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Public Utility Old Money Preferred Stocks

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ABSTRACT

Public utilities can claim a partial dividends-paid deduction on "old money" preferred stock (OMPS) but the 42 percent dividends-received deduction (DRD) allowed to corporate investors is lower than the 70 percent DRD allowed on other types of preferred stock. This study provides evidence that the implicit tax borne by OMPS is lower than that of other preferred stock and that the estimated implicit tax associated with the 70 percent DRD is much higher than prior research suggests. Evidence is also presented indicating that marginal investors in OMPS are corporations with marginal tax rates between 26.3 percent and 27.2 percent. Finally, this study provides evidence that public utilities use OMPS financing in addition to, rather than as a substitute for, other types of preferred stock. This result suggests that tax considerations influence public utility managers' capital structure decisions even though tax savings flow through to ratepayers in the rate-making process.

INTRODUCTION

Internal Revenue Code (I.R.C.) §247 allows a partial federal income tax deduction for dividends paid on certain public utility preferred stocks, generally known as "old money" preferred stocks (hereafter referred to as OMPS). Corporate investors in OMPS are allowed a dividends-received deduction (DRD) under I.R.C. §244 that is lower than that available to corporate investors in other preferred stocks (42 percent vs. 70 percent). This study examines pre-tax dividend yields on both OMPS and other preferred stocks for evidence of implicit taxes and tax clienteles arising from the differential DRDs available to corporate investors in these securities. In addition, this study examines whether the partial tax deduction allowed on OMPS provides an incentive for public utilities to use higher levels of total preferred stock financing.

The first question I examine is whether and to what extent public utility preferred stock bears an implicit tax as a result of the DRD allowed to corporate investors. Implicit taxes are defined as the reduced pre-tax returns borne by tax-advantaged investments relative to equally risky tax-disadvantaged investments. Tax clienteles are defined as investor groups that are attracted to one investment type over other equally risky investment types because of the investors' tax status and differences in the taxation of returns across investment types.[1] Erickson and Maydew (1998) report

[1] Scholes and Wolfson (1992), Scholes et al. (2002), and Shackelford and Shevlin (2001) provide detailed discussions of the implicit tax and tax clientele theories and review prior empirical research.

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a negative abnormal return on preferred stock in 1995 following the announcement of a proposal to reduce the DRD. They provide evidence showing that preferred stock is subject to an implicit tax rate ranging from 3.01 percent to 5.01 percent (assuming a 70 percent DRD) and that corporate investors form a tax clientele for preferred stock.

In this study, I compare the pre-tax dividend yields on OMPS to those of other preferred stocks issued by the same public utilities to determine whether differences in the allowed DRD are associated with differences in pre-tax dividend yields. In addition, I compare the pre-tax dividend yields on OMPS to the pre-tax interest yields on debt issued by the same public utilities. I find that the average pre-tax yield on OMPS is higher than that of other preferred stocks and lower than the average pre-tax yield on debt, after controlling for differences in voting rights and risk. My results suggest that the implicit tax rate on preferred stock (excluding OMPS) is higher than prior estimates, approximately 20.4 percent.[2] My results also suggest that marginal investors in OMPS are corporations with marginal tax rates between 26.3 percent and 27.2 percent.

The second question I examine is whether the tax advantage associated with OMPS motivates public utility managers to choose higher levels of total preferred stock financing. Historically, public utilities have used preferred stock financing more than firms in other industries have. However, the link between taxes and the decision to use preferred stock financing, documented for firms in other industries, generally does not hold for public utilities (Houston and Houston 1990; Chen and Fanara 1992; Frischmann and Warfield 1999). Prior researchers and commentators suggest that public utility managers do not have adequate incentives to consider tax savings in their capital structure decisions because tax benefits flow through to ratepayers, rather than equity owners, in the regulatory process (Litzenberger and Sosin 1979; Bierman 1987; Cross 1991, 1992).

This study provides evidence that public utilities' total preferred stock financing increases with the level of OMPS outstanding, indicating that OMPS is not used as a substitute for other types of preferred stock financing. The special features of OMPS (i.e., partial deductibility of dividends paid along with an unlimited life) make them an attractive financing option for public utilities to use in addition to other types of preferred stocks. This result suggests that tax considerations do influence public utility managers' capital structure choices.

This study extends the literature on implicit taxes by providing evidence that the implicit tax associated with the 42 percent DRD allowed on OMPS is lower than the implicit tax associated with the 70 percent DRD allowed on other preferred stock. This study also extends the literature on tax clienteles, documenting one example where the price of an investment asset is determined by a corporate tax clientele with marginal tax rates significantly below the maximum statutory tax rate. Finally, this study adds to the literature examining the relation between tax incentives and capital structure choice. Many studies in the accounting tax literature that have found a link between taxes and the decision to issue preferred stocks have excluded regulated public utilities from their samples. Studies in the public utility literature that have examined the decision to issue preferred stocks have generally not found a tax effect; however, the proxies used in these studies are very weak measures of tax incentives. This paper is a first attempt to document a relation between tax incentives and the level of preferred stock financing used by public utilities. The results of this study should be of interest to public utility regulators because the results indicate that public utility managers are motivated to achieve tax savings even though the benefits may be returned to ratepayers rather than accruing to common shareholders.

The remainder of the paper is organized as follows. The first section provides background on OMPS and develops the research hypotheses examined in the study. The second section presents

[2] As Erickson and Maydew (1998) indicate, a fundamental problem in testing for implicit taxes is separating the effects of taxes from those of cross-sectional differences in risk. They avoid this problem by examining changes in preferred stock prices following the announcement of a proposed reduction in the DRD. However, they cannot control for the market's assessment of the probability that the proposal would be enacted. Thus, their estimate of the implicit tax associated with the 70 percent DRD may be understated.

the research design and sample selection method. Results are presented in the third section while the last section discusses the conclusions.

BACKGROUND AND HYPOTHESES

Corporate investors in preferred stocks can generally claim a deduction of at least 70 percent of the dividends received.[3] However, I.R.C. §244 provides a reduced DRD for certain public utility preferred stocks. These preferred stocks qualify under I.R.C. §247 for a partial dividends-paid deduction to the issuing public utility.[4] Qualifying public utility[5] preferred stocks include (1) preferred stocks outstanding on October 1, 1942; (2) preferred stocks issued after October 1, 1942 to refund or replace other preferred stocks or debt outstanding on October 1, 1942; and (3) preferred stocks issued to replace qualifying preferred stocks of another public utility that was acquired in a tax-free reorganization. Qualifying public utility preferred stocks must have dividends that are cumulative, limited to a fixed dividend rate, and payable in preference to the payment of dividends on common stock. The stock may be voting or nonvoting preferred stock [Treas. Reg. §1.247-1(c)].

Preferred stock qualifying for the partial dividends-paid deduction under I.R.C. §247 and subject to the reduced DRD under I.R.C. §244 is generally referred to as "old money" because it is required to be outstanding on October 1, 1942 or issued to replace preferred stock or debt outstanding on that date. Preferred stock not qualifying for the deduction is generally described as "new money" preferred stock (hereafter referred to as NMPS) because it represents new capital raised after October 1, 1942. OMPS is identical to NMPS in that it is included in the preferred equity section of the balance sheet, shareholders' rights are subordinate to debt holders' rights, and preferred dividends can be temporarily suspended without penalty (other than the concurrent suspension of common dividends).

To calculate the DRD on OMPS, the dividends received are first reduced by a fraction equal to 14 percent divided by the highest statutory rate in effect for the year.[6] The DRD is then calculated as 70 percent of the reduced dividend amount.[7] Thus, a corporate investor owning OMPS can claim a DRD equal to 42 percent [70 percent × (1–14%/35%)] and is taxed on 58 percent of the dividends received. The after-tax return on OMPS to a corporate investor is as follows:

$$r_{oc} = R_{omps} (1 - \tau_{mc} \times 58\%) \quad (1)$$

where r_{oc} is the after-tax return on OMPS to a corporate investor, R_{omps} is the pre-tax return on OMPS, and τ_{mc} is the marginal tax rate of the corporate investor.

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[3] See I.R.C. §243. The 70 percent deduction applies to corporate investors owning less than 20 percent of another corporation. Corporate investors are entitled to an 80 percent deduction if they own between 20 percent and 80 percent of the stock of another corporation and a 100 percent deduction if they own more than 80 percent of another corporation. In my analysis, I assume that the marginal corporate investor owns less than 20 percent of the stock of the public utility and, thus, is subject to the 70 percent DRD.

[4] I.R.C. §247 was enacted as part of the Revenue Act of 1942, a tax package designed to raise money to fund the war effort. Its purpose was to mitigate an expected increase in public utility rates due to an increase in the statutory federal income tax rate. This deduction has remained in effect since 1942 for qualifying public utility preferred stocks.

[5] The term "public utility" is defined as a corporation that furnishes telephone service or sells electrical energy, gas, or water if the rates charged are established or approved by a federal, state, or local government agency or public service commission [I.R.C. §247(b)(1)].

[6] I.R.C. §247(a)(2)(B) specifies that the deduction equals 14 percent divided by the highest rate specified in I.R.C. §11(b). The 38 percent and 39 percent rates included in a corporate tax rate schedule are the result of surtaxes imposed on specific taxable income ranges and serve to phase-out the benefits of the lower tax rate brackets. These surtaxes are not considered to be part of the highest tax rate specified in I.R.C. §11(b). Therefore, the highest tax rate specified in I.R.C. §11(b) is 35 percent.

[7] For corporate investors owning between 20 percent and 80 percent of the public utility's stock, the deduction is 80 percent of the reduced dividend amount.

The first question examined in this study is whether and to what extent public utility OMPS and NMPS bear implicit taxes as a result of the DRD. Corporate investors in NMPS can claim a 70 percent DRD and are taxed on 30 percent of the dividends received. Thus, the after-tax return to a corporate investor in NMPS is as follows:

$$r_{nc} = R_{nmps} (1 - \tau_{mc} \times 30\%) \quad (2)$$

where r_{nc} is the after-tax return on NMPS to a corporate investor, R_{nmps} is the pre-tax return on NMPS, and τ_{mc} is the corporate investor's marginal tax rate. Because the DRD is lower, a corporate investor will be indifferent between investing in OMPS and NMPS only if the pre-tax return on OMPS is higher than that of NMPS. The after-tax return on OMPS (r_{oc}) equals that of NMPS (r_{nc}) to a corporate investor when:

$$R_{omps} (1 - \tau_{mc} \times 58\%) = R_{nmps} (1 - \tau_{mc} \times 30\%)$$

$$R_{omps}/R_{nmps} = (1 - \tau_{mc} \times 30\%)/(1 - \tau_{mc} \times 58\%). \quad (3)$$

For all positive levels of corporate investor marginal tax rates ($\tau_{mc} > 0$), R_{omps}/R_{nmps} is greater than 1. This analysis suggests that the pre-tax return on OMPS must be higher than that of NMPS for a corporate investor to prefer investing in OMPS rather than NMPS. Individual taxpayers are not eligible for the DRD and, therefore, would be taxed equally on dividends received from either OMPS or NMPS. Tax-exempt institutions (such as pension trusts) would not be taxed on dividends from either OMPS or NMPS. Thus, individual and tax-exempt institutional investors would be indifferent between investing in OMPS and NMPS with the same pre-tax return.

In equilibrium, marginal investors determine prices and returns, therefore, the relation between the pre-tax returns on OMPS and NMPS depends on whether the marginal investor is a corporation. The evidence provided by Erickson and Maydew (1998) suggests that preferred stocks are widely held by corporate investors. Consequently, hypotheses 1 and 2 below are based on the assumption that the marginal investors in OMPS and NMPS are corporations. However, tests of implicit taxes in the pricing of OMPS and NMPS must be joint tests for implicit taxes and corporate marginal investors. The first hypothesis is formally stated as follows:

H1: OMPS pre-tax dividend yields are higher than NMPS pre-tax dividend yields for public utilities having OMPS in their capital structures.

Implicit taxes must be measured in relation to a fully taxable asset. Interest income from public utility debt obligations is fully taxable to both individual and corporate investors. The after-tax return to a corporate investor in long-term debt is as follows:

$$r_{dc} = R_{debt} (1 - \tau_{mc}) \quad (4)$$

where r_{dc} is the after-tax return on debt to a corporate investor, R_{debt} is the pre-tax return on debt, and τ_{mc} is the marginal tax rate of the corporate investor. For corporate investors to be indifferent between holding long-term debt and OMPS, the after-tax returns must be comparable. The after-tax return on OMPS (r_{oc}) equals that of debt (r_{dc}) to a corporate investor if:

$$R_{omps} (1 - \tau_{mc} \times 58\%) = R_{debt} (1 - \tau_{mc})$$

$$R_{omps}/R_{debt} = (1 - \tau_{mc})/(1 - \tau_{mc} \times 58\%). \quad (5)$$

For all positive levels of corporate investor marginal tax rates ($\tau_{mc} > 0$), R_{omps}/R_{debt} is less than 1. Individual taxpayers and tax-exempt organizations would be indifferent between investing in equally risky OMPS and long-term debt with the same pre-tax return because individual investors are taxed identically on OMPS dividends and debt interest, and tax-exempt investors are not taxed on either. This analysis suggests that the pre-tax dividend rate on OMPS will be lower than the pre-tax interest rate of equally risky debt when the marginal investor is a corporation. The second hypothesis is formally stated as follows:

H2: OMPS pre-tax dividend yields are lower than long-term debt pre-tax interest yields for public utilities having OMPS in their capital structures.

The second question examined in this study is whether the availability of tax-advantaged OMPS motivates public utility managers to use more total preferred stock financing. Prior research

provides evidence that income taxes play an important role in corporate financing decisions, however, empirical research examining the link between income taxes and preferred stock financing often exclude public utilities in their sample selection process.[8] Empirical studies that have included public utilities in their samples have not consistently found evidence that income taxes influence public utilities' capital structure decisions (Chen and Fanara 1992; Houston and Houston 1990; Frischmann and Warfield 1999).

Prior studies suggest that public utility managers do not have sufficient incentive to achieve tax savings because regulators pass these savings on to customers in the form of reduced rates (Bierman 1987; Litzenberger and Sosin 1979). In response to this incentive problem, regulators may impose "hypothetical" capital structures with higher assumed debt ratios when they believe a public utility's debt ratio is too low. This threat of regulatory intervention provides incentives for public utility managers to maintain high levels of debt financing even though the tax savings are passed directly to ratepayers.[9]

Like debt financing, the cost of preferred stock financing flows directly through to ratepayers in the rate-making process. Unlike debt financing, there is no history of regulators imposing "hypothetical" preferred stock ratios if the level of preferred stock financing is deemed to be too low. However, anecdotal evidence suggests that regulators believe public utilities should have some preferred stock financing for "balance" in their capital structures. Thus, public utility managers may view outstanding OMPS as substitutes for NMPS in achieving the chosen level of total preferred stock financing (i.e., the level needed to provide "balance" in their capital structures).

I.R.C. §247 allows the public utility a deduction for only a portion of the dividends paid on OMPS. The deductible percentage equals 14 percent divided by the highest statutory tax rate applicable for the year (regardless of the utility's actual federal marginal tax rate).[10] Currently, the highest statutory tax rate is 35 percent; therefore, a public utility with OMPS receives a tax deduction equal to 40 percent (14%/35%) of the dividends paid. Since 1942, public utilities have had the option of choosing to preserve or retire outstanding OMPS. One advantage of OMPS compared to debt is that it has an unlimited life, while debt must have a fixed maturity date.[11] Thus, public utilities can replace higher dividend rate OMPS with lower dividend rate OMPS when market conditions are favorable and maintain the lower rate financing indefinitely. Higher interest rate debt that is replaced with lower interest rate debt must have a limited life and, therefore, must be replaced again at maturity (potentially at higher interest rates). For this reason, OMPS has an advantage over debt even though the dividends paid are only partially deductible whereas interest paid on debt is fully deductible.

Once a public utility retires OMPS and does not replace it with other OMPS, the ability to use OMPS is permanently lost. Public utilities can only increase their level of OMPS by acquiring other public utilities that have OMPS and structuring the transaction so that the outstanding OMPS

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[8] Prior studies providing evidence that income taxes play an important role in corporate financing decisions include Mackie-Mason (1990), Scholes and Wolfson (1992), Dhaliwal et al. (1992), Trezevant (1992), Givoly et al. (1992), Carter and Manzon (1995), Collins and Shackelford (1992), Graham (1996a), Callahan et al. (2001), Engel et al. (1999), and Frischmann and Warfield (1999). Studies that have excluded public utilities in their sample selection process include Collins and Shackelford (1992), Carter and Manzon (1995), Newberry (1998), and Callahan et al. (2001).

[9] See Cross (1991) for a summary of rate-making cases and *Associated Natural Gas Company v. Public Service Commission of Missouri*, 706 S.W.2d 870 (1985) for a discussion of the legal precedents for the regulatory practice of imposing a hypothetical capital structure.

[10] The deduction for a given year is also limited to taxable income computed without the deduction [I.R.C. §247(a)(1)].

[11] One of the most important factors in determining whether a security is debt or equity for tax purposes is the presence of a fixed maturity of reasonable length. An unreasonably long maturity date is often deemed to be sufficient to classify an instrument as stock and, therefore, disallow the deduction for the interest paid. See, *Jewel Tea Co. v. United States*, 90 F.2d 451, 453 (2d Cir. 1937) ("in the absence of such a provision a security cannot be debt") and Notice 94-47, 1994-19 I.R.B. 9 (instruments with unreasonably long maturities are given heightened scrutiny).

is preserved. Thus, public utilities with OMPS currently outstanding have chosen to preserve this tax-advantaged preferred stock over time.

If public utility managers are not motivated to achieve tax savings (because these savings are returned to ratepayers rather than accruing to common shareholders), then they will view OMPS and NMPS as substitutes in achieving the level of total preferred stock needed for "balance" in the public utility's capital structure. In that case, the level of total preferred stock financing will not increase with the level of OMPS. However, if public utility managers are motivated to achieve tax savings, then the tax advantage associated with OMPS will provide incentives for public utility managers to use OMPS in addition to NMPS, and thus, the level of total preferred stock financing will increase with the level of OMPS. The third hypothesis is formally stated as follows:

H3: The level of total preferred stock financing utilized by public utilities increases with the level of OMPS outstanding.

RESEARCH DESIGN AND SAMPLE DESCRIPTION

H1 and H2 Research Design

Hypotheses 1 and 2 predict that OMPS pre-tax yields are higher than equally risky NMPS pre-tax yields and lower than equally risky debt pre-tax yields. To test these hypotheses, the average pre-tax yields on securities issued by public utilities that have OMPS in their capital structures (debt, OMPS, and NMPS) are compared after controlling for risk and voting features. The following model is used to test these hypotheses:

$$YIELD_i = b_0 + b_1IOMPS_i + b_2INMPS_i + b_3VOTE_i + b_4MRATE_i + e_i \quad (6)$$

where:

YIELD = pre-tax yield for issue i;
IOMPS = 1 if issue i is an OMPS, 0 otherwise;
INMPS = 1 if issue i is a NMPS, 0 otherwise;
VOTE = 1 if issue i is a voting preferred stock, 0 otherwise; and
MRATE = the Moody's Bond Record rating on a scale from 1 (AAA, least risky) to 9 (C, most risky) of issue i.

YIELD is the annual dividend or interest divided by the year-end price. The dividend, voting, and price information for preferred stocks is obtained from the *Standard and Poor's Daily Stock Price Record*. Information about bond prices and interest rates are obtained from the *Moody's Bond Record*. The variables VOTE and MRATE are included in the model to control for nontax differences between the issues in terms of voting rights and risk.[12] The relation between YIELD and the risk measure MRATE is expected to be positive ($b_3 > 0$). No prediction is made about the sign of the estimated coefficient on VOTE.

A negative sign for the estimated coefficient on IOMPS ($b_1 < 0$) will indicate that OMPS pre-tax dividend yields are lower than those of bonds after controlling for differences in voting rights and risk. A negative sign for the estimated coefficient on INMPS ($b_2 < 0$) will indicate that NMPS pre-tax dividend yields are lower than those of bonds after controlling for differences in voting rights and risk. A lower coefficient on INMPS compared to IOMPS ($b_2 < b_1$) will indicate that NMPS dividend yields are lower than those of OMPS after controlling for differences in voting rights and risk.

H3 Research Design

Hypothesis 3 predicts that the level of total preferred stock financing increases with the level of OMPS outstanding. The following model is used to test this hypothesis:

[12] None of the publicly held stocks in my sample are convertible preferred stocks.

$$PSTOCK_j = a_0 + a_1FMTR_j + a_2FOR_j + a_3NOL_j + a_4PROFIT_j + a_5RISK_j + a_6MTB_j + a_7SIZE_j + a_8OMPSTOCK_j + e_j \quad (7)$$

where:

PSTOCK = the total book value of preferred stock divided by total assets at year-end for public utility j;
FMTR = the federal marginal tax rate for public utility j;
FOR = 1 if public utility j has foreign assets at year-end, 0 otherwise;
NOL = 1 if public utility j has a net operating loss carryforward at year-end, 0 otherwise;
PROFIT = the five-year average return on assets before interest and taxes for public utility j;
RISK = the standard error of PROFIT for public utility j;
MTB = the market value of common equity divided by the book value of common equity at year-end for public utility j;
SIZE = the log of total assets at year-end for public utility j; and
OMPSTOCK = the book value of old money preferred stock divided by total assets at year-end for public utility j.

The federal marginal tax rate (FMTR) is the simulated tax rate developed in Graham (1996b). The indicator variable for foreign investments (FOR) is determined by examining segment disclosures in the financial statement footnotes. All remaining variables are calculated from Compustat data and data collected from the *Moody's Public Utility Manual*.

Prior research suggests that nonpublic utility firms with lower marginal tax rates are more likely to issue preferred stocks (Fooladi and Roberts 1986; Houston and Houston 1990; Carter and Manzon 1995). Consistent with prior research, the sign of the estimated coefficient on FMTR is expected to be negative ($a_1 < 0$). Prior research also suggests that nonpublic utility firms issue preferred stock to obtain more favorable foreign tax credit limitations (Collins and Shackelford 1992; Newberry 1998). Therefore, the sign of the estimated coefficient on FOR is expected to be positive ($a_2 > 0$). Callahan et al. (1998) suggest that firms issue preferred stocks to avoid restrictions on the use of net operating loss carryforwards in the event of an ownership change. Thus, the sign of the estimated coefficient on NOL is expected to be positive ($a_3 > 0$).

PROFIT, RISK, MTB, and SIZE are included in the model as controls for nontax factors that are expected to influence the level of preferred stock financing. Donaldson (1962) and Moyer et al. (1987) suggest that firms with higher bankruptcy risk are more likely to use preferred stock financing because the risk of forced bankruptcy is lower if preferred stock dividends cannot be paid (as compared with failure to pay bond interest). Firms with higher average profits before interest and taxes have lower bankruptcy risk and, thus, are expected to use less total preferred stock financing ($a_4 < 0$). Firms with greater variations in profits before interest and taxes have higher bankruptcy risk and, thus, are expected to use more total preferred stock financing ($a_5 > 0$). Consistent with Chen and Fanara (1992) and Collins et al. (1995), public utilities with higher market-to-book ratios are expected to use less total preferred stock financing ($a_6 < 0$). Consistent with Callahan et al. (1998), larger firms are expected to utilize more total preferred stock financing ($a_7 > 0$).

If the availability of tax-advantaged OMPS provides incentives for public utility managers to choose higher levels of total preferred stock financing, then the relation between total preferred stock financing and OMPS is expected to be close to 1 ($a_8 = 1$). However, if public utility managers view OMPS and NMPS as substitutes, then the relation between total preferred stock financing and OMPS is not expected to be significant ($a_8 = 0$).

Sample Description

An initial sample of 168 U.S. regulated electric, gas, and water public utilities is obtained from the 1997 Compustat Annual Files. Included firms are rate-regulated public utilities having

nonmissing data for total assets at year-end 1997 and operating in Standard Industrial Classification Codes 4911, 4923, 4924, 4931, 4932, or 4941. Two public utilities are deleted because of insufficient data to calculate the PROFIT and RISK variables defined above.

For the remaining 166 public utilities, all preferred stocks outstanding at year-end 1997 are identified from the financial statements available on Lexis/Nexis Academic Universe and the *Moody's Public Utility Manual*. The status of these preferred stocks as OMPS vs. NMPS and the book values of each are determined from information provided in the *Moody's Bond Record* and the *Moody's Public Utility Manual*. This process yields a sample of 73 public utilities having at least one OMPS issue in their capital structure and 93 public utilities having no OMPS issues. The sample for testing H3 includes these 166 public utilities. In total, these firms had 148 OMPS and 402 NMPS issues in their capital structures.

A majority of the OMPS and NMPS issued by the 73 public utilities that have OMPS in their capital structures did not have prices available at year-end 1997 and do not appear to be publicly traded. Consequently, the sample for testing H1 and H2 is reduced to 41 public utilities having 41 OMPS and 47 NMPS issues with price information. Of these 88 preferred stock issues, 34 have voting rights (17 OMPS and 17 NMPS). A sample of long-term debt securities issued by these 41 public utilities is obtained from the *Moody's Bond Record* and the *Moody's Public Utility Manual*. The sample includes 250 taxable long-term debt issues outstanding at December 31, 1997 that have all details (including interest rates, Moody's rating, and price) available.

DESCRIPTIVE STATISTICS AND TEST RESULTS

Tests of H1 and H2

Table 1 presents descriptive statistics for the OMPS, NMPS, and debt issued by the 41 public utilities that have at least one publicly traded OMPS issue. Hypothesis 1 predicts that the pre-tax yield on OMPS will be higher than that of equally risky NMPS because the OMPS DRD is reduced for corporate investors. The descriptive statistics presented in Table 1 indicate that both the mean (6.461 percent) and median (6.410 percent) OMPS dividend yields are significantly higher than the mean (6.181 percent) and median (5.956 percent) NMPS dividend yields. Hypothesis 2 predicts that the pre-tax yield on OMPS will be lower than that of equally risky debt because corporate investors get a partial DRD on OMPS. The descriptive statistics presented in Table 1 indicate that both the mean and median OMPS dividend yields are significantly lower than the mean (7.126 percent) and median (7.151 percent) debt interest yields. These univariate tests are consistent with H1 and H2; however, they do not control for differences in voting rights and risk across issues.

Model (6) in Table 2, Panel A presents the results of multiple regression tests for differences in pre-tax yields of debt, OMPS, and NMPS. Yields are not significantly affected by voting rights but they increase with risk (MRATE) as predicted. The signs of the estimated coefficients IOMPS and INMPS are negative and significant, indicating that the mean risk-adjusted OMPS pre-tax yield of 4.837 (5.594 − 0.757) percent and the mean risk-adjusted NMPS pre-tax yield of 4.451 (5.594 − 1.143) percent are lower than the mean risk-adjusted debt pre-tax yield of 5.594 percent. Furthermore, the mean risk-adjusted pre-tax yield on NMPS is significantly lower than that of OMPS. These results are consistent with H1 and H2 and suggest that the implicit tax borne by OMPS is lower than that born by NMPS.

Table 2, Panel B compares OMPS and NMPS only, Panel C compares OMPS and debt only and Panel D compares NMPS and debt only. These results are similar to those provided by the full model in Panel A. Furthermore, the implicit taxes estimated using the full model in Panel A is similar to those estimated from Panels C and D.

The mean risk-adjusted pre-tax yields from Model (6) Panel A can be used to estimate the implicit taxes on OMPS and NMPS as follows:

$$\tau_{\text{omps, implicit}} = (5.594 - 4.837)/5.594 = 0.757/5.594 = 13.5\%$$

$$\tau_{\text{nmps, implicit}} = (5.594 - 4.451)/5.594 = 1.143/5.594 = 20.4\%$$

The estimated 20.4 percent implicit tax associated with the 70 percent DRD is considerably

TABLE 1
DESCRIPTIVE STATISTICS AND UNIVARIATE TESTS FOR SECURITIES OF PUBLIC UTILITIES WITH OMPS IN THEIR CAPITAL STRUCTURE

	n	Mean	Std. Dev.	Q1	Median	Q3
Panel A: Descriptive Statistics						
$YIELD_{omps}$	41	6.461	0.609	6.228	6.410	6.717
$YIELD_{nmps}$	47	6.181	0.685	5.660	5.956	6.778
$YIELD_{debt}$	250	7.126	0.792	6.608	7.151	7.542
$MRATE_{omps}$	41	3.487	0.977	3	3	4
$MRATE_{nmps}$	47	3.723	0.901	3	4	5
$MRATE_{debt}$	250	3.328	0.731	3	3	4

Panel B: Tests of Differences in Means and Medians

	Mean Test t-statistic	Median Test z-statistic
$YIELD_{omps}$ vs. $YIELD_{nmps}$	2.011**	2.735*
$YIELD_{omps}$ vs. $YIELD_{debt}$	6.178*	5.210*
$YIELD_{nmps}$ vs. $YIELD_{debt}$	7.651*	6.709*
$MRATE_{omps}$ vs. $MRATE_{nmps}$	1.175	1.216
$MRATE_{omps}$ vs. $MRATE_{debt}$	1.001	0.681
$MRATE_{nmps}$ vs. $MRATE_{debt}$	2.836*	2.683*

*,**,** Means or medians across security type (OMPS, NMPS, or debt) are significantly different at less than the 0.01, 0.05, 0.10 level, respectively, based on two-sided t-tests or Wilcoxon rank-sum tests as appropriate.
Variable Definitions:
YIELD = annual dividend or interest divided by price (in percentages) for issue i;
MRATE = the Moody's rating on a scale from 1 (least risky) to 9 (most risky) of issue i;
omps = indicates old money preferred stock issues;
nmps = indicates new money preferred stock issues; and
debt = indicates debt issues.

larger than the 3.01 percent to 5.01 percent estimated by Erickson and Maydew (1998). As they point out, their estimate must be interpreted cautiously because they cannot adjust for the market's assessment of the probability that the DRD reduction proposal would pass. My analysis indicates that the implicit tax resulting from the 70 percent DRD is substantially higher than their findings would indicate. This suggests that the market assessed a relatively low probability that the proposal in their study would pass, which may have contributed to their failure to find a significant reaction for common stocks.

Consistent with prior research, these results imply that marginal investors in OMPS and NMPS are corporations that can claim the DRD. Furthermore, these results can be used to estimate the average marginal tax rate for the marginal corporate investors in OMPS. Substituting the risk-adjusted mean dividend yields of 4.451 percent for NMPS and 4.837 percent for OMPS in Equation (3) above and solving for τ_{mc} indicates that, on average, a corporate investor with a marginal tax rate (τ_{mc}) of 26.3 percent would be indifferent between investing in OMPS and NMPS. Substituting the risk-adjusted mean yield of 5.594 percent for debt and 4.837 percent for OMPS in Equation (5) above and solving for τ_{mc} indicates that, on average, a corporate investor with a marginal tax rate (τ_{mc}) of 27.2 percent would be indifferent between investing in OMPS and debt. This analysis

TABLE 2
REGRESSION ANALYSIS FOR PREFERRED STOCK AND DEBT ISSUES OF PUBLIC UTILITIES WITH PUBLICLY TRADED OMPS ISSUES
Model (6): $YIELD_i = b_0 + b_1IOMPS_i + b_2INMPS_i + b_3VOTE_i + b_4MRATE_i + e_i$

	n	Intercept	IOMPS	INMPS	VOTE	MRATE	Adj R^2
Panel A: Full Model							
Coefficient	338	5.594	−0.757	−1.143	0.045	0.460	0.3639
(t-statistic)		(34.962)*	(−6.894)*	(11.832)*	(0.422)	(10.154)*	
			Ha: INMPS < IOMPS				
			t-statistic = 2.153**				
Panel B: OMPS vs. NMPS							
Coefficient	88	4.385	0.389		0.061	0.4764	0.4454
(t-statistic)		(15.337)*	(3.866)*		(0.518)	(6.874)*	
Panel C: OMPS vs. DEBT							
Coefficient	291	5.682	−0.785		0.122	0.433	0.2425
(t-statistic)		(31.707)*	(−6.210)*		(0.707)	(8.424)*	
Panel D: NMPS vs. DEBT							
Coefficient	297	5.520		−1.123	−0.033	0.482	0.3466
(t-statistic)		(31.760)*		(−10.913)*	(0.262)	(9.737)*	

*, **, *** Significant at the 0.01, 0.05 and 0.10 level, respectively, based on a two-sided t-test for VOTE and one-sided t-tests for all other coefficients.
Variable definitions:
YIELD = annual dividend or interest divided by price (in percentages) for issue i;
IOMPS = 1 if issue i is an old money preferred stock, 0 otherwise;
INMPS = 1 if issue i is new money preferred stock, 0 otherwise;
VOTE = 1 if issue i is a voting preferred stock, 0 otherwise; and
MRATE = the Moody's rating on a scale from 1 (AAA, least risky) to 9 (C, most risky) of issue i.

suggests that, on average, the marginal corporate investors in publicly traded OMPS have marginal tax rates between 26.3 percent and 27.2 percent.

These findings provide further evidence that tax clienteles for preferred stocks exist as a result of the DRD allowed to corporate investors. Furthermore, these results document one example where a corporate tax clientele with marginal tax rates substantially below the maximum statutory rate determined the price of an asset. Prior research suggests that lower marginal tax rate corporations are sometimes priced out of the market for tax-advantaged investments.[13]

[13] Scholes et al. (1990) find that banks with net operating losses take fewer long positions in tax-favored assets such as municipal bonds and direct lease assets. Shackelford (1991) documents that ESOP lenders are high-taxpaying banks and suggests that financial institutions with taxable losses or sufficient alternative tax-advantageous investments appear to have been priced out of the market for the tax benefits of the ESOP interest exclusion.

Tests of H3

Table 3 presents descriptive statistics and univariate tests for public utilities with and without OMPS. Public utilities having OMPS are much larger on average (in terms of total assets) and finance a larger percentage of their assets through preferred stocks than those without OMPS. The mean and median debt-to-total assets of public utilities with OMPS are not significantly different from other public utilities. This suggests that OMPS is not used as a substitute for debt financing. Public utilities with OMPS do have lower ratios of book value of common equity to total assets, but this difference is only marginally significant (at the 0.10 level). Public utilities with and without OMPS are not significantly different in terms of federal marginal tax rates, profit, risk or market-to-book value of common equity.[14]

Hypothesis 3 examines whether OMPS is associated with higher levels of total preferred stock financing or whether OMPS is used as a substitute for NMPS. Table 4 presents the results of estimating Model (7). The model diagnostics indicate no significant problems with heteroskedasticity or multicollinearity. Total preferred stock financing (PSTOCK) is not significantly related to the federal marginal tax rate (FMTR). This result is consistent with prior research, which has not found a relation between tax rates and the decision to issue preferred stocks for public utilities (Houston and Houston 1990; Frischmann and Warfield 1999).

PSTOCK is also not significantly related to the presence of foreign investments (FOR) or the presence of net operating loss carryforwards (NOL).[15] Prior to 1992, public utilities' foreign investments were mainly partial ownerships of small- and medium-sized generating plants. After the 1992 Energy Policy Act, public utilities were permitted to own equity investments in foreign utilities. Since then, some public utilities have increased their foreign investments (Abramson 1996). However, only 11 public utilities in my sample reported having foreign operations and none reported foreign tax credit limitations.[16] Thus, management of the foreign tax credit limitation does not appear to be an important determinate of preferred stock financing decisions for public utilities at this time. Public utilities also have a low incidence of net operating loss carryforwards (only five of the 166 public utilities in the sample) due to the regulatory process. Thus, avoiding restrictions on the use of net operating loss carryforwards in the event of an ownership change does not appear to be an important consideration in the public utility industry.

Consistent with prior research, total preferred stock financing is negatively related to profitability (PROFIT) and the market-to-book ratio (MTB) and positively related to the size of the public utility (SIZE). However, the variability of profit (RISK) is not significantly related to the level of total preferred stock financing.

The coefficient on OMPSTOCK is positive and not significantly different from 1, indicating that the level of total preferred stock financing increases dollar-for-dollar with the level of OMPS financing.[17] This relation suggests that OMPS does not substitute for NMPS but rather that the tax preference on OMPS provides incentives for public utility managers to choose higher levels of total preferred stock financing.[18] This result is consistent with H3.

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[14] I collected information about the date of incorporation for each public utility and/or the date of incorporation of the earliest predecessor to the current company reported in *Moody's Public Utility Manual*. Of the 93 public utilities without OMPS, only 11 had incorporation dates after 1941. Thus, it seems reasonable that the remaining 82 public utilities had OMPS outstanding at one time and chose not to preserve it.

[15] The model was also estimated using the ratios of foreign assets-to-total assets and net operating loss carryforwards-to-total assets in place of the dummy variables FOR and NOL. The coefficients on these variables were also not significant.

[16] Anecdotal evidence from financial analysts speaking at the 2000 Financial Research Institute Utility Symposium suggests that public utilities that have invested in foreign utilities will be fortunate just to get back the money they put into these investments due to regulatory changes made in the foreign countries.

[17] When a dummy variable is added to Model (7) for public utilities having OMPS in their capital structures, the coefficient on the dummy variable is not significant and the results do not change significantly.

[18] When Model (7) is estimated using only NMPS divided by total assets as the dependent variable, the coefficient on OMPSTOCK is not significantly different from 0. The remaining coefficients do not change. This provides further evidence that OMPS and NMPS are not substitutes in the public utilities' capital structures.

TABLE 3
DESCRIPTIVE STATISTICS AND UNIVARIATE TESTS FOR PUBLIC UTILITIES WITH AND WITHOUT OMPS

	n	Mean	Std. Dev.	Q1	Median	Q3
Panel A: Public Utilities with OMPS						
DEBT	73	0.3136	0.0575	0.2789	0.3142	0.3534
PSTOCK	73	0.0232	0.0149	0.0121	0.0200	0.0317
NMPSTOCK	73	0.0167	0.0132	0.0068	0.0136	0.0237
OMPSTOCK	73	0.0064	0.0063	0.0020	0.0042	0.0086
CSTOCK	73	0.2972	0.0578	0.2643	0.3000	0.3428
FMTR	73	0.3343	0.0672	0.3500	0.3500	0.3505
PROFIT	73	0.0861	0.0119	0.0810	0.0850	0.0948
RISK	73	0.0103	0.0077	0.0052	0.0081	0.0135
ASSETS	73	7212.3	7780.0	1861.8	4694.3	9584.1
MTB	73	1.8071	0.4669	1.5857	1.7729	2.0834
Panel B: Public Utilities without OMPS						
DEBT	93	0.3194	0.0899	0.2703	0.3039	0.3561
PSTOCK	93	0.0092*	0.0156	0.0000	0.0000*	0.0111
NMPSTOCK	93	0.0092*	0.0156	0.0000	0.0000*	0.0111
CSTOCK	93	0.3150***	0.0641	0.2777	0.3163***	0.3511
FMTR	93	0.3302	0.0707	0.3400	0.3500**	0.3504
PROFIT	93	0.0881	0.0174	0.0790	0.0906	0.0983
RISK	93	0.0124	0.0088	0.0051	0.0100	0.0177
ASSETS	93	2173.1*	3937.7	243.7	722.1*	2305.8
MTB	93	1.9049	0.5014	1.6045	1.8796	2.1809

(Continued on next page)

TABLE 3 (Continued)

*, **, *** Means or medians across public utility type (with or without OMPS) are significantly different at less than the 0.01, 0.05, 0.10 level, respectively, based on two-sided t-tests or Wilcoxon rank-sum tests as appropriate.

Variable Definitions:

DEBT = the book value of long-term debt divided by total assets;
PSTOCK = the total book value of preferred stock divided by total assets;
NMPSTOCK = the book value of new money preferred stock divided by total assets;
OMPSTOCK = the book value of old money preferred stock divided by total assets;
CSTOCK = the book value of common equity divided by total assets;
FMTR = the federal marginal tax rate;
PROFIT = the average return on assets before interest and taxes;
RISK = the standard error of PROFIT;
ASSETS = the book value of total assets; and
MTB = the market value of common equity divided by the book value of common equity.

TABLE 4
REGRESSION ANALYSIS OF PUBLIC UTILITIES' PREFERRED STOCK CAPITALIZATION
Model (7) $PSTOCK_j = a_0 + a_1FMTR_j + a_2FOR_j + a_3NOL_j + a_4PROFIT_j + a_5RISK_j + a_6MTB_j + a_7SIZE_j + a_8OMPSTOCK_j + e_j$

Dependent Variable	Prediction	Coefficient	t-statistic
Intercept	≥ 0	0.0213	1.955**
FMTR	< 0	0.0159	0.891
FOR	> 0	−0.0061	−1.345
NOL	> 0	0.0000	0.706
PROFIT	< 0	−0.1590	−1.978**
RISK	> 0	−0.2429	−1.723
MTB	< 0	−0.0076	−3.091*
SIZE	> 0	0.0022	3.229*
OMPSTOCK	> 0	1.1161	5.181*
Adjusted R^2		0.3310	
N		166	
		Ho: OMPSTOCK = 1	
		t-statistic = 0.5393	

*,**,*** Significant at the 0.01, 0.05 and 0.10 levels, respectively, based on a two-sided t-test for OMPSTOCK = 1 and one-sided t-tests for all other coefficients.
Variable Definitions:
PSTOCK = the total book value of preferred stock divided by total assets;
FMTR = the Graham federal marginal tax rate;
FOR = 1 if the public utility has foreign assets, 0 otherwise;
NOL = 1 if the public utility has a net operating loss carryforward, 0 otherwise;
PROFIT = the average return on assets before interest and taxes;
RISK = the standard error of PROFIT;
MTB = the market value of common equity divided by the book value of common equity;
SIZE = the log of total assets; and
OMPSTOCK = the book value of old money preferred stock divided by total assets.

The fact that OMPS is not used as a substitute for NMPS raises the question of whether OMPS is used in place of debt or common equity. The descriptive statistics in Table 3 suggest that OMPS may be used as a substitute for common equity; however, the difference is only significant at the 0.10 level. When the common equity-to-total asset ratio is added to Model (7), the coefficient is insignificant and the remaining results do not change substantially. The same is true when the debt-to-total asset ratio is added to Model (7). Thus, tests using levels of preferred stock financing are not powerful enough to determine whether the OMPS financing is substituting for debt or common equity. However, because of the nature of OMPS, it is not possible to use changes in OMPS stock financing in the research design. Public utilities cannot issue additional OMPS; they can only preserve the level that is already outstanding. In addition, OMPS are infrequently retired. Only 23 OMPS were dropped from the *Moody's Public Utility Manual* list during the five-year period 1993 through 1997. Of these, nine were replaced with other OMPS at lower dividend rates, one was canceled as part of a bankruptcy proceeding, and three were redeemed prior to a merger. For three of the remaining issues, the financial statement footnotes stated that the company was retiring senior securities (including debt, these OMPS, and some NMPS) from "internal funds"

to reduce financing costs. For the remaining five issues, the financial statements indicate that the issues were redeemed but make no further comments indicating the reasons for their redemption. Thus, there are not enough changes in OMPS over the past few years to obtain a reasonable sample for testing whether OMPS were replaced with debt or common equity.

CONCLUSION

This study examines the risk-adjusted pre-tax yields of OMPS, NMPS, and debt issued by the same public utilities for evidence of implicit taxes. Corporate investors can claim a higher DRD for NMPS than for OMPS. I provide evidence showing that OMPS pre-tax yields are higher than NMPS pre-tax yields and lower than debt pre-tax yields, after controlling for voting rights and risk. This result is consistent with prior research documenting an implicit tax on preferred stocks due to the DRD. However, I estimate that the implicit tax on preferred stocks associated with the 70 percent DRD is about 20.4 percent, which is much higher than the 3.01 percent to 5.01 percent estimated in prior research. The results of this study are also consistent with prior research indicating that the marginal investors in preferred stock are corporations that claim the DRD. I further estimate that, on average, marginal corporate investors in public utility OMPS have marginal tax rates between 26.3 percent and 27.2 percent.

Finally, this study provides evidence that the partial tax deduction allowed for dividends paid on OMPS motivates public utility managers to choose higher levels of total preferred stock financing. Many prior studies examining capital structure decisions of public utilities have failed to document a tax effect. In this study, no relation is found between the level of public utilities' total preferred stock financing and other tax incentives that have been shown to affect the preferred stock financing decisions of nonpublic utility firms (lower marginal tax rates, mitigating foreign tax credit limitations, and avoiding restrictions on the use of tax net operating loss carryforwards in the event of an ownership change). However, these results must be interpreted with caution. As discussed in Shackelford and Shevlin (2001), cross-sectional tests based on levels are less powerful than those based on changes and can fail to find a tax effect when one actually exists. Due to the nature of OMPS, it is not possible to examine changes in the level of OMPS financing. However, this study does provide insights into the use of preferred stock financing by public utilities and their response to the availability of tax-advantaged OMPS. Future research should focus on changes in public utility capital structures to determine whether public utility managers are motivated to achieve tax savings despite the fact that these savings flow through to ratepayers rather than common shareholders.

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