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ABSTRACT

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HOW TO FUND CANCELLATION CEILINGS ON MULTIYEAR DEFENSE CONTRACTS:
A RISK POOLING ALTERNATIVE

This Policy Analysis Exercise begins with a brief discussion of the benefits and costs associated with multiyear procurement, then reopens the debate on how to fund the cancellation ceilings for Economic Order Quantity (EOQ) materials on these types of programs. EOQ materials--subsystems, raw materials such as aluminum sheet, and components ordered in the first contract year for weapons to be built in future years--are a main source of multiyear savings. Congress wants these obligations--which the Government would owe in the event of multiyear contract cancellation between years--authorized funds "up-front" in the first year of a program, but the Services think this policy forces other valuable programs out of their fixed budgets.

The author describes the objectives Congress, the Office of the Secretary of Defense, the Military Services, and defense contractors have for multiyear contract funding methods. After analyzing four funding alternatives he recommends that the Department of Defense and Congress adopt a Risk Pooling approach for funding cancellation ceilings on multiyear contracts in the Defense budget. This approach, which is similar to an insurance plan, best satisfies the competing objectives of Congress, the Office of the Secretary of Defense, the Military Services, and defense contractors. Multiyear procurement is a more efficient method of buying defense systems when Congress and Defense work together to choose programs in which savings over annual contracts outweigh risks of making a long-term commitment. If implemented, this option will encourage defense managers to submit qualified multiyear candidates for approval.

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HOW TO FUND CANCELLATION CEILINGS ON MULTIYEAR DEFENSE CONTRACTS:

A RISK POOLING ALTERNATIVE

POLICY ANALYSIS EXERCISE

Presented to the Faculty of the John F. Kennedy School of Government

Harvard University

In Partial Fulfillment of the Requirements for the

Degree of Master in Public Policy

By

Rowayne A. Schatz, Jr., BS

Second Lieutenant, USAF

April 15, 1985

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The views expressed in this paper are those of the author and in no way reflect the views of the United States Air Force or the Department of Defense.

EXECUTIVE SUMMARY

RECOMMENDATION: The Department of Defense and Congress should adopt a Risk Pooling approach for funding cancellation ceilings on multiyear contracts in the Defense budget. This approach, which is similar to an insurance plan, best satisfies the competing objectives of Congress, the Office of the Secretary of Defense (OSD), the Military Services, and defense contractors. Multiyear procurement is a more efficient method of buying defense systems when Congress and Defense work together to choose programs in which savings over annual contracts outweigh risks of making a long-term commitment. If implemented, this option will encourage defense managers to submit qualified multiyear candidates for approval.

POLICY QUESTION: This Policy Analysis begins with a brief discussion of the benefits and costs associated with multiyear procurement, then reopens the debate on how to fund the cancellation ceilings for Economic Order Quantity (EOQ) materials on these types of programs. EOQ materials--subsystems, raw materials such as aluminum sheet, and components ordered in the first contract year for weapons to be built in future years--are a main source of multiyear savings. Congress wants these obligations--which the Government would owe in the event of multiyear contract cancellation between years--authorized funds "up-front" in the first year of a program, but the Services think this policy forces other valuable programs out of their fixed budgets.

MULTIYEAR PROCUREMENT DEFINED: Presently, the Services write most defense contracts on an annual basis, which requires them to go back and renegotiate each subsequent contract for future years. This method gives no guarantee to a contractor that the program will continue past the present fiscal year. A multiyear contract, on the other hand, covers several yearly purchases of the same system, and gives the contractor some guarantee that he will have a certain amount of business over a three to five year period. This long-term commitment allows the contractor to plan production more effectively to take advantage of quantity discounts for raw materials and efficient production rates, which lowers the unit cost of the system by 5% to 20%.

ADVANTAGES:

- Offers contract cancellation risk protection to the contractor, which leads to more capital investment.
- Assurance of business over a longer period increases competition at the subcontractor level among those who supply components.
- Lower cost to the Government through better training of personnel and purchases of materials in larger lots.
- Program stability.

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DISADVANTAGES:

- Reduction in budget flexibility--the ability to change order quantities to save costs in one portion of the budget.
- Government faces a termination liability after the first year of the contract for EOQ material. This causes a need for higher authorizations than annual contracts in the first year.
- Congress thinks multiyear reduces their control over Defense spending by "locking-in" future members to programs they may not want.

CONGRESS AND DOD SHOULD ACTIVELY PURSUE MULTIYEAR PROCUREMENT: When Congress and OSD carefully follow the selection criteria for multiyear contracts the risk of cancellation falls very low. If the savings to the Government from a multiyear program outweigh the risks of cancellation in the eyes of Congress and DOD, then they should actively pursue that program and accept the loss of flexibility. Defense should purchase weapons at the lowest cost to the taxpayer.

FULL FUNDING SENDS THE WRONG INCENTIVE: Congress still authorizes budget dollars to multiyear programs on an annual basis. Programs are usually "fully funded," which requires every organization to budget in each program year for all procurement costs necessary to deliver complete useable items to the Defense inventory. EOQ liability on multiyear programs is currently fully funded to guarantee delivery of all prior-year systems should the Government cancel the contract. Because the Services rate cancellation risk low for accepted multiyear programs, they think this "extra" budget authority for EOQ funding comes at the cost of other valid programs in their budgets, discouraging multiyear programs.

OBJECTIVES: To be acceptable, any cancellation ceiling funding alternative must meet the following objectives of actors in the acquisition process:

- Congress.
 - Do not over-commit future Congresses to programs they may want to cut later.
 - Maintain budget flexibility and accountability.
- Office of the Secretary of Defense.
 - Reinforce program stability.
 - Prevent program "lock-in" by the Services.
- The Military Services.
 - Prevent program "crowd-out".
 - Receive the budget savings their multiyear efforts bring.
- The Defense Contractors
 - Protect against cancellation risk.

OPTIONS AND ANALYSIS: I analyzed the following four options to find the one which best met the above objectives. I feel the funding choice most

acceptable to the above interest groups will have the greatest chance of success at encouraging optimal application of multiyear contracting to defense work.

- Full Funding the Total Package: Full funds each program years' buy of systems and the entire EOQ liability each year.
 - Best satisfies Congress' desire for protection against long-term commitment to poor programs.
 - OSD feels it is the best alternative to support program stability.
 - The Services feel the first-year cancellation funds are unnecessary.
 - The Services feel this option crowds-out other viable programs, which makes it more costly for them to submit multiyear candidates.

- Incremental Funding: Funds the program according to planned expenditures to termination liability (the Government could cancel the contract without authorizing additional funds to pay for work in progress) but does not guarantee delivery of operational items if cancelled.
 - Spreads funding over more years than the other options, which better assures Services they will receive benefits of savings.
 - Reduces program stability.
 - Least preferable option to everyone.

- Phased Funding: Full funds each program years' buy of systems but only funds EOQ items to termination liability. Cancellation between the first two years of a contract will not guarantee delivery of operational items.
 - Guarantees Congress it can cancel a program without authorizing additional funds after the first year.
 - High first year requirement prevents program lock-in and ensures OSD that the Services will submit only important multiyear programs.
 - Is not appealing to Congress.
 - Does not guarantee Services receipt of program savings as well as risk pooling.

- Risk Pooling: Full funds each years' buy, then pools the EOQ funding for several multiyear contracts together into an insurance pool to protect against cancellation charges.
 - Protects Congress, OSD, and the contractor against cancellation risk with an insurance pool.
 - Is the alternative which best guarantees the Services that they will not have to give up other programs to place a multiyear contract.
 - Best guarantees the Services reward for multiyear savings.
 - Causes difficulties ensuring funds get allocated to the same program across budget years.

THE RISK POOLING ALTERNATIVE SENDS PROGRAM MANAGERS THE RIGHT INCENTIVES:
Congress and DoD should not allow all contracts to go multiyear, but should encourage ones that meet the selection criteria to do so. The Risk Pooling alternative presented in this paper best satisfies the objectives of all defense procurement interest groups, and encourages programs to seek multiyear approval when it is in the best interest of the Government.

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I. INTRODUCTION

The Senate Committee on the Armed Services made the following statement on multiyear contracting in the 1985 Defense Authorization Act:

The experience thus far with multiyear programs has been favorable. In virtually every program that has been authorized for multiyear funding, substantial savings over annual contract costs have been realized and program instability has been dramatically reduced. The success of these efforts stands in sharp contrast to the rampant cost growth and program turmoil that characterized many Defense Department programs during the late 1970's.

As this statement illustrates, many people involved with defense acquisition agree that multiyear procurement is a more efficient method for purchasing certain types of weapon systems than a system of annual contracts. **Instead of writing five contracts to purchase 100 aircraft a year for five years, for example, multiyear procurement allows the Government to write a single contract to buy those 500 aircraft over the same time period.** Weapon systems typically cost 5% to 10% less using multiyear instead of annual contracts for reasons I will explain later.

Although most actors in the acquisition process support multiyear procurement in principle, problems arise when promulgating multiyear funding policy acceptable to all interest groups. **There is tension between the objectives Congress and the Military Services have for multiyear,** which the following statements illustrate:

The House Appropriations Committee was going to stick with full funding. **The concern that many members of the Appropriations Committee had was that if you allowed the Department of Defense to sign contracts before they had the appropriations in hand, that made it awfully easy for them to sign a lot of contracts and make a lot of binding commitments that would weaken congressional control over the defense procurement process.** Full funding puts discipline into the process by requiring funding up front to match the real level of commitment.

--Mr. Ralph Preston, Staff Member, House Appropriations Committee, Subcommittee on Defense, 1982.²

This up-front YOA for the F-16 looked to the Air Staff and Air Council like several hundred million dollars that was being piled on top of the F-16 program which didn't produce a single additional airplane, but would have come at the expense of other Air Force programs since, from our view, the total amount of obligational authority is always constrained. The full-funding is equivalent to saying that an insurance company should have enough money at a given time to pay off all of its beneficiaries if they dropped dead on the same day. That's ridiculous.

--Willard Mitchell, Deputy Assistant Secretary for Financial Management in the Air Force, 1982.³

Congress and some elements of the Office of the Secretary of Defense (OSD), particularly the Comptroller [OASD(C)], want guarantees that programs are funded to the extent that they can be cancelled at any time without any additional financial obligation. Full funding guarantees this, is the preferable funding method to Congress and the DOD financial community, and is the current method of funding multiyear contracts. **The policy of full funding requires every organization to budget in each program year for all procurement costs necessary to deliver complete useable items to the Defense inventory. The procurement programs are structured to "stand alone" should future procurement be cancelled or terminated.**⁴ See Appendix A for a list of multiyear contracting terms and their definitions.

The military services, however, do not agree that the "full funding" policy should apply to the cancellation ceilings on Economic Order Quantities (EOQ) of materials in multiyear contracts. EOQ materials are subsystems, raw materials such as aluminum sheet, and components ordered in the first year of a multiyear contract for weapons to be built in future years. According to the General Accounting Office,

the rescheduling of these expenses forward is a major source of savings because, "Rather than procure subcontracted parts and materials in annual lots of limited sizes, the prime contractor can procure parts in larger lots, thereby obtaining lower prices from subcontractors because the subcontractor can be more efficient in buying materials and in scheduling production."⁵ **The Services fear that full funding these expenses will force other valuable programs out of an already tight budget.**

This paper reopens the debate on how Congress and the Department of Defense should fund the cancellation ceilings in multiyear contracts.

Using the FY 1982 Air Force F-16 multiyear program request as an example, I will analyze four funding alternatives:

- 1) **Full Funding The Total Package—The Status Quo.**
- 2) **Incremental Funding—Pay Expenses As You Go.**
- 3) **Phased Funding—A Likely Alternative.**
- 4) **Risk Pooling—Cancellation Ceiling Insurance Pool.**

After describing multiyear contracting in detail, I discuss its principal disadvantages and advantages. Next, I describe why I feel multiyear is a more effective method of contracting, introduce the F-16 multiyear example, describe the differences between funding and expenditure levels in a major weapons program, and discuss contract cancellation. After explaining the cancellation process, I discuss the multiyear funding dilemma, objectives the different actors in the acquisition process have, and four different options put forth to solve this dilemma. Finally, I analyze each option in light of the objectives, then recommend which option Congress and the Department of Defense should adopt.

II. WHAT IS MULTIYEAR PROCUREMENT?

Presently, the majority of defense contracts are written on an annual basis. Congress approves programs and appropriates funds on a year-to-year basis with authorizations covering the entire life of an annual contract, and the Defense Department agrees to purchase a set number of a certain product in that fiscal year. Thus, the Army may agree to purchase 300 M-1 tanks in Fiscal Year 1986, but if the Army wishes to buy an additional 300 tanks in FY 1987, it must renegotiate the annual contract, then have it approved and funded by Congress before it can order the 300 tanks in FY 1987.

The Military Departments, however, do not necessarily expend appropriated money for one year's buy of a weapon system in the fiscal year it was authorized. **The full expenditure of procurement funds for a specific program usually takes several years from the date they were appropriated.** For example, if Congress appropriated funds for an F-16 fighter tomorrow the Air Force would not receive delivery until June of 1988. The F-16 is currently in production; if the weapon Congress ordered was not yet developed, the Government would not receive delivery until approximately 13 years later!⁶

In most cases, Congress appropriates annual contract dollars to purchase complete, useable weapons in one lump sum and has required "fully funded" weapon programs. **The policy of full funding requires every organization to budget in each program year for all procurement costs necessary to deliver complete useable items to the Defense inventory.** For example, in 1984 Congress would appropriate all of the money necessary to purchase 120 aircraft in the FY 1985 Defense Budget. Although the contractor might not deliver the last of the 120 FY 1985

aircraft until late 1989 and will receive Government money until the last delivery, all payments through completion of the FY 1985 buy are funded in full at the beginning of the contract in the 1985 budget.

Unlike annual contracts, multiyear contracts cover several (2-5) yearly purchases of a certain weapon system. Instead of negotiating four annual contracts for 120 aircraft each year, the Air Force negotiates one contract to cover all 480 over those four years. Congress has approved 32 multiyear contracts since FY 1982. The main purpose of multiyear contracting is to save money, and these 32 programs, the Defense Department estimates, have saved the government \$4.5 billion in current dollars over what the costs would have been had these been annual contracts.⁷ For a complete listing of multiyear programs and savings since FY 1982 see Appendix B.

The Military Departments submit their multiyear candidates to the Office of the Secretary of Defense (OSD) in the budget cycle, where they are screened before being sent to Congress in the appropriations request. **Congress must approve each multiyear contract with a cancellation ceiling in excess of \$20 million individually as a line-item in the defense appropriations for that fiscal year.**⁸ Appendix C lists DoD and Legislative Policy Guidance for multiyear contracts in detail. To qualify for a multiyear contract, a program must demonstrate that it meets the following criteria set forth in the DOD Budget Guidance Manual, DODM 7110.1:

1) Benefit to the Government. The multiyear contract should yield substantial cost avoidance or other benefits when compared with annual contracting. Candidates with higher risks should show increased cost avoidance over lower risk candidates.

2) Stability of Requirement. The production rate, fiscal year phasing, and total quantities are expected to remain unchanged or vary only slightly during the contract period.

3) Stability of Funding. A reasonable expectation that program funding will be available at required level for the contract period.

4) Stable Configuration. The system should be technically mature, have completed RDT&E (development and test), have stable underlying technology with few design changes anticipated. Changes are allowed, but not to drive the total program costs beyond the proposed funding profile.

5) Degree of Cost Confidence. There should be reasonable assurance that all cost data is realistic (contract cost and cost avoidance). The estimate should be based on historical data for the same or similar items, or a proven estimating technique.

6) Degree of Confidence in Contractor Capability. Confidence in the contractor(s) ability to perform in terms of their firm's capabilities, but contractors do not need previous experience in producing the item.

The above criteria ensure that only programs unlikely to be cancelled by the Department of Defense will be submitted to Congress for multiyear contract consideration.

III. DISADVANTAGES OF MULTIYEAR PROCUREMENT

Multiyear contracting can fence-in money and commit future Congresses to a particular weapon system. **Once Congress and DoD approve a multiyear contract, they authorize acquisition of a system over anywhere from three to five years—time which could commit as many as three sessions of Congress to an individual program.** Congressman Horton (R-N.Y.) commented in 1981 on the authorization process for multiyear contracts after the first year and how they might commit future Congresses:

Multiyear funding would be a commitment for 5 years or 10 years, whatever it might happen to be, and then we would be locked in and I am sure the gentleman knows that. It may be they would have to come back here to get the money, but it is like an entitlement. They have to come back up here. It has to be part of the process, but it is very difficult to make any changes in an entitlement. That is what we are dealing with here.... Now you only have a contract for 1 year, but if you have a contract for 5 years, those damages would be a lot higher if you have to cancel.¹⁰

With multiyear procurement the Department of Defense and the Services, like Congress, lose flexibility in their budgeting processes. The more multiyear contracts negotiated by the services, the less flexibility they have in the outyears when budget time rolls around. In times of rising appropriations, this lost flexibility may be of little concern to DoD, but in times of falling defense budgets past multiyear contracts still in effect could cause budget difficulties. **Defense may be unable to purchase a badly needed system or operational supplies because too many multiyear contracts written in past years have priority over shrinking funds.** Multiyear contracts may "lock-in" the Department of Defense to future expenditures, but as General Robert T. Marsh stated: "It does lock you in, but that's the whole idea behind multiyear procurement. You get stability in a program, and you only select candidates you're convinced you want to pursue on a long-term basis."¹¹

Perhaps the biggest disadvantage of multiyear procurement is the termination liability the Government faces if it cancels a multiyear contract early in its life. For example, on an aircraft multiyear contract there is a cancellation ceiling negotiated above the actual value of the aircraft for the first year covering the contractor's purchases of materials and subsystems for future years' aircraft. Contractors in the first year of the contract will purchase long lead-

time items, such as landing gear, and Economic Order Quantities of material for future years' aircraft. Scheduling these expenses forward is one reason multiyear contracts save money, but in exchange the government takes on a liability it must pay in the event of contract cancellation.

If the Air Force cancels a contract after the first year, not only must the it pay for the first year's buy of aircraft, but it must also reimburse the contractor for any future years' aircraft components. Thus, with this cancellation liability, the unit cost to the government for a set number of aircraft is likely to be greater than it would be under an annual contract. **This extra cost is especially important in the early years of a multiyear contract because the cancellation ceilings for multiyear contracts traditionally fall over time.** (Many parts and materials for aircraft in later years have already been purchased in earlier years.)¹² Graph 1 illustrates cancellation liability on the FY 82 F-16 multiyear contract.

The constraints of the defense budgeting process preclude those programs likely to save the most money through multiyear procurement from being considered multiyear candidates. This is a disadvantage of multiyear contracting I believe the system will never resolve, but deserves mentioning here. **The riskier a program, or the greater the chances of cancellation a program faces, the more incentive a contractor has to lower his contract price to obtain a multiyear agreement, but the less incentive Congress has to accept the offer.** The Military Departments would want a risky multiyear program to protect it from cancellation, but the OSD community would not because it would reduce

TABLE 1: MULTIYEAR ACCEPTANCE VS. PROGRAM RISK

<u>Cancellation Risk:</u>	<u>Low</u>	<u>Med</u>	<u>High</u>
Congress	Likely to Accept	Possible Acceptance	Will Not Accept
Military Services	Highly Likely To Accept	Likely to Accept	May Accept
OSD	Likely to Accept	Possible Acceptance	Will Not Accept
Contractor	May Make Offer	Good Chance Of Offer	Most Beneficial
Savings over Annual Contracts	Good	Better	Best

their flexibility. Thus, the programs likely to save the most money are also too risky for certain members of the acquisition process to accept as multiyear contracts. Table 1 illustrates this dilemma of multiyear procurement.

IV. ADVANTAGES OF MULTIYEAR PROCUREMENT

Multiyear procurement gives contractors a longer planning horizon for a program which enables them to make more realistic investment decisions. **This procurement method guarantees a contractor greater coverage for risks in making investments in capital equipment than an annual method because he can go to creditors with a signed contract covering several years instead of one.**¹³ This should lower both the risk creditors face and, accordingly, the cost of capital for defense contractors, thereby increasing incentives to invest in capital equipment. **Multiyear procurement essentially shifts the investment risk in EOQ type materials from the contractor to the Government because the termination liability in a cancellation ceiling guarantees the contractor payment in the event of cancellation.** Under the F-16 Industrial Technology Modernization Program started during the FY 82 multiyear contract, 19 subcontractors committed to over \$250 million of investments in new capital equipment including robotic work cells, laser soldering and tube drilling, advanced transparency coating equipment, and automated assembly and material handling systems.¹⁴

Another benefit of multiyear over annual procurement is increased competition at the subcontractor level. **Since multiyear contracts typically offer larger subcontracts due to the ability of the prime**

contractor to order future years' requirements early, more subcontractors are likely to bid. Increased competition lowers the cost of programs. The longer term F-16 multiyear production contract increased subcontract competition. According to an Air Force report, "The Economic Order Quantity (EOQ) technique quadrupled the size of many of the subcontracts. As a result, General Dynamics was able to recompute nine of their major subsystems which were originally competed and 70 percent of their general material requirements."¹⁵

The most obvious advantage of multiyear over annual contracting is lower cost to the government for weapon systems purchased. A recent study by the Air Force on 10 major multiyear programs showed savings ranging from 5.7% to 19.2% over annual contracting.¹⁶ These savings are attributable to several factors, including economy of scale lot buying, improved economies and efficiencies in production processes due to increased investment, decreased financial borrowing costs, and a reduction in the administrative burden in the placement and administration of contracts.

V. WHY MULTIYEAR CONTRACTS?

I believe that the benefits of careful application of multiyear contracting outweigh the risks. If Congress, the Services, OSD and military contractors thoroughly apply the multiyear selection criteria listed above when deciding whether to accept or reject a candidate, then the risks of cancellation after the first year should be low enough to remove disadvantages associated with cancellation. Also, by coordinating program selection with Congress, OSD, and the Services--which the current

system of Congressional hearings and approval does--all actors will recognize the multiyear disadvantages associated with committing future Congress and locking-in future Defense budgets. After recognizing the loss of flexibility, Congress, OSD and the Services can decide if they are willing to make a commitment to a long-term program if the benefits outweigh the costs. As Richard Harshman wrote in the Armed Forces Comptroller, multiyear needs cooperation between Congress and OSD:

Obviously the more major programs that are based on the multiyear concept, the less flexibility for change the Service Secretaries and the Secretary of Defense have for future management action. The Congress also must "sign-up" as a partner with the Department for those multiyear programs approved and accept similar responsibility if future changes in the profile are made.

The success of multiyear programs to date illustrates the utility of the selection criteria. Congress approved 32 of 50 programs put forth by DOD for approval.¹⁸ This record illustrates not only the scrutiny applied to multiyear contracts by Congress, but also the thorough analysis these programs receive by DOD after they are received from the services and before they are sent to Congress for approval. **It is difficult, as it should be, for a program to receive multiyear funding approval. These 32 programs are examples of where the government can save money by making a long-term commitment to a contractor and a weapon system after thorough analysis of the implications.**

Given that Congress, OSD, the Services and defense contractors should utilize multiyear procurement on selected programs meeting the selection criteria, the question remaining is how to fund these contracts. **The funding choice sends incentives to program managers, government negotiators, and contractors. I believe the correct incentive to send procurement officials is that the Government should use multiyear**

contracting should whenever the benefits outweigh the risks. If a multiyear contract will save 5% over an annual contract and the Congress, OSD, and the Military Service are willing to make a long-term commitment to the program, then Defense should accept it. We should not pass-by an opportunity to buy weapons efficiently because the budget funding profile sends the wrong incentives.

VI. A MULTIYEAR CONTRACT EXAMPLE

The Air Force presented the F-16 to Congress as the first major multiyear program in Fiscal Year 1982 when they were debating expanded multiyear procurement. Congress, OSD and the Air Force used this program as an example in 1981 when debating how to fund multiyear cancellation ceilings. **The multiyear contract ends in FY 1985, and studies by the Air Force and DOD advertise current dollar savings of \$256.8 million on a \$3,336 million contract by using multiyear instead of annual contracting.**¹⁹

The savings reported on the F-16, however, like other multiyear contracts, are merely estimates based on the difference between negotiated annual and multiyear contract prices. The Air Force has contracted studies aimed at establishing the actual savings due to multiyear contracting the F-16, but because of the difficulty in estimating what the actual cost under annual contracting methods would have been under the same economic circumstances no studies are complete at this time. **The difference between negotiated contract prices is the savings measure DOD, the Services, and Congress currently use.**²⁰

Table 2 below illustrates the F-16 annual contract proposal for 120 aircraft per year for 4 years, and the multiyear proposal for the same

number of aircraft over the same number of years. Table 3 lists the details of the F-16 multiyear contract.

TABLE 2-- F-16 BUDGET AUTHORIZATIONS²¹
(Millions of Dollars)

For 480 Aircraft, 120 a Year, Constant 1982 Dollars

Fiscal Year	Annual Contract	Multiyear Contract
81	74	74
82	721	997
83	830	630
84	861	668
85	850	617
Total	2,336	2,986

TABLE 3-- F-16 MULTIYEAR DETAILS²²

Program years: 82-83-84-85

Quantity: 480 aircraft (120 per year)

Rate: 10 aircraft per month

Financial lead times: For any given program year, deliveries start 20 months after start of that fiscal year. Program year deliveries are completed 12 months after the first delivery. For example:

- FY 82: long-lead funding--Oct. 80
- FY 82: production funding received--Oct. 81
- FY 82: first aircraft delivery--June 83
- FY 82: l. c delivery--May 84

Twelve months termination liability for economic order quantity items by fiscal year:

- FY 82--\$ 283 M
- FY 83--\$ 180 M
- FY 84--\$ 57 M

Multiyear assumptions:

- FY 82 Multiyear contract start
- Long lead-time items for program year 82 aircraft were protected by \$74 million in the FY 81 budget.

VI. DIFFERENCE BETWEEN FUNDING AND EXPENDITURES

As the F-16 example in Table 2 illustrates, the Military Services do not always expend money in the same year Congress authorizes a program. **Expenditures often lag three to five years behind the initial funding of an aircraft program; up to eight years behind for an aircraft carrier.**²³ The incremental funding example in Table 2 above shows the expenditure stream for the four-year FY 1982 multiyear contract on the F-16, while the full funding option illustrates the actual authorization of obligation authority each year. Total obligational authority (TOA) is the total amount of money authorized for a particular project in a certain year.²⁴

Congress funds a weapon system by authorizing obligational authority--this gives the Services authority to enter into contracts with vendors. The authorizing committees for the Defense budget are the House and Senate Armed Services Committees. After authorization, the House and Senate Appropriation Committees appropriate money to cover contract expenditures in that year. As mentioned before, Congress usually fully funds a weapon system.²⁵ **For example, if Congress approved the F-16 Annual Contract it would authorize \$721 million for 120 F-16s in the Air Force part of the Defense budget. This amount of funding would guarantee delivery of 120 ready-to-fly FY 82 F-16s. Delivery of the aircraft might not take place until June of 1984, but because they were funded in the 1982 budget DoD considers them FY 82 aircraft .**

Whereas funding is a budget line item, expenditures are the actual amount of dollars paid out by the U.S. Treasury to a contractor for a particular program. There is, as mentioned above, a time lag between when Congress authorizes money for a program and when DoD spends it.

to the long time necessary to build complicated, technical weapon systems. Although Congress approved and funded the FY 82 F-16 buy in October of 1981, General Dynamics did not schedule delivery of the first FY 82 aircraft until June of 1983.²⁶ Table 4 compares actual obligational authority to expenditure levels for the FY 1982 multiyear F-16 program.

This time lag between appropriations and expenditures causes problems because under expanded multiyear procurement Congress still authorizes funds for each year of the multiyear contract on an annual basis and expenditures in one year can be towards several program years of a contract.²⁷ One source of savings on multiyear contracts is the ability of the contractor to order long lead-time parts for later contract years in the first year of the contract. Similarly, he can order raw materials and subcomponents in economic order quantities, thereby lowering the cost of the weapon system under a multiyear contract. With a contractual guarantee to build 480 F-16s instead of only 120, the prime contractor--General Dynamics, in the case of the F-16--can take advantage of quantity discounts from subcontractors and pass those savings onto the government.

TABLE 4: F-16 AUTHORIZATION VS. EXPENDITURE LEVELS²⁸

<u>Fiscal Year</u>	<u>Budget Authority</u>	<u>Planned Expenditures</u>
1981	74	74
1982	997	807
1983	630	588
1984	668	664
1985	617	562
1986		266
1987		25
Total	2,986	2,986

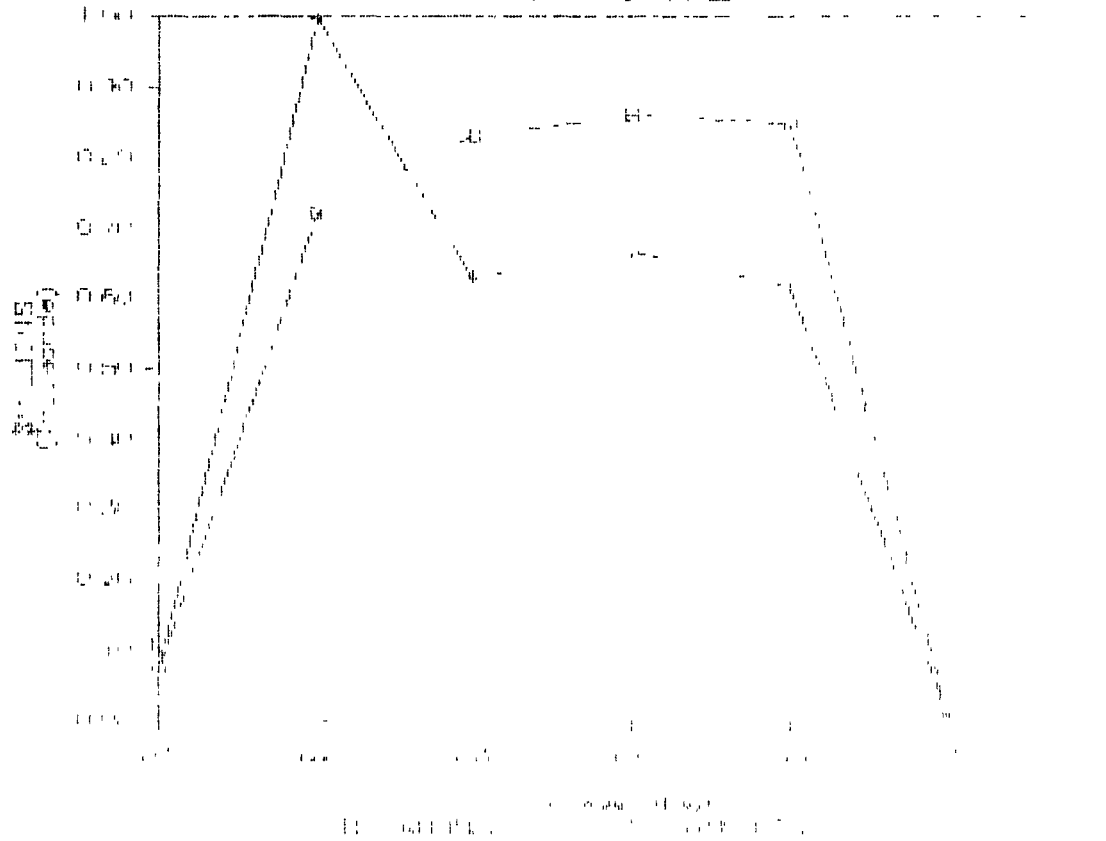
The contractor pushes expenditures for the later years of a multiyear contract forward to take advantage of economic order quantities. **Although the total expenditures for the total multiyear contract may be lower than a series of annual contracts, they may be higher in early years, requiring higher authorizations to deliver the same number of aircraft in those years.**²⁹ For example, the first year authorizations for an aircraft multiyear contract may include the full cost of that first year of aircraft plus landing gear and other materials for later years. Graphs 2 and 3 illustrate the difference between multiyear and annual contract appropriation levels and expenditure levels across the life of a program. For a more detailed comparison of expenditure levels under both types of contracts see the Black Hawk Helicopter example in Appendix D.

VII. WHAT HAPPENS AT CANCELLATION

Contract cancellation is a term unique to multiyear contracts. It is, as Major Gary Poleskey of the Air Force described, "Unilateral government action to stop planned acquisition for the next program year. In annual contracts, cancellation takes place by not awarding a new contract."³⁰ **Thus, when Congress, DOD or the Services cancel an annual contract, or simply not award a new one, the cancellation action has no affect on the previous contract.** The contractor starts no new work and finishes the present contract; government payment comes from budget authority previously set aside for the contract.

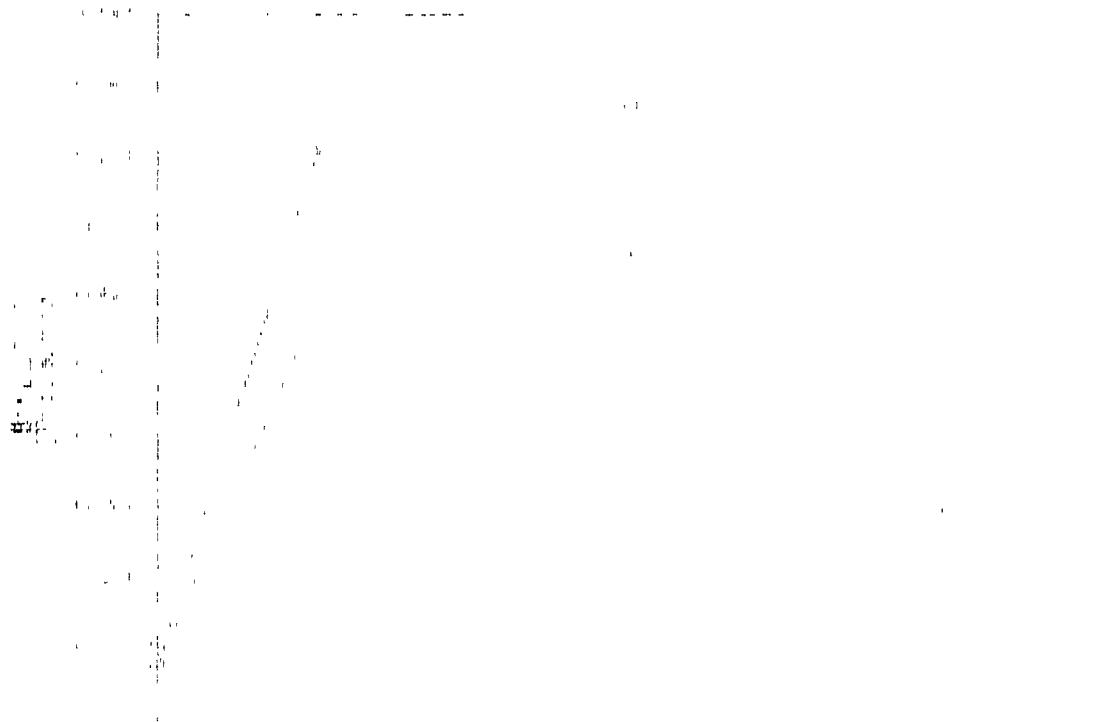
GRAPH 2: ANNUAL VS. MY ATTENTION

F-16 CONTROL



GRAPH 3: ANNUAL VS. MY ATTENTION

F-16 CONTROL



Cancellation of a multiyear contract is a more difficult issue because the contractor may have completed work for cancelled program years, such as landing gear, in contract years not cancelled. The Government must interrupt the program and settle a cancellation claim with the contractor within a contractually established dollar limitation.³¹ For example, if the Air Force cancelled the FY 1982 F-16 multiyear program between years one and two, it would be liable to General Dynamics for \$283 million (EOQ items purchased for future years' aircraft) over the price of the 120 FY 82 aircraft. Cancellation, it should be emphasized, can occur only between program years.

Upon receipt of a cancellation notice, the contractor prepares a claim for all completed work. He then diverts material already received to other government or commercial efforts, and cancels orders for components not yet received. Also, the Government has the opportunity to buy any subassemblies or raw materials to use as spare parts. Following submission of the claim, the parties negotiate a final settlement value, and make appropriate adjustments to the contract. According to Major Poleskey, contractor efforts described above are likely to lower the cancellation liability below the not-to-be-exceeded ceiling originally specified in the contract.³²

VIII. WHAT IS THE FUNDING PROBLEM?

Congress and DOD can agree on the need to fully fund each year's buy of a certain weapon system under a multiyear contract. A problem arises, however, when discussing how to fund the cancellation ceilings atypical of multiyear contracts.

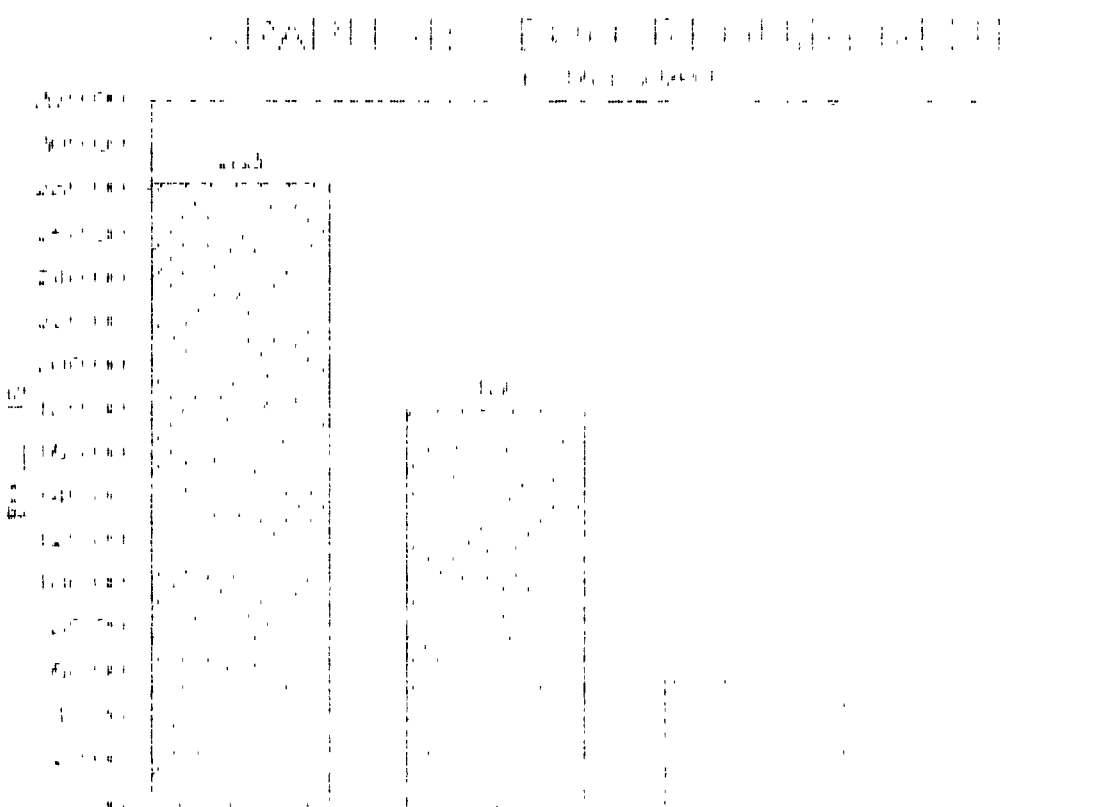
Multiyear contracts give permission for the contractor to recoup nonrecurring costs. These costs include such items as capital investment investment in plant and equipment that takes place once in the early stages of a program. **Congress has said that it will allow unfunded cancellation ceilings—negotiated not to be exceeded Government contract cancellation liability—on these costs.**³³ Thus, if the Government cancels a multiyear contract after the first year, the contractor can ask to be reimbursed for his capital investment costs. Because they were unfunded, the money will have to come from somewhere else in the program after settlement of all claims (perhaps uncompleted first-year weapons), or Congress will have to appropriate more money to receive the planned number of completed weapon systems. **Congress has decided to take on this risk in order to induce more capital investment in the defense industrial base.**

Multiyear contracts, as expanded by law in 1981, also give permission for the contractor to recoup recurring costs in the event of contract cancellation. Examples of recurring costs include advance orders for long lead-time parts and Economic Order Quantities (EOQ) of materials.³⁴ In the F-16 example, General Dynamics planned to spend some \$283 million in FY 82 on Economic Order Quantities of materials for the future 360 aircraft to be produced in FY 83, 84 and 85. Graph 4 illustrates the EOQ requirement for each year of the F-16 multiyear contract.

Multiyear contracts have cancellation ceilings that take into account the recurring costs a contractor may incur. In the event of cancellation between the first and second year of the contract, if Congress had not approved the extra \$283 million for the F-16 EOQ

materials and it still wanted all 120 F' 82 aircraft delivered it would have to authorize up to an additional \$285 million to receive the full delivery.³⁵ **Negotiations with the contractor over settlement would probably lower the cancellation liability for reasons outlined above, but if the reimbursement was not paid the Government would receive less than 120 aircraft.**

This cancellation ceiling causes the funding dilemma. **The Congress, particularly the House Defense Subcommittee of the Appropriations Committee, wants to guard against the possibility of having to appropriate more money to cancel a contract it no longer deems necessary.** Congressmen do not want to commit future Congresses to a program that they will be unable to cancel if they so desire; i.e., they feel that the prospects of large cancellation payments on a multiyear contract may nullify the option of cancellation for future Congresses.



The procurement community, which includes officials in the Military Services and OSD responsible for the day-to-day management of weapons acquisition, feels that the criteria for approving multiyear contracts are stringent enough so as to permit only contracts with a very slim chance of cancellation to go through. These officials view cancellation of a multiyear contract as a remote possibility. Thus, they believe the additional funding needed for the EOQ items added to any multiyear contract for cancellation is unnecessary. The Service procurement officers fear the funding needed for multiyear cancellation ceilings, especially in the first year, may crowd other important weapon programs out of their budget.

The Services see the budget process from a TOA (Total Obligational Authority) standpoint, with yearly limits set by the Secretary of Defense. They fear the extra TOA necessary to fund multiyear cancellation ceilings, which in their view will not be spent that year and does not purchase actual weapons, will crowd-out other programs from their fixed TOA budget.³⁶ Congress or OSD give no guarantee to the Air Force that it will receive the future TOA savings--the Air Force attaches risk to multiyear savings they work to achieve under this funding profile.

The Services view full funding cancellation ceilings as a disincentive to use multiyear contracting. They feel cancellation risk is slim and would rather spread the TOA requirement for a multiyear contract smoothly over its life, thereby avoiding the first-year cancellation ceiling hump. Congress, while possibly agreeing that the risk of cancellation is slim, demands protection if cancellation does

take place. They have achieved a certain degree of protection to date by fully funding the cancellation ceilings on multiyear contracts.

IX. WHAT ARE THE OBJECTIVES?

Any funding option chosen must satisfy the concerns of the various actors in the acquisition process, including the Congress, the OSD acquisition offices, the Services, and the defense contractors. To be successfully implemented and send the right incentives, my recommended funding method must satisfy the most players possible.

A. CONGRESS.

1. Committing Future Congresses. The penalties for cancelling a multiyear contract cannot be so great that they make cancellation politically impossible for Congress. Congressmen do not want to negate the option of cancellation for future members by forcing them to choose between continuing an unwanted program or appropriating extra funds to cancel it. An implementable funding method, as the following statement by House Government Operations Committee illustrates, must meet this concern:

Multiyear contracting fences in money, commits future congresses to particular major weapons systems acquisitions and reduces congressional oversight. If a multiyear procurement was used to lock in a deficient program, costs would be increased to \$100 million or more if the program was cancelled.

2. Budget Flexibility and Accountability. The Congress wants to retain some degree of control over defense spending and keep DoD accountable for its actions. Multiyear contracts, because of their large cancellation ceilings and their length, "freeze" a percentage of the procurement dollars for future years. **Given that the discretionary portions of the**

Defense budget (investment accounts that can be changed in any one year) are small and include procurement and military construction, but exclude such categories as personnel and operations, Congress may decrease its budget flexibility further by allowing more multiyear contracts.³⁸ The following comment from the Defense Journal illustrates this concern: "A second risk [of multiyear contracts] is the loss of executive or congressional 'flexibility' to change defense plans to cope with a changing military situation or changing budget priorities."³⁹

Congressmen have expressed fear in the past that if they allowed the Defense Department to commit to contracts that were unfunded, they would open themselves up to less control in the future. Defense, they feel, would sign contracts and commit the Congress to too many programs if they allowed unfunded cancellation ceilings. The House Appropriations Committee made the following statement in their Report on the 1985 Defense Appropriation Bill:

Authorization action on the Defense bill this year, however, permits the Services to enter contracts with an "unfunded" cancellation ceiling. Such an approach "frees up" budget authority for other programs, and has the appearance of gaining something for nothing. In fact, the budget authority required for termination liability funding will be required in a future year so the overall savings are illusory.⁴⁰

B. THE OFFICE OF THE SECRETARY OF DEFENSE.

1. Program Stability. OSD--particularly the Comptroller, Program Analysis and Evaluation (PA&E), and Major Systems Acquisition (R&E)--endorses a longer-term view of the budget cycle than the Services currently have. These people view the Services' fixation on annual TOA as shortsighted, argue that a dollar saved next year in the budget is still one dollar saved, and want the services to start looking at the

defense budget on a longer time horizon than this year's TOA allotment.⁴¹

Steve Trodden, the OSD Director for Procurement (Comptroller) in 1982 stated:

Multiyear is simply a graphic illustration of budget myopia and I think it's incumbent upon all of us to push for a broader view; if, in fact, multiyear contracting for weapon systems is in the government's best interest over a 5 year period, then we ought to pursue it with whatever TOA and outlay ramifications that entails.⁴²

Program stability is a major source of multiyear savings. By reducing contract order quantity changes the contractor can plan his production methods and schedule material orders more efficiently, which result in lower unit costs. Bob Soule of PA&E stated in an interview, "Program stability is the most important benefit of multiyear contracting."⁴³

2. Prevention of Program Lock-In. Officials in OSD want to prevent a "buy-in" of multiyear contracts by using unfunded cancellation TOA levels to obligate Defense to more programs than it can afford in the future. Trodden stated, "If this 'extra' TOA is used to start more programs than we can ultimately afford, we destabilize the defense profile."⁴⁴ These officials share the concerns of Congress that the services may use multiyear contracts as a means to lock-in future programs. An acceptable funding option will have to meet this important concern of OSD.

C. THE SERVICES.

i. Prevent Program Crowd-Out. The first concern of the Services is that fully funded cancellation ceilings, especially the first year of a multiyear program, will crowd-out other viable programs from their

budgets. Willard Mitchell, Deputy Assistant Secretary for Financial Management in the Air Force, described this concern as follows:

This up-front TOA for the F-16 looked to the Air Staff and Air Council like several hundred million dollars that was being piled on top of the F-16 program which didn't produce a single additional airplane, but would have come at the expense of other Air Force programs since, from our view, the total amount⁴⁵ of obligational authority is always constrained.

They perceive their TOA limits each fiscal year as fixed and believe the additional cancellation funding will not be spent that year because of low cancellation risk. The "extra" F-16 program TOA, according to the Air Force, purchases no additional aircraft and crowds other important Air Force programs out of their budget. They view OSD and Congressional approval of a multiyear program as sign of commitment. **If the selection process lowers the cancellation risk—and the Services believe careful application of the selection criteria ensures this—then they feel there is no need to fund cancellation ceilings.**⁴⁶

2. Reward For Savings. The services want to spread TOA savings due to multiyear across the life of a contract. not simply move obligational authority forward to year one, which they perceive full funding as doing. **A more level funding profile spreads savings across a program's life, which the Services feel would guarantee them more benefits of the cost savings due to their multiyear efforts than "up-front" funding does.** The Services want to receive the benefits of the cost savings their multiyear programs bring. **The Army, for example, has no incentive to save \$100 million in a multiyear contract if in year one it must forego \$100 million in systems because of the cancellation funding, and then have its budget in future reduced by \$100 million**

because of the money it saved through the multiyear contract. As Mitchell remarked, "

[Full funded multiyear] looked to us like a situation where we had to put up a lot of up-front money for a deal that would definitely create a price break over the four year period for the government, but those savings would never materialize to the Air Force--they would never be⁴⁷ available in those outyears to be used for other purposes.

D. THE CONTRACTORS.

1. Cancellation Protection. Contractors want a guarantee that if they take on more risk by buying long lead-time parts and EOQ material early in the life of a multiyear contract, then the Government will reimburse them for incurred costs if it cancels early. They want assurance that if they abide by the contract, the Government will compensate them for an incurred costs, even those on cancelled, but completed outyear subsystems.⁴⁸ For the contractor to expose himself to greater risk by ordering future year parts before the systems are fully authorized, the Government must offer financial protection. This is the purpose of the cancellation ceiling.

X. WHAT ARE THE FUNDING OPTIONS?

1. FULL FUNDING THE TOTAL PACKAGE.

Under this option, Congress authorizes enough money to fully fund completed systems, long lead-time parts, and EOQ material under the multiyear contract. For example, after authorizing budget resources to ensure full delivery of the FY 82 buy of F-16's, Congress authorizes an additional amount that funds EOQ material to termination liability. In the event of cancellation between program years one and two, the Government can still fully purchase the first-year aircraft and any

materials ordered for future year buys without further authorizations.

Congress and DoD currently fund multiyear programs in this fashion.

2. INCREMENTAL FUNDING.

DoD budgets for multiyear contracts on an expenditure basis under this option. **The only funds authorized each year are those that will actually be expended under the terms of the contract in that year.** Aircraft in each contract year are not fully funded. **If the Government cancelled an incrementally funded F-16 program after the first year of the multiyear contract it would not receive 120 fully built aircraft, but far fewer—say 50 or so—and would retain ownership of the EOQ material and long lead-time parts ordered in the first year.**⁴⁹ The Government could cancel the contract between years and walk away without Congress authorizing extra budget dollars, but the Air Force would not receive 120 planes.

3. PHASED FUNDING.

This method involves a two-stage funding approach. **First, the Services budget to fully fund the value of each year's weapons production, as well as the termination liability of long lead time items. They do not budget to cover the EOQ cancellation liability at this time. Second, the Services examine funding levels for each fiscal year to verify full coverage of contract termination liability in any given year. If funding does not cover termination liability in any year, they add the difference to the funding for that fiscal year.**⁵⁰

This approach, like incremental funding, allows commingling of funds. The Government pays contractor invoices for production, long-

lead, and EOQ efforts from pooled obligated funding.⁵¹ In the event of cancellation, authorizations cover all incurred contract liabilities, and the Government might or might not receive the full number of operational systems funded depending on the result of step two. If step one resulted in fully funding all EOQ, then contract cancellation would have no effect on prior year contract completion; if not the Service would receive fewer operational systems unless additional funds were made available.

For example, if the Air Force cancelled the F-16 between FY 82 and 83 it would not receive 120 operational FY 82 aircraft. If it cancelled the contract between FY 83 and 84, however, it would receive the full 120 FY 83 aircraft. This is because unlike FY 82, the FY 83 multiyear authorization met the termination liability for EOQ material under step one of phased funding. The only year EOQ liability for the F-16 multiyear program was not fully covered under phased funding was FY 82.

4. RISK POOLING.

This option is also a two step process. Risk Pooling, however, integrates Congress more fully into the funding level decision process than do the other options. First, OSD submits multiyear programs fully funded each year for the production of weapons and long lead-time items. They leave the additional EOQ termination liability unfunded. Second, Congress takes the unfunded cancellation ceiling from each multiyear contract and divides it by the total number of approved multiyear contracts. Congress then authorizes funds for this portion of the EOQ liability, pools the cancellation ceilings for all approved multiyear programs, and places them in a multiyear cancellation insurance fund attached to that specific fiscal year group of programs.

For example, the fully funded first year buy of F-16's is \$749 million, and EOQ termination liability in FY 82 is \$283 million. Congress first authorizes the \$749 million to the F-16 multiyear program, then authorizes an additional \$56 million to the cancellation insurance fund (assuming there are five approved multiyear programs in total.) If no cancellations are made between 1982 and 1983, this \$56 million from the insurance fund diverts back to the authorization for the FY 83 contract year, and the process repeats itself. The cancellation risks of a program are only pooled with other multiyear programs which begin the same year.

This insurance fund acts to pool cancellation risk for several multiyear programs. **In the event of cancellation, the settlement will first be paid with funds obligated for that contract year. Then Congress and DoD must make a decision; if they wish to complete the previous fiscal year's buy, they must divert funds from the insurance pool to the contract cancellation settlement.**

Table 5 illustrates the differences between these four funding alternatives using the F-16 program as an example. **Note that all four have the exact same total funding requirements—only the timing of the authorizations is different. Expenditures—the amount of money that actually leaves the Treasury—are the same for each of the options.** Because only the timing of budget authorizations and not expenditures are different for the four options, I did not perform any net present value analysis on the four options. Appendix D--the Black Hawk Helicopter example--illustrates the correct application of net present analysis performed by the General Accounting Office to compare annual and multiyear expenditure streams across the life of a contract.

TABLE 5— F-16 MULTIYEAR FUNDING ALTERNATIVES⁵²
(Millions of Dollars, 480 Aircraft, 120 Per Year)

Fiscal Year	Annual Contract	Full Funding	Incremental Funding	Phased Funding	Risk Pooling
81	74	74	74	74	74
82	721	997	807	807	770
83	830	630	588	639	712
84	861	668	664	790	766
85	850	617	562	676	664
86			266		
87			25		
Total	3,336	2,986	2,986	2,986	2,986

Assume a total of five Multiyear Candidates in FY 82 for Risk Pooling.

XI. ANALYSIS OF THE FUNDING OPTIONS.

The funding option I recommend will be the one that best meets the objectives of Congress, OSD, the Services, and contractors listed above. This funding method must send the correct incentives to defense managers, and should encourage the use of multiyear contracting when it is in the Government's best interest. The Government Accounting Office (GAO) stated the following in its report on the Black Hawk Helicopter multiyear contract:

If there is certainty in the number of items—such as Black Hawk helicopters—to be bought, then the question is whether to buy them annually or on a multiyear basis. If there are estimated savings by buying multiyear, then the decision to use the multiyear approach depends upon the amount of estimated savings versus the risks of the contract not being executed as planned.

I share this view of how the Government should utilize multiyear procurement.

A. OBJECTIVES OF THE CONGRESS

1. COMPLETING FUTURE CONGRESSES.

c. Full Funding Total Package. By fully funding the cancellation guarantee, Congress commits enough funds each year to pay all costs incurred by the contractor for the number of weapons ordered in that year, as well as the costs for future years' weapons. **Under this option, a future Congress could cancel the F-16 program after the first year of the multiyear contract and not have to authorize any additional funds to receive the first 120 aircraft because the cancellation payments due the contractor are already authorized.** The Defense Subcommittee of the House Appropriation Committee favors this funding method, as the following statement by a staff member illustrates:

We wanted to keep the issue of whether multiyear contracting was a good idea separate from the full funding question. We were very sensitive about the full funding policy. Full funding puts discipline into the process by requiring funding up front to match the real level of commitment.

A question arises, however: Why would Congress want to complete the previous year's buy of a program it had just cancelled? I have no answer to this question, but I tend to believe the cancellation protection is not as important as some members of Congress have stated because they would probably not want to complete a cancelled contract. Of course, it depends what led the Congress to cancel the contract in the first place. If the reason was a tight budget, they might want the contract completed; but why not save more money by cancelling the previous year's systems as well? If the reason was a faulty program, why continue the buy when all you receive are bad weapons?

b. Incremental Funding. Congress could still cancel a multiyear contract between years without having to authorize any additional funds.

However, this funding method does not guarantee delivery of complete, operational weapon systems. **If the Government cancels a contract, it will only receive the parts and systems completed to date because this funding profile only covers the expenses incurred on a program each year.**

For example, the government might receive 40 complete aircraft, 120 cockpits and 20 landing gear systems if the F-16 multiyear contract was cancelled in FY 83, not the full 120 aircraft. A Defense Subcommittee staff member made the following comment about incremental funding:

Incrementally funded multiyear contracts would require no additional funding in the budget year. Following that rule, contractors could easily lobby their projects into multiyear status, even if those projects failed to meet Departmental criteria.

This option does not satisfy Congress' concern that their actions do not "lock-in" future members.

c. Phased Funding. Congress would be less willing to accept phased funding than full funding because although all liabilities are funded, this option does not guarantee final delivery of completed weapons. This, however, is only likely to be a problem in the first year of a multiyear contract, as in the F-16 example. In the first year of the F-16 multiyear example, if Congress cancelled the contract between FY 82 and FY 83 the Air Force would not receive the full 120 aircraft. Unlike the incremental option, however, funding meets the cancellation liability after the first year and delivery of 120 aircraft each of those years is guaranteed. This option is a good compromise between full and incremental funding, and meets this concern better than incremental funding, but not as well as full funding.

d. Risk Pooling. This option is exactly like the Full Funding option if no more than one contract in a family year of multiyear

contracts is cancelled between fiscal years. **The insurance pool can be used to cover the cancellation costs. However, if total cancellation liability exceeds the amount in the pool, Congress would have to appropriate additional funds to receive delivery of the planned quantity of fully operational weapons.** If the criteria for allowing multiyear contracts are followed closely by DOD and Congress, the risk of cancellation of more than one contract in a year family should be very low.

2. BUDGET FLEXIBILITY AND ACCOUNTABILITY.

Any multiyear contract, no matter how funded, reduces budget flexibility. Congress can best meet this objective by careful application of the multiyear contract criteria and a dedication to better acquisition planning. If the government needs to buy a certain number of weapons, it should purchase them in the least expensive manner possible. If a multiyear contract can save the government money on a much needed system, then the government should be willing to trade some flexibility for the savings. **Congress should continue to judge multiyear applications on their relative merits and be cautious of the loss of flexibility in future defense budgets caused by this contracting method.**

Whether multiyear contracts are fully funded or phase funded should have the same impact on budget flexibility and accountability. Congress, however, perceives that the different funding alternatives have different effects on flexibility and accountability. They are suspicious of any move away from full funding, as the House Appropriations Committee made clear in the Report on the FY 82 Appropriations Bill when it stated, "Any movement from the full funding policy should involve a full review by

both the Executive and the Congress... Especially with regard to the MYC the committee continues to follow the full funding policy⁵⁶

Multiyear procurement may actually increase accountability because the Services must justify program candidates in detail to Congress. Congress must guard against lost flexibility and accountability by careful application of the decision criteria, and should not approve additional multiyear contracts if it fears too much inflexibility. Loss in flexibility is a cost associated with multiyear contracting that is unaffected by the funding profile, but Congress still prefers the full funding option. Any recommendation must address these preferences.

B. OBJECTIVES OF THE OFFICE THE SECRETARY OF DEFENSE.

1. PROGRAM STABILITY.

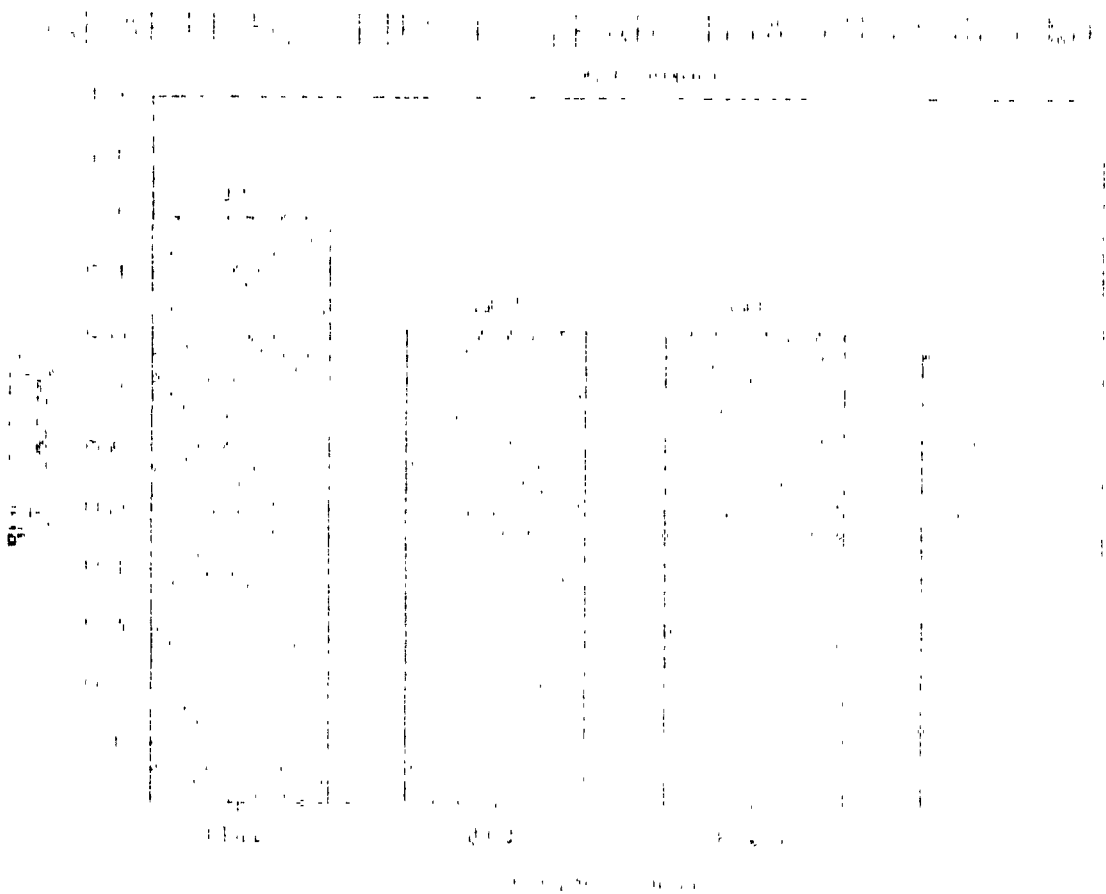
Multiyear contracting, regardless of the funding option chosen, reinforces^{Word} program stability than annual contracting. In fact, program stability is a criteria a weapons program must meet before DoD and Congress award it a multiyear contract. All of the options except incremental funding reinforce program stability to some degree, but OSD personnel judge the options on the amount of first-year funding they require. According to some members of OSD, options that require more up-front funding bring more commitment from the Services and Congress, which brings stability.⁵⁷ Graph 5 shows the first-year funding requirements under each option.

a. Full Funding the Total Package. This option reinforces program stability by requiring Congress, DOD, the Services and the contractor to commit enough resources early in the life of a contract to provide an

incentive not to change contract requirements and quantities later in the life of a contract. These incentives reinforce program stability-- reducing DOD's tendencies to change order quantities and contract requirements during the life of a contract that drive up the unit cost of the weapon system. A person in OSD (Comptroller) made the following observation:

If you're interested in "getting congress out of our hair," full funding is the way to go. Under full funding, we go to the Congress and ask for X amount of dollars to full fund 120 airplanes; there is one request and one approval. The history of the R&D account, which is the classic incrementally funded account, is that programs are stopped and started, slowed down and accelerated annually, depending on the level of funding available.

Thus, OSD feels that full funding reinforces program stability more than incremental funding. It is the funding method they fought for in 1981, and is the only option that does not allow commingling of funds.



b. Incremental Funding. As the above quotation indicates, because this alternative spreads the funding requirements across more years in smaller amounts, there is less of an incentive to avoid destabilizing changes. OSD feels the low funding requirements in early years do not constitute enough of a commitment to ensure program stability. Also, OSD fears problems may arise under this option due to poor cost estimating. This option is clearly the least attractive to OSD when considering program stability.

c. Phased Funding. More attractive than incremental funding, phased funding reinforces program stability in years phase-one fully meets the termination liability. But because this option does not require as much of an up-front commitment as full funding, OSD feels it does not support this objective as well. For OSD, this option lies between incremental funding and risk pooling.

d. Risk Pooling. This option supports program stability, but still leaves a portion of the first-year EOQ termination liability requirement unfunded. Also, Congress must agree to give DoD credit for the unused cancellation risk pool funds if no cancellations take place. There is no guarantee Congress will return the funds and apply them to future years of the same contract. Because of these concerns, this option is less favorable to OSD than full funding. The cancellation risk pool, however, makes it more attractive than phased or incremental funding.

2. PREVENT PROGRAM LOCK-IN.

A contractor or one of the Services could theoretically lock-in a contract by presenting a funding profile with low requirements in the

early years and higher requirements in the later years of the contract.

Given a fixed amount of TOA, the Services can start more programs if the first year budget authority requirement for a multiyear program is low. The first-year incremental funding requirement is less than full funding, so the risk of program lock-in is greater. According to Trodden, "You can start more programs with a fixed amount of TOA using incremental funding--no question about it."⁵⁹

This is a problem in multiyear contracts because, unlike annual contracts, the Government commits to the future years' buys. This offers the chance to lock-in the contract with low funding in the first-year, which commits the Government, and then high funding in out-years when they might find it too expensive to cancel the contract. **A program gathers bureaucratic and Congressional support after its first authorized year and becomes difficult to cancel.** To date, no multiyear contract approved and awarded has been cancelled.

By locking-in several multiyear contracts with low funding requirements in the first year, a Service could expand its budget in later years because the multiyear contracts would require additional funding. While this is unlikely to happen given the Congressional oversight required on multiyear contract approval and the strict selection criteria, funding options with the greatest amount of front-loading reduce this risk—a concern of several offices in OSD. Thus, as Graph 5 illustrates, OSD would prefer the options according to the following order: (1) Full Funding, (2) Phased Funding, (3) Incremental Funding, and (4) Risk Pooling.

C. OBJECTIVES OF THE SERVICES.

1. PREVENT PROGRAM CROWD-OUT.

a. Full Funding Total Package. This objective of the services runs directly counter to the DOD Comptroller's objective of preventing program lock-in. **Because this option requires front-loaded funding to fully fund the cancellation ceiling, the Services feel that this option could force other worthwhile programs out of their budgets to pay for these cancellation ceilings.** As Mitchell stated, "Contrary to what anybody says, the extra TOA was money that was real money that otherwise would have bought missiles, F-15s, whatever. So, in the first year, the full-funding was going to be at the expense of other programs."⁶⁰ DOD got around this in the past by giving the Services "extra" TOA to fund the cancellation ceilings, but this is not guaranteed to happen again.

This option sends the wrong signal to the Services, and if used continually could signal the end of multiyear contracting because the Services see no incentive for them to use the method if they are penalized in the first year with front-loaded funding.⁶¹ The Services have fought since 1982 to have this option replaced with another funding profile that does not require such large up-front funding.

b. Incremental Funding. Although it does have a lower first-year funding requirement, this option is only slightly more favorable to the Services than full funding because they--like Congress and DOD--do not feel comfortable funding weapon systems on an expenditure basis. **The lower first-year funding reduces the chance of program crowd-out, but the length of the funding cycle increases the risk of having to go back to Congress and request reprogramming to cover unanticipated costs or cost**

overruns. According to Major Poleskey, "The acquisition community disagrees with the approach because it adds risk to the multiyear contract environment by stretching funding requirements for a given multiyear project into added budgets and increasing the cancellation burden in later years."⁶² While the other funding options also offer the prospect of reprogramming if cost overruns occur, this option, because the funding is spread thin in each year to only cover expenditures, significantly increases the exposure of the Services to reprogramming and cancellation risk. Because of this increased risk exposure, incremental funding is less favorable to the Services than phased funding and risk pooling.

c. Phased Funding. This option reduces the chance of program crowd-out by reducing the first-year funding requirement of full funding. The first-year funding level is, however, higher than the risk pooling option; therefore, the Services would prefer risk pooling to phased funding.

d. Risk Pooling. This option significantly reduces the first-year funding requirements if Congress and DoD approve more than one multiyear contract each year. If only one multiyear contract is approved by Congress, the funding profile under this option is identical to full funding. **The Services will have an incentive to submit more multiyear candidates because the more candidates submitted, the lower the total funding for each program.** (A fixed cancellation ceiling divided by ten programs instead of five requires lower first-year funding.)

2. REWARDS FOR SAVINGS.

a. Full Funding Total Package. The Services feel that full funding the cancellation ceilings have the potential to take away the

rewards for any cost savings those multiyear contracts bring. This is due to the front-loading of the funding toward the early life of a system. Jim Williams, Deputy Assistant Secretary for Acquisition Management (R&D, Logistics) addressed this concern when he stated:

You could say that the savings that would accrue from multiyear would go into a pot for the next year to provide TOA above the TOA that won't be expended--but that's bookkeeping--so those real savings will never be used for programming. So, no, I don't see any way of effectively crediting the Air Force for saving money on multiyear. We aren't going to get more TOA because we saved money on the F-16 last year or less because we were inefficient.

The Services would prefer a funding profile that is about even through the life of a contract because that insures them they will receive some rewards for the lower total system cost in the first year. They fear Congress will reward them for lower costs in the outyears of a fully funded multiyear contract by cutting their budget by that savings, but not refunding them for the systems given up in the first year of the multiyear to fund the cancellation ceiling.

b. Incremental Funding. This option best guarantees that the Services will receive the benefits of multiyear contract cost savings because funding is spread-out over more years than the other options. **This funding spread-out reduces the risk of budgets being reduced in response to generated multiyear savings because the first year funding requirement is lower than the full funding option and the later years' funding requirements are lower, although spread over more years.** This option offers the best protection for cost savings to the Services than the other options.

c. Phased Funding. This option also guarantees that the cost savings of multiyear contracts accrue to the Services because of a lower first-year funding requirement. It does not, however, guarantee the

savings in later years as well as the incremental funding option because the funding is not spread out over as many years.

d. Risk Pooling. If several candidates are approved to go multiyear in a year this option has a lower first-year funding requirement, thereby guaranteeing the Services will see the savings more than the phased or full funding options. As long as the Services present more than one multiyear candidate to Congress the first-year funding requirement will be less than under full funding. The total program requirements, however, are not spread-out as well as incremental funding. Therefore, when judged against this Service objective, risk pooling lies between incremental and phased funding.

D. CONTRACTOR OBJECTIVES.

1. CANCELLATION PROTECTION.

All four options offer equal cancellation protection from the contractor's point of view. If a multiyear contract is cancelled under any one of the four options, the contractor is guaranteed payment for any costs incurred up to the time of cancellation. Full funding is the only option which guarantees the contractor the possibility of completing the previous year's order, but if Congress desires to complete a program under any of the options it can by authorizing additional funds. Therefore, the contractor may have a slight preference for full funding, but not much because cancellation under any of the options has basically the same outcome from his point of view.

Table 6 summarizes my analysis of the different funding alternatives.

TABLE 6: HOW THE FUNDING ALTERNATIVES COMPARE

<u>Objective</u>	<u>Full Funding</u>	<u>Incremental Funding</u>	<u>Phased Funding</u>	<u>Risk Pooling</u>
Committing Congress	Best	Worst	Maybe	Good
Flexibility and Accountability	Best	Worst	Fair	Good
Program Stability	Good	Worst	Good	Good
Prevention of Lock-in	Best	Worst	Fair	Good
Prevention of Crowd-out	Worst	Good	Good	Best
Reward Savings	Worst	Fair	Good	Best
Provide Risk Protection	Better	Fair	Good	Good

XII. RECOMMENDATION--RISK POOLING

I recommend that Congress and the Department of Defense adopt the risk pooling funding option described above as the defense multiyear contract funding method. My analysis shows that the risk pooling option is the one all parties involved in the multiyear contract funding action channel are most likely to accept. **All defense contracts cannot go multiyear, but the system should encourage selected ones to do so if savings outweigh the risks of it not being executed as planned.**

By applying the selection criteria carefully, Congress should be able to avoid committing future members to undesirable programs using the risk pooling method. The insurance pool will be available to cover any unfunded liability if Congress or Defense cancels a program. The funding

method closely involves Congress in the multiyear decision, so oversight ability should actually increase.

Risk pooling meets OSD's objectives of program stability and prevention of program lock-in. The necessity of the insurance pool insures cancellations will leave no unfunded liability. By screening programs using the selection criteria, OSD can assure only programs that are stable and unlikely to be cancelled receive multiyear approval. The Services will have greater incentive to offer multiyear candidates which will bring greater savings to the defense budget, but OSD will still maintain veto power over candidates. **No unstable or buy-in program will ever reach Congressional hearings if OSD applies the selection criteria carefully.**

The Services will welcome the risk pooling option because it removes the up-front TOA needed for current multiyear programs William Long described as, "the most serious problem affecting widespread implementation because the Military Departments perceive that the additional TOA is at the expense of their other valid requirements."⁶⁴ This alternative also offers more chance that the Services will receive some of the cost saving benefits their efforts bring. **Contractors can accept risk pooling because it offers greater incentives for more multiyear programs and protects them against cancellation risk.**

Risk pooling can fit closely into current multiyear funding procedures, but several changes in DOD policy will be necessary. Currently, DOD funds multiyear contracts using the full funding method, so this will have to be changed through legislation, regulations, policy guidance, and briefings to members of Congress, Department of Defense and Service officials, and contractor representatives. The Air Force must

lobby Congress, pointing out the advantages of an insurance approach to multiyear funding--that the risks of cancellation should be spread across several programs.

XIII. CONCLUSION

In this Policy Analysis Exercise I analyzed four multiyear contract funding options using the F-16 program as an example. After describing how multiyear procurement works, I described several pros and cons of multiyear procurement and the mechanics of the cancellation ceiling. Then I analyzed the objectives of the different actors responsible for multiyear contracts and how the four options satisfied these objectives. **As a result of this analysis, I recommend that the Congress, OSD, the Services and defense contractors adopt the risk pooling method for funding multiyear contracts. This is the funding alternative which best satisfies the interests of all interest groups in the defense acquisition arena.** It protects Congress against committing future members and assures Congressional oversight of Defense programs, offers OSD program stability and prevention of contract buy-ins, gives the Services incentive to offer more multiyear candidates because it does not crowd-out their other programs but rewards them for savings, and protects the contractor against program cancellation risk. **It is surely a better alternative than full funding, the current method of funding cancellation ceilings on multiyear contracts.**

APPENDIX A: GLOSSARY OF MULTIYEAR TERMS

Advance Procurement. An exception to the full funding policy which allows procurement of long lead time items (advanced long lead procurement) or economic order quantities of items (advance EOQ procurement) in a fiscal year in advance of that in which the related end item is to be acquired. Advance procurements may include materials, parts and components as well as costs associated with the further processing of those materials, parts and components.

Annual Funding. The current Congressional practice of limiting authorizations and appropriations to one fiscal year at a time. The term should not be confused with two year or three year funds which permit the Executive Branch more than one year to obligate the funds.

Block Buy. Buying more than one year's requirement under a single year's contract. A total quantity is contracted for in the first contract year. Block buys may be funded to the termination liability or fully funded.

Cancellation. A term unique to multiyear contracts. The unilateral right of the Government not to continue contract performance for subsequent fiscal years' requirements. Cancellation is effective only upon the failure of the government to fund successive FY requirements under the contract. It is not the same as termination.

Cancellation Ceiling. Upon cancellation, the maximum amount that the Government will pay the contractor for nonrecurring costs (and a reasonable profit thereon) which the contractor would have recovered as a part of the unit price, had the contract been completed. The amount which is actually paid to the contractor upon settlement for unrecovered nonrecurring costs (which can only be equal to or less than the ceiling) is referred to as the cancellation charge.

Expenditure Funding. Government funds the contractor's expenditures plus termination liability. Synonymous with funding to termination liability.

Full Funding. Funds are available at the time of award to cover the total estimated cost to deliver a given quantity of complete, militarily useable end items or services. Under current policy (DoD Directive 7200.4), the entire funding needs of the fiscal year production quantity must be provided unless an exception for advance procurement has been approved. A test of full funding is to ask the question, Does any part of this year's buy depend on a future year appropriation to result in the delivery of complete units? If the answer is yes, the contract is probably not fully funded. The principle of full funding applies only to the Procurement Title of the annual appropriation act and therefore affects production contracts but not RDT&E contracts.

Incremental Funding. Funds are not available at the time of contract award to complete a fiscal year's quantity of end items in a finished, military useable form. Future year appropriations are required in order to complete the items or tasks. Incremental Funding is commonly used for RDT&E programs.

Multiyear Contract. A contract covering more than one year's but not in excess of five year's requirements. Total contract quantities and annual quantities are planned for a particular level and type of funding as displayed in the current FYDP. Each program year is annually budgeted and funded and, at the time of award, funds need only to have been appropriated for the first year. The contractor is protected against loss resulting from cancellation by contract provisions which allow reimbursement of unrecovered nonrecurring costs included in prices for cancelled items.

Multiyear Funding. A Congressional authorization and appropriation covering more than one fiscal year. The term should not be confused with two year or three year funds which cover only one fiscal year's requirement but permit the Executive Branch more than one year to obligate the funds.

Multiyear Procurement. A generic term describing situations in which the Government contracts, to some degree, for more than the current year requirement. Examples include multiyear contracts, block buys, advance EOQ procurement. Generally, advance long lead procurements in support of a single year's requirement would not be considered a multiyear procurement.

Nonrecurring Costs. Those production costs which are generally incurred on a one time bases which include such costs as plant or equipment relocation; plant rearrangement; special tooling and special test equipment; preproduction engineering; initial spoilage and rework; and specialized work force training.

Recurring Costs. Production costs that vary with the quantity being produced such as labor and materials.

Termination for Convenience. Procedure which can apply to any Government contract, including multiyear contracts. As contrasted with cancellation, termination can be effected at any time during the life of the contract (cancellation is commonly effected between fiscal years) and can be for the total quantity or a partial quantity (whereas cancellation must be for all subsequent fiscal years' quantities). Also, cancellation costs are currently limited to unrecovered nonrecurring costs whereas termination costs apply to all reasonable and allocable costs incurred by the contractor, recurring or nonrecurring.

Termination Liability. The maximum cost the Government would incur if a contract is terminated. In the case of a multiyear contract terminated before completion of the current fiscal year's deliveries, termination liability would include an amount for both current year termination charges and outyear cancellation charges.

Termination Liability Funding. Obligating sufficient contract funds to cover the contractor's expenditures plus termination liability but not the total cost of the completed end items.

APPENDIX B: MULTIYEAR PROCUREMENT INITIATIVES

<u>PROGRAM</u>	<u>TOA SAVINGS</u>	<u>TOA IMPACT ON FY 1986</u>	<u>PERIOD OF MULTIYEAR CONTRACT</u>
<u>Approved FY 1985 Initiatives</u>			
UH/EH-60 Airframe	129.5	-7.2	85-87
5 Ton Trucks	58.1	-25.1	85-87
CH-47 Modernization	153.4	+7.1	85-89
Bradley Turret Drive	10.6	-6.1	85-87
Shop Equipment Contact Maintenance	74.3	-28.0	85-89
CH-53 Airframe	129.3	-1.0	85-89
AN/SSQ-36 Sonobuoy	1.6	-3.3	85-86
F-16 Airframe	259.6	+17.5	85-89
DSCS Satellites	<u>139.8</u>	<u>-84.0</u>	85-88
Subtotal	956.2	-130.1	
<u>Approved FY 1984 Initiatives</u>			
B-1B (Airframe and Major Subsystems)	1,188.2	-1,231.8	84-86
TB-16 Towed Array	2.3	-2.3	84-86
MK-45 Gun Mount/ MK-46 Hoist	61.8	-13.4	84-87
Armored Combat Earthmover	**	**	**
B-1B Spares	158.9	+2.6	84-87
A-6E TRAM	<u>73.8</u>	<u>-16.1</u>	84-87
Subtotal	1,485.0	-1,261.0	
<u>Approved FY 1983 Initiatives</u>			
Multiple Launch Rocket System	209.1	-143.0	83-87
+ T-700 Engine	75.1	Complete	82-85
KC-10	658.0	-249.0	83-87
NATO Seasparrow (Kits)	36.8	-3.0	82-86
MK-46 Torpedo	86.0	Complete	83-85
DMSP	58.2	-87.2	83-86
M-60 Sight	*	*	*
Bradley Components	<u>109.1</u>	<u>Complete</u>	83-85
Subtotal	1,232.3	-492.2	

Approved FY 1982 Initiatives

F-16 Airframe	256.8	Complete	82-85
TRC-170 Radio	16.0	Complete	81-84
C-2 Airframe	89.0	-43.3	82-87
UH-60 Helicopter	79.4	Complete	82-84
ALQ-136 Radar Jammer	34.6	Complete	82-84
SM-1 (Rocket Motor)	10.1	-7.4	82-86
M-1 Fire Control System	117.3	Complete	82-85
NAVSTAR	<u>212.2</u>	<u>-89.0</u>	82-87
Subtotal	815.4	-139.7	
Total Old Multiyear Programs			
	4,488.9	-2,023.0	

+ Includes 2 Programs: UH-60 and UH-64.

* M-60 Tank Thermal Sight multiyear was cancelled.

** Armored Combat Earthmover multiyear will not be awarded.

APPENDIX C: MULTIYEAR LEGISLATIVE AND DOD POLICY GUIDANCE

o Section 8052 of the Department of Defense Appropriation Act, 1985 provides the following

- No multiyear contract can be initiated for a major system (\$200M for R&D \$1B production) using FY85 funds unless there is specific authority provided for that multiyear contract in that Act.

- No funds may be used (1) for a multiyear contract that employs economic order quantity (EOQ) procurement in excess of \$20M in any one year or that includes an unfunded contingent liability in excess of \$20M, or (2) a contract for advanced procurement leading to such multiyear contract, unless the Committees on Armed Services Appropriations have been notified at least 30 days in advance.

- No part of any appropriation contained in this Act shall be available to initiate a multiyear contract for which the Economic Order Quantity (EOQ) advance procurement is not funded at least to the limits of the governments liability.

o Other Congressional Conference Report needs have been expressed as follows:

- The \$20M relaxation notification threshold has been continued for another year and the Department must submit a quarterly report on utilization of this EOQ authority. Reports cover the last day of the months of March, June, September, and December.

- A two-track system for multiyear justification for all MYP requiring either specific act approval or congressional notification.

(1) First set of material submitted with budget or in notification package. This should be budgetary estimate based on best available data.

(2) Second set of material to be based on actual contract details and submitted after coordination with OASD(C) and OUSDR&E(AM) not earlier than 30 days before contract award nor later than 30 days after contract awards.

APPENDIX D: BLACK HAWK HELICOPTER MULTIYEAR EXAMPLE

	<u>1982</u>	<u>1983</u>	<u>Fiscal Year</u>		<u>1986</u>	<u>Total</u>
			<u>1984</u>	<u>1985</u>		
	-----(\$ Millions)-----					
<u>Annual Contracts</u>						
Estimated Expenditures	37.7	223.5	352.6	340.6	69.5	1,023.9
Present Value	37.7	198.0	276.6	236.7	42.8	791.8
<u>Multiyear Contract</u>						
Estimated Expenditures	43.0	293.0	315.0	272.0	27.0	950.0
Present Value	43.0	259.5	247.1	189.0	16.6	755.2

SUMMARY:

	<u>Current Dollar Savings</u>	<u>Discounted Savings</u>	<u>Discounting Impact</u>
Annual Contract	1,023.9	791.8	
Multiyear	<u>950.0</u>	<u>755.2</u>	
Difference	73.9	36.6	37.3

Present value was calculated using a pretax rate of 12.9 percent. This was based on the average yield on outstanding marketable Treasury obligations that had remaining maturities comparable to this period of analysis.

NOTES

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