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FEDERAL INFRASTRUCTURE SUBSIDIES:
GRANTS OR CREDITS?

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PREFACE

Concern about the nation's infrastructure has prompted a number of legislative proposals that would substantially alter federal infrastructure programs. Some of these proposals would replace or supplement federal infrastructure grants with credit subsidies, such as loans, loan guarantees, tax expenditures, or a government-sponsored enterprise that would provide capital for state and local infrastructure projects. These credit programs would subsidize state and local infrastructure investment by lowering the cost of borrowing for public works construction. Senator Sasser and Senator Domenici of the Senate Budget Committee requested that the Congressional Budget Office (CBO) examine both the economic effects and the budgetary consequences of so changing federal infrastructure programs.

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Robert D. Reischauer
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SUMMARY AND INTRODUCTION

Federal infrastructure grant programs have economic effects that depend principally on three features: the criteria used to determine program eligibility; the share of project costs paid by the program; and whether the grant is open-ended (with the federal government subsidizing all state and local spending) or closed (with state and local spending subsidized only up to some ceiling). The same features determine the economic effects of credit subsidies. Yet credit subsidies generally are less flexible policy instruments than grants. First, credit subsidies cannot always be targeted to their intended beneficiaries as precisely as grants can. Second, the federal share of local project costs can be higher when the subsidy is given as a grant rather than a credit.

Changing the form of federal subsidies from grants to credit subsidies would not, by itself, alter the economic incentives offered by federal infrastructure programs. Replacing a categorical grant program with a categorical loan program, for example, would have no economic effect as long as the federal subsidy was the same in both cases. Federal programs would offer different incentives only if a change in subsidy form was accompanied by changes in either the subsidy provided or the eligibility criteria used for the program.

Most proposals that have been made to establish infrastructure credit subsidies would, in fact, alter both the program eligibility criteria and the level of federal subsidy (these proposals usually call for lower subsidy levels coupled with broader eligibility criteria that would give state and local decisionmakers greater control over the type of infrastructure built with federal subsidies). Federal programs that were so changed would indeed provide subsidy recipients with economic incentives different from those of current programs. The same effects could be achieved, however, simply by changing the parameters of existing grant programs.

The Budget Treatment of Credit Subsidies

With rare exceptions, current Congressional budget procedures make credit subsidies more difficult to measure and to control than grant programs. In many cases, the federal budget simply misstates the long-term losses that accompany federal credit commitments. The budget thus makes it difficult to compare the cost of credit and noncredit policy alternatives, or to compare the cost of different credit programs with each other.

Measuring and controlling credit subsidies is problematic. The federal unified budget is a cash-based budget: transactions are recorded only when cash changes hands. Since most credit program transactions are spread out over many years, cash-based budgeting captures only that part of the credit program that involves cash transactions during the current budget period. The budget records the cost of direct federal loans, for example, as the amount disbursed in the current period. The budget does not reflect any future repayments of the loan, and thereby overstates the loan's long-term cost to the government. In contrast, the budget understates the cost of federal loan guarantees. Loan guarantees affect the budget only when a default occurs and federal payments are made. Thus, at the time a loan guarantee is extended, the budget contains no information on the guarantee's long-term cost to the government.

The deficiencies in the current budget treatment of credit programs have long been recognized. Both the Congress and the Executive Branch have tried to address these problems with a number of administrative reforms and, more recently, legislative proposals. These proposals seek to focus Congressional decisionmaking and spending controls on the government's cost rather than on the volume of credit programs.

The Cost of Alternative Subsidy Forms

The cost to the federal government of providing a given subsidy to states and localities generally does not depend on whether the subsidy is given through grant or credit instruments. From the perspective of both the subsidy recipient and the government, subsidy instruments differ principally in the timing of payments: grants provide the entire subsidy in the initial period, while credit programs provide the subsidy over a number of periods.

There are two cases in which grant and credit programs might provide the same subsidy to recipients but impose different costs on the federal government. First, the benefits provided by the tax exemption of municipal bond interest could be given more cheaply through other credit subsidies or through grants: while the preponderance of the federal revenue lost through the exemption is reflected in lower costs for municipal bond issuance, some of the revenue loss ends up as a windfall to bondholders. Federal costs would be somewhat lower if the subsidy now given through the tax exemption was given instead as a direct grant (or other credit subsidy). Second, when private capital markets are imperfect, the federal government may find it less expensive to provide financial services directly than to offer grants that subsidize state and local borrowing but allow the private market failures to persist. Since specific failures with this market have yet to be identified, however, this paper assumes that the market for municipal debt is efficient.

ECONOMIC INCENTIVES AND THE DESIGN OF FEDERAL INFRASTRUCTURE GRANTS

In 1988, infrastructure spending by all levels of government totaled $132 billion (see Table 1).[1] Federal outlays constituted about 25 percent of total spending, or $34 billion. Federal outlays went principally to highways and aviation (which together comprised about 60 percent of federal infrastructure spending). Federal infrastructure programs involve both direct federal spending and federal subsidies for state and local public works outlays. Federal programs for aviation, water transportation, and water resource projects consist largely of direct federal spending. Other federal programs, in contrast, are almost exclusively subsidies for state and

1. This report defines infrastructure as those facilities that provide a foundation or basic framework for the national economy, and in which federal policy plays a significant role. Table 1 therefore contains spending data for eight infrastructure areas--highways, mass transit, rail, aviation, water transportation, water resources, water supply, and wastewater treatment. This definition excludes some facilities sometimes regarded as infrastructure, such as public housing, government buildings, private rail service, and schools.

TABLE 1. INFRASTRUCTURE OUTLAYS IN FISCAL YEAR 1988
(In millions of dollars)

Type of Infrastructure	Grand Total	Federal Total	Federal Direct	Federal Subsidies to State and Local Government	State and Local Resources
All Categories	132,239	34,377	13,031	21,346	97,862
Capital	64,196	24,125	3,903	20,222	40,071
Operations	68,043	10,252	9,128	1,123	57,791
Highways	55,953	14,237	332	13,904	41,716
Capital	31,647	13,704	12	13,692	17,942
Operations	24,307	533	320	212	23,774
Mass Transit	16,516	3,315	40	3,276	13,200
Capital	4,727	2,395	0	2,395	2,332
Operations	11,788	920	40	880	10,868
Rail	598	598	598	n.a.	n.a.
Capital	-22	-22	-22	n.a.	n.a.
Operations	620	620	619	n.a.	n.a.
Aviation	10,449	5,923	5,098	825	4,526
Capital	3,968	1,897	1,072	825	2,071
Operations	6,480	4,026	4,026	0	2,454
Water Transportation	4,922	3,111	3,080	31	1,811
Capital	1,341	430	430	0	911
Operations	3,581	2,681	2,650	31	900
Water Resources	8,606	4,034	3,883	151	4,572
Capital	5,729	2,561	2,410	151	3,168
Operations	2,877	1,473	1,473	0	1,404
Water Supply	18,867	667	0	667	18,200
Capital	8,505	667	0	667	7,838
Operations	10,362	0	0	0	10,362
Wastewater Treatment	16,328	2,492	0	2,492	13,837
Capital	8,300	2,492	0	2,492	5,808
Operations	8,028	0	0	0	8,028

SOURCE: Congressional Budget Office based on data from Office of Management and Budget and the Bureau of the Census.

NOTE: n.a. = not available.

local spending. Table 1 shows that subsidies to state and local infrastructure spending account for more than 60 percent of the federal public works budget.[2]

Federal subsidies for state and local infrastructure outlays are intended to further a variety of goals. These goals have been pursued through federal public works subsidies, nearly all of which are now provided in the form of grants. The economic incentives offered by each grant vary with three grant characteristics: how broadly defined the grant eligibility criteria are; the federal share of individual project costs; and whether the grant program is open-ended (with the federal government subsidizing all state and local spending) or closed (with the government subsidizing the spending of each state or locality only up to some ceiling).

The Effects of Broadening Grant Eligibility Criteria

Current infrastructure grants are "categorical," and can be spent only for specified purposes.[3] Broadening grant eligibility criteria, and thus giving state and local governments more control over the use of federal funds, could affect: the efficiency of the projects that are built; the extent to which federal funds replace local spending rather than supplement it; and the extent to which grants encourage state and local investments that reflect federal priorities.

The principal advantage of broader grant eligibility criteria lies in the greater efficiency of the infrastructure investments that might result. Rates of return to infrastructure projects vary widely both by mode and by region. By virtue of their greater proximity to local problems, state and local governments might be able to choose a more efficient set of projects if those choices were not distorted by federal subsidies that varied by type of infrastructure. An example of the variation in rates of return that characterizes most infrastructure may be seen in highways: fixing all deficiencies on rural interstates would have little or no economic value, while relieving congestion on certain urban arteries would have a high rate of return.[4] Similarly, the per capita cost of building the wastewater treatment facilities mandated by the 1972 Clean Water Act will be higher in the coastal regions (where population concentrations are highest) than in the Midwest. Moreover, the kinds of wastewater treatment facilities needed vary by region: a state such as Florida, with newer cities and a more rapidly growing population, would have to spend less to correct combined

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2. This paper treats as direct federal spending some outlays that reasonably might be considered subsidies for state and local spending. Federal water resources projects, for example, can proceed only if there is a local sponsor willing to share project costs. If the local share is paid in advance of construction, the federal outlays might be considered a matching grant; if the local share is paid after construction, federal outlays that are later offset by the local share might be viewed as a federal loan to the state. Even where states and localities contribute to project costs, however, federal outlays are classified here as direct spending when the federal government chooses the projects to be built and retains ownership of and responsibility for the completed project.

3. Congressional Budget Office, *New Directions for the Nation's Public Works* (September 1988) describes the major grants programs.

4. See *New Directions* Chapter I.

sewer overflows than would states such as Massachusetts and New Jersey.[5] Given these regional differences, a more efficient set of infrastructure investments might result from state and local choices undistorted by federal subsidies that differ with each type of public works.

A related argument notes that state and local economic development officials face a growing need for institutional and sectoral coordination in planning.[6] The interaction between different types of infrastructure, and the importance of a coordinated, multimodal approach to infrastructure development, can be seen most easily in local water supply and wastewater treatment policies: since the price of water affects the amount of water used, it also influences both the wastewater treatment capacity needed and the amount of nonpoint-source pollution generated. Conversely, the price of wastewater treatment influences the amount of water that is used. The need for similar coordination can be seen in a variety of transportation and environmental problems. Regional transportation planners, for example, will have to decide on a combination of aviation, rail, and highways to provide mobility and ease congestion; local transportation officials must relieve congestion through a combination of new or expanded roads, mass transit facilities, and nonstructural alternatives (such as increased traffic management, changes in car parking policies, and land use planning); and local economic development officials will have to coordinate the provision of both transportation and environmental infrastructure to serve local economic development. In each case, the efficient provision of one kind of infrastructure will depend on having coordinated policies for many kinds of infrastructure. Federal infrastructure policies that give different subsidies to each mode may not improve local infrastructure investment choices.

Broadening grant eligibility criteria would have three drawbacks. First, doing so might reduce the incentives to states and localities to devote more of their own resources to particular types of infrastructure spending. Evidence on the effect of current grant programs is quite mixed.[7] Many studies have concluded that current federal grants mostly replace, rather than complement, state spending, because states tend to reduce their own spending in the subsidized areas. Other studies have found that federal programs stimulate state and local spending. The results vary by type of infrastructure, the time period considered, and the study methodology. Whatever the amount of substitution allowed by current categorical grants, however, it is not uniform across modes. Broadening eligibility criteria would increase the amount of substitution that occurs with federal infrastructure grants: by providing a smaller percentage of a larger spending category, broader federal infrastructure grants would make it easier for state and local governments to substitute federal funds for their own resources. Indeed, the broader the grant criteria, the more the federal grant would resemble general revenue sharing, and the less it would encourage state and local spending on infrastructure relative to other investments. This is a concern, of course, only to the extent that the primary purpose of the grant is to increase the

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5. *New Directions*, Chapter V.

6. See *Technology and Development* (Winter 1987).

7. See Congressional Budget Office, *Federal Policies for Infrastructure Management* (June 1986), p. 80.

total amount of resources devoted to infrastructure, rather than to redistribute income.

Broader criteria also could hamper the ability of federal matching grants to influence state and local investment decisions. Many kinds of infrastructure--the interstate highways, the national air traffic control system, inland waterways, and others--confer benefits on residents outside the jurisdiction providing a particular facility. When a community that pays for a facility also can recover the cost of providing services to nonresidents (through user fees, for example), no federal intervention may be necessary. But when a community receives only a fraction of the benefits from a facility, yet must pay all of the associated costs, it will have no incentive to provide what is most beneficial for the nation as a whole. The federal government could encourage state and local governments to make the appropriate infrastructure investments by paying that portion of state and local expenditures corresponding to the uncompensated benefits that spill over into neighboring jurisdictions.

To the extent that federal grants are intended to address the different spillovers or externalities attendant to each mode, these grants should be categorical. A significant fraction of the traffic on the Interstate highway system, for example, moves between states; on the other hand, externalities in mass transit, though often substantial, fall mainly among the different political jurisdictions within a given metropolitan area. To the extent that federal subsidies are intended to correct externalities, they should differ according to the characteristics of each infrastructure mode. A broad-based infrastructure grant that subsidized all modes at the same rate would not correct for externalities that differ by type of infrastructure. While externalities have been used to justify federal spending, there is no evidence relating them to current matching rates.

Finally, broadly defined federal grants reduce the Congress's ability to define different target populations for each type of infrastructure. One purpose of mass transit grants, for example, is to increase the mobility of the poor; highway grants, in contrast, are intended to benefit all drivers, without explicit reference to income. Evidence from the consolidation of several social welfare grants in the early 1980s suggests that states might direct more broadly defined grant funds less toward low-income populations and more toward the general population than they do with current grants.[8] If a general infrastructure block grant was adopted, one might see a shift away from mass transit and toward other kinds of infrastructure that are less targeted to the poor.[9] States have also shifted funds toward programs that benefited rural areas more than did the categorical programs.

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8. See George Peterson, *The Reagan Block Grants* (Washington, D.C.: The Urban Institute, 1985).

9. The evidence in *New Directions*, however, suggests that current mass transit services ill serve the poor, and may be no more targeted to them than are infrastructure services generally.

The Effects of Higher Federal Matching Rates Under Open-Ended and Closed Grant Programs

Under most federal infrastructure grant programs the federal share of project costs exceeds 75 percent (see Table 2). All current federal infrastructure grant programs are closed--that is, the federal government subsidizes spending in each state and locality only up to some ceiling. Changing either the federal matching rate or whether the grant program is closed or open-ended (so that all state and local spending is subsidized) can affect the extent of fiscal substitution in grants programs, the efficiency of subsidized investments, and the extent to which the Congress controls infrastructure outlays.[10]

Raising federal matching rates generally would lead to higher state and local spending for the purposes of the grant. Federal grants usually increase state infrastructure spending through both an "income" effect and a "price" effect. Grants increase state income and, in general, a wealthier state will spend more for public goods, including infrastructure. Grants also can lower the price that states must pay for infrastructure; with a 90 percent federal share, for example, states must pay only 10 cents for each dollar of the subsidized good. States respond to the lower effective price by purchasing more of the subsidized public works. The extent to which a grant changes state spending through income or price effects depends largely on whether or not the grant is open-ended. Open-ended grant programs subsidize all state spending in the relevant category. When the program is open-ended, states face a lower, subsidized infrastructure price when deciding between infrastructure and other goods. Raising the federal share lowers the price that states have to pay and increases the amount of infrastructure that they buy relative to other goods.

In fact, all existing federal infrastructure programs are closed, with the federal government subsidizing each state's spending only up to some ceiling; state spending above that amount is not subsidized. When states decide to buy infrastructure in amounts greater than the ceiling, they then allocate money between the subsidized good and other goods at the unsubsidized price. (Once the limit is reached, a state must pay the full cost of infrastructure just as it must pay the full cost of other unsubsidized goods.) In consequence, such grants have only income effects. Although the grants are nominally categorical, they offer the same economic incentives as grants with no restrictions at all.

To the extent that the goal of a grant program is to redistribute income, offering closed grants has no effect on the ability of the program to achieve its goal. When the goal of a program is to increase recipient spending of local resources by

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10. The extent of Congressional control over spending programs is determined largely by whether the program is discretionary (with appropriation acts limiting the annual obligation of resources to these programs) or mandatory (with no spending limits enacted). The economic incentives offered by these programs, however, depend on whether the program is open ended (with the federal government subsidizing all state and local spending) or closed (with the federal government subsidizing only a portion of state and local spending). Existing grant programs are both discretionary and closed, but there is no necessary relationship between these two concepts. A discretionary program would be open ended as long as the appropriated limit on obligations was set above the amount that grant recipients chose to spend. Similarly, a mandatory program would be closed if it required the federal government to subsidize each state's spending up to, but not above, some limit for that state.

TABLE 2. FEDERAL SHARES IN MAJOR INFRASTRUCTURE GRANT PROGRAMS

Program	Federal Share (Percent)
Highways	
System Related	
Interstate, Interstate 4R	90a/
Interstate Substitution	85
Primary, Primary Minimum, Urban, Secondary	75a/
Special Purpose	
Bridge Replacement and Rehabilitation	80
Hazard Elimination, Rail Highway Crossings	90
Highway-Related Safety Grants	75a/
Highway Safety R&D, Federal Lands Highways	100
Minimum Allocation	75-90
Demonstrations and Studies	
Railroad Highway Crossing Demo	75
Section 149 Demonstration Projects (152 projects)	80
Motor Vehicle Study	100
Feasibility Study of Using Highway Electrification Systems	65
Airport Improvement Grants	
General Provision	90a/
Primary Airports	75a/
Mass Transit	
Formula Capital Grants	80
Formula Operating Grants	up to 50
Discretionary Capital Grants	75
Wastewater Treatment	
Construction Grants	55
State Revolving Fund Grants	83

a. May be higher for states with large areas of public lands.

changing the price that the recipient faces for the subsidized good, the price incentives offered by open-ended grants must be traded off against the loss of budget control that comes from appropriating amounts sufficient to fund the federal share of all of the projects that grant recipients would like to undertake.

Higher matching rates may induce more spending, but that additional spending may not be efficient. Local governments will build projects as long as the projects return local benefits greater than the local share. If the federal share covers more than the nonlocal benefits, projects will be built that are economical from the local perspective but not from the national perspective. If the federal share covers less than the nonlocal benefits, however, locals will not build all the projects that are worthwhile for the nation as a whole.

THE ECONOMIC INCENTIVES OFFERED BY FEDERAL CREDIT PROGRAMS

Federal credit programs are large and growing: in 1988, the federal government was the country's largest financial intermediary, with federal agencies and government-sponsored enterprises providing loans or guarantees for 15 percent of all funds raised in U.S. capital markets.[11] Federal credit programs have been developed to serve a number of purposes, such as correcting credit market imperfections, influencing the allocation of resources, and redistributing income. Most current federal credit programs began principally as efforts to correct perceived credit market failures. These programs were intended to increase market access that had been limited by discrimination, institutional barriers, or a lack of information. In many cases, however, these programs also were designed to subsidize particular groups or economic activities.

Specific failures in the market for municipal debt have yet to be identified. This paper therefore assumes that any credit program for infrastructure would be adopted not to correct imperfections in the municipal credit market, but rather to subsidize state and local infrastructure investment for the same varied ends that federal infrastructure grant programs now exist. Credit subsidies are viewed as alternative instruments for achieving the same ends as grants; this section therefore considers the extent to which federal credit subsidies could offer states and localities economic incentives similar to those now provided through federal grant programs.

This paper examines four credit subsidy instruments: a tax exemption for state and local bonds; direct federal loans; federal loan guarantees; and the establishment of a government-sponsored enterprise. Nearly all of the credit subsidies now given for infrastructure employ the tax exemption instrument. Tax exemption is an inflexible policy instrument, however, and provides few of the incentives now given through grants programs. Loan programs could more nearly duplicate the incentives

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11. Reviews of federal credit programs can be found in Congressional Budget Office, *Credit Reform: Comparable Budget Costs for Cash and Credit* (December 1989); Congressional Budget Office, *An Analysis of the Administration's Credit Budget for Fiscal Year 1990*; Office of Management and Budget, *The Budget of the United States Government, Fiscal Year 1990, Special Analysis F*; and Barry Bosworth, and others, *The Economics of Federal Credit Programs* (Washington, D.C., Brookings Institution, 1987).

offered by grants. While credit subsidies also could be provided through loan guarantees and government-sponsored enterprises, the tax exemption for state and local bonds would make their use problematic.

Tax-Exempt Credit

The largest credit subsidy for infrastructure now is provided through the federal tax code, which exempts from income tax the interest earned on most state and local bonds.[12] Tax-exempt bonds are more attractive to investors than otherwise similar taxable bonds, and this fact lowers the interest rate that state and local bond issuers must pay.

The tax code provides the most generous tax treatment to bonds classified as "public-purpose." As a rule, public-purpose bonds finance government-owned-and -operated facilities for the general public. All public-purpose bonds are tax-exempt. The tax code imposes no limits on the amount of tax-exempt public-purpose bonds that can be issued by states and localities. In 1988, approximately 80 percent of all tax-exempt infrastructure bonds were classified as public-purpose.

Some infrastructure facilities qualify only for "private-purpose" tax-exempt financing. These facilities include airports, docks and wharves, mass transit facilities not owned and operated by governments, and water and sewer facilities at least 10 percent of which benefit a single customer. The tax code imposes no limits on the amount of tax-exempt private-purpose bonds that states can issue for these purposes (though it does limit the amount of private-purpose tax-exempt debt that states can issue for most other purposes). In 1988, approximately 20 percent of all tax-exempt infrastructure bonds were classified as private-purpose.

Various provisions of the tax code have the effect of raising interest rates on private-purpose tax-exempt bonds above the rates on otherwise comparable public-purpose tax-exempt bonds. First, the demand for private-purpose bonds is reduced by a provision that subjects the interest from such bonds to the alternative minimum tax (AMT). The effect of the AMT is partially offset, however, by tax provisions that lower the supply of private-purpose bonds. These provisions include limits on the amount of private-purpose bonds that states can issue (airports and docks and wharves are exempt from these limits), a requirement that facilities financed by private-purpose bonds be depreciated more slowly than otherwise would be possible, and a prohibition on the advance refunding of such bonds.[13]

Since enactment of the 1986 Tax Reform Act, interest rates on long-term tax-exempt debt have averaged between 75 percent and 85 percent of interest rates on

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12. For a review of current tax-exempt bond law, see the Joint Committee on Taxation, *General Explanation of the Tax Reform Act of 1986* (May 4, 1987); and Sharon White, "Overview of the Technical and Miscellaneous Revenue Act of 1988 as It Relates to Tax-Exempt Obligations," *Municipal Finance Journal* (Winter 1989).

13. Advance refunding makes bond issuance more attractive, for it allows issuers to lock in a new interest rate if interest rates fall before the bonds can be called.

comparable long-term taxable bonds.[14] The tax exemption thus has reduced the payments of the average municipal borrower by about as much as a direct grant covering between 9 percent and 11 percent of project costs. Modifying the tax exemption in order to provide further incentives for state and local infrastructure investment, however, would prove difficult. First, the subsidy implicit in the tax exemption is determined by provisions of the tax code that have wide-ranging effects. The extent to which the tax exemption reduces state and local borrowing costs depends on a host of tax provisions that affect the demand for and supply of tax-exempt bonds relative to other assets. The most important of these provisions include the level of personal income tax rates, the extent to which other tax shelters are available, and the level of corporate income tax rates.[15] Thus, the principal determinants of the value of the tax exemption could be changed only with effects on tax policy that would probably be far out of proportion to the assistance that would be provided to tax-exempt bond issuers. Conversely, the Congress would be most likely to change one of these provisions, and so alter the value of the tax exemption, for reasons unrelated to its desire to change federal infrastructure subsidies.

Another complication arises from the fact that the tax subsidy cannot easily be targeted. Since the tax exemption applies to nearly all municipal bonds, changes in the subsidy would affect state and local capital spending generally, not infrastructure (or a specific type of infrastructure) in particular.

Direct Loans

The federal government can subsidize state and local infrastructure borrowing by making direct loans on terms more generous than those available in the private market. These terms can include lower interest rates and origination fees, more generous repayment schedules and grace periods, and less stringent qualifying criteria. The federal government now makes few loans for state and local infrastructure.[16]

Of all credit subsidies, direct loans can provide the closest substitute for grants-in-aid. Most important, loan subsidies can be targeted by type of infrastructure or by recipient just as grant subsidies can: eligibility criteria for loans can be made the

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14. Based on James Poterba, "Tax Reform and the Market for Tax-Exempt Debt," National Bureau of Economic Research Working Paper No. 2900 (March 1989), and a CBO estimate made by comparing a weighted average marginal tax rate for bondholders of 25.6 percent with the yield spread between AA-rated long-term municipal bonds and AA-rated taxable corporate bonds. This comparison provides only a rough guide to the efficiency of the tax exemption, for it ignores the many minor differences between similarly rated municipal and corporate debt, differences that reasonably could be expected to affect the yield spread between these two debt classes.

15. See the statement of Edward M. Gramlich, Director of the Congressional Budget Office, before the Subcommittee on Oversight and Investigations, House Public Works Committee, September 1987, for a discussion of the effect of various income tax provisions on the value of the tax exemption for state and local bonds.

16. In 1988, federal infrastructure loan obligations comprised $100 million for Farmers Home Administration water supply and wastewater treatment loans and $46 million for highway right-of-way acquisition loans.

same as those for grants, and, for each aid category, the federal share of financing costs can be made to vary and funding can be made open-ended or closed. The share of local costs that would be paid by a subsidized loan depends principally on the difference between the market interest rate and the subsidized loan rate. The federal share of local costs that would be paid by 20-year loans of different interest rates is shown in Table 3. For example, a state repaying a zero-interest loan would have the same annual outlays as if it had received a grant for 51 percent of the loan amount and had borrowed the remainder without subsidy at a market interest rate of 8 percent.

The subsidy provided by a loan also depends on the loan repayment period. When the repayment period increases, so does the cumulative subsidy implicit in the loans, for borrowers then hold the subsidized loans for a longer time. For example, extending the repayment period from 20 years to 30 years would raise the federal share in the example above from 51 percent of project costs to 62 percent of project costs (see Table 4). Most infrastructure projects have expected useful lives of less than 30 years (only water resource projects are longer-lived). If the repayment period on loans was limited to the expected useful life of the project being financed, loans with standard terms could subsidize no more than 55 percent to 65 percent of project costs (depending on the creditworthiness of the borrower), given market interest rates prevailing in 1989.[17] Most infrastructure grant programs, in contrast, currently offer matching rates between 55 percent and 90 percent (see Table 2 above).

In practice, grant and loan programs may also differ in the amount of aid that each provides to borrowers of different creditworthiness. Most grant programs offer the same matching rate to all recipients. Subsidized loans that provided the same interest rate to all borrowers, however, would provide higher implicit matching rates for those with the weakest credit rating (and thus the highest rates were they to borrow in the market). Smaller, infrequent borrowers, for example, generally must pay interest rates that are higher than those paid by larger municipal borrowers with the higher credit ratings. While the interest rate on loans could be made to vary and so offer the same implicit matching grant to all, doing so would come at the price of higher administrative costs.[18]

Loan Guarantees

A loan guarantee is a promise by the government to pay lenders some or all of the principal and interest due in the case of a default. Guarantees allow lenders to pass to the federal government some or all of the risk associated with lending, thus enabling state and local governments to secure credit on terms more favorable than

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17. This assumes that loans have standard covenants. If unusual covenants are allowed, a "loan" can replicate a grant of any matching rate (there being no substantive difference, for example, between a grant and a "loan" with no penalties for defaulting).

18. The interest rates charged on FmHA loans for water supply and wastewater treatment, for example, depend on community median income, and thus bear a rough relation to each community's creditworthiness.

TABLE 3. GRANT EQUIVALENCE OF SUBSIDIZED LOANS AT VARIOUS INTEREST RATES (In percent)

Subsidized Interest Rate	Unsubsidized Interest Rate												
	0	1	2	3	4	5	6	7	8	9	10	11	12
0	0	10	18	26	32	38	43	47	51	54	57	60	63
1	--	0	9	18	25	31	36	41	46	49	53	56	59
2	--	--	0	9	17	24	30	35	40	44	48	51	54
3	--	--	--	0	9	16	23	29	34	39	43	46	50
4	--	--	--	--	0	8	16	22	28	33	37	41	45
5	--	--	--	--	--	0	8	15	21	27	32	36	40
6	--	--	--	--	--	--	0	8	14	20	26	31	35
7	--	--	--	--	--	--	--	0	7	14	20	25	29
8	--	--	--	--	--	--	--	--	0	7	13	19	24
9	--	--	--	--	--	--	--	--	--	0	7	13	18
10	--	--	--	--	--	--	--	--	--	--	0	6	12
11	--	--	--	--	--	--	--	--	--	--	--	0	6
12	--	--	--	--	--	--	--	--	--	--	--	--	0

NOTE: The numbers show the grant equivalence of a subsidized loan at various interest rates. For example, a state repaying a zero-interest loan would have the same annual outlays as if it had received a grant for 51 percent of the loan amount and had borrowed the remainder without subsidy at a market interest rate of 8 percent.

The table assumes that all loan terms other than the interest rate are the same for both a subsidized loan and the privately originated alternative. These terms include, among others, that loans mature in 20 years; that debt service is level; and that payments are made annually.

TABLE 4. GRANT EQUIVALENCE OF SUBSIDIZED LOANS WITH VARIOUS REPAYMENT PERIODS (Assumes an unsubsidized interest rate of 8 percent)

Subsidized Interest Rate	Loan Repayment Period (Years)									
	5	10	15	20	25	30	35	40	45	50
0	20	33	43	51	57	62	67	70	73	76
1	18	29	38	46	52	56	60	64	66	69
2	15	25	33	40	45	50	53	56	59	61
3	13	21	28	34	39	43	46	48	51	52
4	10	17	23	28	32	35	38	40	42	43
5	8	13	18	21	24	27	29	31	32	33
6	5	9	12	14	16	18	20	21	22	22
7	3	4	6	7	8	9	10	11	11	11

NOTE: The numbers show the effect of changing a loan's repayment period on the size of the subsidy it conveys. For example, extending the repayment period from 20 years to 30 years would raise the federal share of a zero interest loan from 51 percent of project costs to 62 percent of project costs.

The table assumes that all loan terms other than the interest rate are the same for both a subsidized loan and the privately originated alternative. These terms include, among others, that debt service is level; that payments are made annually; and that the unsubsidized interest rate would be 8 percent.

they would otherwise receive. In 1988 no new federal loan guarantee commitments were made for infrastructure.

Loan guarantees generally can have incentive effects similar to those of grants and loans. Guarantees can be targeted nearly as well as grants and loans: eligibility criteria can be made broadly the same regardless of the form in which the subsidy is provided; funding can be made open-ended or closed; and, for each aid category, the subsidy provided can be varied by changing the percentages of the principal and interest that the federal government will guarantee.[19] The government has less control over the subsidy implicit in a guarantee, however, for the rates available to borrowers are set in the market. Moreover, the deepest subsidy that can be conveyed with a guarantee will be less than that which can be given through direct loans: where direct loans can be made at zero interest, most loan guarantees can lower the interest rates that localities must pay to only slightly more than the yields on federal debt of similar maturities.[20]

Using federal guarantees to subsidize state and local infrastructure investments would be complicated by the fact that most such investments currently are financed with tax-exempt credit. Guaranteeing tax-exempt bonds would be at odds with a longstanding Congressional and Administration policy to discourage such debt instruments, a policy spurred by the recognition that such debt would compete directly with Treasury bonds and, if issued in large volume, could increase the cost of all federal borrowing.

Providing federal guarantees only for taxable state and local debt, however, would benefit few of the communities now issuing bonds for infrastructure. Federal guarantees could reduce the interest rate on taxable municipal debt to a rate no less than that paid on Treasury bonds plus a premium for the relative illiquidity of municipal debt.[21] Interest rates on existing federally guaranteed debt suggest that the rate on guaranteed taxable municipal debt could range between 0.30 to 2.5 percentage points more than the rate on Treasury notes.[22] Yet nearly all tax-exempt infrastructure bonds issued in 1988 carried interest rates less than or equal to that

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19. Terms on privately originated loans, however, are likely to differ somewhat from terms on direct government loans. See *Budget of the United States Government, Fiscal Year 1990*, pp. 6-23.

20. As with loans, loan guarantees could provide the same subsidy as any direct grant if unusual covenants were allowed. A federal guarantee could cover some fraction of a loan and give the federal government no recourse to the borrower. The borrower could then refuse to repay the guaranteed portion of the loan with no sanction from the government.

21. The specialized trading institutions that have grown up around the large volume of Treasury bonds make it easy for investors to reduce their portfolios before the bonds have matured. Because the secondary market for municipal bonds is more limited, bondholders must be compensated for accepting a greater risk that they will be unable to sell the debt that they hold at expected prices. Investors will also demand a premium to reflect the expected transactions cost associated with getting payment on a guaranteed bond that goes into default.

22. Debt issued in small, heterogeneous lots (such as export loans guaranteed by the Export-Import Bank) would pay a premium over federal securities near the top of this range. Guaranteed debt issued in larger, more homogeneous lots (like that of some government-sponsored enterprises) would pay smaller premiums.

on Treasury bonds.[23] Even tax-exempt bonds carrying no rating (and thus not considered "investment grade"), on average paid interest rates slightly below the rates on Treasury bonds. In only a very few instances, then, would issuers be better off selling taxable bonds with a federal guarantee rather than tax-exempt bonds with only their own resources to back the bonds.

A federal guarantee for taxable bonds would therefore principally benefit two groups: issuers who present such a credit risk that they do not now venture into the tax-exempt market; and issuers who now use taxable debt to pay for infrastructure projects that the volume cap on private-purpose, tax-exempt debt now excludes from the tax-exempt market. Since airports and docks and wharves are exempt from these volume caps, the only types of infrastructure projects curbed by the volume cap are privately-owned mass transit and pollution control facilities.

Government-sponsored Enterprises

A government-sponsored enterprise (GSE) is a federally chartered, privately owned financial intermediary. GSEs are designed to borrow in private capital markets and lend capital to particular sectors of the economy.[24] GSEs generally have been designed both to correct flaws in credit markets and to provide credit subsidies to specific groups.[25]

An infrastructure GSE might lower municipal borrowing costs by ameliorating three limitations of private capital markets that now make these borrowing costs higher than they otherwise would be--the illiquidity of municipal bonds, the relatively high fixed costs of issuing debt in small quantities, and the uncertainty surrounding the creditworthiness of infrequent borrowers. The federal government could lower these borrowing costs by subsidizing a financial entity that would purchase state and local bonds and then resell them in some standard format. By transforming a plethora of bond types into a standard bond, the intermediary would eliminate the current heterogeneity of municipal bonds and facilitate resales of all bonds. Such a program could lower the borrowing costs of small and infrequent borrowers, much as do existing state bond banks, since loans would be resold in large amounts. Indeed, such a program could reduce borrowing costs more than could a single state bond bank, for it would pool risk over both a wider geographic area and a broader class of borrowers.

The federal government need not rely on a GSE, of course, to subsidize the repackaging of municipal debt; alternatives include the creation of an on-budget federal agency that would guarantee bonds backed by pools of state and local infrastructure bonds, and the provision of grants to private firms in exchange for an

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23. Computed by CBO from data supplied by the Public Securities Association.

24. Other definitions of a GSE are noted in R.C. Moe, and T.H. Stanton, "Government-Sponsored Enterprises as Federal Instrumentalities: Reconciling Private Management with Public Accountability," *Public Administration Review* (July/August 1989), pp. 321-329.

25. A description of the seven existing GSEs can be found in Congressional Budget Office, *Credit Reform*, pp. 74-79; and in *Budget of the United States Government, Fiscal Year 1991*, pp. A-1213 ff.

undertaking by those firms to securitize (that is, issue new securities backed by) specific classes of infrastructure bonds. Any of these approaches would make state and local debt more marketable. Providing grants or establishing an on-budget agency, however, would involve economic and budgetary issues similar to those associated with other grant and loan guarantee programs; a GSE would raise new complications.

Establishing a GSE would follow an approach tried, with widely varied success, to further the secondary markets for loans in housing, education, and farming.[26] Like previous GSEs, an infrastructure GSE could both increase the efficiency of the markets that it served and provide federal subsidies to market participants. The Congress's ability to determine either the amount or the recipients of the subsidies, however, would be complicated by the federal guarantee that investors would impute to the GSE's bonds. Even if legislation explicitly disavowed any federal responsibility for the GSE's debt, investors would treat the GSE's bonds as if they were the debt of a federal agency, with backing nearly as good as the "full faith and credit" of the federal government that lies behind Treasury bonds.

In the past, investors have found many reasons for ignoring disclaimers of federal guarantees of GSE debt. Most important, investors have found an implicit guarantee in the structure of the GSE itself. Here investors have looked at the tangible benefits available to GSEs, such as: a line of credit at the Treasury; the ability to issue bonds that are exempt from the securities laws intended to protect investors (lenders have taken this exemption as a sign that the Congress believes the debt of these GSEs to be more secure than other privately issued debt, a belief that can be rationalized by assuming a Congressional willingness to provide needed financial support, but not, in general, by the GSEs' balance sheets); and the ability to issues bonds that bank regulators often treat as being as secure as Treasury bonds. Investors regard these federal entanglements in the concerns of nominally private corporations as signs that disclaimers of federal guarantees are somewhat disingenuous.

Lenders also have found implicit guarantees in previous Congressional actions. For example, the Congress provided a multibillion-dollar bail-out of the Farm Credit System--a GSE lacking federal debt guarantees. The federal government also has been willing to help even nonfinancial private corporations (such as Lockheed and Chrysler) in an effort to avoid the disruption that might follow the collapse of a large firm. Buyers of debt from an infrastructure GSE are likely to assume that similar assistance would lie behind the GSE's bonds.

The subsidy conveyed through an implicit guarantee of the GSE's debt would depend on the extent to which the GSE could use the guarantee to shed risk. Risk-taking by private firms is constrained by the market: as firms increase the riskiness of their portfolios, they find that their cost of selling debt and equity rises. An implicit federal guarantee attenuates the relation between risk and the cost of funds,

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26. The benefits and costs of GSEs are reviewed in Thomas H. Stanton, *Government Sponsored Enterprises: Their Benefits and Costs as Instruments of Federal Policy* (Association of Reserve City Bankers, April 1988). See also the statement of Robert D. Reischauer, Director of the Congressional Budget Office, before the Committee on Ways and Means, April 18, 1989; and *Budget of the United States Government, Fiscal Year 1991, Special Analysis F.*

for a GSE can incur risk without paying the premium that the market would demand of a wholly private firm as long as lenders look to the federal purse, not the GSE's balance sheet, to evaluate the risk associated with their loans.

The experience of existing GSEs during the 1980s has shown just how free GSEs can be from the need to pay a premium when they assume risk. At various times, both Fannie Mae and the Farm Credit System were able to borrow funds at the interest rate on Treasury debt plus a modest premium despite holding a portfolio that in no way justified such low rates.[27] Thus, a GSE can benefit its constituency by borrowing at rates that fail to reflect the risk associated with its debt, and sloughing off onto the federal government much of the risk associated with its lending. The greater the risks that a GSE takes, the greater the subsidy that the federal government provides through the implicit guarantee of the GSE's debt. While the GSE garners the rewards from successful risk-taking, in extreme circumstances the government could pay most of the costs associated with risks that fail. The government could seek to limit its contingent liability for a GSE's debt only through legislation constraining the GSE's financial behavior.[28]

The subsidies conveyed through an infrastructure GSE would be not only uncertain, but also rather difficult to target. One challenge would lie in designing a GSE such that the subsidies given to the GSE were most likely to be passed on to the issuers of bonds purchased by the GSE. Three ways to accomplish this end have been used in the past: cooperative ownership by the borrowers; establishment of multiple GSEs that compete to buy loans from the same borrowers; and provisions in the GSE's charter act that specify its public purposes. It is not clear which method or combination of methods could ensure that a GSE would pass the federal subsidies it received through to the initial bond issuers.[29]

Given mechanisms that ensured the benefits of the GSE would be passed on to the original bond issuers, the Congress could target particular beneficiary groups primarily by deciding which types of infrastructure and which communities were eligible for the subsidy (restrictions could be placed on the issuer, size, and purpose of preferred debt). The subsidy conveyed to each bond category could be varied, however, only if the Congress appropriated grants to the GSE to cover the difference between the amount that the GSE paid for certain classes of bonds and the amount that the GSE received on resale of those bonds. Of course, relying on appropriations to vary the subsidy would simply transform the GSE into a roundabout grant program.

Finally, the assistance provided by a GSE, like that offered by loan guarantees, would be complicated by the tax exemption for municipal debt. If the GSE issued taxable bonds (as do all existing GSEs), it could help only the small fraction of

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27. See Michael Moran, "The Federally-Sponsored Credit Agencies: An Overview," *Federal Reserve Bulletin* (June 1985), pp.373-388; and Congressional Budget Office, *Credit Reform*, pp. 77-78.

28. The constraints might take the form of regulatory oversight and/or operating rules written into the GSE's charter, discussed below.

29. See Thomas H. Stanton, statement before the House Committee on Ways and Means on H.R. 3392, legislation to create the Corporation for Small Business Investment, August 3, 1988.

communities that would be helped by guarantees for taxable bonds. The alternative--to have the program issue tax-exempt debt--may appear at first blush to be a cost-free way to help a larger class of borrowers. Yet issuing tax-exempt debt would lower federal revenues by increasing the amount of tax-exempt debt outstanding (and so increasing the amount of interest income sheltered from federal income taxation). As noted above, issuing tax-exempt, federally guaranteed debt also would be at odds with Congressional and Administration policy, for such debt instruments, if issued in large volume, would increase the cost of all federal borrowing.

MEASUREMENT AND CONTROL OF CREDIT SUBSIDIES

Congressional budget procedures to measure and control federal spending, designed largely with grants in mind, are less well suited to measuring and controlling credit programs. With rare exceptions, the budget now misstates the long-term losses that accompany federal credit commitments. The budget thus makes it difficult to compare the cost of credit and noncredit policy alternatives, or to compare the cost of different credit programs with each other. This section reviews the problems raised by the current budget treatment of credit programs, and outlines proposals that have been made to remedy them.[30]

Measurement and Control of Tax Expenditures

Estimates of tax expenditures reflect the amount of revenue that the federal government forgoes as the result of special provisions of the tax code. They are estimates of revenue losses, funds that the government does not collect. These estimates are imprecise: while the revenues that the government collects and spends are open to direct observation and fairly precise measurement, uncollected funds are not.

In addition to being difficult to measure precisely, tax expenditures generally are subject to less control in the budget process than are many spending programs. Spending programs subject to annual appropriations or periodic reauthorizations are regularly reviewed. Tax expenditures generally are not, although those scheduled to expire may undergo review if their renewal is being considered. Another complication arises from the structure of Congressional committees: measures that would affect tax expenditures for infrastructure come under the jurisdiction of the House Committee on Ways and Means and the Senate Committee on Finance, while the spending programs that might be considered as alternatives come under the jurisdiction of other committees (mainly the House Committee on Public Works and Transportation and the Senate Committee on Environment and Public Works). This structural dichotomy makes trade-offs between tax expenditures and direct spending (either grant or credit) difficult to consider, even though they may be alternative means of accomplishing the same objective.

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30. These issues are examined fully in Congressional Budget Office, *Credit Reform*, and Congressional Budget Office, *The Effects of Tax Reform on Tax Expenditures* (March 1988).

Measurement and Control of Loans and Loan Guarantees

Loans and loan guarantees present measurement problems even more forbidding than those of tax expenditures. The federal budget now records spending on a cash-flow basis: transactions are recorded only when cash changes hands. Cash-based budgeting therefore captures only that part of a credit program that involves cash transactions in the current budget period. Except in rare cases, however, the costs of loans and loan guarantees are the result of cash flows in many years. Cash-based budgeting therefore cannot accurately measure the cost of credit subsidies.

Under current law, the budget records the cost of direct federal loans as the amount disbursed in the current period. The budget does not reflect any future repayments of the loan, and thereby overstates the loan's long-term cost to the government. These long-term costs vary dramatically by program, for both the interest rate charged and the default rate experienced vary substantially across programs. The Administration has estimated that the present value of the government's losses on direct loans to be made in 1990 will range from less than 1 percent of the principal loaned to more than 70 percent.[31]

While overstating the cost of direct loans, the budget's emphasis on cash flow understates the cost of federal loan guarantees. Loan guarantees will affect net budget outlays only if the government receives a fee for guaranteeing the loans, or if a default eventually occurs and federal payments are made. Thus, at the time a loan guarantee is extended, the budget contains little or no information on the guarantee's long-term cost to the government. The long-term cost of providing federal loan guarantees, like the cost of direct loans, varies widely. Government losses on loan guarantees depend principally on the guarantee fees that the government charges, on the loan default rate, and on the percent of the loan covered by the guarantee. The Administration estimates that the cost of guarantees to be issued during 1990 will range from 1 percent of the principal guaranteed to 34 percent of the principal.[32]

The difficulty of measuring the cost of credit programs is compounded by the fact that loan and loan guarantee programs, unlike grant programs, are usually established as revolving funds. Revolving funds present two complications. First, they obfuscate the cost of loan and loan guarantee programs. The budget shows the cost of revolving fund programs as the difference between fund outlays (for new loans and guarantees) and fund receipts (from payments of principal and interest, from guarantee fees, and from proceeds of loan sales). Revolving loan programs with constant or falling new loan outlays therefore appear to have little cost, while newly established programs and programs with expanding loan volumes appear more expensive regardless of the subsidy actually provided. The FmHA's Rural Development Insurance Fund, for example, made $465 million in new loan disbursements in 1987. The Administration estimates that the long-term cost to the government of these loans will be about 15 percent of this amount. The budget, however, showed net outlays for this program as a negative $210 million.

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31. Congressional Budget Office, *Credit Reform*, pp.44-45.

32. *Credit Reform*.

Revolving funds for credit programs also largely escape spending controls exercised through the annual appropriation of budget authority. Each year, the Congress appropriates budget authority, the legal basis for obligating federal resources. Yet Congressional appropriations for revolving funds generally are necessary only to the extent that new loan obligations plus the cost of guarantee commitments exceed account income. Credit programs thus have proved hard to control through annual appropriations limits.[33]

The deficiencies in the current budget treatment of credit programs have long been recognized.[34] Both the Congress and the Executive Branch have tried to address these problems with a number of administrative reforms. First, the Administration's annual budget documents include estimates of the subsidy cost of federal credit programs. Yet these estimates are binding at no point in the Congressional budget process. The Administration also issues an annual credit budget that parallels the unified budget. The credit budget lists, by budget function, new loan obligations and guarantee commitments (including the full amount of the guaranteed loan regardless of the percent guaranteed). Since 1985, the credit budget has been included in Congressional budget resolutions, and annual appropriation acts have placed limitations on the amount of new loan obligations and guarantee commitments for most credit programs. In most programs, however, these limits have been set high enough to avoid restricting program activity. Moreover, the credit budget focuses on loan and loan guarantee volume, rather than on the subsidy cost of different credit programs.

In recent years, legislative proposals have been made to reform the budget treatment of credit programs.[35] While varying in their specifics, these proposals share certain key features. Most important, all of the proposals seek to focus Congressional decisionmaking and spending controls on the subsidy cost rather than the volume of credit programs. All of the proposals would require the budget to measure the current-period cost of credit subsidies as the present value of the government's future losses. By recognizing the losses at the time that these losses were made irrevocable, the plans would facilitate the comparison of grant and credit programs. The proposals differ principally on how to measure subsidy cost and who should do the measuring.

Measurement and Control of the Costs of GSEs

Although GSEs are privately owned, their special legal status and relationship to the government mean that the government bears much of the risk associated with GSE lending. Despite this, reporting of GSE risk is quite limited. The financial statements of GSEs are published in neither the unified nor the credit budget. Instead, very abbreviated versions of their most recent actual and projected financial statements are shown in the Budget Appendix. These statements do not now

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33. See *Credit Reform*, pp. 7, 20-21.

34. A history of credit reform efforts can be found in *Credit Reform*.

35. See *Credit Reform*, Chapters II and III.

indicate either the current market value of any GSE's net worth or the government's contingent liability for GSE lending.

The federal government's contingent liability for GSE debt could be reduced by including in any authorizing legislation constraints on the GSE's financial behavior. These constraints could take the form of regulatory oversight and/or operating rules written into the GSE's charter. Each form of constraint would have its problems. Successful regulation of a GSE requires that the regulator be given a clear, coherent brief; the independence needed to assess impartially the risks undertaken by the GSE; and the authority to enforce its regulations. Regulation of existing GSEs is lacking in all of these regards. Federal regulation of GSEs, where it exists at all, is dispersed among different agencies charged with sometimes conflicting goals. For example, the Department of Housing and Urban Development is asked to ensure that FNMA both promotes low-income housing and makes a profit on its mortgage remarketing operations. Since the two goals are directly at odds with one another, it is easy for the regulation of FNMA to change with each administration's interpretation of the FNMA charter. Establishing well-designed regulations for an infrastructure GSE could be particularly difficult, for the Congress would be designing regulations for a market that currently does not exist and whose complications are at this time only a matter of conjecture. Nonetheless, properly drawn regulations and vigorous federal supervision might mitigate the risks associated with such a GSE.[36]

In addition, or instead, an infrastructure GSE could be required to follow lending practices designed to insure the soundness of its portfolio. Possible rules include: requiring the GSE to meet risk-based capital requirements--that is, to maintain a reserve fund as a function of the size and quality of its portfolio and to stop borrowing money when its capital-asset ratio rises above a certain level; requiring that the GSE regularly report the market value of its assets and liabilities; and allowing the GSE to purchase the bonds only of certain classes of issuers.

The last rule points up a trade-off that the government would encounter in designing an infrastructure GSE: greater protection for the federal government from liability for the GSE's debt could mean less assistance to those issuers who currently pay the highest interest rates. The GSE could be of most help to state and local governments that issue poor-quality debt in small lots. The benefits of the GSE could be targeted to these issuers simply by requiring that the GSE buy only the bonds of such communities. Yet the federal government's contingent liability would be greater the weaker were the issuers of the debt that it bought. Further, the less well-established the credit histories of the communities from which the GSE purchased debt, the more difficult it would be for the Congress to establish constraints on the GSE's lending behavior that in fact protected the federal government from having to provide the GSE with financial assistance.

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36. One model for the regulation of GSEs is discussed in R.C. Moe, and T.H. Stanton, "Government-Sponsored Enterprises as Federal Instrumentalities," pp. 321-329. Moe and Stanton call for a Comptroller for GSEs within the Treasury that would parallel the Comptroller of the Currency. The powers of the GSE Comptroller would mimic those that the Comptroller of the Currency now enjoys over federally chartered banks.

THE COST OF ALTERNATIVE SUBSIDY FORMS

The cost to the federal government of providing a given subsidy to states and localities generally does not depend on whether the subsidy is given through grant or credit instruments. From the perspective of both the subsidy recipient and the government, subsidy instruments differ principally in the timing of payments: grants provide the entire subsidy in the initial period, while credit programs provide the subsidy over a number of periods.

There are two cases in which grant and credit programs might provide the same level of subsidy but impose different costs on the federal government. First, the benefits provided by the tax exemption of municipal bond interest could be given more cheaply through other credit subsidies or through grants: while the preponderance of the federal revenue lost through the exemption is reflected in lower costs for municipal bond issuance, some of the revenue loss ends up as a benefit to bondholders. Federal costs would be lower if the subsidy now given through the tax exemption were given instead as a direct grant (or other credit subsidy). Second, this paper has assumed that the market for municipal debt is essentially competitive. If in fact the municipal credit market not sufficiently competitive, then the federal government may find it less expensive to provide some financial services directly than to offer grants that subsidize state and local borrowing but allow the private market failures to persist.

Tax-Exempt Bonds

Investors will purchase tax-exempt bonds only if the interest paid is at least as great as the interest they would receive after tax from an otherwise comparable taxable bond. Suppose, for example, that the tax-exempt interest rate is 33 percent less than the interest rate on comparable taxable bonds. Investors facing a 33 percent marginal tax rate can obtain the same return whether they receive the higher taxable interest and pay 33 percent of it in tax or receive 33 percent less in tax-free interest income. All taxpayers facing marginal tax rates of less than 33 percent will be better off buying taxable bonds and paying tax on the interest income.

In practice, more tax-exempt bond issues are sold each year than can find buyers in the 33 percent tax bracket. Only by offering interest rates that are closer to taxable interest rates can tax-exempt issuers attract the needed bond purchasers in lower marginal tax brackets. When the tax-exempt rate is 28 percent less than the yield on comparable taxable bonds, for example, taxpayers facing a 28 percent marginal tax rate will receive the same after-tax return from tax-exempt and taxable bonds. At the same time, taxpayers facing marginal rates greater than 28 percent will benefit: their after-tax return will be greater from tax-exempt bonds than from taxable bonds on which they would have to pay 33 percent in tax. This benefit reflects the inefficiency of the tax exemption for municipal bonds. In this hypothetical case, while the tax exemption lowers the interest cost of bond issuers by 28 percent, federal revenue losses are based on the marginal tax rates of all holders of tax exempt bonds, including bondholders facing marginal tax rates greater than 28 percent. The federal government thus could lower municipal interest costs more cheaply by ending the tax exemption and providing direct grants to municipal bond issuers.

Empirical studies have found that in the 1960s and 1970s less than half of the federal revenue losses from the tax exemption were captured by states and localities in the form of lower borrowing costs.[37] The Tax Reform Act of 1986 contained provisions (in particular, flattening the graduated tax rates on personal income) that have dramatically increased the efficiency of the tax exemption for municipal bond interest. Extending the tax exemption to large new classes of debt, however, might increase the yield spread between taxable and tax-exempt debt and so lower the efficiency of the tax exemption.

Credit Market Failures

In the early decades of this century, some federal credit programs offered financial services that were not available from private firms. The Federal Land Banks, for example, pioneered the origination of long-term, fixed-rate agricultural mortgages. The Farm Credit System first developed variable-rate loans. And insurance from the Federal Housing Administration encouraged private lenders to make long-term, fixed-rate housing loans.[38]

Such efforts demonstrated that the risks of providing the services were manageable and encouraged private firms to provide similar services. Although at first the federal programs were heavily subsidized relative to the terms on which credit was available from private lenders, the subsidies declined substantially over time as the government demonstrated that the services could be provided profitably and as private firms entered the new markets.

Because the federal government correctly perceived that the risk associated with these financial services was not as great as the private sector had assumed, it proved to be cheaper for the government to provide these financial services directly than to offer grants (whether those grants subsidized private firms that offered the services or compensated individuals for the continuing market failures). Similarly, if the market for state and local debt were not efficient, then the government might find it cheaper to aid state and local borrowing through credit programs--such as loan guarantees or remarketing of municipal debt--than through direct grants.

In fact, specific failures in the market for municipal borrowing have yet to be identified. Moreover, the ability of financial markets to process information, evaluate risk, and reduce transaction costs has increased enormously in the last two decades, suggesting that there may not be significant market imperfections in municipal finance that private markets could not ameliorate without federal subsidies. Unless imperfections in the market for municipal debt are found to exist, grant and direct credit subsidies for municipal borrowing would impose the same cost on the federal government.

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37. Joseph Pechman, *Federal Tax Policy* (Washington, D.C.: Brookings Institution, 1983), p. 119.

38. See Bosworth and others, *The Economics of Federal Credit Programs*, p. 159, for a discussion of federal credit programs designed to correct flaws in private capital markets.