issuing firm. Their goal is to discover if the poor post-issue stock performance is the result of a firm's rapid growth prior to issuance, that is misinterpreted by the market as a more long lasting phenomenon (Stein (1989)). Loughran and Ritter (1997) shows that indeed higher growth issuers tend to underperform more than lower growth issuers for both growth measures employed.

A replication of the growth portion of Loughran and Ritter (1997) for debt issuers might indicate whether the type of security issued indicates anything about the firm and managers information. Loughran and Ritter (1997) argue that their findings tend to confirm that equity is issued when it is overvalued, i.e. when the current growth is not

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[13] This topic is discussed more thoroughly in Chapter VII.

indicative of the future. If high-growth debt issuers also display poor performance, it could reinforce the overreaction hypothesis that the high growth is falsely predicted to continue (Stein (1989)) and that management has no special insight about the permanence of the growth, and thus does not realize that their equity is overvalued. However, if the findings for debt issuers indicate that higher growth issuers perform as well as (or better than) their matched counterparts, the implication could be that management correctly expects future growth to continue and therefore does not believe that their equity is overvalued by the market. The subsequent decision to issue debt as opposed to equity would provide stronger evidence of asymmetric information and the ability of management to time new issues.

IV. *DATA and PROCEDURES*

A) *Data*

The data for the study consist of issue dates and monthly bond returns from the Warga Fixed Income Database (University of Wisconsin-Milwaukee) for bonds issued during the period 1973 to 1990. The sample of issuing firms consists of 862 individual issuing firms with 397 of those making multiple issues. This results in 1,981 debt issues[14]. Five years of post-issue data are examined for each issue. Equity prices and returns are from the Center for Research in Security Prices (CRSP) daily price file, and firm characteristics are obtained from the Compustat files. Following the method of Ritter (1991) and Loughran and Ritter (1995) in their analysis of equity returns following common stock issues, each issuing firm is matched to the firm closest in market value of equity listed on the CRSP tapes having no new equity issues during the ten year period around the new debt issue date. The total compounded returns of the issuing firm and its match are computed for the observation period and aggregated across all issuers. The aggregation process is discussed in detail later. In addition, the newly issued bond is matched to an existing comparable bond, and monthly returns for both the issuing and matching bonds are aggregated and compared over the same five-year post-issuance observation period. Daily equity returns for each firm are computed over a five year period from the date the new debt is issued. Monthly bond returns are computed for

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[14] Appendix A illustrates some of the characteristics of the issuing and matching firms used in this study.

both the new and existing bond.

Only straight debt issues are studied. No convertible debt issues are included in the sample nor are any offers that involve the simultaneous sale of both debt and equity. Only issues made by industrial firms are analyzed, no utilities or financial institutions are examined.

The reason that convertibles are excluded from the sample is simply to obtain a clear picture of the effect of debt issuance. A convertible bond (that can be converted into equity) is a hybrid having both debt and equity features. Thus the effects of a convertible issue are expected to be some combination of the effects following a straight debt issue and the effects following an equity issue.

B) *Empirical Methods*

B.1) *Measurement Issues*

Long-term studies of abnormal returns are often considered more susceptible to measurement errors than announcement effect studies. The problem is that long-term studies compound any small error which can potentially bias results. Barber and Lyon (1997) document this bias in test statistics used in analyzing long-term abnormal equity returns. They find that cumulative abnormal returns (CAR's) computed against an equally-weighted market index are positively biased, meaning that the null hypothesis of no abnormal return is rejected in favor of positive abnormal returns too often. Conversely, buy and hold abnormal returns computed against an equally-weighted market index are negatively biased. The degree of this bias is affected by the choice of sampling

techniques and how the sample is selected. However, they report no bias when sample firms are matched on a one-to-one basis with comparable firms and the differences of returns are compounded. This technique is similar to that used by Loughran and Ritter (1995) and Spiess and Affleck-Graves (1995, 1996) and is also used in this study. Although Barber and Lyon focus on methods useful in reducing biases in the evaluation long-term equity returns, a similar procedure is used here in the analysis of bond returns as well. Application of this technique will provide consistency between the two portions of the study.

Fama and French (1993) measure the cross-sectional variation in the returns of bonds and common stock and find five factors that appear significant in explaining these returns. For stock returns, three factors are important: firm size, book-to-market ratio, and a market factor. The returns of bonds appear to be explained by two factors: maturity and default risk.

The factors for bonds are extremely powerful for high-quality issues, explaining over 95% of the variation between issues. As the credit quality deteriorates however, the two factors become less useful. In fact, for the lowest-rated debt, the stock factors actually provide more explanatory power than the bond factors. This finding is not at all inconsistent with the findings in Kwan (1996) that very low-rated bonds have returns that are strongly correlated with the issuing firm's equity. Thus analyzing the returns of low-rated issues should provide clues as to the performance of the issuer's equity.

One issue with respect to bond returns that should be addressed is the nature of

bond price movements over time. At a given level of risk-free interest rates, a bond has an absolute maximum attainable value. This is obviously not true for a stock. Therefore measuring the impact of an event on debt returns becomes more difficult. Additionally, bonds approach a fixed price as they approach maturity, which reduces possible price movement.

Since both the stock and bond returns of a firm are being measured, another factor that should be considered is the correlation between the returns of the two securities. Kwan (1996) finds that lower-rated bonds are highly correlated with (and tend to lag) the firm's common stock. He finds that lagged stock returns are significant in explaining a firm's bond returns and the result becomes stronger as the bond's rating declines. Therefore it is expected that results found in the analysis of equity performance may also appear in the analysis of bond performance and especially in the performance of lower-rated bonds.

B.2) *Debt Return Analysis*

B.2.1) *Return Measurement*

Measuring the "abnormal" return on new debt is somewhat different than measuring equity returns. Fama and French (1993) find that two factors, maturity and the default-risk premium, explain a tremendous amount of the variation in cross-sectional bond returns. For this reason bond returns are matched with an existing bond by rating, maturity, and callability. Matches are made by rating and callability first, then those

matches that have been outstanding for at least five years and have a maturity date within one year of the new issue's maturity date are selected. More than one match per issue is allowed. If more than one match for a particular bond exists the average of their returns is used.

The above matching procedure is used because the primary causes of bond price changes are interest rate changes and the reduction in maturity over time. Maturity matching will result in each bond approaching par value at approximately the same rate. The rating match should alleviate the effects of a change in the default-risk premium and should help control for the differential performance of high and low-grade debt found by Fama and French (1993) and others. The rating match should also account for differences in subordination and securitization which is not explicitly considered. Callability is also controlled for since a call feature can affect the price movements of the bond (Ingersoll (1977)). There is no attempt to match bonds by firm size or industry as those factors have not been shown to impact bond returns.

Ideally, new issues would be matched by coupon as well as the factors previously discussed. This would help to equate the prices of the new and seasoned issues as new issues tend to be priced close to par. However, due to the difficulty in matching on the three factors mentioned, requiring matches based on coupon in addition to the other factors severely limited the sample. Only allowing a coupon difference of over 3% created sample sizes comparable to those represented here. Additionally, since the return measure and the yield to maturities explicitly consider changes in price as well as coupon

payments, their should be no systematic return difference between new and seasoned issues based on coupon differences. It is believed that matching on the three chosen factors while not considering coupon rates, does not systematically bias the results of this study.

If the bond is called or the issuing firm declares bankruptcy, its return is computed only for the period of time it is outstanding.[15] If the matching bond is called or its issuer declares bankruptcy, another match is used beginning in the month prior to the call or the bankruptcy announcement. Asquith and Wizman (1990) demonstrate that bondholders experience abnormal returns during LBO's. The direction of the return depends on the covenant protection of the bondholders, so these firms are excluded from the sample. Further as shown by Israel (1991), being identified as a target in an acquisition can increase the value of a firm's debt as well. Therefore, acquisition target firms are also deleted in the examination of bond returns.

One area of concern in this study is the effect of a rating change on either the issued or matching bond. Weinstein (1977) finds no significant reaction in bond prices at the time of a rating change or afterward. In fact most of the price movement he does find occurs prior to the change. However, even this movement is not found to be statistically significant.

Hand, Holthausen, and Leftwich (1992) test the effects of a rating change on

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[15] Keeping bankrupt firms in the sample should help reduce the effects of survivorship bias.

stock and bond prices using daily returns for both securities. They find significantly negative effects in both equity and bond prices from a downgrade and significantly positive effects for bonds from an upgrade. However, when the sample is "cleaned" of other events, the downgrade effect for bond returns disappears and bonds show slightly positive returns from upgrades. For equity returns there appears to be no effect from upgrades and a small significantly negative effect from downgrades.[16]

Since the bond returns used in this paper are monthly, as are those used by Weinstein, no change in the matching bond is made if a rating change occurs.

B.2.2) *Controls used in Analysis of Bond Returns*

The returns of each bond are calculated monthly, due to the nature of the data. Bond returns are defined as the change in price plus accrued interest for month t of bond i as follows:

$$R_{i,t} = \frac{P_{i,t} - P_{i,t-1} + C_t}{P_{i,t-1}} \qquad (1)$$

Monthly returns are obtained from the Warga Fixed Income Database. In addition to the testing of the difference of aggregated returns, the aggregate of return differences is also analyzed. The difference between each issuer and its match is computed for each month,

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[16] Goh and Ederington (1993) find that the significant negative effect on equity returns is concentrated in downgrades due to the raters re-evaluation of the firm or industry prospects. Downgrades due to financial changes in the firm show no such reaction.

then this difference is cumulated over the observation period. The return differences for each bond are then aggregated over the observation period by the following holding period return:

$$R_{D,i} = [\prod_{t=1}^{T} (1 + R_{D,i,t})] - 1 \qquad (2)$$

with $R_{D,i,t}$ being the monthly return on the newly issued bond, i, less the corresponding return on its match for month t, and T being the length of the observation period. Barber and Lyon (1997) find that using a control firm and holding-period returns in long-term equity studies eliminates much of the bias induced from using indices to calculate abnormal returns. Therefore this method should conform to their findings and is analogous to the methods used in the long-term studies of equity issuance.

One problem with long-term studies of debt prices is the infrequency of trading. This leads to reported prices that are not based on actual trades. Often, reported prices are determined by a matrix formula used by bond traders. Many studies use these prices and treat them just as they would actual traded prices (Blume, Keim, and Patel (1991)) and find no significant biases in these prices. This study uses matrix prices when the actual trade quote is not available from the bond return database. The expectation is that any biases over long-holding periods that might arise from using matrix prices will be small.

Specific tests, beyond simply aggregating return differences are performed on the bond returns of the issue and its match. Most of these tests are similar to the equity tests

described later but findings can have different implications. As with equity, the primary tests weight each issue equally. The following tests are performed on the aggregate difference.

1) Bonds are separated by rating to analyze the relation between default risk and differential performance. Initially the sample is separated into investment and speculative grades, and is then further divided into three distinct rating groups. The results reported by Blume, Keim, and Patel (1991), Fama and French (1993), Kwan (1996), and others that suggest low-grade debt has different return characteristics than high-grade debt.

The test is performed in two parts. The first aggregates return differences within each rating group. A test of the hypothesis that the mean difference equals zero is conducted for each group using t-tests. Then tests are performed to examine whether the mean return differentials are significantly different between groups. The second portion of the test regresses differential return against a numerical index representing the rating. This regression takes the following form:

$$R_{Di} = \alpha_0 + \alpha_1 RATING_i + e_i \qquad (3)$$

where R_{Di} represents the holding period return differential for a particular issue i (from equation 2).

2) Bond returns are also analyzed with respect to issue size. Here the compound return difference is regressed against the natural logarithm of the size of the issue (ISSIZE) in the following:

$$R_{Di} = \alpha_0 + \alpha_1 \ln(ISSIZE_i) + e_i \qquad (4)$$

ISSIZE is considered to be a measure of the liquidity of the new issue where a larger issue is expected to have greater liquidity.[17]

3) Liquidity differences between the two bonds could influence the differential performance as discussed in Warga (1992), Blume, Keim, and Patel (1991), and others. Thus the age differential of the two is used as an index of the liquidity difference. The following model is estimated:

$$R_{D,i} = \alpha_0 + \alpha_1 (AGE)_i + e_i \qquad (5)$$

AGE represents the difference in issue dates between the new bond and its match. Although the match must be at least five years older than the new bond, there is no upper limit on its age. If liquidity of an issue decreases over time a negative coefficient should be observed indicating that the older the match, the lower

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[17] Crabbe and Turner (1995) test for liquidity effects (marketability) of debt issues and find no evidence that issue size has any impact. They use different securities issued by the same firm, which is different than the methodology used here.

relative returns for the new issue.

4) Similar to the Loughran and Ritter (1995) study of SEOs, the timing of the debt issue is examined. Loughran and Ritter find that issues made during low-issue volume periods perform better than those offered during periods of heavy issuance. Competition in the new debt market may affect the performance of issues as it appears to do for equity issues. To test this effect the sample of debt issues is divided into quartiles based on annual issuance volume. The mean differential returns are then examined in each quartile and tested for differences between each quartile using t-tests.

5) To address the conflicting findings of Warga (1992) and Shiller and Modigliani (1979) an examination of returns before and after 1987 is performed. The purpose is to determine whether the sample effects are due in part to the tax law changes that occurred at that time. The primary test consists of a regression to isolate the effect of the time of issuance on the relative performance of new debt.

6) Since interest rates are directly related to bond returns, it seems reasonable to investigate whether interest rate levels affect the differential performance of new and old bonds. Here issuers are classified as to the Treasury rates in existence during the year of issuance of the new debt. The issues are divided into quartiles

reflecting the various rate levels. Tests are then conducted to determine any difference between returns within the specific quartiles.

7) The effect of repeat issuers is also investigated. Issuers are separated into single and repeat issues. If the issue is the first (or only) issue made by a particular firm during the observation period it is classified as a single issue. If the issue follows another by the same firm it is classified as a repeat issue. The differential holding-period return of the two groups is then computed and compared.

An important point should be noted here. Due to the data availability and the process of selecting single and multiple issues, the distinction between single and repeat is not exact. The single-issue designation includes all firms that issue during the observation period because all first issues are included. Perhaps the best way to designate the difference is that the multiple-issue category includes *only* firms that make more than one public debt issue during the observation period. All other issues are considered single issues.

B.3) *Equity Return Analysis*

B.3.1) *Return Measurement*

Both Loughran and Ritter (1995) and Spiess and Affleck-Graves (1995) use matching firms to compute abnormal returns of new equity issues. Much of the analysis of the equity of issuing firms will follow their methodology so that a direct comparison between the issuance of debt and equity can be made. Issuing firms are matched to the

firm equal or closest to them, using the next larger, in terms of market capitalization at the time of issuance. Loughran and Ritter (1995) compute daily returns of the issuer and the matching firm (cohort). These daily returns are compounded over the five-year observation period and compared as suggested by Barber and Lyon (1997). Additionally, monthly returns for each are computed to track performance over time. While this controls for the size effect often cited in equity returns (first noted by Banz (1981) and Reinganum (1981)), it ignores other factors considered important in equity returns. A study by Fama and French (1993) finds that three factors explain a large proportion of equity returns. They determine that size, book-to-market ratio, and a market factor are all significant in stock returns. Spiess and Affleck-Graves include a measure for book to market value and control for industry effects. These factors partially explain the difference in performance of SEO's, but leave a large portion of the underperformance unexplained. Given their significance, tests controlling for industry and book-to-market effects are performed in this study, matching their procedure. Additional tests, described below, that are used in the examination of the debt returns are performed as well.

In the long-term equity studies, if a matching firm becomes an equity issuer during the measurement period it is replaced at that time and a new matching firm is used for further comparison. The practice is followed in this work to exclude issuers of new debt from the sample of matching firms. Given the performance of equity issuers, firms that issue equity during the ten-year period surrounding the debt issuance date are also excluded from the samples of issuers and matching firms. If an issuing firm declares bankruptcy it remains in the sample as long as the equity continues to be included on the

CRSP files. If a firm is subsequently delisted from the CRSP files its return is computed up to the delisting date. If a matching firm is delisted, the next largest non-issuing firm is used beginning the day prior to the delisting date.

Due to the extreme effects of mergers and takeovers on the equity returns of acquirers and targets, firms involved in mergers and acquisitions during the observation period are deleted from the sample.

B.3.2) *Controls used in Analysis of Equity Returns*

The following tests are performed on the equity of issuing firms and their cohorts:

1) As in Loughran and Ritter (1995) and Spiess and Affleck-Graves (1995), cumulative returns are computed for the issuer and its cohort from the closing price on the day of issuance through the closing price on the fifth anniversary of the issuance or the delisting date, whichever is earlier. The returns for both the issuer and cohort are computed as follows:

$$R_i = [\prod_{t=1}^{T} (1 + r_{i,t})] - 1 \qquad (6)$$

where T is the number of trading days in the interval-- five years or until the delisting date. $r_{i,t}$ represents the return of firm i on day t.

This procedure essentially creates two portfolios. One is a portfolio of debt issuers, and the other a portfolio of non-issuers. Each portfolio is equally-

weighted in firms of similar size (although since each match is the next *largest* firm in terms of market value, the matching firms are all larger than their issuing counterparts). A comparison of returns for the two portfolios provides a test consistent with the long-term equity studies. This comparison is considered a first-pass analysis that will indicate the results expected in later tests as closer examination of the effects is performed.

In addition the differential return between the issuer and its cohort are determined and analyzed at various intervals to track relative performance. This differential holding period return is computed by the following:

$$\text{Compdiff} = [\prod (1 + (r_{i,t} - r_{c,t}))] - 1 \qquad (7)$$

where $r_{i,t}$ represents the return for day t of issuing firm i and $r_{c,t}$ represents the return of the cohort firm for the same date. Compdiff thus represents the compound return difference over the observation period.

2) Issuers are then matched to non-issuers by industry and book-to-market value as well, following the procedure of Spiess and Affleck-Graves (1995). For their industry and size-matched sample Spiess and Affleck-Graves select the firm closest, but next larger, in size to the issuing firm with the same two-digit SIC code. If the issuing firm is the largest within that class, the second largest is chosen as the match. If no firm in the two-digit class is available, the one-digit code is used.

To match by size and book-to-market, Spiess and Affleck-Graves (1995) choose the match so that the absolute percentage difference of size and book-to-market ratios between the issuer and the match is minimized. This study implements both of these matching techniques. After rematching, aggregate returns for issuers and non-issuers are recomputed and compared as in the first test.

3) Equity returns are also compared across bond rating categories. Issuers are separated into investment (those issues rated BBB and above) and speculative grades (those rated BB and below). The excess (issuer-nonissuer) equity holding-period returns are averaged for each grade. These averages are then be tested for equality between the grades. I then test for rating effects using a cross-sectional regression model. Ratings are converted to a numerical index with 1 representing the highest quality and 23 representing the lowest. This regression has the form:

$$\text{Compdiff} = \alpha_0 + \alpha_1 \ln(MV_i) + \alpha_2 \ln(BV/MV)_i + \alpha_3 RATING_i + e_i \quad (8)$$

This model controls for some of the factors noted previously as important to equity returns, however since the dependent variable represents the difference in the equity returns of the issuer and its match, the additional factors may not have any explanatory power.

The purpose of this test is to examine the effect of credit quality on the equity performance of the issuing firm. It is well documented that issuers of

equity perform poorly (Loughran and Ritter (1995), Spiess and Affleck-Graves (1995)) and that lower-rated debt has return characteristics similar to that of equity (Fama and French (1993) and Kwan (1996)), thus it will be interesting to observe if the stock market treats issuers of lower-rated debt the same as issuers of equity.

4) Equity returns are also compared for issue size; in terms of both the absolute size of the issue and the size of the issue relative to the size of the firm. A positive relation between relative issue size and returns would indicate that the increased risk due to leverage is valued by the market as discussed by Bhandari (1988).

Two regression models are used to measure this effect. The first is to regress the return differential against the size of the issue in one equation and the size of the issue relative to the market value of the issuing firm in another equation.

The regression is similar to the cross-sectional regressions in the first test. For the absolute size of the issue, the following is used:

$$\text{Compdiff} = \alpha_0 + \alpha_1 \ln(MV_i) + \alpha_2 \ln(BV/MV)_i + \alpha_3 \ln(\text{ISSIZE})_i + e_i \qquad (9)$$

where ISSIZE represents the face value of the debt issued.

To test the size of the issue relative to that of the issuer, the regression takes the form:

$$\text{Compdiff} = \alpha_0 + \alpha_1 \ln(MV_i) + \alpha_2 \ln(BV/MV)_i + \alpha_3(\text{Leverage}_i) + e_i \qquad (10)$$

The variable Leverage in equation 10 is defined as the size of the new issue divided by the equity value of the issuing firm at the time of issuance. This should not be confused as the debt-to-equity ratio of the firm as it does not include any other debt for the issuing firm.

Some care will have to be used in the interpretation of the coefficients on the size and relative size of the issue. Obviously, the size of the firm and the size of the debt issue can be expected to be correlated. Chaplinsky and Hansen (1993) suggest that the relative size of the issue is negatively related to the size of the firm. They find that the issue size as a percent of total assets is higher for smaller firms. They attribute this to the spreading of fixed transactions costs of issuance as suggested by Smith (1986). Therefore, the relation between the firm's market value and issue size will have to be considered in discussing the results of the regression.

5) Loughran and Ritter (1995) also observe the performance of SEO's relative to the timing of the issue. They find that issues made during periods of low volume, i.e, when few SEO's are made, perform better than issuances made during high volume periods. The same analysis is performed on the sample of debt issuances.

The test consists of identifying periods in the highest and lowest quartiles

of annual debt issuance volume and comparing the returns of the two groups. The results will provide information on whether competition for funds among debt issuers has an effect on long-run equity returns of the issuers.

6) The differential performance of firms that issue more than once during the time period are examined. The sample is divided into those that issue only once during the observation period and those that repeat. This sample of repeat debt issuers is expected to be substantially larger than that of repeat equity issuers found by Loughran and Ritter (1995), due to the frequency of debt issues in general.

7) Comparisons of equity returns are made for issues made at different interest rate levels. The rationale is that, all else being equal, a lower interest rate on debt should be more beneficial to the firm. The interest rate level is measured by the average yield on Treasury bonds of similar maturity existing at the time of issuance. The issuing years are divided into quartiles according to the volume of debt issues for each year studied.

8) One argument for the issuance of debt over equity is the tax shield received from interest payments. If this is an issue in the value of a firm then firms with higher marginal tax rates should benefit more from debt issuance. Graham (1996) finds that firms with higher marginal tax rates tend to issue more debt. His analysis does not, however, measure the market's valuation of this debt. The test

compares equity performance of issuers facing various tax rates. Equity returns are regressed against the issuer's effective tax rate from the previous year. The effective rate is computed as the income taxes paid by the issuing firm divided by the pre-tax income in the year prior to issuance.

9) Hansen and Crutchley (1990) find that equity issuers tend to show earnings declines prior to issuance. I test how the firm's pre-issuance earnings performance relates to its post-issuance equity performance. The specific test to examine this issue compares the return differential of the issuers equity to the degree of the issuer's earnings decline prior to issuance. The following model is used:

$$\text{Compdiff} = \alpha_0 + \alpha_1 \ln(MV_i) + \alpha_2 \ln\left(\frac{BV}{MV}\right)_i + \alpha_3 \text{EARNDIFF}_i + e_i \qquad (11)$$

EARNDIFF represents the earnings growth rate for the year prior to issuance. A negative sign for α_3 would indicate that with lower earnings, the decision to issue debt is viewed favorably by the market.

10) A test of Jensen's (1986) free cash flow argument would be to consider whether free-cash flow is related to the post-issuance long-term equity returns. Specifically, observing the after-tax cash flow less any payments to equity holders could provide such a measure. The model takes the following form:

$$\text{Compdiff} = \alpha_0 + \alpha_1 + \ln(MV_i) + \alpha_2 \ln\left(\frac{BV}{MV}\right)_i + \alpha_3(\text{Freecash})_i + e_i \qquad (12)$$

Freecash represents the net after-tax cash flow of the issuing firm less any dividend payments for the year prior to issuance. A negative sign for α_3 indicates that lower levels of free cash are viewed more favorably by the market.

B.4) *Growth Effects*

To investigate whether prior growth is overvalued by the market for debt issuer as it appears to be for equity issuers, a replication of part of Loughran and Ritter (1997) (specifically Tables VII and VIII) is performed. The first test is to compare the returns of new debt issuers separated by sales growth and by growth in capital expenditures. Like Loughran and Ritter (1997) sales growth and capital expenditure growth rates are computed for the year of issuance with the following:

$$\text{SGROWTH} = \frac{[\text{Sales}_0 - \text{Sales}_{-1}]}{\text{Sales}_{-1}} * 100$$

and

$$\text{CAPEXPG} = \frac{[\text{R-D} + \text{Capital Expend}_0] - [\text{R-D} + \text{Capital Expend}]_{-1}}{\text{Total Assets}_{-1}} * 100$$

where year 0 refers to the year of issuance while year -1 is the prior year.

For ease of comparison the categories chosen for the division of growth rates is the same as that shown in table VII of Loughran and Ritter (1997). Both the one and five-year buy and hold returns are compared for issuers and the non-issuing matching firms. One important difference is the type of returns employed. Loughran and Ritter (1997) use market-adjusted returns, while I examine unadjusted bond and stock returns.

Additionally, regression tests are performed to test whether the growth in sales or capital expenditures are important in determining relative performance. The regressions use the differential holding-period returns for both the new debt and equity of the issuing firm. In the regressions again the one and five-year returns are used. Note that the regressions do not use raw returns, but instead use the differential return between the new bond (equity) of the issuer and its match.

B.5) *Statistical Tests*

The statistical tests used in this work primarily consist of regression, mean, and proportion tests. Since the primary objective is to isolate the differential performance of debt issuers from that of non-issuers, means tests are used to make this differentiation. Much of the analysis consists of dividing issuers and their matches across different categories and comparing the returns of either the equity of the firms or the returns of the debt. Significance tests utilized are the result of findings by Barber and Lyon (1997) who report the following test-statistic for differential holding period returns (which they refer to as "buy-and-hold abnormal returns"). The t-statistic takes the following form:

$$t_{Compdiff} = \frac{\overline{Compdiff_{i,\tau}}}{\sigma(Compdiff_{i,\tau})/\sqrt{n}}$$

Where $\overline{Compdiff_{i,}}$ represents the average differential holding period return for the issuer or new bond versus its matched counterpart and $\sigma(Compdiff_{i,\tau})$ represents the cross-sectional standard deviation the differential holding period return over time τ. Although the actual differential holding period returns are not normal, as confirmed by the Jarque-Bera (1987) test, the distribution of mean differential holding-period returns converges to the normal under the central limit theorem (Barber and Lyon (1997)) for large sample sizes.

For proportion tests, the sign test is utilized to determine if the sample proportion is significantly different from .5.

The test takes the form:

$$z_{1-\alpha/2} = \frac{P_+ - .5n}{\sqrt{n/4}}$$

This non-parametric test requires only that the distribution of observations be symmetric.

Regression analysis utilizes OLS estimates for the parameters, and utilizes White's (1980) correction for t-statistics where heteroskedasticity is identified.

V. *EMPIRICAL RESULTS*

A) *Bond Returns*

A.1) *Overall Sample and Rating Effects*

The sample contains 1,981 available debt issues, but the actual sample sizes vary in the tests reported below due to missing returns for some bonds as well as the absence of market value information on the issuance date for many of the issuing firms.

The long-run returns of new debt issues are significantly lower than those of existing issues. The degree of underperformance is affected by the quality of the debt as well, with lower quality bonds showing greater underperformance. The lowest-rated debt displays a level of underperformance comparable to that of new equity issues.

The excess returns presented in the tables are computed as the monthly return of the new issue less the return of its match for the same month, compounded over various periods. Thus the negative excess returns indicate that the seasoned issue provides higher returns than the new issue. If either the issue or its match has a missing return after the first two years, it is not included in the differential returns of that year nor any further holding-period returns.

Table 1 illustrates the excess returns for the entire sample. Note that from the sixth month through the full five-year observation period, the excess return is significantly negative at conventional levels[18]. Additionally, the magnitude increases

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[18] The decline in sample size after year two for debt returns occurs because for the first two years if either the new issue or its match has a missing returns the difference in returns for that month is set to zero. This technique has the effect of biasing the mean excess return to zero, but keeps a full sample for the first two years. After two years if either return is missing, the issue drops from the sample for the remainder of the

each period until the four-year differential holding period return, after which the performance of the new issue becomes closer to that of the match.[19]

Table 2 demonstrates that the underperformance indicated in table 1 is not driven by only a few large observations. Note that the proportion of negative return differences exceeds the number of positive differences in each period up to three years. This is consistent with table 1 where the greatest significance is achieved for the three-year holding period. In table 2 the results are for each interval and do represent cumulative differences over the specific period. For example the proportion for the third year represents the percentage of new issues that provide returns lower than the matching bonds for that year. The results in table 1 and subsequent tables represent the differential holding-period returns for the entire period indicated.

Note that after three years the majority of new issues provide returns higher than their matches. This finding is consistent with the previous discussion of bond returns and maturity. If a bond provides lower initial returns than its match, its return is likely to increase relative to the matching bond as both bonds approach maturity and the price appreciation of the matching bond eventually slows. But as seen from table 1 the compound 5-year returns on new issues are still significantly lower than those of their matched counterparts.

Table 3 compares the excess returns when bonds are separated into investment

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observation period.

[19] The individual annual return differences are not reported, but are not significant after year two.

and speculative grades. The first thing to notice is that the overall negative results are not specific to either grade. Both grades show significantly negative differential holding-period returns through the five-year observation period. Also note that the magnitude of the differential returns is smaller for the investment grade than for the speculative grade as well as for the overall sample. This provides the first evidence that the return difference between new and seasoned issues is related to the default risk of the issue. Through five years the seasoned speculative grade issues provide excess returns with a mean 12 percentage points lower than corresponding investment-grade issues.[20]

The relation between default risk and excess returns becomes more apparent in Table 4 which shows the excess returns for investment grade bonds rated AAA and AA (the safest of the issues) versus those rated A and BBB (less safe of the investment grade). Again, each group shows significantly negative excess returns for the new issue relative to the seasoned issue. The magnitude of the excess holding-period returns for the safer group again is smaller in almost every case and essentially increases each period until the fifth year. The differential holding-period returns are only significant in the safest group for the two through five- year periods while for the riskier group they are significantly negative from six months through the five-year observation period.

The very riskiest group–those rated below BB display very different excess return patterns than other groups as shown in Table 5. The return difference is positive, although insignificant, for the first six months and is not significant until two-year excess

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[20]The t-statistics for the difference between groups are not shown, but exceed 2.2 for all cumulative excess holding-period returns for one year and beyond.

returns. The excess returns remain significantly negative through the fifth year with a magnitude of 24.6 percentage points. After two years the differential holding-period returns for individual years are insignificant and of varying signs (although not reported here). Note the small sample sizes which make any conclusions regarding this group suspect beyond the second year.

The magnitude of the five-year differential holding-period returns is large (in absolute value) relative to that of the overall sample in table 1, and seems consistent with the Spiess and Affleck-Graves (1996) finding of poor equity performance of debt issuers and the return characteristics of high-risk debt found by Fama and French (1993) and Kwan (1996).

A.2) *Cross-Sectional Results*

A further test of the effects of credit quality on the performance of new issues is presented in the regression results displayed in Table 6. Here the bond rating is converted to a numerical value where higher values represent lower ratings[21]. Thus the negative coefficient indicates that as the value of the variable increases, the new issue's returns are smaller relative to the match. In other words, as the credit quality of an issue declines, the magnitude of the underperformance of the new issue increases. The significance of the effect is somewhat inconsistent, but is significantly negative at the .01 percent level for the excess holding-period returns for one year through the five-year

[21] The S&P rating is used and the numerical values begin with a '1' for those rated AAA+, and increase by 1 for each decrease in rating. For example the value '2' represents AAA, '3' represents AAA-, etc. to a maximum of 23 for those in default.

observation period. Also note that all of the coefficients are negative and all but the two and six-month excess returns are significant at the 5% level. However, the low r-squared values indicate that a large portion of the underperformance remains unexplained.

A.3) *Liquidity Effects*

To explore the possible effect of bond liquidity, Tables 7 and 8 show the results of regressing the difference in returns between new and seasoned issues against the size of the issue (Table 7) and then against the age of the matching bond at issuance (Table 8). Neither variable shows a strong impact on the return differential. For issue size, only the three and nine-month excess holding-period returns even approach marginal significance. Again, these findings are not inconsistent with the results of Crabbe and Turner (1995). Therefore the hypothesis that liquidity is the driving force for the return differences is generally not supported by these results.

Table 8 illustrates the effect of regressing excess returns against the age of the matching bond at the time the new bond is issued. The age of the match is insignificant in all cases, but this should not be too surprising. Recall that each match is at least five years older than the new issue. Thus for the age to have an impact in this test an effect would have to exist beyond five years. As shown by the previous results an effect beyond five years is unlikely since in the overall sample the magnitude of underperformance decreases during the fifth year. Therefore this test is probably not the best representation of the effect of varying age differences.

Table 9 illustrates the results of combining all three of the independent variables

(amount, age, and rating). Again amount and age add no significant explanatory power while rating remains significantly negative.

A.4) *Issuance Volume and Debt Performance*

Table 10 reports the impact of debt issuance volume upon the return of the new debt. The first quartile represents the bonds issued during the four years having the highest number of debt issues during the year, while the fourth quartile represents the lowest-volume years. Casual inspection indicates that increased competition increases the underperformance of new issues. It appears that during high issuance volume periods new bonds provide lower long-term differential returns than bonds issued during lower volume periods. Panel A shows the two-year differential holding-period returns for the new versus existing debt. The t-statistics demonstrate that the differences are not significant except between the highest and lowest volume quartiles at the 5% level. Panel B provides the five-year returns which show a pattern similar to that of the two-year returns, again the difference between the highest and lowest quartiles is significant, though not as strong as that in panel A.

A.5) *Tax Treatment and Time of Issuance*

To investigate whether the differing results of Shiller and Modigliani (1979) andWarga (1992) are the results of different tax treatments, the sample of debt issues is separated into periods before and after 1987. The selection of the date is due to the tax law change of 1986 that eliminated the differential tax treatment of capital gains. Table

11 displays the results of separating the issues. Panel A shows the excess bond returns over different periods for issues made prior to 1987 and those issued in 1987 and later. There seems to be little difference between the two periods. The mean return differences for each period are almost equal between the two groups. Not only does this indicate that the capital gains tax effect is not a factor in the return differences, but that the documented underperformance of new bonds does not seem to be specific to a particular issue period.[22]

Panel B examines the effect of the bond rating for issues made in the different periods. The rating is not significant at conventional levels for either period, although it has a negative coefficient prior to 1987 and is positive afterward. However, the low t-statisitics indicate no significant difference between the two periods.

A.6) *Interest Rate Levels and New Debt Performance*

Abnormal bond returns do not seem to be affected by the level of interest rates in the market at the time of issuance. Table 12 illustrates the relative performance of new debt issues when separated by the level of interest rates during the year of issuance. Here the first quartile consists of issues made during the four years with the highest rates while the fourth quartile represents the lowest-rate years. The interest-rate level is defined as the average 10-year U.S. Treasury rate for the year of issuance. There seems to be no clear pattern between the quartiles at various rates in either panel A, which represents the

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[22] Although it is not reported here, tests were performed using different divisions according to issue dates, however none had any effect on the differential returns of the new and existing bonds.

two-year differential holding period return, or panel B which represents the five-year returns. The t-statistics for the difference between quartiles verifies that there is no significant difference between the quartiles.

A.7) *First-time vs.Repeat Issuers*

Table 13 indicates that debt issued by firms that have made previous issues does not suffer the same level of underperformance as that of firms who make their first issue or only appear once in the sample. Panel A represents the first debt issue made by a firm during the observation period. Selecting in this manner causes panel A to include all issuing firms. It should be noted that this technique may cause the results to be affected by including firms that have made debt issues prior to the observation period. The potential impact of including prior out-of-sample issuers in the single-issue category is expected to be minimal as most of the low-volume years described in section A.4 occur at the beginning of the observation period. Panel B thus includes only issues that are subsequent to a previous issue by the same firm during the observation period.

The bonds from single issuers and the first issues from multiple issuers shows a mean differential holding-period return of -2.7% while that of repeating firms shows just over a -1.1% differential return after two years. Those same returns are -6.1% for singles and -3.7% for multiples after five years. It thus appears that additional issues from the same firm are forced to offer higher returns than debt from first-time firms in the sample. The t-statistics for the difference between the two types of issues show that the relative performance between the two types is significantly different at the .01 level over the two

and three-year periods. This finding indicates that the bond market is less receptive to additional issues made by firms. The rationale for this conclusion is that the higher relative returns of repeating issuers could well be the result of depressed prices at issuance. This would cause higher early returns as both the coupon and capital gains yields would be higher given a lower initial price. While this does not seem to provide evidence to support the liquidity advantage of new debt, it reinforces the equity returns of single and multiple issuers reported later.

B) *Equity Returns*

The following discusses the equity performance of new debt issuers and reinforces that the issuance decision should be a significant factor to the firm's investors. The stock returns of the issuing firms versus non-issuing firms present a complicated story. In general it appears that new debt issuers underperform firms that do not issue new debt, but that cross-sectional determinants tend to cloud the average results.

B.1) *Overall Sample and Return Differences*

A simple examination of the differential returns under the three matching processes demonstrates the importance of the technique chosen. For firms matched only by size, matching firms were chosen by selecting the next largest non-issuing firm based on the number of shares outstanding and market price per share on the issuance day of the new debt. The resulting matches are larger than the issuing firms by an average of 0.6% with the largest difference being 15%. Returns for the 1250 trading days following

issuance were collected for both the issuer and its match. Matching in this manner resulted in 856 issues. Table 14 illustrates that although all of the annual mean holding period return differences are negative--implying underperformance by the issuer, only the five-year holding period return difference is significant. For individual years, only the fourth and fifth years are significant. Though the finding of insignificance is not totally unexpected, it is strange that the only significant findings would occur in the later periods.

The results are somewhat different when both industry and size-matched firms are used. In this process the match is selected as the next largest firm with the same two-digit SIC code as the issuer and results in the matching of 1879 firms. Table 15 shows that issuers outperform their non-issuing counterparts during the first year, and this difference is significant especially over the first six months. The holding period return differences are negative after the first year but are not significant. The return difference for the second year alone (although not shown) is significantly negative, while the third and fourth years show insignificant underperformance. However, as shown later, these particular results may be driven by large positive observations. Actually the majority of issuing firms underperform relative to their non-issuing counterparts under this matching procedure.

The final matching procedure utilizes both size and book-to-market value. Here the match is chosen such that the percentage difference between the market and book-to-market values of the two firms is minimized. This procedure resulted in 678 matches. The reduced firm number under this technique is due the unavailability of book values for

many of the issuing firms. Although it was anticipated that this procedure would remove some of the abnormal performance, it seems to have done the opposite. As seen in table 16 the holding period return difference for issuers and non-issuers is negative and significant for the entire observation period as well as for each individual year over the five-years after issuance. In addition, the magnitude of the return difference increases each year and becomes large very quickly, possibly reflecting the importance of the book-to-market ratio illustrated later.

The negative differences reported in tables 14 and 16 do not appear to be the result of outliers. For each annual period more than 50% of the holding period return differences are negative, regardless of the matching procedure. The lowest frequency of negative holding period return differences is for the first year using industry and size matching where only 54.72% of the return differences are negative. The greatest frequency of negative differences appears for the first year using size and book-to-market value matching where 69.44% of the return differences are negative. Table 17 displays the proportion of issuers underperforming for each year and each matching technique. Note that for each year and across each matching technique that the proportion of negative compound return differences is significantly greater than 50%. Again this indicates that the industry-matched results could be the effect of a few large observations.

B.2) *Debt Quality and Issuer Performance*

Equation 8 attempts to examine the effect of the new debt's quality on the issuer's

equity performance. For the size-matched sample the holding period return difference is used as the dependent variable while the issuer's market value, book-to-market ratio, and bond rating are included as independent variables. Table 18 indicates the impact of the debt rating on the relative performance of the issuing firm. Panel A shows the holding period return differences between issuer and its match for investment and speculative grades under different matching techniques. Note that when size is the only matching criterion there is a significant discrepancy between the two classifications. The investment grade shows a small but insignificant level of underperformance while the speculative grade shows much larger, statistically significant underperformance by the issuing firm. However when book-to-market value is added as a matching factor the discrepancy between the grades disappears. Here the underperformance, although larger than matching only by size, is virtually identical between the two grades. Panel B shows the regression results using the size-matched sample and includes size and book-to-market value as independent variables. Note that the coefficient for rating is insignificant while the coefficients for size and book-to-market are both significant. Since the firms are already matched by size, it appears that larger firms suffer greater underperformance than smaller firms. This result appears to contrast with the findings of Loughran and Ritter (1995) who find that smaller equity issuers fare worse than larger issuers. The significant coefficient for the book-to-market value of the issuer indicates that perhaps the effect of the credit quality of the debt may be reflected in the book-to-market ratio of the firm.

B.3) *Issue Size and Issuer Performance*

Table 19 displays the results of equation 9 which examines the impact of the size of the new debt issue on the performance of the issuing firm. In this test the natural log of issue size was used as the coefficient for the actual issue size is extremely small. Issue size is positive and significant at the 10% level, indicating that a larger issue size is greeted by less underperformance than a smaller issue. It should be noted however that prior research has noted a correlation between firm size and debt issue size, which is not surprising and may influence these results.

B.4) *Firm Leverage and Performance*

Equation 10 attempts to address the issue mentioned in the previous section by combining issue and firm size as a leverage variable. The variable "leverage" is determined by dividing the dollar amount of the debt issue by the equity value of the issuing firm. The measure thus represents a pseudo "debt-to-equity" ratio of just the new issue. Table 20 shows that the leverage variable takes a positive sign indicating that greater leverage improved the performance of the issuer, but it is not significant at normally acceptable levels. However, this variable does diminish the importance of firm size on return difference.

The regressions in tables 18, 19, and 20 are repeated using the size and book-to-market matched sample and shown in table 21. The results are similar to those using the sample matched only by size. Only issue size appears significant either when regressed by itself or with rating and leverage. It is significantly negative at the 1% level over the first

six months after issuance, at the 5% level after one year, and not significant at normal levels over the full five-year period. Rating is not significant in any of the models, reflecting again that its impact may be assumed by the book-to-market matching.

B.5) *Callability and Issuer Performance*

An additional test investigating the importance of callability is performed using the size and book-to-market matched sample. Here the analysis is performed on the differential holding-period return over various periods. Table 22 demonstrates that the callability of the issue appears significant at the 5% level in the differential performance for the first six months after issuance and at the 6% level over the first year, but is not significant over the entire five-year observation period. Callable takes a value of one if the issue is callable and zero if not. The positive coefficient suggests that issuers of callable bonds suffer less underperformance than issuers of non-callables.

B.6) *Issue Volume and Issuer Performance*

The effects of competition with other debt issues differs with different matching procedures. For example, when matches are made by size only, there seems to be no difference whether the issue is made during a high or low volume period. The performance during higher volume periods is not significantly different than during low volume periods. As illustrated in table 23, only the third quartile (the second-lowest quartile of volume) is significantly different from zero, and it does show significantly greater underperformance than the first and second quartiles.

When matches are selected by size and book-to-market value the results are somewhat different. Here the two largest quartiles of issuance years show significant underperformance of issuers, as does the quartile of lowest volume. The second highest quartile of volume shows significantly worse underperformance than any other quartile while the third quartile shows significantly higher performance than either the first or second quartiles. However, in any case there seems to be no clear pattern that competition among issues affects the relative performance of the issuer.

B.7) *Multiple Issues*

It appears that underperformance is affected by a firm's frequency in the debt market. Tables 24 and 24a show the results of comparing firms that make only one debt issue with those that have multiple issues during the observation period, 1973 to 1990. The findings indicate that firms that have only one issue during the period suffer less underperformance than those that return to the debt market. Table 24 shows the results using the size-matched sample. Note that the mean return differences seem to show slightly greater underperformance for multiple issuers. However neither the individual abnormal returns nor the difference between the two groups is significant. However in table 24a the size and book-to-market matched sample dramatically illustrates the difference between single and multiple issuers. While both issuer types show significant underperformance, the multiple issuers show even stronger underperformance with the difference between single and multiple issuers being significant over the two and three-year period.

This finding is reinforced by regressing the return difference for the size and book-to-market sample against a dummy variable for multiple issuers shown in table 25. The variable mult takes the value of one if the issue is not the first by a firm during the observation period, and zero if it is the firm's first issue during the period. This variable has a negative coefficient for all periods, but is only significant for the two-year period which agrees with the results in table 24a. It should be noted that this measure may be biased by the fact that it doesn't consider issues prior to or after the observation period nor issues that were deleted from the sample, but the significantly negative coefficient for mult during the first two years shown in table 25 reinforces the argument that firms that issue more often may be viewed more negatively than other issuers by the market.

B.8) *Performance and Interest Rates*

Table 26 illustrates the impact of interest rate levels on the equity performance of new debt issuers. Here the issuers are divided into quartiles by the average 10-year U.S. Treasury Bond yield for the year prior to issuance. Thus the first quartile represents the four issue years with the highest interest rates and the fourth quartile represents the lowest interest rate years. It was expected that issuers during high rate periods would suffer greater underperformance than those during low rate periods due to the higher interest payments required of the issuing firm. However, this does not appear to be the case in this test. Panel A of table 26 illustrates the results using the size-matched sample. There is no distinct pattern for the different quartiles and in fact the mean compound return differences are not significantly different from each other. Panel B shows the same

information for the size and book-to-market sample. Here it appears that the quartiles with lower rates have issuers suffering greater underperformance. The t-statistics for differences between quartiles are greater than those for the size-matched sample, although only the third quartile shows significance. Its issuers have significantly worse performance than those in the highest-rate quartile and significantly better performance than those in the lowest-rate quartile.

B.9) *Tax Rate and Issuer Performance*

To analyze the impact of taxes on the performance of debt issuers, the issuing firms effective tax rate is regressed against the holding period return difference. The tax rate is determined as the total income taxes paid by the firm divided by its pre-tax income for the year prior to the debt issue. As seen in table 27 the coefficient is negative, but at best only marginally significant for the one and five-year holding period return differences. The negative coefficient is consistent for all periods and indicates greater underperformance for issuers with higher rates. Although it is hypothesized that the higher rate increases the value of the debt tax shield, the negative coefficient is not completely surprising since equity returns are being analyzed. It is arguable that higher rates represent less cash to shareholders and may be unrelated to the issuance of debt.

B.10) *Performance and Earning Changes*

Hansen and Crutchley (1990) point out that firms often issue debt to offset earnings declines. Table 28 illustrates that the larger the earnings decline prior to

issuance the more the firm's stock suffers. The variable Earndiff represents the percentage change in net income for the year prior to issuance. It is computed by taking the last years income, subtracting the prior years income and dividing the difference by the older income. The positive coefficient in table 28 indicates that increases (or smaller decreases) in earnings prior to the issue result in less underperformance for the issuer. In other words, firms that have large earning declines prior to their debt issue suffer greater underperformance than other issuers.

B.11) *Performance and Free Cash Flow*

From this study it would appear that Jensen's free cash flow argument is not completely valid for debt issuers. Table 29 shows a positive coefficient for Freecash indicating that the higher the level of free cash flow in the firm, the better the relative performance of the debt issuer. The variable Freecash is determined by subtracting the preferred and common dividends from the firm's net cash flow for the year prior to issuance. The coefficient is significant at the .01 percent level for the first six months after issuance and is again significant at the 5% level after five years.

C) *The Effects of Company Growth*

C.1) *Overall Results*

The tests of the effects of growth on post-issue returns provide a test of the hypothesis that high growth may be overvalued, or falsely perceived to continue, by the market, as proposed by Stein (1989) and amplified by Loughran and Ritter (1997). Table

30 displays the equity returns for both issuers and non-issuing matching firms separated by sales growth. The sample sizes for these tests is somwhat smaller than those used in previous analyses. The reason is that many of the issuing firms, and matching firms do not have complete Compustat information necessary to compute the operating measures used in the following tests. Note that while the overall returns for issuers is lower than that of non-issuers, the underperformance is not consistent across all growth rates. Debt issuers appear to *outperform* non-issuers when each have low (or negative) growth in sales for the year of issuance. The one-year returns show that issuers have higher returns for each growth category up to 20% sales growth. The five-year buy and hold returns are higher for issuers whose sales decline in the year of issuance versus firms with similar growth but do not issue debt. At higher growth rates, the non-issuers begin to dominate, quite strongly for the five-year period.

One possible interpretation is that the decision to issue debt in the face of low sales growth is a sign of confidence by management that the low sales will not continue. A related interpretation is that the low growth results in the firm's equity being undervalued, thus making debt financing more attractive.

The discrepancy of returns across categories is not evident when capital expenditure is used as the separating measure. There seems to be no consistent difference in the relative performance across categories as seen in table 31.

An interesting finding is that while Loughran and Ritter (1997) show that firms in the highest growth category represent a large group of equity issuers (16.2% for sales growth and 24.1% for capital expenditure growth) the highest growth category represents

a small proportion of debt issuers (2.36% for sales growth and 2.38% for capital expenditure growth). Additionally the proportions of debt issuers are smaller than the proportion of non-issuers for each of the highest growth categories--the opposite of the findings for equity issuers. This again seems to reinforce the idea that the high growth leads to an overvaluation of a firm's equity.

When separating the debt returns by the same growth measures little is obtained. When returns are segmented by sales growth, as shown in table 32, no clear pattern emerges. In fact the returns of new debt exceeds that of existing bonds overall. True comparison here is difficult as many of the bonds do not have full information on Compustat necessary to compute the growth rates. However, it is interesting to note that for returns separated by capital expenditure growth, as seen in table 33, new debt consistently provides lower returns for each category above the very lowest rate of growth.

C.2) *Regression Results*

Table 34 shows the results of regressing differential equity returns against the two growth measures. Panel A illustrates the results for sales growth and panel B for capital expenditures growth. The only significance is found in the one-year return results for sales growth. The positive coefficient for SGROWTH indicates that higher sales growth in the year of issuance leads to higher first-year post-issue relative performance. This finding is in direct contrast to the findings of Loughran and Ritter (1997) who show negative (and mostly significant) coefficients for both growth measures, again indicating

that the equity issuance choice reflects possible overvaluation of the firm's equity by the market. The sign for CAPEXPG is positive for the one-year differential returns as well, but it is statistically insignificant. Both variables have negative, but insignificant coefficients for the five-year differential holding period returns.

Table 35 illustrates the results of the growth regressions using debt returns. Panel A again uses sales growth as the independent variable. The coefficient for sales growth is insignificant for both return measurement periods. However, panel B shows a positive coefficient for capital expenditure growth for the one-year excess return. The coefficient is significant only at the 10% level; markedly different than the findings of Loughran and Ritter (1997). Overall the results on the association between prior firm growth and the post-issue debt and equity returns of debt issuers reveal that no statistically significant link exists for debt issuers.

VI. *CONCLUSIONS*

This examination of the performance of debt issuers demonstrates that neither newly issued debt nor the stock of the issuer proves to be a wise investment. In the case of the debt, newly issued bonds provide lower returns than seasoned issues of similar characteristics. The degree of lower returns is greatly affected by the credit quality of the new debt with lower-rated debt showing greater underperformance. It also appears that this underperformance lasts for long periods of time and cannot be completely explained by the difference in liquidity between the new and old bonds. At least the liquidity measures incorporated here have no impact on the degree of underperformance. The study also shows that the conflicting results reported by Shiller and Modigliani (1979) and Warga (1992) do not appear to be completely explained by the different time periods studied. The results indicate that in terms of new versus existing debt, that the level of underperformance is comparable before and after 1987. There does however appear to be some difference in the effect of debt rating on the relative performance between the two periods.

Like the equity of repeat debt issuers, new bonds issued by firms that are returning to the debt market are treated more harshly by the market. The underperformance of the repeating debt tends to be less than that of first time issuers. Thus the market forces the new bonds of repeat issuers to pay returns closer to that of existing bonds. In contrast, first-time issues (as they appear in this study) are able to offer returns significantly less relative to exisiting debt. This finding seems to negate the liquidity argument since repeated debt could arguably be exchanged with other debt from the firm rather easily.

Either the bond market doesn't view such issues as interchangeable, or liquidity is not a major factor in the bond return.

There doesn't seem to be any strong significant impact from issuance volume although the underperformance appears greater for issues made during periods of greater volume. It is possible that the higher return for existing debt during the high volume period is the result of their need to compete with the greater number of new issues. Whether this result is truly due to liquidity differences is still unclear.

Equity for debt issuing firms under performs relative to the stock of non-issuing firms. This level of underperformance is much smaller in magnitude than that found for equity issuers, but is comparable to that reported by Spiess and Affleck-Graves (1996), and is accentuated when matching firms are selected on the basis of book-to-market values. In this latter matching procedure the magnitude of underperformance does appear to rival that of equity issuers. Perhaps most surprising is the duration of this underperformance, especially when matching by book-to-market value, the return differentials are strongly significant even after five years. Also surprising is the fact that issuers tend to outperform non-issuing firms in the same industry, although this result may well be driven by large outliers.

Similar to the underperformance observed in the new debt issue, credit quality appears to be a factor, with speculative grade issuers again showing greater underperformance. However, the significance of credit quality disappears with the book-to-market matched sample. Thus indicating that the book-to-market ratio may contribute some of the same information as credit quality.

In addition, it appears that issuers of smaller, callable debt issues, and those firms that are less frequent participants in the debt market perform better than their larger, more active counterparts. This coincides with the finding that larger firms tend to suffer greater underperformance, but doesn't seem to fit well with the asymmetric information argument. Smaller, less active firms would seem to have greater amounts of information released in a new issue. Since smaller equity-issuing firms do perform worse it is possible that the information released by a debt issuance is more positive news.

The Hansen and Crutchley (1990) argument that firms issue to finance decreases in earnings is apparently recognized by the market. Firms with earnings declines prior to issuance suffer more than other firms, while greater cash flow prior to issuance leads to less underperformance for the issuer.

The results of this study and those of equity issuers seem to indicate that firms should weigh carefully the decision to raise funds externally. The long-run performance of issuing firms demonstrates that the market does not view these choices favorably. It seems to indicate as well that the market may view some issuances as an attempt to shore up weak cash flows. This is evidenced by the fact that firms with higher pre-issuance cash flows tend to perform better relative to their matches.

However, the fact that this underperformance, like that of equity issuers, tends to persist for long periods of time does not seem to speak well of market efficiency. There must be some fundamental change in the firm to warrant this type of performance. The fact that the newly issued debt as well as the equity of the issuer both suffer underperformance seems to indicate that asymmetric information and its reduction by

new issuance may be part of the explanation. It seems that for returns of seemingly equal securities to be that different for such a long period of time, something about the issuer must change. If the issuance causes a review of the firm that releases information, or at least reduces the uncertainty regarding the existence of asymmetric information, then the lower returns would be justified. This argument is further supported by the result that more frequent issuers show greater underperformance as well as do firms making larger issues. However, this may be contradicted by the fact that larger firms seem to suffer significantly greater underperformance in every case. The asymmetric information argument would seem to indicate that smaller firms would show lower returns due to the greater degree of asymmetric information expected in smaller firms. Especially since, in the studies of equity issuance, much of the underperformance was found in smaller firms.

A further difference between the underperformance of debt issuers compared to that of equity issers is evident in the analysis of growth measures of the issuer prior to issuance. While growth seems to be a factor in the future return performance of new equity issues, it doesn't seem to be as important for debt issuers. Additionally, where it is important it tends to show the opposite effect than that for equity issuers.

VII. *EXTENSIONS*

This study is a comprehensive examination of the long-term impact of debt issuance on the issuing firm. Specifically, the performance of the equity after issuance as well as the relative performance of the new debt issue is examined. There are, however, several areas not addressed that I plan to pursue in future research. This section addresses some of the possible extensions to this study.

While this study investigates the relative performance of a new debt issue, the performance of the firms existing debt subsequent to the new issue is not investigated. It certainly could be interesting to examine whether there is a consistent impact on a firm's other debt. In general it would seem that the firm's existing debt would not respond favorably to a new issue given the results of this study. Certainly the new debt increases the total obligation of the firm which could diminish the safety of the existing debt, however, if the new debt is subordinate to the existing debt it could, theoretically, increase the value of the existing debt. The rationale is that the subordinated debt will provide cash to the firm that could increase the assets of the firm and possibly the liquidation value of the firm. This does assume that absolute priority holds in any potential bankruptcy proceedings (Warner (1977)).

This study analyzes only non-financial firms and doesn't consider utilities. As these two industries are tremendous issuers of debt it seems an obvious extension to analyze the impact of debt issued by these types of firms. One might expect that the frequency of their debt issues might tend to make new issues a "non-event" and thus they would not tend to show the underperformance associated with industrial firms. However,

given that this study shows poorer performance for frequent issuers in other industries, an examination of utilities and financial firms could prove interesting.

Another obvious extension of this study is the inclusion of convertibles which are not considered here. Convertibles are often seen as hybrid securities that have characteristics of both debt and equity. Consequently in most empirical studies, convertibles tend to have impacts between that of debt issues and equity issues in both announcement effects (Dann and Mikkelson (1983) and Masulis and Korwar (1980)) and long-term effects (Spiess and Affleck-Graves (1996)). Consequently the expectation is that the long-term effect on the firm as well as the performance of the new convertible issue would lie between the long-term performance of equity and straight debt issues.

Finally an examination of the post-issue operating performance is a natural extension of this work. Loughran and Ritter (1997) and McLaughlin, Safieddine, and Vasudevan (1996) examine the operating performance of firms making seasoned equity offers. Each study finds significantly poorer performance after the equity issue is made.

Loughran and Ritter (1997) find that while issuers outperform non-issuers prior to the equity issue, they underperform relative to non-issuers afterward. This coincides with their findings of a pre-issue stock price run-up and subsequent equity underperformance after issuance (Loughran and Ritter (1995)). In addition they demonstrate that the poor operating performance exists for all size groups of issuers, but is more pronounced for smaller firms.

McLaughlin, Safieddine, and Vasudevan (1996) also demonstrate that issuers perform better prior to issuance and markedly worse afterward. This performance decline

exists both in the firms raw performance and its industry-adjusted performance. They also show that firms with higher free cash flow suffer larger decreases in operating performance.

Certainly the findings in these works, given the findings in this study, suggest that the operating performance of debt issuers is a topic worthy of investigation.

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Appendix A

Descriptive Statistics	Mean	Minimum	Maximum
Mean Issue Size	$145,058,490	$20,000000	$700,000,000
Mean Issuer Size	$3,403,406,610	$25,099,500	$57,978,474,130
Mean Match Size	$3,473,551,360	$25,166,750	$59,384,574,000
Average Relative Size	1.00592	1.0000162	1.1506985

Issues by Year

Year	Number
1972**	2
1973	31
1974	46
1975	44
1976	56
1977	70
1978	61
1979	58
1980	69
1981	68
1982	154
1983	120
1984	151
1985	207
1986	186
1987	206
1988	163
1989	173
1990	116
Total	1919

* Relative size is defined as the market equity value of the matching firm divided by the market equity value of the issuing firm at the time of issuance.

**The two issues from 1972 are included since they have a first-month return available on the Warga Bond Database, which tracks issues from 1973.

Table 1

Excess Bond Returns: All Issues

Excess returns are computed as the monthly return of the newly issued bond less that of its match. These excess returns are then compounded as described in equation 2[23] over the period indicated.

Period	N	Mean	t
1 Month	1760	-0.0007	-0.748
2 Months	1760	-0.0022	-1.652
3 Months	1760	-0.0020	-1.332
6 Months	1760	-0.0067**	-3.426
9 Months	1760	-0.0116***	-3.813
1 Year	1760	-0.0169***	-4.217
2 Years	1760	-0.0227***	-6.516
3 Years	846	-0.0405***	-6.812
4 Years	681	-0.0566***	-5.478
5 Years	521	-0.0506***	-4.552

*, **, and *** represent significance at the .05, .01, and .001 levels repectively

[23]Equation 2 is represented by the following:

$$R_{D,i} = [\prod_{t=1}^{T} (1 + R_{D,i,t})] - 1$$

with $R_{D,i,t}$ being the monthly return difference computed by subtracting the return of the matching bond from that of the newly issued bond.

Table 2

Proportion of Negative Differential Debt Returns

The following table represents the proportion of new bonds that provide lower returns for the period. The monthly periods are holding-period returns up to the period indicated, while the annual periods are the differential returns for the year indicated.

Period	Proportion Negative	z-value for p>.5
3 Months	54.00%	2.021*
6 Months	59.78%	4.945***
9 Months	60.84%	5.490***
1st Year	61.31%	5.727***
2nd Year	54.98%	2.464**
3rd Year	58.28%	2.935**
4th Year	45.16%	-1.524
5th Year	41.99%	-2.156*

The z-statistics show the significance of the test that the proportion of negative returns exceeds 50%. A positive value indicates a proportion greater than 50% while a negative value shows a proportion below 50%. The significance of each period is indicated as follows: * represents significance at the .05 level, ** indicates significance at the .01 level, and *** shows significance at the .001 level.

Table 3

Excess Bond Returns: Investment vs. Speculative Grade Issues

Excess returns are computed as the monthly return of the newly issued bond less that of its match. These excess returns are then compounded over the period indicated.

	Investment Grade			Speculative Grade		
Period	**N**	**Mean**	**t**	**N**	**Mean**	**t**
1 Month	1322	0.0001	0.139	659	-0.0020	-1.018
2 Months	1322	-0.0013	-1.030	659	-0.0033	-1.302
3 Months	1322	-0.0021	-1.513	659	-0.0012	-0.403
6 Months	1322	-0.0059***	-3.719	659	-0.0060	-1.458
9 Months	1322	-0.0066***	-3.638	659	-0.0176**	-2.436
1 Year	1322	-0.0095***	-4.811	659	-0.0262**	-2.632
2 Years	1322	-0.0124***	-4.207	659	-0.0357***	-4.989
3 Years	654	-0.0241***	-4.917	192	-0.0965***	-4.893
4 Years	517	-0.0309***	-5.242	164	-0.1377***	-3.616
5 Years	387	-0.0192**	-2.660	134	-0.1412***	-3.833

The significance of each period is indicated as follows: * represents significance at the .05 level, ** indicates significance at the .01 level, and *** shows significance at the .001 level.

Table 4

Excess Bond Returns: AAA and AA Rated vs. A and BBB Rated

Excess returns are computed as the monthly return of the newly issued bond less that of its match. These excess returns are then compounded over the period indicated.

		AA and Above			A and BBB	
Period	**N**	**Mean**	**t**	**N**	**Mean**	**t**
1 Month	518	0.0011	1.217	732	-0.0005	-0.486
2 Months	518	-0.0002	-0.206	732	-0.0017	-0.802
3 Months	518	-0.0003	-0.211	732	-0.0027	-1.229
6 Months	518	-0.0027	-1.457	732	-0.0072**	-2.887
9 Months	518	-0.0027	-1.286	732	-0.0083**	-2.922
1 Year	518	-0.0033	-1.473	732	-0.0117***	-3.937
2 Years	518	-0.0057*	-1.881	732	-0.0173***	-4.062
3 Years	214	-0.0161**	-3.000	408	-0.0270***	-3.914
4 Years	165	-0.0164**	-2.875	326	-0.0324***	-3.983
5 Years	121	-0.0153*	-1.899	247	-0.0217*	-2.077

The significance of each period is indicated as follows: * represents significance at the .05 level, ** indicates significance at the .01 level, and *** shows significance at the .001 level.

Table 5

Excess Bond Returns: Rated Below BB

Excess returns are computed as the monthly return of the newly issued bond less that of its match. These excess returns are then compounded over the period indicated.

Period	N	Mean	t
1 Month	199	0.0005	0.236
2 Months	199	0.0016	0.328
3 Months	199	0.0049	0.769
6 Months	199	0.0002	0.023
9 Months	199	-0.0340	-1.528
1 Year	199	-0.0581*	-1.839
2 Years	199	-0.0643**	-3.485
3 Years	76	-0.0986**	-3.049
4 Years	67	-0.2212**	-2.731
5 Years	51	-0.2459**	-2.985

The significance of each period is indicated as follows: * represents significance at the .05 level, ** indicates significance at the .01 level, and *** shows significance at the .001 level.

Table 6

Regression Results: Excess Bond Returns vs. Bond Rating

Model: $Excess\ Return_i = \alpha + \beta Rating_i + e_i$

Excess returns are computed as the monthly return of the newly issued bond less that of its match. These excess returns are then compounded over the period indicated.

Variable	Intercept	t	Estimate of β	t	p-val	Adj r^2
1 Month	0.003690	38.202	-0.000402	-31.117	0.0001	0.0032
2 Months	0.002435	0.693	-0.000508	-1.730	0.0839	0.0018
3 Months	0.002476	8.389	-0.000370	-10.721	0.0001	0.0002
6 Months	-0.000866	-0.175	-0.000482	-1.163	0.2451	0.0003
9 Months	0.001825	0.317	-0.000194	-2.479	0.0133	0.0046
1 Year	0.001437	0.248	-0.001608	-3.320	0.0009	0.0089
2 Years	0.008367	8.300	-0.003610	-28.974	0.0001	0.0169
3 Years	0.005303	2.528	-0.004853	-17.619	0.0001	0.0262
4 Years	0.021587	5.646	-0.008116	-15.239	0.0001	0.0526
5 Years	0.035106	5.784	-0.009314	-10.881	0.0001	0.0503

Bond rating is a numerical value representing the S&P rating of the new issue. Rating takes the value '1' for AAA+ bonds, '2' for AAA, '3' for AAA-, etc. to 23 for those in default.

Table 7

Regression Results: Excess Bond Returns vs. Size of Issue

Model: $Excess\ Return_i = \alpha + \beta\, ln(Issue\ Size_i) + e_i$

Excess returns are computed as the monthly return of the newly issued bond less that of its match. These excess returns are then compounded over the period indicated.

Variable	Intercept	t	Estimate of β	t	p-val	Adj. r^2
1 Month	-0.008409	-0.551	0.000708	0.495	0.6207	-0.0007
2 Months	-0.030641	-1.199	0.002445	1.101	0.2709	0.0002
3 Months	-0.049314	-1.710	0.004194	1.674	0.0945	0.0016
6 Months	-0.053203	-1.477	0.004146	1.325	0.1855	0.0007
9 Months	-0.085183	-2.032	0.006554	1.799	0.0723	0.0020
1 Year	-0.044754	-1.058	0.002640	0.718	0.4727	-0.0004
2 Years	-0.026994	-0.473	-0.000026	-0.005	0.9959	-0.0009
3 Years	0.059394	0.562	-0.008788	-0.961	0.3369	-0.0001
4 Years	0.102281	0.690	-0.014016	-1.090	0.2761	0.0004
5 Years	0.210825	1.017	-0.023651	-1.310	0.1910	0.0021

Table 8

Regression Results: Excess Bond Returns vs. Age of Match

Model: $Excess\ Return_i = \alpha + \beta Age_i + e_i$

Excess returns are computed as the monthly return of the newly issued bond less that of its match. These excess returns are then compounded over the period indicated.

Period	Intercept	t	Estimate of β	t	p-val	Adj. r^2
1 Month	0.00245	0.615	-.0000008	-1.603	0.1096	0.0030
2 Months	-0.02518	-0.400	-0.000001	-1.234	0.2179	0.0010
3 Months	0.00223	0.305	-0.000001	-1.479	0.1397	0.0025
6 Months	-0.01001	-0.959	-0.000001	-1.024	0.3063	0.0001
9 Months	-0.02880	-2.236	.0000002	0.136	0.8919	-0.0029
1 Year	-0.01792	-1.581	-.0000008	-0.514	0.6079	-0.0026
2 Years	-0.07895	-3.158	0.000003	0.932	0.3528	-0.0008
3 Years	-0.09161	-2.522	0.000004	0.719	0.4740	-0.0049
4 Years	-0.17877	-2.075	0.000003	0.297	0.7683	-0.0276
5 Years	-0.12475	-1.844	0.000002	0.195	0.8479	-0.0533

Age represents the difference, in days, between the issue date of the new bond and the issue date of its matching bond.

Table 9

Regression Results: Combined Regression

Model: Excess Return$_i$ = α + β_1 Issue Size$_i$ + β_2Age$_i$ + β_3 Rating$_i$ + e_i

Excess returns are computed as the monthly return of the newly issued bond less that of its match. These excess returns are then compounded over the period indicated.

Period	Intercept	β_1	p-val	β_2	p-val	β_3	p-val	Adj r^2
1 Month	0.00795	0.00485	0.8797	-.0000008	0.1383	-0.00112	.0094	0.0131
	(0.208)	(0.151)		(-1.484)		(-2.608)		
2 Months	-0.04226	0.004502	0.3706	-.0000096	.2360	-0.00122	0.0738	0.0069
	(-0.704)	(0.896)		(-1.186)		(-1.792)		
3 Months	-0.10308	0.009721	0.0932	-.0000014	0.1455	-0.00067	0.850	0.007
	(-1.492)	(1.682)		(-1.458)		(-0.850)		
6 Months	-0.16917	0.014615	0.0812	-.0000014	.3272	-0.00096	0.3873	0.0068
	(-1.689)	(1.748)		(-0.981)		(-0.866)		
9 Months	-0.05828	0.005869	0.5664	.00000043	0.8074	-0.00387	0.0047	0.0202
	(-0.474)	(0.574)		(0.244)		(-2.849)		
1 Year	-0.01305	0.000749	0.9339	-.0000007	0.6291	-0.00135	0.2704	-0.0048
	(-0.120)	(0.083)		(-0.484)		(-1.104)		
2 Years	0.10084	-0.00662	0.7188	.00000429	0.2178	-0.01063	0.0001	0.0958
	(0.455)	(-0.361)		(1.237)		(-4.242)		
3 Years	-0.18798	0.01593	0.6076	.00000417	0.4287	-0.00918	0.0171	0.0439
	(-0.504)	(0.515)		(0.795)		(-2.426)		
4 Years	0.44268	-0.03076	0.6364	.00000389	0.7126	-0.02320	0.0042	0.1638
	(0.568)	(-0.477)		(0.372)		(-3.091)		
5 Years	-0.47474	0.046441	0.4099	.00000136	0.8516	-0.01949	0.0238	0.1570
	(-0.735)	(0.846)		(0.190)		(-2.496)		

t-statistics are in parantheses

Table 10

Relative Bond Performance by Issuance Volume

In each sample the first quartile represents the differential performance of firms making debt issues during one of the four years of highest volume of debt issues. The following quartiles represent periods of declining issue volume. The mean represents the holding-period return for the difference between the new bond and its match.

Panel A--Two-Year Return

Quartile	N	Mean	t
1st	393	-0.03120**	-3.106
2nd	658	-0.01879**	-3.524
3rd	494	-0.01896***	-4.297
4th	257	-0.00589	-1.056

t-tests for differences between quartile means

Quartiles	t-stat	Quartiles	t-stat
1-2	-1.195	2-3	0.024
1-3	-1.196	2-4	-1.399
1-4	-2.036*	3-4	-1.785*

Panel B--Five-Year Return

Quartile	N	Mean	t
1st	135	-0.07752**	-2.504
2nd	135	-0.05233**	-2.940
3rd	88	-0.05769 *	-2.247
4th	87	-0.00753	-0.400

t-tests for differences between quartile means

Quartiles	t-stat	Quartiles	t-stat
1-2	-0.706	2-3	0.177
1-3	-0.455	2-4	-1.669
1-4	-1.813*	3-4	-1.572

The significance of each period is indicated as follows: * represents significance at the .05 level, ** indicates significance at the .01 level, and *** shows significance at the .001 level.

Table 11

Issues Separated by Issue Date

Panel A

Excess Bond Returns

	Issues Prior to 1987			*Issues 1987 and later*		
Period	**N**	**Mean**	**t**	**N**	**Mean**	**t**
6 Months	1323	-0.00430*	-1.938	658	-0.00915**	-3.435
9 Months	1323	-0.00986**	-2.601	658	-0.01113***	-3.961
1 Year	1323	-0.01576**	-3.093	658	-0.01353***	-4.245
2 Years	1323	-0.02081***	-5.475	658	-0.01879***	-3.523
3 Years	558	-0.03989***	-5.482	288	-0.04180***	-4.037
4 Years	469	-0.05363***	-3.987	212	-0.06318***	-4.286
5 Years	386	-0.04998***	-3.659	135	-0.05233**	-2.940

Panel B

Regression Results of Debt Rating--Using One-Year Differential Returns

Model: $Excess\ Return_i = \alpha + \beta Rating_i + e_i$

	Issues Prior to 1987 (N = 1323)		*Issues 1987 and later* (N = 658)	
Variable	**Estimate**	**p-value**	**Estimate**	**p-value**
Intercept	-0.01397 (-2.121)	0.0341	-0.01599 (-3.932)	0.0001
Rating	-0.00012 (-0.428)	0.6685	0.00014 (0.972)	0.3312

*, **, *** represent significance at the .05, .01, and .001 levels respectively

Table 12

New Debt Performance Sorted by Interest-Rate Levels

The first quartile represents the issuing years with the highest interest-rate levels while the fourth includes years with the lowest rate levels.

Panel A--Two-Year Differential Returns

Quartile	N	Mean	t
1st	549	-0.01472**	-2.990
2nd	579	-0.03078***	-4.104
3rd	337	-0.01211*	-1.814
4th	337	-0.01639**	-2.964

t-tests for differences between quartile means

Quartiles	t-stat	Quartiles	t-stat
1-2	1.770*	2-3	-1.687
1-3	-0.320	2-4	-1.345
1-4	0.263	3-4	0.494

Panel B--Five-Year Differential Returns

Quartile	N	Mean	t
1st	104	-0.05601	-2.260*
2nd	124	-0.08984	-2.676**
3rd	86	-0.02006	-1.023
4th	131	-0.03489	-2.235*

t-tests for differences between quartile means

Quartiles	t-stat	Quartiles	t-stat
1-2	0.784	2-3	-1.604
1-3	-1.104	2-4	-1.510
1-4	-0.946	3-4	0.594

The significance of each period is indicated as follows: * represents significance at the .05 level, ** indicates significance at the .01 level, and *** shows significance at the .001 level.

Table 13

First-time versus Repeat Issuers

The variable studied is determined by subtracting the monthly return of the matching bond from that of the newly issued bond and compounding the differences over the period indicated. t-Diff represents the t-statistic for the difference in mean values for single and multiple isuers for the particular observation period. Panel a includes the first issue of a firm during the observation period from 1974 to 1990. Multiple issue firms include subsequent issues during the period.

a) First-time and Single-Issue Firms

Period	N	Mean	t
6 Months	1117	-0.00630*	-2.332
9 Months	1117	-0.01343**	-3.014
1 Year	1117	-0.01953**	-3.270
2 Years	1117	-0.02701***	-6.036
3 Years	410	-0.05818***	-5.764
4 Years	349	-0.06755***	-4.702
5 Years	288	-0.06134**	-3.436

b) Multiple-Issue Firms

Period	N	Mean	t	t-Diff
6 Months	864	-0.00542**	-2.898	-0.252
9 Months	864	-0.00621**	-2.765	-1.329
1 Year	864	-0.00919**	-3.447	-1.438
2 Years	864	-0.01125**	-2.751	-2.530**
3 Years	436	-0.02395***	-3.692	-2.888**
4 Years	332	-0.04509**	-3.033	-1.087
5 Years	233	-0.03730**	-3.267	-1.076

The significance of each period is indicated as follows: * represents significance at the .05 level, ** indicates significance at the .01 level, and *** shows significance at the .001 level.

Table 14

Issuer Performance---Size-Matched

'Compdiff is determined by subtracting the daily equityreturn of the matching firm from that of the issuer and compounding the daily differences over the period indicated.

Compdiff	N	Mean	t
1 Month	856	-0.0021	-0.512
2 Months	851	0.0015	0.248
3 Months	847	-0.0030	-0.438
6 Months	835	0.0048	0.474
9 Months	822	0.0077	0.624
1 Year	809	-0.0056	-0.387
2 Years	779	-0.0247	-1.258
3 Years	755	-0.0098	-0.321
4 Years	741	-0.0551	-1.837
5 Years	725	-0.0699*	-2.086

The significance of each period is indicated as follows: * represents significance at the .05 level, ** indicates significance at the .01 level, and *** shows significance at the .001 level.

Table 15

Issuer Performance---Industry-Matched

Compdiff is determined by subtracting the daily equityreturn of the matching firm from that of the issuer and compounding the daily differences over the period indicated.

Compdiff	N	Mean	t
1 Month	1883	0.0057*	2.295
2 Months	1876	0.0085**	2.416
3 Months	1866	0.0103**	2.461
6 Months	1813	0.0189**	3.000
9 Months	1765	0.0275***	3.675
1 Year	1736	0.0159*	1.846
2 Years	1676	-0.0029	-0.230
3 Years	1633	-0.0151	-1.013
4 Years	1587	-0.0159	-0.890
5 Years	1540	-0.0158	-0.717

The significance of each period is indicated as follows: * represents significance at the .05 level, ** indicates significance at the .01 level, and *** shows significance at the .001 level.

Table 16

Issuer Performance---Size, and Book/Mkt-Matched

Compdiff is determined by subtracting the daily equity return of the matching firm from that of the issuer and compounding the daily differences over the period indicated.

Compdiff	N	Mean	t
1 Month	678	-0.01422	-2.372**
2 Months	676	-0.02863	-3.291**
3 Months	673	-0.04363	-4.259***
6 Months	665	-0.07522	-5.104***
9 Months	652	-0.15010	-6.081***
1 Year	648	-0.15079	-8.345***
2 Years	619	-0.22340	-8.488***
3 Years	594	-0.28086	-8.990***
4 Years	585	-0.35617	-11.16***
5 Years	572	-0.35441	-6.663***

Table 17

Proportion of Issuers Underperforming

Year	Size-Match		Industry-Match		Bk/Mkt Match	
1	59.21%	(5.239)***	54.72%	(3.936)***	69.44%	(9.899)***
2	59.53	(5.294)***	58.87	(7.356)***	66.94	(8.434)***
3	58.16	(4.407)***	56.88	(5.539)***	65.98	(7.688)***
4	61.05	(5.778)***	59.15	(7.093)***	67.58	(8.217)***
5	61.40	(5.650)***	55.88	(4.405)***	65.70	(6.909)***

z-statistics in parentheses. *,**, and *** represent significance at the .05,.01, and .001 levels respectively.

Table 18

Panel A:

Investment vs. Speculative Grade

Holding period Differential EquityReturns

Size-Matched	Mean	N	t
Investment Grade	-0.028197	537	-0.7044
Speculative Grade	-0.181936**	175	-2.9327

Size&Bk-Mkt Match	Mean	N	t
Investment Grade	-0.35466***	472	-5.8117
Speculative Grade	-0.35372***	96	-3.5103

Panel B:

Results of Equation 8

Model: $Compdiff = \alpha + \beta_1 ln(mktval) + \beta_2 ln(bk\text{-}mkt) + \beta_3 rating + e_i$

Compdiff represents the five-year holding-period differential equity return. Rating is a numerical value that takes higher values as the S&P bond rating of the issue becomes lower. Matching bonds are selected by size.

Variable	Estimate	Std. Error	p-value
Intercept	-0.146900	0.564402	0.7948
ln(Mkt Val)	-0.110466***	0.036678	0.0027
ln(Bk to Mkt)	-0.130819***	0.023153	0.0001
Rating	-0.000891	0.014170	0.9499

*,**, and *** represent significance at the .05, .01, and .001 levels respectively.

Table 19

Results of Equation 9

Model: $Compdiff = \alpha + \beta_1 ln(mktval) + \beta_2 ln(bk\text{-}mkt) + \beta_3 ln(issue\ size) + e_i$

Compdiff represents the five-year holding-period differential equity return. Rating is a numerical value that takes higher values as the S&P bond rating of the issue becomes lower. Matching bonds are selected by size.

Variable	Estimate	Std. Error	p-value
Intercept	-1.190716*	0.601189	0.0482
ln(Mkt Val)	-0.158707***	0.039365	0.0001
ln(Bk to Mkt)	-0.134255***	0.022622	0.0001
ln(Issue Size)	0.143725	0.073286	0.0504

Table 20

Results of Equation 10

Model: $Compdiff = \alpha + \beta_1 ln(mktval) + \beta_2 ln(bk\text{-}mkt) + \beta_3 leverage + e_i$

Compdiff represents the five-year holding-period differential equity return. Rating is a numerical value that takes higher values as the S&P bond rating of the issue becomes lower. Matching bonds are selected by size. Leverage is determined by dividing the amount of the debt issue by the equity market value of the issuing firm.

Variable	Estimate	Std. Error	p-value
Intercept	0.098355	0.459522	0.8306
ln(Mkt Val)	-0.129409**	0.039352	0.0011
ln(Bk to Mkt)	-0.133756***	0.022874	0.0001
Leverage	-0.131762	0.163533	0.4208

*,**, and *** represent significance at the .05, .01, and .001 levels respectively.

Table 21

Effects of Debt Characteristics on Differential Returns

Model: $Compdiff = \alpha + \beta Rating_i + \beta ln(Issue\ Size_i) + \beta Leverage_i + e_i$

This regression analyzes the effect of the bond rating, the size of the new issue and the leverage, defined as the issue size divided by the equity market value of the issuing firm, on the differential holding-period return of the new issue versus the matching firm. Here the matches are selected on the basis of size and book-to-market value.

Six Months

Intercept	Rating	Ln(Issue Size)	Leverage	Adj. r^2
-0.0824**	0.00062			-.0015
(-2.327)	(0.160)			
0.4126*		-0.04132**		.0050
(1.753)		(-2.085)		
-0.0807***			0.01935	-.0008
(-5.270)			(0.692)	
0.4932*	-0.00388	-0.04577**	0.02402	.0034
(1.870)	(-0.844)	(-2.176)	(0.767)	

One-Year

Intercept	Rating	Ln(Issue Size)	Leverage	Adj. r^2
-0.1517***	-0.00010			-.0016
(-3.431)	(-0.020)			
0.4186		-0.04815*		.0041
(1.391)		(-1.902)		
-0.1444***			-0.04578	.0012
(-7.594)			(-1.330)	
0.4719	0.00031	-0.05205*	-0.05452	.0047
(1.420)	(0.055)	(-1.956)	(-1.414)	

Five-Year

Intercept	Rating	Ln(Issue Size)	Leverage	Adj. r^2
-0.3054**	-0.00598			-.0015
(-2.312)	(-0.407)			
1.0624		-0.11897		.0019
(1.087)		(-1.451)		
-0.3434***			-0.06395	-.0010
(-6.116)			(-0.648)	
1.2801	-0.00811	-0.13095	-0.04762	-.0003
(1.227)	(-0.484)	(-1.553)	(-0.434)	

*, **, and *** represent significance at the .05, .01, and .001 levels respectively.

Table 22

Results of Callability Tests

Model: Compdiff $= \alpha + \beta$ *call feature*$+e_i$

Compdiff represents the five-year holding-period differential equity return. Rating is a numerical value that takes higher values as the S&P bond rating of the issue becomes lower. Matching bonds are selected by size and book-to-market values. Call feature is a dummy variable taking the value of one if the issue is callable and zero if the issue is not callable.

Six Months

Variable	Coefficient	Std. Error	p-value
Intercept	-0.106837*** (-5.141)	0.020783	0.0001
Callable	0.057151* (1.978)	0.028893	0.0483

One Year

Variable	Coefficient	Std. Error	p-value
Intercept	-0.187643*** (-7.314)	0.025654	0.0001
Callable	0.068868 (1.916)	0.035947	0.0558

Five Years

Variable	Coefficient	Std. Error	p-value
Intercept	-0.311632*** (-4.193)	0.074331	0.0001
Callable	-0.088868 (-0.830)	0.107020	0.4067

*, **, and *** represent significance at the .05, .01, and .001 levels respectively.

Table 23

Relative Performance by Issuance Volume

In each sample the first quartile represents the differential equity performance of firms making debt issues during one of the four years of highest volume of debt issues. The following quartiles represent periods of declining issue volume.

Panel A--Size-Matched Sample

Quartile	N	Mean	t
1st	337	-0.01023	-0.189
2nd	136	-0.13353*	-1.864
3rd	113	-0.22060***	-3.889
4th	71	0.06673	0.472

t-tests for differences between quartile means

Quartiles	t-stat	Quartiles	t-stat
1-2	1.276	2-3	0.926
1-3	2.122*	2-4	-1.408
1-4	-0.652	3-4	-2.163*

Panel B--Size and Book to Market-Matched Sample

Quartile	N	Mean	t
1st	350	-0.31447***	-7.121
2nd	125	-0.68957***	-18.039
3rd	60	0.19680	0.469
4th	37	-0.49368***	-6.530

t-tests for differences between quartile means

Quartiles	t-stat	Quartiles	t-stat
1-2	4.847***	2-3	-3.168**
1-3	-2.520**	2-4	-2.654**
1-4	1.294	3-4	1.490

*,**, and *** represent significance at the .05, .01, and .001 levels respectively

Table 24

Performance of First and one-time versus Repeat Issuers

Size-Matched Sample

The variable studied is determined by subtracting the daily equity return of the matching firm from that of the issuer and compounding the daily differences over the period indicated. t-Diff represents the t-statistic for the difference in mean values for single and multiple isuers for the particular observation period. The distinction between first-time and repeat issuers refers only to the sample period 1974 to 1990.

a) Single and first-time Issuing Firms

Period	N	Mean	t
1 year	425	0.0043	0.199
2 years	403	-0.0089	-0.291
3 years	386	0.0250	0.501
4 years	377	-0.0449	-0.934
5 years	366	-0.0606	-1.112

b) Repeat-issuing Firms

Period	N	Mean	t	t-Diff
1year	384	-0.0166	-0.876	0.719
2 years	376	-0.0416	-1.719	0.833
3 years	369	-0.0463	-1.325	1.161
4 years	364	-0.0656*	-1.857	0.344
5 years	359	-0.0794*	-2.051	0.281

*,**, and *** represent significance at the .05, .01, and .001 levels respectively

Table 24-a

Performance of First-time and Repeat Issuers

Size & Book to Market Matched Sample

The variable studied is determined by subtracting the daily return of the matching firm from that of the issuer and compounding the daily differences over the period indicated. t-Diff represents the t-statistic for the difference in mean values for first-time and repeat isuers for the particular observation period.

a) First-time Issuers

Period	N	Mean	t
1 year	256	-0.114***	-3.868
2 years	237	-0.140**	-2.607
3 years	224	-0.199***	-2.958
4 years	217	-0.283***	-4.191
5 years	212	-0.266**	-2.066

b) Repeat-Issue Firms

Period	N	Mean	t	t-Diff
1 year	392	-0.1749***	-7.667	1.654
2 years	382	-0.2751***	-10.453	2.504**
3 years	370	-0.3302***	-11.403	2.036*
4 years	368	-0.3992***	-12.777	1.760*
5 years	360	-0.4033***	-10.861	1.279

*, **, and *** represent significance at the .05, .01, and .001 levels respectively

Table 25

Regression Results of First-time vs. Repeat Issuers

Size & Book-to-Market Matched Sample

Model: Compdiff $= \alpha + \beta mult + e_i$

Compdiff represents the holding period daily difference in equity returns between the issuer and its match for the period indicated. Mult is a dummy variable that takes the value of zero if the firm is making its first issue during the observation period and the value of one if the firm is repeating during the observation period.

One Year

Variable	Estimate	Std. Error	p-value
Intercept	-0.146041***	0.041340	0.0004
Mult	-0.005875	0.045972	0.8983

Two Years

Variable	Estimate	Std. Error	p-value
Intercept	-0.082848	0.061333	0.1773
Mult	-0.171936*	0.067836	0.0115

Three Years

Variable	Estimate	Std. Error	p-value
Intercept	-0.207896**	0.073597	0.0049
Mult	-0.088997	0.081280	0.2740

Four Years

Variable	Estimate	Std. Error	p-value
Intercept	-0.361812***	0.076462	0.0001
Mult	0.006835	0.084149	0.9353

Five Years

Variable	Estimate	Std. Error	p-value
Intercept	-0.442888***	0.128555	0.0006
Mult	0.106778	0.141220	0.4499

*,**, and *** represent significance at the .05, .01, and .001 levels respectively.

Table 26

Issuer Performance Sorted by Interest-Rate Levels

Here the first quartile represents the issuing years with the highest interest-rate levels while the fourth includes years with the lowest rate levels. The return represents the mean 5-year differential holding period return for each quartile.

Panel A--Size-Matched Sample

Quartile	N	Mean	t
1st	185	-0.09195*	-1.786
2nd	155	0.04033	0.372
3rd	232	-0.12141**	-2.665
4th	79	-0.05173	-0.451

t-tests for differences between quartile means

Quartiles	t-stat	Quartiles	t-stat
1-2	-1.159	2-3	1.545
1-3	0.429	2-4	0.533
1-4	-0.509	3-4	-0.678

Panel B--Size and Book to Market-Matched Sample

Quartile	N	Mean	t
1st	102	-0.01982	-0.078
2nd	106	-0.45325***	-6.448
3rd	302	-0.38192***	-8.674
4th	56	-0.60344***	-10.038

t-tests for differences between quartile means

Quartiles	t-stat	Quartiles	t-stat
1-2	1.672	2-3	-0.837
1-3	2.186*	2-4	1.414
1-4	1.675	3-4	2.099*

*, **, and *** represent significance at the .05, .01, and .001 levels respectively

Table 27

Effects of Tax Rate on Differential Equity Returns

Model: $Compdiff = \alpha + \beta_1 \ln(mktval_i) + \beta_2 \ln(bk\text{-}mkt_i) + \beta_3 \, tax\ rate_i + e_i$

Tax rate represents the issuing firms total taxes divided by pre-tax income for the year prior to issuance. Compdiff represents the differential holding period returns for the period indicated. The matching firm is selected on the basis of size and book-to-market values.

Six Months

Variable	Estimate	Std. Error	p-value
Intercept	0.131680	0.141674	0.3531
ln(Mkt Val)	-0.028340*	0.014005	0.0435
ln(Bk-Mkt)	0.016706	0.010193	0.1018
Tax Rate	-0.020129	0.023733	0.3968

One Year

Variable	Estimate	Std. Error	p-value
Intercept	0.127351	0.187071	0.4963
ln(Mkt Val)	-0.041072*	0.018422	0.0262
ln(Bk-Mkt)	0.025643	0.013538	0.0588
Tax Rate	-0.027378	0.030499	0.3698

Five Years

Variable	Estimate	Std. Error	p-value
Intercept	0.341531	0.380138	0.3694
ln(Mkt Val)	-0.060570	0.036380	0.0966
ln(Bk-Mkt)	0.015720	0.025744	0.5417
Tax Rate	-0.087878*	0.002654	0.0175

*,**, and *** represent significance at the .05, .01, and .001 levels respectively.

Table 28

Effects of Earning Changes on Differential Equity Returns

Model: $Compdiff = \alpha + \beta_1 ln(mktval_i) + \beta_2 ln(bk\text{-}mkt_i) + \beta_3 earndiff_i + e_i$

Earndiff represents the percentage change in net income for the issuing firm for the year prior to issuance. Compdiff represents the differential holding period returns for the period indicated. The matching firm is selected on the basis of size and book-to-market values.

Six Months

Variable	Estimate	Std. Error	p-value
Intercept	0.147632	0.141881	0.2986
ln(Mkt Val)	-0.030549*	0.014043	0.0301
ln(Bk-Mkt)	0.017515	0.010189	0.0862
Earndiff	0.007095***	0.001838	0.0001

One Year

Variable	Estimate	Std. Error	p-value
Intercept	0.141836	0.187669	0.4501
ln(Mkt Val)	-0.043261*	0.018502	0.0198
ln(Bk-Mkt)	0.026445	0.013553	0.0516
Earndiff	0.006117	0.005845	0.2958

Five Years

Variable	Estimate	Std. Error	p-value
Intercept	0.433100	0.379950	0.2549
ln(Mkt Val)	-0.072032*	0.036392	0.0484
ln(Bk-Mkt)	0.019729	0.025664	0.4425
Earndiff	0.027317	0.020530	0.0919

Table 29

Effects of Free Cash on Differential Equity Returns

Model: $Compdiff = \alpha + \beta_1 ln(mktval_i) + \beta_2 ln(bk\text{-}mkt_i) + \beta_3 freecash_i + e_i$

Freecash represents the issuing firms net cash flow less any dividends paid for the year prior to issuance. Compdiff represents the differential holding period returns for the period indicated. The matching firm is selected on the basis of size and book-to-market values.

Six Months

Variable	Estimate	Std. Error	p-value
Intercept	0.309109	0.162924	0.0584
ln(Mkt Val)	-0.042181**	0.015272	0.0060
ln(Bk-Mkt)	0.016232	0.010154	0.1105
Freecash	0.000044***	0.000006	0.0001

One Year

Variable	Estimate	Std. Error	p-value
Intercept	0.307667	0.215706	0.1544
ln(Mkt Val)	-0.055413**	0.020178	0.0062
ln(Bk-Mkt)	0.025426	0.013512	0.0605
Freecash	0.000043	0.000202	0.4161

Five Years

Variable	Estimate	Std. Error	p-value
Intercept	0.577952	0.441206	0.1909
ln(Mkt Val)	-0.079890*	0.040097	0.0469
ln(Bk-Mkt)	0.015594	0.025785	0.5456
Freecash	0.000050*	0.000025	0.0215

*,**, and *** represent significance at the .05, .01, and .001 levels respectively.

Table 30

*Equity Returns Segmented by Sales Growth**

	Porportion		1-year Returns		5-year Returns	
Sales Growth	Issuers	Non-issuers	Issuers	Non-Issuers	Issuers	Non-issuers
SG≤-20%	2.80%	7.94%	5.979%	-13.142%	123.801%	7.505%
-20%<SG≤-10%	4.27%	7.01%	14.559	-1.982	154.277	42.910
-10%<SG≤ 0%	17.08%	11.99%	5.290	2.747	66.618	58.024
0%<SG≤ 10%	41.68%	23.21%	13.732	9.851	82.156	114.260
10%<SG≤ 20%	19.88%	20.56%	21.076	20.110	95.899	116.679
20%<SG≤ 30%	6.48%	9.19%	22.933	45.328	89.138	163.052
30%<SG≤ 40%	2.65%	5.92%	17.618	34.104	53.623	281.467
40%<SG≤ 50%	2.80%	4.67%	28.712	25.455	108.437	65.050
50%<SG	2.36%	9.50%	44.336	48.638	174.984	235.616
All	100.00%	100.00%	15.408%	17.563%	89.100%	118.143%

* Sales growth is computed as the sales level for the year issuance year less the sales for the year prior, divided by the prior year's sales level.

Table 31

*Equity Returns Segmented by Capital Expenditure Growth**

	Porportion		1-year Returns		5-year Returns	
Cap. Exp. Growth	Issuers	Non-issuers	Issuers	Non-Issuers	Issuers	Non-issuers
CE≤ -6%	2.91%	10.53%	4.782%	-23.128%	94.754%	19.941%
-6%<CE≤ -4%	3.97%	4.28%	6.554	-8.860	72.199	44.532
-4%<CE≤ -2%	14.29%	10.86%	11.899	14.558	93.284	222.171
-2%<CE≤ 0%	23.54%	20.07%	9.230	10.890	68.960	102.922
0%<CE≤ 2%	34.39%	14.80%	17.480	11.682	88.416	84.590
2%<CE≤ 4%	14.02%	8.22%	19.607	17.610	76.335	230.067
4%<CE≤ 6%	3.17%	6.91%	17.793	42.164	142.718	53.341
6%<CE≤ 8%	1.32%	5.26%	33.464	29.313	86.745	66.492
8%<CE	2.38%	19.08%	16.549	40.662	50.086	146.566
All	100.00%	100.00%	14.434%	16.341%	83.167%	115.358%

* Capital expeditures growth is determined as R&D expense plus capital expenditures in the year of issuance less the same expenditures for the prior year, divided by the total assets of the year prior to issuance.

Table 32

*Debt Returns Segmented by Sales Growth**

Sales Growth	Porportion		1-year Returns		5-year Returns	
	Issuers	Non-issuers	Issuers	Non-Issuers	Issuers	Non-issuers
SG≤-20%	4.98%	5.59%	11.51%	8.82%	23.25	12.02
-20%<SG≤-10%	5.29%	6.15%	16.17	12.62	18.01	11.22
-10%<SG≤ 0%	15.55%	15.08%	11.62	14.09	13.38	11.12
0%<SG≤ 10%	23.79%	22.91%	10.06	13.53	11.79	13.86
10%<SG≤ 20%	22.55%	27.93%	10.09	10.49	11.41	7.57
20%<SG≤ 30%	13.06%	10.61%	11.44	2.85	16.32	6.83
30%<SG≤ 40%	8.09%	6.70%	10.86	13.06	10.75	12.22
40%<SG≤ 50%	2.95%	2.23%	9.44	9.82	6.83	11.22
50%<SG	3.73%	2.79%	8.55	-6.26	21.77	14.38
All	100.00%	100.00%	10.88%	10.65%	13.58%	10.52%

* Sales growth is computed as the sales level for the year issuance year less the sales for the year prior, divided by the prior year's sales level.

Table 33

*Debt Returns Segmented by Capital Expenditure Growth**

	Porportion		1-year Returns		5-year Returns	
Cap. Exp. Growth	Issuers	Non-issuers	Issuers	Non-Issuers	Issuers	Non-issuers
CE≤ -6%	6.62%	1.74%	15.37%	7.00%	74.88	16.94%
-6%<CE≤ -4%	5.30%	1.74%	13.84	16.25	7.11	22.41
-4%<CE≤ -2%	11.92%	6.09%	18.46	18.93	10.80	8.73
-2%<CE≤ 0%	18.54%	29.96%	11.93	13.10	11.30	17.28
0%<CE≤ 2%	27.81%	41.74%	8.93	11.74	10.37	8.78
2%<CE≤ 4%	15.89%	11.30%	11.49	14.46	13.97	16.14
4%<CE≤ 6%	7.95%	6.96%	4.01	8.53	13.23	8.04
6%<CE≤ 8%	3.31%	1.74%	13.87	14.83	23.47	2.30
8%<CE	2.65%	1.74%	11.97	14.67	14.18	-9.07
All	100.00%	100.00%	11.57%	12.73%	16.03%	11.81%

* Capital expeditures growth is determined as R&D expense plus capital expenditures in the year of issuance less the same expenditures for the prior year, divided by the total assets of the year prior to issuance.

Table 34

Regression Results of Equity Returns and Growth Measures

Compdiff represents the differential holding period returns for the period indicated. The matching firm is selected on the basis of size and book-to-market values. Growth measures are computed using COMPUSTAT data for issuing and matching firms for the year of issuance and the prior year. SGROWTH is defined as the percentage increase in sales for the issuance year over the previous year. CAPEXPG is computed as the percentage increase in R&D expediture and other capital expenditures for the same period.

Panel A: *Sales Growth*

$$Model: Compdiff_i = \alpha + \beta SGROWTH_i + e_i$$

Return	Intercept	Estimate of β	p-value	Adj. r^2
1-year	-0.1681	0.00202	.0312	0.0072
	(-8.547)	(2.160)		
5-year	-0.3444	-0.00125	.6599	0.0003
	(-5.975)	(-0.440)		

Panel B: *Capital Expenditure Growth*

$$Model: Compdiff_i = \alpha + \beta CAPEXPG_i + e_i$$

Return	Intercept	Estimate of β	p-value	Adj. r^2
1-year	-0.1681	0.00339	.2980	0.0030
	(-6.868)	(1.042)		
5-year	-0.3262	-0.00292	.7916	0.0002
	(-3.742)	(-0.264)		

Table 35

Regression Results of Debt Returns and Growth Measures

Excess returns are computed as the monthly return of the newly issued bond less that of its match. These excess returns are then compounded over the period indicated. Growth measures are computed using COMPUSTAT data for issuing and matching firms for the year of issuance and the prior year. SGROWTH is defined as the percentage increase in sales for the issuance year over the previous year. CAPEXPG is computed as the percentage increase in R&D expediture and other capital expenditures for the same period.

Panel A: *Sales Growth*

$$Model: Excess\ Returns_i = \alpha + \beta\, SGROWTH_i + e_i$$

Return	Intercept	Estimate of β	p-value	Adj. r^2
1-year	-0.0134	0.00003	.7420	0.0001
	(-4.556)	(0.329)		
5-year	-0.0407	-0.00010	.8170	0.0002
	(-2.948)	(-0.232)		

Panel B: *Capital Expenditure Growth*

$$Model: Excess\ Returns_i = \alpha + \beta\, CAPEXPG_i + e_i$$

Return	Intercept	Estimate of β	p-value	Adj. r^2
1-year	-0.0151	0.00261	.0924	0.0122
	(-2.564)	(1.690)		
5-year	-0.0985	0.01571	.1821	0.0211
	(-2.542)	(1.346)		