

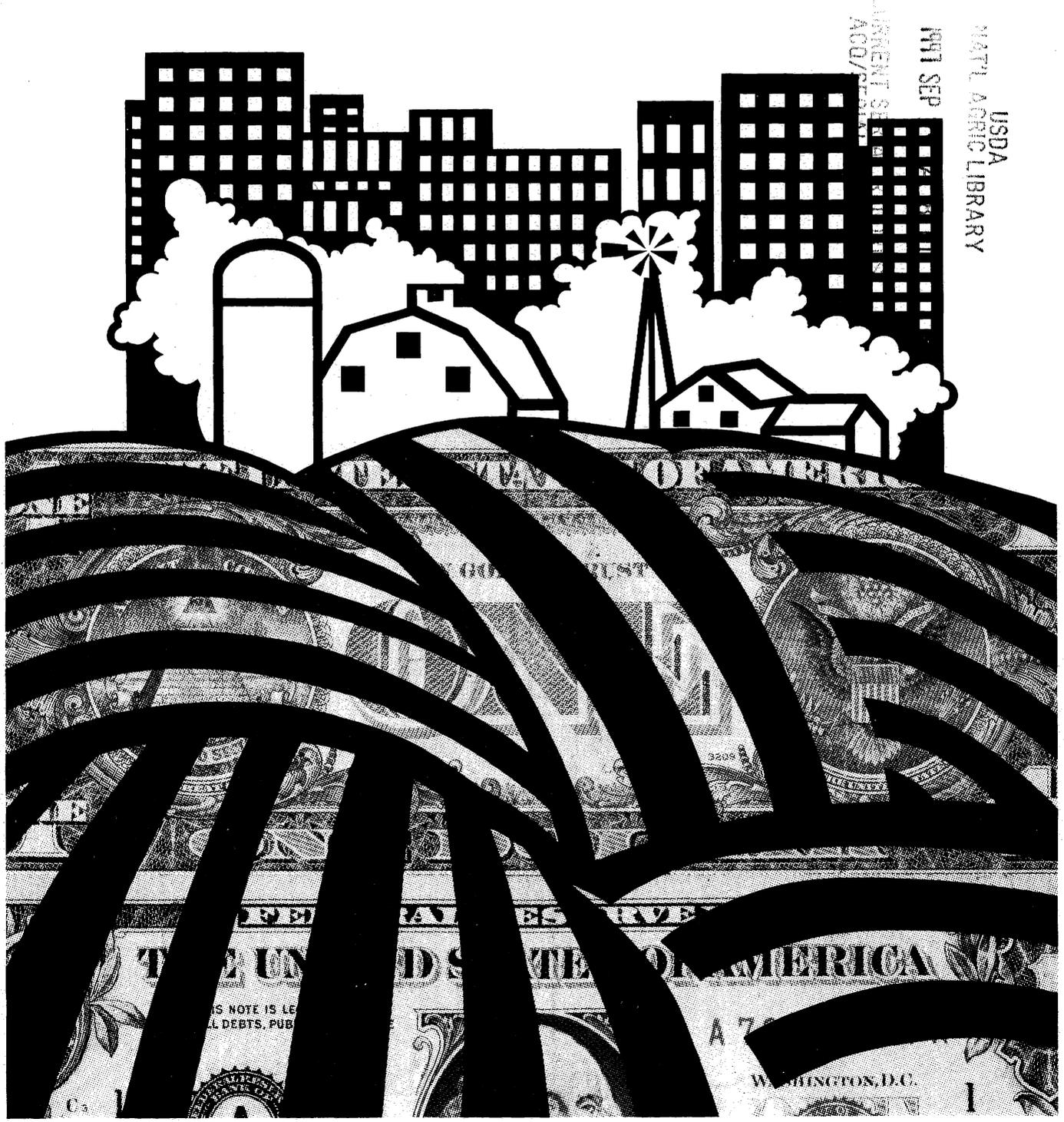
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The Cost of Metro and Nonmetro Government Borrowing

Patrick J. Sullivan



THE COST OF METRO AND NONMETRO GOVERNMENT BORROWING. By
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ABSTRACT

Nonmetro governments paid about the same interest rates on municipal bonds sold in 1977 as metro governments, even though policymakers commonly believed that rural governments had more limited access to regional and national bond markets. The movement toward State taxing limitations and the tightening of Federal budgets may make the bond market a more important source of local government construction funds. This study indicates that rural governments in general should have as much (or as little) access to the bond market as urban governments.

Keywords: Municipal bonds, local government finance, rural government borrowing, tax-exempt securities.

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SUMMARY

Nonmetro governments paid about the same interest rates on municipal bonds sold in 1977 as metro governments, even though policymakers commonly believed that rural governments had more limited access to regional and national bond markets. The movement toward State taxing limitations and the tightening of Federal budgets may make the bond market a more important source of local government construction funds. This study indicates that rural governments in general should have as much (or as little) access to the bond market as urban governments.

In 1977, borrowing costs of most nonmetro governments were roughly equivalent to those of metro governments; however, nonmetro governments sold bonds with characteristics which normally would have added to the costs. Nonmetro governments generally sold small bond issues, sold them noncompetitively, sold revenue bonds (bonds backed by revenues from a specific and limited source such as highway tolls), and sold unrated or unfavorably rated bonds. The demand for rural government bonds was evidently high enough to keep interest rates down despite these characteristics.

Rural governments rely heavily on noncompetitive marketing techniques (bonds are sold to preselected underwriters at negotiated prices or bonds are sold directly to investors). This reliance on noncompetitive sales with their relatively high borrowing costs may come from a lack of technical expertise in marketing bonds or from a lack of underwriter interest in many rural bond issues. However, several State governments are helping to lower borrowing costs for small governments. Although the need for such programs was evidently not widespread in 1977, they may be more important for the attainment of rural development goals, given current bond market conditions. The following programs already have been adopted in one or more States in an attempt to lower the cost of borrowing for small towns and rural areas:

- o Technical assistance programs can improve local government understanding and evaluation of the alternatives in issuing bonds.
- o The sale of several small bonds at one convenient location can increase underwriter interest in small bonds. Such a plan would reduce the costs to underwriters when submitting bids on bonds and heighten underwriter competition for rural bonds, making competitive sales a viable marketing method for more rural borrowers.

- o State supervision programs which increase the perceived investment quality of rural bonds by major investors can broaden the market for these bonds. Investors may come to accept the judgment of State officials on the local government's ability to pay back its debts effectively. However, such programs reduce local government autonomy and, therefore, may meet considerable resistance from local government officials. To some extent, the autonomy factor can be avoided by making local participation in these programs optional.

The Cost of Metro and Nonmetro Government Borrowing

Patrick J. Sullivan*

INTRODUCTION

Tightening Federal budgets and a continuing tax-limitation movement at the State level are forcing local governments to rely on their own revenues for a greater share of the construction and rehabilitation costs of public facilities. For many local governments, the only practical means of financing major capital projects is through the sale of long-term municipal bonds. ^{1/} Governments serving the many rural areas which continue to experience population and economic growth can be expected to rely heavily on bond financing as they cope with increased demands for new schools, roads, water and sewer lines, and other public facilities.

Many of the Federal and State loan and loan guarantee programs currently affected by budget constraints originally were instituted to overcome the borrowing problems and high interest rates rural governments were believed to face. Nevertheless, little empirical work has been done to determine whether borrowing problems were widespread among rural governments or whether the municipal bond market discriminated between metro and nonmetro borrowers.

This report summarizes an analysis of the borrowing costs of metro and nonmetro governments in 1977. The available evidence suggests that nonmetro areas have been remarkably successful in marketing their long-term bonds.

Based on bond sales reported in the financial press, the interest rate for nonmetro bonds is roughly equivalent to that paid by governments in metro areas selling similar types of bonds and using similar marketing methods.

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^{1/} The terms "municipal bonds" and "tax-exempt bonds" will be used interchangeably throughout this report. All securities issued or guaranteed by States, their political subdivisions, agencies, or instrumentalities are referred to as municipal bonds if their interest is exempt from Federal income tax.

CHARACTERISTICS OF
RURAL GOVERNMENT
BONDS

The characteristics of local government bonds and how they are marketed help determine the cost of bond financing. Such characteristics as the dollar amount of the bond issue and its security backing, maturity structure, credit rating, and method of sale affect borrowing costs. ^{2/} For many of these characteristics, the bonds of nonmetro governments are different from those of metro governments.

Data on bond sales reported in 1977 are the basis for the description and analysis to follow. Information on individual bond sales is collected from reports in the financial press (primarily The Bond Buyer) and from bond dealers by the Public Securities Association (PSA). However, the PSA does not geographically locate bond issuers beyond identifying the State in which they are located. Location and debt information from the census of governments' individual governments files were used to ease the task of geographically locating the government responsible for each bond issue and to supplement the information reported by the PSA. As a result, 1977--the latest year a census of local governments was taken--was chosen as the sample period for this analysis. The resulting data base, merging information from the PSA with information from the Bureau of the Census, is the only nationwide data set available for assessing bond market conditions in nonmetro areas.

However, the PSA/census data base does not report information on all bonds sold during any given time period. Nor do reported sales constitute a representative sample of all bond sales. The PSA is more likely to report information on larger bond issues, on the bond issues of frequent borrowers, and on bonds sold through traditional marketing channels. Because many rural bond issues fall outside this set, many of them likely go unreported and, therefore, are excluded from our data set. Nonetheless, information should be recorded on most of the dollar volume of bonds issued by both metro and nonmetro governments. As a result, in describing the characteristics of rural bonds, we will look at the dollar volume issued by metro and nonmetro governments instead of at the "average" bond issue.

Issue
Characteristics

Local government bonds are categorized in numerous ways. The source of funds pledged toward repayment, the use for which the bonds were issued, their maturity, and their credit ratings are used to differentiate one bond issue from another. To some extent, each of these characteristics affects the cost of borrowing. An examination of bonds issued by metro and nonmetro governments during 1977 reveals many prominent differences and some surprising similarities.

^{2/} A bond is a written promise to pay a specified sum of money on a specific date in the future, together with periodic interest at a specified rate. A bond issue is a group of bonds sold at one time as a package.

Local governments sell two broad types of long-term bonds. General obligation bonds are backed unconditionally by the issuing government's general revenues or, if these prove insufficient, by the full taxing power of the jurisdiction. Revenue bonds are not backed by the issuing government's general revenues but depend on a specific revenue source, such as highway tolls, for the funds needed to repay principal and interest. Borrowing costs tend to be slightly higher for revenue bonds than for comparable general obligation bonds (3). 3/.

In 1977, roughly two-thirds of the bond issues sold by nonmetro governments were of the general obligation type. However, over two-thirds of the dollar amount of bonds sold was accounted for by revenue bonds. This apparent contradiction resulted because the general obligation bond issues of nonmetro governments tended to be small--averaging \$1.5 million compared with \$6.1 million for revenue bond issues. 4/ Thus, for most of their borrowing, nonmetro governments favored the more costly type of bond. Metro governments, in comparison, relied on revenue bonds for a much smaller percentage of their borrowing.

A second characteristic of rural government borrowing was that the bond issues tended to be smaller than those of metro governments. The average size of nonmetro revenue bond issues was roughly half the average size of those sold by metro governments; for general obligation bonds, the average size of nonmetro issues was less than one-third that of metro issues. Small bond issues tend to cost more on a "per-dollar-borrowed" basis because of economies of size in marketing and trading (14).

A third characteristic of nonmetro government bonds was a comparative absence of credit ratings. The investing public uses the judgments of the two major rating agencies--Moody's Investors Service, Inc., and Standard and Poor's Corp.--to categorize municipal bonds. The rating agencies' decisions on the creditworthiness of a bond are a major component in the market's judgment of a bond's credit quality. Favorable ratings tend to reduce the cost of issuing a bond.

The issuing government generally decides on whether to have a bond rated by either or both agencies; both will rate most bonds for a fee. 5/ In 1977, the agencies rated only 57 percent of the nonmetro bond issues sold, compared with 70 percent of the metro bond issues. This pattern is not too

3/ Underscored numbers in parentheses refer to items in the References section of this report.

4/ All of the nonmetro figures referred to in this section exclude five Alaskan oil pipeline industrial revenue bonds sold by the city of Valdez, Alaska. These bonds had little in common with other local government issues because of their large size and the nature of the facility being built.

5/ The rating agencies refuse to evaluate certain types of debt and may withhold publishing a rating on any bond for which insufficient information has been made available.

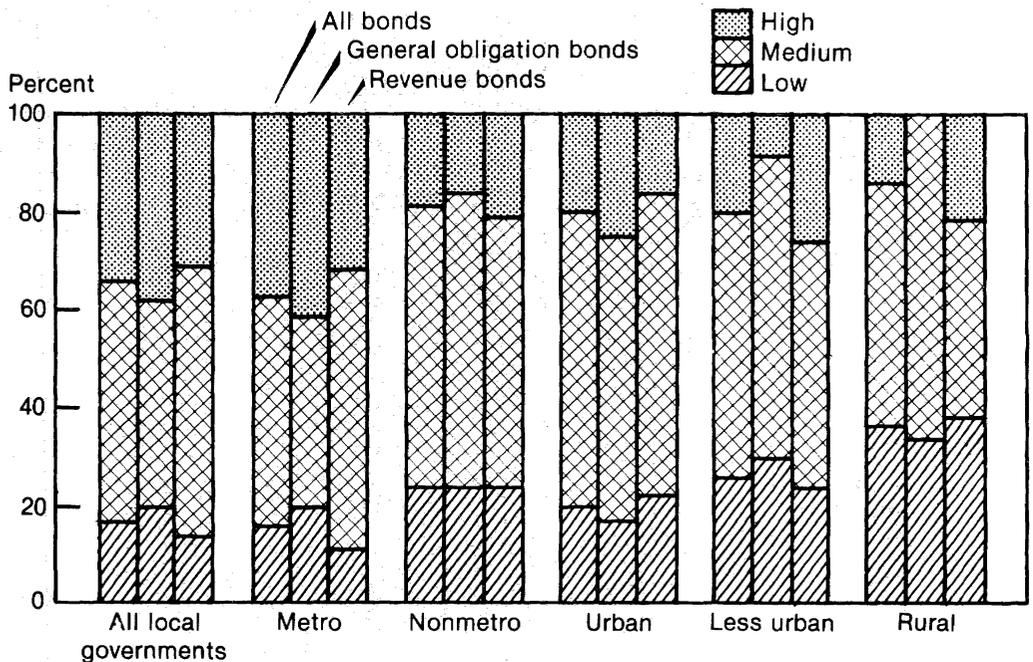
surprising given the small size of many nonmetro bond issues and the localized markets within which the bonds tend to be sold. Small bond issues being sold to local investors usually do not need a published credit rating (21). Credit ratings are more important for larger bond issues being marketed regionally or nationally.

When only bonds with ratings are considered, a smaller percentage of nonmetro area bonds are rated favorably compared with those of metro areas. General obligation bonds have an especially pronounced difference in rating distributions. Although only 19 percent of the nonmetro bonds were rated "Aa" or better, 37 percent of the metro bonds were rated as high (fig. 1). Whether this pattern was the result of the rating agencies' belief that most rural governments do not merit high grades for creditworthiness or was simply a reflection of a decision by rural officials to purchase ratings on only their "hard-to-sell" bonds is difficult to say. The result in either case should be a tendency for nonmetro issuers to pay higher borrowing costs vis-a-vis metro issuers.

A final characteristic of municipal bonds that is noteworthy because of the similarity between metro and nonmetro areas is the maturity structure. Most municipal bond issues are comprised of bonds that come due at different times over the life of the issue (11). The ability to stretch bond maturity, and therefore,

Figure 1

Distribution of Rated Bonds Among Major Rating Groups by Type of Bond and Metropolitan Status, 1977



¹Ratings by Moody's Investors Service are used whenever possible. Otherwise ratings by Standards and Poor's Corp., are used. "Aaa" and "Aa" are high; "A-1" and "A," medium; and "Baa-1," "Baa," and "Ba," low.

Source: Calculated from unpublished data from the Public Securities Association long-term municipal bond file and Moody's *Municipal and Government Manual*.

debt retirement, over 20 to 30 years may be as important in determining the project's financial feasibility as the ability to raise sufficient funds to cover construction costs. Generally, however, investor demand for the longer term bonds tends to be lower than demand for short- to medium-term bonds (5).

An examination of the average maturity of the bonds issued by metro and nonmetro governments during 1977 shows little difference between the two. The average maturity of nonmetro general obligation bonds is within 1 year of the metro average. For revenue bonds, the average maturity is 2 years longer than the metro average. Both differences represent less than 10 percent of the average maturity of bonds in each group. Apparently nonmetro areas can issue longer termed bonds when necessary.

Marketing Methods

In addition to a bond's characteristics, how it is marketed and how it is received by the underwriting industry also help determine the cost of borrowing. Local governments usually do not sell bonds directly to the public. In a typical sale, the issuing government sells the entire bond issue to an underwriter or to a group of underwriters which then resells the bonds to investors. The two methods of choosing an underwriter are: (1) selling the bond issue at a public auction to the underwriter submitting the lowest bid and (2) selling the bonds to a preselected underwriter at a negotiated price. Occasionally, local governments sell the bonds directly to the investors themselves. In 1977, however, less than 2 percent of the dollar volume was sold in this manner.

Each type of sale has advantages and disadvantages, and under the right circumstances, each may be the cheapest method of marketing bonds (12). Nonetheless, competitive sales tend to be less costly than either negotiated or direct sales. For this reason, State law often requires local governments to attempt to sell their general obligation bonds through a competitive auction. Since revenue bonds generally fall outside the purview of State regulation, local officials have more latitude in choosing their method of sale. As a result, noncompetitive sales are much more prevalent in marketing revenue bonds.

An examination of the methods used by nonmetro governments to market their long-term bonds reveals a sharp contrast between general obligation and revenue bond sales. Roughly 78 percent of nonmetro general obligation bonds were sold competitively--a slightly higher proportion than for those of metro issuers. Only 12 percent of nonmetro revenue bonds were sold competitively--a much lower proportion than for those of metro issuers. Overall, only 33 percent of the total bonds issued by nonmetro governments were sold competitively in 1977, compared with 48 percent of metro bonds. To some extent this pattern is to be expected. For many of the bonds sold by nonmetro governments, negotiated sales may be the best way (and in some cases, the only way) of marketing them. Nonetheless, such a heavy

reliance on noncompetitive sales by nonmetro governments likely adds to the cost of bond financing.

The major reason a negotiated sale may be cheaper than a competitive sale is underwriter apathy toward certain types of bonds. Small bond issues sold at remote locations may not attract many bids. As the number of bids falls, the cost of competitive sales tends to rise. ^{6/} Nonetheless, an examination of the average number of bids received on metro and nonmetro competitively sold bond issues fails to reveal lower underwriter competition for the issues of rural governments.

In sum, the borrowing cost for nonmetro bonds should be higher than that for metro bonds. This expectation results from nonmetro governments' heavy reliance on revenue bonds and noncompetitive sales, the small size of nonmetro bond issues, and a small proportion of favorable ratings for nonmetro bonds. We will now examine the cost of rural government bond financing to see if this hypothesis is supported.

THE COST OF RURAL GOVERNMENT BONDS

If the market facing nonmetro issuers is distinct from the national bond market, the cost of borrowing still may be low vis-a-vis the national average. This section examines some of the costs that local governments incur when issuing bonds. Of particular concern is the interest rate paid on the bond issues. Variations in the net interest cost (NIC) associated with bonds sold during 1977 will be examined as will the two components of the NIC--underwriter compensation and reoffering yields. ^{7/} A brief discussion of some of the other costs associated with selling a bond issue closes this section.

Interest Cost

The net interest cost of a bond issue is not only a measure of the government's interest cost. It also reflects the underwriter's assessment of investor demand for the bonds and the risk involved in handling the bond issue. The NIC will be high if the underwriting firms feel that investors will demand high

^{6/} Sorensen (18) found that for lower rated bonds, negotiated sales are cheaper than competitive sales that attract only one bid. For a discussion of the potential benefits of marketing risky securities through a preselected underwriter, see (19).

^{7/} The net interest cost (NIC) measure of municipal bond rates is a weighted average of the undiscounted interest payments made on a bond issue. Because the NIC measure doesn't take the time of payment into account, it is not a very good measure of the true cost associated with a bond issue. Nonetheless, the NIC is the only measure currently reported for most bond issues (8). The underwriter compensation rate is the margin of gross profit per \$1,000 of bond proceeds which the underwriters receive for distributing the securities. The measure of reoffering yields used is the rate offered by the underwriters to the investing public on bonds maturing in 10 years.

yields for purchasing the bonds or that incurring losses in purchasing and reselling the bonds is a high risk.

The interest cost of a bond issue is sensitive to a number of factors which reflect the bond's attractiveness as an investment. General money market conditions and the bond issue's credit rating, maturity structure, and size help determine its interest cost. Obviously, not all of these factors can be accounted for in a tabular presentation of interest costs. Table 1 reports the NIC for metro and nonmetro bonds grouped into two categories based on the type of bond and the type of sale local governments used to raise funds. These two aspects of municipal bonds are directly controlled by the issuing government and represent areas where metro and nonmetro bonds differ.

Previous studies of the determinants of municipal borrowing costs have shown consistently that revenue bonds and bonds sold through negotiation tend to have higher interest costs. The interest rates reported for general obligation and revenue bonds awarded through competitive and noncompetitive sales support these conclusions. For each type of bond, the interest cost of competitively sold bonds was consistently lower than that for negotiated or directly sold bonds. Furthermore, the interest cost of revenue bonds is nearly always higher than the corresponding cost of general obligation bonds.

The type of bond and the type of sale explain much of the metro-nonmetro variation in interest rates. Overall, nonmetro governments paid slightly lower rates on bonds issued in 1977 than did governments in metro areas. Given the heavy reliance nonmetro governments placed on revenue bonds and noncompetitive sales, a lower overall interest cost is surprising.

An interesting set of patterns emerges when general obligation and revenue bonds are examined separately. Nonmetro governments paid a lower rate on their general obligation bonds than did metro governments regardless of the type of sale. For competitively sold bonds, the rate charged for nonmetro bonds sold in 1977 was 20 basis points lower than the rate charged for metro bonds. (A basis point is one-hundredth of 1 percent.) Within nonmetro areas, the cost of competitively sold general obligation bonds remained remarkably stable as the area became less urbanized. For bonds sold through negotiation, metro governments paid a rate 134 basis points higher than the rate paid by nonmetro governments. Unlike competitively sold bonds, however, the rate paid by nonmetro governments tended to increase as the area became less urbanized.

For revenue bonds, a different pattern is evident. Nonmetro governments paid slightly higher rates on bonds issued in 1977 than did metro governments. Among nonmetro areas, the more rural areas appeared to pay a lower rate on their competitively sold revenue bonds than their urbanized counterparts; no clear pattern emerged for revenue bonds sold through negotiation.

Table 1--Net interest rates of long-term bonds issued by type of bond, method of sale, and metropolitan status, 1977

Government category	All long-term bonds <u>1/</u>			General obligation bonds <u>2/</u>			Revenue bonds		
	Total	Competitive sale	Noncompetitive sale	Total	Competitive sale	Noncompetitive sale	Total	Competitive sale	Noncompetitive sale
	<u>Percent</u>								
Local governments <u>3/</u>	5.83	5.33	6.29	5.61	5.22	6.92	6.01	5.62	6.13
Metropolitan <u>4/</u>	5.84	5.36	6.38	5.68	5.25	7.04	5.99	5.63	6.15
Nonmetropolitan <u>5/</u>	5.79	5.18	6.15	5.15	5.05	5.70	6.11	5.60	6.19
Urbanized <u>6/</u>	5.72	5.15	6.07	5.10	5.02	5.63	6.03	5.60	6.10
Less Urbanized <u>7/</u>	5.85	5.21	6.23	5.14	5.07	5.69	6.18	5.62	6.26
Rural <u>5/</u> , <u>8/</u>	5.81	5.11	6.11	5.33	5.05	5.80	6.14	5.45	6.19

1/ This table is based upon 3,998 local government bond issues for which interest rate information is available. The dollar volume of these bonds amounted to 87.6 percent of the volume of all local government bonds sold in 1977. The interest rates reported represent an average of all the bond issues in each category weighted by issue size.

2/ Includes limited-tax bonds not classified as "full faith and credit" obligations.

3/ Includes governments that could not be classified as either metropolitan or nonmetropolitan.

4/ Metropolitan status is determined according to whether or not the issuing government was located in a Standard Metropolitan Statistical Area (SMSA) as defined in 1974.

5/ Excludes five Alaskan oil pipeline industrial revenue bonds for comparison purposes.

6/ Issuers located in nonmetro counties which had 20,000 or more people residing in urban places in 1970.

7/ Issuers located in nonmetro counties which had between 2,500 and 19,999 people residing in urban places in 1970.

8/ Issuers located in nonmetro counties which had no urban places in 1970.

Source: Calculated from unpublished data from the Public Securities Association's long-term municipal bond file.

Thus, despite low credit ratings and small-sized bond issues, the interest rate on nonmetro bonds is remarkably low. Even with their heavier usage of revenue bonds and noncompetitive sales, the overall nonmetro rate was 5 basis points lower than the metro rate.

Variations in market conditions throughout the year or unique differences in government financial conditions might possibly explain this interest rate pattern. To determine whether the interest cost associated with nonmetro bonds seems reasonable when bond characteristics are taken into account, a simple model of the determinants of NIC on newly issued bonds sold in 1977 is developed and estimated in appendix A of this report. A single-equation regression approach is used to hold constant the effects of bond issue size, maturity structure, national bond market conditions, credit rating, and regional location when comparing the interest cost of metro and nonmetro government bonds. To further clarify the comparison, only competitively awarded bonds issued by general-purpose governments and school districts were examined. Bonds with these characteristics are easier to compare with one another since they are subject to fewer measurement and reporting problems than are noncompetitively sold bonds.

The parameters of the model are reported in appendix table 1 for samples comprised of general obligation and revenue bonds grouped together and estimated separately. Nonmetro governments paid a lower rate for their general obligation bonds and roughly the same rate as did metro governments for their revenue bonds once various bond issue, issuer, and market conditions were taken into account. When these characteristics were held constant, metro governments paid an additional 6 basis points over the nonmetro rate on their competitively sold general obligation bonds; there was no statistically significant difference in the rates paid on revenue bonds.

There are several possible explanations for this interest differential. One is that the data base is biased in favor of the more marketable (and therefore less costly) rural bonds, although it includes the full range of metro bonds. To minimize this problem, the comparison was restricted to competitively sold bonds, which by their nature (and in many cases, by law) are widely advertised. However, for bonds which can be sold either competitively or through negotiation--a group which includes most revenue bonds--a built-in bias leading to underestimation of nonmetro borrowing rates is still possible. This possibility will be discussed in more detail shortly.

Another possible explanation for the interest cost differential between metro and nonmetro bonds is that underwriters and investors are adjusting for what they consider to be unrealistically low credit ratings for nonmetro bonds. Although no attempt has been made to determine whether published ratings of nonmetro governments are based on the same objective criteria as those of metro governments, the general belief is that nonmetro governments find it more difficult to acquire favorable

credit ratings. The market may adjust for this rating pattern in such a way that a nonmetro bond with an "A" rating is accepted as being more secure than a metro bond with the same rating. If so, then a slightly lower interest cost for nonmetro bonds with a given credit rating would be expected.

Still another possible explanation for the interest cost differential is that local market conditions were not the same in metro and nonmetro areas in 1977. Very little is known about the effect local markets have on the borrowing costs of local governments. The local supply of tax-exempt bonds and the demand for these bonds by local investors may be important determinants of the borrowing costs of small governments (7, 20). Because most local governments serving nonmetro areas are small, their borrowing costs may be sensitive to changes in the demand for tax-exempt bonds by local investors and to changes in the local supply of tax-exempt bonds. If demand for municipal bonds by rural investors was high relative to the local supply of tax-exempt securities in 1977, rural governments would have found issuing bonds slightly less expensive than would otherwise be the case. The investment behavior of at least one major group of investors differed regionally--commercial banks. Relative to bank assets and the local supply of tax-exempt securities, rural banks purchased more municipal bonds than metro banks in 1977 (19). Thus, the average nonmetro government could have enjoyed a slightly lower interest cost on the bonds it sold in 1977 because of the support of the rural commercial banking system.

The regression results reinforce the interest cost patterns reported in table 1. The results indicate that the bond market favors competitively sold nonmetro issues over comparable issues sold by metro governments. Nonetheless, this comparison of interest rates is based on the premise that "all other things are equal." However, as illustrated in the last section, metro and nonmetro bonds are not equal. Nonmetro bond issues still have lower credit ratings and tend to be smaller than metro bond issues--characteristics which add to the interest rate nonmetro governments have to pay. In addition, the regression approach ignores the effect that the method of sale has on borrowing costs.

As discussed in the previous section, two-thirds of the dollar amount of bonds issued by nonmetro governments in 1977 were not competitively sold. The NIC analysis based on competitively sold bonds may or may not be relevant for nonmetro bonds in general, depending on the reason so many nonmetro bonds were sold noncompetitively.

If nonmetro governments choose to sell their bonds through a preselected underwriter because experience has shown this to be the cheapest way of marketing bonds, then the NIC analysis discussed above underestimates the cost of debt financing for nonmetro areas vis-a-vis metro areas. On the other hand, if nonmetro governments rely on negotiated bond sales for convenience or for taking advantage of the underwriting industry's

expertise in preparing bond issues for sale, then the NIC analysis based on competitive sales should be a fairly accurate reflection of the "true" market acceptance of nonmetro bonds.

Both causes for choosing a preselected underwriter over a competitive sale are probably important to nonmetro issuers. The reasons for this conclusion are presented in appendix A. The implication of this is that the competitive sale model of the determinants of NIC probably underestimates the true interest cost of nonmetro bonds to some extent. The degree of underestimation remains unknown, but the underlying conclusion of this section remains valid: interest costs paid by nonmetro borrowers are not unreasonably high, nor does the market seem to be discriminating against nonmetro bonds.

Underwriter and
Investor
Compensation

The NIC is a measure of the underwriter's judgment of the marketability of the bond issue. The NIC includes both the underwriter's profit (or loss) and the yield payable to the initial purchasers of the bonds as they are resold by the underwriting firm. Information on each of these cost components is sketchy. Although NIC information is available on a large portion of the reported bond sales, information on underwriter compensation rates and yield information on reoffered bonds is available for only 25 percent of the local government bond issues. Thus, data reported in this section do not necessarily represent market conditions in either metro or nonmetro areas.

In determining their bids on competitively sold bonds and their profit margins on negotiated sales, underwriters attempt to structure their proposed interest rate schedule to compensate themselves for the operating costs of doing business and the risk they undertake in purchasing the bonds for resale. Underwriter compensation is the difference between what the underwriting firm pays for a bond issue and what it receives upon resale of the bonds. In a world of perfect knowledge, this difference represents the value of the underwriter's services.

Table 2 presents the underwriter compensation rates reported for general obligation and revenue bonds by type of sale. The figures represent the cost per \$1,000 of gross proceeds from all bond sales for which data are available. As expected, the compensation rates for negotiated sales were higher than those for competitive sales. Furthermore, with the exception of the most rural areas, underwriter compensation rates on revenue bonds were higher than the corresponding rates on general obligation bonds. These two cost patterns account for the overall higher compensation rate paid by nonmetro governments. Compensation paid on nonmetro bonds for which underwriter "spreads" were available was \$1.37 (per \$1,000 borrowed) higher than that on metro bonds.

The other pattern evident from table 2 is that underwriter compensation rates on reported general obligation bonds sold through competitive auction were lower for nonmetro areas than

Table 2--Underwriter compensation: Cost per \$1,000 of gross proceeds by type of bond, method of sale, and metropolitan status, 1977

Government category	All long-term bonds <u>1/</u>			General obligation bonds <u>2/</u>			Revenue bonds		
	Total	Competitive sale	Noncompetitive sale	Total	Competitive sale	Noncompetitive sale	Total	Competitive sale	Noncompetitive sale
	<u>Dollars</u>								
Local governments <u>3/</u>	15.16	12.01	17.56	12.98	11.92	16.02	16.61	12.19	17.91
Metropolitan	14.84	12.02	17.72	12.93	12.00	15.51	16.48	12.06	18.44
Nonmetropolitan <u>4/</u>	16.21	11.92	17.73	13.37	11.42	20.53	17.20	13.64	17.51
Urbanized	15.93	11.30	17.33	12.02	10.76	16.55	17.08	13.03	17.39
Less urbanized	16.39	12.21	18.50	12.82	11.53	19.33	18.06	14.80	18.43
Rural <u>4/</u>	17.61	15.19	18.27	23.87	15.95	35.58	15.33	12.88	15.52

1/ This table is based upon 1,241 local government bond issues for which underwriter spread information is available. The dollar volume of these bonds amounted to 37.8 percent of the volume of all local government bonds sold in 1977. The compensation rates reported represent an average of all the bond issues in each category weighted by issue size.

2/ Includes limited-tax bonds not classified as "full faith and credit" obligations.

3/ Includes governments that could not be classified as either metropolitan or nonmetropolitan.

4/ Excludes five Alaskan oil pipeline industrial development bonds for comparison purposes.

Source: Calculated from unpublished data from the Public Securities Association's long-term municipal bond file.

for metro governments while nonmetro areas paid a higher compensation rate on their competitively sold revenue bonds. Interestingly, underwriter compensation rates for the general obligation bonds of the most rural areas were much higher than the rates paid by governments in other categories, while their rates for revenue bonds were lower.

Studies have found that underwriter compensation rates tend to be higher for small, unrated, and unfavorably rated issues. Revenue bonds and bonds sold through negotiation tend to have higher underwriter compensation rates than do general obligation bonds and competitively sold issues. For competitive sales, underwriter compensation rates decline as the number of bids increases (10, 17, 22). All these tendencies should put many nonmetro issuers at a disadvantage and should lead to higher overall underwriter compensation rates for nonmetro areas. Nonetheless, underwriting firms do not seem to favor either metro or nonmetro areas once the bond issue characteristics have been taken into account--metro and nonmetro governments appear to pay roughly the same rate for underwriting services. 8/

The other component of NIC is the yield which investors receive when they purchase the bonds. Given the term structure of interest rates, the yield that investors expect to receive on a bond is related directly to the length of time before the bond matures. Since each bond issue usually is comprised of bonds with a range of maturity dates, only the yield on bonds maturing in 10 years (that is, 1987) will be examined to insure comparability. Table 3 presents information on the yields offered by underwriters on 10-year bonds sold by metro and nonmetro governments during 1977. As with NIC, these yields should be higher for revenue bonds and for bonds sold through negotiation, other things being equal. Because these two factors predominate in the nonmetro bond market, the overall yield on nonmetro 10-year bonds was slightly higher than the yield on metro bonds.

For the most part, yield patterns were consistent with the NIC patterns discussed previously. Yields on competitively sold nonmetro general obligations were lower than metro yields, while the reverse was true for revenue bonds. Nonetheless, as with underwriter compensation rates, when national market effects, bond issue characteristics, and issuer financial conditions are held constant, the difference between metro and nonmetro bond yields was not substantial.

8/ A single-equation model similar to that estimated for NIC in appendix A was used to explain variations in the underwriter compensation rates of general-purpose government and school district bonds sold competitively during 1977. The metro dummy variable was not significantly different from zero for either general obligation or revenue bonds at the 5-percent level of confidence.

Table 3--Reoffer yields for bonds maturing in 10 years by type of bond, method of sale, and metropolitan status, 1977

Government category	All long-term bonds <u>1/</u>			General obligation bonds <u>2/</u>			Revenue bonds		
	Total	Competitive sale	Noncompetitive sale	Total	Competitive sale	Noncompetitive sale	Total	Competitive sale	Noncompetitive sale
	<u>Percent</u>								
Local governments <u>3/</u>	5.00	4.84	5.20	4.88	4.86	4.99	5.13	4.78	5.26
Metropolitan	4.99	4.85	5.18	4.89	4.88	4.95	5.10	4.77	5.26
Nonmetropolitan <u>4/</u>	5.08	4.73	5.28	4.80	4.70	5.28	5.24	4.88	5.28
Urbanized	5.05	4.71	5.22	4.71	4.66	5.04	5.21	4.95	5.23
Less Urbanized	5.12	4.74	5.39	4.76	4.73	5.20	5.33	4.79	5.39
Rural <u>4/</u>	5.16	4.78	5.33	5.19	4.76	5.49	5.08	4.90	5.10

1/ This table is based upon 1,178 local government bond issues for which yield information is available. The dollar volume of these bonds amounted to 41 percent of the volume of all local government bonds sold in 1977.

The re-offer yields reported represent an average of all the bond issues in each category weighted by issue size.

2/ Includes limited-tax bonds not classified as "full faith and credit" obligations.

3/ Includes governments that could not be classified as either metropolitan or nonmetropolitan.

4/ Excludes five Alaskan oil pipeline industrial development bonds for comparison purposes.

Source: Calculated from unpublished data from the Public Securities Association's long-term municipal bond file.

Marketing Costs

Interest payments, usually the largest cost item, are not the only expenses associated with selling a bond issue. In the majority of cases, the issuer must pay a number of "out-of-pocket" costs to prepare a bond issue for eventual sale. These costs may include obtaining voter approval of a bond sale when a referendum is required, purchasing a credit rating and an independent audit, and hiring a fiscal advisor to help with the sale. Although these expenses are not incurred for all bond sales, and some may not require any of them, nearly all have associated expenses for legal counsel and for preparing and printing legal notices, the bond prospectus, and the bonds themselves.

Information on these preparation costs is not reported in the financial press with the other information about each bond sale. For this reason, a comparison of actual preparation costs borne by nonmetro and metro governments cannot be presented. However, two special surveys were undertaken to determine the amount local governments spend in preparing bonds for sale (6, 13). Although these surveys were not oriented geographically, the cost patterns revealed have implications for nonmetro areas. In particular, preparation costs for small bond issues are quite large in relation to the amount of funds being raised. In addition, costs of preparing revenue bonds for sale are higher than those for general obligation bonds. Since nonmetro areas tend to sell smaller bond issues and rely more heavily on revenue bond financing, the preparation costs (per dollar borrowed) borne by nonmetro governments likely would tend to be higher than those of metro governments.

If one assumes that the cost of services needed to prepare a bond of given size and security type for sale does not vary geographically or by type of sale, very rough estimates of the preparation costs for bonds sold in 1977 can be calculated. Based on the size of the bond issue, the type of security, and the reported marketing costs corrected for price level changes, appendix B of this report calculates these cost estimates for 1977. The geographic distribution of estimated preparation costs is reported in appendix table 3. If the assumption of constant service costs is correct, local governments paid approximately \$4.57 per \$1,000 of gross proceeds for bonds sold during 1977. Nonmetro governments, because of the smaller size of their bond issues, paid a much higher rate than did metro governments. Overall, nonmetro governments paid \$5.94 per \$1,000 to prepare bonds for sale compared with \$4.30 per \$1,000 for metro governments. The disparity between rates paid by governments in metro and nonmetro areas was greatest for general obligation bonds, again because of the smaller average size of the nonmetro bond issues.

These preparation cost estimates may be high for nonmetro areas for two reasons. First, many nonmetro bonds probably do not require the preparation services expected of metro bonds. For example, investors who purchase nonmetro bonds may not expect them to be rated, thus relieving many nonmetro governments of the need to purchase a rating. Second, the preparation costs

for negotiated or directly sold bonds are probably lower than those for bonds sold competitively. Often these services are performed by the underwriting firm or by the investors themselves, with the costs being reflected in higher interest costs. Because nonmetro governments rely on these noncompetitive methods of marketing their bonds to a larger extent than do metro governments, the nonmetro cost estimates may be too high. Nonetheless, the small average size of nonmetro bonds issues is likely to lead to higher preparation costs per \$1,000 of gross proceeds on balance.

In sum, the full cost of issuing bonds--the interest cost plus the incidental costs of marketing the bonds--is roughly the same per dollar borrowed for metro and nonmetro governments. Investors seem willing to purchase nonmetro bonds at remarkably low rates given the characteristics of these bonds. Sampling error may make nonmetro borrowing costs appear lower than they actually are, but any cost differences that may exist are small, and are due entirely to the types of bonds issued and to the marketing techniques relied upon by nonmetro governments. These choices suggest areas where State and local government policy could yield significant cost savings for small borrowers in both metro and nonmetro areas.

POLICY IMPLICATIONS

An examination of interest and related costs suggests that nonmetro governments are able to issue bonds at moderate rates given the type of debt and marketing methods used. At least for 1977, the market did not appear reluctant to purchase the bonds of rural governments at reasonable cost. Evidently, tax-exempt investors found most nonmetro bonds to be of acceptable investment quality and roughly on a par with the bonds of metro governments.

The success many nonmetro governments enjoyed in marketing their long-term bonds during 1977 suggests that, given favorable bond market conditions in the eighties, rural development can continue in the face of cutbacks in Federal and State inter-governmental grant and loan programs. However, these Government grant, loan, and loan guarantee programs will continue to improve the prospects for continued rural development. Programs which make the State or Federal Government the "lender of last resort" for local governments unable to obtain conventional financing may be critical for many rural governments. ^{9/} Furthermore, given current financial market conditions, few local governments can afford to rely on debt financing for any but the most critical projects. Nonetheless, if bond market conditions improve and if recent changes in tax laws have not altered the relative demand for rural government bonds, bond issuance should be a viable method of financing public investment in rural development.

^{9/} No attempt has been made to estimate the number of local governments unable to issue bonds because they were rationed out of the market.

Although more research is required to determine the effect recent changes in tax laws and regulations have had on the demand for rural government bonds, the implications our historical view of the market has for Federal and State rural development policy can be specified. The caveat attached to the following discussion is that, even with an improved economy, the relative position of rural governments in the eighties may be radically different from that which prevailed in 1977.

Federal Policy

Given the prevailing political climate, funding for new or expanded Federal assistance to local governments is likely to be scarce in the near future (1). Nonetheless, as communities grow and as existing infrastructures age, funding for capital projects will have to be found. In the absence of intergovernmental aid, local governments historically have relied on the municipal bond market for a sizeable portion of their capital needs. The result of our analysis suggest that, other things being equal, rural governments have access to the long-term bond markets at costs roughly equivalent to those facing metro governments. Thus, from a rural versus urban perspective, rural governments do not appear to require further special assistance in raising funds for needed capital projects. However, rural governments, together with urban and State governments, could benefit from Federal actions which reduce yields on tax-exempt securities in general.

Tax-exempt bond yields are interrelated with interest rates paid by other borrowers and are dependent on general money market conditions. Thus, any change in national economic policy which results in an across-the-board reduction in interest rates would benefit local governments in both urban and rural settings. Short of that, actions which lower the relative yield on long-term borrowing for essential public services would help local governments adjust to cuts in the size of intergovernmental grant and loan programs.

From a local government's perspective, current bond market conditions are troublesome for two reasons. Not only are yields high, but the yields currently being paid on tax-exempt securities are high relative to the yields being paid on taxable securities. The reduced Federal income tax liability, the increased availability of other tax shelters, and the use of municipal bonds for a wide range of nontraditional purposes have all narrowed the gap between the borrowing costs of local governments and those of the Federal government and the corporate sector. Historically, tax-exempt rates for long-term bonds have been approximately 65 to 70 percent of the cost of comparably rated taxable corporate bonds; today the ratio is in the neighborhood of 80 percent (2). As a result, public sector borrowing for traditional purposes is costlier than it would be if current tax-exempt yields were at their historical level in relation to other interest rates.

One approach open to the Federal Government to reverse the upward trend in tax-exempt yields would be to reduce the use of

the tax exemption. Such devices as the all-savers certificate, the industrial revenue bond, the pollution control bond, and the mortgage revenue bond use the tax exemption to lower the direct cost of financing private sector investment. What is often overlooked is that these uses of the tax exemption increase the cost of government borrowing for the construction and rehabilitation of essential public facilities such as water systems, highways, and schools. By restricting the use of tax-exempt bonds, the supply of these securities could be reduced, resulting in relative tax-exempt yields more in line with historical trends. The cost of public sector borrowing could be lowered while at the same time Federal income tax losses could be reduced.

State Policy

State governments are less likely to find restricting the use of the tax exemption politically feasible. Interstate competition for new business and for plant retention and expansion may make unilateral restrictions on the issuance of industrial revenue and pollution control bonds difficult to accept. Restrictions give the appearance of placing the State in a noncompetitive position with neighboring States which encourage the use of tax-exempt financing to attract and hold business firms. Furthermore, the interest rate effect associated with such restrictions is diffused throughout the Nation. Benefits to the State's borrowers appear to be small. ^{10/}

In general, although efforts to lower yields on tax-exempt securities would be more successful if made at the Federal level, State governments can take steps to help lower the cost of borrowing for small governments and governments cut off from regional bond markets. The discussion which follows is concerned with State policy in fairly broad terms.

One of the major differences between metro and nonmetro borrowing is the heavier reliance placed on noncompetitive sales by rural governments. The cost of bond-financed rural development will be higher than necessary if this pattern results from a lack of rural government technical expertise in marketing bonds or from a lack of underwriter interest in small-sized bond issues offered for competitive sale by isolated rural governments. State governments are in the best position to initiate programs to correct these problems.

Some States have started technical assistance programs to improve local government debt management practices (¹⁵). To the extent that such programs improve local government understanding and evaluation of debt issuance alternatives, the cost of borrowing can be minimized. However, in many areas of the

^{10/} Evidence suggests that heavy Statewide issuance of tax-exempt bonds may raise small government borrowing costs while leaving large governments unaffected (^{7, 20}). Thus, there still may be sufficient reason for the State to unilaterally place restrictions on the use of tax-exempt borrowing.

country, rural borrowers may find their alternatives limited by geographic isolation from regional financial centers. For such governments, the opportunity to request more extensive State involvement in the marketing process may be needed to obtain lower borrowing costs. Centralized marketing is one example of how the State could increase underwriter interest in small bond issues. By offering several small bond issues for sale at one convenient location, the State can reduce bid submission costs and heighten underwriter competition for rural bonds, making competitive sales a viable marketing method for more rural borrowers.

Based on conditions in 1977, the localized markets in which most rural government bonds are sold were able to absorb the supply of rural bonds at reasonable interest rates--a condition that may not exist in the future. Although there is no a priori reason to expect the recent changes in tax law to affect the demand for rural bonds more adversely than metro bonds, neither is there empirical evidence to suggest that this has not been the case. If it turns out that relative demand for rural bonds has fallen significantly, States with large and growing rural populations may wish to consider policies which could enlarge the market for the bonds of their rural governments.

The characteristics of most rural bonds make them unlikely investments for large investors oriented toward the national bond market. Rural bond issues are small, tend to be unrated or unfavorably rated, and seldom have a viable secondary market--all characteristics which discourage serious consideration from investors who are not familiar with the issuing government. Programs which increase the investment quality of rural bonds, as perceived by major investors, will broaden the market for these bonds.

Over time, State supervision of local government borrowing or State presale approval of local bonds can increase the perceived quality of small government bonds. Investors may come to accept the judgment of State officials on the local government's ability to support debt burdens and manage debt retirement effectively. However, to the extent that such programs are meaningful, they reduce local autonomy and, therefore, may meet considerable resistance from local government officials.

To some extent, the autonomy factor can be avoided by making local participation in the program optional. Optional State guarantees of local bonds or the creation of a State municipal bond bank are examples of State participation in local government bond issuance requiring mutual agreement. The State government is obligated to participate only if some specific set of safeguards has been met by the local government. Local officials can choose, if their bonds meet the requirements, to take part in the program if it seems economically advantageous.

Each of these programs has been adopted already in one or more States in an attempt to lower the cost of borrowing for small towns and rural areas. Although the evidence from 1977 does not suggest any widespread need for such programs, they may become more important for the attainment of rural development goals if current bond market conditions do not improve in the years ahead.

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APPENDIX A--THE
DETERMINANTS OF
NET INTEREST COST

Considering the narrowness of the topic, a rather extensive literature exists on the determinants of interest rates payable on tax-exempt bonds. The typical study adopts a linear multiple regression approach to analyze variation in the net interest cost of some sample of municipal bonds. This technique is applied here, with the selection of independent or explanatory variables drawing heavily on the results of previous studies (4, 7, 9, and 10).

A total of 2,134 bond issues sold during 1977 is included in the analysis. Only bonds of general-purpose governments (county, city, village, and town governments) and school districts are included to make comparisons as simple as possible. Special district governments vary too much in degree of governing autonomy and taxing power to easily interpret the results of an analysis which includes their bonds. For much the same reason, industrial development and pollution control bond issues are excluded from the sample. Furthermore, bond issues underwritten by the Farmers Home Administration have been excluded since the interest cost for these issues does not vary among borrowers.

The NIC is assumed to be dependent upon the bond issue's characteristics, certain characteristics of the issuing government, and bond market conditions at the time of sale. Based on previous work, the bond issue characteristics included in the equation are dollar amount of the issue; average maturity; callability of bonds prior to the stated maturity date; bond type, general obligation or revenue; use of the proceeds; insurance provisions; and credit rating. All but the dollar amount variable, which enters the equation in natural log form, and the average maturity variable are dummy variables taking on a value of either zero or one. For example, the call provision variable is equal to one if any of the bonds in the issue are callable before their stated maturity date; if none are callable, the variable is equal to zero. 11/

The credit rating variable is based on the ratings assigned by Moody's Investors Service and Standard and Poor's Corp. Their rating schemes were collapsed into the four major rating classes--"Aaa," "Aa," "A," and "Baa"--with Moody's rating being used whenever possible. The use-of-proceeds variable attempts to capture the effect of "risky" uses of revenue bonds as defined by Hopewell and Kaufman (9). Our data set excludes bonds which fall into the Hopewell-Kaufman high-risk category (university facilities). The low-risk category includes bonds sold to finance construction of sewer, water, and nonuniversity school facilities and bonds sold to refinance outstanding issues.

The issuer characteristics are long-term bonds outstanding at the end of fiscal year 1977, outstanding short-term per capita bonds, the census region in which the jurisdiction is located,

11/ For an explanation of the terms used in this appendix, the reader is referred to (11, 12).

and government location in a Standard Metropolitan Statistical Area (SMSA). The long-term bonds variable enters the equation in natural log form while the regional and metropolitan indicators are dummy variables.

Variables measuring the condition of the bond market at the time each bond issue was sold include the number of bids submitted by underwriting firms, the general level of tax-exempt bond yields, and the term structure of tax-exempt bond yields (that is, the yield curve). The market rate of interest used is a simple average of the Salomon Brothers' weekly indices for prime grade 1-year notes, 10-year bonds, and 25-year bonds for the week in which the bond was sold (16). The slope of the yield curve is measured by the difference between the Salomon Brothers' weekly indices for prime grade 25-year bonds and prime grade 1-year notes. It enters the regression equation as an interaction term with the natural log of the final maturity of the issue.

In general, NIC is expected to decline at a decreasing rate as the size of the bond issue increases and as the dollar amount of the issuer's outstanding long-term bonds increases. Economies of size for underwriters and investors make larger bond issues (up to a point) less costly to handle, while the existence of a secondary market for a government's bonds--measured by the existence of outstanding bonds--reduces investor and underwriter uncertainty regarding the bond issue's market acceptance. In the wake of New York City's fiscal problems, the hypothesis is that higher levels of short-term bonds are associated with potential credit problems and therefore increase borrowing costs. The NIC is also expected to decline as the number of bids increases because a high degree of underwriter competition should result in lower borrowing costs. The NIC is expected to rise as the bond issue's average term to maturity increases because longer termed bonds are usually more difficult to sell. Revenue bonds, bonds callable before their maturity date, and bonds with low credit ratings, because of the higher risk associated with these characteristics, are expected to have higher NIC's than general obligation, noncallable, higher rated bonds. Because some types of revenue bonds are evidently less risky than others, the low-risk uses of revenue bonds should be associated with lower NIC's than are expected of other revenue bonds.

National market conditions are measured by the market rate of interest and structure of interest rates. Higher market rates should be associated with higher NIC's. In addition, the higher the long-term rates are relative to the short-term rates, the greater the borrowing cost on bonds with long-term maturities should be. During 1977, the rate on long-term bonds was always higher than the rate on short-term bonds. Therefore, the product of the "yield curve" and the natural logarithm of the bond issue's longest term to maturity should be related positively to borrowing costs.

To refine the effect of metropolitan status, a series of regional dummy variables is included in the equation to account for regional variation in interest rates. Previous research found that governments in the Northeast and North Central States tended to pay higher NIC's on their bonds than did governments in the Southern and Western States (4).

The results of the regression analysis are reported in appendix table 1 for general obligation bonds, revenue bonds, and a

Appendix table 1--Regression equations for estimating new-issue net interest cost for competitively sold tax-exempt bonds by type of security, 1977

Independent variables	All bonds		General obligation bonds		Revenue bonds	
	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
Constant	-1.6721	4.39	-1.5225	3.95	1.29	.87
Issue size in logs	-.0075	1.10	-.0098	1.44	-.0027	.10
Long-term debt outstanding in logs	.0088	4.36	.0091	4.57	.0107	1.27
Short-term debt per capita	.0002	3.62	.0002	3.60	.0006	.71
Number of bids	-.0194	7.11	-.0178	6.59	-.0389	3.22
Average maturity	.0630	22.98	.0680	23.12	.0495	6.34
Market interest rate	1.2343	14.74	1.1889	13.98	.7399	2.33
Yield curve x final maturity in logs	.1255	17.06	.1262	16.82	.0440	1.52
Call provision dummy	.0758	4.59	.0633	3.89	.2036	2.53
Revenue bond dummy	.1773	5.40	na	na	na	na
Low-risk revenue bond dummy	-.0662	1.61	na	na	-.0565	1.03
Insured issue dummy	-.1128	3.21	-.1193	3.32	-.0763	.63
Credit rating dummy						
Aaa	-.6671	14.49	-.6784	15.12	-.2865	.98
Aa	-.5553	19.60	-.5504	19.47	-.5642	4.77
A	-.3249	15.50	-.3322	15.67	-.2684	3.54
Unrated	-.1191	4.80	-.1547	6.19	.2110	2.28
Regional dummy						
Northeast	.4863	18.51	.5101	19.53	.1236	.77
North Central	.1536	8.08	.1781	9.15	-.0406	.63
West	.1954	8.36	.2271	9.34	.0646	.90
Metropolitan dummy	.0618	4.02	.0608	3.94	.0698	1.17
R ²	.692		.711		.508	
F-ratio	250.4		271.1		12.8	
Number of observations	2134		1892		242	
NIC (mean)	5.033		4.984		5.410	

na = Not applicable.

Sources: Calculated from unpublished data from the Public Securities Association's long-term municipal bond file and the U.S. Bureau of the Census, 1977 Census of Governments.

combination of both. Each coefficient can be interpreted as the incremental cost (in NIC, measured as a percent) associated with the characteristic measured by the independent variable. For the continuous variables--such as bond issue size, debt outstanding, and number of bids--the regression coefficient measures the expected change in NIC, given a one-unit change in the independent variable. For example, receiving one additional bid on the sale of a general obligation bond issue is expected to lower the issue's NIC by 0.018 of 1 percent (or 1.8 basis points).

The interpretation placed on coefficients of dummy variables is slightly different since these variables can only take on values of zero or one. For dummy variables that are not part of a series (the call provision, revenue bond, low-risk use, and metropolitan dummy variables), the coefficient indicates the incremental cost associated with the characteristic. For example, adding a call provision to a general obligation bond adds 6.3 basis points to the NIC. For dummy variables that are part of a series (the credit rating and regional dummy variables), the coefficients indicate the incremental costs associated with the bonds of a given characteristic in relation to bonds with the characteristic that has been excluded from the series. The excluded category in the credit rating series is the "Baa" rating while the South is excluded from the census regions. The -.33 coefficient for general obligation bonds with an "A" rating means that governments selling general obligation bonds with "A" ratings can expect to pay an NIC 33 basis points lower than that paid on comparable bond issues with "Baa" ratings.

The results indicate all relevant independent variables have a statistically significant impact on the NIC of general obligation bonds. The equation "explains" roughly 69 percent of the variation in the NIC of these bonds. Increasing the size of the bond issue, increasing the number of bids received, and raising the bond issue's credit rating reduce the NIC on general obligation bonds. Interestingly, unrated bonds cost less than bonds with a "Baa" or lower rating. High amounts of outstanding debt, long maturities, high market rates, and steep yield curves are associated with high NIC's. In addition, bonds with call provisions and bonds of governments located in SMSA's and outside of the South cost more to sell.

Fewer coefficients are statistically significant (at the 0.05 level) in the revenue bond equation. Nonetheless, those that are statistically significant have the anticipated signs and are roughly equivalent to the coefficients in the general obligation equation. Of importance, for our purposes, is the lack of statistical significance associated with the positive coefficient for the metropolitan dummy variable. Holding the other explanatory variables constant, governments in SMSA's pay roughly the same NIC for their revenue bonds as do governments in nonmetro areas.

Problems With a
Single-Stage
Regression Approach

Using a single-equation model to estimate the market's acceptance of nonmetro bonds has three potential sources of bias. Our single-stage regression approach fails to model the rating process, the underwriting industry's bid decision process, and the decision on how the bond issue is to be sold. By ignoring the importance of the issuer's rurality in each of these decisions, the single-equation model may yield a biased estimate of the coefficient for the metropolitan dummy variable.

If a local government has a lower probability of receiving a favorable rating on its bonds when it is located outside of an SMSA, then the degree of market acceptance of rural bonds will be overestimated to some extent. Because of data requirements, no attempt has been made to model the rating process as part of this analysis, and attempts by others have not examined the influence rurality has on the rating process. Thus, the degree to which ratings are a function of geographic location remains open to speculation. Nonetheless, that this relationship would seriously bias our regression results seems unlikely. In relation to large metropolitan issues, ratings tend to have a smaller influence on the cost of rural government borrowing (21).

To the extent that underwriter competition is affected adversely by geographic isolation, rural issuers will receive fewer bids on their publicly sold bond issues. Preliminary analyses do not suggest that competitively sold rural bond issues receive fewer bids; thus, the single-equation approach may not be biased. Furthermore, according to the coefficients reported in appendix table 1, one less bid only adds 2 basis points to the NIC on general obligation bonds and 4 basis points to the NIC on revenue bonds so any bias would be small. The underwriter industry's bid decision process can have a powerful influence on borrowing costs if it affects the issuing government's marketing technique, however.

The failure of our single-equation approach to address the decision on how bonds are sold is the model's most serious shortcoming. To make the NIC analysis as straightforward as possible, only competitively sold bond issues were analyzed. Nonetheless, the same basic result emerges when the analysis includes both competitive and negotiated sales--other things being equal, nonmetro bond issues have significantly lower NIC's. The problem is not with the sample frame; the problem emerges because a single-equation approach fails to explain the heavy usage of noncompetitive sales by rural governments. If rural governments are forced to rely more heavily on noncompetitive sales because of their rurality, then our estimate of the market's acceptance of rural bonds will be biased.

Unfortunately, the information needed to adequately model the issuer's decision on how to sell each bond issue is not available. Nonetheless, the underwriter compensation and reoffer information presented in this paper, as sketchy as it is, does provide a few clues on the choice between using competitive and noncompetitive marketing techniques. A look at table 2

reveals that underwriter compensation rates were high for bonds sold through negotiation while table 3 reveals that their reoffer yields were also high. To the extent that these cost differentials are a function of the bonds' marketability, they suggest that the cost of issuing bonds may be higher for nonmetro governments than our single-equation regression analysis of NIC indicates.

Underwriter compensation rates are higher for negotiated bond offerings for several reasons. Noncompetitive sales could result in inefficient levels of compensation for underwriting services. Because no market test of the negotiated cost exists, local governments, especially small governments which do not issue bonds often, could easily overpay. But higher compensation rates on negotiated sales simply could reflect the cost of purchasing a more comprehensive package of services from the underwriter. If either of these reasons adds to the level of compensation received by the underwriter, the NIC of negotiated bonds will be higher, but for reasons unrelated to the bond's marketability. If such is the case, the higher NIC of negotiated bonds merely reflects costs due to errors in judgment and costs that the issuer would have had to pay separately had the bonds been sold competitively. Since total marketing costs are not higher, the analysis of variations in NIC for competitive sales is a reasonably accurate measure of market conditions facing urban and rural bond offerings.

Higher underwriter compensation rates paid for bonds sold through negotiation also may be due to factors which make these bonds difficult to market. If the risk associated with holding the bonds is high, then underwriter compensation will be high. To the extent this explains the higher compensation rate paid on negotiated bonds, the analysis of NIC for competitive sales underestimates the true cost of nonmetro debt. While all three explanations are probably relevant for nonmetro areas, the last possibility is most consistent with the patterns reported in table 3.

The reoffer yields reported in table 3 are invariably higher for negotiated bond offerings. Although this condition does not prove that the bonds themselves are less attractive to investors than competitively sold bonds, it is one explanation. If investors do not like something about a bond, the bond issue will be difficult to sell. Under such a circumstance, the issuing government may find it cheaper to work closely with a preselected underwriter. Thus, the bonds offer a higher yield, not because they are sold through negotiation but because they are difficult to market. An alternative explanation is that underwriters of negotiated bonds lack the incentive to find investors that would accept a lower yield. Either intentionally or for lack of more complete knowledge of potential investors, preselected underwriters may underprice their bonds (select too high an interest rate), thus needlessly adding to the cost of selling bonds.

Again, neither explanation can be accepted or rejected on the basis of currently available information. Both factors probably play a role in raising the reoffer yields and the NIC on negotiated bond offerings. As a result, the interest cost of bonds is probably higher for nonmetro areas than our single-stage regression analysis indicates.

APPENDIX B--
MUNICIPAL BOND
PREPARATION COSTS

In 1973, the Municipal Finance Officers Association (MFOA) circulated a questionnaire to its members requesting information on the preparation costs of recently sold bonds. Information on 496 bond issues, amounting to nearly \$3.1 billion (mostly sold during the 1971-72 period), was summarized in a special MFOA publication (13). The survey collected data on the costs of holding special elections; the costs of purchasing the services of special bond attorneys, fiscal advisors, and local attorneys; and the costs of preparing bond notices and bond prospectuses, printing bonds, and having bonds rated. While these figures did not include the cost of services performed in-house by the issuing government's own personnel, they did provide a rough estimate of the preparation costs local governments could expect to pay during the early seventies.

In the wake of New York City's fiscal problems in 1975, however, investors and underwriters began demanding much more information on the fiscal and economic bases supporting a government's debt. These information requirements changed the nature of the services provided by fiscal advisors, bond counsel, and the rating agencies. To capture the effects of inflation and stricter disclosure requirements, the MFOA recently resurveyed its members. A preliminary report summarizes the responses of 279 governmental units which issued bonds during 1979 (6). These data, reported by size and type of bond issue, are the basis for the estimates for general obligation and revenue bonds reported in appendix table 2. To obtain dollar amounts consistent with the other cost data reported for 1977, the 1979 figures were deflated to 1977 dollar figures by use of the consumer price index for services other than rent. However, the 1980 survey had an insufficient number of responses to estimate the preparation costs of special assessment and limited-tax bonds confidently. Therefore, the estimates from the 1973 survey were inflated to 1977 dollars for this category of bonds. Appendix table 2 presents estimates of the total preparation cost per \$1,000 of gross proceeds for general obligation bonds, revenue bonds, and special assessment bonds by the size of the bond issue. 12/

Based on these estimates, calculation of the preparation costs local governments in metro and nonmetro areas might have paid, given the size and type of bond issues they sold during 1977, is possible. The bond issues sold by governments in each of the government categories were stratified by size and type; these strata were then used to weight the cost figures reported in appendix table 2. The weighted average preparation costs for the general obligation and revenue bonds of local governments by metropolitan status are reported in appendix table 3.

12/ The 1979 figures were deflated by a factor of 1.215 while the 1971-72 figures were deflated by a factor of .661 to arrive at 1977 estimates.

Appendix table 2--Estimated bond preparation costs per \$1,000 of gross proceeds by type of security and bond issue size, 1977

Size of issue	Type of security		
	General obligation bonds	Revenue bonds	Special assessment bonds
Million dollars	Dollars		
0 to 0.5	15.70	24.29	22.87
0.5 to 1	9.83	16.53	14.98
1 to 2	7.08	12.86	8.14
2 to 3	7.15	15.34	5.39
3 to 5	3.88	11.20	5.79
5 to 10	4.04	7.71	4.75
10 to 25	3.65	5.08	<u>1/</u> 3.65
25 and up	2.75	3.01	<u>1/</u> 2.75

1/ The average cost of general obligation bonds was applied to special assessment bonds exceeding \$10 million.

Source: Calculated from data reported in (6, 13).

Appendix table 3--Estimated bond preparation costs per \$1,000 of gross proceeds by type of security and metropolitan status, 1977 1/

Government category	All long-term bonds	General obligation bonds <u>2/</u>	Revenue bonds
	Dollars		
Local governments <u>3/</u>	4.57	4.27	4.78
Metropolitan	4.30	3.93	4.62
Nonmetropolitan <u>4/</u>	5.94	6.19	5.82
Urbanized	5.53	5.41	5.58
Less urbanized	6.37	6.96	6.10
Rural <u>4/</u>	5.86	6.25	5.57

1/ The bond preparation costs reported represent an average of all the bond issues in each category weighted by issue size.

2/ Includes limited-tax bonds not classified as "full faith and credit" obligations.

3/ Includes governments that could not be classified as either metropolitan or nonmetropolitan.

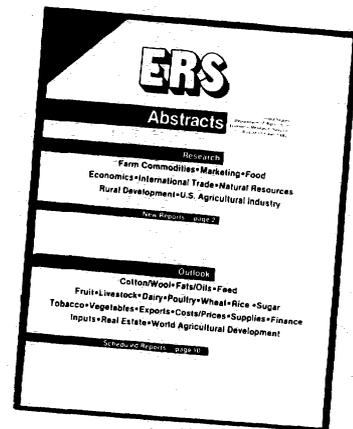
4/ Excludes five Alaskan oil pipeline industrial development bonds for comparison purposes.

Sources: Calculated from data reported in appendix table 2 and from unpublished data from the Public Securities Association's long-term municipal bond file.

Information for decisionmakers

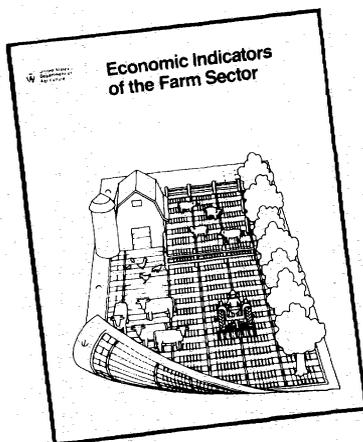
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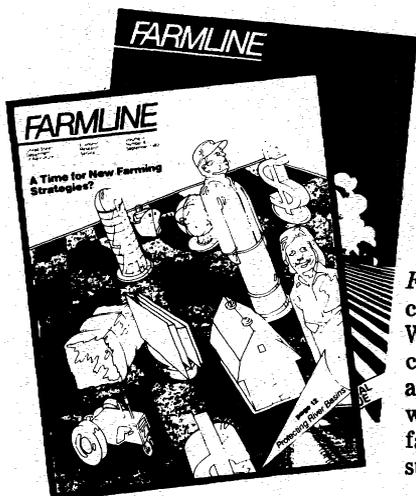
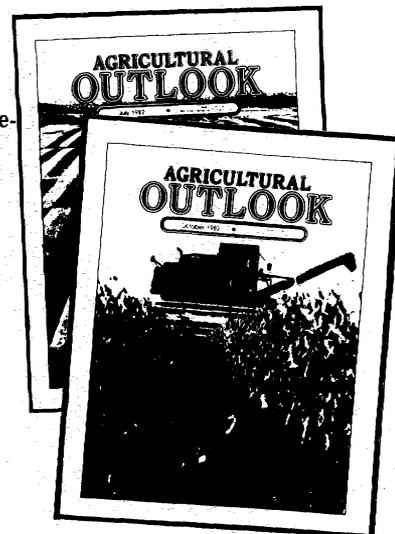
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1982 Handbook of Agricultural Charts

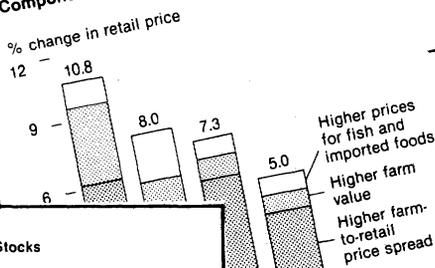
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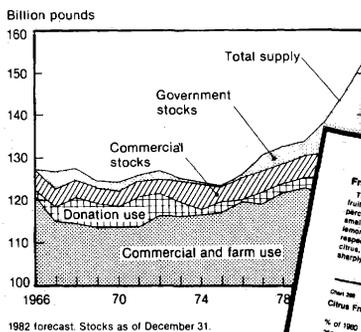
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Components of Increases in Retail Food Prices



Milk Supply, Use and Stocks



Fruit

The Florida freeze in January 1981 caused citrus fruit production for the 1980/81 season to decline 9 percent to 15 million tons. Moderately to sharply smaller crops were estimated for all citrus except lemons and limes, which were up 52 and 9 percent respectively. Consequently, citrus returns for most citrus, particularly in Florida, averaged substantially to sharp year-to-year levels. Per capita citrus consumption increased moderately in 1980, reflecting newly increased consumption of fresh oranges. Production of noncitrus fruits totaled 10.2 million tons in 1980, up 11 percent from 1979. Record crops of apples, pears, and peaches mostly contributed to the increase. Most fruit prices averaged lower. Per capita noncitrus consumption of 106.4 pounds in 1980 was up only slightly from 1979.

Chart 276
Citrus Fruit Production and Farm Prices

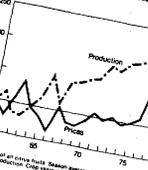


Chart 277
Citrus Fruit Consumption

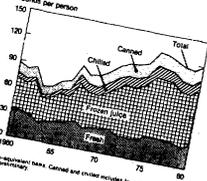


Chart 271
Noncitrus Fruit Production and Farm Prices

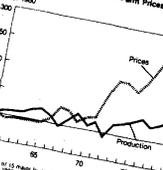
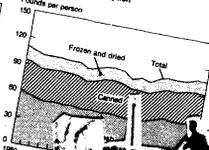


Chart 272
Noncitrus Fruit Consumption



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THIRD CLASS BULK RATE

Northern Great Plains Coal Mining

What are the likely effects of expanded coal mining in Montana, Wyoming, and North Dakota on the small towns and communities there? Mining activity in the sparsely populated region has grown dramatically over the last decade—from less than 20 million tons of coal in 1970, to 100 million tons in 1978, with projections for 350 million tons per year by the mid-1980's.

The Fort Union coal formation, which straddles those three States contains nearly 40 percent of the Nation's coal reserves. Its coal is highly desirable because:

—It is low in sulfur, meaning that it can be burned by utility companies with less air pollution than other coal.

—It is in thick seams (some seams up to 200 feet thick), and can be recovered by strip mining.

To try to ascertain the effects of development on the region, the authors

of this report used computerized simulations of various levels of coal activity to see if the communities could afford the increased level of government services and upgraded infrastructure required by new energy projects and the larger population attracted by those projects.

In the long run (10 years or more), most communities in the region will be able to pay for the services required by the new coal-related development, provided that they can tax the new developments. Without taxing authority (for instance, if the mine lies outside the taxing district of a locality), they will have problems.

Northern Great Plains Coal Mining: Regional Impacts (by Thomas F. Stinson, Lloyd D. Bender, and Stanley W. Voelker; AIB-452; July 1982; 36 pages; color illustrations; \$5; stock no. 001-000-04265-3).

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