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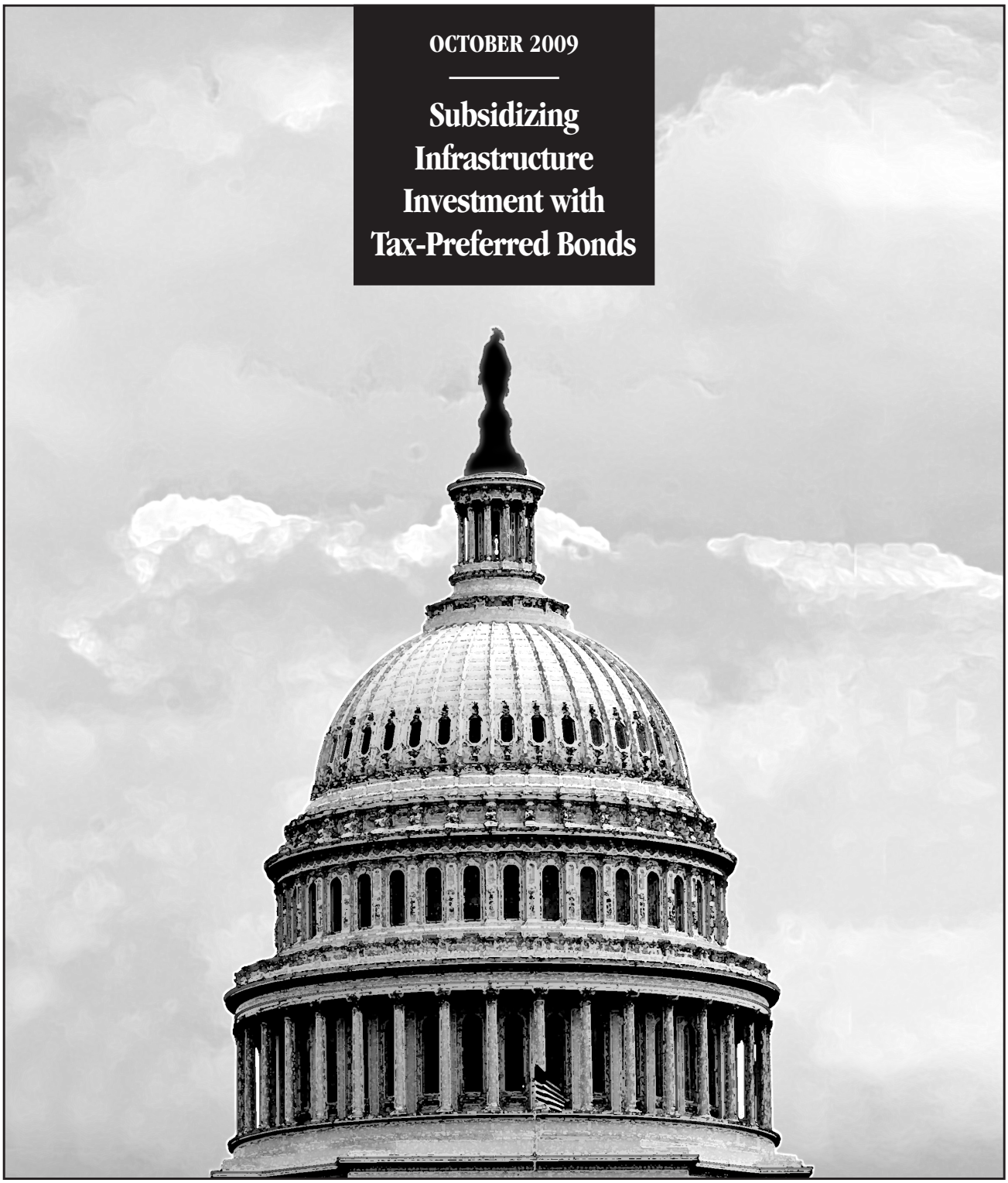
STUDY

OCTOBER 2009

Subsidizing Infrastructure Investment with Tax-Preferred Bonds



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Notes

Unless otherwise indicated, all years in this report are federal fiscal years.

Numbers in the text and tables of this report may not add up to totals because of rounding.

In this analysis, investment in infrastructure is defined as capital spending on transportation, utilities (such as water and power supply), environmental projects, and schools. In addition, because they account for a significant share of the tax-exempt debt issued, health care facilities and hospitals are also treated as infrastructure.

Under this study's definition, capital spending consists of investment in physical capital, such as structures and facilities, rather than intangible capital, which is formed by spending on educational programs or on research and development.

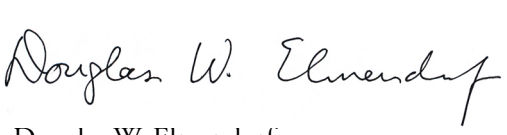
Preface

The federal government supports infrastructure investment in a variety of ways. It spends money directly, makes grants to state and local governments for their capital spending and, through the tax system, subsidizes the borrowing of both of those levels of government as well as certain private entities to finance infrastructure projects. However, the most common means of providing a tax subsidy for infrastructure investment—by offering a tax exemption for interest on state and local bonds—is generally viewed to be an inefficient way to subsidize state and local borrowing, largely because the revenue cost to the federal government may exceed the interest-cost subsidy provided to state and local governments by a substantial amount.

To inform the Congress in its deliberations about federal infrastructure policy, this study assesses the role of tax preferences in infrastructure investment in the United States. It discusses the types of tax preferences for state and local bonds, reports the amount of such debt that has been issued for infrastructure projects undertaken by the public and private sectors, and estimates the importance of that debt financing to infrastructure investment. It also considers how the current system of tax preferences—which historically has relied primarily on tax exemptions for interest income on debt issued by states and localities—might change as a result of greater use of tax-credit bonds.

The paper was written by Nathan Musick of the Congressional Budget Office (CBO) and the staff of the Joint Committee on Taxation (JCT). Within CBO, Elizabeth Cove Delisle, Mark Hadley, and Susan Yang provided useful comments, as did Thomas Woodward (formerly of CBO). Cynthia Belmonte of the Department of the Treasury provided data and analysis of nonprofit bond issuance. Dennis Zimmerman of the American Tax Policy Institute and Matt Fabian of Municipal Market Advisors reviewed the draft. (The assistance of external reviewers implies no responsibility for the final product, which rests solely with CBO and JCT.)

Sherry Snyder edited the manuscript, and Christine Bogusz proofread it. Maureen Costantino prepared the paper for publication with assistance from Chris Howlett. Lenny Skutnik produced the printed copies, Linda Schimmel coordinated the print distribution, and Simone Thomas prepared the electronic version for CBO's Web site (www.cbo.gov). The study is also available on the Web site of the Joint Committee on Taxation (www.jct.gov).



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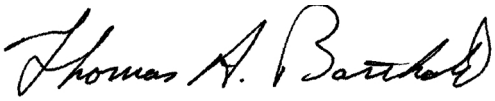

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October 2009

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Summary

The public and private sectors in the United States together spend over $500 billion a year on infrastructure projects, including highways and airports, water and energy utilities, dams, waste-disposal sites and other environmental facilities, schools, and hospitals. The federal government makes a significant contribution to that investment through its direct expenditures and the subsidies it provides indirectly through the tax system, which are sometimes referred to as **tax expenditures**. Direct expenditures comprise what the federal government spends on infrastructure (for example, by funding construction of dams and other water resources by the Army Corps of Engineers) and what it provides as grants and loan subsidies to states and localities (primarily for transportation projects). Those expenditures and grants account for a bit more than one-eighth of the roughly half-trillion dollars in total capital expenditures on infrastructure in the United States. However, for specific types of projects—for example, transportation and environmental facilities—those outlays represent about one-half or more of the total investment.

The Importance of Tax Preferences in Financing Infrastructure

Most federal tax expenditures for infrastructure are the result of tax preferences granted for bonds that state and local governments issue to finance capital spending on infrastructure. For fiscal years 2008 to 2012, federal revenues forgone through the tax-exempt bond financing of infrastructure—both for new investments and for the refinancing of existing debt—are estimated to exceed $26 billion annually.

Tax preferences for bonds reduce borrowing costs. Because infrastructure facilities typically provide a stream of benefits (and, in some cases, revenues) well into the future, their construction is often financed by borrowing. The amount of tax-preferred debt issued to finance new infrastructure projects undertaken by the public and private sectors totaled $1.7 trillion from 1991 to 2007. About three-quarters of those bond proceeds, or roughly $1.3 trillion, was for capital spending on infrastructure by states and localities, and the remainder was used to fund private capital investment for projects that serve a public purpose, such as schools and hospitals. That $1.3 trillion amounted to over one-half of the $2.3 trillion in capital spending on infrastructure by state and local governments (that is, net of federal grants and loan subsidies). Since 1991, tax-exempt bonds have become a more important source of financing, particularly for public investment in transportation facilities, such as highways, and for private investment in schools.

Tax preferences for debt are also attractive to states and localities because they generally allow those governments to exercise broad discretion over the types of projects they finance and the amount of debt they issue. But unlike direct expenditures, tax expenditures—including tax preferences for state and local bonds (also known as municipal bonds)—are not subject to the annual appropriation process that determines federal outlays for infrastructure and other discretionary programs. As a result, the cost of tax subsidies for infrastructure is not readily apparent, making the design of cost-effective tax preferences all the more important.

That history and the projected demand for investment in the nation's infrastructure draw attention to the question of how to make the most effective use of the range of policy options available to support investment in infrastructure. Understanding the advantages and disadvantages of the various types of tax preferences and their role in financing infrastructure investment is an important issue in that regard.

The Types of Tax-Preferred Bonds and Their Characteristics

The Internal Revenue Code provides for three forms of tax-preferred state and local bonds:

- **Tax-exempt bonds** pay interest to the bondholder that is not subject to federal income tax.
- **Tax-credit bonds,** by contrast, generally provide a credit against the bondholder's overall federal income tax liability.
- **Direct-pay tax-credit bonds,** in effect, require the federal government to make cash payments to the issuer of the bond in an amount equal to a portion of each of the interest payments the issuer makes to the bondholder.

Tax-exempt bonds are the most well established type of tax-preferred debt (tax exemption dates to the beginning of the federal income tax in 1913) and are issued to finance either the general functions of state and local governments or certain projects undertaken by the private sector. Tax-exempt bonds reduce the issuer's borrowing costs because purchasers of such debt are willing to accept a lower rate of interest than that of taxable debt of comparable risk and maturity.[1] However, tax-exempt bonds are a relatively costly mechanism for delivering a subsidy to the issuer of the bonds, because the revenue forgone by the federal government in connection with the tax exemption is not limited to the issuer's subsidy; a portion of the federal subsidy is captured by holders of tax-exempt bonds whose tax rates exceed the rate of tax on the marginal (or market-clearing) buyers of the tax-exempt bonds.[2]

In contrast to tax-exempt bonds, **tax-credit bonds** are much more recent in origin. Authority for the first tax-credit bonds, known as Qualified Zone Academy Bonds, was added to the Internal Revenue Code in 1997, effective for 1998. Although the outstanding amount of tax-credit bonds currently is minuscule in comparison with that of tax-exempt bonds, tax-credit bonds potentially offer two advantages for economic efficiency. First, tax-credit bonds can be a more cost-effective means of subsidizing borrowing, because every dollar of federal revenue forgone through the tax credit is transferred to borrowers rather than accruing to individuals whose marginal tax rate is high. Second, although tax-credit bonds have tended to provide a subsidy that is close to 100 percent of interest costs, the amount of the tax credit can be adjusted, depending on the purpose for which the bonds are issued. By adjusting the credit amount, the Congress effectively can exempt more or less of each dollar of interest income on a bond and tailor the federal subsidy to the public benefit the Congress expects to derive from the project being subsidized.

Nevertheless, tax-credit bond programs have not been particularly well received by the market for a number of reasons, including the limited size and temporary nature of tax-credit bond programs and the absence of rules for separating tax credits from the associated bonds and reselling them. That situation is likely to change, however, as a result of the American Recovery and Reinvestment Act of 2009 (ARRA, Public Law 111-5), which greatly expanded the size and range of tax-credit bond programs. As those new programs are implemented, it will be possible to gauge more accurately the practical advantages and disadvantages of tax-credit bonds.

ARRA also created a third type of tax-preferred debt—the **direct-pay tax-credit bond**. With that type of bond, the federal government makes a payment to the issuer in lieu of providing a tax credit to the holder of the bond. For example, issuers of the new Build America Bonds (also authorized by ARRA) can elect to issue direct-pay bonds provided that 100 percent of the available proceeds from the bond are to be used for capital expenditures. The issuer of those bonds receives a payment from the federal government equal to 35 percent of the taxable

1. The excess of tax-exempt yields over taxable Treasury yields in 2008 reflected an extreme "flight to quality" that has rarely been seen in U.S. debt markets. Uncertainty in the markets caused investors to move away from investments they believed to be riskier, including tax-exempt municipal bonds, and into those perceived as safer—Treasury securities in particular. As a result, yields on some Treasury bonds fell to levels below yields on tax-exempt municipal bonds that have the same maturity.

2. As the issuers of tax-exempt debt expand the pool of bond purchasers until it is sufficiently large to exhaust the amount of debt they are bringing to market, they draw in bond buyers from ever-lower income tax brackets by raising the interest rate enough so that the yield on tax-exempt bonds is competitive with the after-tax rate of return on taxable instruments for investors in those lower brackets. As a result, the marginal buyer of tax-exempt bonds will typically demand a tax-exempt yield that exceeds what an individual in a higher income tax bracket requires to purchase those bonds.

interest paid to the holder of the bond. In part because the direct payment to the issuer represents a "deeper" subsidy to the issuer than the provision of a tax credit represents to the bondholder, the direct-pay option of qualifying Build America Bonds has been particularly well received by issuers. In addition, fully taxable Build America Bonds must offer yields comparable with those of other taxable securities. Those yields may make the bonds an attractive investment for tax-exempt and foreign persons, who do not invest in traditional tax-exempt bonds.

Conclusions

The estimated $26 billion in annual federal revenue forgone through tax-exempt bond financing of infrastructure is greater than the associated reduction in borrowing costs for state and local governments. Some analysts have estimated the magnitude of that differential and conclude that several billion dollars each year may simply accrue to bondholders in higher income-tax brackets without providing any cost savings to borrowers.

Replacing tax-exempt interest with tax credits could, in principle, increase the efficiency of financing infrastructure with tax-preferred debt. Tax-credit bonds transfer to issuers all of the federal revenues forgone through the tax preference; in addition, the amount of the tax credit can be varied across types of infrastructure projects, thus bringing the federal revenue loss in line with the benefits expected from the investment.

CHAPTER

1

Paying for Infrastructure

Investment in the nation's infrastructure each year amounts to roughly a half-trillion dollars. Both government and the private sector fund that investment, which covers the costs of constructing and renovating such facilities as highways and airports, water and energy utilities, dams, waste-disposal and other environmental sites, schools, and hospitals.

The federal government makes a significant contribution to that investment through its direct expenditures and the subsidies it provides indirectly through the tax system. **Direct expenditures** comprise what the federal government spends on infrastructure (for example, by funding construction of dams and other water resources by the Army Corps of Engineers) and what it provides as **grants and loan subsidies** to states and localities (primarily for transportation projects).

Because infrastructure facilities typically provide a stream of benefits (and revenues for repayment) well into the future, their construction is often financed by borrowing. States and localities issue debt to finance projects undertaken by government and, in some cases, by the private sector (bonds issued by states and localities to finance either government operations or certain private-sector activities are known as **municipal bonds**). The federal government subsidizes the issuance of municipal bonds by offering **tax preferences** that lower the cost of debt incurred for those projects.

The substantial need for additional investment in infrastructure has drawn attention to who should pay for any new investment and how that spending might best be financed. Government accounts for the bulk of investment in infrastructure today, largely reflecting the likelihood that infrastructure would otherwise be undersupplied. Recently, however, the private sector has been viewed as an increasingly viable source of financing; from that perspective, a key issue is whether the government should offer incentives (say, through tax subsidies or other favorable regulation) to encourage such investment. This study, prepared jointly by the Congressional Budget Office and the Joint Committee on Taxation, focuses on the use of tax-preferred debt to finance infrastructure. After an overview of investment in infrastructure in the United States—who pays for it, how much it costs, and the federal government's role in financing it—the study:

- Discusses some of the advantages and disadvantages of tax preferences as a means of providing federal financial support for investment in infrastructure;
- Outlines the rules applicable to the issuance of tax-exempt and tax-credit bonds;
- Reviews historical trends in the issuance of tax-preferred bonds and quantifies the reliance of state and local governments and the private sector on such bonds as a means of financing their capital spending; and
- Considers potential efficiency improvements to current tax policy through appropriately structured tax-credit bonds.

Overview of Investment in the Nation's Infrastructure

In this analysis, investment in infrastructure is defined as capital spending on transportation, utilities (for example, water and power supply), environmental projects, and

Table 1-1.

Capital Spending on Types of Infrastructure Financed by Tax-Preferred Bonds, 2007

(Billions of dollars)

	Public				
	Federal	State and Local	Subtotal	Private	Total
			Transportation		
Highways	34.4	49.9	84.3	0	84.3
Mass Transit[a]	9.0	4.3	13.3	b	13.3
Freight Railroads	0	0	0	9.6	9.6
Passenger Railroads	0.8 [c]	0	0.8	b	0.8
Aviation	6.1	6.4	12.5	1.5	14.0
Water Transportation[d]	1.1	2.2	3.3	1.3	4.6
Subtotal, Transportation	51.4	62.8	114.2	12.4	126.6
			Utilities		
Drinking and Wastewater	2.3	32.5	34.8	2.8 [e]	37.6
Energy[f]	1.4	8.9	10.3	80.8 [e]	91.1
Subtotal, Utilities	3.7	41.4	45.1	83.6	128.7
			Environment		
Water and Other Natural Resources[g]	8.4	5.3	13.7	0	13.7
Pollution Control and Waste Disposal[h]	0.9	2.0	2.9	5.1 [i]	8.0
Subtotal, Environment	9.3	7.3	16.6	5.1	21.7
			Other		
Education[j]	0.4	94.0	94.4	27.8 [i]	122.2
Health Care[k]	3.4	9.8	13.2	115.0 [i]	128.2
Subtotal, Other	3.8	103.8	107.6	142.8	250.4
Total	**68.2**	**215.3**	**283.5**	**243.9**	**527.4**

Continued

schools.[1] In addition, because they account for a significant share of the tax-exempt debt issued, health care facilities and hospitals are treated as infrastructure in this study, although they might not be classified as such for many other types of analyses. Capital spending under this study's definition consists of investment in physical capital, such as structures and facilities, rather than intangible capital, which is formed by spending on educational programs or on research and development.

Public- and Private-Sector Roles

Investment in infrastructure comes from both public and private sources. The public sector supplies almost all investment in transportation infrastructure (with the exception of freight railroads), water and sewer utilities, and the environment (with the exception of pollution control and waste disposal). The public sector also

1. For a broader discussion of infrastructure, see Congressional Budget Office, *Issues and Options in Infrastructure Investment* (May 2008), pp. 2–4. Three types of infrastructure examined in that paper—telecommunications, postal facilities, and prisons—are not included here because available data are not sufficiently detailed to allow analysis of the tax-exempt debt issued for them (in the case of prisons) or because they are almost entirely provided by the federal government (postal facilities) or the private sector (telecommunications) and a tax preference for the debt incurred through that capital spending does not exist.

Table 1-1. **Continued**

Capital Spending on Types of Infrastructure Financed by Tax-Preferred Bonds, 2007

Source: Congressional Budget Office based on data from the following sources unless otherwise specified: for federal spending, Congressional Budget Office analysis of data reported in *Budget of the United States Government, Fiscal Year 2009: Analytical Perspectives,* Table 6.2, www.whitehouse.gov/omb/budget; for state and local spending, U.S. Census Bureau, State and Local Government Finances, 2005–2006 and 2006–2007, www.census.gov/govs/estimate; and for private-sector investment, Bureau of Economic Analysis, National Economic Accounts, Fixed Asset Tables, Table 3.7S, www.bea.gov/national/FA2004/TableView.asp?SelectedTable=55&FirstYear=2002&LastYear=2007&Freq=Year. Private spending for transportation equipment is primarily for vehicles, which can be used anywhere in the system and therefore are not considered part of investment in transportation infrastructure.

Notes: Public-sector spending is for federal fiscal year 2007; state and local spending has been estimated to conform to federal fiscal year 2007 and is net of federal grants and loan subsidies realized in that year. Private-sector spending is for calendar year 2007.

Historical data on public spending by federal, state, and local governments on many of the types of infrastructure shown in this table, along with a detailed discussion of data definitions, sources, and methodology, can be found in Congressional Budget Office, *Trends in Public Spending on Transportation and Water Infrastructure, 1956–2004* (August 2007), and the supporting documentation.

a. Includes subways, bus transportation, and commuter rail.

b. The Bureau of Economic Analysis's Table 3.7S reports $0.8 billion of private investment in structures for "Transit and ground passenger transportation" in 2007; however, that figure includes spending on structures for taxi and limousine services and proprietary and charter bus services, which are not considered as infrastructure in this study.

c. See *Budget of the United States Government, Fiscal Year 2009: Appendix,* pp. 905–906.

d. Includes inland waterways, harbors, and port facilities.

e. Data are from Census Bureau, *2007 Annual Capital Expenditures Survey,* Table 4a, www.census.gov/econ/aces/xls/2007/Full%20Report.htm.

f. Includes the generation, transmission, and distribution of electricity and the distribution of natural gas.

g. Includes dams and flood control; conservation (of wildlife and forestry, for example); and geological, oceanic, and atmospheric surveys.

h. Includes disposal of hazardous and solid waste.

i. Data are from Bureau of Economic Analysis, National Economic Accounts, Fixed Asset Tables, Table 3.7ES. The data include structures and equipment.

j. Includes primary and secondary schools, colleges and universities, vocational schools, and special education.

k. Includes hospitals, clinics, and other health care facilities and equipment.

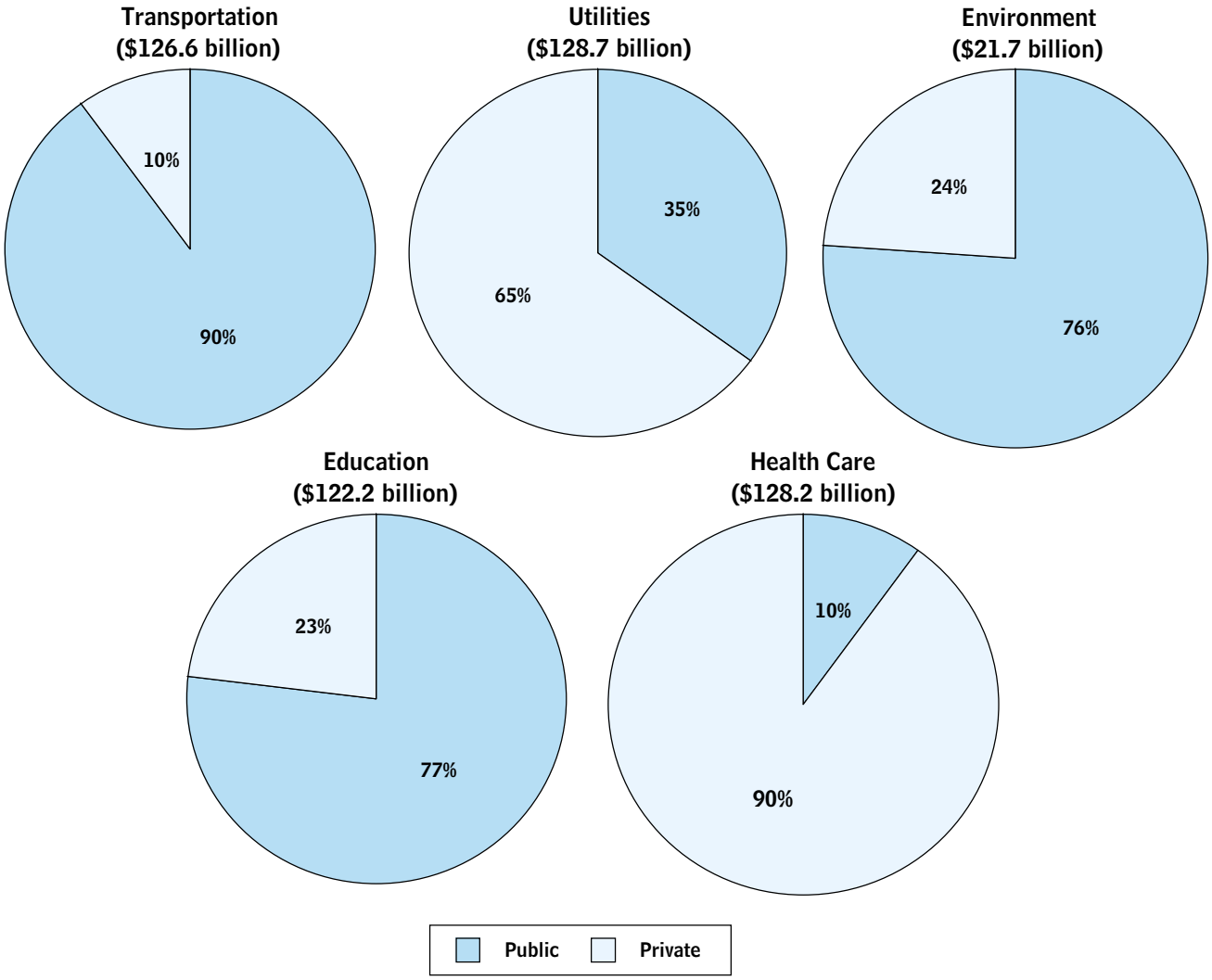
accounts for about three-quarters of capital spending on education—notably for primary and secondary schools. The private sector provides almost all investment in energy utilities and in health care facilities and hospitals, funds most of the investment in pollution control and waste disposal, and is the sole source of capital spending on freight railroads (see Table 1-1 and Figure 1-1).[2]

Considerations of economic efficiency and equity—that is, ensuring that sufficient infrastructure services are provided and that they are widely available—determine the relative amounts of public- and private-sector investment in infrastructure. In particular, the extent to which infrastructure is likely to be undersupplied by private firms largely accounts for the degree of responsibility that government will assume for it. For example, some infrastructure projects, such as roads and water systems, display pronounced economies of scale; that is, they have high up-front (or fixed) costs to build and low incremental (or marginal) costs to operate and maintain, making it economically feasible for only one entity to undertake them (commonly referred to as a "natural monopoly"). Such projects may require public ownership—or at least

2. For other data on investment by the federal government, which may include spending on facilities and equipment in addition to the spending reported in this study, see *Budget of the United States Government, Fiscal Year 2009: Analytical Perspectives,* pp. 57–68, and *Historical Tables*, Tables 9-1 to 9-6.

Figure 1-1.

Total Capital Spending on Infrastructure in 2007, by Type of Infrastructure



Source: Congressional Budget Office based on data and definitions of infrastructure categories in Table 1-1 of this report.

Note: Total capital spending by the public and private sectors in 2007 totaled $527.4 billion. The amounts in parentheses reflect the total capital spending on that type of infrastructure in 2007.

public oversight—in order to maintain the price and supply of those infrastructure services at or near an economically efficient level (basically a level that is no higher than what is required to cover the cost of supplying the services). By contrast, a private firm in such a position would be expected to try to maximize profits by restricting supply and raising prices.

Another likely scenario for public-sector ownership arises when a private entity is not able to charge all users of the infrastructure a fee that is based on the value of the services they receive. Dams and other natural resource projects, for example, can provide various services, such as flood control and recreation, to a diffuse group of consumers. Because it is unclear who should be charged—and how much—for those services, they are referred to as public benefits.[3] Infrastructure whose public benefits are pronounced can be undersupplied by the private sector because it is harder for that sector to charge users enough to cover costs. Government can remedy that by supplying such services and recouping the cost through taxation.

3. Public benefits stand in contrast to private benefits, which can be assessed and charged to the individuals receiving them and for which those individuals are willing to pay. Other terms for public benefits are "social benefits," "collective consumption benefits," and "positive spillover effects."

Infrastructure that is less subject to scale economies or constraints on recouping costs—for instance, hospitals, postsecondary educational institutions, and pollution control and waste-disposal facilities—may be more suitable for private ownership. Even when infrastructure is privately owned, however, governments regularly provide financial support, oversight, or both. In addition, governments may offer tax benefits and make transfer payments to enable lower-income individuals to use that infrastructure. Such measures can provide an indirect source of public funding for investment in infrastructure that is primarily supplied by the private sector.

Capital Spending by Federal, State, and Local Governments

In 2007, the most recent year for which comprehensive data are available, federal spending on infrastructure totaled $68 billion, or about one-eighth of all capital expenditures on infrastructure in the United States. However, for specific types of projects—for example, transportation and environmental facilities—those outlays represent about one-half or more of the total investment.

Although public funding for infrastructure comes from all levels of government, state and local governments effectively have operational control over how the money will be spent. For example, about 80 percent of all federal capital spending on infrastructure, as defined in this study, is in the form of grants and loan subsidies to state and local governments (which must comply with some federally imposed conditions in order to receive those federal dollars).

Capital spending by states and localities out of their own tax receipts is also an important source of funding for infrastructure for which the public sector is the primary source of investment, especially transportation and water projects. States and localities have accounted for around 60 percent of total public capital spending on such projects over the past several decades (that measure does not include the federal government's contribution through tax preferences on municipal bonds).[4] State and local governments have been particularly important sources of investment in water and sewer infrastructure, supplying well over 90 percent of the $35 billion of public capital spending on those facilities in 2007 (see Figure 1-1).[5] They also have provided virtually all public investment in education facilities. Total state and local spending on infrastructure amounted to $215 billion in 2007.

Infrastructure projects undertaken by state and local governments are typically financed with tax-preferred bonds, which are then repaid with general tax receipts or revenues collected from users of the infrastructure. In some cases, private-sector investment in infrastructure may be eligible for tax-preferred financing, and state and local governments have historically controlled the decision as to whether to provide financing for private activities within their jurisdiction.[6]

Tax Preferences for Financing Infrastructure

For fiscal years 2008 to 2012, federal revenues forgone through the tax-exempt bond financing of infrastructure—both for new investments and for the refinancing of existing debt—are estimated to exceed $26 billion annually. Offering a federal tax preference for debt financing is one way of using the tax system to allocate economic resources. Like grants and loan subsidies, which are the alternative means of providing federal financial support to lower levels of government and the private sector, tax preferences may redirect federal revenues to state and local borrowers and, in some cases, reallocate resources from federal taxpayers to private entities. Tax preferences for debt financing therefore have consequences for both budgetary practice and economic efficiency.

Budgetary Implications

Federal tax preferences for municipal debt make the government's allocation of federal dollars less transparent and, because those preferences are outside the annual

4. See Congressional Budget Office, *Issues and Options in Infrastructure Investment*, Figure 1, p. 6.

5. In contrast, the federal government is a more important source than states and localities for investment in environmental infrastructure, such as water and other natural resources (for example, dams).

6. More precisely, because the federal government allows each state to issue up to a specified amount of tax-preferred debt each year for certain investments by the private sector, states and localities generally select the particular projects within their jurisdiction that will receive that financing. See Chapter 2 for further discussion of restrictions on private-sector issuance of tax-preferred bonds.

appropriation process, also limit the control the government exercises over that allocation. Four factors account for those effects: First, because the revenues forgone from tax preferences—which are known as **tax expenditures**—do not count as federal spending in calculating the budget, their widespread use masks the full scope of the government's activities.[7] Second, federal tax preferences potentially redistribute national income to constituents in the states and localities that make especially heavy use of them; in contrast to federal grants and loan subsidies, however, the amounts by which individual states benefit from tax preferences are not reported in the budget.[8] Third, because estimates of tax expenditures from the most common type of tax-preferred debt (that is, tax-exempt bonds issued by states and localities for their own purposes) are made annually at only an aggregate level, it is unclear how much any particular type of municipal project (say, spending on highways versus water utilities) benefits from tax preferences in a given year. As a consequence, the value of federal subsidies delivered through the tax system cannot always be compared with contemporaneous federal outlays in the same spending categories. Finally, under current federal budgetary practice, the federal government's control over the subsidy provided through tax preferences is limited because the amount of tax expenditures is not decided through the annual appropriation process—as is, for example, spending on infrastructure and other discretionary programs. Thus, tax expenditures constitute a form of "entitlement" spending whose amount is largely determined by circumstances outside the federal government's control.[9]

Tax expenditures offer some advantages over direct spending as a means of providing federal financial support. Tax preferences on municipal debt generally leave to states and localities the decision about which projects to finance and how much debt to issue. Issuers of those bonds are responsible for repaying the debt and may therefore be more prudent in how they allocate both their own funds and the federally subsidized portion of that spending than if they had simply received a federal grant. Moreover, although a federal financial subsidy could be delivered to borrowers through alternate means that would allow the subsidy to appear as spending on the budget—say, by making payments directly to those who report having provided financing for projects eligible for federal support—the current method of tax exemption and the claiming of tax credits are established means of delivering the same type of financial support to state and local governments.[10]

Economic Efficiency

Federal tax preferences for interest income from debt issued by states and localities make some investments more attractive than others and, as a result, redistribute some of the savings available for investment in the national economy to the governmental entities and private concerns that benefit from tax-preferred debt. A basic issue for policymakers as they consider establishing or setting the value of tax preferences is whether those subsidies stimulate investment that benefits the economy—and thus increases economic activity—and would otherwise have been underprovided because the states, localities, and private entities undertaking it would not have recouped enough of the total economic payoff.

Federal tax preferences may or may not be an economically efficient means of financing infrastructure projects. For example, offering a tax preference for financing a project undertaken by a particular state or locality could be economically efficient for the federal government if that investment was expected to generate economic benefits for taxpayers both nationwide and locally. (For economic efficiency, those who benefit from a project should bear its expense. Otherwise, too large a project might be undertaken—or too many infrastructure services might be consumed—relative to the resource cost of providing the project or services.) Offering a federal

7. For the most recent estimates of federal tax expenditures from tax preferences on municipal bonds and from other provisions of the tax code, see Joint Committee on Taxation, *Estimates of Federal Tax Expenditures for Fiscal Years 2008–2012,* JCS-2-08 (October 31, 2008), pp. 48–72, www.house.gov/jct/s-2-08.pdf; and *Budget of the United States Government, Fiscal Year 2010: Analytical Perspectives,* Table 19-2, pp. 303–306. Although they apply slightly different methodologies, the two sets of estimates are usually very close in value.

8. For the most recent data on the distribution of federal grants and loan subsidies across states, see *Budget of the United States Government, Fiscal Year 2009: Analytical Perspectives,* Tables 8-2 to 8-36, pp. 126–156.

9. However, the federal government does place limits on the annual amount of some tax-exempt bonds that states and localities may issue to finance investment by the private sector.

10. A recent modification to the tax-preferred bond regime is the direct-pay feature of certain new bonds authorized by the American Recovery and Reinvestment Act of 2009 (Public Law 111-5), under which the government makes direct payments to bond issuers (see Chapter 2).

subsidy for the financing of infrastructure that provided only local benefits would thus not be an economically efficient use of federal revenues (it could, however, be rationalized on equity grounds, in that it could help ensure that all citizens had access to that type of facility).

Concerns about economic efficiency are particularly acute for the federal tax preferences that help finance private-sector investment in infrastructure, because those preferences risk transferring resources from taxpayers to private investors without obtaining a commensurate payoff in terms of the value of the infrastructure services that would not have been provided without that subsidy. For example, the fact that those infrastructure facilities are in private hands indicates that owners can capture—through user fees and other charges—a sizable portion of the value of the services they provide. Hence, public benefits from those investments may be small relative to those of infrastructure owned and operated by government, and determining the appropriate degree of subsidy—or whether any is warranted—may be difficult. If the private-sector investment would have taken place even without a subsidy, then the tax preference simply shifts resources from taxpayers to private investors. Because tax preferences for private-sector borrowers lower the cost of financing and hence the return needed to make an investment attractive, they can also reallocate capital from profitable projects to projects that otherwise would not have been undertaken, thereby potentially reducing economic growth.[11]

11. An estimate of the amount of output forgone by making interest income tax-exempt—and the corresponding economic or social return beyond that obtained by private investors in order to make the tax preference generate a net public benefit—can be obtained by considering how much higher the gross return to the capital invested in a project would have to be in order to warrant that investment in the absence of the tax exemption. For an example of such calculations, see Dennis Zimmerman, *The Private Use of Tax-Exempt Bonds: Controlling Public Subsidy of Private Activity* (Washington, D.C.: Urban Institute Press, 1991), pp. 124–128.

CHAPTER

2

Tax-Preferred Bonds Under Current Law

Like other activities carried out and paid for by state and local governments, infrastructure projects are eligible for financing with the proceeds of tax-preferred bonds. In some cases, federal tax preferences may also apply to the debt those governments issue to finance infrastructure (and other) activities undertaken primarily by the private sector.

The amount of tax-preferred debt issued to finance new infrastructure projects undertaken by the public and private sectors totaled almost $1.7 trillion from 1991 to 2007. About three-quarters of those bond proceeds, or roughly $1.3 trillion, was for capital spending on infrastructure by states and localities, and the remainder was used to fund private capital investment for projects that serve a public purpose, such as schools and hospitals. That $1.3 trillion amounted to over one-half of the $2.3 trillion in capital spending on infrastructure by state and local governments (that is, net of federal grants and loan subsidies). Since 1991, tax-exempt bonds have become a more important source of financing, particularly for public investment in transportation facilities, such as highways, and private investment in education.

That history and the projected demand for investment in the nation's infrastructure argue strongly for making federal subsidies for that capital spending as effective as possible. Understanding the advantages and disadvantages of the various types of tax preferences is therefore an important consideration for federal infrastructure policy.

The Internal Revenue Code provides for three forms of tax-preferred state and local bonds:

- **Tax-exempt bonds** pay interest to the bondholder that is not subject to federal income tax.
- **Tax-credit bonds,** by contrast, generally provide a credit against the bondholder's overall federal income tax liability.
- **Direct-pay tax-credit bonds,** in effect, require the federal government to make cash payments to the *issuer* of the bond in an amount equal to a portion of each of the interest payments the issuer makes to the bondholder.

Those tax preferences, and the spending measures by which the federal government supports investment in infrastructure, are shown in Figure 2-1.

Tax-Exempt Bonds

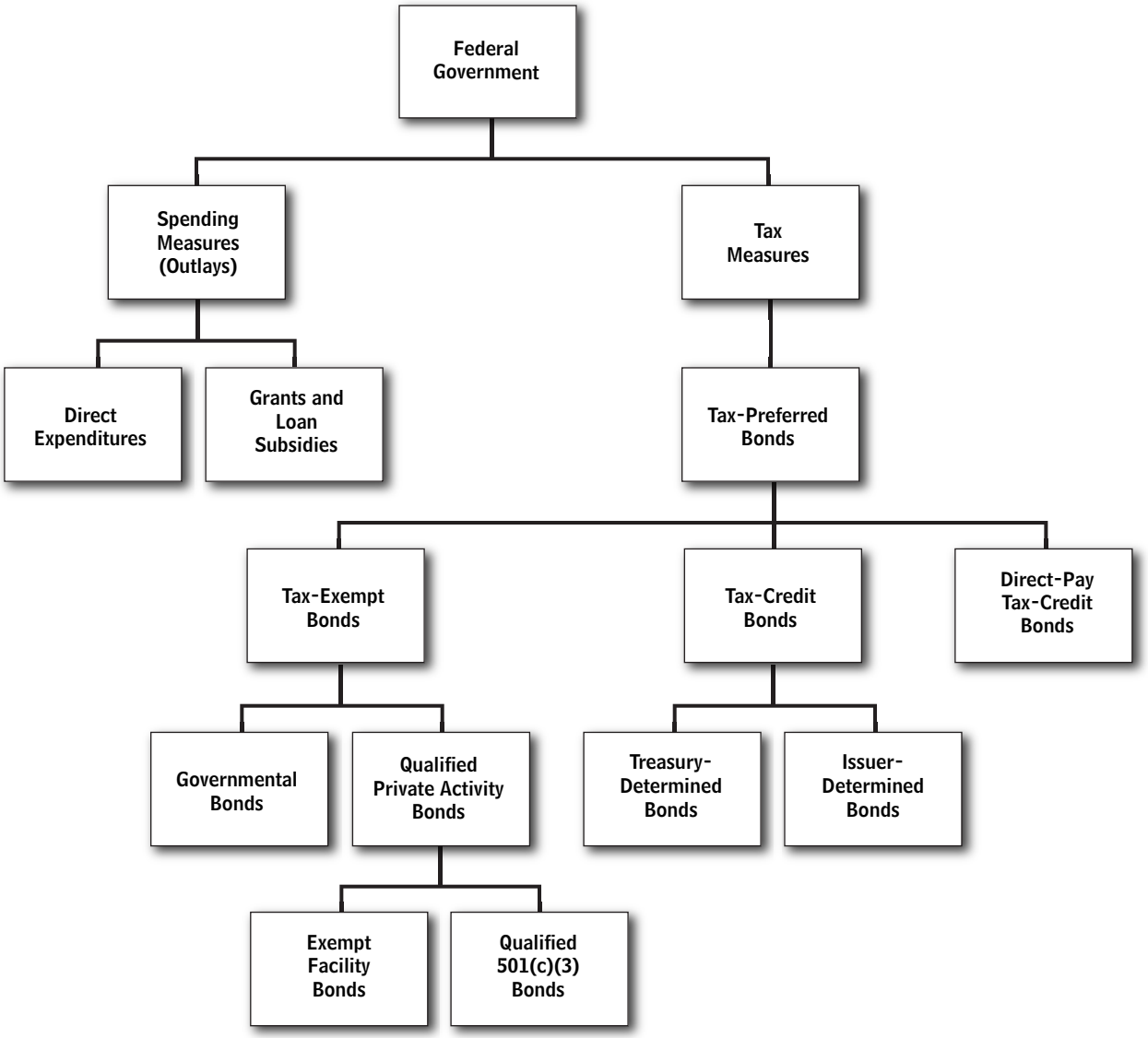
Tax-exempt bonds are the most well established type of tax-preferred debt (tax exemption dates to the beginning of the federal income tax in 1913) and are issued to finance either the general functions of state and local governments or certain projects undertaken by the private sector. Tax-exempt bonds reduce the issuer's borrowing costs because they normally can be sold at a lower rate of interest than can taxable debt of comparable risk and maturity.

Tax-exempt bonds must be issued by or on behalf of "qualified governmental units," which include a state or local government or any political subdivision thereof.[1] If bonds are issued directly by a state, city, or county, compliance with that requirement is easily determined;

1. Indian tribal governments also can issue tax-exempt bonds to finance "essential governmental functions," and the American Recovery and Reinvestment Act of 2009 contains a provision that permits them to issue **tribal economic development bonds** for any purpose for which a state or local government can issue tax-exempt bonds. The cumulative amount of tribal economic development bonds issued nationwide may not exceed $2 billion.

Figure 2-1.

How the Federal Government Finances Infrastructure



Sources: Congressional Budget Office and Joint Committee on Taxation.

however, many bonds are issued by other entities that are not clearly political subdivisions of a state. In general, an entity is a political subdivision (and thereby a qualified governmental unit) only if it has more than an insubstantial amount of one or more of the following powers: taxation, eminent domain (that is, the ability to seize private property without the owner's consent—but with compensation), and law enforcement.[2]

Tax-exempt bonds may be classified as either governmental bonds or private activity bonds. **Governmental bonds** are primarily used to finance governmental functions or are repaid with governmental funds. **Private activity bonds** provide financing to nongovernmental entities (for example, private businesses or individuals); a qualified governmental unit serves as a conduit between those entities and the purchaser of the bond. The tax exemption for interest on state and local bonds does not apply to private activity bonds unless those bonds are issued for certain permitted purposes and meet other requirements under the Internal Revenue Code. Bonds that meet such criteria

are known as **qualified private activity bonds** and may be issued to finance a wide range of infrastructure projects. [3]

Governmental Bonds

Whether a bond is a governmental bond is determined by how its proceeds are used and how they are paid and secured, not by the type of facility being financed. Thus, a qualified governmental unit may issue governmental bonds to finance general government operations and services, including physical infrastructure such as transportation, utilities, environmental projects, schools, and hospitals.[4] However, although the types of projects eligible for governmental bond financing are not circumscribed, current law imposes restrictions on the parties that may benefit from such financing. For example, current law limits the amount of proceeds from governmental bonds that nongovernmental entities can use; if that amount exceeds the limit, those bonds may be treated as private activity bonds rather than as governmental bonds. Only certain types of private activity bonds—known as qualified private activity bonds and discussed in detail below—are tax-exempt.

2. See Commissioner v. Shamberg's Estate, 144 F.2d 998 (2d Cir. 1944), cert. denied, 323 U.S. 792 (1945). A qualified governmental unit may also establish an entity with limited sovereign powers (for example, an economic development authority) to issue bonds on its behalf. Such "on behalf of" corporations developed historically because some state laws and constitutions defined the purposes for which the state could issue bonds more narrowly than federal tax law did. For example, a specially constituted nonprofit corporation acting on behalf of a qualified governmental unit might own, operate, and issue tax-exempt debt to finance a local airport. The general requirements that those nonprofit corporations must satisfy are specified in two administrative determinations of the Internal Revenue Service (see Rev. Rul. 63-20, 1963-1 C.B. 24; Rev. Proc. 82-26, 1982-1 C.B. 476).

3. In contrast to governmental bonds, qualified private activity bonds do not benefit from a full tax exemption because the interest income from them (other than qualified 501(c)(3) bonds issued after August 7, 1986), is a preference item for purposes of calculating the alternative minimum tax (AMT). However, as a result of a change made by the American Recovery and Reinvestment Act of 2009, interest on private activity bonds (other than certain refunding bonds) issued after December 31, 2008, and before January 1, 2011, is not treated as an AMT preference item; see sec. 57(a)(5)(C)(vi). All section references are to the Internal Revenue Code of 1986 (the Code) unless otherwise indicated.

4. In addition to financing infrastructure projects that fall under the definition of this analysis, states and localities also issue tax-exempt debt for public housing and other, more general purposes.

Private Activity Bonds

Generally, private activity bonds—only some of which are tax-exempt—are defined by the Code as any bond that satisfies either of two criteria: (1) the private *business use* test and the private *security or payment* test (jointly referred to as the private business test); or (2) the private loan financing test.[5]

Under the **private business test,** a bond is a private activity bond if it is part of an issue in which:

- More than 10 percent of the proceeds of the issue (including use of the bond-financed property) is to be used in the trade or business of any person other than a governmental unit ("private *business use* test"), as specified in sec. 141(b)(1); and
- More than 10 percent of the payment of principal or interest on the issue is, directly or indirectly, secured by (a) property used or to be used for a private business use (or payments in respect of such property) or (b) to be derived from payments in respect of property, or borrowed money, used or to be used for a private business use ("private *security or payment* test"), as specified in sec. 141(b)(2).

The two prongs of the private business test are conjunctive; that is, a bond is a private activity bond only if both conditions are met. Thus, the bonds financing a facility that is 100 percent privately used are not private activity bonds if they are not secured by or repaid with private payments. For example, a city may use governmental bonds to finance the relocation of privately owned utility lines if the bonds will be paid from tax assessments rather than from payments by the utility or its ratepayers.[6]

5. Sec. 141(a).

6. Local governments may structure the financing of some projects—notably sports stadiums—so that the bonds financing them fail the private business test. Governments can do that by making the private business or sports team using the stadium responsible for only a very small share (less than 10 percent) of the repayment of the loan *or* by supporting the debt service on the bonds with generally applicable taxes. The Joint Committee on Taxation has identified elimination of the private payment prong of the private business test as a way of preventing that practice. See Joint Committee on Taxation, *Options to Improve Tax Compliance and Reform Tax Expenditures,* JCS-02-05 (January 27, 2005), pp. 353–358.

A bond issue also will be treated as a private activity bond if the issue satisfies the **private loan financing test,** that is, if proceeds exceeding the lesser of $5 million or 5 percent of the issue are used directly or indirectly to finance loans to one or more nongovernmental persons (sec. 141(c)).[7]

Qualified Private Activity Bonds Issued to Finance Infrastructure Investment. The interest income on some private activity bonds may be eligible for tax-exempt status, thus allowing tax-exempt financing to be provided for certain private activities through what are known as **qualified private activity bonds**.[8] A qualified governmental unit generally acts as the "conduit issuer" of the debt, and the "conduit borrower" is the nongovernmental entity that receives the benefit of tax-exempt financing for those bonds. Two types of qualified private activity bonds are used to finance infrastructure: exempt facility bonds and qualified 501(c)(3) bonds.

To qualify as an **exempt facility bond,** at least 95 percent of the bond's net proceeds must be used to finance an eligible facility (sec. 142). Infrastructure facilities eligible for that financing include transportation (airports, docks and wharves, local mass commuting, high-speed intercity rail facilities, and qualified highway or surface freight transfer facilities); privately owned or operated public works facilities (water, sewage, solid and hazardous waste disposal, and local district heating or cooling facilities); certain private facilities that provide electricity or gas locally; and qualified public educational facilities.

Qualified 501(c)(3) bonds may be used to finance the activities of infrastructure projects by organizations described in sec. 501(c)(3) of the Code and exempt from federal income tax under sec. 501(c).[9] Those organizations are permitted to finance their exempt activities, such as charitable endeavors or efforts to promote social welfare, on a tax-exempt basis. Infrastructure projects undertaken by sec. 501(c)(3) organizations that are eligible for such financing include schools and hospitals.

Investment that falls outside this study's definition of infrastructure may also be financed by qualified private activity bonds. Examples include qualified mortgages, residential rental properties, student loans, and a few other activities.

Restrictions on Qualified Private Activity Bonds. Generally, qualified private activity bonds are subject to restrictions that do not apply to governmental bonds. For example, many types of qualified private activity bonds are subject to an annual cap on the aggregate volume that can be issued. One such limit—referred to as the **unified volume cap** because it applies to the combined issuance of the different types of qualified private activity bonds subject to it—is imposed at the state level.[10] For calendar year 2009, those annual volume limits, which are indexed for inflation, equal the greater of $90 per state resident or $273.27 million.[11]

Some qualified private activity bonds are not subject to the unified volume cap. Such bonds include those that finance infrastructure projects such as airports, docks, and wharves; nonprofit activities undertaken by qualified 501(c)(3) organizations such as education and health care facilities; and certain facilities if they are government owned (for example, high-speed intercity rail and solid waste disposal). In addition, bonds that are subject to separate local, state, or national volume caps are not subject to the unified volume cap. Examples of such bonds issued to finance infrastructure investment include qualified public education facility bonds and qualified highway or surface freight transfer facility bonds.

If the aggregate amount of qualified private activity bonds issued in a particular state during a calendar year is less than the volume cap, the authority may elect to allow all (or any portion) of the difference to be carried forward

7. Private loans include both business and other (for example, personal) uses and payments by private persons; however, in the case of business uses and payments, all private loans also constitute private business uses and payments subject to the private business test.

8. For a discussion of the law and economics of tax-exempt private activity bonds, see Dennis Zimmerman, *The Private Use of Tax-Exempt Bonds: Controlling Public Subsidy of Private Activity* (Washington, D.C.: Urban Institute Press, 1991).

9. Rules for the issuance of tax-exempt bonds by 501(c)(3) organizations are found in sec. 145 of the Code.

10. A state-level volume cap is allocated statutorily among "issuing authorities," which can be state agencies or other qualified governmental units. The annual issuance level for local governments, for example, is based on their population, although the state governor or legislature can reallocate issuance among them. For further details, see sec. 146.

11. See sec. 146(d)(1); Rev. Proc. 2008-66, 2008-45 I.R.B.

to subsequent years for one or more of four purposes specified in the Code:

- Issuing exempt facility bonds;
- Issuing qualified mortgage bonds or mortgage credit certificates;
- Issuing qualified student loan bonds; and
- Issuing qualified redevelopment bonds.

Carryforwards of an unused volume cap are valid for three years.

Qualified private activity bonds also are subject to limitations on the costs of issuing the bond, its maturity, and federal tax liability. The costs of issuing the bond (for example, legal and underwriting fees) that may be paid from the proceeds of qualified private activity bonds are generally limited to 2 percent per bond. Most qualified private activity bonds are subject to a term-to-maturity rule that limits the period of time such bonds may remain outstanding. Generally, that rule provides that the average maturity of a qualified private activity bond cannot exceed 120 percent of the economic life of the property being financed.[12] In addition, the interest income from qualified private activity bonds (other than qualified 501(c)(3) bonds issued after August 7, 1986) is generally subject to the alternative minimum tax (sec. 57(a)(5)), although the AMT does not apply to private activity bonds issued during 2009 and 2010 (see sec. 57(a)(5)(C)(vi).[13]

Tax-Credit Bonds

In contrast to tax-exempt bonds, tax-credit bonds are much more recent in origin (however, the Congress's interest in them spans a number of decades—see Box 2-1). The first tax-credit bonds were added to the Internal Revenue Code in 1997, effective for 1998. Although the outstanding amount of tax-credit bonds currently is minuscule in comparison with that of tax-exempt bonds, tax-credit bonds have two features that would in theory enable federal subsidies for borrowing to be delivered more efficiently:

- They can be more cost-effective, and
- The amount of the tax credit can be adjusted.

Tax-credit bonds can be more cost-effective than tax-exempt bonds because every dollar of federal revenue forgone through the tax credit is transferred to borrowers, whereas only a portion of the federal revenue forgone through a tax exemption lowers financing costs for bond issuers. Second, although tax-credit bonds have tended to provide a subsidy that is close to 100 percent of interest costs, the amount of the tax credit can be adjusted, depending on the purpose for which the bonds are issued. By adjusting the credit amount, the Congress effectively can exempt more or less of each dollar of interest income on a bond and tailor the federal subsidy to the public benefit the Congress expects to derive from the project being subsidized.

Tax-credit bonds subsidize the issuer's cost of borrowing by providing a tax credit in lieu of (or in addition to) the payment of interest to the holder of the bond or, in some cases, directly to the issuer. Tax-credit bonds can be divided into two categories:

- **Treasury-determined** (for which the credit rate is set by the Secretary of the Treasury), and
- **Issuer-determined** (for which the credit is calculated on the basis of an interest rate set by the issuer).

The first Treasury-determined tax-credit bonds, known as Qualified Zone Academy Bonds, were added to the Code in 1997, and seven others have since been added. The first issuer-determined tax-credit bonds, known as Build America Bonds, were added to the Code in 2009.

Treasury-Determined Bonds

The eight types of Treasury-determined tax-credit bonds and the sections of the Code that authorize them (given in parentheses) are as follows: Qualified Zone

12. For more discussion of these and other limitations on the issuance of qualified private activity bonds, see Joint Committee on Taxation, *Present Law and Issues Related to Infrastructure Finance,* JCX-83-08 (October 24, 2008), www.house.gov/jct/x-83-08.pdf, and *Present Law and Background Relating to State and Local Government Bonds,* JCX-14-06 (March 16, 2006), www.jct.gov/publications.html?func=startdown&id=1506.

13. Under special rules, the refunding of bonds issued before August 8, 1986, and the refunding of certain bonds issued before September 1, 1986, are not subject to the alternative minimum tax.

Box 2-1.

History of Congressional Proposals for Alternatives to Tax Exemption for Municipal Bonds

For more than 40 years, Members of Congress have been proposing various alternatives to tax exemption as a means of subsidizing state and local borrowing. Two such alternatives are payments the federal government would make directly to the issuers of municipal bonds and a tax credit equal to a percentage of the taxable interest paid on bonds.

Direct Payment

Several proposals for a direct subsidy date back to 1968. In that year, Senator William Proxmire proposed extending a federal guarantee to the debt of state and local bond issuers who elected to receive the guarantee; interest on the bonds covered by the guarantee would have been taxable, and the federal government would have paid issuers amounts equal to one-third of each interest payment on the bonds.[1]

In 1969, Congressmen Wilbur Mills and John Byrnes introduced a similar bill that would have allowed state and local entities to issue taxable bonds and receive payments from the federal government equal to a percentage (fixed at the time of issuance at between 25 percent and 40 percent) of the interest paid on the bonds. The Secretary of the Treasury would have adjusted that percentage on a quarterly basis to reflect the amount determined to be "necessary for the United States to pay in order to encourage the States and political subdivisions thereof to make [the election]."[2] The provision was included in H.R. 13270, the Tax Reform Act of 1969, as passed by the House of Representatives, but was not part of the Senate bill or the Conference Agreement.[3]

In 1973, Senator Edmund S. Muskie proposed making direct payments to state and local entities that issued taxable bonds. Those payments would have been equal to 50 percent of the interest, the highest level in any proposed bill.[4]

A novel proposal for a direct subsidy by Senator Pete V. Domenici in 1983 would have tied the amount of the federal subsidy to the spread between the yields on state and local bonds and Treasury bonds. Senator Domenici's bill would have permitted municipalities to issue taxable bonds and then would have required the federal government to make direct payments to the issuers equal to a percentage of the interest paid on the bonds. That percentage was determined by taking 100 percent and then reducing it by a percentage that was calculated by taking the interest yield of Moody's AAA-rated tax-exempt bonds and dividing that yield by the interest yield for the most recent Treasury bond of like maturity.[5] As the yield on Treasury bonds relative to tax-exempt municipal bonds rose, the subsidy also would have increased. Although the proposal in some sense tied the subsidy to the value the market placed on the tax exemption, it ignored the other factors—such as an increase in the perceived credit risk of debt issued by state and local governments relative to obligations of the federal government—that might drive down the yield on Treasury bonds relative to the yields on municipal bonds.

Tax Credit

The first bill providing for a credit rather than a direct payment or exemption was introduced in 1974 by Senator William D. Hathaway. That bill would have given the holders of the tax-credit bonds a credit equal to 30 percent of the taxable interest paid on the bonds.[6] Five years later, Senator John C. Danforth proposed an even more generous credit—67 percent—for any person who chose to include the interest payable on formerly exempt municipal bonds.[7]

1. S. 3170, 90th Cong. (1968).
2. H.R. 13270, 91st Cong., sec. 602(b) (1969).
3. Id.
4. S. 1439, 93d Cong., sec. 502(b) (1973). In 1978, the Carter Administration proposed a taxable bond election for state and local issuers that would have been coupled with a subsidy equal to 30 percent of the interest payments. See *Budget of the United States Government, Fiscal Year 1978: Budget Receipts* (H. Doc. 95-28, Vol. IX), at 62.
5. S. 533, 98th Cong., sec. 103(a)(2) (1983).
6. S. 4124, 93d Cong., sec. 42(a) (1974).
7. S. 1021, 96th Cong., sec. 44D(a) (1979).

Academy Bonds (sec. 54E), Gulf Tax-Credit Bonds (sec. 1400N(1)(4)), Midwest Tax-Credit Bonds,[14] Qualified Energy Conservation Bonds (sec. 54D), Clean Renewable Energy Bonds (sec. 54),[15] New Clean Renewable Energy Bonds (sec. 54C), Qualified Forestry Conservation Bonds (sec. 54B), and Qualified School Construction Bonds (sec. 54F). Each type of Treasury-determined tax-credit bond is subject to certain special rules and volume limitations, the discussion of which goes beyond the scope of this paper.[16]

In general, a taxpayer holding a Treasury-determined tax-credit bond at specific times during the year (typically referred to as credit allowance dates) is entitled to a tax credit. The amount of the credit is determined by multiplying the bond's credit rate by the face amount of the holder's bond. The credit rate for the bonds, as determined by the Secretary of the Treasury, is the rate (or a percentage of the rate) that permits the qualified tax-credit bond to be issued without a discount and without interest cost to the qualified issuer (the "clearing rate").[17] The credit for Treasury-determined tax-credit bonds is 100 percent of the clearing rate, with two exceptions: For Qualified Energy Conservation Bonds (QECs) and New Clean Renewable Energy Bonds (New CREBs), the credit rate is 70 percent of the clearing rate. The credit accrues quarterly and is included in the bondholder's gross income as if it were an interest payment on the bond; it can be claimed against liability under the regular income tax and the alternative minimum tax. Unused credits may be carried forward to succeeding tax years. In addition, for certain types of tax-credit bonds (known as **qualified tax-credit bonds**), credits may be separated from the ownership of the underlying bond similar to the way in which interest coupons can be stripped from interest-bearing bonds in order to separate payment of principal from payment of interest.[18]

Issuer-Determined Bonds

The American Recovery and Reinvestment Act of 2009 created Build America Bonds, a new type of tax-credit bond that supplements interest paid by the issuer with a fixed-rate tax credit to the holder of the bond. The bondholder must report both the interest payment and the credit as taxable income. Build America Bonds may be issued only in 2009 and 2010. An issuer of those bonds elects to have an otherwise tax-exempt bond treated as a **taxable governmental bond,** that is, as any obligation (other than a private activity bond) if the interest on it would otherwise be excludable from gross income under sec. 103 and if the issuer makes an irrevocable election to have the provision apply.

Unlike the credit for Treasury-determined tax-credit bonds, the credit rate on Build America Bonds is set by law at 35 percent of the interest, or coupon, payment the bondholder receives from the issuer. (Presumably, the interest rate is a market rate that varies with the issuer's creditworthiness, the bond's maturity date, and other factors that typically determine a borrower's cost of funds.) The holder of a Build America Bond generally receives a tax credit of 35 percent of the interest paid on the bond on each of the due dates during the calendar year (original issue discount is not treated as a payment of interest for purposes of determining the credit).[19] The sum of the accrued credits is allowed against the regular income tax

14. Midwest Tax-Credit Bonds were authorized by the Heartland Disaster Relief Act of 2008, Div. C., Title VII, Subtitle A. of Pub. Law 110-343, 122 Stat. 3912. They may be issued in 2009 by any state (or any agency or other entity acting on behalf of a state) in which a Midwestern disaster area is located and may be issued to make payments of principal or interest on outstanding state debt.

15. Authority to issue Clean Renewable Energy Bonds under sec. 54 sunsets on December 31, 2009.

16. For a more detailed discussion of the law relating to certain tax-credit bonds, see Joint Committee on Taxation, *Present Law and Issues Related to Infrastructure Finance,* pp. 18–22. That discussion predates the American Recovery and Reinvestment Act of 2009, however; for an explanation of the provisions of that act, see House of Representatives, *Making Supplemental Appropriations for Job Preservation and Creation, Infrastructure Investment, Energy Efficiency and Science, Assistance to the Unemployed, and State and Local Fiscal Stabilization, for the Fiscal Year Ending September 30, 2009, and for Other Purposes,* H.R. Conf. Rep. No. 111-16 to accompany H.R. 1 (February 12, 2009).

17. See, generally, IRS Notice 2009-15, 2009-6 I.R.B. "The Treasury Department will determine and announce credit rates for tax-credit bonds daily for purposes of §§ 54, 54A, 1400N(l), and other similar provisions, based on its estimate of the yields on outstanding bonds from market sectors selected by the Treasury Department in its discretion that have an investment grade rating of between A and BBB for bonds of a similar maturity for the business day immediately preceding the sale date of the tax-credit bonds."

18. Qualified tax-credit bonds are Qualified Zone Academy Bonds, New CREBs, QECs, Qualified Forestry Conservation Bonds, and Qualified School Construction Bonds. See sec. 54A(d)(1).

19. Original issue discount is the excess of an obligation's stated redemption price at maturity over the obligation's issue price (sec. 1273(a)).

and the alternative minimum tax. Any unused portion of the credit may be carried forward to succeeding taxable years. The credit and the interest paid by the issuer are included in gross income; the credit may be stripped under rules similar to those provided in sec. 54A regarding qualified tax-credit bonds.

Build America Bonds should sell at the same price as comparable taxable bonds; because of the 35 percent tax credit, however, the interest paid by the issuer of the bond will be considerably smaller—approximately 74.1 percent of the amount due on a taxable bond. Consider, for example, two bonds—a taxable bond and a Build America Bond—that have a face value of $1,000 (the amount due at maturity). The taxable bond sells at par (at its face value) and has a $60 coupon (that is, it pays 6 percent in interest). The Build America Bond, which has a coupon of $44.40—that is, it pays 4.4 percent in interest (74.1 percent of 6 percent)—should also sell at par. The taxpayer who acquires the Build America Bond will receive an interest payment of $44.40 and may claim a credit of $15.60 (35 percent of $44.40). The credit and the interest payment are both included in the taxpayer's income. Thus, his or her taxable income from the bond would be $60 ($44.40 plus $15.60)—the same amount that would accrue to the holder of a comparable taxable bond.

Direct-Pay Tax-Credit Bonds

As part of the authorization of Build America Bonds, the American Recovery and Reinvestment Act created several issuer-determined, direct-pay tax-credit bonds. Such bonds—known as qualified Build America Bonds—must be sold in 2009 or 2010; in addition, 100 percent of the proceeds from them (net of a "reasonable" amount of proceeds set aside as reserves for future bond payments) must be used for capital expenditures. However, in lieu of a tax credit going to the bondholder, a credit equal to 35 percent of each interest payment (excluding any original issue discount) can be claimed by the issuer. The issuer does not pay tax on that credit and therefore pays less interest than for other types of Build America Bonds. For example, the issuer of a direct-pay Build America Bond in the scenario above (in which the taxable bond has a face value of $1,000 and a coupon of 6 percent) receives a payment of $21 for each $60 coupon paid to bondholders (35 percent of $60). Because the issuer does not pay tax on the payment, its net interest cost is $39, compared with $44.40 if the bondholder claimed the credit instead.[20]

20. The American Recovery and Reinvestment Act also created another type of qualified Build America Bond—Recovery Zone Economic Development Bonds, which have a credit rate of 45 percent rather than 35 percent (sec. 1400U-2). Again, because the issuer does not pay tax, the issuer's net interest cost for one of those bonds with a face value of $1,000 and a coupon of $60 would be $33 (compared with $39 in the case of other qualified Build America Bonds and $44.40 in the case of Build America Bonds that are not qualified bonds).

CHAPTER

3

Issuance of Tax-Preferred Bonds and Investment in Infrastructure, 1991 to 2007

Tax-preferred bonds can be issued to finance capital spending on infrastructure by either state and local governments or the private sector. Until recently, such debt has almost exclusively taken the form of tax-exempt bonds, with tax-credit bonds playing only a very small role. The importance of tax-exempt bonds as a means of financing investment has not changed much for infrastructure as a whole; it has risen slightly for capital spending by state and local governments and has fallen for investment by the private sector. Tax-exempt bonds have, however, played an increasing role in financing transportation projects undertaken by state and local governments and private investment in education.

Trends in the Issuance of Tax-Preferred Bonds

The amount of tax-preferred debt issued to finance new infrastructure projects undertaken by state and local governments and the private sector totaled almost $1.7 trillion from 1991 to 2007. That amount does not reflect issuance of tax-credit bonds (which are a relatively insignificant source of financing) and does not include proceeds of tax-exempt bonds whose issuance is not reported in an infrastructure category but could nonetheless have financed infrastructure projects.

Trends in the amount of tax-preferred debt issued to finance infrastructure investment are based on data published by the Internal Revenue Service (IRS). Those data are sufficiently detailed to allow the amount of tax-exempt debt issued for projects within infrastructure categories to be tracked on an annual basis. In contrast, relatively little information is available on the issuance of tax-credit bonds, and this chapter considers them only briefly. Unless otherwise indicated, all references to tax-exempt bonds refer to bonds issued to finance new infrastructure projects; such bonds are known as **new-money** issues. In contrast, tax-exempt bonds that refinance debt incurred in the past are known as **refunding issues.**[1]

Inferences about the amount of tax-exempt bond proceeds going to infrastructure are subject to several qualifications. In particular, the use of tax-exempt bonds to finance investment in infrastructure is understated to the extent that bond proceeds that are not reported in any of the infrastructure categories identified in this study are in fact spent on infrastructure. For example, a single municipal bond may be issued to finance diverse projects, because bundling that financing into one bond is cheaper than issuing separate bonds for each activity. As a result, 30 percent of the proceeds from governmental bonds issued during the 1991–2007 period—including bonds issued to finance infrastructure as well as other activities—were reported by their issuers as being for "other purposes," which means either that the specific purpose(s) listed on the reporting form did not apply or that the issuer did not allocate the bonds' proceeds among

1. Statistics on tax-exempt bonds are available at www.irs.gov/taxexemptbond/index.html. The data on bond issuance used in this study reflect debt of long-term maturity (13 months or more); that type of debt is generally used to finance construction or other capital improvement projects and is reported to the IRS by tax-exempt bond issuers on Form 8038-G (Information Return for Tax-Exempt Governmental Obligations) and Form 8038 (Information Return for Tax-Exempt Private Activity Bond Issues). Information on tax-credit bonds is reported to the IRS by individuals and businesses claiming those tax credits on Form 8912 (Credit to Holders of Tax Credit Bonds) and, for holders of Qualified Zone Academy Bonds claiming that credit before the 2008 tax year, on Form 8860 (Qualified Zone Academy Bond Credit).

separate purposes. Such bonds could have financed new investment in infrastructure along with other activities; that possibility is particularly relevant to education because states often issue bonds whose proceeds are used to finance construction of education facilities and for other purposes. In contrast, the opposite scenario—in which the issuance of tax-exempt education bonds financed both capital spending on infrastructure and activities unrelated to infrastructure investment (such as student loan programs)—appears less significant (see Box 3-1).

The system that the IRS uses to classify the purpose for which qualified private activity bonds are issued is more precise than the one it uses for governmental obligations. As a result, the issuance of such bonds can be classified by type of infrastructure project more completely than that of governmental bonds, and the amount of proceeds classified in the "other purposes" category is never more than a few tenths of a percent in any year from 1991 through 2007.[2]

One exception, however, is a type of qualified private activity bond—a nonhospital 501(c)(3) bond—that can be used to finance a variety of nonprofit activities related to infrastructure. The share of those bonds in the overall issuance of new-money qualified private activity bonds has increased sharply since the early 1990s, rising from a level of 20 percent during the early to mid-1990s to a high of almost 40 percent in the 2000–2003 period before settling back to around 30 percent by 2007. This study allocates the annual proceeds of those bonds to specific infrastructure categories (namely "education" and "health care") on the basis of the results of an unpublished IRS analysis. As with governmental bonds, however, a large share (over 30 percent) of the proceeds of nonhospital 501(c)(3) bonds cannot be attributed to any type of project, and so the importance of that source of financing to infrastructure is probably also understated.

2. The issuance of some qualified private activity bonds reported in separate categories on IRS Form 8038 has been combined in this study to facilitate comparison with the corresponding data reported for governmental bonds; details are provided in Box 3-2 on page 23. Information on the purposes of such bonds is probably more specific because qualified private activity bonds are subject to more restrictions than are governmental bonds (such as volume caps), and those restrictions are often dependent on the particular type of project being financed.

Finally, not all of the proceeds from tax-exempt bonds are actually spent to finance the infrastructure projects for which they are issued. Some of the proceeds from a bond sale may also be used to cover the costs associated with the debt-financing process itself (for example, expenses to issue bonds, to obtain bond insurance and other forms of credit enhancement, and to create a reserve fund in case projected sources of repayment funds fall short). As a result, the data on tax-exempt bonds used in this analysis generally include a very small amount of proceeds—about 2 percent—that is not invested in infrastructure.[3]

Tax-Exempt Bonds

Because of volume caps and other restrictions on qualified private activity bonds, governmental bonds—whose issuance is not subject to such constraints—provide the bulk of tax-exempt financing for new investments in infrastructure. Governmental bonds accounted for about three-quarters ($1.3 trillion) of the $1.7 trillion in tax-exempt debt issued to finance new investment in infrastructure from 1991 to 2007, compared with $372 billion for qualified private activity bonds.[4]

The amount of tax-exempt debt issued has increased significantly—and, for governmental bonds, fairly regularly—since the mid-1990s (see Figure 3-1). At least two factors have probably contributed to that increase: First, the demand for greater investment in infrastructure boosted the demand for debt financing. Second, the steady decline in interest rates charged to municipal borrowers during that period made it cheaper for them to finance any amount of capital spending by issuing debt.

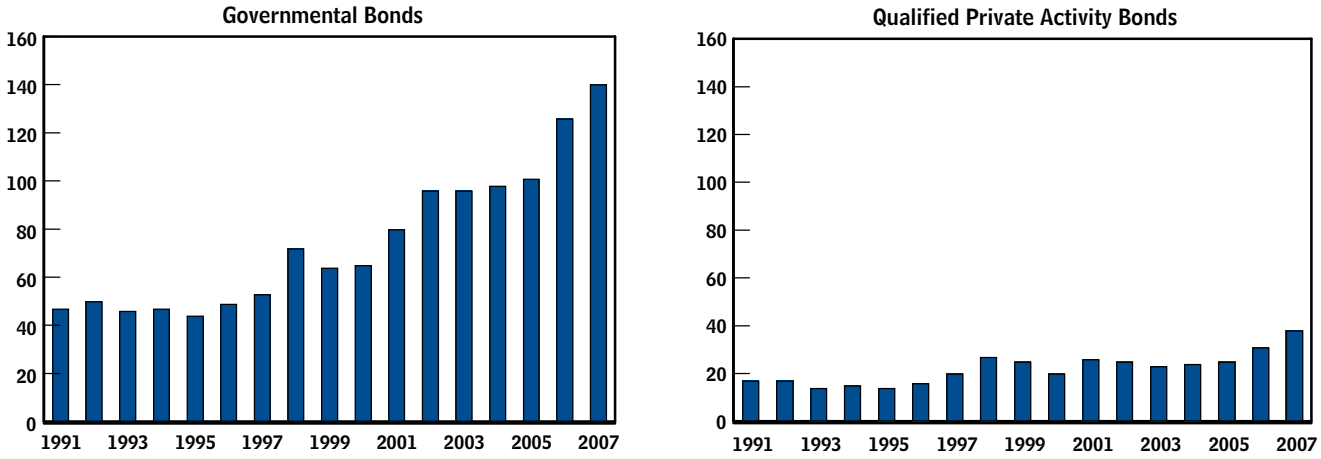
3. Data from the IRS show that debt-financing costs for governmental bonds average about 2 percent of the value of the bonds issued; see, for example, Table 3, www.irs.gov/pub/irs-soi/07bd03gb.xls. For qualified private activity bonds, such use of the proceeds is capped at 2 percent by law.

4. From 1991 to 2007, tax-exempt bonds issued for refunding existing infrastructure debt amounted to $932 billion for governmental bonds and $225 billion for qualified private activity bonds. Beneficiaries of those bond proceeds may have applied some of the cost savings from that refunding to make additional investment in infrastructure. However, unless that investment drew upon a tax-exempt bond sale (with the savings in interest costs from the refinancing applied to service the new debt), the contribution of refunding bonds to capital spending on infrastructure would not be reflected in this analysis.

Figure 3-1.

Issuance of Tax-Exempt Bonds for New Investment in Infrastructure, Calendar Years 1991 to 2007

(Billions of dollars)



Source: Congressional Budget Office based on data from the Internal Revenue Service.

The jump in the issuance of governmental bonds in 2006 and 2007 was mainly due to sharp increases in the sale of such bonds to finance new investment in utilities, education, and transportation.

Governmental Bonds. Whether measured in the aggregate over the 1991–2007 period or on an annual basis, education bonds have accounted for the largest share of governmental obligations issued to finance new investment in infrastructure (see Figure 3-2). Education bonds made up $620 billion, or 49 percent, of the $1.3 trillion of such bonds issued over the 1991–2007 period to finance that investment. Transportation and utilities accounted for $252 billion and $230 billion (20 percent and 18 percent), respectively; environmental projects (including sewage), for $131 billion (10 percent); and health care projects, for $42 billion (3 percent). Education also claims the largest share on a yearly basis, followed by bonds for transportation, utilities, and, through much of the 1990s, environmental projects.[5] A notably smaller amount of governmental bonds has been issued annually to finance new capital spending on health care projects.

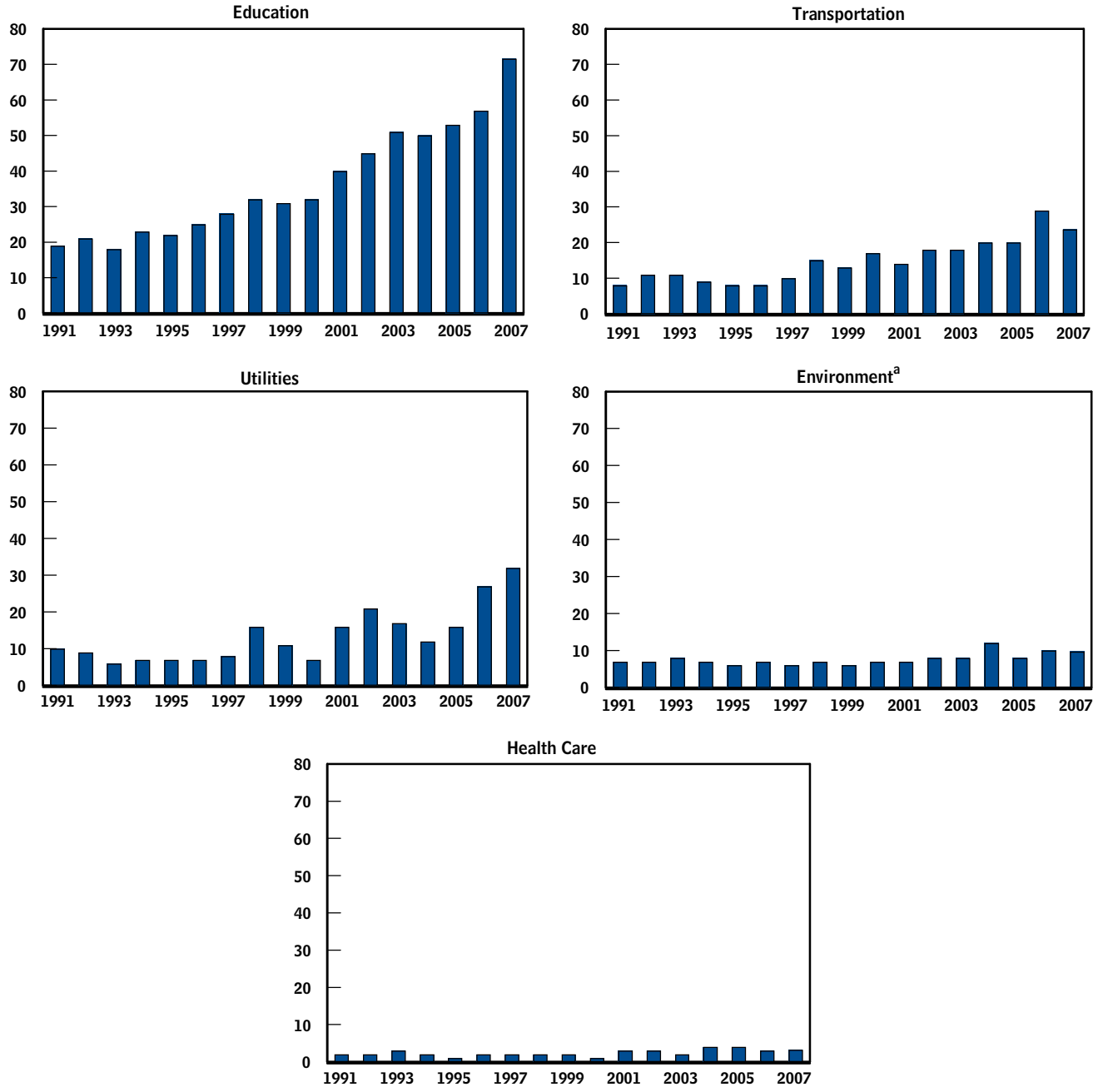
Qualified Private Activity Bonds. Compared with governmental bonds, qualified private activity bonds account for a smaller share of total financing for new investment in infrastructure (about one-quarter) and have a different allocation among infrastructure categories (see Figure 3-3 on page 21 and Box 3-2 on page 23). From 1991 to 2007, health care bonds accounted for $200 billion (53 percent) of the $372 billion of total issuance of qualified private activity bonds; transportation bonds, for $67 billion (18 percent); education bonds (primarily for colleges and universities), for $62 billion (17 percent); environmental projects (that is, solid and hazardous waste disposal), for $35 billion (9 percent); and utilities (including sewage, water supply, and energy), for $8 billion (2 percent). From year to year, bonds issued

5. Although water supply and sewer systems might both be considered utility services, the IRS puts the proceeds of governmental bonds issued for sewer projects in the "environment" category. That classification is maintained when this study reports the issuance of state and local bonds and capital spending by type of infrastructure (see Table 3-1 on page 25). In reporting the proceeds of qualified private activity bonds issued for utilities and environmental projects, however, this study classifies sewer systems as a utility because that is how the Census Bureau and the Bureau of Economic Analysis report data on private-sector investment in infrastructure (see Figure 3-3 on page 21, Box 3-2 on page 23, and Table 3-2 on page 27).

Figure 3-2.

Issuance of Governmental Bonds for New Investment, by Type of Infrastructure, Calendar Years 1991 to 2007

(Billions of dollars)



Source: Congressional Budget Office based on data from the Internal Revenue Service.

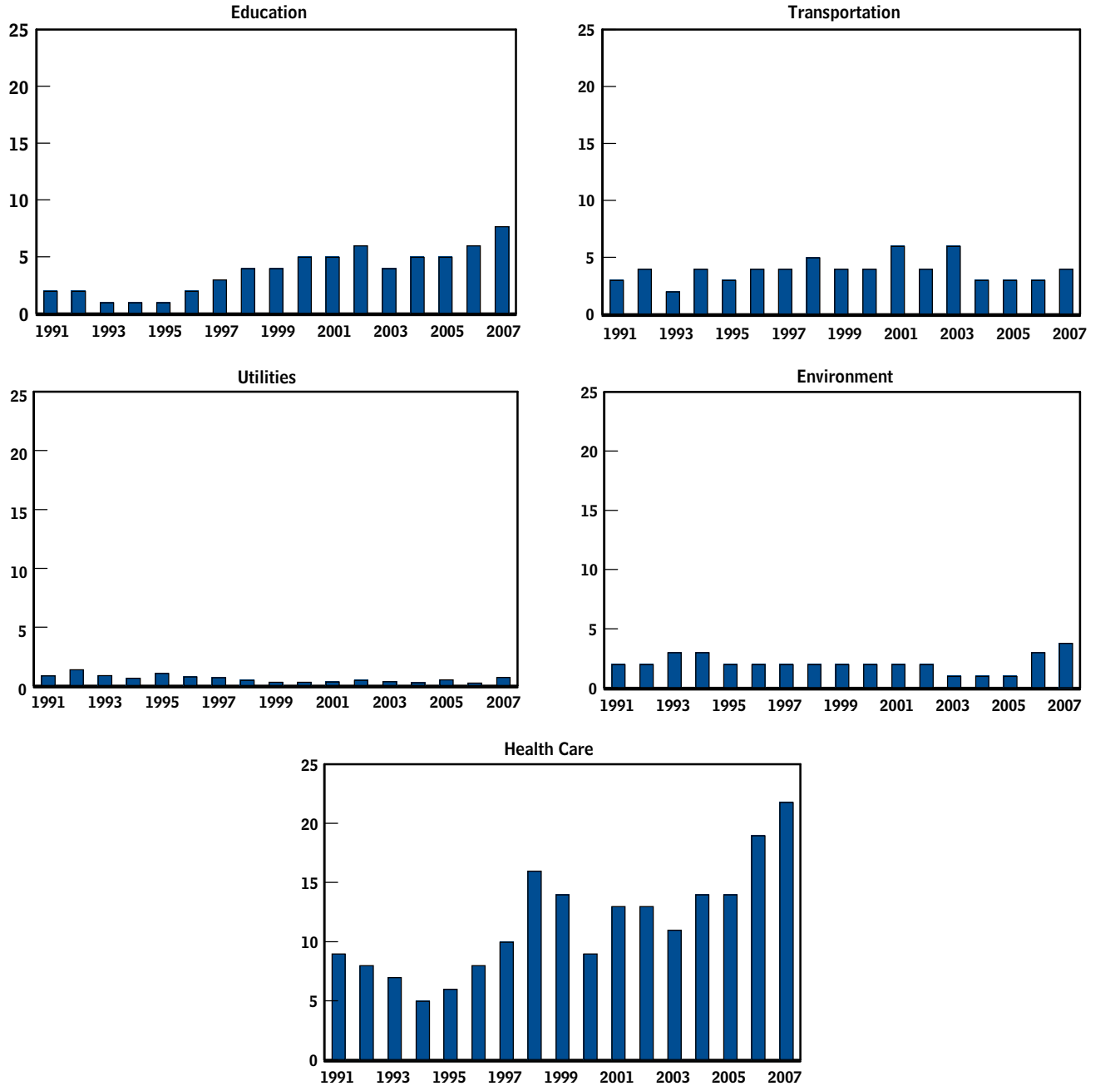
Note: Infrastructure categories come from the classification scheme on Internal Revenue Service Form 8038-G (Information Return for Tax-Exempt Governmental Obligations).

a. Includes sewage bonds.

Figure 3-3.

Issuance of Qualified Private Activity Bonds for New Investment, by Type of Infrastructure, Calendar Years 1991 to 2007

(Billions of dollars)



Source: Congressional Budget Office based on data from the Internal Revenue Service.

Note: Infrastructure categories reflect the grouping of qualified private activity bonds as identified on Internal Revenue Service Form 8038 (Information Return for Tax-Exempt Private Activity Bond Issues). See Box 3-2 for a description of those categories.

Box 3-1.

The Use of Education Bonds for Human Rather Than Physical Capital

The data on tax-exempt bonds issued for new investment in education reported in this study will overstate the amount of infrastructure financing to the extent that the proceeds of those bonds are used to finance student loan programs and other activities that contribute to the formation of intangible assets (for example, human capital) rather than physical capital (such as education facilities and equipment). According to Thomson Financial, the proceeds of bonds allocated to student loans accounted for approximately 13 percent of the annual value of municipal debt issued for educational purposes from 1991 to 2007.[1] That figure applies to the combined issuance of governmental bonds, qualified private activity bonds, and taxable bonds and covers bonds issued for new investment and for refinancing.

Evidence suggests that the sale of debt for educational purposes other than investment in structures and equipment does not weaken this study's findings for tax-exempt bond issuance and its importance for infrastructure financing. First, the proceeds of governmental bonds generally cannot be used to finance student loans because of the restriction on private-loan financing (sec. 141(c) of the Internal Revenue Code). Reflecting that fact, *The Bond Buyer Yearbook* reports that among the major sales of debt for educational purposes in 2007, most bonds issued to finance student loan programs were either taxable or subject to the alternative minimum tax (AMT).[2] Those AMT-liable bonds are probably qualified private activity bonds authorized by sec. 144(b) of the Code and, as such, are identified separately on Internal Revenue Service (IRS) Form 8038 and therefore can be excluded from this analysis. In addition, other types of qualified private activity bonds that may be issued to finance education generally and student loan programs in particular (for example, tax-exempt 501(c)(3) bonds authorized by sec. 145(a) of the Code) are also not likely to overstate the capital spending on education infrastructure reported in this study, because those data include only bonds issued by or on behalf of schools, and the proceeds of such bonds are typically used only for capital projects.

1. See Thomson Financial, *The Bond Buyer Yearbook* (New York: SourceMedia, various years).

2. See Thomson Financial, *The Bond Buyer Yearbook, 2008* (2008), pp. 140–141.

Box 3-2.

Types of Infrastructure Financed by Qualified Private Activity Bonds

The data on qualified private activity bonds presented in the text and in Figure 3-3 on page 21 follow the definitions based on Internal Revenue Service (IRS) Form 8038 (Information Return for Tax-Exempt Private Activity Bond Issues) and, in some cases, unpublished information from the IRS.

Education comprises "qualified section 501(c)(3) nonhospital" bonds; the proceeds of those bonds are allocated to "education" on the basis of unpublished data from the IRS. Qualified private activity bonds may also be issued to finance "qualified public education" facilities; however, their issuance is not reported separately by the IRS in some years to avoid disclosure of individual issues.

Transportation includes "airports" and "docks and wharves" facility bonds. Although qualified private activity bonds are also issued for "mass commuting" and "high-speed railway" facilities, the annual amount of that issuance is either less than $1 million (and hence reported as zero) or not reported separately by the IRS in order to avoid disclosure of individual issues.

Utilities include "local electricity or gas," "water supply," "sewage," and "local district heating or cooling" facility bonds.

Environment includes "solid waste disposal" and "qualified hazardous waste" facility bonds.

Health care includes "qualified hospital" (that is, 501(c)(3)) bonds and, on the basis of unpublished IRS data, proceeds from the issuance of some "qualified nonhospital" bonds for hospitals, clinics, and other health care projects.

to finance health care projects (such as hospitals) also claimed the largest share of qualified private activity bond proceeds for infrastructure purposes, and issuance of education bonds posted the largest annual rate of growth (about 11 percent).[6]

The consistently large amount of health care bonds and the rapid growth in the issuance of education bonds (relative to that of other qualified private activity issues) may be due in part to the fact that nonprofits can finance their activities by issuing those bonds at tax-free rates of interest while earning returns from other assets in their portfolio at taxable rates (but they do not pay taxes on those returns). That practice, known as **tax arbitrage**, can provide an important financial benefit to such organizations,

6. According to an unpublished IRS analysis, education and health care projects accounted for approximately 28 percent and 17 percent, respectively, of the total new-money issuance of nonhospital 501(c)(3) bonds over the 1996–2006 period. A study by the Government Accountability Office (GAO) found a very different allocation: 15.5 percent of nonhospital 501(c)(3) bonds issued in 2003 and 2004 went to education and 37.2 percent went to health care. See Government Accountability Office, *Tax-Exempt Status of Certain Bonds Merits Reconsideration, and Apparent Noncompliance with Issuance Cost Limitations Should Be Addressed,* GAO-08-364 (February 2008). The IRS and GAO analyses covered different time periods; in addition, their results may differ because of how each study allocated the proceeds of nonhospital 501(c)(3) bonds. The IRS analysis determined the use of bond proceeds on the basis of the "primary tax-exempt purpose" of nonprofit organizations benefiting from them (as reported on IRS Form 990); the GAO study used information on the industry classification of the "projects financed" by the bond proceeds (reported on IRS Form 8038). The IRS's method is consistent with how the data on private-sector investment collected by the Bureau of Economic Analysis and used in this study are classified by type of infrastructure.

although the Internal Revenue Code attempts to limit that practice with regard to tax-exempt bonds.[7]

Tax-Credit Bonds

The issuance of tax-credit bonds to finance infrastructure projects has been limited. For example, a recent article analyzed the data available for Qualified Zone Academy Bonds (QZABs), which finance certain types of education facilities.[8] Those data were obtained from filings of the Internal Revenue Service's Form 8860 for 2005, which taxpayers (in this case, financial institutions such as banks and insurance companies) use to claim the QZAB credit. Approximately $2.1 billion in outstanding QZAB principal was reported to the IRS in 2005, which amounts to only about two-thirds of the total authorized to have been issued during that time. The other limited data that are available appear to confirm that, for other types of tax-credit bonds, issuances have been well below authorized amounts. For example, a recent article concluded that the amount of Clean Renewable Energy Bonds that has been issued is only a small fraction of the amount authorized.[9]

The Importance of Tax-Preferred Financing for Investment in Infrastructure

Reliance on tax-preferred bonds as a means of financing investment in infrastructure—roughly measured as the ratio of the cumulative amount of bonds issued for new investment relative to capital spending on infrastructure from 1991 to 2007—is more pronounced for state and local governments than for private businesses. The difference is consistent with two basic features of infrastructure spending financed by issuing qualified private activity bonds: Issuance is restricted to certain types of projects, and the amount of bonds sold in a given year may also be capped.

Although tax-exempt bonds serve as a means of financing investment in infrastructure, only a portion of that issuance—equal to the savings in financing costs conveyed through their tax-exempt status—can be considered a source of funding. Future payments on infrastructure debt typically will be made with tax receipts or with payments from users of the infrastructure services in question.[10] Taxpayers also must make up for the federal revenues forgone through the tax exemptions.

Assessing the role of tax-exempt bonds as a means of financing investment in infrastructure—and determining the trend in that relationship over time—is challenging. It requires matching the annual issuance of bonds to particular infrastructure spending categories and then

7. See Congressional Budget Office, "Nonprofit Hospitals and Tax Arbitrage," letter to the Honorable William "Bill" M. Thomas (December 6, 2006). The exclusion from income for interest on state and local bonds does not apply to any arbitrage bond (sec. 103(a) and (b)(2)). An arbitrage bond is defined as any bond that is part of an issue if any proceeds of the issue are reasonably expected to be used (or intentionally are used) to acquire higher yielding investments or to replace funds that are used to acquire higher yielding investments. In general, arbitrage profits may be earned only during specified periods (for example, defined "temporary periods") before funds are needed for the purpose of the borrowing or on specified types of investments (for example, "reasonably required reserve or replacement funds"). Subject to limited exceptions, investment profits that are earned during those periods or on such investments must be rebated to the federal government. However, tax-exempt bond issuers can engage in a less direct form of tax arbitrage when they finance their activities by issuing tax-exempt debt rather than selling off assets that generate returns at taxable rates.

8. See Thornton Matheson, "Qualified Zone Academy Bond Tax Credit Usage in 2005," *Statistics of Income Bulletin* (Spring 2009), pp. 106–109. QZAB proceeds can finance projects undertaken at a "qualified zone academy," which is basically a publicly run school in an economically disadvantaged neighborhood that has the support (both in designing the curriculum and providing equipment) of private business. Those projects can include activities related to infrastructure investment—such as rehabilitation and repair of the facility—and also spending to develop course materials and train teachers.

9. See Peter Schroeder, "Not-So-Warm Embrace," *The Bond Buyer* (March 30, 2009), www.bondbuyer.com/article.html?id=200903271L87BV5E.

10. Tax-exempt bonds that rely on tax receipts for their repayment are known as **general obligation bonds.** However, not all tax-exempt bonds are general obligation bonds, because some types of infrastructure lend themselves to repayment through user fees better than do others and are thus less reliant on taxes for their funding. For example, repayment of the infrastructure debt financed by qualified private activity bonds—nonprofit schools and hospitals, utilities, and certain modes of transportation (such as airports)—is done through the user fees and other charges collected by the private entity responsible for the facility. In such cases, the bonds are known as **revenue bonds.** Governments with the power to tax may also issue revenue rather than general obligation bonds, but they restrict the debt-service funds to only those funds from the governmental entity that generates the revenues. In contrast to general obligation bonds, in such cases the government itself does not pledge its own credit to pay the debt.

Table 3-1.

Issuance of Governmental Bonds for New Investment and Capital Spending by State and Local Governments, by Type of Infrastructure, 1991 to 2007

	Governmental Bonds[a]		Capital Spending by the Public Sector[b]		Governmental Bonds as a Share of Capital Spending (Percent)	Annualized Rate of Growth		
	Amount (Billions of dollars)	Share of Total (Percent)	Amount (Billions of dollars)	Share of Total (Percent)		Governmental Bonds (Percent)	Total Capital Spending (Percent)	Difference (Percentage points)
Education	619.9	49	956.2	42	65	8.5	7.8	0.7
Transportation	251.8	20	715.3	31	35	7.3	5.1	2.2
Utilities	229.6	18	262.5	12	87	7.6	5.2	2.3
Environment[c]	131.1	10	242.1	11	54	1.6	5.7	-4.1
Health Care	42.3	3	104.6	5	40	2.7	5.5	-2.7
Total	**1,274.8**	**100**	**2,280.7**	**100**	**n.a.**	**7.1**	**6.3**	**0.9**

Source: Congressional Budget Office.

Note: n.a. = not applicable.

a. Calendar year data.

b. Fiscal year data, net of federal grants and loan subsidies. Capital spending in 2007 has been estimated.

c. Includes sewage bonds.

distributing the proceeds of those bonds annually among the years required to complete the infrastructure project in question. However, the issuance of bonds and capital spending on infrastructure are not contemporaneous—bonds to finance infrastructure projects may be issued to investors up front, whereas infrastructure projects usually require several years to complete.

The Congressional Budget Office has also found that annual spending rates of federal grants for state and local investment may vary considerably by infrastructure category and by type of project within categories. As a result, it is difficult to accurately distribute on a yearly basis the proceeds from the issuance of municipal bonds. For that reason, in assessing the reliance of the public and private sectors on tax-exempt bond financing, this study simply compares the cumulative amounts of bonds issued and capital spending across the period for which data are available (1991–2007); to infer the trend in that relationship over time (either overall or for particular types of infrastructure), this study assumes that tax-exempt bonds have increased their importance as a means of financing investment in infrastructure if the growth in their annual issuance has exceeded the growth in capital spending over that period.[11]

Governmental Bonds

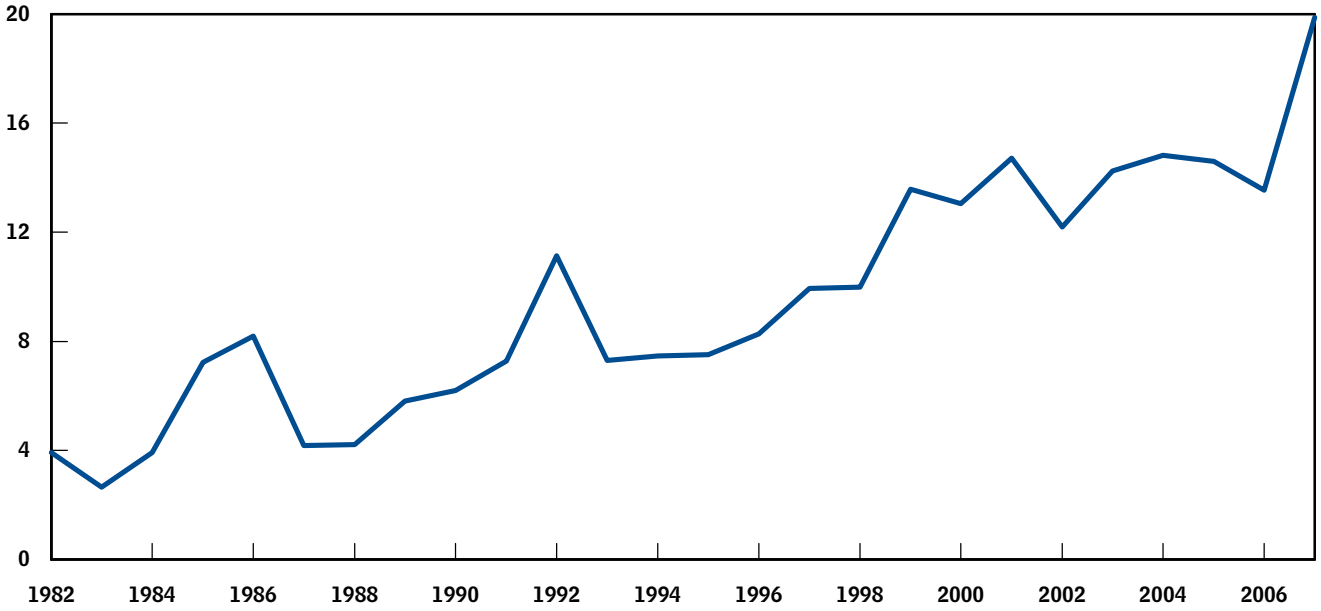
Over the 1991–2007 period, issuance of governmental bonds for new investment in infrastructure totaled $1.3 trillion, compared with $2.3 trillion of capital spending on infrastructure by state and local governments (net of federal grants and loan subsidies). The implied reliance of those governments on tax-exempt bonds to finance their capital spending varies by type of infrastructure: The ratio of governmental bond issuance to capital spending was highest for investment in utilities (87 percent), followed by education (65 percent) and the

11. For that assumption to allow for an accurate inference about the importance of tax-exempt bond financing to infrastructure investment, the rate at which the proceeds of bonds issued before 1991 are spent over the 1991–2007 period must match the spending rate after 2007 for the proceeds of bonds issued during that period.

Figure 3-4.

Proceeds from State Bonds Used for New Investment in Highways, 1982 to 2007

(Billions of 2007 dollars)



Source: Congressional Budget Office based on data from the Federal Highway Administration.

environment (54 percent).[12] In contrast, states and localities made less use of governmental bonds to finance investment in health care and transportation infrastructure. The ratios of bond proceeds to capital spending in those categories were 40 percent and 35 percent, respectively (see Table 3-1).

From 1991 to 2007, tax-exempt bonds were increasingly important as a means of financing state and local investment in transportation. The annual increase in the issuance of governmental bonds for that purpose was 7.3 percent, outpacing growth in capital spending on that infrastructure (5.1 percent) by more than 2 percentage points. Although issuance of governmental bonds for new investment in utilities also grew faster than capital spending (by 2.3 percentage points), that growth differential disappears when the calculation excludes 2006 and 2007 (years in which an especially large amount of utility bonds was issued—see Figure 3-2 on page 20). Annual issuance of governmental bonds for new investment in education from 1991 through 2007 grew faster than state and local capital spending by about 0.7 percentage points. However, that growth differential disappears when data for 2007 are excluded (sales of education bonds were exceptionally strong in that year). In contrast, growth in the annual issuance of governmental bonds for projects related to the environment and to health care was slower (by several percentage points) than the growth of

12. The use of tax-exempt bonds to finance local investment in water supply and sewage systems (classified in the "utilities" and "environment" categories of governmental bond issuance, respectively) seems to be very common (as is the use of state revolving funds). For example, according to a January 10, 2005, survey of U.S. cities with a mayoral form of government and a population of 30,000 or more, cities that had made a major capital investment in a water supply or a wastewater treatment system during the five years before the survey financed that spending with either general obligation bonds (for 25.8 percent of projects) or revenue bonds (for 41.3 percent of projects); for investments planned in the next five years, the corresponding percentages were 24.9 percent and 44.7 percent. (Because those bonds may be used in tandem and with other funding sources, such as charges to current users and general tax receipts, the shares cannot be added to obtain the overall contribution of tax-exempt financing to that capital spending.) In contrast, for only about 1 percent of cases of past and future investment were tax-exempt or taxable private activity bonds reported to be a source of financing. See United States Conference of Mayors' Urban Water Council, *National City Water Survey 2005* (Washington, D.C.: United States Conference of Mayors, November 15, 2005), pp. 18–19, www.usmayors.org/74thWinterMeeting/NationalCityWaterSurvey2005.pdf.

Table 3-2.

Issuance of Qualified Private Activity Bonds for New Investment and Capital Spending by the Private Sector, Calendar Years 1991 to 2007

	Qualified Private Activity Bonds		Capital Spending by the Private Sector				Annualized Rate of Growth		
			All Infrastructure		Structures Only				
	Amount (Billions of dollars)	Share of Total (Percent)	Amount (Billions of dollars)	Share of Total (Percent)	Amount (Billions of dollars)	Share of Total (Percent)	Qualified Private Activity Bonds (Percent)	Total Capital Spending (Percent)	Difference (Percentage points)
Health Care	199.6	53	1,190.4	44	326.3	36	5.4	6.5	-1.1
Transportation									
Aviation	58.8	16	350.5	13	31.2	3	0.7	3.9	-3.2
Docks and wharves	8.3	2	72.6	3	4.5	*	7.3	9.1	-1.9
Education	62.3	17	286.7	10	180.9	20	10.7	9.0	1.7
Environment	35.1	9	67.1	2	22.2	2	4.1	0.5	3.6
Utilities[a]									
Electric and gas	2.3	1	724.4	27	326.6	36	-2.3	6.3	-8.6
Water, sewer, and other	5.5	1	39.7	1	26.1	3	1.8	-3.4	5.2
Total	**371.9**	**100**	**2,731.4**	**100**	**917.8**	**100**	**5.3**	**6.3**	**-1.0**

Source: Congressional Budget Office based on data from the Internal Revenue Service (for qualified private activity bonds) and the Department of Commerce (for capital spending, Bureau of Economic Analysis, Table 3.7ES and Table 3.7S, www.bea.gov/national/FA2004/SelectTable.asp; for utilities, Census Bureau, Table 4a, www.census.gov/econ/aces/xls/2007/Full%20Report.htm).

Note: * = less than 0.5 percent.

a. Satisfactory information on investment in utilities is available only from 1994. To ensure comparability between trends in bond issuance and in capital spending by the private sector for that type of infrastructure, calculations of bond issuance and capital spending growth rates for each type of utility are limited to the 1994–2007 period.

capital spending by states and localities on that infrastructure.

Other sources also point to an increased role for bonds in financing investment in transportation projects—at least for investment in highways. The Government Accountability Office concluded that states' issuance of bonds for highways rose fairly steadily from 1982 to 2001—registering a 270 percent increase (in constant dollars) by the end of the period—and that state and local investment (net of federal grants and loan subsidies and adjusted for inflation) rose by 166 percent over the same period.[13] The importance of tax-exempt bond financing to highway investment leveled off after 2001 before rising sharply again in 2007 (see Figure 3-4, which shows the trend in state borrowing to finance new investment in highways). That trend is consistent with a spike in bond-financed capital spending on highways coming a year after a jump in issuance of new-money bonds for

13. Approximately three-quarters of state and local capital spending on highways originates with the states. See Government Accountability Office, *Trends in Federal and State Capital Investment in Highways*, GAO-03-744R (June 18, 2003), pp. 3–10. The data on state highway spending and revenues come from the Federal Highway Administration, Highways Statistics Series, www.fhwa.dot.gov/policy/ohpi/qffinance.cfm. For data on bond issuance, see Section IV: Finance, Table SF-1, various years, www.fhwa.dot.gov/policy/ohpi/hss/hsspubs.cfm. In 2006, states issued $11.9 billion of bonds for new highway investment, compared with $5.6 billion issued by localities in 2005 (both numbers are in current dollars; data on bonds issued by localities are reported every other year).

transportation (an increase of $9 billion from 2005 to 2006).[14]

Qualified Private Activity Bonds

Issuance of qualified private activity bonds for new investment in infrastructure from 1991 to 2007 totaled $372 billion (see Table 3-2). That amount accounts for roughly 13 percent of the $2.7 trillion in total private capital spending on infrastructure during the same period. The ratio of tax-exempt bond issuance to private-sector investment cannot, however, be directly compared with its counterpart for governmental bond financing of state and local infrastructure spending. The reason is that data on private-sector investment in infrastructure are reported within categories that may include a considerable number of capital goods that are unrelated to the accumulation of physical infrastructure and whose purchase most likely would not be eligible for tax-exempt financing. For example, the data include aircraft and equipment used in operations by privately owned airlines along with airports in the aviation category of official U.S. statistical reports for private-sector investment, but proceeds from the issuance of qualified private activity bonds cannot be used for airplanes (see 26 U.S.C. 147(e)).

Focusing solely on capital spending for structures (that is, buildings and other facilities), qualified private activity bonds issued for new investment amounted to roughly 40 percent of private capital spending on infrastructure over the 1991–2007 period. However, because that tax-exempt bond issuance exceeded investment in structures for most types of infrastructure, some of the proceeds of those bonds must have been spent on nonstructural assets, such as equipment. Thus, an estimate that would correspond to the ratio reported for state and local infrastructure spending out of tax-exempt bond proceeds would be lower (because it would reflect that additional nonstructural capital spending) and thus would be lower than the ratio for governmental bonds.[15]

Investment in electric and gas utilities, which is reported separately under the utilities category in Table 3-2, offers another example of the difficulty in matching spending by the private sector on infrastructure and the issuance of tax-exempt bonds. Almost all of that capital spending is for the generation, transmission, and distribution of electric power; however, it is unclear how closely those activities—which, in the case of electric power distribution, may be done either locally or over a multiregional electric grid—correspond to the narrow geographic restriction placed on issuance of qualified private activity bonds in that category (that is, facilities for the local furnishing of electric energy or gas whose construction can be financed with such bonds may serve at most two counties).

Qualified private activity bonds have generally not become a more important means of financing private-sector investment in infrastructure. The importance of tax-exempt financing appears to have increased in particular for investment in water and sewer utilities and the environment: The annual growth rate of qualified private activity bond issuance exceeds capital spending on those types of infrastructure by 5.2 and 3.6 percentage points, respectively (see Table 3-2). However, the excess of bond issuance over spending growth disappears for that utilities category when the time period excludes 2007 (a year in which tax-exempt bonds for private investment in water utilities were issued at an exceptionally fast rate). And as with bonds issued to finance various modes of privately owned transportation—for which tax-exempt financing does not increase in importance—the issuance of environment bonds does not display a pronounced growth trend over time (see Figure 3-3 on page 21).

The use of tax-exempt bonds to finance education projects undertaken by nonprofits (that is, 501(c)(3)

14. Over the 2001–2006 period, states' issuance of highway construction bonds (in constant dollars) fell by about 1.7 percentage points on an annualized basis, which is close to the decline of 1.5 percentage points in inflation-adjusted state and local highway spending.

15. Qualified private activity bonds may still be very important for financing some types of capital spending on infrastructure. For example, studies suggest that tax-exempt bond proceeds going to private investment in airports over the past decade may have been of comparable importance to other types of funding for that purpose, such as federal grants or airport user charges. See ACI-NA Policy Center, *Reforming the Federal Tax Treatment of Airport Bonds: Executive Summary* (February 28, 2006), available on request from the Airports Council International—North America, www.aci-na.org. Note, however, that the various sources of funding may not be entirely independent, because airport user charges can be used to secure or pay off loans. In addition, federal grants through the Airport Improvement Program are more important to smaller airports than to larger ones, because the latter are better able to tap financial markets to fund their capital projects. See Robert S. Kirk, *Airport Improvement Program: Issues for Congress,* CRS Report for Congress RL33891 (Congressional Research Service, February 26, 2007), p. 7.

organizations) has increased since 1991—growth in annual bond issuance exceeds growth in capital spending by 1.7 percentage points). The same does not appear to be true for nonprofit financing of health care investment, for which annual bond sales lag capital spending by 1.1 percentage points. However, when trends in bond issuance and investment are compared from 1996—when the issuance of all types of 501(c)(3) bonds begins to grow rapidly—a somewhat clearer picture emerges. The annual growth in bond issuance exceeds capital spending by 6 percentage points for education and 1.3 percentage points for health care projects.

CHAPTER

4

Assessing the Current Tax-Preferred Regime and an Alternative Regime

Offering a tax exemption for the interest income from bonds issued by state and local governments—governmental bonds and qualified private activity bonds—is the most well established and common way in which the federal government subsidizes borrowing by the public or private sector to invest in infrastructure. However, tax-exempt financing is not the most efficient way of delivering a subsidy: Borrowers receive only a portion of the revenues the federal government forgoes by not taxing the bonds. In addition, tax-exempt financing is regressive; the remaining portion of the forgone revenues accrues to investors in higher income tax brackets who receive greater tax savings through the exemption than would be necessary for them to purchase such bonds.

Tax-credit bonds, in contrast, do not have those disadvantages. Those bonds allow bondholders to receive a credit against federal income tax liability instead of—or in addition to—the cash interest typically paid on the bonds. Moreover, tax-credit bonds could improve the efficiency with which the federal government provides financial support to borrowers by allowing the amount of the federal subsidy to vary across projects according to the public benefits expected from them.

The amount of revenues the federal government forgoes through tax-exempt bonds is substantial. For example, the loss to the federal government from the outstanding stock of tax-exempt bonds issued to finance infrastructure is estimated to be $132 billion over the 2008–2012 period, or more than $26 billion annually. This chapter looks at how the current system of tax preferences could be made more efficient by making greater use of tax-credit bonds.

Cost Savings for States and Localities

The federal tax exemptions for interest income from governmental bonds and qualified private activity bonds enable issuers of such debt to sell bonds that pay lower rates of interest than do taxable bonds. Because purchasers of tax-exempt bonds demand a return that is no less than the after-tax yield they could obtain from comparable taxable bonds (that is, from taxable bonds of the same maturity, risk, and so on), the amount by which the return from tax-exempt bonds is lower than the yield on comparable taxable bonds depends on the income tax rate of the marginal (or market-clearing) buyer of tax-exempt bonds.[1] Box 4-1 illustrates how income tax rates affect the yields on tax-exempt bonds.

Data on tax-exempt and taxable bond transactions allow estimation of the marginal tax rate faced by the market-clearing buyer of tax-exempt bonds and, thus, the amount that states and localities save in financing costs by issuing such bonds. In 2007, the yield on (taxable) high-grade corporate bonds was 5.6 percent, and the yield on tax-exempt municipal bonds of similar creditworthiness was 4.4 percent—a difference of 1.2 percentage points, or approximately 21 percent of the taxable return.[2] The marginal tax rate at which an investor would

1. Bond issuers must pay the market-clearing bond buyer an interest rate that matches the supply of tax-exempt bonds with the demand for them; that interest rate is therefore the yield that all issuers of comparable tax-exempt debt must pay.

2. See Joint Committee on Taxation, *Present Law and Issues Related to Infrastructure Finance*, JCX-83-08 (October 24, 2008), p. 28, www.house.gov/jct/x-83-08.pdf. See also *Economic Report of the President* (transmitted to the Congress in January 2008), Table B-73, p. 312.

Box 4-1.

Income Tax Rates and Yields on Taxable and Tax-Exempt Bonds

The benefits from purchasing tax-exempt bonds vary among individual investors, depending on their tax bracket. If the demand for tax-exempt bonds is equal to their supply, an investor is indifferent between a tax-exempt and a taxable bond. Hence, the marginal tax rate of that market-clearing investor determines the yield on tax-exempt debt.

Consider, for example, a taxpayer with a 25 percent marginal tax rate who purchases a $1,000 taxable bond at an interest rate of 6 percent. That bond purchaser receives $60 in interest income and pays $15 in income tax, for an after-tax return of $45 and an after-tax yield of 4.5 percent. That return is the same as the net return the taxpayer would receive if he or she purchased a $1,000 tax-exempt bond paying 4.5 percent in interest. Thus, at those rates of interest, whether the bond is taxable or tax-exempt generally does not matter to that taxpayer (see the table, below).

The returns from tax-exempt debt increase with a bondholder's income tax liability. For example, a taxpayer with a 33 percent marginal tax rate who purchases a $1,000 taxable bond at an interest rate of 6 percent receives $60 in interest income and pays $20 in income tax, for a net return of $40 and an after-tax yield of 4 percent. However, that taxpayer would receive a 4.5 percent net return on a tax-exempt bond paying 4.5 percent in interest. Thus, unlike the taxpayer in the 25 percent bracket who would be indifferent between the purchase of a taxable bond paying 6 percent interest or a tax-exempt bond yielding 4.5 percent, a taxpayer in the 33 percent bracket would receive a greater benefit from that tax-exempt bond.

In contrast, a taxpayer with a 15 percent marginal tax rate would not benefit from a tax-exempt investment in this scenario, because the $45 that taxpayer would earn from a $1,000 tax-exempt bond yielding 4.5 percent would be less than the $51 he or she could obtain net of taxes by purchasing a $1,000 taxable bond yielding 6 percent (because the taxpayer would be required to pay only 15 percent—or $9—in taxes).

Rates and Yields on a $1,000 Bond

	25 Percent Marginal Tax Rate		33 Percent Marginal Tax Rate		15 Percent Marginal Tax Rate	
	Taxable	Tax-Exempt	Taxable	Tax-Exempt	Taxable	Tax-Exempt
Interest Rate	6%	4.5%	6%	4.5%	6%	4.5%
Interest Income	$60	$45	$60	$45	$60	$45
Income Tax Owed	$15	0	$20	0	$9	0
After-Tax Return	$45	$45	$40	$45	$51	$45
After-Tax Yield	4.5%	4.5%	4.0%	4.5%	5.1%	4.5%

be indifferent between purchasing a taxable bond yielding 5.6 percent and a tax-exempt bond yielding 4.4 percent is 21 percent (that is, 5.6 - (5.6 x 0.21) = 4.4); thus, one can conclude that the marginal investor pays income tax at a rate of 21 percent.[3]

In 2007, $178 billion in tax-exempt bonds was issued for new investment in infrastructure—$140 billion in governmental bonds and $38 billion in qualified private activity bonds. The difference of approximately 1.2 percentage points in the yield on tax-exempt and taxable bonds suggests that the tax exemption provided state and local governments and private-sector borrowers with a first-year interest subsidy of a bit over $2 billion on the debt they issued in 2007 to finance new infrastructure projects. Tax-exempt bonds also provide a significant subsidy to the taxpayers in higher income tax brackets who purchase them.

Revenue Loss, Inefficiency, and Regressiveness of Tax-Exempt Financing

The revenues forgone through the issuance of tax-exempt bonds are one type of implicit financial support (a tax expenditure) that the federal government provides.[4] On the basis of the outstanding stock of tax-exempt debt and an estimate of the return that would be realized if those bond holdings instead were in the form of taxable investments (usually assumed to be taxable bonds of comparable risk and maturity), tax expenditures are calculated as forgone taxable income multiplied by the average marginal income tax rate of tax-exempt bondholders.[5]

For governmental bonds, the Joint Committee on Taxation estimates the cumulative federal tax expenditure over the 2008–2012 period to be $147 billion.[6] Bonds financing infrastructure investment (both new-money and refinancing issues combined) accounted for 64.7 percent of total governmental bond issuance from 1991 to 2007. Thus, a rough estimate of the tax expenditures over the 2008–2012 period from public infrastructure projects would be $95 billion ($147 billion multiplied by 64.7 percent), or $19 billion per year. That amount includes the approximately $1.7 billion in interest subsidy on new-money governmental bonds issued in 2007, plus the federal revenues forgone to subsidize outstanding governmental bonds that were issued in prior years (both new-money and refinancing bonds).

For qualified private activity bonds, the Joint Committee on Taxation estimates total federal tax expenditures (new-

3. The precision of the estimated tax rate depends heavily on the comparability of the yields on tax-exempt and taxable bonds. For example, because the data on both tax-exempt and taxable interest rates used in this analysis are averages across bonds in each category that may still vary somewhat because of risk, time to maturity, fixed versus variable interest payments, and other bond-specific factors, the marginal tax rate they imply for the market-clearing buyer of tax-exempt bonds may not be equal to a rate specified by the tax code.

   However, several potential sources of bias probably offset each other to a large degree—at least in the calculations in this analysis. For example, if the yield on tax-exempt bonds included a premium relative to the yield on taxable corporate debt because municipal bonds are less liquid—which can happen if state and local borrowers are more heterogeneous and issue debt in smaller amounts than corporations do—that would bias downward the estimated tax rate of the market-clearing buyer of tax-exempt bonds. The reason is that the inflated yield on a tax-exempt bond that included such a liquidity premium relative to more liquid taxable debt would result in a smaller observed spread between the returns of taxable and tax-exempt bonds and consequently would understate the pure tax benefit necessary to make a tax-exempt purchase advantageous. Potentially working in the opposite direction—that is, inflating the estimated tax rate of the market-clearing buyer of tax-exempt bonds—would be a greater creditworthiness of municipalities relative to that of issuers of taxable corporate bonds, even though each type of bond received the same rating for credit risk (see Moody's Investors Service, *Moody's US Municipal Bond Rating Scale*, November 2002). Comparing two such bonds would produce too large an observed spread between taxable and tax-exempt bond returns, because the yield on taxable bonds would include a risk premium that the tax-exempt bond did not.

4. States also typically exempt from taxation the interest income from municipal bonds issued in-state and, in a few cases, those issued out-of-state as well. However, income tax rates are much lower at the state level than at the federal level and, hence, so too would be any revenues forgone by the state government through such exemptions. For data on tax rates and tax exemptions offered by individual states, see Thomson Financial, *The Bond Buyer Yearbook* (New York: SourceMedia, various years).

5. Such calculations do not incorporate the behavioral responses of bondholders to a removal of the tax exemption on interest income, and they are subject to other assumptions. See Leonard E. Burman, "Is the Tax Expenditure Concept Still Relevant?" *National Tax Journal*, vol. 56, no. 3 (September 2003), pp. 613–627.

6. See Joint Committee on Taxation, *Estimates of Federal Tax Expenditures for Fiscal Years 2008–2012*, JCS-2-08 (October 31, 2008), www.house.gov/jct/s-2-08.pdf.

money and refunding issues combined) of $37.3 billion over the 2008–2012 period, or almost $7.5 billion on an annual basis. That estimate is for six groups of infrastructure projects: nonprofit and qualified public education facilities ($16.0 billion); nonprofit hospital facilities ($12.1 billion); airports, docks and wharves, and mass transit facilities ($5.4 billion); sewage, water, and hazardous waste-disposal facilities ($3.1 billion); energy production facilities ($0.6 billion); and highway projects and rail-truck transfer facilities ($0.1 billion).[7]

Because there are multiple tax brackets and the market-clearing purchaser of municipal bonds will probably be in a lower bracket than most other bondholders, the loss of federal receipts is greater than the reduction in the interest costs of tax-exempt issuers. Assume, for example, that a tax-exempt bond buyer's preferred alternative investment is a taxable bond. If taxable bonds paid 6 percent in interest and the market-clearing municipal bond buyer faced a 25 percent marginal tax rate (as in the example above), the yield on a tax-exempt bond would be 4.5 percent. In that case, the revenue forgone by the federal government ($15 in lost income taxes based on a $60 interest payment taxed at 25 percent) would equal the interest savings of the tax-exempt bond issuer (who pays 4.5 percent instead of 6 percent in interest). However, some taxpayers who purchase those bonds would probably be in a higher tax bracket and consequently would produce a federal revenue loss that exceeded the savings of the bond issuer. For example, if a taxpayer in the 33 percent bracket purchased the tax-exempt bond bearing a 4.5 percent rate of interest, it would cost the federal government $20 ($60 of interest income that would have been taxed at a 33 percent rate). In that case, the $15 interest subsidy provided to the issuer of the tax-exempt bond would cost the federal government $20.[8]

Tax-exempt bonds are thus an inefficient means of providing a subsidy for debt financing from the federal point of view because a direct appropriation of funds would purchase more infrastructure on a dollar-for-dollar basis. Several analysts suggest that only about 80 percent of the tax expenditure from tax-exempt bonds actually translates into lower borrowing costs for states and localities, with the remaining 20 percent simply taking the form of a federal transfer to bondholders in higher tax brackets.[9]

If 20 percent of the federal revenue loss from tax-exempt bonds accrued to bondholders in higher tax brackets without lowering borrowing costs, and if the outstanding stock of tax-exempt debt for infrastructure during the 2008–2012 period instead took the form of tax-credit bonds designed to deliver the same amount of interest subsidy per year, the federal government would save over $26 billion (20 percent of an estimated $132 billion in tax expenditure), or more than $5 billion on an annual basis.

Using tax-exempt bonds to finance infrastructure is also regressive, because the amount by which the benefits captured by investors in either governmental or qualified private activity bonds exceeds the issuer's cost savings increases with the taxpayer's marginal tax rate. One study estimates that eliminating the tax exemption on state and local debt would reduce after-tax income primarily for taxpayers in the highest income quintile—and particularly for individuals in the top 1 percent of the income distribution.[10]

7. Ibid.

8. The yield on taxable bonds is typically used as a proxy for the return from a taxable investment that tax-exempt bondholders would make if that exemption was removed. Some analysts suggest that using a different alternative taxable investment could result in a smaller estimate of tax expenditures. See, for example, James Poterba and Arturo Ramirez Verdugo, *Portfolio Substitution and the Revenue Cost of Exempting State and Local Government Interest Payments from Federal Income Tax*, Working Paper 14439 (Cambridge, Mass.: National Bureau of Economic Research, October 2008), www.nber.org/papers/w14439.

   However, if tax-exempt bondholders face different marginal income tax rates, then such findings still do not alter the conclusion that the federal government loses more in revenue from the issuance of tax-exempt bonds than state and local governments gain. For example, Poterba and Ramirez Verdugo estimate that 53 percent of the outstanding stock of tax-exempt bonds in 2003 was held by households with marginal tax rates in excess of 30 percent and that the holdings of the remaining tax-exempt bonds were distributed throughout most of the lower income tax brackets (see Table 6 on p. 31 of their paper). More recently, on the basis of tax-exempt interest income reported by taxpayers to the IRS, the staff of the Joint Committee on Taxation projects that approximately 4.9 million individual taxpayers will report about $71 billion in tax-exempt interest for 2009. Of those totals, 3.2 million taxpayers are projected to be in marginal tax brackets of 25 percent or higher in 2009 and will report in excess of $56 billion in tax-exempt interest. Joint Committee on Taxation, *Present Law and Issues Related to Infrastructure Finance*, footnote 40, p. 27.

Redesigned Tax-Credit Bonds

The Congress has recently turned to tax-credit bonds as a way to finance public expenditures. Those bonds allow bondholders to receive a credit against federal income tax liability instead of—or in addition to—the cash interest typically paid on the bonds. The revenues forgone by the federal government through tax-credit bonds reduce state and local borrowing costs dollar for dollar, rather than partially accruing to investors in high marginal tax brackets (as is the case for tax-exempt debt). Thus, tax-credit bonds offer the promise of increasing the efficiency with which federal resources are allocated to support infrastructure and other investments.

Consider a Treasury-determined tax-credit bond on which the bondholder earns no interest but instead is allowed to claim a tax credit equal to 100 percent of the prevailing yield on comparable debt, which effectively subsidizes all of the issuer's interest payments. For example, the holder of a $1,000 tax-credit bond that would yield 6 percent if it was issued as taxable debt (that is, it would pay $60 in interest) would be entitled to claim a tax credit of $60. In general, a $60 tax credit would be worth $60 to a taxpayer, provided that the taxpayer had at least $60 in tax liability. However, for tax-credit bonds, the $60 credit also has to be reported as income. Reporting an additional $60 in income would cost a taxpayer in, say, the 25 percent tax bracket an additional $15 in income taxes, payable to the federal government. With the $60 tax credit that is ultimately claimed, the taxpayer nets $45 of income by holding the bond. The federal government loses $60 on the credit but recoups $15 of that amount because the $60 must be included in income, for a net cost of $45, which is exactly the net return to the taxpayer.

If the federal government had simply agreed to pay the interest on behalf of the state or local government instead of issuing a tax-credit bond, both the federal government and the bondholder/taxpayer would be in the same situation. The federal government would disburse $60 in interest payments but would recoup $15 of that in tax receipts, for a net budgetary cost of $45 as before. Similarly, the bondholder/taxpayer would receive a taxable $60 in interest and would owe $15 in taxes, for a net gain of $45 as before. The state or local government also would be in the same situation in both cases.

Because the amount of the tax credit can be set to deliver a subsidy of any value, tax-credit bonds can be structured either to provide a subsidy equivalent to that currently available from tax-exempt bonds at a lower cost (in terms of forgone federal revenue) per dollar of benefit (see Box 4-2) or, alternatively, to increase the amount of that subsidy with an unchanged revenue loss.[11] In addition, tax-credit bonds do not provide a revenue transfer to investors in high marginal tax brackets. Indeed, because the tax credit is subject to federal income tax, bondholders in higher income brackets (but above the tax-paying threshold necessary for the tax credit to be worthwhile) would, net of taxes, receive fewer credits per dollar of tax-credit bond value than would bondholders in lower income brackets (although the former group

9. See Dennis Zimmerman, *The Private Use of Tax-Exempt Bonds: Controlling Public Subsidy of Private Activity* (Washington, D.C.: Urban Institute Press, 1991), pp. 103–104; and Poterba and Ramirez Verdugo, *Portfolio Substitution and the Revenue Cost of Exempting State and Local Government Interest Payments from Federal Income Tax*. The latter authors estimate that in 2003 the marginal income tax rate of the average tax-exempt bondholder was 26.8 percent and the tax rate faced by the market-clearing municipal bond buyer was between 13 percent and 22 percent (see pp. 3 and 16 in Poterba and Ramirez Verdugo). Their analysis is restricted to households and does not include corporations, which account for between one-quarter and one-third of the total tax expenditure from tax-exempt bonds estimated for the 2008–2012 period.

10. The decrease in after-tax income that results from eliminating the tax exemption is estimated to be at or near zero for all but the top income quintile, where after-tax income falls by 0.24 percent for that quintile and 0.50 percent for the top 1 percent. See Leonard Burman, Eric Toder, and Christopher Geissler, *How Big Are Total Individual Income Tax Expenditures, and Who Benefits from Them?* Discussion Paper No. 31 (Washington, D.C.: Urban Institute, December 2008), p. 11, www.urban.org/publications/1001234.html.

11. The taxable Build America Bonds authorized by the American Recovery and Reinvestment Act of 2009, which are to be issued by state and local governments in 2009 and 2010 and which provide a 35 percent tax credit to either purchasers or issuers (in the latter case, if all of the proceeds are used to finance capital expenditures and the issuer elects to receive the credit) illustrate to some degree how more of the federal tax expenditure from tax preferences on governmental bonds can be provided to borrowers. In addition, the direct-pay feature of certain Build America Bonds, under which the government makes direct payments to bond issuers rather than providing a tax credit to bondholders, allows the amount of subsidy provided by the tax preference to show up as an outlay in the federal budget. However, because the credit amount on those bonds is almost certainly higher than the marginal income tax rate of the average tax-exempt bondholder, the federal subsidy is larger.

Box 4-2.

Using Tax-Credit Bonds to Deliver an Unchanged Amount of Subsidy at Lower Cost to the Federal Government

Tax-credit bonds can be structured to deliver any amount of federal subsidy and, in theory, could provide the same amount of federal subsidy to issuers that tax-exempt bonds are estimated to provide—and with a lower revenue loss. (Important constraints to setting such a credit rate in practice are discussed below.) The return provided by a tax-credit bond has two taxable components: an interest payment from the borrower and a tax credit from the federal government. To maintain the federal subsidy currently available to borrowers through tax-exempt debt, the tax-credit bond would have to meet two conditions:

- The interest payment due from borrowers would have to be the same as it would have been if the bonds had been issued as tax-exempt debt; and
- The value to bond buyers of the sum of that interest payment and the tax credit would have to equal the interest income on a comparable taxable bond.

To meet those conditions, the tax-credit rate would be expressed as a percentage of the borrower's interest cost, $t/(1-t)$, where t is the marginal income tax bracket of the market-clearing bondholder. In 2007, for example, t was 21 percent. (The yield on high-grade taxable corporate bonds was 5.6 percent, and the yield on tax-exempt municipal bonds of similar creditworthiness was 4.4 percent—a difference of approximately 1.2 percentage points, or 21 percent of the taxable return.) With an implied marginal tax rate of 21 percent for the market-clearing tax-exempt bondholder, the tax-credit rate would be 26.5 percent (0.21/1-0.21).

Given a taxable rate of interest on a comparable bond of 5.6 percent, all purchasers of a $1,000 tax-credit bond would receive a taxable interest payment of $44 from the borrower—the same 4.4 percent in interest that the borrower would have paid on a tax-exempt bond for which the implied market-clearing marginal tax rate was 21 percent—and a tax credit of $11.66 (which equals the credit rate of 26.5 percent multiplied by 4.4 percent multiplied by $1,000).

The federal government would not lose any revenues other than the amount of the credit, because both the borrower's interest payment of $44 and the tax credit of $11.66 would be taxed at each bondholder's

Continued

may have larger savings and investment holdings and, as a result, own more bonds).

Beyond making federal tax preferences for borrowing more cost-effective, tax-credit bonds can increase the efficiency with which the federal government supports debt financing of state and local investment in infrastructure in another way as well. Tax-credit bonds have traditionally provided a large subsidy to issuers, approaching 100 percent of interest costs for most types of tax-credit bonds—and a much larger subsidy than is available through issuing tax-exempt debt.[12] The amount of the subsidy provided by a tax-credit bond, however, can be varied across different types of projects by setting the level of the credit in accordance with the public benefits expected from each. The substantial differences among infrastructure facilities and the services they provide—even within groups of publicly or privately owned infrastructure—suggest that those efficiency gains could be sizable.

12. For example, Qualified Zone Academy Bonds provided borrowers with an annual subsidy equal to roughly 6 to 7 percentage points of bond yield between 1998 and 2005; in contrast, the annual interest subsidy from tax-exempt bonds during that time ranged from 1 percent to 2 percent. See Thornton Matheson, "Qualified Zone Academy Bond Tax Credit Usage in 2005," *Statistics of Income Bulletin* (Spring 2009), Figure D, p. 109; and Joint Committee on Taxation, *Present Law and Issues Related to Infrastructure Finance*, p. 28.

Box 4-2. Continued

Using Tax-Credit Bonds to Deliver an Unchanged Amount of Subsidy at Lower Cost to the Federal Government

marginal tax rate—as would be the $55.66 of interest income on an equivalent taxable bond. The interest payment and tax credit received by the market-clearing bond buyer in this example would be taxed at the rate of 21 percent, and the bond buyer would receive $44 after taxes (that is, $34.80 + $9.20). The $11.66 tax credit would substitute for the $11.66 of interest costs that the borrower would have had to pay on a taxable bond; it would also equal the savings that the borrower would have realized by issuing a tax-exempt bond. The federal government's cost would equal the tax credit—that is, the interest savings—regardless of whether the marginal tax rate of the bond purchaser was 21 percent or a higher rate.

The tax-credit bonds in this example are assumed to replace tax-exempt debt in its entirety. If that is not the case and both tax-credit and tax-exempt bonds are issued contemporaneously, then bond buyers with high marginal income tax liability would have an incentive to continue to purchase tax-exempt debt because, as long as the market-clearing buyer was in a lower tax bracket, those bonds would be more desirable to them. As a result, tax-credit and tax-exempt bonds would not be directly interchangeable in many investors' portfolios, and it would be necessary to determine the yield that would clear the market for tax-credit and tax-exempt bonds individually in order to estimate the potential gains (from lowering the federal government's revenue loss) through the newly designed tax-credit bonds. An additional factor in the analysis is a potential change in the pool of potential tax-preferred bond buyers, which could occur if the tax credits in question could be stripped and sold or if the tax-credit bonds were taxable direct-pay issues. In either case, the number of prospective buyers of tax-credit bonds could increase to include entities such as tax-exempt organizations and foreign persons, who previously would have had no incentive to invest in tax-exempt debt.

For additional information on this topic, see Congressional Budget Office, *Tax-Credit Bonds and the Federal Cost of Financing Public Expenditures* (July 2004), p. 6; and Joint Committee on Taxation, *Present Law and Issues Related to Infrastructure Finance,* JCX-83-08 (October 24, 2008), pp. 32–34, www.jct.gov/x-83-08.pdf.

For example, local governments' investment in local mass transit systems benefits from the same federal tax-exempt financing as does their capital spending on the interstate highway system, even though public benefits provided at the national level are probably quite different between the two types of infrastructure. A similar reasoning applies to private-sector investments eligible for tax preferences. Although current law does not impose a "public purpose" requirement on qualified private activity bonds, many of the original facilities eligible for tax-exempt financing under the Internal Revenue Code of 1986 (for example, airports, docks and wharves, and solid waste facilities) provide services that probably include some public benefits. However, because the private-sector owners of even within groups of publicly or privately owned infrastructure—suggest that those efficiency gains could be sizable.

For example, local governments' investment in local mass transit systems benefits from the same federal tax-exempt financing as does their capital spending on the interstate highway system, even though public benefits provided at the national level are probably quite different between the two types of infrastructure. A similar reasoning applies to private-sector investments eligible for tax preferences. Although current law does not impose a "public purpose" requirement on qualified private activity bonds, many of the original facilities eligible for tax-exempt financing under the Internal Revenue Code of 1986 (for example, airports, docks and wharves, and solid waste facilities) provide services that probably include some public benefits. However, because the private-sector owners of that infrastructure can capture through user fees and other charges a sizable portion of the value of the services they

provide, the public benefits from those investments may be small relative to infrastructure provided by government, and only a small subsidy—if any—may be efficient.[13]

In addition, over the past several decades the Congress has expanded the list of private-sector activities eligible for federal tax preferences and, as a result, 26 categories of private activities are now eligible for a tax preference on borrowing (that figure includes the preferential rules for certain geographic areas such as enterprise zones, the New York Liberty Zone, the Gulf Opportunity Zone, and qualified forestry conservation areas). As tax-preferred financing is extended to private activities that are more narrowly defined, the amount of public benefits from them is likely to decline and so too the economically efficient amount of federal subsidy. Consequently, allowing the subsidy rate to vary by type of infrastructure financed and the public returns expected from it could increase the efficiency of tax-preferred financing of infrastructure projects undertaken by either the public or the private sector.

13. The cost of financing investment with tax-preferred bonds is similar for public and private projects: Yields on qualified private activity bonds exceed those of comparable governmental bonds by 5 to 20 basis points, depending on the maturity of the bond (see Poterba and Ramirez Verdugo, *Portfolio Substitution and the Revenue Cost of Exempting State and Local Government Interest Payments from Federal Income Tax*, p. 5). The Congress does set some limits on the federal financing subsidy provided to many types of private-sector investments; among other restrictions, it places a cap on the dollar amount of bonds that can be issued annually. However, qualified private activity bonds for many types of private-sector infrastructure projects (including airports; docks and wharves; and activities related to education, hospitals, and health care undertaken by qualified 501(c)(3) organizations) are not subject to the volume cap.