

THE TAX REFORM ACT OF 1986 AND MUNICIPAL BONDS:

A STUDY OF THREE TEXAS CITIES

BY

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CHAPTER I

INTRODUCTION

Historically, state and local governments have depended upon debt instruments to fund infrastructure and capital improvements. In the 1800s, legislation first granted state governments authorization to incur debt to meet increasing demands for public services. Later, increased urbanization of cities strained operating budgets. Faced with their own public service requirements, municipalities sought and received debt financing capabilities through state legislative action.

General obligation and revenue bonds are the two main debt instruments utilized to finance capital facilities and infrastructure. Their unique characteristic, interest free from federal taxation, holds investor appeal regardless of the motivation to hold such securities. Individuals desiring tax shelters and commercial institutions such as banks and property and casualty companies seeking tax deductions are the major investors in general obligation and revenue bonds. The private sector also benefits from municipal bonds by using them to finance projects at rates lower than commercial banking rates.

While municipalities and investors enjoy the benefits of tax-exempt municipal bonds, displeasure exists on the federal level. The dissatisfaction stems from the loss of tax revenue to the Federal Treasury. Attempts to curb or

eliminate the tax-exempt status have been a long-standing issue. Not only have presidents but Congress has also lamented the loss of federal income.

Congressional action has influenced the direction of municipal bond usage through numerous revenue and tax reform acts. While most legislation tightened the controls, some of the legislation loosened controls on revenue bonds. Revenue bonds, unlike general obligation bonds, are outside debt limitations, and, in many instances, do not require voter approval before issuance. Revenue bonds, therefore, have been the target of legislation.

In addition to federal tax policy, judicial rulings influence the direction of tax-exemption. In 1819, the Supreme Court ruled in *McCulloch v. Maryland* that states could not tax the interest on instruments of the national government. Later, the doctrine of intergovernmental tax immunity arose from the 1895 decision in *Pollock v. Farmers Loan and Trust Company* stating that the federal government could not tax the interest on state and local securities. A more recent Supreme Court decision in 1988 reversed the opinion held in the 1895 ruling. Hence, interest on municipal bonds was no longer protected by court ruling from federal taxation. While legislation has yet to rescind the tax-exempt status of these bonds, the advantages of tax-free bonds to state and local government are threatened by Congressional action.

The most far-reaching legislation to date is the Tax Reform Act of 1986. Part of the act specifically addressed municipal bonds. Two aspects of the act that apply to municipal bonds are the volume caps placed on certain issuances and the

definitions of municipal bonds types. General obligation and revenue bonds are now termed governmental bonds. Private activity bonds replaced some public purpose bonds such as industrial development, mortgage revenue and student loan bonds. The Tax Reform Act narrowed the definition, thereby restricting revenue bond usage that finances capital projects.

Municipal bond issuances are influenced by other aspects of the act aside from the narrowed definition of what constitutes private activity. Also affected are the issuance process, disclosure requirements to the Internal Revenue Service, and arbitrage and advance refunding restrictions. Part of the act affects traditional investors of municipal bonds by establishing minimum tax criteria on individuals and corporations. The act may also indirectly influence municipalities' debt policies, debt volume, interest rates, bond ratings, and alternative financing sources.

Purpose

Municipalities are constantly striving to maintain a current level of public services and infrastructure and construct capital improvements to meet public demands. Although the tax-exempt status of municipal bonds has been subject to numerous legislative enactments and judicial rulings, it suffered a set back with the Tax Reform Act of 1986 (TRA). The TRA's new restrictions and definitions of municipal bonds caused local governments to reexamine the bond's role in public works.

This paper explores the influence the Tax Reform Act may have had on the three Texas cities of Austin, Dallas, and San Antonio. The purpose is two-fold. First, any shifts from general obligation bond issuances to revenue bond issuances after the tax reform's passage will be identified. Second, the purpose is to examine the law's influences, if any, on the cities' debt policies, bond ratings, interest rates, and debt levels. This analysis will provide insight into whether the municipalities experienced significant changes in their ability to satisfy internal improvement requirements.

Organization

Chapter II introduces background information on municipal bonds from the nineteenth century to the present and discusses the relevant federal tax policies, judicial rulings, and legislative acts. The portions of the Tax Reform Act of 1986 which address municipal bonds are discussed, followed by opinions, assertions and studies by individuals in academia, government, and the business community.

In Chapter III, each city is described in terms of its respective economic, business and financial status during the years 1980 through 1990. Chapter IV presents the methodology used to identify any influences of the Tax Reform Act and the results of the analyses are stated in Chapter V. Chapter VI contains a summary of the findings and an evaluation of the act and its relationship to the three cities' municipal bond issuances, credit quality, bond interest rates and debt levels.

CHAPTER II

MUNICIPAL BONDS: HISTORY AND USAGE

Maintaining infrastructure and constructing capital facilities are traditionally state and local government's responsibility. Funding sources are primarily derived from the sale of short and long-term debt. Municipal bonds, typically in the form of long-term debt, finance projects such as capital improvements programs (infrastructure) or utility projects (capital facilities). This study focuses on general obligation and revenue bonds, which are traditionally used to fund infrastructure and capital projects; however, other basic types of bonds are used by governmental entities.

Municipal bonds can be classified into basic types according to the security that stands behind them: general obligation bonds (guaranteed debt), revenue bonds, special tax or special assessment bonds, and housing authority bonds. With the exception of general obligation bonds, each of the above general types are considered nonguaranteed bonds. Nonguaranteed debt is debt which is repaid solely from specifically pledged sources - i.e., from earnings of revenue-producing activities (Steiss, 1975: 111).

General obligation bonds are secured with the pledge of the full faith, credit, and taxing power of the issuing authority. This type of bond is seen as the

most secure of municipal issues, since the issuing authority has the power to levy taxes to meet debt service requirements.

Debt financing has been criticized by "some guardians of the public purse that the issuance of state and local debt is synonymous with fiscal irresponsibility" (Zimmerman, 1991: 17). Rather, the opposite is true. Capital facilities provide services over a long period of time. Paying for the facilities on a long-term basis stands to reason, as taxpayers derive benefit as long as they retain their residency. In a highly mobile society, taxpayers are hesitant to pay today for capital services to be received in the future. From the governmental entity's perspective, it makes sense to match the flow of payments to the flow of services (Zimmerman, 1991: 17 and 18). Therefore, bonds have been an affordable method of supplying capital services and facilities.

Over the last ten years, the volume of bonds has indicated the existence of a robust market for raising public sector capital (see Table 2.2, pg. 12). "Without this market, the state and local sector would be subject to intermittent service disruptions and a continual suboptimal level of capital formation. Since the state and local sector is an important component of each citizen's economic life, national welfare would suffer" (Zimmerman, 1991: 57-58).

Used for a multitude of purposes, bond sale proceeds have furthered industrial development, education, sports events, and government buildings. Tax-exempt interest earnings, which facilitate the sale of bonds, are a unique characteristic of municipal bonds. The federal government has promoted the

municipal bond market by granting the exemption of interest income from federal income taxation. Congress has not made any effort to eliminate this exemption; nonetheless, it has been a source of contention both judicially and legislatively.

Tax-exemption status has been a long-standing issue subject to debate in judicial courts and in federal tax policy. Numerous judicial rulings and legislative acts have affected municipal bond usage, but none as greatly as the most recent tax reform act. The Tax Reform Act of 1986 placed restrictions on bond usage and imposed definitive guidelines which greatly affected the entire issuance process.

History of Municipal Bonds From the 1800s

State and local governments provide capital facilities and infrastructure for the public at large to meet services needs and demands which have been funded by municipal bonds. The exact date when the municipal bond appeared is not known but New York City began to float securities circa 1812. New York City issued bonds for the city's first waterworks in 1837-1838 at which time only one other water supply system existed in the country (Hillhouse, 1936: 31).

Although municipal bonds were sold from around the beginning of the Republic (Kreps, 1991: 16), state and local capital improvements had been financed by various other means prior to the nineteenth century. Before the advent of municipal bonds as a financing instrument, lotteries, current taxation, donations, sales of public lands, and some combination of loans were the primary sources of financing capital improvements (Zimmerman, 1990: 18). In reaction to

increased demands for public services, states slowly passed legislation authorizing the issuance of bonds for specific projects. The legislation encompassed both state and local authority to incur debt by bonds.

Until the 1840s, states had the heaviest debt burden, amounting to \$175 million compared to municipal debt of \$25 million. However, the depression of 1837 brought massive defaults at the state level. Municipalities then took the lead as the primary borrowers for the state and local sector. Local governments began to borrow extensively in the 1870s for internal improvements, notably for railways. By 1870, state debt had doubled to \$353 million, but local debt had exploded to \$516 million.

TABLE 2.1 OUTSTANDING STATE AND LOCAL DEBT
1840-1962 (\$ MILLIONS)

Year	State	Local
1840	175	25
1850	190	NA
1860	257	200
1870	353	516
1880	275	821
1890	211	926
1902	239	1,630
1912	346	3,476
1922	936	7,754
1932	2,374	15,216
1942	3,096	15,310
1952	6,640	22,080
1962	21,612	55,931

Sources: Totals, 1840-1932, from Hillhouse, (1936), p. 36; totals, 1942-62, U.S. Bureau of the Census, *Census of Governments*, various issues. NA, not available.

State governments imposed limitations on local borrowing as a result of widespread defaults which occurred during the depression of 1873 - estimation of the local default rate was perhaps 20 percent of the total outstanding debt

(Aronson, 1986: 161). Nevertheless, the growth in issuances continued into the 20th century. State debt increased to \$2,374 million by 1932. Municipal debt, however, surpassed state debt at \$15,216 million. The rapid growth continued, as shown in Table 2.1: Three decades later, state debt had increased to \$21,612 million, and municipal debt had ballooned to \$55,931 million.

The vast majority of outstanding state and local debt was issued for internal improvements. The growth can be attributed to four factors. First, a continual growth in population meant higher requirements for public capital. Secondly, due to the exodus of population from rural areas to cities, urbanization increased the need for debt. The migration required cities to invest in public services such as sewage disposal, streets, and water supply. Third, education increased as a public responsibility, and fourth, economic development and technological changes made facilities obsolete before their useful lives had expired (Zimmerman, 1991: 19-20).

Use of revenue authorities began in the early part of the twentieth century. The public revenue authority is a tool employed by a governmental entity to finance operations through user fees. Essentially, individuals and commercial enterprises using the authority-created facility enable the borrowing. The structure of the authority resembles a corporate-type enterprise. Authorities had a mandate to create one project from the sale of revenue bonds (now it is not uncommon for an authority to create multiple projects). After the bonds were

paid off, title of the project reverted to the municipality. The authority ceased to exist and became the responsibility of the municipality (Marlin and Mysak, 1991: 18).

The impetus for creating an authority was to provide government services without exceeding constitutional debt limitations and to keep politics out of the operations (Lamb and Rappaport, 1987: 85). The tremendous growth of revenue-backed debt issued since World War II is a direct result of the growth of revenue authorities. The Port Authority of New York and New Jersey, created in 1921, was the first major public revenue authority in the United States. It remains one of the nation's largest public agencies.

Originally, revenue bonds were issued to finance utility projects. Chicago issued the first municipal revenue bond in 1905 for a water supply system, and Kentucky issued the first state revenue bond in 1920 (Marlin and Mysak, 1991: 18). The revenue bond concept was implemented to permit public services to be paid by those who used the facility (Marlin and Mysak, 1991: 18). Later, under federal sponsorship, such debt was broadened to provide for local public housing projects. The difficulty in affording rent or house prices is one reason why federal, state and local governments have provided massive financial support (Lamb and Rappaport, 1987: 105). In 1957, the bulk of all local outstanding revenue bonds had been incurred for these two purposes. Soon thereafter, a rapid extension to other services followed. Revenue bonds were used for services

such as electric power, mass transit, pollution control, hospitals, sewers, airports and education.

During the eras of the Great Depression and the New Deal, municipal bonds were issued to create public power facilities. Congress, in an attempt to aid rural areas in the Northwest, passed legislation enabling issuance of public power bonds for electrification in the Northwest. In 1936, Mississippi issued the first modern industrial development bonds to aid economic industrial development (Lamb and Rappaport, 1987: 90). Since the 1930s, public power issuers have built projects for oil, coal, and nuclear fuels and were the largest issuers of all revenue bonded debt during the 1970s and early 1980s.

General Obligation Bonds

Backed with the governmental entity's full taxing power, the general obligation (GO) bond is an investment with higher security than revenue bonds. Because public debt purchasers have the assurance of tax resources to meet the principal and interest payments on time, GOs bear a lower interest rate than nonguaranteed bonds. At the same time, however, GO bonds fall within state debt limitations commonly set as a percentage of the local government's property tax base. State and local governments have sought alternatives to avoid such limitations. In 1931, only fifteen states permitted local governments to use nonguaranteed bonds. The number rose to forty by 1936, and, now, nonguaranteed bonds are used in every state. Over the last thirty years, issuance of tax-supported GO bonds has declined relative to revenue bonds, from seventy-

nine percent to about thirty percent of the total new issue municipal bond volume.

Table 2.2 indicates the trend toward revenue bond issuances.

Traditionally, GO bonds are an important financing vehicle for such capital improvements as schools, streets, and municipal buildings. This financing will continue to provide these types of improvements, but revenue bonds or hybrid-type securities will be the major source of funding for public services in the future.

TABLE 2.2 VOLUME OF LONG-TERM TAX-EXEMPT DEBT:
GENERAL OBLIGATION (GO) BONDS AND REVENUE
BONDS, 1965-1990 (\$ MILLIONS)

Year	Long-term Bond Volume	
	GO (\$)	REV (\$)
1965	7,445	3,639
1966	7,013	4,076
1967	9,192	5,096
1968	9,611	6,763
1969	8,047	3,413
1970	11,803	5,959
1971	16,241	8,129
1972	14,121	8,820
1973	12,827	10,126
1974	13,031	9,793
1975	15,003	14,323
1976	16,916	16,929
1977	17,887	27,173
1978	17,894	28,321
1979	12,615	29,646
1980	16,347	30,786
1981	13,988	32,146
1982	23,276	53,903
1983	22,584	60,764
1984	27,508	74,374
1985	55,287	148,994
1986	45,555	105,417
1987	30,867	74,656
1988	31,502	85,509
1989	38,216	86,818
1990	39,929	86,444

Sources: The Bond Buyer Municipal Statbook (1990 and earlier years).
GO = General obligation bonds REV = Revenue bonds

Apart from debt limitations, another impediment for GO bonds is that many states require voter approval before bond issuance. In many states, revenue bonds do not have this obstacle; in Texas, approval in a referendum election is not required. GO debt, then, possesses accountability controls in the form of debt ceilings and voter approval. However, revenue bonds in many jurisdictions are free from such controls.

Municipalities can and have issued bonds indiscriminately to meet public services and needs. New York City, for example, incurred large amounts of debt to meet its demands. Within the seven years between 1966 and 1973, the city's debt service had increased from thirty-five percent to forty-four percent. Several banks refused to lend to the city in 1975. In order to avoid default, the state created the Municipal Assistance Corporation to buy and manage the city's debt obligations. The federal government also authorized the Treasury to lend the city up to \$2.3 billion to finance short-term borrowing (Aronson, 1986: 166).

Revenue Bonds

Revenue bonds finance public facilities that benefit a readily identifiable group of users. In addition to socially and industrially related public services, revenue bonds expanded into leisure related projects such as swimming pools, golf courses, and education related projects such as college dorms. The security to repay the debt is earned by the facility. A municipality is not obligated to use tax revenue to redeem revenue bonds should the revenue generated by the facility prove insufficient. In recent years, revenue bonds have become an increasingly

popular method of financing capital facilities. This trend indicates that they can be self-supporting (Kamer, 1983: 184).

Revenue bonds are used when municipalities desire that users finance the facility or when voter approval of GO bonds cannot be obtained. Because voter approval is often not required for revenue bonds, they are also used to finance a capital project that benefit several governmental jurisdictions even though the jurisdictions may not be subject to statutory or constitutional debt limitations.

Although special districts are the heaviest users of nonguaranteed debt, municipalities are the largest local users of debt markets (Mikesell, 1990: 405). Local nonguaranteed debt increased from thirty-two percent of the local total long-term debt in 1960 to sixty-nine percent in the late 1980s. A stimulus to the recent proliferation of nonguaranteed debt was caused by increasingly stringent regulations covering the issuance of tax-supported debt and by the broadened definition of "public purpose". Local governments increasingly stretched the definition of public purpose in order to lend funds cheaply to various sectors of the economy to compete for jobs and taxpayers (Sbragia: 1983: 68). This broader definition of public purpose increased local borrowing for purposes not traditionally associated with local government. For example, industrial revenue bonds were issued by local entities on a tax-exempt basis to finance private industrial development.

The shift from GO bonds to revenue bonds emerges largely from the desire to avoid legal restrictions placed on GO issues. Unlike general obligation bonds,

nonguaranteed bonds are not easily adapted to generating financing for reconstruction or maintenance, so the shift creates special problems for cities. Debt is not the complete answer for public infrastructure; maintenance and operations are recurring costs that should be a part of a municipality's operating budget (Mikesell, 1986: 405).

Fiscal pressures on municipalities contribute to the rise of bond issuances. The issuance of large amounts of long-term debt is one way of borrowing from future generations of taxpayers. The most obvious mechanism for transferring budgetary difficulties from one generation to the next is to leave a tradition of high debt service and a depleted tax base. Fiscal pressures have contributed to capital stock deterioration because maintenance and replacement cycles have been dramatically reduced (Peterson, 1981: 249).

Revenue bonds do have disadvantages. Industrial revenue bonds are often the hardest bonds to sell because the revenue is based upon a projected revenue stream; therefore, such bonds are considered unreliable and are generally sold through negotiation (Colby, 1991: 15). Issuers pledge repayment from the system's net revenue (gross revenue less the cost of operation and maintenance). Such bonds are payable solely from these revenues and are frequently required to contain a statement on the face of the bond that the holder is not entitled to demand payment from property taxes.

Another downside to revenue bonds is the possibility of default. Overly optimistic revenue forecasts and underestimated project costs are the most

common reasons of defaults. In 1983, the Washington Public Power and Supply System (WPPSS) defaulted on \$2.24 billion in revenue bonds. In this particular instance, several factors augmented the default. First, engineers overestimated a demand for power that never materialized, and the issuer accepted the optimistic feasibility studies. Secondly, high interest rates of the 1980s caused the project to go over budget. A slowdown in the region's economy and higher utility rates forced WPPSS to cancel two projects. The cancellation forfeited future revenues even though tax-exempt bonds depending on these revenues had already been sold. Anticipating rate hikes, electric customers went to court. The Supreme Court ruled that the municipalities participating in the system were not legally authorized to enter into "take or pay" contracts with the system. Since the contracts between the municipalities and WPPSS were ruled invalid, the former could no longer participate in the project. WPPSS was then unable to meet its debts without the municipalities.

Capital Financing and Infrastructure

Infrastructure applies to facilities with high fixed costs and a long physical life. This definition is rather ambiguous because it encompasses all spending for the provision of physical capital projects. The term is often applied to the portion of capital stock provided by the public sector, commonly known as public works. Adam Smith suggested in the *Wealth of Nations* that the duty falls on the public sector to erect and maintain public buildings and public works (Smith, 1925: 214). In 1983, the Congressional Budget Office characterized infrastructure as capital

intensive and requiring a high public investment at all government levels (Congressional Budget Office, 1983: 1). The concept of infrastructure included social facilities and industrial related activities.

At the federal level, considerable effort has been devoted to studying infrastructure. The nation's infrastructure needs have been heavily documented. The National Council on Public Works Improvements reported in 1988 that capital spending for infrastructure should be doubled without delay to maintain the health of the economy. The study also indicated that the nation's needs were growing rapidly, and the infrastructure was deteriorating quickly. Furthermore, investment was slow, and corrective policies were belated in development and adoption. According to a 1984 report issued by the Joint Economic Committee of Congress, the bill for construction and repair of bridges, roads, and sewer systems will total \$1.16 trillion by the end of the century (Peers, 1987: A1, col.6).

Judicial and Legislative Impact on Municipal Bonds

The most important and distinctive characteristic of local issues is the freedom from federal taxation. The nature of tax-exemption has long been the topic of legal and legislative debate. America's first experience with income taxation was the Civil War Income Tax enacted in 1861. Taxes were levied on income from "whatever source derived." Interest earned on federal government securities was taxed at one-half percent; however, state and local securities did not receive exemption and were to be included in taxable income. It wasn't until the federal income tax law was adopted in 1913 that interest on state and local

government bonds was exempt. The reasoning behind this law reflected the doctrine of intergovernmental tax immunity.

Intergovernmental tax immunity arose from *McCulloch v. Maryland*, with Justice Marshall stating that "the power to tax is the power to destroy." This 1819 decision prevented states from taxing instrumentalities of the national government. The decision was guided by the principle that a tax would undermine the supremacy clause of the U.S. Constitution. In 1895, the doctrine became reciprocal when the Supreme Court held unanimously in *Pollock v. Farmers Loan and Trust Company*, 157 U.S. 429 (1895), 158 U.S. 601 (1895), that interest on state and local securities could not be taxed by the national government. The decision stated that "the tax in question is a tax on the power of the states and their instrumentalities to borrow money, and consequently repugnant to the Constitution."

The enactment of the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) required the issuance of municipal bonds be registered to qualify for tax exemption. Bearer bonds, have no indication of ownership other than the individual in possession of the bond. Since bearer bonds left no audit trail, the Internal Revenue Service claimed the bonds were used to launder money illegally earned and as a way to escape gift and estate taxes. In response to TEFRA, South Carolina brought a lawsuit contesting the registration requirement, claiming TEFRA violated the doctrine of reciprocal tax immunity and the 10th Amendment.

In *South Carolina v. Baker*, the Supreme Court reversed its earlier decision in *Pollock* by ruling that the interest on municipal bonds was not constitutionally protected by the 10th Amendment or the doctrine of intergovernmental tax immunity. Robert Bland and Li-Khan Chen (1990: 45) describe the 1988 decision as "a new doctrine of tax immunity, one best described as unilateral tax immunity," in which federal securities are protected from taxation by the states but not the reciprocal (Bland and Chen, 1990: 45). State and local government's only recourse to preserve the tax-exempt status is through statutory protection since the Supreme Court's decision in *South Carolina* (Bland and Chen, 1990: 45). This statutory protection which was granted in the federal income tax law in 1913 is bestowed upon both guaranteed and nonguaranteed debt instruments.

Although Bland and Chen lament the South Carolina decision, a fundamental inconsistency exists in applying the doctrine of tax immunity to revenue bonds under existing laws and conditions (Ratchford, 1954: 42). Nonguaranteed debt such as revenue bonds is frequently outside legal limits placed on municipal debt, often does not require voter approval, and is not secured by a government's full taxing power. Yet, at the same time, the interest is eligible for the same exclusion from federal taxation received by general obligation debt. This situation creates a logical inconsistency:

In order to invoke tax immunity the agency which issues those bonds must show that they are the obligations of a state or subdivision; but in order to prove that they are true revenue bonds and not subject to the usual debt limitations it must show that they are not the obligations of any such unit (Ratchford, 1954: 42).

Federal Tax Policy

Over the past ten years alone, the Federal Treasury has lost over 160 billion in tax revenue (see Table 2.3). Hence, it is not surprising that presidents and Congress have shown a distaste towards tax exemption due to the loss in federal income. In 1938, the House of Representatives' Committee on Ways and Means conducted hearings on tax-exempt securities during which President Franklin Roosevelt declared, "A fair and effective progressive income tax and a huge perpetual reserve of tax exempt bonds can not exist side by side." Presidents Harding, Coolidge, Roosevelt and Hoover all urged the discontinuance of tax exemption (Davie and Zimmerman, 1990: 1576).

TABLE 2.3 FEDERAL REVENUE LOSS ON OUTSTANDING STOCK OF TAX-EXEMPT BONDS, 1980-89

Year	Revenue (\$ billions)
1980	7.697
1981	9.800
1982	11.435
1983	13.775
1984	16.080
1985	18.170
1986	21.305
1987	22.215
1988	21.800
1989	20.915
Total	163.192

Sources: Office of Management and Budget, *Special Analyses: Budget of the United States Government*, various fiscal years.

Federal subsidy in the form of tax exemption to state and local governments has been subjected to Congressional scrutiny. Congress' concern was that the bonds were increasingly used for purposes not consistent with the original intent of the law. The original purpose of revenue bonds was to attract firms to capital poor regions by providing low interest rates for financing. K-Mart and McDonalds, for example, used industrial revenue bonds to open a total of 118 stores between 1975 and 1980 (Moore and Squires, 1988: 155). The "obvious movement away from the original intent ... contributed to the severe restrictions imposed by Congress in the 1986 Tax Reform Act" (Watson and Vocino, 1990: 209).

Congress also shared presidential concern over lost revenue. Because interest payments are not subject to tax, municipalities can borrow at artificially low interest rates. This situation creates capital market distortions between taxed and tax-exempt activities and causes loss of federal revenue. According to George Peterson (1981: 68), "...tax exemption represents an inefficient form of subsidy because part of the federal tax revenues foregone must be shared with investors and are not captured in their entirety by state and local borrowers in the form of lower interest rates."

When interest rates climb, tax-exempt bonds are appealing to businesses. Industrial development revenue bonds issued by local governments promoted private industrial development. These bonds are issued on behalf of a private business which uses the proceeds to construct the capital facility. The private firm

makes payments to the issuing government to cover principal and interest on the bonds. Competition for business investment induces local governments to use their tax-exempt bonding authority as an economic development tool, with the Federal Treasury bearing the cost of the subsidy.

The federal government's greatest concern in the mid-1980s was tax subsidies for private uses of bond proceeds and arbitrage from investing tax-exempt proceeds. Arbitrage occurs when local borrowing costs are lower than the yield gained from investing in securities earning higher interest rates than the issued bonds. Municipalities earn "profits" from such an investment. An additional way of lowering issuing costs and generating revenues without cost to the taxpayers is advanced refunding. Arbitrage earnings from advanced refunding is produced by issuing bonds at a lower tax-exempt interest rate for purposes of retiring another bond issue in the future. The proceeds are then invested in higher yielding securities.

The Department of Treasury identified two "undesirable results" of arbitrage and advanced refunding. Since arbitrage was excluded from use limitations on money from tax exempt bonds, it financed activities which otherwise might be ineligible for tax-exemption. In addition, the volume of tax-exempt bonds increased. According to the Treasury report, the increased volume magnifies the interest savings, which amounts to an "indirect federal assistance" that is "not subject to the same degree of Congressional scrutiny that attaches to direct federal expenditures" (Pagano, 1988: 42). The Treasury report singled out

tax-exempt borrowing because comparatively more high-income individuals hold tax-exempt debt; this favoritism handicaps private issuers attempting to compete with tax-exempt issuers in the bond market.

Most of the public subsidization of the private sector is accounted for by expenditures on infrastructure. Revenue bonds are increasingly employed to finance private projects. This method is appealing because the revenue loss is at the federal level and because the project's technical nature usually eludes the electorate. Taxpayers understand the general nature of revenue bonds; the bonds fund a facility and user charges or fees service the bond debt. However, most taxpayers are unaware of the technical aspects of the facility project, and its local costs are unlikely to be understood or opposed by the electorate. As a result, local officials have little incentive to limit bond usage that boosts local economies. The subsidy is thus awarded indiscriminately in hopes of attracting new businesses (Moore and Squires, 1988: 151).

Federal policy decisions on the executive level also affect tax-exempt securities. Reagan's economic policies of the eighties made privatization a focal point. A governmental entity privatizes by contracting with a private firm to provide a public service, or in some cases, selling assets to a private firm. The move towards privatization began in the late 1970s with the passage of California's Proposition 13. The tax revolt in California led the way to privatization as an alternative means of financing public services. The privatization trend extended to state and local use of tax-exempt securities, specifically, industrial development

revenue bonds. The growth in private activity bonds had its beginnings in the mid-1970s when local governments undertaking infrastructure development were given the option of issuing bonds on behalf of a private business. The businesses, in turn, used the proceeds to build capital facilities.

Congress reacted to the escalating private activity use of tax-exempt municipal bonds. The Revenue and Expenditure Control Act of 1968 exemplified the first of several endeavors to restrict the private use of tax-exempt bonds (often referred to as private activity bonds or private purpose debt). Tax-exempt bonds were originally intended to subsidize state and local infrastructure and other "public good" projects. The 1968 act limited the scope of bond proceeds used for private uses.

Under the new two-part test, the bonds would be classified as private purpose if more than 25 percent of the proceeds were used by a business or individual (the private benefits test). The same percentage applied to the principal and interest secured by or derived from property used in a business (security test). Bonds were classified as industrial development bonds if one of the two tests were met and were therefore ineligible for tax-exempt status (Bland and Chen, 1990: 43).

Revenue acts of the 1970s and the Tax Reform Act of 1976 eased restrictions on public and private purpose bonds. Terms for water bonds were broadened; constraints on small-issue industrial development bonds were eased; and tax-exemption eligibility was liberalized. Furthermore, the Economic

Recovery Tax Act of 1981 further loosened the original tightened restrictions by extending tax-exempt status to bonds issued for financing equipment used for public transit.

While legislative acts implement federal tax policies governing municipal bonds, federal regulatory agencies also control municipal bond procedures and practice. The Securities and Exchange Commission adopted a new rule effective January 1990 requiring stricter disclosure documents. The rule is designed to improve consistency and timeliness of the disclosure process. Underwriters are directly affected by the rule, but governmental bodies issuing municipal bonds are indirectly influenced because they transmit information to investors through the underwriters.

The Tax Reform Act of 1986

By far, the greatest impact on the municipal bond market was the Tax Reform Act of 1986 (TRA).¹ TRA encompassed a broad spectrum of tax policy issues; tax-exempt securities was only one of them. The federal government proclaimed that the underlying theme of the tax reform was based upon the concept of revenue neutral tax law changes. However, tax reform with respect to all state and local treasuries was not revenue neutral. The most heated debates centered around issues limiting the tax-exempt authority of state and local governments and repealing the deductibility of state and local income taxes.

¹A synopsis of the portion of the Tax Reform Act of 1986 which relates to municipal bonds is contained Appendix A.

While the deductibility issue ultimately waned, tax-exemption issues were dramatically affected.

TRA defined two types of tax-exempt obligations: governmental and private activity. Any obligation that satisfies both parts of the private business test, or the private loan financing test is defined as a private activity obligation. Private activity bonds roughly correspond to industrial development bonds (IDBs) whereas all other obligations are termed governmental. The private business tests are met if more than ten percent of bond proceeds are directly or indirectly used for private business and if more than ten percent of principal of or interest on the obligation is directly or indirectly paid or secured by a private business.

Proceeds are used for private business use if a private business owns, leases, or manages (except under a qualified management contract) the financed facility. The private business use definition also includes the use of a facility or its output. The test is not satisfied if private business use is on the same basis as members of the general public. The second portion of the private business test is the security interest test. The test is met directly if the facility is leased to a private business, and the proceeds are used to pay debt service. The security interest test is met indirectly if the facility is leased to private business even if the lease payments are not for debt service but the facility-generated revenue is used for debt service. The test is not satisfied when the bonds are donated to the private borrower to finance the facility. Exceeding the ten percent limit exposes

the issuer to penalties of possible taxability of the bonds with retroaction to the time of issuance.

Under the business test, bonds issued for sports, convention, or trade show facilities, parking facilities (unless related to exempt facilities such as public airports) are no longer tax-exempt. IDBs can no longer be issued for industrial pollution control facilities and industrial parks unless they are issued as GO bonds. Permissible types of private activity bonds include multi-family housing, certain mass commuting, water and sewer facilities, and electricity and gas facilities. These bonds retain their tax exemption but are subject to state volume restrictions.

Another method of identifying private activity obligations is the private loan financing test. This test is satisfied if five percent of proceeds or \$5 million is used directly or indirectly to make or finance loans to other than governmental bodies. This criterion applies even if the loan is not for business purposes. The definition of loan is broad, encompassing promissory notes, installment sales, financing leases and any type of deferred payment arrangement.

For all practical purposes, arbitrage earnings have been eliminated by the TRA. Local governments will lose this method of raising revenue or borrowing less. The yields on investments must be calculated, and any excess earned over the yields on the tax-exempt bonds must be rebated to the Federal Treasury if bond proceeds are not spent within six months. Restrictions on advance refunding includes all private activity bonds except Section 501(c)(3) bonds (bonds issued for

universities, hospitals, and health care facilities). The TRA does exempt "small issue" cities from arbitrage restrictions. Cities with less than \$5 million in annual issuances may retain arbitrage earnings.

Private activity obligations are now under unified statewide volume limitation caps. The maximum amount that may be issued in a state for calendar years after 1987 is the greater of \$50.00 multiplied by the state population or \$150 million (Watson and Vocino, 1990: 210). The bond cap is divided proportionally between state and all local governments unless the state enacts legislation otherwise. The state must enact legislation to control the volume allocation, or the process will be subjected to the federal system (Stanfield, 1987: 13). Bond issuances exceeding the cap must be floated as a taxable bond issue.

A section of the TRA established a minimum tax for previously tax-exempt bonds purchased by individuals and corporations. Interest received from certain private activity bonds will be included in calculating the alternative minimum tax. The risk of increasing taxable income will necessitate a higher yield or interest on the bonds to attract investors.

The Implications of the Tax Reform Act of 1986

Sweeping changes came out of the Tax Reform Act of 1986. Individuals benefitted from decreased tax rates, but local governments foresaw an impediment to their major source of financing capital improvements. Almost every aspect of municipal bonds and their marketing process was touched upon: arbitrage, credit quality, and issuance and disclosure requirements. After the TRA, the major

purchasers of tax-exempt securities shifted to other tax shelters, and taxable bonds became a viable alternative (Bashe, 1987: 3).

The media primarily focused upon the tax reform impact on individuals. Less notice was given to the impact on tax-exempt municipal bonds for several reasons: 1) the language governing the bonds was not clear; 2) the layperson was less informed about the bond market than about income taxes; and 3) the effect of the bond market on individuals was subtle (Pagano, 1989: 319).

Some reactions were favorable towards limiting private purpose bond usage. Thomas Dye, a professor of government and policy sciences at Florida State University, Tallahassee, believes that eliminating the tax-exemption of new issues of private purpose bonds would benefit state and local governments. Supply changes have affected the bond market more than any other factor. By eliminating tax-exemption, the supply of new issues would be greatly reduced, as would the yields on the remaining public offerings. Dye cites the year 1982 when a flood of new issues hit the market in December. These new issues caused a huge jump in yields. If tax-exemption status was removed, the new issue supply of municipal bonds reduces. Therefore, yields are reduced on the outstanding issues. Local governments would then concentrate their limited resources on the rebuilding of infrastructure (Dye, 1985: 269).

Dye continues his argument against tax-exemption by citing the effect on the private market and the misuses of industrial revenue bonds. The interest exemption creates the incentive for investment in public infrastructure - schools,

hospitals, streets, sewers, airports, etc. The social value of these investments is indisputable; however, capital is directed away from the private market. The private market is also disadvantaged when tax-exempt securities finance business enterprises such as apartment complexes or single-family housing developments at the expense of businesses relying on private market capital. Furthermore, examples of abuse among industrial development bonds are numerous. The explosive growth in mortgage subsidy bonds and IDBs to over half the municipal bond market was a warning sign for potential abuse (Dye, 1985: 269). The McDonalds and K-Mart stores mentioned earlier are examples of such abuse.

The law restricts the ability of local governments to issue tax-exempt debt. This complicates the tax-exempt borrowing process and affects the market for a governmental entity's debt issuance (Bashe, 1987: 2). Although fewer opportunities are available to earn income by investing bond proceeds, arbitrage-driven borrowing is still possible as long as the issuance costs are not subtracted from available funds for purposes of calculating yields. The period of unlimited arbitrage earnings is shortened from three years to six months. While the potential exists for producing revenue by arbitrage, severe constraints are placed on short-term deficit financing.

The TRA's issuance requirements have also affected bond dealers and underwriters. The two percent cap for issuance costs financed out of bond proceeds and the TRA's burdensome procedures concerning the issuances have driven firms from the business. All tax-exempt transactions must be reported to

the Internal Revenue Service. Furthermore, bond dealers are required to disclose to customers the different tax implications of specific bonds. Constraints on floatation costs and stiff competition among underwriters resulting from fewer deals means lower profits. Firms relying on the strategy of high volume and low margins have seen the market convert into one of low volume and no margin (Petersen, 1988: 28).

Another concern arising from the TRA is credit quality. Bond ratings are the essence of credit analysis as they categorize risk. Investors generally rely on bond ratings as an indication of an issuer's credit quality. An exception is in the case of conduit bonds. Conduit bonds, in which the issuer has no liability but makes tax exemption available to the actual obligor, are not directly affected by defaults. Nonetheless, defaults reflect poorly on the bond market as a whole. The massive WPPSS default and defaults in small-issue industrial development, hospital, and nursing home bonds, for example, prompted calls for issuance regulation by the SEC. At least sixty IDBs were in default in 1989, and sixty-five nursing homes concentrated in the midwestern and southern states are currently in some stage of default (Cohen 1989: 64).

Industrial development bonds had grown from \$600 million in 1978 to 5.9 billion in 1986 just before tax reform made them less desirable to investors. In 1987, for instance, the volume was \$2 billion or two percent of the total market (Cohen, 1989: 64). Table 2.4 indicates the shift in the types of investors after the TRA. Commercial banks, who buy large quantities of issues for investment

purposes, also sell these bonds in the secondary market. After the Tax Reform Act, commercial banks could no longer deduct from taxes 80 percent of the interest paid to finance industrial development bond purchases. Hence, their share of the municipal market has dropped to 30 percent in 1986 (Moore, 1988: 188).

TABLE 2.4 OWNERSHIP OF TAX-EXEMPT BONDS (Percent Distribution)

Year	Households(1)	Commercial Banks	P&C Insurance Companies	Other
1979	26.4	42.4	22.7	08.5
1980	27.8	42.2	23.0	07.0
1981	29.2	41.3	22.5	07.0
1982	31.5	37.9	20.8	09.8
1983	39.5	34.8	18.5	07.2
1984	43.1	33.5	16.3	07.1
1985	44.1	35.3	13.5	07.1
1986	47.8	29.9	15.3	07.0
1987	51.9	24.4	17.9	05.8
1988	56.1	19.9	18.5	05.5
1989	58.9	16.5	19.1	05.5

Source: Federal Reserve Board, Flow of Funds Account. (1) Households include debt held through mutual funds and money markets.

TABLE 2.5 NET ISSUES AND OUTSTANDING HOLDINGS OF TAX-EXEMPT BONDS (Dollars in Billions)

Year	State and Local Govts(1)	Households and Nonprofit Organizations	Nonfinancial Corporations (Industrial Revenue Bonds)	Net Issues Total	Outstanding Holdings (2)
1979	14.8	2.9	10.1	27.7	320.6
1980	10.7	3.1	10.9	24.7	350.3
1981	15.9	4.4	13.4	33.7	373.7
1982	26.7	8.5	15.1	50.4	417.9
1983	22.5	11.4	9.4	43.3	471.7
1984	20.3	10.2	20.5	51.0	520.0
1985	82.7	30.2	22.6	135.4	655.5
1986	34.8	-2.2	-9.9	22.7	679.1
1987	35.9	-1.0	0.9	34.1	713.2
1988	33.1	-0.9	0.1	34.0	759.8
1989	23.7	1.7	-1.1	24.2	784.0

Source: Federal Reserve Board, Flow of Funds Accounts.

(1) Includes general obligation bonds and governmental revenue bonds.

(2) This represents the current market value of outstanding holdings. The change from one year to another will not necessarily equal the face amount of net new issues.

A major shift in investors willing to hold municipal securities occurred after the Tax Reform Act of 1986. Institutional investor demand has lowered, and the individual investor is now the major investor in municipal bonds. The major purchasers of tax-exempt debt, commercial banks and property and casualty insurance companies, have withdrawn from the market, since tax-exempt securities have lost much of their advantage and attractiveness (Table 2.5).

The loss of the tax deduction removed much of the advantage in holding tax-exempt securities. Any reduction in demand for tax-exempt income usually drives interest rates higher because competition with investment alternatives, such as taxable investments with higher yields, becomes a viable option. Significant differences exist between rates for tax-exempt and taxable bonds. Since 1978, interest rates on tax-exempt bonds have remained at sixty to eighty percent of the taxable bond interest rates (Pagano, 1988: 39)

A study conducted by Bland and Chen in 1990 revealed that tax-exempt interest costs are about 2.2 percent lower than taxable municipal interest costs. Part of the research examined private purpose debt issued in 1988. If this debt had been taxable, \$441 million in additional interest payments would have been incurred by state and local governments. Or, if extended over the average twenty-five year lifetime for the debt, governments would have incurred \$5.9 billion in additional payments (Bland and Chen, 1990: 46-47).

Despite the research findings that tax-exempt interest costs are lower than taxable interest costs, new tax-exempt issues in the bond market declined. John E.

Petersen, a senior director of the GFOA's Government Finance Research Center, blames the TRA for "the incredible shrinking market of the 1980s" (Moore, 1988: 187). The dramatic effect on issuers became a reality, but states have yet to deal with the volume caps because bond issuances are far below the cap level. One reason is that cities anticipated the Congressional action and issued large quantities of bonds in the two years preceding the TRA. Secondly, the TRA complexity and local government consternation over compliance costs have been a deterrent.

Local governments have responded to the TRA with budgetary adjustments and shifts in debt and capital policies. Michael A. Pagano, an associate professor at Miami University and co-editor of *The Annual Review of American Federalism*, conducted a survey regarding the shifts. Two surveys, one in 1987 and one in 1988 examined cities' reactions to the TRA. Finance officers in all cities with minimum populations of 50,000 were surveyed to ascertain whether capital or debt policies have altered as a result of tax reform. Tabulated responses in the 1987 survey indicate that seventy-five percent of the 234 cities have changed their policies due to the definition of governmental and private activity bonds (Pagano, 1988: 46).

Approximately one-fourth of finance officers indicated that the TRA definition had caused or would cause the volume of debt to decline during 1987 (Pagano, 1988: 46). However, the 1988 survey revealed that the overwhelming majority of cities (77%) have not felt forced to reduce the volume, and less than

only one in six cities actually reduced its volume of GO or revenue issues (Pagano, 1989: 323).

In 1988, one in ten cities had issued taxable bonds as an alternative to the TRA restrictions. In fact, nineteen of forty-one cities that did reduce their volume of tax-exempt debt had proposed to or had issued taxable bonds. Pagano states that the taxable bond market appears to be mitigating the adverse effects of the TRA for nearly half of those cities. The most frequently cited effect of the TRA in both surveys involved compliance with the public purpose definitions. Over half of the large cities spent or planned to spend more time and administration costs inspecting project proposals and selections (Pagano, 1989: 323).

Pagano, in his 1987 study of 234 cities' responses to the TRA, suggested that to maintain the current level of services and capital investment, cities could raise taxes and fees (none of the cities surveyed did so). Cities could also reduce the quality of services and investment in capital facilities. Only four percent responded that the recent reductions were attributable to tax reform (Pagano, 1989: 326). Table 2.6 summarizes the findings. Pagano interpreted the findings as contradictory: The TRA was not affecting cities' fiscal profiles as originally speculated, but the cities' debt policies are undergoing fundamental shifts (Pagano, 1989: 323).

The tax law changes appear to be working at cross purposes. The possibility that the changes would produce lower capital cost is debatable. Lowering individual tax rates and removing incentives for investors to buy tax-

exempt securities should force interest rates higher (Bashe, 1987: 3). The combination of lower individual tax rates and the alternative minimum tax on corporations and financial institutions makes tax-exempt municipal bonds less attractive. Individuals whose tax rate have been lowered have less inducement to obtain tax-exempt investments compared to higher yielding taxable investments (Reynolds, 1987: 11). On the other hand, if the supply of tax-exempt securities is reduced due to the tax law changes, interest rates may come down, but not necessarily significantly. Tax shelter eliminations may add to lowering interest rates because tax-exempt bonds are more attractive (Bashe, 1987: 3).

TABLE 2.6 COMPILATION OF CITIES' RESPONSES TO TAX REFORM (PERCENT)

	FY 1987		FY 1988	
	TAKEN*	PROPOSED**	TAKEN*	PROPOSED**
Altered capital and debt policies	75			
Administration costs and paperwork increased		49.6	42.6	9.1
Reduced debt volume		24.6	15.7	7.3
Issued taxable bonds		17.5	10.2	9.1
Responses in 1987 - 234 Responses in 1988 - 260. Same cities surveyed in 1988 as 1987.				
* City has taken action ** City anticipates taking action				

Source: Summary of findings information obtained from Michael A. Pagano, "Cities Responses to Tax Reform." Municipal Finance Journal 10, no.4 (1989): 319-333.

While legislative action can affect interest rates, other federal agencies' actions may as well. The Federal Reserve Board, on December 20, 1991, lowered the discount rate one full percentage point from 4.5% to 3.5%. The reduction was an attempt to stimulate the economy out of a seventeen month recessionary

period. The easing of the rate brought long-term rates in the bond market down to its lowest levels since 1987 (Murray and Wessel, 1991: p. A1, col. 6). Lowered rates prompted issuers in the municipal bond market to sell debt and to call in debt issued in the early 1980s when interest rates were much higher (Mitchell, 1991: p. C19, col. 2)

Many individual investors once viewed municipal bonds as "feather bonds" - investments so safe that buyers can sleep soundly. But the concern about higher interest rates and a possible lack of liquidity in the bond market has caused many to sell their bonds in favor of tax-exempt money-market funds. In addition, the municipal market's image has been tainted by federal investigations of alleged fraudulent bond sales (Peers, 1987: A1, col. 6).

The Future for Tax-Exempt Municipal Bonds

Judicial rulings and legislative actions will continue to influence the municipal bond market. Despite the outcry over reciprocal tax immunity, the "market reacted with a yawn and went about its way" (Peterson, 1981: 31). The Supreme Court clearly expressed its opinion in the *South Carolina* decision that the determination of tax exemption status belongs in Congress. By narrowing the types of bonds that qualify for tax-exemption status and lowering income tax rates, Congress has altered the municipal bond market. Congress congratulated itself for reducing tax rates, but no one has acknowledged the expense to state and local government (Reynolds, 1987: 13).

By continually imposing restrictions on state and local government's ability to issue tax-exempt bonds important for financing infrastructure, Congressional tax-writing committees have further reduced infrastructure spending (Zimmerman, 1991: 255). Petersen (1988: 22) maintains that the municipal market, "wrestling with credit quality problems, changing buyers, disclosure concerns, and adverse court decisions, nevertheless appears well positioned to concentrate its resources on its traditional role in the financing of infrastructure." This belief is echoed by Zimmerman (1991: 269), who asserted that the "importance of the Tax Reform Act of 1986 in reducing the volume of non-infrastructure financings is apparent. It should save state and local taxpayers a considerable amount of money and add to the stock of state and local infrastructure."

A new fiscal environment has emerged. Debt policies may change to encompass more federal regulations and include innovative methods developed to attract new business. The combination of public and commercial investment is often a catalyst for development activity. Moreover, lower individual tax rates should encourage higher levels of investment and spending at the local level. "Dollars that don't go to Washington have a greater likelihood of staying within each community's local economy. That translates into a new stimulus for local businesses, local job creation, local tax base growth, and a strengthened revenue position for local government" (Reynolds, 1987: 13).

The TRA restrictions may increase cost and administrative complexity of tax-exempt financing. Despite the TRA's new provisions, however, "tax-exempt

financing remains among the most effective tools available to local governmental units. If conscientious effort is made by local officials and careful due diligence is exercised in structuring and administering the financing, the tax-exempt financing tool will remain economic and efficient for local government" (White, 1987: 9).

This research examines the influence the TRA may have had on municipal bond issuances of three Texas cities: Austin, Dallas, and San Antonio. Other components relating to bonds such as interest rates, bond ratings, debt policies, debt volume, and taxable bonds may have been influenced. The change in bond issuances after the legislation passage is reflected in bond types (general obligation, revenue, and taxable) and the number of issuances associated with them.

The TRA's provisions appears to have decreased both general obligation and revenue bond issuances. One way to assess the rise or fall in revenue and taxable bonds is to compare the number of the issuances or the amount in dollars before and after the TRA. Existing literature indicates that nationally aggregated issuances dramatically increased in anticipation of the law and then dropped tremendously the year following the TRA enactment.

Interest rates determine the marketability of the bonds. Since the TRA lowered individual tax rates, decreased incentive to buy tax-exempt securities may force relative interest rates higher. On the other hand, if the supply of tax-exempt securities is reduced due to tax law changes, interest rates may come down.

Nonetheless, the interest rate alters the debt load; lower rates decreases debt

service, and higher rates increase debt service. Interest rates, therefore, influence bond ratings, debt volume and debt policies.

Bond ratings are determined by independent analysts of the rating agencies. When judging a municipality, the rating agencies use industry standards and guidelines to arrive at the annual bond rating. Credit quality is a concern, and rightly so, as defaults have negative consequences both to the city and in the bond market. Although a combination of factors ascertain the rating, debt load and debt management are critical components.

Debt volume is controlled both by legal/regulation and the municipality's debt policy. Statutory or charter-set ceilings cannot be maneuvered, but policy decisions are controlled by elected officials such as city council members and the mayor. The literature review revealed that many cities have changed their debt policies due to the TRA. Additionally, some cities had reduced their volume of tax-exempt debt.

Pagano's 1988 study indicates that municipalities with populations exceeding 50,000 altered debt policies, increased administration costs and paperwork, and issued taxable bonds instead of tax-exempt bonds. The study also revealed that debt volume did not decline.

It is hypothesized that the three Texas cities under current examination decreased their volume of municipal bond issuances following the Tax Reform Act of 1986 enactment. However, revenue and taxable bond issuances increased shortly thereafter. It is further hypothesized that debt policies were revised in

response to the TRA's new definition of private activity bonds, that debt volume did not decline, that interest rates rose, and that bond ratings were unaffected. A summary of the hypotheses is presented in Table 2.7.

According to Pagano's study, local governments' response to the increased regulation of bond issuances before and after the act are quite different. Although the surveyed cities anticipated lower debt levels, less than one-fourth had lower debt levels. Likewise, only one-half of the cities that expected to issued taxable debt had done so. Increased regulations translates to more paperwork and higher administrative costs as attested to by the finance officers' responses.

TABLE 2.7 HYPOTHESIS	
The Tax Reform Act of 1986 hindered municipalities' general obligation bond issuances, it is hence associated with an increase in revenue and taxable bond issuances.	
SUBHYPOTHESES	
The Tax Reform Act influenced:	
Higher interest rates	+
Bond ratings	x
Debt policies decisions	+
Lowered debt volume	-
+ = positive - = negative x = no influence	

Texas municipalities, no doubt, experienced changes as did other cities. Varying economic climates, financial conditions, and administrative policies in each Texas city under study will differ in their reactions to the act.

CHAPTER III

THREE TEXAS CITIES

Texas, due to its size and geographic locale, is a state with diverse attributes. Three of the state's largest cities, Austin, Dallas, and San Antonio, each has its respective resources that make it unique. Austin, as the state's capital and the home of the University of Texas and four other higher education institutions, has an economy skewed towards services and government. As one of the Federal Reserve's district locations, Dallas serves as a major financial center. And lastly, San Antonio possesses the state's largest military center whose economy is dependent on government and tourism. Each municipality is economically diverse, but is not insulated from national or international economic events.

During the 1980s, two international recessions affected the Texas economy. The monetary policies of the Federal Reserve Board in the early 1980s contracted the monetary supply, thus triggering a recession. The second recession, in the mid-eighties, resulted from a worldwide oil glut and rapidly decreasing market prices. Texas suffered tremendously, as its monetary resources depend heavily upon the oil industry. Real estate values began to wane, and the construction industry faltered. Compounding this recession was the savings and loan crisis,

which also magnified problems of the real estate collapse.² Dallas, Austin, and San Antonio reacted differently to the recessions. An economic synopsis for each city is presented for the time period of 1980 through 1990.

Austin

The backbone of the City of Austin's economy traditionally has been state government. Employment in the public sector reached 32 percent in 1980, but fell to 28 percent in 1990. The economy broadened in the service sector, which increased its employment share from 18 percent to 25 percent by 1990. Although manufacturing employment increased significantly over the years 1980 to 1990, the relative share of employment remained constant at 13 percent.³

Texas municipalities enjoyed good economic health until the mid-1980s. Although real estate values plummeted, economic factors such as population, building permits, and unemployment rates remained favorable until 1986-87. Population increased steadily throughout the 1980s as shown in Figure 3.1. From 1980 to 1984, population grew by 20 percent, primarily due to the development of a high technology manufacturing sector. During this same time period, residential and commercial construction dramatically increased, thereby stimulating economic growth.

²Mark Sanchez, *The Texas Perspective*, Austin, Texas. Interview by author via telephone 23 March 1992, Austin, Texas.

³Sources: Texas Employment Commission and the city of Austin's Comprehensive Annual Financial Reports, fiscal years 1980 through 1990.

However, as Table 3.1 and Figure 3.2 indicate, the rapidly expanding economy began to slow down in 1985. The construction industry, which contributed immensely to economic growth, fell dramatically, and Austin's unemployment rate exceeded the national figures by 1987. National and statewide economic factors exacerbated Austin's economic slowdown. Mideastern oil flooded the international market in 1985. Oil prices dropped from about \$30 per barrel in the beginning of 1986 to almost single digits by the summer. Texas, whose economy is heavily dependent on oil, quickly felt the decline in the oil industry. In addition to the decline of the oil industry, high technology industry weakened.⁴

TABLE 3.1 POPULATION TRENDS

	Population	Percent Change
1980	345,496	
1981	355,117	2.8
1982	367,550	3.5
1983	375,000	2.1
1984	403,723	9.6
1985	406,584	.71
1986	431,851	6.2
1987	444,684	3.0
1988	447,582	.65
1989	450,107	.56
1990	465,622	3.4

Sources: City of Austin's CAFRs 1980-1990

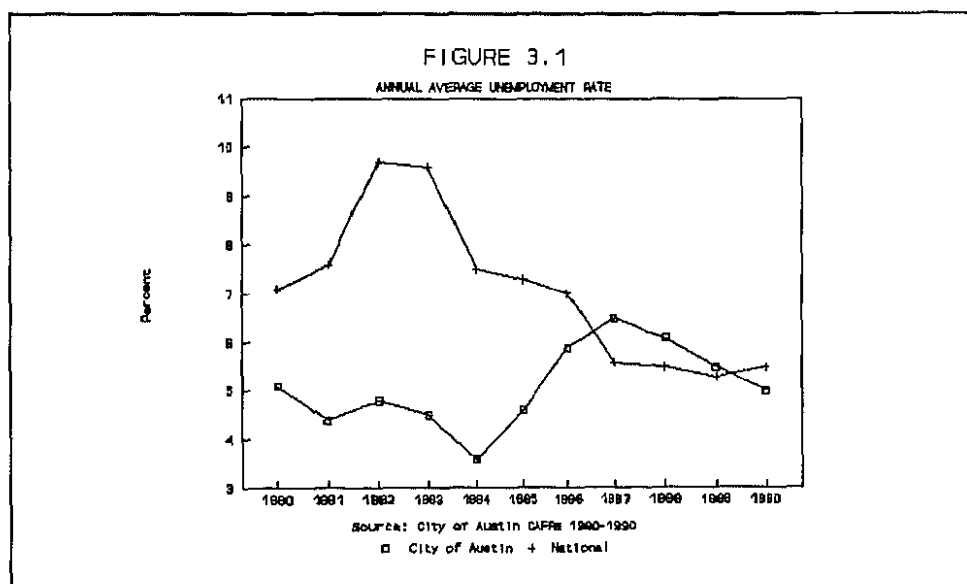
⁴Mark Sanchez (Austin, Texas 1992).

TABLE 3.2 BUILDING PERMITS - VALUES

1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
566,432	673,349	838,792	1,156,066	1,156,386	771,142	434,264	378,986	373,957	358,312

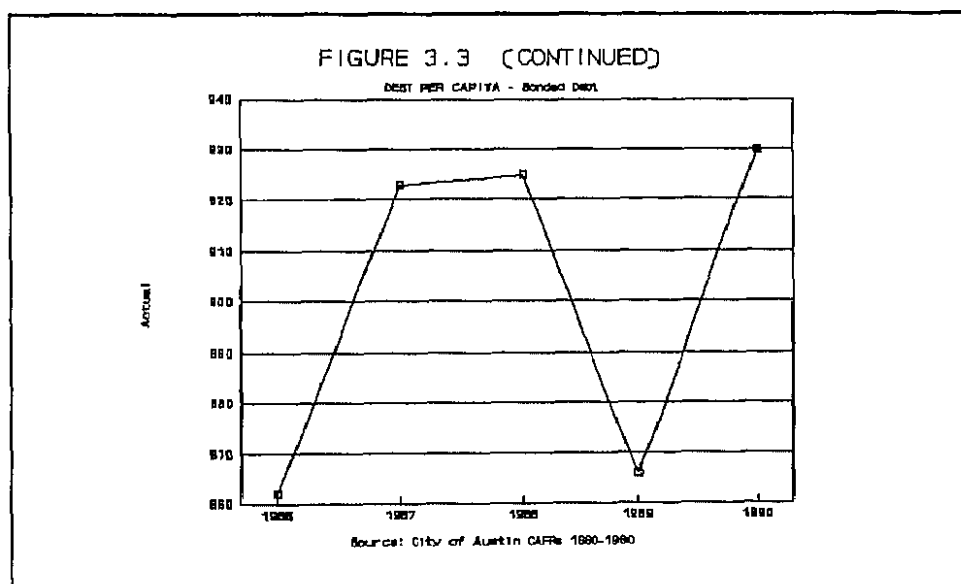
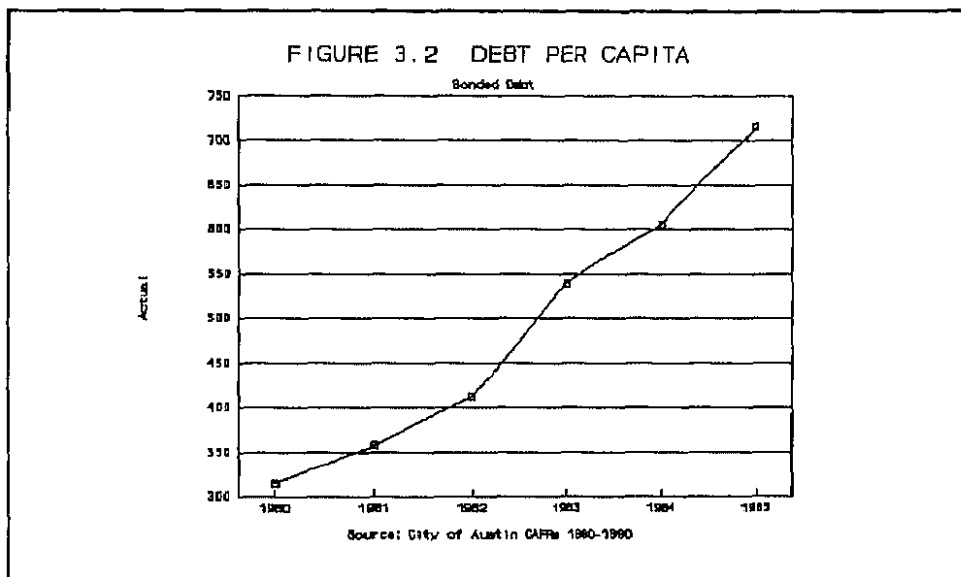
In thousands. Includes residential and commercial permits. Sources: City of Austin CAFRs 1981-1990.

Austin's recovery from the economic downturn has been sluggish. In 1990, construction remained down, but unemployment was also low. Even though the city is no longer as prosperous as it was in the early 1980s, debt service requirements continue as an integral part of the budget. One indicator of financial condition is debt per capita. This measurement is of financial condition, not growth, as is the unemployment rate, construction, and population datum.



The amount of bonded debt per capita is useful to management, citizens and investors as an indicator of the city's financial status. Debt per capita

illustrates how much each resident is responsible for financing. The assumption is that each resident contributes the same amount to the budget. Austin had the highest debt per capita levels of the three cities throughout the 1980s decade. Its debt per capita is reflected in Figure 3.3.



Since the City of Austin was experiencing continual population growth and the demand for services that is associated with growth, the city commenced with a capital improvements program beginning in 1979. Each year since through 1985, general obligation and revenue bond referendums were held. Table 3.2 represents outstanding general obligation and revenue bond debt for 1980 through 1991.

TABLE 3.3 OUTSTANDING DEBT

	General Obligation (GO)	Revenue	Ratio of Revenue to GO
1981	115,270,000	789,495,000	6.85
1982	141,390,000	892,445,000	6.31
1983	265,496,761	2,000,767,517	7.54
1984	209,545,000	726,490,000	3.47
1985	250,310,000	877,700,000	3.51
1986	309,048,455	1,487,875,000	4.81
1987	409,898,455	1,932,640,000	4.71
1988	443,648,455	2,117,000,000	4.77
1989	447,208,455	2,127,430,000	4.76
1991	441,027,087	2,326,680,496	5.28

Sources: Texas Municipal League's Annual Debt Surveys for years 1980 through 1990. Note: Data for 1990 was not available. Amounts relate to prior fiscal year ending September 30th of indicated year. For example, amounts stated for 1981 are figures as of September 30, 1980.

Dallas

Dallas is the second largest city in Texas and the eighth largest in the United States. While other parts of Texas' economy suffered from the bleak condition in the oil business in 1985, Dallas' economy was only slightly affected. In the mid-1980s, the energy industry constituted only 1.5 percent of local industry employment. The trade industry dominated local employment, closely followed by

the service industry. By 1990, each sector occupied 26 percent of industry employment.⁵

Dallas is the fifth largest financial center in the nation. The Federal Reserve System's 11th District is located here. The city supports the Dallas Market Center, the largest wholesale merchandise mart in the world. In 1990, Fortune magazine ranked Dallas among the top best cities for business.

TABLE 3.4 POPULATION TRENDS

	Population	Percent Change
1980	904,078	
1981	905,350	.1
1982	916,050	1.2
1983	938,250	2.4
1984	947,950	1.0
1985	935,150	-1.4
1986	941,700	0.7
1987	951,150	1.0
1988	960,850	1.0
1989	971,100	1.1
1990	1,006,877	3.7

Sources: City of Dallas CAFRs 1980-1990.

TABLE 3.5 BUILDING PERMITS - VALUES

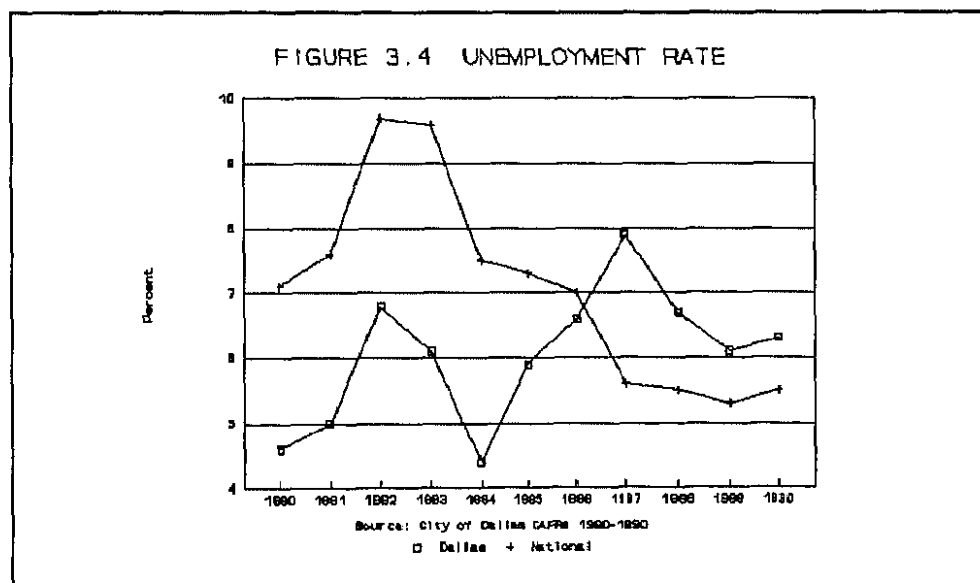
1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
1,456,432	949,325	1,619,005	2,172,298	1,680,274	1,370,464	522,119	449,059	304,411	255,105

Sources: City of Dallas CAFRs 1981-1990. Values represent residential and commercial.

⁵Sources: Texas Employment Commission and city of Dallas' Comprehensive Annual Financial Reports fiscal years 1980 through 1990.

Population increased modestly each year, with the exception of 1985 (see Table 3.3). Construction began a downward trend in 1985, as can be seen in Table 3.4. The unemployment rate in Dallas was below the national rate until 1987, at which time it rose and remained higher for the rest of the decade (Figure 3.4).

Two of the top rating agencies, Standard and Poor's Corporation and Moody's Investors Service, Inc. both gave the City of Dallas' economy a vote of confidence by giving Dallas the highest credit ratings for its general obligation bonds. Standard and Poor's Corp. assigned a rating of AAA for the 11th consecutive year while Moody's Investors Service gave a rating of Aaa for the 16th consecutive year.⁶



⁶Source: Comprehensive Annual Financial Report fiscal year 1990.

When assigning a debt rating, great emphasis is placed upon underlying economic trends such as population, employment, and trade activity, as the economic base provides the definitive capacity to repay debt. The level of debt and the resources to finance the debt (ad valorem taxes for general obligation debt) is taken into consideration. While the rating agencies may not directly factor debt per capita into their analyses, the financial indicator still furnishes data of how much bonded debt is owed. Figure 3.5 shows Dallas' debt per capita, and Table 3.5 reflects outstanding general obligation and revenue bond debt.

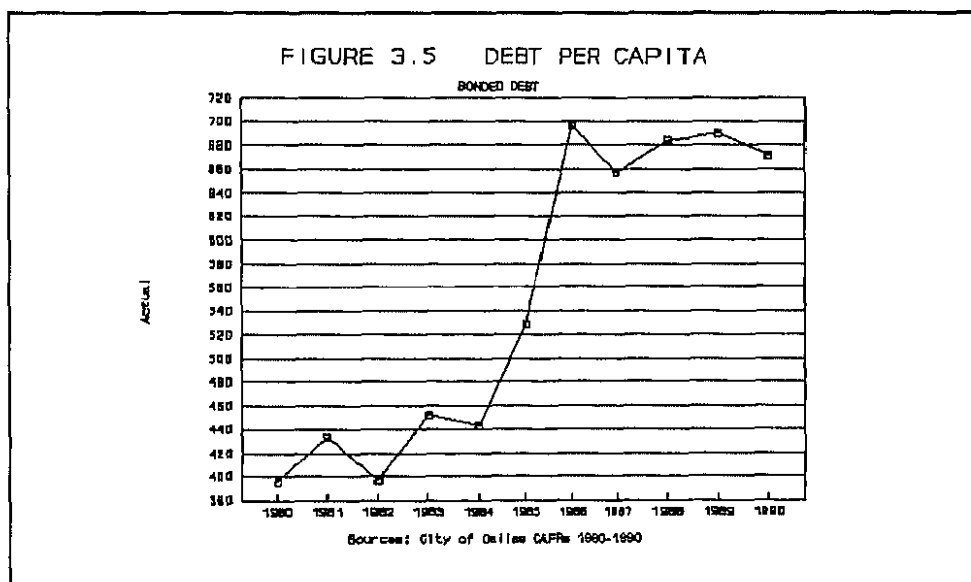


TABLE 3.6 OUTSTANDING DEBT

	General Obligation (GO)	Revenue	Ratio of Revenue to GO
1981	410,564,000	252,832,750	.62
1982	414,682,336	243,958,750	.59
1983	414,682,000	306,788,000	.74
1984	468,247,782	301,603,750	.64
1985	472,855,000	494,438,000 ¹	1.05
1986	525,025,554	597,748,750	1.14
1987	686,142,844	705,042,750	1.03
1988	644,421,000	796,080,000	1.24
1989	683,483,844	645,007,000	.94
1990	688,566,000	773,017,000	1.12

Sources: Texas Municipal League's Annual Debt Surveys, years 1981-1990. Amounts relate to prior fiscal year ending September 30th of indicated year. For example, amounts stated for 1981 are figures as of September 30, 1980.

San Antonio

San Antonio, as the ninth largest city in the United States, follows Dallas in size (population trends can be reviewed in Table 3.6). The local economy is predominately based upon the services, retail and wholesale, and government industries. The employment sector distribution for these industries is 26.1, 25.7, and 23.1 percentages respectively.⁷ San Antonio entered the 1980s with the same flurry of development as other Texas cities. Construction escalated each year (Figure 3.6), and unemployment was low (Figure 3.7) until the statewide recession and the glut in real estate markets slowed the economy.

⁷Sources: Texas Labor Market Review (September 1990) and Comprehensive Annual Financial Reports fiscal years 1980 through 1990.

TABLE 3.7 POPULATION TRENDS

	Population	Percent Change
1980	786,023	
1981	796,500	1.3
1982	817,200	2.5
1983	832,000	1.8
1984	849,500	2.1
1985	869,100	2.3
1986	911,400	4.6
1987	936,000	2.6
1988	946,800	1.1
1989	956,200	.98
1990	982,000	2.6

Sources: City of San Antonio CAFRs 1980-1990.

In San Antonio, the importance of infrastructure investment is acknowledged. The city has been the recipient of the All-American City Award for revitalization and educational efforts by the National Municipal League of New York City. With such a recognition, infrastructure appears to be a high priority, and one would expect the city to have high debt levels. However, San Antonio's debt per capita (Figure 3.8) remains the lowest of the three Texas cities in this study.

TABLE 3.8 BUILDING PERMITS - VALUES

1980	1981	1982	1983	1984	1985/86	1986/87	1987/88	1988/89	1989/90
443,970	509,040	598,615	789,127	754,565	572,394	638,789	370,501	417,532	309,578

Note: Years 1980 through 1984 are calendar years. Beginning in 1985 amounts are stated in fiscal years.

FIGURE 3.6 UNEMPLOYMENT RATE

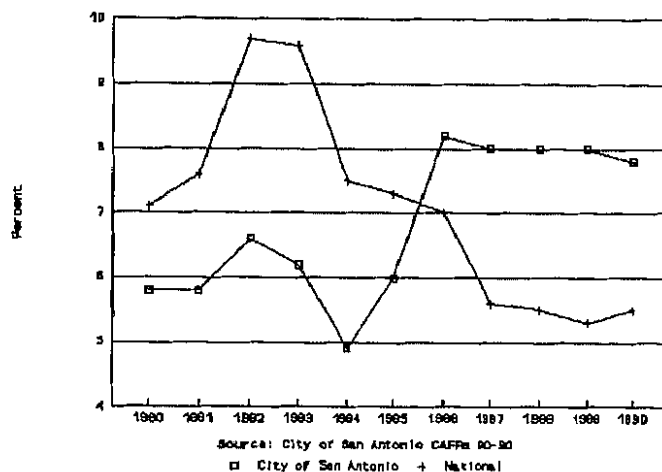


FIGURE 3.7 DEBT PER CAPITA

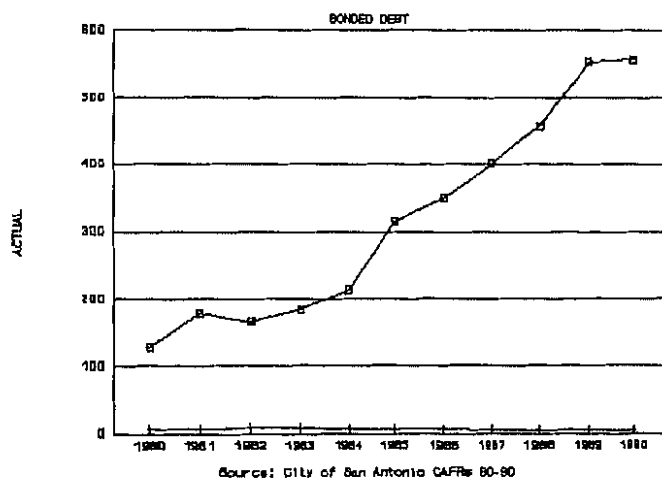


TABLE 3.9 OUTSTANDING DEBT

	General Obligation (GO)	Revenue	Ratio of Revenue to GO
1981	100,230,240	62,610,000	.62
1982	159,615,000	92,305,000	.58
1983	146,391,000	136,955,000	.94
1984	157,898,000	171,000,000	1.08
1985	206,485,000	204,165,000	.98
1986	289,640,000	281,090,000	.97
1987	358,755,000	413,595,000	1.15
1988	420,244,819	449,620,000	1.07
1989	412,476,000	460,620,000	1.12
1991	461,689,000	434,405,000	.94

Sources: Texas Municipal League's Annual Debt Surveys for years 1980 through 1990. Note: Data for 1990 was not available. Amounts relate to prior fiscal year ending September 30th of indicated year. For example, amounts stated for 1981 are figures as of September 30, 1980.

Summary

All three cities entered the 1980s on a prosperous note. However, the international recessions made their mark on Texas municipalities. Each city under study has a different economic mix and, therefore, responded differently to the downturn. San Antonio remains stable and functions at its own pace due to the military installations. Austin suffered only a minor setback, as the combination of state government and high technology industry assisted in softening the economic slowdown. Dallas was the first of the three cities to experience a major slump; yet, as the site of money center banks (major banks that conduct business internationally), Dallas continues as a heavily influential financial center.

Construction in all three cities slowed, as evidenced by the decline in building permits. San Antonio's decline began in 1984, followed by Dallas in 1985

and Austin in 1986. The unemployment rate rose in 1985 through 1987 in all three cities. After 1987, the unemployment rate began to slowly decline. Each city incurred bonded debt as debt per capita increased every year (with the exception of Austin in 1989). The increasing population that the three cities experienced has added to the tax base but has also elevated public service demands for facilities and infrastructure.

Each city continued to fund public works, as evidenced by the debt per capita figures and the outstanding general obligation and revenue bond level tables. Builders were overly ambitious in Austin during the eighties. With a population of less than half of Dallas', building permits values were close to Dallas' building permit values. In 1990, Austin surpassed Dallas. The oversupply of commercial buildings was very apparent in the late 1980s and continues into the 1990s (Sanchez, 1992). San Antonio's debt per capita remained the lowest, which is not surprising since the electorate votes on whether to incur debt.

On the surface, the economic conditions did not appear to restrict the municipalities' desire to issue debt. Nonetheless, the question remains whether the Tax Reform Act of 1986 had any influence on the municipal bond issuances by the cities of Austin, Dallas, and San Antonio. In the following chapter, the study approaches used to determine any influences will be discussed.

CHAPTER IV

METHODOLOGY: STUDY APPROACHES TO THE TAX REFORM ACT OF 1986 AND MUNICIPAL BONDS

In the preceding chapter, various financial health indicators were presented for Austin, Dallas, and San Antonio. Although these indicators show only a partial economic and financial picture, a sense of how the cities fared during the 1980s is obtained. Shortly after the economy began its downhill trend, the Tax Reform Act of 1986 went into effect. This chapter discusses the case study research method and quasi-experimental design, the methodological technique employed to discern any relationship between the three cities' municipal bond issuances and the new law. The strengths and weaknesses of the research and methodology design is discussed. In addition, the data under examination and the variables used to test hypotheses are addressed within the methodology discussion.

An information gathering method, the interview, addresses the remaining hypotheses: the premises that debt policies changed, that debt volume declined, and that the cities resorted to taxable bonds after the passage of the Tax Reform Act of 1986. The interviewing process focused not only on government officers but also on individuals in the private sector who experienced firsthand the ramifications of the TRA. The interviews give an indication of whether changes in

debt levels are due to the tax law, debt policy, or both. Lastly, the interviews explore the issuance of taxable bonds as an alternative debt financing tool.

Case Study Research

Case study research was chosen in this study, which concerns three Texas cities and how they responded to a legislative act. This research method is preferable because not only are the cities examined individually, but they are compared to each other. In this multiple-case study, the "how" (did the cities react to the Tax Reform Act?) question is explanatory in nature. Case studies and experiments are preferred as research strategies because the "how" question deals with operational links needing to be traced over time, rather than frequencies or incidence (Yin, 1989: 18). Case studies, as with most research designs, have their strengths and weaknesses.

The case study's unique strength is its ability to deal with a full variety of evidence such as documents and interviews. Through investigating documents and extracting information from interviews, the researcher can fulfill his/her goal to "expand and generalize theories (analytic generalization) ... not to enumerate frequencies (statistical generalization)" (Yin, 1989: 20). In analytic generalization, a previously developed theory is used to compare the empirical results of the case study.

The primary weakness when using a case study research design for explanatory purposes is internal validity. Internal validity is a cause for consternation when the goal is to determine if a causal relationship between x and

y exists without knowing whether another factor may actually have caused y. One way to address internal validity is by time-series analysis (Yin, 1989: 43).

Quasi-Experimental Evaluation Design

A quasi-experimental evaluation design, the single interrupted time-series, was used to measure any influences the TRA may have had on municipal bond interest rates and on the city's bond ratings. Quasi-experiments are differentiated from true experiments by the lack of a random sample of subjects. Interrupted time series analysis was chosen because a continuous process was in place; municipal bonds are regularly issued to fund needs for capital improvements and facilities. When the TRA occurred, it disrupted the established process.

The value of time series designs is that it is able to examine the trends in the data before the intervention, at the time of the intervention, and after the intervention (Wholey, 1983: 116). Time series is a weak design in that something other than the experimental stimulus may explain any change (Babbie, 1983: 326). This situation is the most serious source of invalidity. In time-series, a source of invalidity is the failure to control history; that is, a rival hypothesis exists that not x but some more or less simultaneous event produced the shift. To counter such a situation, the researcher can assert awareness of possible rival events that may cause changes, and thus s/he can plausibly discount the likelihood that these events explain the effect (Campbell and Stanley, 1963: 39).

The time period under review is 1984 through 1990. The original study period was from 1980 through 1990. However, the author discovered that specific

municipal bond information was difficult to obtain prior to 1984. The data is the actual general obligation and revenue bond issuances for this period. Only general obligation and revenue bonds were included in the study because they are most commonly used to finance infrastructure and capital facilities on a long-term basis.

To statistically test the relationship between TRA and municipal bond interest rates and bond ratings, multiple regression analysis was used. By providing an equation, regression analysis shows how one variable relates to another. In the equation, the known value of one or more variables is used to estimate the unknown value of the remaining variable (Babbie, 1983: 430). The chief goal of regression analysis is to obtain predictions of one variable using the known values of another (Lapin, 1987: 301). It is important to remember that predictions made from the regression equation are subject to error and are only estimates of the true values (Lapin, 1987: 301).

When examining the effect of an independent variable upon a dependent variable, especially in the case of multiple regression (in which a dependent variable is affected simultaneously by several independent variables), a control factor(s) is included to account for a variance in the dependent variable not accounted for by the independent variables analyzed (Babbie 1983: 432). The dependent variable in this study, bond interest rate, is influenced by a multitude of factors, including the overall economy and other lead interest rates such as the federal discount rate.

The variables - the law, bond interest rate, bond ratings, and federal discount rate - are the components of the equation (see Table 4.1 for a complete specification of the equation, variable measurement, hypotheses/purpose for the variables in the model). The dependent variable, bond interest rate, is a function of the independent variables, the federal discount rate, the TRA, and the bond ratings. This does not necessarily mean that a causal relationship exists, only that any relationship uncovered by regression analysis is a statistical one.

TABLE 4.1 REGRESSION MODEL

VARIABLES	DATA SOURCE	VARIABLE MEASUREMENT	HYPOTHESES/PURPOSE
Dependent Variables			
General Obligation Interest Rate	City (1), (4)	Actual value	Increased after TRA
Revenue Interest Rate	City (1), (4)	Actual value	Increased after TRA
Independent Variables			
Federal Discount Rate	Bond Buyer (2)	Actual value	Control variable used to control for the influence of the overall economy
Tax Reform Act of 1986 (TRA)	Portion of the act pertaining to bonds in 1986	0 = before 1986 1 = after 1986	The TRA had an influence on interest rates (increased), and on debt levels (decreased)
Bond Rating	City (1),(4)	Numerically coded (3)	Bond ratings unaffected by the TRA
(1) Austin-Assistant Investment Manager, Dallas-Cash and Debt Administrator, San Antonio-Assst. Director of Finance			
(2) The Bond Buyer 1990 Yearbook. International Thomson Publishing Co. New York: 1991, pg. 46.			
(3) Standard & Poor's Corp. rating system. Highest rating AAA coded 8, AA+-7, AA-6, AA-5, A+-4, and A-3.			
(4) For San Antonio and Austin, both the annual report and city personnel provided the bond rating information.			

There are generally two purposes for regression: prediction and explanation. Regression forecasting models are used to predict the value of the dependent variable under different circumstances. When explanation is the focus,

the relationship between independent and dependent variables is most carefully examined (Lapin, 1987: 300-303). For example, the regression results should reveal whether there is a net independent influence of the TRA on general obligation and revenue bond interest rates. This study will use regression analyses as an explanatory tool.

Regression analysis is valuable both descriptively and inferentially. The regression equation furnishes a mathematical description of the relationship between the variables. In addition, the regression equation allows inferences of unknown values from known values (Babbie, 1983: 432).

However, precautions should be taken when using a regression model. First, regression is suitable for intrapolation but not for extrapolation (drawing inferences outside the range of observation). Secondly, regression analysis for statistical inferences is based on the assumption of random sampling, absence of non-sampling errors, and continuous interval data. Since these three assumptions are rarely fulfilled, regression results should be analyzed with caution (Babbie, 1983: 433-434).

A potential problem in regression is multicollinearity. This occurs if two independent variables are highly correlated. A regression can exhibit multicollinearity by reflecting inaccurate coefficients that vary widely from sample to sample. In some situations where the assessment of the effects of independent variables is the primary concern, including a third independent variable will eliminate the problem created by multicollinearity (Lapin, 1987: 473).

Heteroscedasity is another area of concern when making regression inferences. Nonhomogeneous (unequal) variances of the random errors in the independent variables are said to be heteroscedastic. To detect the variances, the researcher can look for patterns of deviations between the observed and the corresponding predicted values (residuals) of the dependent variable (Mendenhall and McClave, 1981: 141-142). Additionally, examination of the residuals will give an idea of how well the model is predicting (Mendenhall and McClave, 1981: 142).

Two separate regression analyses were performed for each city: one for general obligation bonds and one for revenue bonds. Separate analyses were necessary because general obligation and revenue bonds are rated differently. These bonds have different criteria due to varying revenue sources pledged to service the debt. General obligation bonds are less risky and more secure than revenue bonds because they are repaid with pledged ad valorem taxes. Revenue bonds are riskier investments because a facility financed by revenue bonds rely on a steady revenue stream generated by the facility.

Only new issues were used in the study. Refunding issues were excluded because many times the issue is sold for multiple reasons. For example, a refunding issue can include allocations for advanced refunding, for current and for capital appreciation bonds. Furthermore, each portion of the issue is usually assigned a separate bond rating.

The bond interest rate used in the equation is the stated rate. If the bond was a serial bond (a bond issued in installments over a set period of years) the interest rate for the first installment was used.

All three cities use both Standard and Poor's Corporation and Moody's Investors Service as their rating agencies. Standard and Poor's Corporation was chosen to use in the analysis because this company considers the economic base and operating account analyses to be the most critical elements in determining bond debt ratings (Standard & Poor's Corp., 1989: 13). It also places more emphasis on underlying economic trend data than does Moody's Investors Service. Since the economic base provides the ultimate capacity to repay debt (Standard & Poor's Corp., 1989: 11), a ten year time frame composed of economic indicators such as population, employment, personal income and trade activity is plotted.

The bond rating is included in the model as a measure of interest rates because it is one of the factors determining the interest rate. A high bond rating indicates that the municipality exhibits stability in financial and managerial areas. Consequently, a negative association between bond interest rates and bond ratings should exist: the higher the bond rating, the lower the interest rate.

The discount rate used in the equation corresponded to the issuance date of the first issuance. The actual federal discount rate was used. The federal discount rate was included in the regression model because it influences other interest rates. When the discount rate is altered, the money supply is influenced, which causes changes in all types of interest rates, among them bond interest rates

(Mansfield and Behraves, 1989: 207-208). Hence, the discount rate is a control variable.

The Tax Reform Act of 1986 is used as a measure of bond interest rates. A positive association is expected, as increased restrictions on municipal bonds should drive interest rates higher.

Each city is analyzed individually, not collectively or comparatively. Each is appraised singly because each municipality has its own mix of diverse revenue sources, public service needs, and financial and managerial policies. These policies are set by the city council members elected by the municipality's citizens. Financial and management strategies set the tone for the city's direction.

Interviews

Interviews, as with most methods of extracting information or data, have advantages and disadvantages. Among the advantages are the following: the ability to ask complex questions at length and in depth, the ability to obtain detailed answers, and the likelihood of establishing a good rapport with the interviewee. Lack of speed and anonymity, interviewer bias, and the pressure placed on the respondent for an immediate response are some of the drawbacks. However, the interviewing process supplied details regarding debt policy changes, bond rating changes, and alternative financing methods that statistical tests cannot provide.

Through interviews, both in person and by telephone, government finance officers not only furnished insight into policy changes resulting from the law, but

also supplied additional information about how the law has specifically affected the city financially and administratively.⁸ In addition to government officials, persons working in the private sector in professions relating to governmental securities also observed noticeable differences in the demand for their services. Included in the interview process were an arbitrage expert, a bond attorney, and a financial advisor.

These three professionals were chosen because they offer different perspectives of the TRA and its effect on their services for state and local governments. First, an arbitrage expert provides advice on arbitrage liability and the laws pertaining to arbitrage restrictions and rebates. Second, bond counsel advises in the area of federal, state, and local laws pertaining to bond usage and issuances. Third, municipalities are always interested in their financial condition. Financial advisors are employed to survey the city's fiscal status and to assist the city in making sound financial decisions.

The interview material can either confirm, supplement, or contradict the hypotheses. Each interviewee was asked the same questions:

- 1) Did the city change its debt policy as a result of the Tax Reform Act of 1986?
- 2) Did the city issue taxable debt instruments or any other alternative financing tool as a result of the act that the city would not have issued if the law had not been passed?

⁸ The author interviewed the City Treasurer, Deputy Treasurer, and Assistant Investment Manager with the City of Austin. For the City of Dallas, the Cash and Debt Administrator was interviewed and for the City of San Antonio, the Assistant Director of Finance was interviewed.

3) Can the lower (or higher, depending on the city) debt levels be attributed to the act?

In addition, the following two questions were asked of the respondents:

4) How has capital planning been affected, if at all?

5) What has been the greatest impacts of the law on the city?

In summary, multiple regression analysis was utilized to test for an association between the bond interest rate and the law and the bond rating. Interviews were employed to inquire about debt policy changes, taxable bond issuances and other effects the act has had on the cities and businesses associated with the municipal bond industry. The next chapter addresses the findings of the regression analysis and the views of the government finance officers and professionals in the municipal bond industry.

CHAPTER V

STUDY FINDINGS

The results of interviews and regression analysis are presented in this chapter. The multiple regression results are discussed and evaluated in terms of acceptance or rejection of the null hypothesis. The null hypothesis is a statement that an observed difference is due to chance alone and not due to a systematic cause. The results for each city are presented separately. Before the regression analysis is discussed the mean and correlation are presented. The interview responses are then introduced with references made to data presented in Chapter III.

The answers to the interview questions as well as supplemental information were gained through the interview process with government finance officers. Additionally, information gathered from the interviews conducted with industry related experts is introduced where applicable.

Austin

Mean and Correlation

Descriptive data, means and standard deviation for the variables used in the regression analysis are presented first, followed by correlation. The mean for the TRA variable is not presented because as a nominal variable the mean is an

inappropriate measure. Instead, the percentage of data cases after the passage of the TRA is included. The correlation shows the strength of the relationship between the values of two variables. The percentage, mean and correlation are represented in Table 5.1 for both general obligation and revenue bonds.

For general obligation bonds, the percentage of data cases for TRA is fifty percent; half the issues were before the law and half of the issues were after the law. The bond rating mean was about 6.6 with a range between six and seven (Standard and Poor's rating of AA and AA+ respectively). Therefore, the bond rating changed very slightly.

More than half of the revenue bonds were issued after the law's passage (61%), and the revenue bond ratings fluctuated more than the general obligation bond ratings, as indicated by the standard deviation (1.68) and the range of three to eight (Standard & Poor's rating of A to AAA). The 4.64 mean indicates that the revenue bonds were generally rated lower than the general obligation bonds.

For the general obligation and revenue bonds, the association between the bond ratings and the interest rates is weak. For revenue bonds, the bond rating and interest rate have a negative correlation, signifying that as interest rates went up, the bond rating went down. The relationship between the bond interest rate and the discount rate is slightly significant (.81).

The means for the discount rate for both general obligation and revenue bonds are very similar. The means for the bond interest rates are also very similar for the types of bonds. However, the dissimilarity between the means of

the discount rates (6.65 and 6.95) and the means of the bond interest rates (9.96 and 9.71) indicates that other factors determining bond interest rates are involved.

The range for the law in the city of Austin table will be the same for the Dallas and San Antonio tables. The coded values are zero and one. Zero represents the period before the Tax Reform Act and one represents the period after the law. Hence, the range symbolizes only the occurrence within the time-series.

TABLE 5.1 AUSTIN - MEAN AND CORRELATION

GENERAL OBLIGATION BONDS	MEAN/ %	STANDARD DEVIATION	RANGE	CORRELATION	R- SQUARED
Bond Interest Rate*	9.96				
Tax Reform Act of 1986 **	50%	.51	0-1		
Bond Rating **	6.6	.49	6-7	.23	.05
Discount Rate **	6.65	.81	5.5-7.5	.81	.66
REVENUE BONDS					
Bond Interest Rate *	9.71				
Tax Reform Act of 1986**	61%	.5	0-1		
Bond Rating **	4.64	1.68	3-8	-.5	.25
Discount Rate **	6.95	1.17	5.5-9.0	.29	.08
* Dependent Variable ** Independent Variables					
% Percent of issues after the TRA Sample size = 28					

Regression Results

For both general obligation and revenue bonds, the model is significant. For general obligation bonds, the model does a good job of accounting for

variation in the dependent variable. The results of the regression are presented in Table 5.2.

For general obligation bonds, the model is significant, as evidenced by an F-value of 172.26 ($p=.0001$). The r-squared of .96 indicates that the model did an excellent job of accounting for variation in the dependent variable (bond interest rate).

Although not as strongly as for general obligation bonds, the model was also significant for revenue bonds with an F-value of 5.95. Unlike for general obligation bonds, the r-squared of .43 shows that the model did poorly in accounting for variance in the dependent variable. The independent variables achieved statistical significance (t-values of 9.41, 12.52, and 21.77, $p=.0001$) for general obligation bonds but no significance for revenue bonds.

TABLE 5.2 AUSTIN - REGRESSION RESULTS

	BETA	COEFF	t- VALUE**	PROB(1)	R- SQUARED	F- TEST	N
GENERAL OBLIGATION					.96	172.26	28
Tax Reform Act of 1986 *	.74	2.1	9.41	.0001			
Bond Rating *	1.0	2.84	12.52	.0001			
Discount rate *	1.17	2.04	21.77	.0001			
REVENUE BONDS					.43	5.95	28
Tax Reform Act of 1986 *	-.49	-2.1	1.83	.081			
Bond Rating *	-.34	-.43	1.86	.075			
Discount Rate *	-.06	-.11	.23	.82			

* Independent Variables ** Significant at .01 (1) Probability

The null hypothesis is accepted for the revenue bonds but rejected for the general obligation bonds. For the city of Austin, the law, bond rating, and discount rate all appear to have had an influence on the bond interest rate for general obligation bonds but not for revenue bonds.

Interview Responses

Table 5.3 represents the outcome of the Austin interviewees as it pertains to the hypotheses. Following is a discussion of other impacts and ramifications of the law that the city has experienced.⁹

Hypotheses

The interview responses contradicted the hypotheses regarding debt policy changes, and taxable debt issuances, as can be seen in Table 5.3. Additionally, capital planning for the city was unaffected by the law, and a downgrade in bond ratings was attributed to the City Council's unwillingness to raise property taxes to increase revenues rather than the TRA. However, the hypothesis that debt levels would not decline after the TRA passage was supported.

Debt policy changes for the city of Austin were due to management decisions. For example, the city has a self-imposed limitation on property tax supported debt which prohibits issuance of more debt each year than is retired in principal. The purpose of this policy is to keep debt levels constant each year (these levels do not include self-supporting debt). The policy is not a consequence

⁹A condensed version of the interview is in appendix B.

of the Tax Reform Act; it is an approach to keep the tax rate as stable as possible.

Post-1980, debt levels continually rose. As mentioned in Chapter III, Austin committed itself to a major capital improvement program beginning in 1979. This action accounts for the increasing debt levels and the continual bond issuances. In the period from 1984 through 1990, the city had both general obligation and revenue bond issuances every year, including general obligation refunding bonds in years 1985 and 1990, and revenue refunding bonds in 1985, 1986, 1988, and 1990.

TABLE 5.3 INTERVIEW RESPONSES FROM THE CITIES

	AUSTIN		DALLAS		SAN ANTONIO	
QUESTIONS	YES	NO	YES	NO	YES	NO
The Tax Reform Act of 1986 caused:						
Debt policy changes		X		X		NP
Issuance of taxable debt		X		X	X	
Lower debt levels		X		X		X
Capital planning changes		X		X		X
NP = No Policy						

No taxable bonds have been issued since the Tax Reform Act went into effect. The act did not prevent the city from issuing debt; however, the city has had to look at ways of issuing debt that are consistent with the new tax laws, besides the more traditional ways of financing by long-term debt. One such method is the Commercial Paper Program. The city council approved the

issuance of commercial paper instead of long-term revenue bonds relating to the utility plant. The proceeds of the sale could be invested in tax-exempt securities as a way to avoid arbitrage restrictions and rebate requirements that would apply if revenue bonds were issued.

Capital planning has indirectly changed due to the TRA, which has altered the way the city approaches contracts with firms in private industry. An example is the convention center. Care must be taken not to lease out more than ten percent of its space to avoid violating the private business test and losing tax-exempt status. Another example is the revenue bond-funded utility plant, which can sell excess electricity but only under certain circumstances, or tax-exempt status will be revoked.

Austin's bond debt rating for both general obligation and revenue bonds remained unchanged during this period until 1988. Standard & Poor's Corp. gave the city's general obligation bonds AA+ every year until 1988, at which time it was downgraded to AA. The A+ rating for revenue bonds dropped to A in 1988. The downgrade was partially due to the city's refusal to increase ad valorem taxes as property tax values dropped.

Other Effects of the TRA

The Tax Reform Act has affected three aspects of Austin's debt administration: administrative costs, arbitrage liability, and bond refundings. Increased administrative costs are associated with the tracking of the bonds. The primary recordkeeping task is knowing how much money is invested and allocating

earned interest to this amount. The city had not tracked each bond issue separately prior to the TRA. A common practice for investing bond proceeds was to commingle the funds to earn higher returns on the aggregate. This method is still practiced; however, the city is now faced with tracking each issuance while it is invested and earning interest.

Another way that the TRA influenced debt administration was through increased delimitations on arbitrage profits. The act allows arbitrage profits but the gross bond proceeds (including interest earnings) must be expended within six months from the date of issue. According to Terry Burke, an arbitrage expert, less than one percent of governmental entities in Texas can meet the six month rule.¹⁰ A two-year rule was introduced in 1989 that allows a two-year spend-out period. However, the application of the two-year exception is very detailed, and the issuer must make certain elections prior to the delivery of the bonds. The city of Austin doesn't comply with the two-year spend out because it is unrealistic for the city to expend all the gross proceeds. Delays and unexpected obstacles often hinder project progress, thereby disrupting time schedules. The city has rebated approximately \$700,000 to \$800,000 on three issues to the Federal Treasury.

Not only recordkeeping and rebates but also bond refundings pose more consternation to government finance officials than prior to the TRA. Bond refundings are now limited to one or two refundings depending on the original issuing date and other criteria. Therefore, city officials are forced to carefully

¹⁰Terry Burke, Vice-President, Arbitrage/Compliance. First Southwest Company, Investment Bankers, Dallas, Texas. Interviewed by author via telephone on February 20, 1992.

consider when to refund an issue to take advantage of lower interest rates and the opportunity to reduce debt service levels.

Dallas

Mean and Correlation

In Dallas, more general obligation bond issuances occurred after the TRA, but more revenue bond issuances occurred before or about the time of the law (see Table 5.4). No mean or correlation is stated for bond ratings because the ratings were the same during the study time for general obligation and revenue bonds.

TABLE 5.4 DALLAS - MEAN AND CORRELATION

GENERAL OBLIGATION BONDS	MEAN/ %	STANDARD DEVIATION	RANGE	CORRELATION	R-SQUARED
Bond Interest Rate *	7.62				
Tax Reform Act of 1986 **	61%	.5	0-1		
Bond Rating ***					
Discount Rate **	7.0	1.15	5.5-9.0	.95	.90
REVENUE BONDS					
Bond Interest Rate *	7.53				
Tax Reform Act of 1986 **	36%	.49	0-1		
Bond Rating ***					
Discount Rate **	6.96	1.28	5.5-9.0	.97	.94
* Dependent Variable ** Independent Variable *** Not tested due to no variance in ratings					
% indicates percentage of issues after the TRA passage Sample size = 28					

Unlike the means for Austin's bonds, the means for the general obligation and revenue bonds are very similar. And, as expected, interest rates and discount

rates are very similar. The similarity is expected because the discount rate functions as a lead rate for interest rates.

TABLE 5.5 DALLAS - REGRESSION RESULTS

	BETA	COEFF	t- VALUE**	PROB	R- SQUARED	F- TEST	N
GENERAL OBLIGATION					.9	116.55	28
Tax Reform Act of 1986 *	.13	.26	1.32	.2			
Bond Rating ***							
Discount Rate *	1.04	.91	10.85	.0001			
REVENUE BONDS					.98	535.05	28
Tax Reform Act of 1986 *	-.2	-.48	6.43	.0001			
Bond Rating ***							
Discount Rate *	.95	.88	31.29	.0001			
* Independent Variable ** Significant at .01 *** Not tested due to no variance in ratings							

Regression Results

The results are dissimilar for the two bond types (Table 5.5). The model was meaningful, as indicated by the F-value of 116.55 for general obligation bonds and 535.05 ($p=.0001$ for both F-values) for revenue bonds. Both models did an excellent job of accounting for variation in the dependent variable as evidenced by the r-squared (.9 and .98). In these two models, the independent variables that affected the dependent variable were the discount rates. However, for revenue bonds the law influenced interest rates. The discount rates had a t-value of 10.85 for general obligation bonds and 31.29 for revenue bonds. Both t-values were $p=.0001$.

Interview Responses

Hypotheses

Again, the interview outcome did not agree with the hypotheses. See Table 5.3 for the city of Dallas' responses to the questions regarding debt policy, debt level, taxable securities, capital planning and other implications of the Tax Reform Act of 1986.¹¹ As in Austin's case, the hypothesis concerning debt per capita and outstanding debt is substantiated as the city's debt obligations did not decrease (more detailed numerical data on debt per capita and outstanding debt are included in Chapter III).

The debt policy was unaffected and taxable bonds were not issued. Guidelines were formulated according to the city's preference, not to accommodate the act. Moreover, the law did not necessitate an alternate source of funding. Not only did the TRA have no bearing on Dallas' debt policy, but capital planning was untouched.

Capital planning was modified because of the economy and the desire to keep taxes down, not because of the TRA. In some cases, a declining population obviated the need for facilities. The desire to avoid raising taxes and to refrain from constructing unnecessary facilities helped to keep debt service lower. These options exercised by the city are examples of prudent planning and debt management actions. Another instance of careful planning involves the city's bond rating.

¹¹A condensed version of the interview is in appendix C.

The city declined to issue bonds because of the city's bond rating. Dallas has retained Standard and Poor's highest rating of AAA for general obligation bonds (AA for revenue bonds) during the study period, and this rating still stands. Because Dallas has a decreasing tax base and wishes to retain the rating, it has chosen not to issue bonds and risk lowering its bond rating.

Other Effects of the TRA

Dallas has had the same difficulties that Austin experienced: arbitrage liability, bond refunding, and administrative costs. The city expends \$15,000 to \$20,000 annually for an arbitrage consultant to assist the city in keeping abreast of arbitrage. Additionally, to track the bonds and interest earned, staff cost approximates \$100,000 a year. Dallas had made an effort from the beginning to remain abreast of the tax law and its implications. Before the law went into effect, the city escalated issuances in anticipation of the law's passage in late 1985 and early 1986. The city also instituted procedures to keep adequate records on issuances and interest earnings associated with each bond.

San Antonio

Mean and Correlation

Both general obligation and revenue bonds, with percentages of 54 and 57 respectively, had about the same number of issues before and after the act (see Table 5.6). General obligation bond ratings were not tested for a mean since the ratings remained unchanged through the period under examination.

TABLE 5.6 SAN ANTONIO - MEAN AND CORRELATION

GENERAL OBLIGATION BONDS	MEAN/ %	STANDARD DEVIATION	RANGE	CORRELATION	R-SQUARED
Bond Interest Bond *	6.68				
Tax Reform Act of 1986 **	54%	.51	0-1		
Bond Rating ***					
Discount Rate **	7.0	1.31	5.5-9.0	-.46	.21
REVENUE BONDS					
Bond Interest Rate *	8.55				
Tax Reform Act of 1986 **	57%	.50	0-1		
Bond Rating **	5.14	.97	4-6	.61	.37
Discount Rate **	6.98	1.19	5.5-9.0	.80	.64
* Dependent Variable ** Independent Variable *** Not tested due to no variance in ratings					
Sample size = 28					

The mean for the revenue bond rating is misleading because the ratings for electric and water issues were combined. Revenue bonds financed the electric and the water plants. There were no changes in the ratings on any of the issues for either the electric or the water boards. Despite this fact, taken together the bond rating mean is 5.14 (Standard & Poor's AA-) whereas the individual ratings were 4 (A+) for the City Water Board and 6 (AA) for the City Public Service (electric and gas).

Correlations between the bond interest rates and the discount rates were surprising. For the general obligation bonds, there was a negative correlation; as the discount rate went down, interest rates rose, indicating that other factors are involved. Bond ratings remained the same; hence, no correlation tests were executed.

Regression Results

San Antonio's regression models (presented in Table 5.7) are slightly diverse. Both models are significant. The general obligation bond model, with an F-value of 3.32, has a probability of about five percent ($p=.0528$) of the model's significance being other than by chance. The revenue bond model is more significant, with an F-value of 56.08 and a probability of .0001. For the city's general obligation bonds, the model did poorly in accounting for the variance, as evidenced by the r-square of .12.

TABLE 5.7 SAN ANTONIO - REGRESSION RESULTS

	BETA	COEFF	t- VALUE**	PROB (1)	R- SQUARED	F-TEST	N
GENERAL OBLIGATION					.21	3.32	28
Tax Reform Act of 1986 *	.03	.03	.12	.91			
Bond Rating ***							
Discount Rate *	-.44	-.20	2.01	.055			
REVENUE BONDS					.88	56.08	28
Tax Reform Act of 1986 *	-.21	-.66	1.58	.13			
Bond Rating *	.41	.68	4.74	.0001			
Discount Rate *	.57	.77	4.94	.0001			
* Independent Variable ** Significant at .01 *** Not tested-no variance in ratings (1) Probability							

For general obligation bonds, the null hypothesis was accepted in that the law had no effect on bond interest rates (t-value .12, $p=.55$). The only independent variable to have a significant influence on interest rates was the discount rate (t-value of 2.01). The discount rate had a slight negative influence on interest rates.

For the revenue bonds, all three independent variables had an influence on the bond interest rates, as evidenced by the t-values. However, the effects were not significant.

Interview Responses

Hypotheses

San Antonio has slightly different results than Austin and Dallas in the areas of debt policy, taxable bonds, and capital planning. Its bond rating situation, though, is similar to Austin's. San Antonio's responses are also tabulated in Table 5.3.¹²

The city does not have a debt policy other than following the statutory laws regarding tax-supported debt limitations. The current procedure is to let the voters decide whether capital improvements will be funded by ad valorem taxes (although unlike Austin, revenue bonds are not subjected to voter approval). The voters are informed of the estimated amount of taxes that is needed to fund improvements. This way, the voters choose whether to incur the expense and raise taxes.

The voting citizens of San Antonio evidently agree with city management on financing infrastructure. As shown in Chapter III, debt per capita and outstanding debt has increased each year (except in 1982 when debt per capita dropped, and in 1983 when general obligation debt levels dropped). With a policy

¹²A condensed version of the interview is in appendix D.

of letting the voters determine when to incur debt and raise taxes rather than a formal debt policy, capital planning was not affected by the TRA at all.

San Antonio was the only city in the study to turn to taxable instruments as a direct result of the TRA. Just under \$200 million in taxable Certificates of Obligation were sold in 1988 and 1989 to finance land purchases, a stadium, and theater and convention center renovations.

The city's bond rating was downgraded from AA+ to AA (general obligation bonds) by Standard and Poor's Corporation in fiscal year 1990. Standard and Poor's Corp. lowered the rating because of the city's overdependence on utility revenues. This rating may revert to its former rating if the city reduces its reliance on utility income.

Other Effects of the TRA

Higher administration costs, arbitrage liability, and bond refunding were three areas that the law has impressed. San Antonio has purchased a software package to aid in calculating rebates and in tracking the bond proceeds and interest earnings. Although the software assists the city, financial advisors are still retained. The higher administration costs are directly attributable to the Tax Reform Act's arbitrage criteria, as checking for arbitrage liability is both tedious and time consuming.

Refunding restrictions are costly in that the city loses opportunities to benefit from lower interest rates and to decrease its debt service requirements. The law limits municipalities to one advanced refunding on bonds issued after

December 31, 1985. Bonds issued prior to this date are allowed two refundings unless the bonds were advanced refunded two or more times before March 14, 1986.

Summary of the Findings

The findings of the statistical tests of the hypotheses are summarized, and the interview results are offered as additional support. An evaluation of the results is subsequently presented. This section of the chapter also addresses one of the drawbacks of the study design, internal validity, and the use of a control variable as it relates to the weakness.

The statistical tests, means, correlation, and multiple regression revealed that the law had different consequences on general obligation and revenue bonds in the three cities. For the city of Austin, the null hypothesis was rejected for the general obligation bond issuances, as the law, bond ratings, and discount rate appear to have had an influence on interest rates. In fact, the hypothesis was supported. However, the null hypothesis was accepted for revenue bond issuances. Here, the law seemed not to make a difference.

The outcome of the interview did not support the hypotheses concerning bond ratings, debt policy, and taxable bonds (or other non-traditional financing instruments). Bond ratings did change, not because of the act, but because of the city council's refusal to raise taxes in a period of declining property values. The changes in debt policy were due to management decisions, not the Tax Reform Act. In Austin's case, the debt level continued to increase, as the city was

committed to a major capital improvements program. This program, along with other projects that were debt financed by bonds (such as the convention center), was not hindered by the TRA. If the law had any impact on issuances, the city would have refrained from incurring the debt.

The interview also revealed that the city was not compelled to use taxable bonds and that capital planning was undisturbed. Nonetheless, the city approaches contracts with private firms cautiously where a revenue bond-funded facility is concerned. The city has to take care not to jeopardize the facility's tax-exempt status by violating the private business test section of the law.

For the city of Dallas, the discount rate for both general obligation and revenue bonds had the most significant effect on bond interest rates. The TRA appears to have had an influence on interest rates. The interviewing process imparted information that contradicted the hypotheses.

The interviewee stated that the TRA had no bearing on debt policy or bond ratings. Moreover, debt levels, taxable bonds and capital planning were unaltered by the legislation. Consistent with the hypothesis, debt levels increased. First, the debt policy was already in place at the time of the law's enactment and remained in its original form. Secondly, the hypothesis that the law did not affect bond ratings seems to be supported since ratings have stayed at the highest position before and after the law's passage. This is not the circumstance. The city's desire to retain the rating led to the decision to increase debt only enough not to disturb the rating.

The feedback on taxable bonds also did not support the hypothesis that alternative instruments such as taxable bonds would be utilized due to TRA. Dallas has not turned to taxable bonds.

Furthermore, supplemental details regarding capital planning were gained, revealing that again, the law had no impact. Planning modifications were attributed to the downward change in the economy and a declining population in 1985, not the impending tax law. However, the city did anticipate the law by issuing bonds before the law's effective date.

The results of the hypotheses testing for the last city under study, San Antonio, demonstrated an effect of the bond rating and discount rate for revenue bonds. The null hypothesis is rejected for the interest rate and bond rating relationship but accepted for the law and interest rate relationship. The null hypothesis is accepted for general obligation bonds.

The San Antonio interviewees' responses revealed information that deviates from Dallas' and Austin's responses pertaining to the hypotheses. Responses regarding bond ratings, taxable bonds, capital planning and debt policies all contrasted with responses from the other two cities. The downgrade in bond ratings was due to an overreliance on utility revenue, not to the law. However, the use of taxable bonds are directly credited to the TRA.

The act could not have had any influence on debt policy because, unlike Dallas and Austin, San Antonio is without a formal debt policy. Debt levels hinge upon voter decisions about capital improvements and infrastructure. The city's

policy (albeit informal) leaves the incurrence of debt to the taxpayers, as they ultimately pay for any infrastructure maintenance and facilities. Evidently, the taxpayers approve of repairs and construction for the city's debt level has steadily increased during the 1980s.

Dallas, Austin, and San Antonio have four things in common relating to effects of the Tax Reform Act of 1986: higher administration costs, increased arbitrage liabilities, limited bond refunding, and higher debt levels. The respondents contend that the first three items were impacted the most.

Mike Willatt, bond lawyer, concurs with the cities. As an attorney that provides bond counsel services, he has also witnessed increased administration costs to municipalities. These costs have not prevented municipalities from utilizing traditional bonds but the bonds have become more expensive to issue.¹³

All three cities continued to increase their debt levels. The premise that revenue bond usage would increase has been satisfied (Chapter III features the tables on general obligation and revenue bond ratios).

Thus far, the statistical test and interview findings have been discussed. The last area this chapter discusses is internal validity, the primary weakness of time-series design. The plausibility that rival explanations are the cause of a shift in the time-series rather than the effect put forth in the hypothesis is heightened. The failure to control for history (a specific event(s) occurring between the first and second measurement in addition to the experimental variable) threatens the

¹³Mike Willatt, Austin, Texas. Interview by author 17 April 1992, Austin, Texas.

results of the analysis. In this study, the variable discount rate was used as a control for the economic activity that could affect municipal bonds.

This control variable was important because economic events greatly impact the municipal bond market, as well as the investment market as a whole. At the time of the Tax Reform Act's passage, the economy slowed dramatically as a result of an international oil glut. Since Texas' economy was heavily dependent on the oil and gas industry, it was hit especially hard. The discount rate controlled for the bond interest rates, but nothing can control for debt policies, since the policies are at the discretion of city management and council members. Debt policies, though, directly affect debt levels, which in turn affect bond ratings and capital planning.

In summary, the Tax Reform Act of 1986 appeared to influence debt administration more so than it affected interest rates, debt policies, bond ratings, and the number of bond issues (see Tables 5.8 and 5.9). However, the hypothesis that the Tax Reform Act of 1986 influenced interest rates is supported for Austin's general obligation bonds and Dallas' revenue bonds. The economy also played an important role in municipal bond issuances to the extent that the cities made decisions centered around the economic downturn. No doubt exists that the law has complicated administrative tasks and increased administrative costs as a result of arbitrage criteria and limitations on bond refundings.

CHAPTER VI

CONCLUSION

The three Texas cities responded to the Tax Reform Act of 1986 in a variety of ways. First, the results of the empirical testing did not correspond in the three cities. Secondly, the interviewing process brought out implications of the law that had much more serious consequences for the cities than the empirical results. This chapter briefly discusses these implications and presents an evaluation of the testing and interview findings in terms of financing infrastructure and capital facilities.

As for the hypotheses, revenue bond usage did increase in the three cities. Further, the premise that after the law, bond interest rates would be higher was only partially supported by the testing. The TRA appears to have influenced interest rates for Austin's general obligation bond issuances and Dallas' revenue bonds issuances.

As for the remaining hypotheses, bond ratings did change, debt levels increased; and debt policies did not change as postulated. Both Austin and San Antonio experienced a downgrading of their bond ratings, but not because of the Tax Reform Act. Debt levels increased in the three cities as a commitment to maintaining infrastructure and providing public facilities. No changes were made

to debt policies in Austin and Dallas, and San Antonio does not have plans to establish a debt policy.

The last hypothesis, that taxable bonds or other financing mechanisms would be used after the TRA passage, was also partially supported. The only city directly attributing the usage of taxable securities to the TRA was the city of San Antonio, which turned to taxable Certificates of Obligation. However, the city of Austin sought other means of financing long-term debt by soliciting city council approval for the sale of commercial paper. The proceeds could be invested in tax-exempt securities to bypass arbitrage restrictions and rebate requirements.

According to Terry Burke,¹⁴ the TRA has raised costs for local governments in two ways: higher administration costs and rebates. The cities concurred with this statement, as asserted during the interviews. The increased administrative costs are unavoidable since the bonds must be tracked to avoid arbitrage penalties. Furthermore, the rebates not only take away "profits" from the municipalities, but have taken away a "revenue" source that was used for cost overruns or for additional projects.

The cities also have higher debt service requirements due to the limitations on bond refundings imposed by the law. All three cities expressed consternation over this limitation. The increase in costs are not directly incurred (as are expenditures). The cities lose money through their inability to replace an issue

¹⁴Austin, Texas (1992).

that has high interest rates with an issue with lower interest rates which could decrease debt service.

The primary aim of the Tax Reform Act of 1986 was to limit tax-exempt bond usage because the federal government (mainly the Internal Revenue Service) believed that the proceeds were not used for governmental purposes (although the revenue loss to the federal treasury has also been a long-standing issue). The TRA was successful in eliminating industrial development bond abuses.¹⁵ The law has slightly hindered the usage of tax-exempt bonds but the main effect has been in related costs: staff time, software, and increased usage of advisors for arbitrage and refundings. Hence, the Tax Reform Act of 1986 has forced the three municipalities to pay more for infrastructure and capital facilities, which in turn has shifted the burden onto the taxpayers.

¹⁵D. Ladd Patillo. Interview by author, 17 April 1992, Austin, Texas.

APPENDIX A

The Tax Reform Act of 1986

The following are the main provisions of the Tax Reform Act of 1986, as it applied to tax-exempt municipal bonds. The excerpt below is from The Guide to Municipal Bonds: The History, The Industry, The Mechanics, Appendix 2, published by the American Banker/Bond Buyer.

I. Private Activity Bonds

Interest on all private activity municipal bonds will be taxable unless they fall under the exempt category of "qualified bonds." A bond is considered to be for a private activity when more than 10% of the issue's proceeds are used for any private business, and when the payment of principal or interest on more than 10% of the issue is secured by property used by a private business.

II. Qualified private activity bonds that retained their tax-exemption include:

- 1) Exempt facility bonds
 - a) Airports
 - b) Docks and wharves
 - c) Mass commuting facilities
 - d) Sewage disposal facilities
 - e) Solid waste disposal facilities
 - f) Facilities for furnishing electric energy or gas
 - g) Facilities for furnishing water
 - h) District heating or cooling facilities
 - i) Qualified hazardous waste facilities
- 2) Multifamily housing bonds
- 3) Single-family housing bonds
- 4) Qualified 501(c)(3) bonds
 - a) Hospitals are qualified but the term "hospital" does not include rest or nursing homes, day care centers, medical school facilities, research laboratories or ambulatory care facilities. Also, the weighed averaged maturity of qualified 501(c)(3) bonds may not exceed 120% of the economic life of the property.
- 5) Qualified redevelopment bonds

This covers tax increment financing in which in the course of redevelopment a project is generally transferred to private individuals.
- 6) Qualified student loan bonds

III. Unified Volume Limitation for Private Activity Bonds: To further limit the issuance of private activity bonds, the Tax Reform Act imposed the following cap:

- a) A single unified volume limitation will be applied to all private activity bonds including multifamily and single-family housing bonds. Qualified veterans mortgage bonds will retain their own separate volume limitation. Those areas which do not come under the limitation are: general obligations, qualified 501(c)(3) bonds, airports, docks and wharves, government-owned solid waste disposal facilities and current refunding issues.
- b) The annual ceiling per state in 1986 and 1987 will be \$75 per capita or \$250 million, whichever is greater. After 1987 the annual ceiling will be \$50 per capita or \$150 million, whichever is greater.
- c) 50% of the volume limitations will be allocated to state agencies, and the remaining 50% shall be allocated to local issuers in proportion to population.
- d) 95% of the "net proceeds" of all issues of private activity bonds must be used for the exempt purpose of the borrowings. The 5% balance of the issue must include the cost of issuance. Also, the issuance cost may not exceed 2% of the face amount of the issue. This amount is increased to 3.5% for qualified mortgage bonds when the face amount does not exceed \$20 million. This limits the amount of "spread" or profit that investment bankers can work into a deal.

IV. Advanced Refunding Reductions

- a) For bonds issued before January 1, 1986, the refunding bonds must be the first or second advance refunding of the original bond unless the bonds were advance refunded two or more times before March 14, 1986, in which case a transition rule will permit one additional advance refunding.
- b) For bonds originally issued after December 31, 1985, the refunding bond must be the first refunding of the original bond.
- c) For bonds originally issued before January 1, 1986, the refunded bonds are required to be redeemed not later than the earliest date on which such bond could be redeemed at par or a premium of 3% or less if the advanced refunding will produce a debt service savings.
- d) For bonds originally issued after December 31, 1985, the refunded bond is required to be redeemed not later than the first date on which its call is not prohibited in the case of a refunding producing debt service savings.

V. Current Refundings

Current refunding bonds may not exceed the outstanding amount of the refunded bonds, and the maturity date of such refunding bonds may not

exceed the later of the maturity date of the refunded bond or the date that is 32 years after the date of issuance of the refunded bonds.

VI. Alternative Minimum Tax (AMT)

Private activity bonds issued after August 7, 1986, are treated as preference items for those eligible for the A.M.T. Exceptions to the rule are qualified 501(c)(3) bonds and current refunding bonds if the refunded bond was issued before August 8, 1986.

Also, if a corporation's book income (which includes all tax-exempt income) exceeds its taxable income, 50% of the difference becomes a tax preference for the AMT.

Example:

\$1,100,000 (Book income)

\$1,000,000 (Taxable income)

\$100,000 (Difference)

50% or \$50,000 becomes a tax preference item for AMT. That \$50,000 can include tax-exempt income (Gos and revenue bonds of any issue date).

VII. Property and Casualty Insurance Companies

The deduction taken for losses incurred by property and casualty insurance companies is reduced. This is equal to 15% of tax-exempt interest received or accrued during the taxable year. This applies to all municipal bonds acquired after August 7, 1986, and is effective with respect to taxable years beginning after December 31, 1985.

VIII. Bank Deduction

The act eliminated commercial banks' ability to deduct 80% of the interest they incur to carry their tax-exempt investment portfolios. Exceptions were made to protect smaller municipalities throughout the nation which depended on local banks to purchase their bond issues. Banks are permitted the deduction on "Bank qualified municipal bonds," which are bonds issued by a municipality whose total issuance for the calendar year will not exceed \$10 million.

Arbitrage rebate requirements beginning on the following page has been taken from Chapter III, *Guide to Arbitrage Requirements of Governmental Issuers*. The guide was written by Terry Burke, Vice-President, The First Southwest Company, Investment Bankers, Dallas, Texas.

III. ARBITRAGE REBATE REQUIREMENTS

The arbitrage rebate rules require that all earnings from the investment of gross proceeds of a bond issue that are in excess of the amount that could have been earned had the yield on the investment been equal to the yield on the bonds be remitted to the federal government. In other words, earnings from the investment of bond proceeds exceeding the yield on the bonds must be remitted to the federal government. These rules carry very strict penalties for noncompliance including taxability of interest retroactive to the date of issue.

A. Which issues are subject to rebate?

As briefly discussed in History of the Arbitrage Regulations section, the rebate provisions have gradually increased to various types of tax-exempt bond issues throughout the years. Bonds issued after the following are the dates are subject to a rebate requirement:

Type	Date
Governmental Bonds	August 31, 1986
Private Activity Bonds	December 31, 1984
Single-Family Bonds	September 25, 1979
Student Loan Bonds	December 31, 1985

B. What funds are subject to rebate?

The rebate regulations are very broad in their definition of funds subject to the rebate requirement. These rules require rebate on excess earnings from the "gross proceeds" of the issue. Gross proceeds includes:

- (a) Sale proceeds which includes the proceeds received from the sale of the bonds,
- (b) Investment proceeds (interest) received from the investment of the bond proceeds,
- (c) Reserve funds whether comprised of bond proceeds or revenues,
- (d) Transferred Proceeds which represent proceeds from a prior issue which become part of the new issue (e.g., resulting from a refunding),
- (e) Securities Pledged for payment of debt service on an issue (e.g., debt service fund), and
- (f) Interest earnings from the investment of any of the preceding.

C. Exceptions to the Rebate Requirements

There are several exceptions which will preclude an entire issue from compliance of the rebate regulations:

1. **Small Issuer Exception.** Bonds issued by governmental units with general taxing power who reasonably expect to issue \$5 million or less in tax-exempt bonds during each calendar year, are not subject to the rebate requirements if at least 95% of the net proceeds are to be used for local governmental activities of the issuer. In determining whether the \$5 million limit is reasonably expected

to be exceeded, all governmental bonds issued by the governmental unit and all other governmental units that are subordinate to it must be counted (with the exception of private activity bonds).

2. **Six-Month Exception.** If the gross proceeds (including interest earnings) of the issue are expended for their governmental purposes within six months after the date of issuance of the bonds, the interest earned during that period is not subject to rebate. If all but a minor portion of the proceeds (equal to the lesser of 5% of the proceeds or \$100,000) is spent within a six month period, then the exception deadline is extended another six months. Amounts held in a bona fide debt service fund or reserve fund are not considered for the purpose of determining whether the six-month test has been met. However, the reserve fund is not completely exempt from rebate. The interest earned from the reserve fund is still subject to rebate after the initial six month period. Therefore, even if the six month test is met, the issuer must perform rebate computations on the reserve fund throughout the life of the issue after the initial six month exception period.

In determining the six month period for tax and revenue anticipation notes, the available construction proceeds of such an issue (including interest earnings) are considered expended for the governmental purpose of the issue on the first day after the date of issuance that the cumulative cash flow deficit to be financed by the issue exceeds 90% of the aggregate face amount of the issue.

3. **Two-Year Exception for Certain Construction Bonds.** On December 19, 1989, the President signed the Omnibus Budget Reconciliation Act of 1989 (the "1989 Act") which included several changes to the arbitrage rebate provision of the Internal Revenue Code of 1986. The new provisions apply to any bonds issued on or after December 20, 1989 and require certain elections to be made by the issuer prior to delivery of the bonds. Several technical corrections were made to this exception on November 5, 1990 when the Revenue Reconciliation Act of 1990 was signed.

The 1989 Act created an additional exception to exempt certain construction bond issues from rebate if all of the proceeds are expended within a two-year period. The application of this exception is very detailed and should be fully understood by the issuer before any elections are made to apply these rules. To facilitate this discussion, a flowchart is provided in Exhibit 4.

- a. **Expenditure Requirements.** The two-year exception is available for an issue if at least 75% of the available construction proceeds are to be used to finance construction expenditures on property to be owned by a governmental unit or a 501(c)(3) organization. This exception will also apply to private activity bond issues if the property is to be owned by a governmental unit (for example, an airport facility). Under the statutory language, construction issues include reconstruction and rehabilitation projects.
-

If however, less than 75% of the issue is to be used to finance construction expenditures, the law allows an issuer to treat the issue as two separate issues for purposes of the exception. This separation into construction and nonconstruction portions is referred to as bifurcation. If the issuer elects, prior to closing, to separate the construction and nonconstruction portions into two issues, the two-year exception will be available for the construction portion. The nonconstruction portion must still comply with the normal rebate requirements, which means that unless all of the nonconstruction portion (and interest earnings) are spent within six months from delivery, all earnings on the nonconstruction portion are subject to rebate. Issuers should keep in mind that separating the issue into construction and nonconstruction portions will require that they maintain detailed investment and expense records separately for each portion.

In order to qualify for the two-year exception, the available construction proceeds of the issue (which includes cumulative interest earnings) must be spent for their governmental purpose under the following expenditure schedule:

Period	Cumulative Expenditures
6 months	10%
12 months	45%
18 months	75%
24 months	95%
36 months	100%

The 5 percent of available construction proceeds allowed after 24 month period is to provide for reasonable retainage. It is important to note that the preceding expenditure requirements of available construction proceeds include interest earnings from the investment of the bond proceeds. In addition, the 1990 Tax Act clarified that proceeds or interest earnings used to pay any principal requirements on the bonds will not qualify as an expenditure under these rules. If earnings are used to pay interest requirements on the bonds, such a payment would qualify as an expenditure of the available construction proceeds.

- b. **Available Construction Proceeds** are defined as the issue price of the bonds to the public (which ignores the price paid by underwriter), increased by earnings from the investment of the issue price, earnings from a reserve fund not funded from the issue, and earnings on all of the foregoing earnings, reduced by the amount of bond proceeds placed in a reserve fund and the costs of issuance (including underwriters' fees) paid prior to the investment of the proceeds.

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- c. **Treatment of Reserve Fund Earnings.** Interest earnings must be included in the expenditure test of the available construction proceeds. However, if the issuer elects prior to delivery of the bonds, interest earnings on a reserve fund may be excluded from the definition of available construction proceeds and therefore eliminated from the expenditure test. If this election is made, interest earnings from the reserve fund are subject to rebate under the normal rules.

By ignoring the election, the provision essentially allows the issuer to exempt interest earnings in the reserve fund from rebate during the two-year period as long as the expenditure test is met. As with the six-month exception, the reserve fund will be subject to rebate throughout the remaining life of the issue after the two-year period. Again, making the election requires that excess earnings on the reserve fund be rebated under the normal rules. An issuer should analyze whether including the interest from the reserve fund will cause them not to meet the expenditure test, in which case it may be advantageous for them to use the normal rebate rules on such earnings.

- d. **Election to Pay Penalty in Lieu of Rebate.** The penalty provision of the 1989 Act provides an alternative to rebate. Under this provision, an issuer who fails to meet the required expenditure requirements during the two-year period may elect, prior to delivery of the bonds, to pay a penalty rather than rebate excess earnings.

In the event expenditures during any six-month period are less than the required percentage under the law, the issuer would be required to pay penalty on the portion of the proceeds not expended on time.

- (1) **1.5% Semi-Annual Expenditure Penalty.** The issuer may pay a penalty equal to 1.5% of the amount of the available construction proceeds not spent as required by the established expenditure schedule. Payment of this penalty is due within 90 days after the end of each semiannual period. For example, by the end of the 12 months, 45% of the available construction proceeds should have been spent. If only 40% of the available construction proceeds had actually been spent, the issuer must pay a penalty equal to 1.5% on the 5% not expended in time. To quantify this example, assume a City issues a \$20,000,000 construction bond issue. By the end of the first year, \$9,000,000 (45%) should have been expended, however, only \$8,000,000 (40%) was actually spent. The City must pay a penalty equal to \$15,000 (\$9,000,000 - \$8,000,000 X 1.5%). Each semi-annual period stands alone, so if during the next semi-annual period the actual expenditures now are greater than or equal to the required expenditure percentage, no penalty is required for the subsequent period.
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(2) **Election to Terminate 1.5% Penalty.** As part of the technical corrections included in the 1990 Tax Act, an option was created to solve the problem of penalty on amounts remaining after construction is completed. One complaint voiced by issuers after the two-year provisions were first passed in 1989 was the treatment of proceeds which remain after completion of the projects. Under the revised rules, an issuer may elect to discontinue the 1.5% penalty on remaining amounts. The election must be made within 90 days of the earlier of the end of three years from the delivery date of the bonds or the date the construction is substantially complete. However, if this election is made, the issuer must:

- (a) pay a one-time penalty equal to 3% of the amount of remaining proceeds multiplied by the number of years since the proceeds were originally received, and
- (b) invest the remaining proceeds at a yield not to exceed the yield on the bond issue until the proceeds are either used for the governmental purpose of the issue or used to redeem bonds on the earliest call date of the bonds, regardless of whether a premium is required for the early call redemption.

e. **Failure to Pay Penalties.** The 1990 Tax Act added rules for the treatment of a failure to either pay a penalty, or failure to pay the penalty when due (within 90 days of each semiannual period). Under the revised rules, an issue will not lose the tax-exempt status for failure to pay penalty timely if such failure was not due to willful neglect if, and if in addition to paying such penalty, the issuer pays an additional penalty equal to:

- (1) 50% of the amount not paid on time, plus
- (2) interest at the underpayment penalty rate on the portion of the amount which was not paid on the date required for the period from the original due date until payment is actually made.

f. **Advance Refunding Issues.** Advance refunding issues are not eligible for the Two-Year Exception. As a result, if an issue contains both a new money and refunding portion, an issuer will be required to bifurcate the issue between the construction portion and nonconstruction portion (which includes the issue price used for refunding outstanding bonds).

Exhibit 4: Two-Year Construction Exception

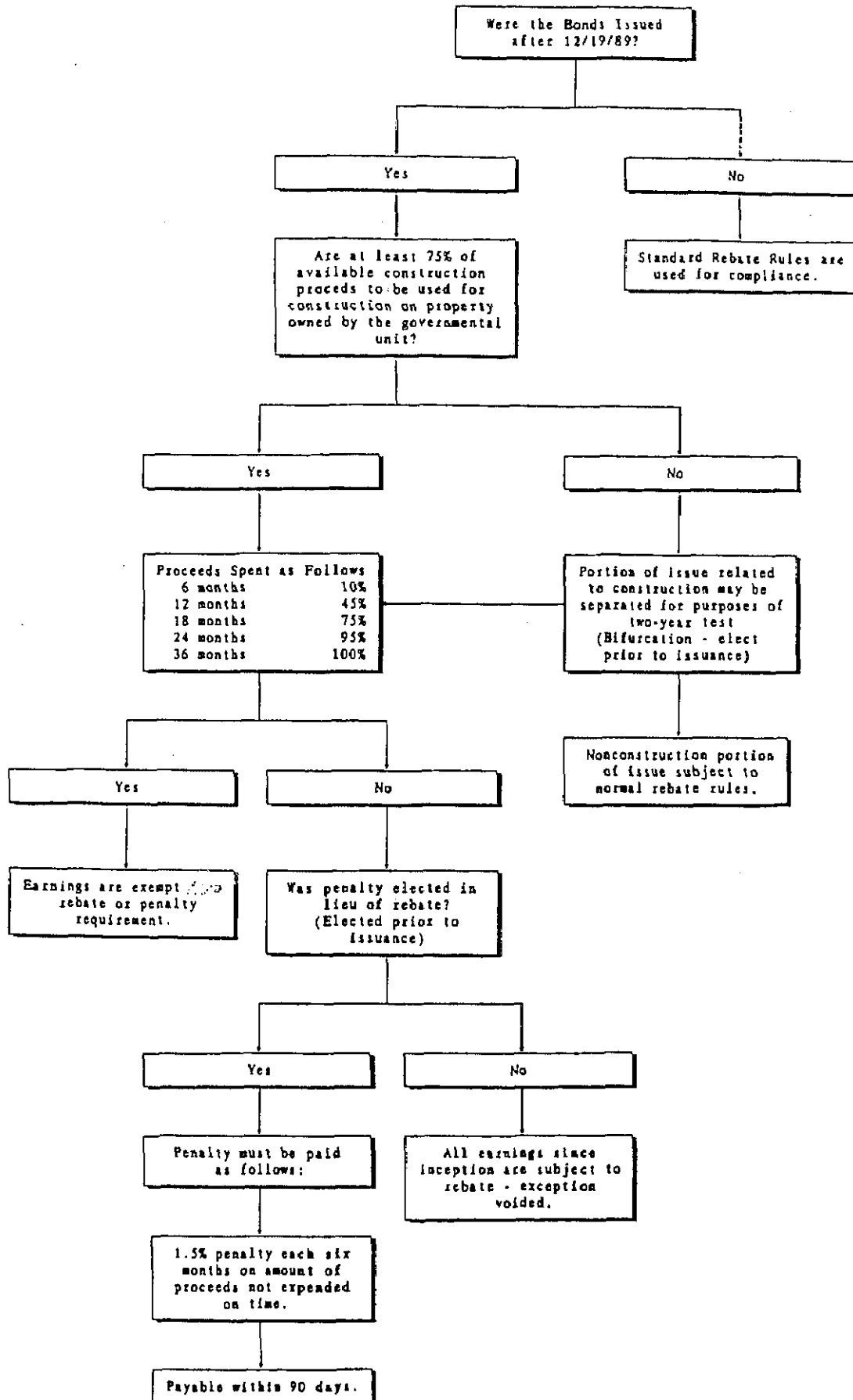


Exhibit 5: Computation of Penalty for Two-Year Exception

Delivery Date: 04/26/90

Months Since Delivery	Transaction Date	Expense Transaction	Cumulative Expenses	Interest Earnings	Remaining Construction Proceeds	Available Construction Proceeds	% of Available Construct Proceeds Spent
0.00	04/26/90		0.00		43,233,960.35		
0.00	04/26/90		0.00		43,233,960.35	43,233,960.35	0.0000%
0.13	04/30/90		0.00	9,555.56	43,243,515.91	43,243,515.91	0.0000%
1.16	05/31/90	16,114.65	16,114.65	12,458.06	43,239,859.32	43,255,973.97	0.0373%
2.13	06/30/90	172,149.59	188,264.24	185,244.06	43,252,953.79	43,441,218.03	0.4334%
3.16	07/31/90	478,992.28	667,256.52	408,317.74	43,182,279.25	43,849,535.77	1.5217%
4.16	08/31/90	897,668.67	1,564,925.19	125,426.38	42,410,036.96	43,974,962.15	3.5587%
5.13	09/30/90	371,039.80	1,935,964.99	296,966.37	42,335,963.53	44,271,928.52	4.3729%
6.00	10/26/90	1,064,962.59	3,000,927.58	0.00	41,271,000.94	44,271,928.52	6.7784%
TOTALS:		3,000,927.58	3,000,927.58	1,037,968.17	41,271,000.94	44,271,928.52	6.7784%

Computation of the Arbitrage Penalty:

Available Construction Proceeds	\$44,271,928.52
Required Expenditure Percentage	<u>10.00%</u>
Required Expenditures during Computation Period	4,427,192.85
Less:	
Actual Expenditures during Computation Period	<u>3,000,927.58</u>
Deficiency (Excess) of Actual over Required Expenditures	<u>\$1,426,265.27</u>
Penalty at 1.5%	<u>\$21,393.98</u>

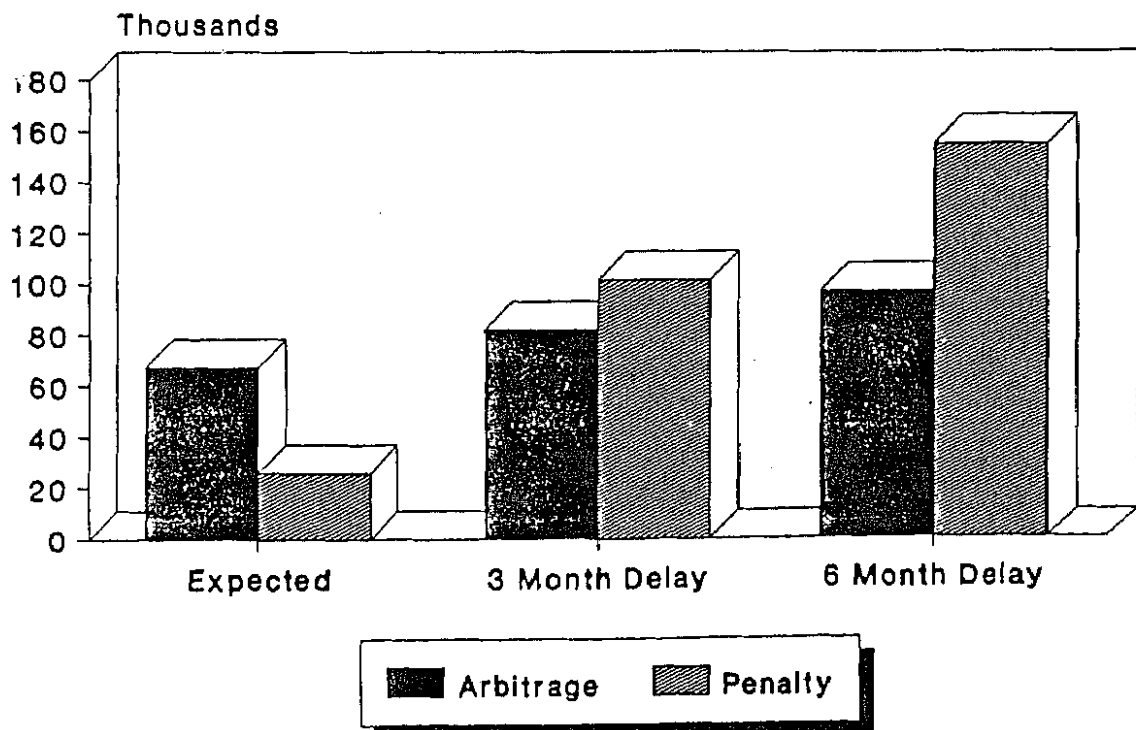
- g. **Items to Consider About the Two-Year Exception.** Because the new provisions of the 1989 Act only recently became effective, many questions concerning their application are created for which no definitive answers are yet available. The Treasury Department has stated that the regulations detailing the application of these rules are a top priority, but no estimated date of their release has been slated.

Therefore, issuers should consider the following items before making any elections to adopt these new rules. Because regulations have not yet been released, bond counsels and financial advisors may vary in their interpretation. We recommend that you discuss your specific concerns with your bond counsel before making any elections.

- (1) The elections under the new rules, once made, are irrevocable. Therefore, issuers must carefully consider the implications of any actions they may be considering. If, for example, an unanticipated delay occurs in construction that will cause the project to be behind schedule for a long period of time, the issuer may not change back to the normal rebate provisions to lessen the impact of the delay.
- (2) If any proceeds remain at the completion of the construction project, the issuer must to pay a special 3% penalty on the remaining proceeds to terminate the continual 1½% penalty.
- (3) The term "available construction proceeds" includes interest earnings from the investment of the funds. This may add some complexity to meeting the semi-annual expenditure requirements of the two-year rule. Since interest is added to the available construction proceeds amount, it will take longer to spend the proceeds and therefore may cause an issuer to fail the expenditure test.
- (4) The new law does not define construction costs. As a result, the Internal Revenue Service may not consider furniture and equipment as part of the construction expenditures. Until the regulations are released, we do not have a concrete answer on what constitutes a construction cost. Allocation of construction costs for purposes of meeting the two-year exception should be carefully analyzed.
- (5) In the event the actual construction expenditures fail to meet the semi-annual requirements, the issuer (if so elected) must pay a penalty. It is very possible that because of interest rate spreads, the excess investment earnings may be in a "negative arbitrage" position or in a very small positive position. If the issuer elects penalty on the unspent proceeds failing the expenditure schedule, they may actually pay more in penalty than the total arbitrage earned from investing the proceeds.

- (6) The new rules may increase the record keeping responsibilities of the issuer. Detailed expenditure records must be maintained separately on each bond issue to be able to test for compliance of each semi-annual period. In addition, separate investment records must be maintained for each bond issue since investment earnings are included as part of available construction proceeds in the expenditure requirements. The record keeping requirements are doubled in the event the issue is bifurcated. The issuer must maintain separate investment records and separate expenditure records for both the construction and nonconstruction portions of the issue.
- (7) An unexpected delay on a project may create significant penalties which could be greater than rebating arbitrage profits earned. For example, assume that bonds are issued to acquire land and then construct a building on that land. The total issue size was \$10 million with \$2 million being used for acquisition and \$8 million for construction purposes. If the project were delayed because of litigation on the purchase of the land, significant penalties may be paid because none of the construction proceeds are being expended. If the project was still delayed at the end of 12 months, the issuer would have to pay a penalty of \$67,500 ($\$8,000,000 \times 45\% \times 1.5\%$). This penalty would continue to grow in size each six months until the project is completed.

Impact of Project Delays on the Penalty Election



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4. **Investments Strategies which Exempt an Issue From Rebate.** In addition to the exceptions previously discussed, certain investment strategies will also relieve an issuer from compliance of the annual computation:

- a. **Tax-Exempt Obligations.** Interest earned from investments in tax-exempt securities are not subject to rebate. Therefore, an issuer can avoid any rebate by investing all of the bond proceeds in other tax-exempt instruments. However, this rule was modified for any bonds issued after March 31, 1988. For bonds issued after that date, the proceeds of which are invested in tax-exempt bonds subject to the Alternative Minimum Tax (AMT), earnings from AMT investments which exceed the yield on the bonds must be rebated. This was a result of several issuers taking advantage of the interest rate spread between their low-yielding governmental bonds and the high-yielding AMT bonds.

While relieving the issuer of rebate, this investment strategy will frequently result in a loss of potential earnings since the available yields on tax-exempt instruments are usually lower than the yield on the issue. As a result, the issuer is losing the earnings from the spread between the tax-exempt rate and the allowable rate (bond yield). Since an issuer is allowed to retain all earnings up to a rate equal to the yield on the bonds, this strategy may not maximize the legal amount of retainable interest earnings.

- b. **Treasury's Demand Deposit SLGS Program.** The Tax Reform Act of 1986 revised the Treasury Department's SLGS program to permit demand deposits under the program. The revised program provides for demand deposits offering yields that will eliminate impermissible arbitrage profits and thereby eliminate the rebate requirements. However, since the program is to operate at no cost to the Government, obtainable yields have been between 4-6%, making this investment strategy undesirable. The potential earnings loss created by the low rate of return is normally greater than the expense of performing a rebate computation.

As the previous discussion indicates, the most beneficial investment strategy for an issuer subject to the rebate requirements is one designed to recognize the highest yields available and rebate any excess earnings to the federal government.

5. **Debt Service Fund Exclusion.** One of the more confusing areas of the arbitrage regulations is whether or not the Debt Service Fund (commonly referred to as the "Interest and Sinking Fund") is subject to the rebate. The following analysis may help you understand this problem.

As previously discussed, all gross proceeds of a bond issue are subject to rebate. Gross proceeds includes, among other things, any amount designated to pay debt service on an issue and, therefore, includes amounts deposited to a Debt Service

Fund. In evaluating the amount of investment earnings subject to rebate, an exclusion is provided for certain earnings on a bona fide debt service fund.

a. **Definition of a Bona Fide Debt Service Fund.**

A "bona fide debt service fund" is defined by the arbitrage regulations as follows: "A bona fide debt service fund is a fund that is used primarily to achieve a proper matching of revenue and debt service within each bond year. A bona fide debt service fund for a single issue must be depleted at least once a year except for a reasonable carryover amount (not to exceed the greater of 1 year's earnings on the fund or one-twelfth of annual debt service)."

b. **Original Rebate Requirements on Debt Service Funds.**

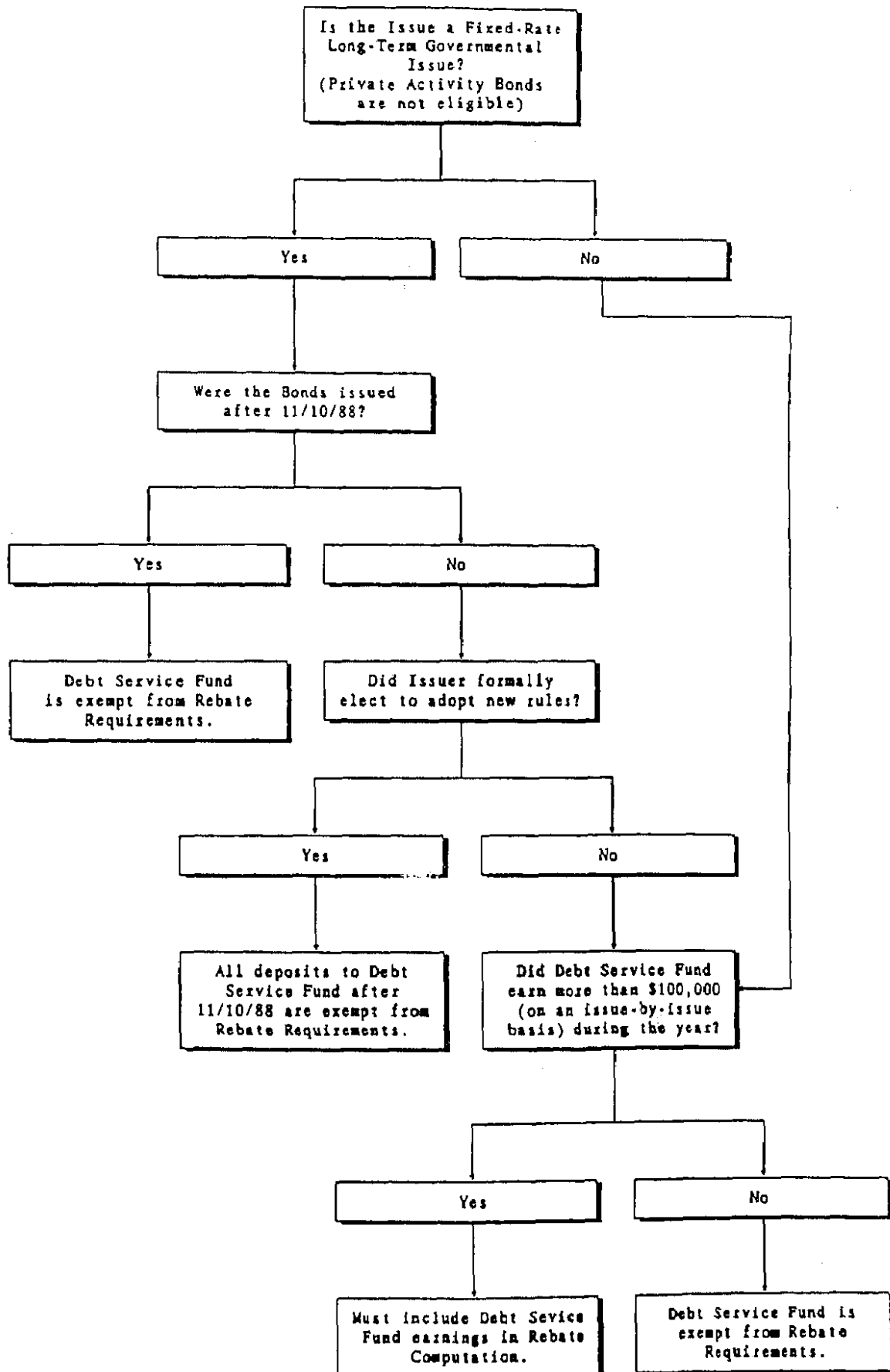
The Tax Reform Act of 1986 included provisions for debt service funds. Under the Act, a debt service fund was subject to rebate if the fund earned more than \$100,000 during the bond year. Commingling debt service funds for multiple issues is permitted, however, for purposes of determining the \$100,000 exclusion, it is necessary to allocate the debt service fund on an issue-by-issue basis. It was necessary for the issuer to allocate earnings from the debt service fund to each Post-Tax Reform issue to determine its treatment under the arbitrage rebate regulations. This requirement, however, has been amended.

c. **Amended Rebate Requirements on Debt Service Funds.**

The Technical and Miscellaneous Revenue Act of 1988 (the "1988 Act") revised the debt service fund requirements. Under the revised rules, a debt service fund is excluded from the rebate requirements for all fixed rate, long-term issues. A long-term issue is defined as an issue with an average maturity of at least five years. The definition of a long-term, fixed rate issue applies to the majority of bonds issued by cities, counties and school districts, and therefore, the new rule should eliminate the Debt Service Fund from the rebate calculation for most issues.

In the event the bonds were issued prior to the date of enactment of this amendment (November 11, 1988), the issuer is allowed a 1-time election to adopt the amendment to their existing bond issues. By making the election, any amounts deposited to a debt service fund after November 10, 1988 will be exempt from arbitrage rebate. Electing to adopt the new requirement will remove the need to allocate debt service funds to each bond issue in order to demonstrate compliance with the rebate requirements, and as a result, reduce the amount of record keeping associated with rebate. Keep in mind that short-term bond issues and variable/floating rate issues must still meet the \$100,000 test to be excluded. The following flowchart will graphically demonstrate the application of the Debt Service Fund exception rules.

Exhibit 6: Debt Service Fund Exclusion



APPENDIX B

INTERVIEW: THE CITY OF AUSTIN

The author interviewed Corrinne Steeger, City Treasurer; Susan Anderson, Deputy Treasurer; and Dennis Waley, Assistant Investment Manager; on February 14, 1992 in Austin, Texas. Relevant portions of the interview follow.

Debt Policy

How has the TRA affected the policy?

Corinne Steeger was not with the city of Austin (COA) when the policy was drafted 3 years ago, but in the two and one-half years of her capacity as City Treasurer, she hasn't seen any influence.

Effects of the TRA

- 1) Increased administrative costs in terms of debt administration. The cost is internal; staff time is consumed by tracking the bond issues. It's a new approach for monitoring expenditures.
The primary objective is to know the bond proceeds amount and when the proceeds were spent to calculate interest earnings. Cities have a difficult time in calculating interest earnings because most large cities comingle bond proceeds. The cities don't set up individual portfolios because they want to maintain larger balances for investment purposes. Since the funds are comingled, cities need a method for allocating the interest to each fund. The COA's biggest problem has been to find an allocation method for interest earnings, as COA commingles gross bond proceeds. Dallas addressed this problem right at the beginning to keep it under control (Ms. Steeger was formerly employed by the city of Dallas).
- 2) Refundings
Current refundings are not a problem. The problem is advanced refundings as far as the TRA is concerned. There is a limit to the number of times an issuer can refund, therefore, opportunities are not used lightly.

3) Arbitrage

Rebates are the most difficult aspect of arbitrage in that the recordkeeping is extremely tedious. Fiscal year 1992 is the first year that the city has had to make (rebate) payments. The city of Austin has rebated approximately \$700,000-\$800,000 on three issues.

Revenue Bonds

The city charter requires that all bonds must be voter approved.

Taxable Bonds

None.

Rating Agencies

The COA has its issues rated by Standard & Poor's Corporation, Moody's Investors Service and Fitch's Investors Service.

The city's external auditors are KPMG Peat Marwick. Ms. Steeger believes that the auditor's opinion doesn't make a difference in the ratings.

The agencies look at the average life of a municipality's debt. The agencies prefer average life of debt to be ten years or less. The COA strives for a level debt service, which means principal and interest payments are approximately the same.

Bond Ratings

Bond ratings remained the same, except for in 1988 when Standard & Poor downgraded general obligation bonds from AA+ to AA. The downgrade was due, in part, to the city council's refusal to raise taxes in a period of declining property values.

Capital Planning

Has the TRA changed capital planning?

The TRA hasn't directly changed the plan but has altered the way the city does business with private industry. For example: 1) the convention center must be owned by the city and cannot lease out more than 10% space by contract, and 2) the utility plant cannot sell excess electricity except under certain circumstances, or tax-exempt status will be revoked.

Debt Levels

The TRA has not prevented the COA from issuing debt. The COA has had to look at ways of issuing debt that fit more easily into the new tax laws than the more traditional ways of financing. For example: to comply with newer arbitrage criteria, gross bond proceeds must be expended within a six-month or two year spend-out period. If an issuer cannot meet these time limits, a rebate must be made to the federal government. The COA doesn't comply with either spend-out periods because the city has difficulty expending bond proceeds within these time frames.

The city has a self-imposed limitation on property tax supported debt, which doesn't allow issuance of more debt each year than is retired in principal. The purpose is to keep debt levels constant each year (excluding self-supporting debt). This policy is to keep the tax rate as stable as possible.

Commercial Paper Program

The city council has approved the utilities to issue commercial paper instead of long-term revenue bonds. The proceeds can be invested in tax-exempt securities to avoid rebates until the funds are needed.

APPENDIX C

INTERVIEW: THE CITY OF DALLAS

The author interviewed Rob Dulaney, Cash and Debt Administrator, via telephone on February 13, 1992. Relevant portions of the interview follow.

Debt Policy

Has the TRA influenced the city's debt policy?

No.

Effects of the TRA

1) Arbitrage/Administrative Fees

The city pays a consultant \$15,000-20,000 annually to assist with arbitrage. Mr. Dulaney estimates that a total of \$100,000 annually is spent on staff time with arbitrage related paperwork.

2) Limitations on bond refundings.

Taxable Bonds

The city has not had to issue taxable bonds as a result of the TRA.

Bond Rating

The city currently enjoys the highest rating possible, AAA (Standard & Poor's). To retain the rating, the city refrains from issuing too many bonds during a year that has a declining tax base.

Capital Planning

The TRA has not affected infrastructure or capital improvement planning. The main culprit is the economy. In order to keep taxes down, the city refrains from issuing debt.

APPENDIX D

INTERVIEW: THE CITY OF SAN ANTONIO

The author interviewed Nolie Tolbert, Assistant Director of Finance in San Antonio, Texas on February 17, 1992. Relevant portions of the interview follow.

Debt Policy

San Antonio does not have a debt policy.

How does the city decide when to incur debt?

The city determines the cost to fund the proposed improvements or facility. The citizens then vote whether to incur the expense (raise taxes).

Effects of the TRA

- 1) Arbitrage - the city has lost "profits" due to the arbitrage restrictions in the Tax Reform Act of 1986.
- 2) Refunding - the TRA limit on refundings can be equated into higher costs for the city because the city can no longer take advantage of low rates.
- 3) Administrative costs - additional costs have been incurred due to tracking of the bond proceeds. The city has also purchased a software package to track the bond funds for arbitrage liability.
- 4) Taxable debt - The city has issued taxable debt as a result of the Tax Reform Act. San Antonio issued Certificates of Obligations (four issues) approximating \$200 million in 1988 and 1989 to fund the Dome, the convention center renovations, and the Majestic theater renovations and land purchase.

Rating Agencies

San Antonio uses Standard & Poor's Corporation and Moody's Investors Service. Mr. Tolbert believes that the external auditor's opinion makes a difference with the rating agency because they look at the transmittal letter for exceptions or for a qualified opinion.

San Antonio's bond rating was downgraded from AA+ to AA (Standard &

Poor's) due to the city's overreliance on utility revenue. If the city can remedy the situation, Standard & Poor's will consider reinstating the former rating.

Capital Planning

The TRA has not had an effect on short or long term capital planning or on the capital budget.

Revenue Bonds

Voter approval is not required.

Debt Levels

TRA has not caused lower debt levels. The policy is to issue debt when funds are needed for improvements or capital facilities (as long as voter approval is obtained).

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