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DOES THE MARKET REACT TO SURPRISE ISSUES OF CALLABLE AND NONCALLABLE DEBT?

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Abstract

Insignificant stock market reactions to debt issues have been well documented in the finance literature. This paper segments debt issues into callable/noncallable and long-term/short-term categories, as well as anticipated and unanticipated issues (8 different categories of debt). A logit model was used to classify the debt issues into anticipated and unanticipated categories. Stock market reactions were insignificant for 7 of the 8 debt categories. Market reactions were sizably negative and highly significant for unanticipated long-term noncallable debt issues. These results support the efficiency of the market and Flannery (1986) conjecture that the issuance of long-term noncallable debt is a signal for identifying bad firms.

INTRODUCTION

Most research on corporate finance assumes that noncallable debt is an insignificant portion of the debt market. For example, Van Horne (1984) claims that almost all corporate debt is callable.[1] As a result of this preconceived notion of the nonexistence of noncallable bonds, most theoretical research attempts to prove the dominance of callable bonds over noncallable debt.

Theoretical arguments of the dominance of callable bonds over noncallable bonds revolve around several central themes. A number of authors claim that inclusion of the call feature provides the issuing firm with the flexibility to take advantage of favorable future events. Other researchers argue that both the interest rate and tax environments prevailing at the time of issue influence debt choice. Still others argue that private information exclusively available to the firm's managers allows the firm to issue callable bonds at a favorable price.[2]

If callable debt dominates noncallable debt, as the theoretical literature suggests, we expect to find no noncallable bonds. Instead, the empirical evidence shows that a significant amount of noncallable debt is issued. Out of the 6,736 public corporate debt offerings during the period 1977-1986, nearly 17% in dollar value was noncallable. This compelling evidence suggests that noncallable debt is not a dominated security, which is inconsistent with the Robbins and Schatzberg (1986) theoretical signalling model's prediction that long-term noncallable bonds are dominated securities and should not exist.

Prior empirical studies show that the stock market does not react significantly to debt issues.[3] This lack of a market reaction may result because the security market correctly anticipates most corporate debt decisions. Since the market participants incorporate any potential consequences into the security price at the time of announcement, only surprises should have an impact upon security prices.

The empirical literature does not distinguish between surprise debt announcements and fully anticipated debt announcements. The purpose of this paper is to try to make such distinctions by estimating an empirical model which distinguishes surprise callable and noncallable debt issues from fully anticipated ones. For surprise and fully anticipated debt issues, market reactions are examined for long and short maturity callable and noncallable debt.

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The market reactions are insignificantly different from zero for all classifications except for surprise noncallable bonds and surprise long-term issues of noncallable bonds. The significance of the market reaction to noncallable bonds can be attributed to the unanticipated long-term noncallable bond segment. Long-term noncallable bonds show sizable and statistically significant negative market reactions. This is an indication that the market views surprise issues of long-term noncallable bonds in a negative way, a position consistent with Flannery (1986).

CALLABLES VERSUS NONCALLABLES

A number of arguments contrast the advantages of callable bonds compared to noncallable bonds including increased flexibility, tax incentives, and informational inefficiencies.[4] The first argument's claim is that callable bonds allow the firm increased flexibility when refinancing due to the fixed call price. This argument suffers from a fallacy in logic. If the market is informationally efficient and bondholders have the same information as the managers of the firm, the issuing firm should be forced by the market to pay for the present value of these possible future advantages when it issues the bond. For example, a callable bond might have a call premium and a higher coupon when compared to an otherwise identical noncallable bond. Another argument associated with flexibility centers on the level of interest rates.[5] If interest rates are high by historical norms, a call option has more value because a drop in interest rates is more likely. Again, if the market is efficient and bondholders have the same information as issuers, the added value of the call option should be reflected in the bond price and its features.

The second key argument focuses on taxes. Callable bonds offer unique tax advantages not available with noncallable debt. If issuing firms in high tax brackets are able to sell callable bonds to bondholders in lower tax brackets, then the tax deductibility of the call premium creates an advantage for callable bonds.[6,7] Unfortunately, these tax advantages do not exist when the tax rate of the marginal bondholders equals the firm's corporate tax rate. In addition, a sizable percent of callable bonds are callable at par, eliminating the call premium tax argument.

The final proposed advantage is directed at informational inefficiencies. If the firm's management possesses superior information about the firm's prospects compared to the bondholders, call options might provide net advantages to the firm.[8] With informational inefficiencies, the firm can incorporate a call feature at a low price compared to its true value.

The Relative Frequency Of Noncallable Bond Issues

Most authorities assume that corporate bonds are callable with virtually no exceptions. The actual evidence indicates otherwise. Over 1977-1986, a 6,736 corporate debt issues were floated totaling $638 billion, as reported in *Moody's Bond Survey*. The percentage of corporate bond issues that were noncallable during this 10-year period ranged from 2.9% in one year to over 20% in another year (an average of 12.4%). As a percentage of the dollar amount of issues during the same time period, the range was even higher, from 3.5% to over 25% (an average of 16.8%). The dollar amount of noncallable debt was also substantial, ranging from a low of $900 million in 1979 to over $36 billion in 1986 (an average of $10.7 billion).[9]

Maturities Of Callable Versus Noncallable Debt Issues

Since the option to call long-term debt allows the firm to reduce the true maturity of a debt issue, one would expect callable debt issues to have longer maturities than noncallable debt issues on average.[10] For the entire 10-year period, the average maturity for the callable issues was 19.0 years with a standard deviation of 9.1 years. For the noncallable group, the average was significantly less. The noncallable mean maturity was 8.0 years with a standard deviation of 6.1 years. The majority, but not all, of noncallable debt had short to intermediate term maturities. In fact, only 7.7% of the noncallable debt issues had maturities of 20 or more years.

This evidence is not consistent with the view that short-term noncallable bonds are a simple substitute for long-term callable bonds. If this substitute theory was correct, we would find no short-term callable bonds and no long-term noncallables. Since many short-term callable bonds and many long-term noncallable bonds have been issued, the simple substitute theory does not accurately describe debt maturity patterns.

LOGIT ANALYSIS

A large number of factors are suggested in the literature as determinants of a firm's decision to issue callable or noncallable debt. Based on the literature, this section develops an empirical model to capture the factors claimed to create advantages for callable bond issues when compared to noncallable issues. This logit regression model is then used to distinguish firms that issued callable bonds from those that issued noncallable bonds. Some bond issues were misclassified by this model. These misclassified issues are viewed as proxies for surprises in the market. Properly classified bond issues are considered fully anticipated.

Data Set

All public corporate debt offerings listed in *Moody's Bond Survey* for the years 1977 through 1986 are included in the original population. From this population, a sample was selected meeting the following criteria: (1) the issuing firm's financial data are available on the Compustat Tapes, (2) the issues are nonconvertible, and (3) there are nonzero, fixed rate coupons. These criteria reduce the sample size to 1,842 usable bonds.

The Logit Regression Variables

As previously mentioned, several factors suggested in the literature as creating special advantages for callable bonds include flexibility, tax advantages, and informational inefficiencies. In addition, the level of interest rates and bond maturity are proposed as important factors affecting the value of a call option. This section presents an empirical model that predicts the decision to issue callable or noncallable debt on the basis of these factors. The model variables are defined in Table 1.

TABLE 1
Symbols And Definitions Of Variables

Dependent Variable:		
CALL	=	A binary variable for the presence (1) or absence (0) of a call feature being placed on the debt issue.
Independent Variables:		
		Flexibility Factor
UNCER	=	Average change in interest rates over the 10 weeks prior to the debt issue.
		Interest Rate Factor
LEVEL	=	The yield on a 3 year treasury security issue.
		Agency Factors
DA	=	Debt to asset ratio.
MARKET	=	The ratio of the new debt issue to the amount of debt outstanding.
GROWTH	=	Growth during the year the debt was issued, measured ex-post.
Ratings:		
HIGH	=	A binary variable for debt ratings Aaa or Aa.
MODERATE	=	A binary variable for debt ratings A or Baa.
LOW	=	A binary variable for debt rating Ba or lower.
Firm Classifications:		
FINANCE	=	A binary variable for financial firms.
UTILITY	=	A binary variable for utilities.
INDUSTRIAL	=	A binary variable for industrial firms.
		Tax Factors
MTAX	=	The marginal corporate tax rate of the issuing firm.
		Substitution Factor
MAT	=	Maturity of the debt issue in years.

The logit model was run for a sample composed of all the noncallable bonds plus an equal number of callable bonds selected at random for a total of 304 issues. The logit results are shown in Table 2.

TABLE 2
Logistic Regression Estimation Equation

Variable	Predicted Sign[a]	Beta	Standard Error	Chi-Sq	Prob[b]	R[c]
Intercept		-7.5020	1.6923	19.65	0.0000	
Class						
*FINANCE**	-	-1.1895	0.3643	10.66	0.0011	-0.132
UTILITY	+	+0.4237	0.4575	0.86	0.3544	+0.000
*DA**	+	+4.1355	1.1647	12.61	0.0004	+0.146
*GROWTH**	+	+5.6743	2.5446	4.97	0.0258	+0.078
*LEVEL**	+	+0.4373	0.0829	28.81	0.0000	+0.228
*MARKET**	+	+2.2426	0.9260	5.86	0.0155	+0.088
*MAT**	+	+0.1625	0.0209	60.36	0.0000	+0.344
MTAX	+	-0.0162	0.0144	1.26	0.2611	+0.000
Ratings						
*MODERATE**	-	-1.1459	0.4161	7.58	0.0059	-0.106
LOW	+	+0.9310	0.5821	2.56	0.1098	+0.034
UNCER	+	+1.5076	1.0843	1.93	0.1644	+0.000

Model Chi-Square	215.60
Probability	0.0000
Sample Size	305
Correct Classification (Estimation Sample):	
Total	81.8%
Callable	82.0%
Noncallable	81.6%

*Variable is statistically significant within the logit model. (Level of significance is 5% or better.)

a. Note that a plus sign (+) means that callable debt is more likely and a negative sign (-) means that noncallable debt is more likely.
b. The significance level is defined as the probability of obtaining a larger absolute value of the coefficient when the coefficient is actually equal to zero.
c. Individual R statistics are defined as:

$$R = ((MLE\ chi\text{-}square - 2)/(-2L(0)))^{1/2}$$

and provide a measure of the independent variable's contribution to explaining the dependent variable.

The managerial flexibility hypothesis implies that the variability of interest rates over time is the main reason for issuing callable bonds. To measure this variability, we use the mean absolute deviation of the interest rate on 3-year Treasury securities over the 10 weeks prior to the bond issue.[11] Higher recent interest rate volatility is expected to increase the likelihood of a callable bond being issued. Table 2 indicates that interest rate uncertainty, denoted by *UNCER*, is positively but not significantly related to the call feature in the logistic regression.

Van Horne's (1984) suggestion that the level of interest rates is positively related to the value of debt call options is supported by the logistic regression reported in Table 2. The level of interest rates, denoted by *LEVEL*, is positively related to the call feature (i.e., when interest rates are high, callable bonds are more likely than when rates are low).

The tax advantage argument is analyzed using the marginal tax rates of the issuing firms. *MTAX* is the firm's marginal tax rate and is based upon the firm's pretax profits and the tax schedule in effect at the time of the debt issue. The tax rate shows no significant impact upon the likelihood of issuing callable or noncallable bonds.

Bodie and Taggart (1978, 1980) suggest that asymmetric information creates an advantage for callable debt. When favorable information is subsequently revealed to the market, firms with callable bonds are able to capture more of the benefits for stockholders. We use two types of variables as proxies for the potential benefits from callable bonds. First, the firm's growth rate, denoted by *GROWTH*, is found to be positively related to callable bonds. This finding is consistent with the view that firms with high growth rates are more likely to have private positive information. Second, default risk is used as a proxy for asymmetric information, under the assumption that firms with high default risk are more likely to have asymmetric information. Default risk was estimated by the debt/equity ratio, denoted by DA, the ratio of the value of the new debt to the value of all outstanding debt, denoted by *MARKET*, and bond ratings, denoted by *HIGH*, *MODERATE*, and *LOW*.

The debt/equity ratio and the ratio of the new debt to existing debt are positively related to callable debt (i.e., higher debt/equity ratios are associated with a greater chance of callable debt). Firms with moderate ratings are less likely to have callable bonds, while firms with the lowest ratings are more likely to have callable bonds.

A number of other factors are included as determinants of the decision to issue callable bonds. Bond maturity is included because a short maturity noncallable bond can be a substitute for a long-term callable bond. Maturity is found to be highly significantly related to the decision to issue callable bonds. Specifically, callable bonds are much more likely for long maturity bonds than for short maturity bonds.

Firm classifications into the categories of *INDUSTRIAL*, *FINANCE*, and *UTILITY* are also included as determinants of the call feature. The *INDUSTRIAL* classification is the base case. The regression coefficient for financial firms is negative, indicating that financial firms show a greater tendency to issue noncallable bonds when compared to industrials. Utilities show a positive coefficient, meaning that they tend to issue callable bonds.

In summary, the logistic regression indicates that the call option is more likely with higher interest rates, higher default risk, higher growth rates, and longer bond maturities. The regression also indicates that the call option is not affected by interest rate uncertainty or the firm's marginal tax bracket.

For this subsample of the logit data set (304 firms), the model produces an 81.8% prediction ratio for the correctly identified bonds. The predictions are correct for 82.0% of callable debt and for 81.6% of noncallable debt.[12] When the estimated parameters, shown in Table 2, are applied to the total logit data set of 1,842 debt issues, 80.5% of the bonds are correctly classified.[13] These results, summarized in Table 3, support the validity of utilizing the logit model to proxy anticipated/unanticipated debt issues.

TABLE 3
Prediction Results
Utilizing Estimated Logistic Regression Equation
On Total Logit Data Set

Debt Type	Correct Prediction	Wrong Prediction
Callable Debt	1233 (81.7%)	276 (18.3%)
Noncallable Debt	250 (75.1%)	83 (24.9%)
Total	1483 (80.5%)	359 (19.5%)

Predictions based on final model shown in Table 2.

EVENT STUDY ANALYSIS

The capital market has been found to respond differently to announcements that a firm is raising external capital, depending on whether the financing is to be met by issuing debt or issuing equity. In particular, raising external debt elicits no change or an insignificant decrease in the issuer's stock price, while equity issues substantially reduce share prices.[14] This paper tests the hypothesis that surprise announcements of callable and noncallable debt issues may generate significant market reactions.[15]

Data Set Utilized Within The Event Study

Daily stock returns are compiled from the CRSP Daily Returns tape. Issue and announcement dates are obtained from *Moody's Bond Survey* and the *Wall Street Journal Index* respectively. The announcement date (*AD*) is the earliest mention of the proposed debt issue, restricted to one year prior to the actual issuing date. The execution date (*ED*) is the actual date the debt was placed.

A corporate debt issue is included in the sample if the following requirements are met:

1. The issuer is on the CRSP Daily Return Tape.
2. The debt issue occurs during the period 1981 through 1986.
3. A distinct announcement date of the debt issue is found in the *Wall Street Journal Index*.

These requirements reduce the sample used in the event study analysis to 631 debt issues. Restricting the event study sample to firms listed on the CRSP Daily Return Tape mean that only firms listed on the New York or American Stock Exchanges are utilized.

Event Study Model

Using the methodology of Brown and Warner [1985], the market model (1) is estimated for each firm issuing debt during the base period of 200 trading days before the debt announcement date through 20 trading days prior to the announcement date (-200, -20).[16]

Equation 1

$$\tilde{R}_{i,t} = \hat{\alpha}_i + \hat{\beta}_i \tilde{R}_{m,t} + \tilde{e}_{i,t}$$

$R_{i,t}$ is the daily return including dividends for the firm under study at time t. The tildes (~) indicate random variables.

The estimated parameters (α_i and β_i) from the market model are applied to the return series for each firm to calculate the residual returns, $u_{i,t}$.

Equation 2

$$\tilde{u}_{i,t} = [\tilde{R}_{i,t} - (\hat{\alpha}_i + \hat{\beta}_i \tilde{R}_{m,t})]$$

The daily residual return illustrates the change in the realized residual returns after the base period calculations and reflects any new information from the announcement and the actual debt issue.

Next, the individual company residuals are cross-sectionally averaged to yield average abnormal returns for each day *(t = -20 to 20)* for both test periods. The average residual return, AR_t, for all the firms on each day relative to the announcement date (*AD*) and the execution date (*ED*) is calculated using a simple mean,

Equation 3

$$AR_t = \frac{1}{N}\sum_{i=1}^{N}(\tilde{u}_{i,t})$$

Finally, the average residuals (*AR*) are accumulated across time,

Equation 4

$$CAR = \sum_{t=1}^{T} AR_t$$

where *T*, the number of test periods, revolves around the period 20 days before and 20 days after the *AD* and the *ED*.

Excess returns are reported over the periods -1 through 0 trading days, -1 through +5 trading days, -/+ 1 trading days, and -/+ 5 trading days to test for information leakage.[17] Significant t-values for the respective cumulative test periods indicate abnormal changes in the returns to the shareholders from the debt issues. A positive trend in t-values shows a gain to shareholders from the debt issues. Similarly, a negative trend implies that shareholders were worse off from the debt issues.

Hypotheses And Test Results

This section examines the impact of anticipated and unanticipated debt issues upon the value of equity for the total debt sample and for the various subsamples. The results of all the tests are reported in Tables 4 and 5 for the *AD* and *ED* periods respectively.

TABLE 4
Correctly Identified Debt Issues
Cumulative Average Residuals Tests

	Interval			
Announcement Period:	**-1,0**	**-1,+5**	**-1,+1**	**-5,+5**
I. Correctly Identified (n=436)	+0.1017 (+0.1751)	+0.3071 (+0.2825)	+0.2671 (+0.3754)	+0.8159 (+0.5989)
A. Callable (n=341)	+0.0889 (+0.0883)	+0.3067 (+0.1629)	+0.2890 (+0.2345)	+0.8914 (+0.3777)
1. Long Maturity (n=309)	+0.0932 (+0.1135)	+0.2410 (+0.1569)	+0.3097 (+0.3081)	+0.8266 (+0.4294)
2. Short Maturity (n=32)	+0.0471 (+0.0961)	+0.9413 (+1.0267)	+0.0892 (+0.1486)	+1.5174 (+1.3203)
B. Noncallable (n=95)	+0.1481 (+0.1471)	+0.3084 (+0.1638)	+0.1884 (+0.1529)	+0.5452 (+0.2310)
1. Long Maturity (n=17)	+0.0988 (+0.1670)	+0.6227 (+0.5627)	+0.0053 (+0.0073)	+0.0493 (+0.0355)
2. Short Maturity (n=78)	+0.1588 (+0.5460)	+0.2400 (+0.4411)	+0.2283 (+0.6409)	+0.6533 (+0.9578)
II. Incorrect (n=195)	-0.3293 (-0.3439)	-0.7250 (-0.4046)	-0.6238 (-0.5318)	-1.5858 (-0.7060)
A. Callable (n=147)	-0.1250 (-0.2327)	-0.6727 (-0.6696)	-0.4961 (-0.7543)	-1.1037 (-1.3902)
1. Long Maturity (n=84)	-0.1844 (-0.0802)	-1.1466 (-0.2667)	-0.6849 (-0.2434)	-1.4177 (-0.2631)
2. Short Maturity (n=63)	-0.0457 (-0.1122)	-0.0409 (-0.0537)	-0.2445 (-0.4895)	-1.3535 (-1.4153)
B. Noncallable (n=48)	-0.9552 (-2.4143)[b]	-0.8849 (-1.1955)	-1.0150 (-2.0946)[b]	-2.1848 (-2.3547)[b]
1. Long Maturity (n=20)	-1.7829 (-3.0004)[c]	-2.0172 (-1.8145)[a]	-1.6998 (-2.3355)[b]	-3.7775 (-2.7106)[c]
2. Short Maturity (n=28)	-0.3639 (-0.7143)	-0.0761 (-0.0798)	-0.5258 (-0.8427)	-1.0472 (-0.8764)

a. Significant at 10% level using a two-tail test.
b. Significant at 5% level using a two-tail test.
c. Significant at 1% level using a two-tail test.

Note: *CAR* = top value; t-statistic = (bottom value).

TABLE 5
Correctly Identified Debt Issues
Cumulative Average Residuals Tests

	Interval			
Execution Period:	**-1,0**	**-1,+5**	**-1,+1**	**-5,+5**
I. Correctly Identified (n=436)	+0.6969 (+1.2006)	+1.0394 (+0.9571)	+0.8434 (+1.1863)	+1.6437 (+1.2074)
A. Callable (n=341)	+0.7687 (+0.8240)	+1.2489 (+0.7156)	+0.9051 (+0.7922)	+1.9273 (+0.8809)
1. Long Maturity (n=309)	+0.3345 (+0.4074)	+0.0168 (+0.0109)	+0.5398 (+0.5369)	+0.3897 (+0.2024)
2. Short Maturity (n=32)	+0.3748 (+0.7647)	+0.2161 (+0.2356)	+0.6686 (+1.1138)	+0.5830 (+0.5072)
B. Noncallable (n=95)	+0.4393 (+0.4365)	+0.2873 (+0.1526)	+0.6220 (+0.5048)	+0.6259 (+0.2652)
1. Long Maturity (n=17)	+0.9199 (+1.5555)	+1.5284 (+1.3814)	+0.9993 (+1.3797)	+1.7094 (+1.2325)
2. Short Maturity (n=78)	+0.8095 (+1.4111)	+1.3559 (+1.2633)	+0.9296 (+1.3231)	+2.0665 (+1.5359)
II. Incorrect (n=195)	-0.2650 (-0.2766)	-0.9716 (-0.5421)	-0.1849 (-0.1576)	-1.2104 (-0.5387)
A. Callable (n=147)	-0.2342 (-0.1765)	-0.8254 (-0.3326)	-0.0251 (-0.0154)	-1.1125 (-0.3576)
1. Long Maturity (n=84)	-0.3070 (-0.1336)	-1.4281 (-0.3322)	-0.9505 (-0.3378)	-1.8091 (-0.3357)
2. Short Maturity (n=63)	-0.1072 (-0.1768)	-1.1616 (-1.0238)	-0.0059 (-0.0080)	-0.9528 (-0.6699)
B. Noncallable (n=48)	-0.3593 (-0.9084)	-1.4194 (-1.9179)[a]	-0.6742 (-1.3916)	-1.5102 (-1.6279)
1. Long Maturity (n=20)	-0.4326 (-0.7283)	-1.4073 (-1.2662)	-0.2874 (-0.3950)	-1.0917 (-0.7836)
2. Short Maturity (n=28)	-0.3294 (-0.6441)	-0.5733 (-0.5990)	-0.0395 (-0.0632)	-1.2323 (-1.0272)

a. Significant at 10% level using a two-tail test.
b. Significant at 5% level using a two-tail test.
c. Significant at 1% level using a two-tail test.

Note: *CAR* = top value; t-statistic = (bottom value).

Preliminary Tests

The surprise factor for the overall sample is examined first. For the total sample of 631 firms, cumulative average residuals (*CARs*) are calculated for correctly and incorrectly classified debt issues. For the four test periods, the *CARs* are insignificant for both the announcement and the execution dates, which is consistent with efficient markets.

The results from partitioning the sample into callable and noncallable debt types are shown in Tables 4 and 5. There are no significant market reactions on shareholders' wealth, except for incorrectly identified noncallable debt, i.e. the surprise issues.[18] The incorrectly identified noncallable debt issues show a significantly negative reaction during the announcement test periods. This subsample is further decomposed in section labeled "Short Versus Long Maturity: Noncallable Debt."

Short Versus Long Maturities: Callable Debt

The *CARs* for callable debt segmented by maturity are also reported in Tables 4 and 5. The cumulative abnormal returns for firms issuing both long-term and short-term callable debt are not significantly different from zero when segmented into surprise and anticipated categories. The trend for the correctly identified callable debt (both long-term and short-term) is insignificantly positive and the trend for incorrectly identified callable debt (both long-term and short-term) is insignificantly negative.[19]

Short Versus Long Maturity: Noncallable Debt

The *CARs* for short-term and long-term noncallable debt are reported in Tables 4 and 5. The cumulative abnormal returns for firms issuing correctly classified long-term noncallable debt show positive but insignificant *CARs*. But the incorrectly identified long-term noncallables show sizable and statistically negative *CARs*. The differences between the correct/incorrect subsample *CARs* are also statistically significant.[20] Short maturity noncallable debt shows insignificant results for both the correctly and incorrectly identified debt samples.

Thus, the significant negative *CARs* for surprise noncallable bonds are concentrated among long-term noncallable bonds. This evidence is consistent with the view that long-term, noncallable, surprise issues send a negative signal to the market as reported in Flannery (1986). Interestingly, anticipated long-term noncallables do not appear to send a signal to the market.

CONCLUSION

Substantial amounts of noncallable debt were issued during the 10 year period 1977-1986, suggesting that callable bonds did not dominate noncallable bonds during this period. Logistic regression used to classify debt issues into anticipated and unanticipated issues finds that the levels of interest rates, default risk, and maturity are important determinants in the issuance of bonds with call options. Interest rate uncertainty and tax arguments are insignificant factors.

The event study was conducted for anticipated/unanticipated, callable/noncallable, and long-term/short-term debt samples. The cumulative abnormal residuals (*CARs*) are insignificant for all categories except surprise issues of noncallable long-term debt. Our evidence indicates that some long-term noncallable bonds–the anticipated ones–produce no significant market reactions, as expected within an efficient market. Other long-term noncallable bonds–the surprise issues–have sizably negative and statistically significant market reactions, signalling bad news. These results are consistent with the Flannery (1986) model, which predicts that long-term noncallable bonds will be issued by bad news firms.

ENDNOTES

1. Other researchers sharing this viewpoint include Bodie and Friedman (1978), Bodie and Taggart (1978), Barnea, Haugen, and Senbet (1980), Boyce and Kalotay (1979a), Robbins and Schatzberg (1986). The same sentiments are found in the leading finance textbooks.

2. See for example, Bodie and Taggart (1978, 1980).

3. For example, see Eckbo (1986).

4. For example, flexibility and interest rate arguments are outlined in Bowlen (1966), Pye (1966), Jen and Wert (1967), and Van Horne (1984). For tax arguments, see Boyce and Kalotay (1979b) and Marshall and Yawitz (1980). Bodie and Taggart (1978) and Myers (1971, 1977) argue that a call option may be a contractual response to agency problems between debt and equity claimants. Other agency problems associated with information asymmetry between borrowers and lenders are detailed in Barnea, Haugen, and Senbet (1980,

1981). In an empirical study, Thatcher (1985) found that default risk is a major reason for the inclusion of the call option. Flannery (1986) models a signalling attribute of the call option and debt maturity. Flannery's model predicts that the issuance of short-term noncallable or long-term callable debt is viewed more favorably by the capital market then issuance of long-term straight debt. Finally for the indenture features, see Smith and Warner (1979) and for the substitution factor see Kidwell (1976).

5. See for example, Bowlen (1966), Pye (1966), Jen and Wert (1967), and Van Horne (1984).

6. See Boyce and Kalotay (1979a).

7. See Marshall and Yawitz (1980).

8. See Bodie and Taggart (1978, 1980), Flannery (1986), and Robbins and Schatzberg (1986) for related arguments.

9. See Kish and Livingston (1989a, Table 1) for a complete summary of the callable and noncallable debt issues by dollar amounts and number of issues on a yearly basis for the period 1977 through 1986.

10. A question arises concerning the "maturity" of a callable bond. When the bond is called, the actual, realized maturity is less than the stated maturity. This paper deals only with the stated maturities of the bonds and makes no attempt to factor in the realized maturity. The maturity distributions for both callable and noncallable bond issues over the 1977-1986 period are summarized numerically in the frequency distribution found in Kish and Livingston (1989a, Table 2).

11. Several other empirical studies use this proxy variable for variability. See for example Chatfield and Moyer (1986).

12. The prediction results are statistically significant when tested against the naive model of assuming all debt is callable and when using the probabilities for callable and noncallable debt found within the population of debt issues during the period 1977 through 1986.

13. Utilizing only firms that issued either noncallable or callable debt during any one year, the predictive powers of the model increased to 84.3% (85.3% and 75.8% for callable and noncallable debt respectively).

14. A summary of empirical research on the impact of debt issues on the firm's equity value is provided by Eckbo (1986). Also see Masulis (1980), McConnell and Schlarbaum (1981), and Dann and Mikkelson (1984).

15. See Flannery (1986) for the theoretical justification of debt choices.

16. $R_{m,t}$ is the daily return at time t of a broad portfolio of stocks on the NYSE and AMEX. The specific index utilized in this study was the CRSP *Value Weighted Index with Dividends* (*VWRETD*). It was used as a proxy for the market index.

17. Excess returns were also calculated for the periods -/+ 20 trading days and -/+ 10 trading days with no significant difference from the reported results.

18. Long and short maturity partitioning was also undertaken with insignificant results. The long and short maturity subsamples and the callable subsample showed insignificant *CARs*.

19. See Brown and Warner (1985, p. 29) for a description of the test statistic calculations.

20. See Miles and Rosenfeld (1983, p. 1603) for a description of the test statistic calculations used in the analysis of the differences in CARs from two subsets.

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