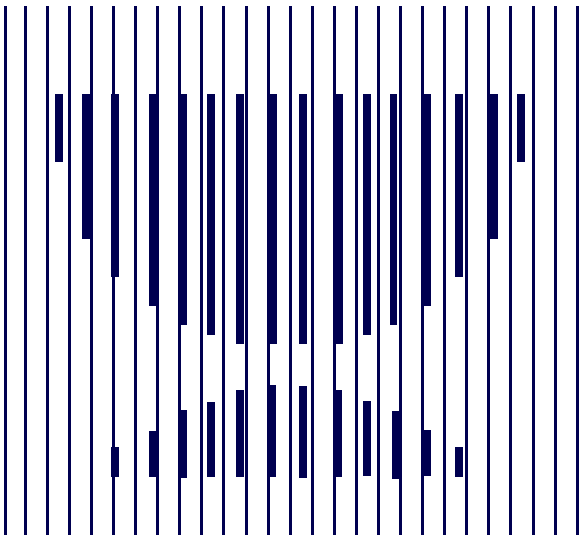
CBO MEMORANDUM

BUDGETARY TREATMENT OF NASA'S ADVANCE COMMITMENTS TO PURCHASE LAUNCH SERVICES

June 1995



CONGRESSIONAL BUDGET OFFICE

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SECOND AND D STREETS, S.W.
WASHINGTON, D.C. 20515

NOTE

Unless otherwise indicated, all years referred to in this memorandum are fiscal years.

The Congressional Budget Office (CBO) undertook this analysis of the budgetary treatment of selected options to attract private financing for developing new space-launch systems at the request of the House Committee on Science (formerly the Committee on Science, Space, and Technology). David Moore of CBO's Natural Resources and Commerce Division prepared the memorandum under the supervision of Elliot Schwartz and Jan Paul Acton. Janet Airis, Pete Fontaine, Kathleen Gramp, and Robert Sunshine of CBO's Budget Analysis Division reviewed the document and provided guidance and comments. Gail Del Balzo, CBO's General Counsel, also provided a helpful critique. The memorandum was edited by Leah Mazade. Christian Spoor provided editorial assistance, and Angela Z. McCollough prepared the memorandum for production.

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SUMMARY AND INTRODUCTION

The National Aeronautics and Space Administration (NASA) has initiated the Reusable Launch Vehicle (RLV) program to develop new space-launch systems that will reduce the cost of putting people and cargo into space. According to the program's rationale, the new systems will provide less costly launch services because they will use new technology and be operated by the private rather than the public sector. To lessen the demands on the federal budget and to draw private operators into providing launch services, NASA is exploring funding options for developing the new systems that depart from the traditional approach of direct government financing.

A prominent feature of some of the proposals for private financing of such development is offering the prospective private developer an advance commitment by the government to purchase launch services after the system has been built. The House Committee on Science (formerly the Committee on Science, Space, and Technology) asked the Congressional Budget Office (CBO) to analyze the budgetary treatment of advance commitment proposals. The Committee also asked CBO to consider using unobligated balances to cover termination liabilities incurred by the government.

This memorandum examines the budgetary treatment of two private financing options. In the first, the "advance commitment" option, NASA would agree to purchase launch services in the future with the expectation that a selected private contractor could use that commitment to attract private capital. In the second, the "loan guarantee"option, the government would guarantee the private debt necessary to develop a new launch system. Neither of those options has been presented to CBO as a legislative proposal; accordingly, CBO is not providing a definitive answer as to how either option would be shown in the budget. The discussion below should be considered preliminary: it indicates what factors are important in determining the budgetary treatment of options that encourage private financing rather than how any specific proposal would be treated.

The current rules for determining the budgetary effects of pending and enacted legislation were adopted as a result of the Budget Enforcement Act of 1990. CBO believes that the rules governing lease-purchases--transactions in which the government purchases an asset by making lease payments--should apply to the advance commitment option. Specifically, NASA's advance commitment to purchase launch services would be treated as a lease-purchase in which the government bears substantial risk. That treatment would require NASA's budget to record the budget authority and outlays necessary to fulfill the advance commitment as if the government were funding development of the launch system directly but did not enjoy its usual relatively low cost of borrowing. The rules governing lease-purchases are

explicitly intended to discourage expensive "buy now/pay later" financing schemes by displaying the true cost of those arrangements in the budget.

CBO's conclusion that the advance commitment option to finance the development of a new launch system should be treated as a lease-purchase with substantial governmental risk is based largely on the assumption that NASA's advance commitment would cover all or almost all of the cost of developing the system. That large a purchase would allow the system's private owner, as it provided launch services to the government, to depreciate fully the cost (or a very large part of the cost) of acquiring the system. In an accounting sense, the government would consume all or almost all of the value of the asset. If NASA's advance commitment covered a significantly smaller portion of the cost of developing the system (for example, only 60 percent) and all other aspects of the option remained the same, a different budgetary treatment would be appropriate. Such a treatment would still require that budget authority be recorded at the time the commitment was made but would allow outlays to be recorded over the extended period of the service-purchase commitment.

The loan guarantee option for funding the development of a new launch system accomplishes the major objectives of the RLV program using a federal loan guarantee of private debt. Under the rules for budgetary treatment of the extension of federal credit to a private borrower, NASA's budget would reflect only the subsidy cost--that

is, the present value of the expected net cost to the government. (The present value is a single number that expresses a flow of current and future income or payments in terms of an equivalent lump sum received or paid today.) The actual amount of budget authority and outlays that NASA's budget would require under the loan guarantee option is uncertain because the chance of default is difficult to assess without additional details regarding the loan guarantee contract. The likelihood of default would have to be estimated under the assumption that no future appropriations would be available to purchase services from the RLV contractor. That assumption implies a high probability of default that would probably require levels of budget authority and outlays approaching those needed for direct financing by the government.

Relying on private financing to acquire a capital asset that is entirely consumed by the government--all other things being equal--will cost the government more than acquiring the same asset directly. The reason is that the government's cost of borrowing is always lower than the private sector's, even if a loan to a private party is guaranteed by the government either directly or indirectly through an advance commitment to purchase. The reasoning behind NASA's emphasis on private financing, however, holds that all other things are not equal. NASA maintains that only through private development and operation of a new launch system can launch costs be driven down to their lowest possible level. Accordingly, to justify private financing on the grounds of cost, the savings uniquely attributable to private

ownership and operation must be sufficient to offset the higher cost of private financing.

THE REUSABLE LAUNCH VEHICLE PROGRAM

The Reusable Launch Vehicle program, which was formally initiated in NASA's budget request for 1996, will support the development of new space-launch systems ranging from those carrying small payloads of as little as 1,000 pounds to launchers capable of lifting 25,000 pounds into orbit.[1] NASA's current plan anticipates that the RLV program will require federal spending of $1.6 billion between 1994 and 2000 (see Table 1). Notably, NASA is considering replacing the space shuttle with a vehicle based on a flight demonstrator developed by the RLV program.

NASA maintains that the cost of space launches can be dramatically reduced by combining new technology with the private development and operation of new launch systems. In addition to the benefit it would receive from such reductions in cost, NASA contends that less expensive systems would allow U.S. producers to increase their share of the private market for space launches, which would be likely to grow as falling launch costs encouraged new commercial activities.

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1. National Aeronautics and Space Administration, *Budget Estimates, Fiscal Year 1996*, pp. SAT 5-5 through SAT 5-12.

TABLE 1. PROPOSED FUNDING FOR THE REUSABLE LAUNCH VEHICLE PROGRAM (In millions of dollars of budget authority)

Program Components	1994	1995	1996	1997	1998	1999	2000	Total
Systems Engineering and Analysis	3.5	4.6	4.7	4.7	4.7	4.7	4.9	31.8
Ground-Based Technology	28.4	76.9	59.3	117.2	250.7	255.1	266.3	1,053.9
Flight Demonstration	2.3	47.0	95.0	91.0	95.0	105.0	100.0	535.3
Total	34.2	128.5	159.0	212.9	350.4	364.8	371.2	1,621.0

SOURCE: Congressional Budget Office based on data provided by the Office of the Comptroller, National Aeronautics and Space Administration.

The RLV program has three components: systems engineering and analysis, ground-based-technology development, and flight demonstration.[2] The flight demonstration part of the program focuses on developing two vehicles, the X-34 and the X-33, and their supporting systems. The X-34 will carry small payloads of 1,000 to 2,000 pounds to low-Earth orbit. The X-33 is intended to be the precursor for a larger vehicle that will replace the space shuttle as the means of carrying 25,000-pound payloads to the international space station's planned orbit (220 nautical miles high, inclined at 51.6 degrees to the equator).[3] Initially, the X-33's successor will carry only cargo. Subsequently, NASA could add a module to carry people back and forth to the space station. That module would probably be developed and financed

2. Office of Technology Assessment, *The National Space Transportation Policy: Issues for the Congress*, OTA-ISS-620 (May 1995), provides an overview of the RLV program; its antecedent, the DC-X program; and its fit with other federal support for the development of new space-launch systems.

3. James R. Asker, "New Space Launchers a Tough Test for NASA," *Aviation Week & Space Technology* (October 31, 1994), pp. 22-24.

as a standard NASA procurement of a capital asset: private contractors under NASA supervision will build a system that the government will own, with funding provided as annual appropriations.[4]

NASA is proposing to conduct the X-33 portion of the RLV program differently from its traditional approach.[5] During the 15-month phase I--the first of three phases--three teams of contractors selected in March 1995 will develop their vehicle designs, operations concepts, and business and investment strategies. The last category must include an evaluation of the vehicle's potential share of the commercial market and the "legislation/policy required to permit unique government/industry partnerships." Phase II will narrow the field of competitors to no more than two. During that phase, beginning no later than 1996, the would-be RLV contractors will design, construct, and fly a scale model of the X-33 prototype. Sometime before the end of the decade, NASA will select a phase III contractor that will then develop and certify for operational use a full-scale version of the new RLV launch system.

For the X-33, the government and the selected private contractors will undertake phases I and II under cooperative agreements. During those phases, the RLV

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4. Ivan Bekey, "A Win-Win Concept for Commercial Development and Operation of a New, Large Reusable Space Launch Vehicle " (NASA Headquarters, Washington, D.C., December 1994), p. 3.

5. Two NASA solicitations of private interest, *A Cooperative Agreement Notice: Reusable Launch Vehicle (RLV) Small Reusable Booster X-34* and *A Cooperative Agreement Notice: Reusable Launch Vehicle (RLV) Advance Technology Demonstrator X-33*, both dated January 12, 1995, provide detailed versions of the programs as currently planned.

contractors will commingle funds and in-kind contributions of their own, anticipated by NASA to be $300 million, with NASA funds granted under the agreements. Phase III--the development of the final system and its operational certification--could cost between $10 billion and $15 billion.[6] Among the options for financing that development is a proposal to substitute private financing--leveraged by the promise that the government will purchase launch services in the future--for direct government funding.

NASA assumes that the accomplishments anticipated during phases I and II of the RLV program will not reduce the risk of investing in a new launch system enough to draw private financing to the system's final development phase without a substantial government role. Yet the usual approach of direct financing would place heavy near-term demands on NASA's budget at a time when the agency was adjusting to a lower level of funding.[7] Moreover, NASA maintains that private ownership and operation of a new system--an institutional arrangement inconsistent with direct government financing--are necessary to reduce the cost of launch services to the lowest possible level.

Options that use a government commitment to attract private financing arise out of this context. One is a government guarantee of private debt that would be used to

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6. Bekey, "A Win-Win Concept," p. 2.

7. Allan Freedman, "Fierce Competition for Funding Could Ground the Space Station," *Congressional Quarterly* (June 3, 1995), p. 1574.

finance the new launch system. A second, more prominent option would use NASA's commitment to purchase launch services in the future as a device to lower the risk faced by private investors that the demand for the new system would be weak. Under that option, NASA's advance commitment is thought to be a necessary condition for the investment to occur, in the same way that the commitment of a large retailer is usually necessary for a shopping mall to gain financing. By analogy, the role proposed for NASA's advance commitment is sometimes called "anchor tenancy."

BUDGETARY TREATMENT OF ADVANCE COMMITMENTS TO PURCHASE LAUNCH SERVICES

Legislation, precedents, and conventions govern the budgetary treatment, or scoring, of different types of spending and revenue proposals. The rules currently in effect were summarized in the conference report accompanying the Budget Enforcement Act of 1990 (BEA).[8]

Lease-Purchase Scoring

The option of financing the development of new launch vehicles by committing the government to purchase services in the future most closely resembles a lease-

8. U.S. House of Representatives, *Omnibus Budget Reconciliation Act of 1990*, Conference Report 101-964, to accompany H.R. 5835 (October 27, 1990), pp. 1172-1176.

purchase--specifically, a lease-purchase in which the government bears substantial risk. In a practical sense, a lease-purchase is a purchase disguised as a lease (see Box 1). The rules that govern the budgetary treatment of lease-purchases specify how the budget records the acquisition of capital assets--office buildings, ships, or, in this case, new space-launch vehicles--by the federal government when the traditional mode of direct purchase is not used.[9]

The government can secure the use of a capital asset without directly purchasing it by one of the following three mechanisms:

- An operating lease in which the government makes lease payments for the temporary use of the asset but does not assume ownership of the asset, bear any risk of ownership, consume a large portion of its economic value, or require that the asset meet unique specifications;

- A capital lease in which the government extends an operating lease over a large part of the useful life of the acquired asset; or

9. When the government purchases an asset, it pays for it in full with appropriated funds. In the case of a construction or development program requiring several years, funding can be provided in one of several ways: as annual appropriations of budget authority sufficient to cover anticipated progress--and the government's liability--with outlays scored as payments are made; as multiyear appropriations of budget authority sufficient to cover the cost of the entire project, with outlays scored as payments are made; or as a single appropriation of budget authority in the year the project begins that is large enough to cover the anticipated total cost of the project, with outlays scored as payments are made.

BOX 1.
BUDGETARY TREATMENT OF LEASE-PURCHASES:
BACKGROUND AND HISTORY

Observers of the budget have long been concerned about expensive buy now/pay later acquisitions financed by lease-purchases. The current Congressional scoring rules adopted as part of the Budget Enforcement Act of 1990 are in large part a response to those concerns.

The idea of using lease-purchases has most often and most recently arisen when the federal government sought to acquire office space. Yet the Navy's substitution of leased tankers for purchased ones during the 1970s remains a prominent lease-purchase case and an example of the problems inherent in such agreements. Taken together, these examples help to explain the budgetary treatment problems created by lease-purchase proposals and the reasoning behind the scoring rules for lease-purchases.

In presenting testimony in 1982 on the Navy's leasing of tankers, the General Accounting Office (GAO) noted that such arrangements made Congressional oversight of procurement difficult because they obscured the size of the government's total financial commitment and hindered an accurate comparison between the lease and the purchase alternatives.[1] In 1994, the Office of Management and Budget (OMB), GAO, and the Congressional Budget Office each testified on legislation that would have permitted wider use of lease-purchases to meet the federal government's need for office space.[2] Each organization made the point that showing the government's commitments in the budget at the time they were made was consistent with the principle that the budget should measure the effects of federal decisions on the economy. Moreover, the three agencies pointed out that as long as the cost of private borrowing remained above the cost of borrowing from the Treasury, a lease-purchase would cost the taxpayers more than direct government financing.

Executive branch rules for budget preparation and program evaluation are designed to discourage lease-purchases. OMB Circular A-104 establishes a procedure to determine whether the government should lease or purchase an asset. That procedure compares the discounted present value of the cost of a hypothetical purchase of an asset with the discounted present value of the cost of a hypothetical lease of the same asset. (The present value is a single number that expresses a flow of current and future income or payments in terms of an equivalent lump sum received or paid today.) The government should choose the option that costs less on a discounted-present-value basis. Unless the government requires the use of only part of an indivisible capital asset that private parties might also rent, the government's lower cost of capital will always argue in favor of purchasing the asset rather than leasing it.

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1. Statement of Warren Grosshans, Deputy Director, Procurement, Logistics, and Readiness Division, General Accounting Office, before the Subcommittee on Oversight of the House Committee on Ways and Means, February 28, 1983.

2. Statements by James L. Blum, Deputy Director, Congressional Budget Office; Paul L. Posner, Director, Budget Issues, General Accounting Office; and Alice Rivlin, then Acting Director, Office of Management and Budget, before the Subcommittee on Legislation and National Security of the House Committee on Government Operations, September 20, 1994.

- A lease-purchase in which the government pays for all (or almost all) of an asset over the period of the lease or assumes ownership of the asset at the end of the lease period.

The current rules for budgetary treatment recognize each of these mechanisms and an additional distinction between two types of lease-purchases based on how much risk the government bears.[10] Projects that are essentially governmental in nature are classified as lease-purchases with substantial governmental risk. Projects in which the private sector carries a large burden of risk are classified as lease-purchases with substantial private risk. (Table 2 summarizes the budgetary treatments that could conceivably be applied to the advance commitment option.)

CBO would score NASA's advance commitment to purchase launch services as a lease-purchase with substantial governmental risk, choosing to emphasize the substance of the proposal rather than its formal appearance. The advance commitment option does not formally transfer ownership of the new launch system from the private contractor to the government. Yet in order to attract private financing to the task of developing a new system, the size of the government's commitment to purchase launch services would probably have to be large enough to finance all or almost all of the acquisition of the new system without any commitment

10. Office of Management and Budget, "Preparation and Submission of Budget Estimates," Circular A-11 (July 1994), pp. 165-168, provides direction to federal agencies about showing various types of lease-purchases in their budget submissions.

TABLE 2. BUDGETARY TREATMENT OF LEASE-PURCHASES AND LEASES OF CAPITAL ASSETS

Transaction	Budget Authority	Outlays
Lease-purchase with substantial governmental risk	Amount equal to asset cost recorded up front; amount equal to imputed interest costs recorded on an annual basis over lease period.	Amount equal to asset cost scored over the construction period in proportion to the distribution of the contractor's costs; amount equal to imputed interest costs recorded on an annual basis over lease period.
Lease-purchase with substantial private risk	Same as above	Scored over lease period in an amount equal to the annual lease payments.
Capital lease	Same as above	Same as above

SOURCE: Congressional Budget Office based on Office of Management and Budget, "Preparation and Submission of Budget Estimates," Circular A-11 (July 1994), p. 165.

to purchase launch services by other parties. In an accounting sense, the government would consume the entire (or almost the entire) value of the acquisition as the private contractor depreciated the investment necessary to develop the system in providing services to the government alone.

Scoring NASA's advance commitment as a lease-purchase with substantial governmental risk requires that NASA's budget include "up-front" budget authority at the time of the commitment equal to the present value of the stream of guaranteed purchases discounted at the appropriate Treasury rate--referred to as the asset cost--plus the differential cost of private financing. (The differential cost of private financing measures the higher cost of borrowing by the private sector compared with the government's cost of borrowing.) That treatment is based on two principles.

First, the budget should recognize the government's full liability at the time a commitment for future spending is made. Second, the budget should reflect the higher cost of substituting private financing for government financing. NASA's budget thus would show additional budget authority for each year of the service agreement in which launches were purchased equal to the imputed interest costs--the financing cost that would have been incurred if the Treasury had issued debt equal to the total cost of the project.

NASA's budget would show outlays from the budget authority recorded when the commitment was made just as if the agency were proceeding in the traditional mode of purchasing the system directly. Its budget would also record as additional outlays a portion of the annual lease payments equal to the imputed interest costs as services were provided over the term of the purchase agreement. The remainder of the annual lease payments would not be scored as outlays but as redemption of debt.

Although CBO would treat the advance commitment option as a lease-purchase with substantial governmental risk, an alternative is to treat the option as a lease-purchase with substantial private risk.[11] The budgetary treatment for that type of arrangement would differ from that for a lease-purchase with substantial governmental risk only in the way outlays were shown in the budget. Outlays for a lease-purchase

11. An argument could also be made to treat the advance commitment option as a capital lease, but the distinction creates no real difference in budgetary treatment.

with substantial private risk would be spread out over the period in which services were delivered rather than recorded up front during the period in which the new launch system was being developed.

Who Bears the Risk?

The key issue in deciding whether to score the advance commitment option as one type of lease-purchase or another is the division of risk between the government and the private sector. On balance, the option that seeks to attract private financing by an advance commitment to purchase services tilts the scales toward recognizing that the government is likely to bear substantial risk and, accordingly, showing outlays in the budget as they are incurred in the development and production of the new launch system. That conclusion gains support by evaluating the essential characteristics of the RLV proposal against the set of illustrative criteria for determining whether an activity is essentially governmental in nature. Those criteria are included in both the conference report accompanying the BEA and in the Office of Management and Budget's scoring guidance for lease-purchases.[12] Were NASA to choose to go forward with the advance commitment approach, those criteria would also provide

12. U.S. House of Representatives, *Omnibus Budget Reconciliation Act of 1990*; Office of Management and Budget, "Preparation and Submission of Budget Estimates."

guidance about how to structure agreements to reduce governmental risk to the point where the arrangement could be treated as one with substantial private risk.

An activity is deemed to be governmental in nature to the extent that:

1. *The government bears substantial risk through an explicit guarantee of third-party financing.* Although the selected RLV contractor might be able to strike a loan agreement with a private lender that does not include an explicit government guarantee, no agreement would be possible without an explicit government commitment to purchase launch services in the future. Indeed, the leverage provided to the would-be developer of a new launch system by the government's commitment to purchase services is the central idea of the anchor tenancy concept that underlies the RLV proposal.

2. *All of the risk incident to ownership of the asset does not remain with the lessor—excepting circumstances in which the government is at fault.* The RLV proposal does not address that issue directly. A point of concern, however, is whether the government would bear the risk of damage to life or property during the development and subsequent operation of the system. For example, if a vehicle was destroyed during a launch, would the government or the private contractor bear the cost? In the past, the government has borne such risks in the development of new launch systems. If the government continued to carry those

risks in the RLV development effort, it would indicate that the program was more governmental in nature than oriented toward the private sector. If the private sector purchased insurance to cover its liabilities, those costs would be reflected in the price for launch services that the contractor would charge the government. They would also increase the cost of the private financing option compared with direct financing and operation of a new launch system by the government.[13]

3. *The leased asset is designed for a special purpose of the government rather than for a general purpose.* The preponderance of government demand in the market for space launches--particularly for large payloads--implies that a new system that strives to be profitable must accommodate that demand. Although the RLV plan emphasizes meeting general commercial needs as well as the government's special needs, qualifying the rocket system to carry human beings remains a uniquely governmental demand that drives the specifications under which a new system would be developed.

4. *No private market for the asset exists.* The RLV plan presumes that a launch system providing services at prices dramatically lower than those available today will win a share of the market for commercial satellite launches. The current

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13. When the government undertakes a risky activity, it "self-insures." Economists view self-insurance as justifiable because the risk of failure is very widely spread among all taxpayers.

demand for space launches is not sufficient, however, to call forth the private capital necessary to finance the RLV's development. It seems likely that the government's commitment to purchase services would have to be large enough to cover all or almost all of the cost of developing the new system.

5. *The asset is constructed on government-owned land.* This criterion is more applicable to office buildings and housing projects than to the development of new space-launch systems. If, however, government facilities were part of the chosen contractor's plan, the effort would appear to be more governmental and less oriented toward the private sector.

In summary, CBO's judgment that the advance commitment option should be treated as a lease-purchase with substantial governmental risk holds that the government's commitment to purchase launch services removes the risk of commercial failure from the private sector. Although the private RLV contractor would continue to face the risk of failing to deliver on its promised performance, costs, or schedule, ultimately even those risks could revert to the government. The overall national space transportation plan of which the RLV effort is a part would leave NASA little option but to pay whatever it would take to bring the RLV on line, firm-fixed-price contracts notwithstanding. The government would have little choice because alternative modes of access to space--primarily the space shuttle--are to be phased out as the RLV program proceeds.

THE LOAN GUARANTEE APPROACH AND ITS BUDGETARY TREATMENT

An alternative to the advance commitment option is to offer the selected RLV contractor a loan guarantee--a federal commitment to pay back all or a large part of the private loan that the private contractor would take to develop the new launch system. As with the advance commitment option, the loan guarantee option would permit the private development and operation of a new launch system that NASA views as critical to reducing space-launch costs.

The scoring of a loan guarantee is based on the same principle as the scoring of a lease-purchase: when the government accepts a liability, it should be recorded in the budget.[14] The risk that the borrower will default and the size of the loan determine the dollar value of that liability. The government's estimated subsidy cost is calculated by summing the discounted present values of the government's expected net payments resulting from the loan guarantee. In the year that the government provides the guarantee, sufficient budget authority to cover the government's subsidy cost must be appropriated in the guaranteeing agency's budget. Outlays are scored over the years as the loan is disbursed, resulting in a time profile for outlays similar to that for the asset cost in the case of a lease-purchase with substantial governmental risk.

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14. U.S. House of Representatives, *Omnibus Budget Reconciliation Act of 1990*, pp. 641-660; Office of Management and Budget, "Preparation and Submission of Budget Estimates," pp. 95-117.

The amount that would be scored against the NASA budget in the loan guarantee option cannot be known, but it is likely to be large. The venture is risky. The development of a new launch system is a significant technical challenge, and the market for the new venture would still depend on the willingness of future Congresses to appropriate funds for the purpose of buying launch services. In the case of the Spacehab project, in which a private lender required that a private contractor purchase insurance against the political risk of the government's termination for convenience of a commitment to purchase, the policy premium totaled 25 percent of the value of the loan for the three years the policy was in effect.[15] Applying the same probability of default to the RLV case would result in an outcome in which the budgetary treatment of the government's liability would rapidly deplete the advantage in budgetary treatment terms that might be gained from a loan guarantee compared with direct funding.

OTHER ISSUES

Attracting private capital to develop a new launch system by offering a government commitment raises two related issues: the relative costs of private and government financing and the use of unobligated balances to cover governmental liabilities.

15. Elaine Budd, "SPACEHAB, INC.: Overview of a Commercial Space Venture" (Davis, Graham, and Stubbs, LLC., Washington, D.C., Spring 1993), p. 9.

Can Private Financing Be Cost-Effective?

Private financing of a new launch system cannot be judged as cost-effective unless the savings that come from the private design and operation of the system are large enough to offset the higher cost of private borrowing. A central tenet of the RLV approach is that the reductions in costs attributable to private development and operation of a new launch system would be more than sufficient to offset higher borrowing costs.

The budgetary treatment of lease-purchases is intended to level the playing field among the different ways that the government could acquire the use of a capital asset. That treatment reflects the fact that the government can borrow money more cheaply than a private firm. The rate of interest a lender charges depends in part on the risk of default that the borrower represents. The government's ability to increase taxes or print money reduces the risk of default on government debt to zero.[16] Even the most creditworthy private borrower is at more risk of default than the government and must pay a slightly higher rate of interest, referred to as a risk premium. Similarly, firms enjoying government guarantees of one sort or another pay higher rates than does the federal government when it borrows directly.

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16. Fredric S. Mishkin, *The Economics of Money, Banking, and Financial Markets*, 4th ed. (New York: HarperCollins, 1995), p. 150.

The aerospace firms (and partnerships thereof) competing for the RLV contract have credit ratings ranging from low medium grade to high grade, which will in part determine the size of their risk premiums.[17] Moreover, the historical record of difficulty and unpredictability in the development of launch vehicles suggests that the project-specific risk carried by the RLV contractor would be substantial, even after the government had removed the risk that demand would fail to materialize by its commitment to purchase launch services. In short, a substantial risk premium would be paid if private financing was used to develop a new launch system.

This memorandum cannot fully explore the contention that private development of a new launch system will lead to lower costs than would a government-supervised attempt to accomplish the same goal.[18] The case is in large part based on the premises that government managers lack incentives to reduce costs and that government is inherently inefficient. The space shuttle experience offers some support for that position: the costs of space launches using the shuttle have been consistently above those that the program initially promised and well exceed those of expendable launch vehicles. Recently, however, NASA has claimed substantial reductions in the costs of launches despite continued government operation and ownership of the shuttle system. Moreover, foreign competitors in the launch market, which are to one degree

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17. The Standard & Poor's senior debt ratings for firms participating in the RLV program range from AA- (a strong capacity to repay debt) to B+ (currently able to repay debt but vulnerable to adverse business, economic, and financial conditions).

18. Congressional Budget Office, *Reinventing NASA* (March 1994), pp. 25-27, presents the general case for lower private-sector costs.

or another government enterprises, offer lower launch prices than do private U.S. launch providers. Finally, a large part of the reduction in the cost of space launches that NASA is seeking in the RLV program would come from factors unrelated to ownership--that is, from new technology and economies of scale attributable to increased rates of operation. To the extent that new technology is available to either the public or the private sector or that lower launch prices lead to increased demand and still further reductions in cost, a new launch system developed in the traditional way could achieve a substantial part of the program's goal of lower costs.

Termination Liability

Another issue raised by the advance commitment option is termination liability, which is the government's obligation to pay contractors for costs they have incurred when working on a government contract that the government terminates for convenience. The Antideficiency Act limits that liability to appropriated funds by forbidding agencies from incurring obligations prior to receiving appropriations or in excess of amounts appropriated unless specifically authorized by law.[19]

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19. General Accounting Office, *A Glossary of Terms Used in the Federal Budget Process*, rev. (January 1993), pp. 14-15, provides an overview of the provisions of the Antideficiency Act. The act itself can be found at 96 Stat. 923, 31 U.S.C. 1341.

NASA has sought relief from the limits of the Antideficiency Act for its traditional programs by proposing that the Congress authorize the use of unobligated balances to cover the termination liability for programs in which the natural rhythm of completing a large multiyear development effort causes contractors to spend more than the government's annual appropriations.[20] It has also been suggested that NASA cover the termination liability created by advance commitments to purchase by providing recourse to unobligated balances instead of the budget authority and outlays that would be included in NASA's budget under the budgetary treatment rules for lease-purchase scoring. Specifically, the Congress could waive the Antideficiency Act and give NASA access to funds appropriated for other purposes if the RLV program was terminated for convenience.

In theory, the budget process provides just enough budget authority to cover the obligations that authorization and appropriation acts permit an agency to incur. In practice, budget authority usually exceeds obligations for a variety of reasons but primarily because contracts are signed after appropriations are made available. For example, at the start of fiscal year 1995, NASA's unobligated balances were estimated to be just over $1.5 billion.[21]

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20. General Accounting Office, *A Glossary of Terms*, pp. 61-62.

21. *Budget of the United States Government, Fiscal Year 1996: Appendix*, pp. 899-903.

Even when authorized in law, the fit between unobligated balances and termination liability is an uneasy one. When the Congress allows unobligated balances provided for another purpose to be used as coverage for termination liability, it must implicitly bet against that outcome. When funds are obligated for purposes for which they were not appropriated, it disrupts the balance sought in the appropriation process among contending spending priorities. If a project requiring termination liability draws on unobligated balances from accounts dedicated to similar purposes--for example, space transportation in the RLV case--such a disruption may be easily managed. In other cases, appropriators must revisit issues that they considered settled to find funds to carry out their original purposes. Accordingly, permitting termination liabilities or any advance commitment that the government enters into to have a claim on unobligated balances undermines the appropriation process. For that reason, covering termination liability by using unobligated balances seems an unattractive alternative for both traditional NASA development projects and the nontraditional alternatives being considered as options in the RLV program.