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# Market Uncertainty and the Least-Cost Offering Method of Public Utility Debt: A Note

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THE CHOICE OF OFFERING method, competitive bidding or negotiated offering, for the issuance of new securities by public utilities is subject to approval by its regulators. The Securities and Exchange Commission (SEC) regulates security issuance by utility holding companies as stipulated by the Public Utility Holding Company Act of 1935. Rule 50 requires that, unless a waiver is granted, sales of all securities of a holding company or subsidiary company be accomplished through competitive bidding procedures. The Federal Energy Regulatory Commission (FERC) requires competitive bidding on all new securities issued by electric utilities.[1] Each state regulatory agency can formulate its own policy concerning security issuance. Most states that have the legal authority to require competitive bidding do require it. A fair conclusion of the prevailing regulatory environment is that regulators believe that competitive bidding will lead to lower overall interest cost.

Three recent studies have investigated this question. Based on a pooled sample of industrial and public utility debt offerings for the period January 1974 to April 1978, Sorensen [5] found that competitive bidding leads to a significantly lower overall interest cost compared with negotiated offerings. In contrast, Parker and Cooperman [3], using a sample of public utility debt offerings issued between 1970 and 1974, found that competitive bidding did not necessarily result in lower cost. Fabozzi and West [1] resolve these two seemingly conflicting findings using a sample of public utility debt offerings for the period 1974 through 1976. They demonstrate that the "appropriate comparison is not between negotiation and competitive bidding, per se, but rather between negotiation and the intensity of bidding competition" [1, p. 324]. In addition, they show that the general level of uncertainty must be considered in investigating the least-cost offering method. In doing so, they develop a measure to proxy for market uncertainty.

The purpose of this note is to provide additional empirical evidence on the importance of market uncertainty in the method of offering controversy using a sample from a more recent time period that includes a more volatile interest rate environment than in previous studies. To investigate this issue, we employ a new measure of market uncertainty as well as the measure developed by Fabozzi and West.

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[1] This is limited to securities of electric utilities organized and operating in states where the securities are not regulated by that state regulatory agency.

## I. The Sample

In this study, we investigate public utility debt offerings for the period January 1, 1977 to December 31, 1983. During this sample period, regulated public utilities floated more than $74 billion of new debt in a total of 747 new debt issues. From this universe of 747 debt issues, 120 issues were omitted for at least one of the following reasons: a) if the issue was a floating-rate or variable-rate security, b) if the credit rating was less than BBB, c) if the maturity was less than ten years, or d) if the face value was less than $10 million. An additional 132 issues were omitted due to insufficient data. The final sample consists of 495 of the 747 debt issues, representing $39.9 billion of the $74 billion. Of the 495 issues in the sample, 264 are negotiated offerings and 231 are competitive biddings. In terms of dollars, negotiated offerings exceeded competitive biddings by just under $2 billion.

On February 24, 1982, shelf registration (SEC Rule 415) became effective. At first, this might suggest that we should either omit issues offered via shelf registration or account for shelf registration by including a dummy variable. Closer examination, however, suggests that neither is necessary. Over the time period we investigated, utilities could not simply take advantage of Rule 415 without first obtaining permission from their regulators. During 1983, for example, only thirteen state regulatory agencies preapproved utility financing plans and permitted the use of shelf registration.[2] The other regulatory agencies required that the utility obtain an order specifically approving the terms of each new security sale. This could take as long as a week in some jurisdictions. Therefore, many of the security sales classified as shelf sales were not true shelf sales, but rather "mechanical shelf" sales.[3] That is, the utility took advantage of the expedited SEC shelf registration procedures, but the actual security sale was handled conventionally—through the traditional negotiation or competitive-bid process. This would call into question the further partitioning of our sample into shelf and nonshelf public utility bond sales.[4]

## II. Variables Employed in the Regression Model

The methodology that we employ, multiple regression analysis, is the same used in the three previous studies. Here we describe the variables that we used in the regression model.

The following two variables are used as dependent variables in our study. The source of information for these variables is the various issues of *Public Offerings of Corporate Securities* published by Drexel Burnham Lambert.

*Overall interest cost*: The overall interest cost is the best measure of the cost of a new debt issue because it takes into consideration the underwriters' commission, the price received for the securities, and the term to maturity.

[2] See "1984: Utilities on the Shelf," *Corporate Financing Weekly*, March 26, 1984.

[3] This term was coined by the *SEC's* Division of Corporate Finance.

[4] Rogowski and Sorensen's [4] study of the impact of shelf registration on the overall interest cost was restricted to new industrial issues; Kidwell, Marr, and Thompson [2] examined new industrial issues and utilities separately.

The overall interest cost is the interest rate that makes the present value of the cash outflow to satisfy the bond obligation equal to the proceeds received by the issuer.

*Underwriter spread*: The underwriter spread is the difference between the offering yield to the public and the overall interest cost to the issuer.

The following independent variables are characteristics of the issue.[5]

*Bond quality rating*: An issue characteristic that is expected to affect the overall interest cost is the quality rating of the issue. The quality ratings used in this study are those assigned by Standard & Poor's.

*Average term to maturity*: A second issue characteristic that can be expected to impact the overall interest cost is the number of years to maturity, barring any early refunding or swap activities by the issuer. However, due to possibility of call, we followed Sorensen [6] and used the average term to maturity, defined as the average of the maturity and call date.

*Call provisions*: To account for the call provision of an issue, the call deferment period as a percentage of the term to maturity is used.

The following two independent variables are a measure of the market environment.

*Current level of interest rates*: The current level of interest rates is a barometer of the yields investors are demanding on their capital. Salomon Brothers provides the best measure for this variable by estimating the interest rate at which a debt issue with a given rating could be sold in the market. Salomon Brothers provides an estimate on a weekly basis. We used the interest rate reported by Salomon Brothers for the week of the sale.

*Market uncertainty*: To assess whether competitive bidding results in a lower overall interest cost, Fabozzi and West [1] argue that market uncertainty must be considered. As a measure of uncertainty, they use the percentage of new public utility bonds offered via negotiation. They employ this measure because they find that during "the months when negotiation was most prevalent, the number of bids submitted for issues sold via competitive bidding was substantially below the average for the period as a whole" [1, p. 329]. They then argue, "To the extent that issuers use negotiation more frequently as rising uncertainty reduces the intensity of bidding competition, the percentage of issues sold via negotiation would itself seem to represent a reasonable proxy for the level of uncertainty" [1, p. 329]. The higher the percentage of offerings issued via negotiation in the period, the greater the market uncertainty. We use the same proxy measure for market uncertainty.

In addition, we use another measure of market uncertainty that may have some advantages over the percentage-negotiated measure. This measure of market uncertainty is equal to the dollar amount of new security issues that were either postponed or cancelled during the month of each new debt issue and the prior month. We believe that this measure may be a better proxy for market

[5] Another variable that was tried in the initial regressions was the size of the issue; however, size was never significant. This finding is consistent with that of Fabozzi and West [1].

uncertainty because public utility chief financial officers will postpone or cancel a new security issue whether it was intended to be sold competitively or through negotiation. The percentage-negotiated measure, however, is affected by forces other than market uncertainty. Some utilities cannot offer a new debt issue via negotiation even if the market is in a state of extreme uncertainty due to regulatory constraints, thereby limiting the magnitude of the percentage-negotiated measure. Chief financial officers who do not have the option to offer securities through negotiation will tend to postpone or cancel the sale of new securities. The change in the percentage-negotiated measure when a competitively bid issue is postponed or cancelled is smaller than the change if that security sale was switched from competitive bid to negotiated. Yet this measure is not perfect either because an issuer may postpone or cancel an issue for reasons other than market uncertainty.

The data on the bond issues that are postponed are developed from a Salomon Brothers report entitled *Special Report for Utility Officers*. This report details all public utility new issues as well as those that have been postponed or cancelled. The data on the postponed and cancelled issues are available for public utilities because utilities announce their plans to finance significantly in advance of the proposed sale date.

The offering method is represented in two different ways. First, we used a simple classification of competitive bidding and negotiated offering, using the dummy variable to represent competitive bidding. Second, as suggested by Fabozzi and West [1], an offering-method dummy variable was structured to recognize the number of bids submitted for each competitively bid issue. One offering-method dummy variable was assigned the value of one if the issue was a competitive bid issue *and* two bids were submitted (there were no one-bid issues in our sample), and zero otherwise; the other offering-method dummy variable was assigned the value of one if the issue was a competitive issue *and* three or more bids were submitted on a competitive offering, and zero otherwise.[6] The omitted group represented negotiated offerings. The number of bids on a competitively offered issue was obtained from Ebasco Business Services, Inc.

## III. Results

### *A. Results without Considering Market Uncertainty*

The regression results without considering market uncertainty are summarized in Table I. For each dependent variable (overall interest cost and underwriter spread), two results are shown. The first treats the offering method as simply negotiation or competitive bid. The second takes into account the number of bids on a competitive bid offering.

Focusing on the naive representation of the offering method, regression (1) indicates that the overall interest cost is roughly thirty-one basis points lower

[6] Initially we tried the following three dummy variables for the offering method: two bids, three bids, and more than three bids. We did not find that the submission of three bids is statistically significant, a finding consistent with that of Fabozzi and West.

**Table I**

Regression Results for Overall Interest Cost and Underwriter Spread without Considering Market Uncertainty[a]

| | Overall Interest Cost | | Underwriter Spread | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Yield | 0.870 | 0.871 | −0.001 | −0.001 |
| | (28.07)* | (27.87)* | (0.34) | (0.21) |
| Competitive Issues | −0.309 | — | −0.115 | — |
| | (1.98)* | — | (7.88)* | — |
| Two-Bid Issues | — | −0.264 | — | −0.099 |
| | — | (1.15) | — | (4.61)* |
| More Than Two-Bid | — | −0.325 | — | −0.121 |
| Issues | — | (1.95)* | — | (7.73)* |
| AA Rating | 0.262 | 0.262 | 0.036 | 0.036 |
| | (1.54) | (1.54) | (2.28)* | (2.28)* |
| A Rating | 0.997 | 0.994 | 0.082 | 0.082 |
| | (5.38)* | (5.35)* | (4.78)* | (4.71)* |
| Average Term | −0.044 | −0.045 | 0.001 | 0.001 |
| | (1.25) | (1.26) | (3.01)* | (2.98)* |
| Call | 0.553 | 0.513 | −0.065 | −0.069 |
| | (0.64) | (0.62) | (0.85) | (0.89) |
| Intercept | 2.543 | 2.540 | 0.676 | 0.675 |
| | (2.70)* | (2.70)* | (7.67)* | (7.66)* |
| $R^2$ | 0.74 | 0.74 | 0.20 | 0.20 |
| $F$-Value | 229.51* | 196.36* | 20.41* | 17.65* |

[a] Results are based on 495 observations. Absolute value of the $t$-value is shown in parentheses.

* Significant at the five percent level.

competitive offerings than for negotiated offerings. This is the typical finding studies investigating this question. Regression (3) shows that, for competitive offerings, underwriters accepted a spread that is twelve basis points lower than an otherwise comparable negotiated offering.

When bidding intensity is considered (regression (2)), the overall interest cost for competitive issues that receive only two bids is not lower than negotiated offerings, as indicated by the insignificant $t$-value for the dummy variable representing two-bid competitive issues. However, competitive issues with more than two bids did realize a cost savings, on average, of thirty-three basis points. Thus, without considering market uncertainty, the findings suggest that competitive bidding is cheaper than negotiation when more than two bids are received but that there is no difference when only two bids are received. The underwriter-spread regression (regression (4) in Table I) indicates that underwriters accepted a lower spread than on negotiated offering regardless of the number of bids received.

Before investigating the impact of market uncertainty, we shall discuss the results for the other independent variables. As expected, regressions (1) and (2) indicate that the overall interest cost is related to the yield level at the time of issuance. However, the yield level does not impact the underwriter spread. (See regressions (3) and (4).) The dummy variable representing A-rated issues is

positive and statistically significant in all four regressions. The AA-rated dummy is positive but not statistically significant at the five percent level in the overall-interest-cost regressions but statistically significant in the underwriter-spread regressions.

The call variable is not statistically significant in either the overall-interest-cost or underwriter-spread regressions. Based on the historical record at the time, utilities generally did not call or redeem their long-term securities prior to maturity. For example, during the 1970s, only AT&T subsidiaries and Public Service Electric and Gas Company refunded any long-term debt prior to maturity. Thus, a finding of no relationship between the call variable and the overall interest cost is not surprising.

The average term variable is not statistically significant in the two overall-interest-cost regressions, but it is statistically significant and positive in the underwriter-spread regressions. The reason for the former finding is probably due to the changing shape of the yield curve over the period investigated. During the investigation period, there were times when the yield curve was normal and other times when it was inverted. Since the yield curve was not constant, a finding of no relationship between overall interest cost and average term is not unusual. It is easy to explain why the underwriter spread is positively related to the average term. When an underwriter purchases a debt issue, the underwriter is exposed to price risk until the issue is sold. The longer the term of the issue, the greater its price volatility for a given change in interest rates and, therefore, the greater the price risk to which the underwriter is exposed. A higher underwriter spread for longer term bonds is required to compensate the underwriter for this risk.

### *B. Results Considering Market Uncertainty*

As we explained in Section II, we use two proxy measures for market uncertainty: a) percentage of new public utility bond issues offered via negotiation and b) the dollar amount of issues postponed. We classified a time period as one of high market uncertainty if the measure exceeded the average value for the sample period. For the percentage-negotiated measure of market uncertainty, the average was approximately thirty-six percent; for the postponement measure, it was approximately $200 million.

In Table II, we report the regression results when a dummy variable representing high market uncertainty is included as an independent variable. In both overall-interest-cost regressions, the dummy variable for high market uncertainty is significant at the one percent level. The sign in both regressions is positive, indicating that, in periods of high market uncertainty, the overall interest cost of an issue is on average higher regardless of the offering method. Note also that, when the dummy variable representing high market uncertainty based on the percentage of issues negotiated is included in the regression, the dummy variable representing competitive issues with more than two bids is no longer statistically significant. Using the postponement variable as a proxy measure for market uncertainty, the dummy variable representing more than two-bid issues is significant at the seven percent level, not the five percent level. In the underwriter-

**Table II**

Regression Results for Overall Interest Cost and Underwriter Spread Considering Market-Uncertainty Dummy Variable[a]

| | Overall Interest Cost | | Underwriter Spread | |
|---|---|---|---|---|
| | % Negot.[b] (1) | Postpone[c] (2) | % Negot.[b] (3) | Postpone[c] (4) |
| Yield | 0.793 | 0.739 | −0.001 | −0.003 |
| | (22.61)* | (22.64)* | (0.05) | (0.85) |
| High Market Uncertainty[d] | 0.867 | 1.501 | −0.005 | 0.025 |
| | (4.58)* | (8.79)* | (0.28) | (1.45) |
| Two-Bid Issues | 0.049 | −0.275 | −0.101 | −0.099 |
| | (0.21) | (1.29) | (4.48)* | (4.62)* |
| More Than Two-Bid Issues | −0.092 | −0.276 | −0.122 | −0.120 |
| | (0.54) | (1.78) | (7.46)* | (7.69)* |
| AA Rating | 0.311 | 0.299 | 0.036 | 0.036 |
| | (1.85)* | (1.89)* | (2.25)* | (2.32)* |
| A Rating | 1.010 | 1.084 | 0.081 | 0.083 |
| | (5.55)* | (6.27)* | (4.70)* | (4.79)* |
| Average Term | −0.039 | −0.009 | 0.010 | 0.010 |
| | (1.14) | (0.28) | (2.96)* | (3.13)* |
| Call | 0.626 | 0.468 | −0.070 | −0.069 |
| | (0.78) | (0.61) | (0.90) | (0.90) |
| Intercept | 2.662 | 3.022 | 0.673 | 0.683 |
| | (2.88)* | (3.44)* | (7.64)* | (7.74)* |
| $R^2$ | 0.75 | 0.77 | 0.20 | 0.21 |
| $F$-Value | 181.47* | 208.34* | 15.42* | 15.74* |

[a] Results are based on 495 observations. Absolute value of the $t$-value is shown in parentheses.

[b] Market-uncertainty proxy is percentage negotiated.

[c] Market-uncertainty proxy is postponement.

[d] High market uncertainty equals one if the observation is in the high-uncertainty period and zero otherwise.

* Significant at the five percent level.

spread regression, the high-market-uncertainty dummy variable is not statistically significant.

Our story concerning the overall interest cost changes slightly after we introduce market uncertainty. There is still no difference between competitive issues with only two bids and negotiated offerings; however, based on one measure of market uncertainty, competitive issues receiving more than two bids may not result in a lower overall interest cost compared with negotiation.

We can take this analysis a step further. In Table III, we included the market-uncertainty measure in a more complex form. We introduced two interaction dummy variables to account for the number of bids and market uncertainty. The first interaction dummy variable is equal to one if the observation is a two-bid competitive offering in a high-market-uncertainty environment, and zero otherwise. The second interaction dummy variable is equal to one if the observation is a competitive offering with more than two bids issued in a high-market-uncertainty environment, and zero otherwise.

**Table III**

Regression Results for Overall Interest Cost and Underwriter Spread with Market-Uncertainty-Interaction Dummy Variables[a]

| | Overall Interest Cost | | Underwriter Spread | |
|---|---|---|---|---|
| | % Negot.[b] (1) | Postpone[c] (2) | % Negot.[b] (3) | Postpone[c] (4) |
| Yield | 0.839 | 0.829 | −0.001 | −0.002 |
| | (25.28)* | (25.04)* | (0.45) | (0.68) |
| Two-Bid Issues | −0.672 | −0.698 | −0.118 | −0.118 |
| | (2.62)* | (2.78)* | (4.87)* | (4.98)* |
| Two Bids—High Market Uncertainty[d] | 1.339 | 1.845 | 0.070 | 0.088 |
| | (3.02)* | (3.58)* | (1.68) | (1.81) |
| More Than Two-Bid Issues | −0.605 | −0.568 | −0.126 | −0.129 |
| | (2.87)* | (3.01)* | (6.35)* | (4.98)* |
| >2 Bids—High Market Uncertainty[d] | 0.533 | 0.727 | 0.009 | 0.021 |
| | (2.02)* | (2.27)* | (0.36) | (0.71) |
| AA Rating | 0.284 | 0.294 | 0.037 | 0.038 |
| | (1.68) | (1.75) | (2.28)* | (2.37)* |
| A Rating | 0.954 | 0.978 | 0.080 | 0.081 |
| | (5.19)* | (5.34)* | (4.61)* | (4.69)* |
| Average Term | −0.041 | −0.037 | 0.010 | 0.010 |
| | (1.16) | (1.06) | (3.03)* | (3.06)* |
| Call | 0.597 | 0.507 | −0.065 | −0.069 |
| | (0.73) | (0.62) | (0.84) | (0.90) |
| Intercept | 2.854 | 2.957 | 0.681 | 0.690 |
| | (3.03)* | (3.16)* | (7.66)* | (7.78)* |
| $R^2$ | 0.75 | 0.75 | 0.21 | 0.21 |
| $F$-Value | 157.48* | 159.22* | 14.07* | 14.71* |

Number of Observations per Classification

| | % Negotiated | | Postponement | |
|---|---|---|---|---|
| | Low | High | Low | High |
| Negotiated Issues | 42 | 222 | 145 | 119 |
| Competitive Issues | 147 | 84 | 186 | 45 |
| 2 bids | 49 | 17 | 55 | 11 |
| >2 bids | 98 | 67 | 131 | 34 |

[a] Results are based on 495 observations. Absolute value of the $t$-value is shown in parentheses.

[b] Market-uncertainty proxy is percentage negotiated.

[c] Market-uncertainty proxy is postponement.

[d] This dummy variable equals one if the observation received more than two bids and is in a high market-uncertainty period and zero otherwise.

* Significant at the five percent level.

Looking at the overall-interest-cost regressions, we see that the dummy variable for two-bid issues is negative and statistically significant, while the interaction dummy variable for two-bid issues in a high-market-uncertainty environment is positive and statistically significant. This is true for both measures of market uncertainty. The sum of the two coefficients is always positive and significantly different from zero at the one percent level. Thus, during periods of

high market uncertainty, negotiation is the lower cost offering method when a competitive offering receives only two bids. Fabozzi and West found that, during periods of high market uncertainty, there was no difference between the two. Yet our findings are consistent with their argument that, in a high-market-uncertainty environment, two-bid issues do not provide the issuer with any advantage relative to negotiated offerings and, in fact, may be more expensive.

Focusing on the dummy variable for more than two-bid competitive issues and the interaction dummy variable for more than two-bid competitive issues in a high-market-uncertainty environment, the sign of the former is negative and the sign of the latter is positive. When the percentage negotiated is used as the proxy measure for market uncertainty, the sum of the two coefficients is not statistically different from zero at the five percent level. In contrast, when postponement is employed as the proxy measure for market uncertainty, the sum of the two coefficients is positive and statistically different from zero. This implies that, in high-market-uncertainty environments, even competitive issues receiving more than two bids may cost more than negotiation.

## IV. Conclusions

A fair assessment of the issuing requirements set forth by public utility regulators suggests that they believe that negotiated offerings will lead to a higher overall interest cost than competitive bidding. There is conflicting empirical evidence about the least-cost method of issuance. To assess empirically whether there is a least-cost method of issuing bonds, Fabozzi and West [1] argued that it is necessary to consider market uncertainty. Using both a proxy measure of market uncertainty developed by Fabozzi and West and a new proxy measure, we find that, in periods of low market uncertainty, competitive bidding may be the least-cost offering method only when issues are expected to receive more than two bids. In periods of high market uncertainty, two-bid competitive offerings may be more costly than negotiated offerings. The fact that these results are consistent for two independently developed measures of market uncertainty is comforting. For more than two-bid issues, the results are split in high-market-uncertainty environments—it may be more expensive or the same as negotiated offerings.

In concluding their paper, Fabozzi and West argue:

> ... we think it appropriate to note that when an issuer's overall interest costs are not expected to vary with the method of offering, it might be expected to prefer negotiation. Negotiation, after all, puts the underwriter in a position where it must help the issuer "shape up the offering." While the value of this service may be readily quantifiable, it should tip the balance in favor of negotiation, *ceteris paribus.*

Our finding, that in high-market-uncertainty periods there is no advantage to competitive offerings and that they, in fact, may cost more than negotiated offerings, should tip the balance even further in favor of negotiation of public utility debt offerings.

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