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BUDGET ISSUES

The Role of Depreciation in Budgeting for Certain Federal Investments

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Preface

In this study we explore the applicability and usefulness of depreciation in federal budgeting for spending on transportation infrastructure, research and development, and human capital. Such spending is intended to provide future benefits primarily in terms of increased long-term private sector economic growth. We have defined this spending as investment.[1] Depreciating these investments and appropriating annual depreciation charges would conceivably be one way to spread the costs of these investments over time.[2] While we previously reported[3] that the use of depreciation presents many practical difficulties in making budget decisions about levels of federal investments, we believe that more research in this area contributes to the overall debate about capital budgeting.

In addition to investment spending, the federal government makes other expenditures of a capital nature which are intended to provide future benefits to the government as an operating entity; examples are office buildings and computer systems. There might be benefits from some change in the budget treatment of this type of spending, but that issue was not the subject of the request and, therefore, is not addressed in this study. It needs to be considered separately on its own merits.

We found widespread agreement among accounting and budgeting experts that the federal government generally does not depreciate transportation infrastructure, research and development (R&D), and human capital for either accounting or budgeting purposes. In our research we found no evidence that states or private sector businesses use depreciation in budgeting for any of these types of investments. However, economists depreciate infrastructure and R&D investments in their more global analyses to make rough estimates of national wealth.

We found virtually no sources that identified methods by which these investments could reasonably be depreciated for federal accounting or budgeting purposes. Our review of the professional literature and consultation with budget and accounting experts did not support depreciating such investments in federal budgeting as useful or

[1]For example, see Budget Policy: Prompt Action Necessary to Avert Long-Term Damage to the Economy (GAO/OCG-92-2, June 5, 1992) and Federal Budget: Choosing Public Investment Programs (GAO/AIMD-93-25, July 23, 1993).

[2]This study addresses depreciation broadly as a concept. Many of the issues raised in this study would also apply to other methods of spreading costs over time such as depletion accounting in the case of natural resources and amortization in the case of certain intangible assets.

[3]Budget Issues: Incorporating an Investment Component in the Federal Budget (GAO/AIMD-94-40, November 9, 1993).

appropriate because (1) it could undermine budgetary control (2) it would result in depreciating assets the government does not own, and (3) determining the value and useful life of these investments would be difficult to do.

We believe that depreciation for these types of federal investments is not an appropriate budgetary treatment. However, we do believe that federal investments with long-term potential benefits for economic growth and productivity should be considered differently than is presently done in the budget. One option we have previously discussed[4] is to include an investment component in the budget focusing on these areas of investment within the Budget Enforcement Act framework, possibly with a separate floor for investment spending, to help ensure attention to these needed areas of investment while preserving the established controls in the current budget process.

We are sending copies of this study to interested congressional committees and the Directors of the Office of Management and Budget and the Congressional Budget Office. Copies will also be made available to other interested parties on request.

Major contributors to this study are identified in appendix I.

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[4]Budget Issues: Incorporating an Investment Component in the Federal Budget (GAO/AIMD-94-40, November 9, 1993).

Contents

Abbreviations

BEA	Bureau of Economic Analysis
CBO	Congressional Budget Office
DOT	Department of Transportation
FASAB	Federal Accounting Standards Advisory Board
FASB	Financial Accounting Standards Board
GAO	General Accounting Office
GASB	Governmental Accounting Standards Board
IASC	International Accounting Standards Committee
NSF	National Science Foundation
OECD	Organization for Economic Cooperation and Development
OMB	Office of Management and Budget

Introduction

Background

Concerns about long-term national economic growth have focused attention on the federal government's role in promoting investment necessary to sustain the economy's capacity to maintain and improve future living standards. The federal government contributes to investment in two primary ways.

First, the federal government can facilitate private investment by reducing the federal deficit. Federal budget deficits have absorbed large proportions of national savings that would otherwise have been available to finance investments, either public or private.

Second, within an established fiscal policy, the federal government can change the proportion of government spending devoted to investment. In the past, federal investments in infrastructure, human capital, and R&D have played a key role in economic growth, either directly or by creating an environment conducive to private sector investment.

Both the Congress and the administration are considering budgeting alternatives to decrease the annual federal deficit while increasing long-term federal investment intended to enhance private sector growth. Some discussions have focused on capital budgeting and the possible use of depreciation in the budget as a measure of the cost of federal investments which deliver benefits over a future period of time. These investments include infrastructure such as highways, bridges, and air traffic control systems; R&D, which produces new technology that leads to innovative products and processes; and investments in human capital through education and training designed to increase worker productivity.

Depreciation is an integral component in capital budgeting—a proposal contained in several bills in recent years. A capital budget approach using depreciation would report total acquisition costs of the investment in a capital budget and the annual depreciation in an operating budget. The cost of the investment recorded in the operating budget would thus be spread over the estimated life of the investment. The operating budget would reflect the cost of goods and services consumed rather than purchased during the period.[1] Under most capital budgeting proposals, the operating budget must balance while the capital budget may be financed by borrowing. By contrast, the federal budget is a unified cash-based budget which treats outlays for capital and operating activities the same.

[1]Some private sector businesses include depreciation in their operating budgets, but those operating budgets are totally accrual-based and, therefore, similar to income statements. They are, therefore, unlike the operating budgets described in most capital budgeting proposals for government. Businesses use cash and capital budgets to allocate financial resources.

Federal debt is undertaken for general purposes of the government rather than for specific projects or activities.

Three views have been cited in support of proposals to depreciate investments in the federal budget. First, the long-lived nature of the benefits arising from these investments causes some analysts to believe that their costs should also be spread over time by some method of depreciation so that costs are shared by those who will benefit in the future.[2] Second, some analysts believe that because the initial cost of these investments is high, budgeting for the full commitment up-front discourages investment and favors consumption spending. Finally, proponents believe that budgeting for depreciation instead of the full commitment up-front frees up budgetary resources for greater investment or other uses in the current period and reduces the current year's deficit.

Other analysts, taking an opposing view, believe that depreciation would not really free up resources or reduce the deficit. Such a proposal would only redefine the deficit to be controlled as the operating budget deficit rather than the larger unified budget deficit. This would mean that any spending categorized as "capital" would not be subject to the same pressures to reduce the deficit as any other federal spending. Thus, it might be used to justify larger unified budget deficits and borrowing. In addition, they believe that appropriating annual depreciation instead of the amount of the full commitment undertaken by the government poses a loss of budgetary control that would threaten the integrity of the budget and the budget process.

Objectives, Scope, and Methodology

The objectives of this review were to determine (1) whether federal agencies are depreciating transportation infrastructure, R&D, and human capital for accounting and budgeting purposes, and if so, the methods they use, (2) whether any state, local, or foreign governments are depreciating these investments, and (3) whether depreciation of these investments could be useful in budgeting. Based on the items traditionally included in these categories, we define infrastructure as federally funded physical transportation assets, such as highways, bridges, railways, and air traffic control systems. We define R&D as federally funded activities intended to produce new or improved products or processes. For purposes of this study, we define investment in human capital as federally funded education and training programs.

[2]The concept of generational equity includes matching revenues and expenses during a period to determine if each generation is paying for the services it receives.

To meet these objectives, we discussed the concept of depreciation as a budgeting tool with professional staff at the Office of Management and Budget (OMB), the Congressional Budget Office (CBO), the Department of Commerce's Bureau of Economic Analysis (BEA), and the Organization for Economic Cooperation and Development (OECD).[3]

We also discussed depreciation from an accounting and budgeting perspective with officials at the Departments of Education and Transportation, the National Science Foundation, the Federal Highway Administration, the Federal Aviation Administration, and the Federal Railroad Administration. We reviewed articles in budgeting and accounting professional journals on the use of depreciation in federal budgeting and accounting.

We reviewed relevant standards issued by the Financial Accounting Standards Board (FASB), the Governmental Accounting Standards Board (GASB), and the International Accounting Standards Committee (IASC). We also reviewed Title 2 of the GAO's Policy and Procedures Manual for Guidance of Federal Agencies, and standards drafted by the Federal Accounting Standards Advisory Board (FASAB) dealing with depreciation.[4]

To specifically address the second objective, we reviewed the GASB standards to determine if state and local governments are required to treat depreciation of infrastructure, R&D, and human capital for financial statement purposes. We also interviewed officials from federal agencies, OECD, and two consultants regarding the budgeting practices of foreign governments. We discussed the experience of New Zealand with these experts because of its recent adoption of accrual-based budgeting.[5]

We performed our work in Washington, D.C., between June and December 1994.

[3]OECD is an international organization, comprised of 24 democratic nations with advanced market economies whose aim is promoting economic and social welfare throughout the OECD area.

[4]FASB provides accounting standards for the private sector in the United States; GASB provides accounting standards for state and local governments; and IASC provides private sector standards for the international community. Title 2 provides accounting standards established by the GAO for federal agencies. FASAB was established in 1990 to consider and recommend accounting principles for the federal government.

[5]Accrual-based budgeting includes depreciation of certain assets for budgeting purposes.

Depreciating Federal Investments

Depreciation in Accounting

Depreciation is an accepted part of accounting in business organizations. Under business accounting practices, depreciation is the allocation of the costs, less salvage value, of fixed assets, including equipment, buildings, and other structures, over their useful lives in a systematic and rational manner. It is recorded in the business' financial statements to reflect the use of assets during specific operating periods in order to match costs with related revenues in measuring income and to determine the organization's profit or loss, its federal tax liability, and the depreciated book value of the asset. It is also a factor in determining the cost of manufactured items and the amount of user charges appropriate for services rendered.

Depreciation of assets in federal accounting is often not done because it is difficult to do and often provides little relevant information. In the past, federal accounting standards for non-business-type activities established by GAO, known as Title 2, encouraged, but did not require, depreciation of general tangible assets. However, Title 2 did require depreciation accounting for all federal business-type activities in cases where depreciation of federal assets were used to establish sales prices or user charges necessary to reimburse revolving funds or otherwise recover costs.[1] In these cases, federal agencies do depreciate the relevant assets to determine user charges to recover the cost of the asset. Presently, FASAB is considering standards that would require federal agencies to depreciate infrastructure assets owned by the federal government, but probably not intangible investments such as R&D and human capital.[2]

GASB, which sets accounting standards for state and local governments, prohibits recording annual depreciation charges in financial statements for the general fund because these funds do not operate on a strictly accrual basis. Depreciation, which is an expense, applies only to accrual-based accounting systems. GASB standards, however, do require the reporting of depreciation in financial statements for proprietary and certain trust fund

[1]Currently, the accounting standards to be used by federal agencies are set forth in Interim Accounting Standards Guidance approved by GAO, OMB, and Treasury. It specifies the following hierarchy of federal accounting standards: (1) individual standards approved through the FASAB process, (2) OMB Form and Content requirements, (3) accounting standards contained in agency manuals as of March 29, 1991 (these may have been based on Title 2), and (4) accounting principles published by other sources in the absence of guidance from (1) through (3).

[2]The depreciation of general tangible assets will be addressed in a FASAB exposure draft on Accounting for Property, Plant and Equipment which is planned to be issued for public comment in early 1995. Accounting standards for human capital and R&D are expected to be incorporated in the Statement of Stewardship exposure draft which is planned to be issued for public comment in the spring of 1995.

assets because these funds are reported on an accrual rather than a cash basis.

If depreciation methodologies were to be used in federal budgeting, one starting point for establishing those methodologies conceivably would be the accounting methods used for depreciation of tangible assets for financial statement purposes. Depreciation in accounting can be a complex and technical subject and involves significant subjectivity concerning such key factors as the asset's value, its useful life, and its salvage value. Because of its subjective nature, it is only an approximation of how much of an asset is used up in any period. Ultimately, depreciation of tangible assets is an imperfect way of spreading costs over the asset's useful life. Trying to apply depreciation accounting techniques to intangible assets such as R&D and human capital investment for either accounting or budgeting purposes would be even more difficult because of the additional difficulties in estimating value, useful life, or establishing ownership.

Basic Depreciation Calculations

Calculating the amount of depreciation to be recorded annually depends on how assets are valued to determine the depreciation base,[3] the depreciation method used, and the asset's useful life.

Asset Valuation

There are three general ways to value assets—historical cost, constant cost, and current cost. Historical cost is the amount of cash (or its equivalent) paid to acquire an asset and is considered to be an objective and verifiable basis for valuation. Constant cost restates historical cost information in terms of dollars of equal purchasing power. Current cost is the amount of cash or other consideration that would be required today to obtain the same asset or its equivalent. Market prices are often used to determine current cost. Which of these valuation methods is chosen greatly affects the depreciation base. While historical cost is most widely used and documented, current cost provides a more relevant measure of the resources tied up in a particular asset and the cost to replace the asset. After an asset is valued (usually at historical cost), one of numerous depreciation methods is then selected to spread the depreciation base over the asset's useful life.

Depreciation Methods

Depreciation computations are based on the assumption that every fixed asset (except land) has a limited useful life. The value of the asset (or

[3]The depreciation base is the recorded costs or other value basis of a fixed asset that is to be recovered through depreciation, excluding estimated recovery from resale or salvage.

depreciation base, as described previously) is thought of as a prepaid expense that by some method must be spread over the asset's useful life. Various methods have been developed to do this—among the most well-known are the straight-line, declining-balance, and replacement cost methods. The straight-line method is the simplest and most commonly used. Other methods that can be more complicated have been advocated or approved by accountants for income tax and other purposes. The following describes the three methods mentioned above.

- The straight-line method spreads the depreciation base equally over the useful life of the asset.
- The declining-balance or geometric method determines the annual depreciation charge by applying a fixed percentage to the diminishing value of the asset, that is, the asset's value after deducting the preceding year's depreciation charges.
- The replacement method considers the asset's replacement cost and increases the current depreciation charge by a percentage based on a comparison of the anticipated replacement cost with the recorded cost.

Selecting an appropriate depreciation method depends on the purposes for which depreciation is being recorded. In our review, we found that depreciation of transportation infrastructure, R&D, and human capital investments in the public sector was used primarily by economists for analytical purposes such as estimating economic wealth. Many economists identified the replacement method as the appropriate method for economic analysis because it provides the closest estimate of true economic cost.

Status of Depreciating Federal Investments

In general we found that none of the three types of federal investments we examined—transportation infrastructure, R&D, and human capital—are depreciated for either accounting or budgeting by federal agencies. We did find that some consideration had been given to depreciating infrastructure because physical assets are depreciated in the private sector, and its tangible nature provides a reasonable basis for discussion. However, investments for R&D and human capital had received little attention because they are not depreciated in the private sector and the intangible nature of these assets made issues of valuation and ownership difficult to determine.

Depreciation of Infrastructure Investments

The Department of Transportation (DOT) administrations that we reviewed—the Federal Highway Administration, the Federal Aviation

Administration, and the Federal Railroad Administration—do not depreciate transportation infrastructure investments for accounting or budgeting purposes. The reason given for this is that the federal government does not own most of the transportation assets it funds. The federal government funds most transportation infrastructure through grants. For example, the federal government spent more than $24 billion on physical transportation investments in 1993, but more than $21 billion of this spending was in the form of grants.

Generally accepted accounting principles established by FASB provide that infrastructure assets owned by the reporting entity, such as railroad tracks owned by the entity, are depreciated in the entity's financial statements. At this time, federal accounting standards for infrastructure assets not owned by the federal government do not provide for recording grantee assets for purposes of depreciation. FASAB is considering standards for infrastructure assets owned by the federal government, but not for infrastructure grants or assets owned by grantees.

DOT analysts cited two major problems with depreciating assets which DOT does not own. First, it is often difficult, and in some cases impossible, to link federal grant money to the value of a specific infrastructure asset. In part, this is because it is difficult to distinguish how the federal share of funding is used when mixed with funding from other sources. It is also difficult to assign value to portions of a project that are only components of larger projects. Also, if federal investment expenditures cannot be linked directly to an asset, there is no basis for determining a useful life over which to spread the cost.

A second problem cited by analysts at DOT is the difficulty of monitoring the value of an asset not owned by the entity seeking to depreciate it. The owners of an infrastructure asset can improve or discard that asset at their own discretion, although in the case of highways the federal government may share in any monetary return resulting from disposition. Applying the concept of depreciation to federal grants could result in a situation in which an annual depreciation charge would appear in the federal budget for an asset that is not owned by the federal government or that may not even exist any longer.

Analysts at DOT said that the effort that would be required to determine the value of depreciable transportation assets funded by grants would be large and would detract from DOT's other missions. Officials at these agencies expressed strong doubts that the benefits from depreciating these

infrastructure investments would justify the cost of determining the assets' value.

Among the 24 OECD nations, none appropriates depreciation for infrastructure assets in its national budget. Even New Zealand, the only OECD nation that uses depreciation in its budget, does not appropriate depreciation for infrastructure assets that are owned by the government as a whole.[4] New construction of roads and other infrastructure assets owned by the New Zealand government as a whole are appropriated up front on a cash basis. In this instance, New Zealand's system is, in principle, similar to the system that is used to budget for highways in the United States. Infrastructure assets not owned by the New Zealand government are not depreciated by the government for either budgeting or financial reporting purposes. However, for accounting purposes, in cases where the government owns transportation infrastructure assets, the assets are depreciated using the current replacement cost method in the government's financial statements.

Depreciation of R&D Investments

Officials at the National Science Foundation (NSF) told us that they do not depreciate R&D and advised us that they could imagine no reasonable method or practical reason for doing so. Major impediments to depreciation include establishing the value and useful life of R&D. Also, NSF's R&D funds are usually disbursed through grants for which there is no established method of depreciation.

Depreciation of R&D investment has been proposed and considered for the private sector, but not practiced. FASB prohibits capitalization and depreciation of any R&D expenses by private sector entities, including the R&D costs of internally developed computer software. Depreciation of R&D was rejected because of the uncertainty and difficulty in measuring the benefits and the inability to determine useful life.

From an international perspective, the IASC provides that in limited cases R&D expenditures may be deferred and depreciated if they result in a product or process that is technically and commercially feasible and can be marketed. In our review, we found only one OECD government, New Zealand, that provided for depreciation of R&D to a limited extent in its budget, and then only for R&D owned by the government.

[4]Depreciation on assets owned by individual departments, such as office buildings, is included in each department's budget.

In New Zealand, government R&D expenditures generally are expensed as incurred in both the budget and financial statements. However, they can be capitalized and depreciated in both if they result in a product or process which is demonstrated to be technically useful and is intended to be used or marketed. In cases where this is anticipated, depreciation is deferred until a market asset is produced. At that point, the R&D expenditures (based on historical cost) are depreciated over the expected period of future benefits, allowing for a more accurate assessment of costs for the period. Otherwise, R&D expenditures are reported as expenses for that year.

Depreciation of Human Capital

We found no government that capitalizes or depreciates human capital in any budget or financial statement. At the core of this issue there is a basic unresolved question as to whether human capital depreciates or appreciates over its relevant life. Officials at the Department of Education told us they had discussed the concept of depreciating human capital, but did not find it cost beneficial or a useful tool. Similar to the DOT with its highway grants, the Department of Education funds education and training mostly through grants[5] for which there is no standard or methodology for depreciation. In the academic literature we reviewed, there is general agreement that the problems preventing the acceptance of depreciation of human capital are insurmountable in part because of the inability to determine the useful life and real value of education and training spending.

In the private sector, various methods for recognizing in financial statements the value of a firm's employees have been developed and proposed over the last 30 years. However, no standard for reporting human capital has ever been accepted, or even seriously considered, because (1) the methods are complicated and difficult to apply and (2) the methods used to determine values for human capital are subjective and open to challenge.

The methods that have been developed apply only to specific firms and are not intended to measure the value of human capital outside the firm. Thus, even if they were accepted as valid, they are not applicable to the education and training expenditures that governments would make, which are primarily for the benefit of the general public.

[5]The Department of Education also funds education and training with loans and loan guarantees. The Credit Reform Act of 1990 provides a methodology for controlling and accounting for these credit programs in the budget.

Depreciation for National Economic Wealth Estimates

Although federal investments in transportation infrastructure, R&D, and human capital are not depreciated for budgeting or accounting purposes, OMB and BEA depreciate infrastructure and R&D investments to make rough estimates of national wealth for analytical purposes. Depreciation is considered to be appropriate for generating national economic wealth estimates because it is used only to provide rough estimates of the value of existing assets in the economy. In these economywide analyses, the problems of determining ownership or control of assets are not relevant. However, the analysts who generate these estimates maintain that this type of analysis is inappropriate for budgeting because (1) the estimates are imprecise and dependent on questionable assumptions and (2) because measures of stocks have no place in a budget that allocates resource flows.

In making national economic wealth estimates, the BEA and OMB use a valuation method called the perpetual inventory method. In this method, the gross federal investment for the year is added to the sum of previous years' net investments. This sum is then reduced by depreciation and estimated discarded investment to determine net investment. All OECD nations use the perpetual inventory method in estimating their national wealth.

BEA and OMB have both estimated the value of the stock, that is, inventories, of physical capital investments including infrastructure. In making estimates of the value of the nation's stocks of economic wealth, BEA depreciates the estimated stock of infrastructure assets valued on historical cost, constant cost, and current cost bases using straight-line depreciation over a 50-year estimated useful life. OMB estimates the total net federally financed physical capital stock including transportation stocks, regardless of ownership. OMB made its estimates using a constant dollar adjustment to historical federal spending for transportation and depreciated it on a straight-line basis. The transportation stocks are depreciated over a 40-year estimated useful life. These estimates are produced for economic policy information.

OMB has also estimated the stock of federally financed research and development. In making these estimates, OMB assumed that basic research did not depreciate but applied research and development depreciated, using the geometric method, at a 10 percent rate. BEA recently published estimates of the national R&D stocks. In making its estimates it depreciated all R&D, including basic research using a method equivalent to an 11 percent geometric rate. In the President's 1995 budget, OMB

estimated the stock of the nation's education capital based on an estimate of what it would cost to reeducate the population at 1987 prices. They did not assume any depreciation of education over an individual's lifetime. BEA has made no attempt to estimate the stock of human capital.

Depreciation as a Budgeting Concept

We found widespread agreement among accounting experts published in professional journals, budget experts, and economists at BEA and OECD that the use of depreciation is not well suited to a cash and obligation-based budget like that of the United States. Depreciation as envisioned in most capital budgeting proposals is not currently done in the federal budget. Appropriations and outlays are normally recorded on a cash basis in the budget. Thus, in general, the total commitment of the government in making an investment is usually recorded up front, not spread over the useful life of the investment.

No state records annual depreciation in its capital or operating budgets because depreciation has no effect on the flow of current financial resources. However, an important task of state capital budgets is to relate the purchase of some of a state's fixed assets to borrowing and other specified types of financing.

Business enterprises do not include depreciation of capital assets in their budgets. Businesses do, however, include a cost of capital (primarily principal and interest payments) in their financial budgets. Textbooks on private business budgeting practices indicate that depreciation is irrelevant for budgeting except where income taxes are affected. Private businesses use depreciation primarily for two purposes: (1) to match revenues with expenses in a given period for the purposes of reporting profit or loss in financial statements and (2) for tax purposes. Neither of these purposes, however, are applicable to federal budgeting, except for federal business-type activities which consider revenues and expenses in setting user fees.

Of the OECD member nations only one, New Zealand, uses depreciation in its budget. New Zealand began to apply depreciation to budgeting in 1992 as a part of its transition from a cash to an accrual-based budgeting system. New Zealand's accrual-based budgeting system includes depreciation for department or agency-owned physical assets in the budget statements where the depreciation is appropriated as part of the cost of departmental operations. However, assets owned by the government as a whole, such as transportation infrastructure and some

R&D, are depreciated in the financial statements, but are not appropriated in the budget. New Zealand does not depreciate expenditures for human capital in either its financial or budget statements.

In talking to budget experts, we identified four major disadvantages in the use of depreciation for federal investments in infrastructure, R&D, and human capital: (1) loss of budgetary control, (2) increasing uncertainty over budget estimates, (3) obscuring the effect of budgetary decisions on the deficit, and (4) concern with depreciating assets not owned by the federal government.

The greatest disadvantage according to these experts was that depreciation would result in a loss of budgetary control under an obligation-based budgeting system. In general, the federal budget records the full cost of its spending decisions up front in terms of both budget authority and outlays so that decisionmakers have the information needed and an incentive to take the full cost of any decision into account. The only time that spending on a federal investment can be controlled is before obligations are made. After obligation, recipients of the spending expect it to occur and the government is generally committed to payment of all the costs. Depreciation, on the other hand, would spread that cost over the asset's expected useful life. The focus of control for the operating budget—the component that would be subject to a balanced budget requirement—would not be on the total up-front government commitment because, by the time the commitment would be fully recognized in the operating budget, the expenditures would have already been made. Although decisionmakers would consider the up-front costs of an investment in the capital budget, this budgetary component would not be subject to resource constraints or balanced budget requirements, thereby diminishing the incentives to carefully weigh total costs and benefits.

This loss of budget control would be evident in two ways. First, under Budget Enforcement Act provisions, investment spending would be transformed from a discretionary decision in the current year to a stream of sunk mandatory payments in future years to finance the depreciation charge.[6] This would diminish budgetary flexibility in the discretionary portion of the budget. Second, without the establishment of some new method of control, depreciation of investments would nearly eliminate budgetary constraints on current investments. Since assets are only

[6]In the Budget Enforcement Act of 1990, as amended, discretionary spending refers to spending controlled by the Congressional appropriation process. Mandatory spending refers to relatively uncontrollable payments for entitlements which are controlled indirectly through substantive law rather than directly through the appropriation process.

depreciated after they have been fully constructed and put into service, outlays for current investments would not be recognized in the operating budget until the annual depreciation charges began. For example, spending on the recently cancelled Superconducting Super Collider would not have been included in any prior year's budget nor have been subject to any spending cap[7] because it was never put into service. In addition, all previous spending would appear in the budget in the year it was cancelled, setting up a perverse incentive to continue the program rather than to absorb the accumulated past spending in 1 year.

Depreciation could be applied to the federal budget process only if it were accompanied by new methods of control that would provide discipline for making up-front commitments that would not destroy budgetary integrity. For example, when New Zealand included depreciation in its budgetary process, it substantially reformed its budget process to include new controls on agencies. These controls included the imposition of asset caps and the establishment of output contracts which established performance goals for agency heads.

A major disadvantage to using depreciation in the federal budget cited by budget experts is its effect on the quality of budget estimates. They are concerned that depreciation of investments would make budget estimates uncertain and/or unreliable. Determining any asset's useful life is a complicated technical exercise that is inherently subjective. For example, OECD recently surveyed the useful lives over which capital equipment was depreciated in 14 OECD countries and found wide discrepancies in the average life for the same categories of assets. The range for capital equipment was 11 years in Japan to 26 years in the United Kingdom. Uncertainties about the useful lives for assets with possibly indefinite lives, such as highways, and intangible assets, such as R&D and education, would be even greater. Cash flows provide a more certain and more objective basis for making budgetary decisions.

Another major disadvantage cited by budget experts is the claim that depreciation would undermine the usefulness of the budget as a fiscal policy measure. The generally cash-based federal budget deficit is currently designed to provide an indication of the level of federal borrowing. Budget decisionmakers consider, among other things, the effect of federal borrowing on the economy in general and the national credit markets in particular. If depreciation, a noncash cost allocation, is

[7]Under the Budget Enforcement Act of 1990, as amended, spending limits or caps are the maximum amount of new budget authority and outlays for discretionary appropriations.

recorded in the budget in lieu of actual cash payments, budgetary decisions would no longer be connected to their impact on the government's borrowing.

We recognize that there are already departures from a cash-based budget process when the cash basis fails to recognize the government's full commitment up front. Credit reform, for example, is a revised method, specified in the Federal Credit Reform Act of 1990, of controlling and accounting for credit programs in the budget. It requires that the full cost of credit programs over their entire lives be included in the budget up front so that the full cost is considered when making budget decisions. However, changes in the treatment of the investment spending we reviewed would do the opposite. For such spending, departing from the cash basis of budgeting by budgeting depreciation would actually spread the government's commitment over time rather than recognizing it when it is made.

Finally, budget experts mentioned the difficulty of depreciating assets that are not owned by the federal government. Many of the investment expenditures of the federal government are made in the form of grants for assets or intangibles that the federal government does not own. There is currently no provision in any accounting standard for depreciating assets that are not owned. Grants are normally accounted for as current expenditures.

Despite the disadvantages cited in using depreciation for budget or resource allocation decisions, there is widespread agreement in the literature and among the budget experts and program analysts we interviewed that depreciation can be a useful analytical tool for certain other purposes. For example, information on depreciation costs may be one factor considered in making budgetary decisions by serving as a reminder that aging assets may require replacement or maintenance. Depreciation may also be used to measure the operating cost of an activity.

Investment Component in the Budget

We have previously reported that depreciation is not a practical alternative for the Congress and the administration to use in making decisions on the appropriate level of spending intended to enhance the nation's long-term economic growth.[8] While depreciation is used in estimating the level of the

[8]Budget Issues: Incorporating an Investment Component in the Federal Budget (GAO/AIMD-94-40, November 9, 1993).

nation's economic wealth, we believe that these estimates are not useful in determining future federal spending. However, we have reported that an investment component in the federal budget, with targets for appropriate levels of investment, could be more useful to the Congress and the President regarding decisions on future investments.

Setting an investment target would require policymakers to evaluate the current levels of investment and consumption spending and would encourage a conscious decision about an appropriate overall level of investment. In our view, unlike a focus on incremental depreciation charges, this approach has the advantage of focusing budget decisionmakers on the overall level of investment supported in the budget without losing sight of the unified budget deficit's impact on the economy. It also has the advantage of building on the current congressional budget process as the framework for making decisions. And it does not raise the budget control and other practical measurement problems posed by the use of depreciation.

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