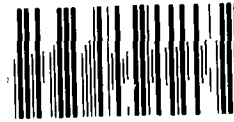


December 1986

GOVERNMENT  
CONTRACTING

Assessment of the  
Study of Defense  
Contractor  
Profitability



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United States  
General Accounting Office  
Washington, D.C. 20548

National Security and  
International Affairs Division

B-224639

December 23, 1986

The Honorable William V. Roth, Jr.  
Chairman, Committee on Governmental  
Affairs  
United States Senate

The Honorable Jack Brooks  
Chairman, Committee on Government  
Operations  
House of Representatives

This report was prepared at your request and addresses DOD's Defense Financial and Investment Review (DFAIR). The report addresses the completeness, accuracy, and adequacy of DFAIR, the validating of its findings and the appropriateness of its recommendations

This report contains a recommendation in chapter 7 to the Congress concerning the establishment of a legislative requirement for a Profitability Reporting Program and periodic profit studies.

We are sending copies of this report to interested congressional committees and to the Secretary of Defense.

Frank C. Conahan  
Assistant Comptroller General

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# Executive Summary

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In August 1985, the Department of Defense (DOD) released its Defense Financial and Investment Review (DFAIR) report, which recommended changes in DOD's policies concerning contractors' profits.

The Chairman, Senate Committee on Governmental Affairs, requested that GAO evaluate the adequacy of the report, the validity of its findings, and the appropriateness of its recommendations. GAO also received a similar request from the Chairman, House Committee on Government Operations.

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## Background

DOD's profit policy provides its contracting officers a structured approach to calculating prenegotiation profit objectives through weighted guidelines. The profit objectives determined through weighted guidelines, coupled with the government's estimate of contract cost, produces the government's "target" price used by the contracting officer in negotiating with a potential contractor.

Over the past 10 years, the Office of the Secretary of Defense and the military services have done ad hoc profit studies each using different methodologies. DOD's Profit '76 study based its analyses on return on assets—income divided by assets (less progress payments and cash). The Air Forces's Profit '82 study based its analyses primarily on return on sales and profit negotiation objectives. DFAIR based its analyses on return on assets—income divided by total assets (including progress payments but less cash). The use of inconsistent methodologies has been a major weakness in the ad hoc approach to reviewing profit.

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## Results in Brief

GAO agrees with the DFAIR report that contract pricing, financing, and profit policies are related and should be examined on an integrated basis.

In its study, DFAIR used a methodology which permitted it to conclude that since 1970 the profitability of defense business was roughly comparable to commercial business except for the time period 1980-83. GAO found that the use of conventional methodology results in the conclusion that during the entire period the profitability of defense business was substantially greater than commercial business.

DFAIR also concluded that a 1980 change to DOD profit policy resulted in a 0.5 to 1 percent unintended increase in profit objectives. GAO believes that the unintended increase was larger than 1 percent. Although DFAIR's

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recommended changes to the weighted guidelines were designed to do away with this unintended increase, GAO found that they would not. In fact, had the combination of all DFAIR recommendations been implemented, GAO estimates they would have produced profit objectives about 25 percent more than intended by DFAIR.

More importantly, while GAO does not take a position on what defense business profits should be, achieving rough comparability between defense and commercial business will require more than a 1 percent reduction in profit objectives because actual defense business profits have been substantially greater than those calculated by DFAIR.

DOD recently established an interim profit policy which was based on DFAIR data and analysis. In GAO's view, the interim policy will not achieve the appropriate profit reductions because it uses as a baseline the flawed data analyses contained in the DFAIR report.

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## Principal Findings

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### Comparative Profitability

In calculating return on assets—the ratio of income to assets—DFAIR increased the asset base by adding government progress payments to contractor inventories. In a separate action, DFAIR adjusted income by using a unique calculation of “economic profit.” These two actions reduced the apparent return on assets for defense business and led to an understatement of its profitability.

Based on this understatement, DFAIR concluded that profits on defense business were very similar to those of commercial manufacturers except during 1980-83. GAO's analysis of the DFAIR data—using conventional methodology—showed that defense contractors were 35 percent more profitable than commercial manufacturers during 1970-79 and 120 percent more profitable during 1980-83. In addition, GAO's analysis of publicly available data indicates that defense business was substantially more profitable than comparable nondefense firms during the period 1975 to 1983.

DFAIR concluded that the defense sector has become more capitalized in the last 9 years. GAO analysis shows that defense contractor investment has increased during the period 1975 to 1983. However, when growth in

investment is measured by the increase in capital intensity as represented by a capital to labor ratio, defense contractors' rate of investment growth lagged behind the rate for nondefense firms.

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### Weighted Guidelines Changes

To reduce negotiated profit objectives by 0.5 to 1 percent, DFAIR recommended several changes in the weighted guidelines policy. Its analysis showed that the recommendations would reduce profit objectives from 12.3 to 11.5 percent of total cost.

GAO analyses of the same DOD data showed that the recommended changes would not reduce profit objectives. Using a broader data base and considering the effects of all the DFAIR recommendations, the profit objectives could range as high as 12.7 percent of total cost.

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### Contractor Financing

Further, in evaluating contractor financing costs, DFAIR developed a "typical" contract model for a \$10 million contract. From the model, it concluded that contractors historically incurred a cost equal to 2 percent of the total contract cost (\$175,323 on the \$10 million model contract) to finance their working capital requirements. GAO questions the validity of this conclusion because historic data indicates that these costs are less than 2 percent.

The effect of related DFAIR recommendations, particularly the establishment of interim/milestone payments, would be to provide almost all of contractor working capital needs. But in addition to making interim/milestone payments, DFAIR recommended that contractors receive 2 percent of contract cost as profit to cover working capital costs. As a result, based on DFAIR's model contract with costs of \$10 million, a contractor would get \$200,000 in profit as compensation for its working capital financing costs when those costs had been substantially reduced by interim/milestone payments.

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### Subsequent Profit Policy Proposals

DFAIR was issued in August 1985. The September 18, 1986, Federal Register contained a new DOD proposed profit policy to become effective January 1, 1987.

On November 14, 1986, DOD published a new interim policy retroactively effective for all solicitations issued on or after October 18, 1986. The interim policy—like the policy proposed in September 1986—is designed to reduce profit objectives to bring defense profitability into

line with comparable durable goods manufacturers. The DOD briefing that accompanied the announcement of the initial policy stated that this reduction would cause profit objectives to go from 12.3 percent to 11.3 percent. However, subsequent DOD analyses shows that average DOD profit objectives were about 13.7 percent in 1985. Therefore a 1 percent reduction would result in profit objectives of 12.7 percent—not 11.3 percent.

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## Profitability Reporting

The DFAIR report is based on data that was submitted voluntarily by contractors, was reviewed by the contractor's public accounting firms (app.VII) but not by the government, and was not retained after being summarized by Touche Ross and Company. A Profitability Reporting Program that provides verifiable data would improve the credibility of future profit studies and policy changes. Such a program would require a central authority, appointed by the President, to implement and administer the program, act as a repository for the data, and periodically conduct profit studies on a consistent basis.

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## Recommendations

GAO recommends that the Secretary of Defense

- initiate, on an expedited basis, new analyses using conventional methods to evaluate profitability;
- based on these analyses make appropriate modifications as soon as possible to the interim profit policy; and
- develop a means to show, in contract negotiations, the effect of government contract financing (for example, rate of progress payments, payment frequency, speed of payment, etc.) and the use of interim/milestone payments on contractors' return on assets.

GAO also recommends that the Congress establish a legislative requirement for a Profitability Reporting Program and periodic profit studies which should help assure fair and reasonable profit in the negotiation of government contracts.

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## Agency Comments

DOD generally disagreed with all of GAO's findings, conclusions, and recommendations concerning DFAIR. DOD was particularly concerned that GAO's report did not discuss actions taken by DOD subsequent to the DFAIR report.

GAO's recommendations have been modified to recognize these actions.

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**Abbreviations**

|       |   |
|-------|---|
| DFAIR | Defense Financial and Investment Review |
| DOD   | Department of Defense                   |
| GAO   | General Accounting Office               |
| LMI   | Logistics Management Institute          |
| QFR   | Quarterly Financial Report              |
| ROA   | return on assets                        |
| ROE   | return on equity                        |
| ROS   | return on sales                         |

# Introduction

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The Department of Defense (DOD) made its Defense Financial and Investment Review (DFAIR) to (1) determine if contract pricing, financing, and profit policies provided for effective and efficient spending of public funds and the viability of the defense industrial base and (2) make recommendations for improvements. The DFAIR report was released in August 1985.

The decade between the last similar study—Profit '76—and the DFAIR study was one of change, and DFAIR was to evaluate DOD profit policy and the defense industry in light of those changes. Since Profit '76, DOD's policy has undergone several changes: adjustments to the profit policy, development of a policy covering contractor investment incentives, changes in progress payment policy, and various changes in cost allowability rules. Shifts in the economic environment have also affected the defense contracting and commercial manufacturing segments of the economy. Rapid inflation and high interest rates affected all segments of the economy in the late 1970s. The defense industry has benefited from an increase in defense outlays while, according to the DFAIR report, commercial manufacturers have experienced a severe recession.

To evaluate the effect of those changes on its profit policies, DFAIR analyzed data submitted voluntarily by 76 contractors, the DOD Form 1499<sup>1</sup> data base, and the Quarterly Financial Reports developed by the Commerce Department's Bureau of the Census. Outside studies done by Touche Ross and Company, the Logistics Management Institute, and the Conference Board were used as well. DFAIR also conducted opinion surveys of contractors and DOD procurement personnel.

From its evaluation DFAIR concluded that, in general, the current contract pricing, financing, and markup policies are balanced economically, are protecting the interests of the taxpayer, and are enabling U.S. industry to achieve an equitable return for its involvement in defense business.

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## DOD's Current Profit Policy

DOD currently implements its profit policy through weighted guidelines—a method of computing a profit objective. A profit objective is the part of the estimated contract price that, in the contracting officer's judgment, is an appropriate profit for use in the negotiation process. Because of the give and take of the negotiation process, the amount of

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<sup>1</sup>The DOD Form 1499, Report of Individual Contract Profit Plan, is prepared for negotiated contractual actions with cost and profit that together amount to at least \$500,000.

profit negotiated for a contract generally falls between the computed profit objective and the amount initially requested by the contractor. DFAIR shows that the profit negotiated tracks closely with the profit objective.

A profit objective has historically been based on estimated cost. However, in 1976 Defense Procurement Circular 76-3 made a major revision to the profit policy and the method of calculating profit. Profit on facility capital employed—a measure of investment—was introduced into the weighted guidelines method of computing a profit objective. At that time, DOD believed that adding investment to the calculation of a profit objective would help remove disincentives for contractor facility investments and would reduce reliance on cost as a basis for estimating profit. It was felt that facility capital investments by contractors would, in turn, reduce production costs and thus reduce the overall cost to the government. At the same time that DOD was revising its policy to include profit on investment, it already was giving additional profit for cost risk and was recognizing cost of money as an allowable cost.

Under the current weighted guidelines method, a profit objective is determined for several factors, including (1) estimated cost, (2) cost risk, (3) facility capital investment, and (4) cost of money. The sum of the profit objectives for these factors plus special profit factors which vary by contract, represents the overall profit objective for a contract.

One of DOD's primary goals in revising its profit policy in 1976 was to reduce emphasis on cost as a profit determinant and at the same time increase the incentive for investment in facilities by rewarding contractors who made such investments. To ensure that overall profits would not increase, DOD developed an offset factor to be applied to the profit objective based on estimated contract cost. The sum of individual profit objectives for estimated cost is multiplied by 0.7 (the 30-percent offset factor) to arrive at the reduced profit objective on estimated cost. This reduction of profit on estimated cost, plus the deletion of profit on past performance,<sup>2</sup> was intended to offset (1) the increased profit for risk, (2) newly recognized profit on facility capital investment, and (3) the recognition of cost of money as an allowable element of the cost of capital.

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<sup>2</sup>Before revising the profit policy under Defense Procurement Circular 76-3 a profit objective existed for past performance. Historically it had represented a relatively small portion of overall profit objectives. Under Defense Procurement Circular 76-3 this profit objective was deleted.

In February 1980, under Defense Acquisition Circular 76-23, DOD revised its profit policy. It provided new weighted guidelines for labor-intensive research and development and service contracts. Adjustments were made for profit on risk, and the profit range for facility capital employed was increased from 6 to 10 percent to 16 to 20 percent on manufacturing contracts. This change more than doubled profit for contractors' facility capital employed on manufacturing contracts but nothing was done to reduce the profit objective based on cost. The overall effect was a substantial increase in manufacturing contract profit objectives and, ultimately, an unintended increase in negotiated profits.

Based on its study, DFAIR concluded that the implementation of Defense Acquisition Circular 76-23 had resulted in a 0.5 to 1 percent unintended increase in overall contract profit objectives. The conclusion that profit objectives were higher than intended is consistent with the findings of our March 14, 1986, report.<sup>3</sup>

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## Objectives, Scope, and Methodology

The Chairman, Senate Committee on Governmental Affairs, requested us to evaluate the adequacy of the DFAIR study, the validity of its findings, and the appropriateness of its recommendations. (See app. II.) The Chairman, aware that a comprehensive review of defense contract payment and profit policies had not been made since 1976, expressed a belief that the DFAIR study would greatly affect DOD's future contract financing policies. We also received a similar request from the Chairman of the House Committee on Government Operations. (See app. III.)

We began our review in August 1985 and completed field work in March 1986. The DFAIR report was released in August 1985. On May 27, 1986, the Deputy Secretary of Defense issued a memorandum that adopted many of the DFAIR recommendations. We sent a draft of this report to DOD for its review and comment on July 24, 1986. Subsequent to that date, DOD issued two profit policy proposals. The first was published in the September 18, 1986, Federal Register and was to be effective on January 1, 1987. We provided comments to that proposal on November 14, 1986. (See appendix IX.) On November 14, 1986, DOD published a new interim policy retroactively effective to all solicitations issued on or after October 18, 1986.

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<sup>3</sup>Cost Accounting Standard 414—Its Relationship to DOD Profit Policy (GAO/NSIAD-86-55, Mar 14, 1986)

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## Economic Issues

Although we did not have access to the segment<sup>4</sup> data gathered from 76 contractors and developed for DFAIR by Touche Ross and Company, we did have access to the summary data. The raw data was submitted to Touche Ross and Company on a voluntary basis, by 76 of the 126 contractors surveyed. The primary reason why the remaining contractors did not submit data was concern over the time and cost involved in preparing their responses. To protect the confidentiality of the data, Touche Ross and Company returned the raw data to the contractors at the end of the study. We initially requested access to the raw data but we decided not to pursue this request in order to encourage contractor participation in the DFAIR study. Although we would have preferred access to the raw data so that it could be verified, we were satisfied that the Touche Ross data was useful and valuable after comparing the results of analyses based on the Touche Ross data to the results of analyses based on other data sources.

Due to the nature of the data available publicly, our analyses are different from the DFAIR analyses. We were forced to use different data bases over different time periods. Although the results of our analyses using publicly available data are not exactly the same as our analyses using the aggregated Touche Ross data, the trends shown by both kinds of analyses are similar and support our overall conclusions.

Our analyses of economic issues are based on the Touche Ross aggregated data and financial data obtained from the COMPUSTAT data base at the company level and segment level (the defense and nondefense segments of defense firms). The financial data from COMPUSTAT are taken from audited financial reports incorporated in company annual reports and Form 10K reports filed with the Securities Exchange Commission. Although we performed some computer checks of the data we did not verify the accuracy of the computerized data, provided by COMPUSTAT by comparing them to the original source documents. Our COMPUSTAT analysis at the company level included 84 defense firms and 228 commercial firms.

For various measures of profitability, we compared our samples of defense and nondefense firms for the period 1975-1983. In a further

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<sup>4</sup>The Cost Accounting Standards Board definition of segment is "Segment One of two or more divisions, product departments, plants or other subdivisions of an organization reporting directly to a home office, usually identified with responsibility for profit and/or producing a product or service. The term includes Government-owned contractor-operated facilities, and joint ventures and subsidiaries (domestic and foreign) in which the organization has a majority ownership. The term also includes those joint ventures and subsidiaries (domestic and foreign) in which the organization has less than a majority of ownership, but over which it exercises control."

attempt to determine the influence of defense business on profitability, we also stratified the defense firms we selected by the percentage of total sales attributed to defense. We used six measures of return

- Net income return on assets (ROA).
- Net income return on stockholders' equity (ROE).
- Net income return on sales (ROS).
- Cash flow ROA.
- Cash flow return on stockholders' equity.
- Market return.<sup>5</sup>

We measured the ROA and ROE at the firm level, with and without adjustments for the effect of tax deferrals. We evaluated the ROS and ROA for the defense and nondefense segments of the 84 defense firms in our sample, and evaluated the risk of defense business compared with that of commercial manufacturing. We also evaluated the relative levels of investment of defense firms and nondefense firms for the period 1975-1983 (See chs. 3 and 6 and apps. IV and V.)

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## Weighted Guidelines Policy

We examined the proposed changes to the DOD profit policy and to the weighted guidelines used to implement that policy, to obtain a thorough understanding of the changes and their effect on defense contract profitability. For reporting purposes, DFAIR included cost of money in negotiated profits. We also treated cost of money as though it were part of profit. Our review included an examination of profit objectives as reported in the DOD Form 1499 data system, not negotiated profit or realized profit.

We used the same DOD Form 1499 (Report of Individual Contract Profit Plan) data files used by DFAIR to support its conclusion that the profit policy alternatives it suggested would reduce contractor profits. We included in our analysis shipbuilding industry contracts which are a part of the available data files. As discussed in chapter 4, DFAIR treated shipbuilding separately. The data files we reviewed included prenegotiation profit objectives and cost of money for about 6,500 Army, Navy, and Air Force contract actions from 1981 through 1983. The data files also included approximately 6,200 nonshipbuilding contracts and about

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<sup>5</sup>Market return is the stock price at the end of the year minus the stock price at the beginning of the year plus any dividends paid during the year. This quantity is then divided by the stock price of the beginning of the year to get a percentage of return.



260 shipbuilding contracts with a total estimated cost of \$61 billion and \$12 billion, respectively.

We reviewed the DFAIR analysis of the DOD Form 1499 data to determine how DFAIR used the data to estimate the effect of its proposed profit policy changes on contractor profits. We followed the DFAIR methodology and converted the historical DOD Form 1499 data to the proposed weighted guidelines format. We computed weighted average profit rates and applied these rates to the proposed profit (weight) ranges. We also analyzed data by kind of contract (e.g; manufacturing, research and development, and service contracts) and by type of contract (e.g., firm fixed price, fixed-price incentive, etc ).

To make our analysis comparable to DFAIR's analysis, we analyzed the data using the DFAIR assumptions, including

- the distribution of facility capital to land, buildings, and equipment of 8, 34, and 58 percent, respectively;
- the lengths of contracts of 40 months for manufacturing, 24 months for research and development, and 12 months for service contracts;
- overtarget cost-sharing ratios of 50/50 for fixed-price incentive contracts and 90/10 for cost-plus-incentive-fee contracts; and
- a progress payment rate of 85 percent and a prime interest rate of 10.8 percent.

In certain instances, we varied these assumed factors to determine their effect, if any, on projected defense contractor profits.

We reviewed reports and documents relative to the current profit policy as implemented by Defense Procurement Circulars 76-3 and 76-12 and Defense Acquisition Circular 76-23.

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## Contract Financing Issues

The objectives of this segment of our review were to (1) test and validate the DFAIR conclusions regarding contract financing and its effect on profitability and (2) determine the appropriateness of DFAIR's recommendations.

We included in our review data from previous DOD profit reviews, DOD regulations and policies on contract financing, aggregated data obtained by DFAIR from defense contractors, and the models and methodology used by DFAIR to develop its conclusions and recommendations.

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We did a review of the DFAIR report chapter on contract financing and interviewed the chapter's authors in an effort to obtain an understanding of the chapter and the data used in the chapter. We visited the headquarters of a defense contractor that was a source for data used in the DFAIR study and obtained similar data and an explanation of the methods used to develop the data. We also obtained, from the Defense Contract Audit Agency, contract financing data on the defense contractors that provided these data for the DFAIR study.

Using the DFAIR contract financing model, methodology, and assumptions concerning contractor costs for capital invested in a defense contract, we tested the validity of DFAIR's conclusions and the results of its recommended changes to contract financing policies. (See ch. 5.)



# The DFAIR Study Provides a Good Basis for Profit Policy Evaluation

Several aspects of the DFAIR study are valuable for evaluating DOD profit policy.

- The study recognized the interrelationship among contractor investment in working capital, contract financing, and profit policy.
- It relied on ROA's to measure comparative profitability.
- It showed that relevant financial data on defense business could be gathered from a contractor's segment or division level.

## DFAIR Recognized That Contractor Investment in Working Capital Contract Financing and Profit Policy Were Related

DFAIR's discussion of contractors' contract financing costs recognized the relationship among the contractors' investment in working capital, DOD contract financing policies in terms of progress payment rates, payment policy in general, interest rates, and DOD's profit negotiation policy. Although DFAIR's assessment of profit policy and its relationship to short-term assets—working capital—is valuable, we believe DFAIR's methodology is deficient in that it does not directly link changes in DOD's profit policy to the contractors' profitability as measured by ROA.

As discussed in chapter 5, DFAIR developed a model of a "typical" contract to use in calculating contractors' contract financing costs for working capital. This model included a calculation of the contract costs in excess of the assumed progress payment rate, the amount of interest the contractor would have to pay if it were required to bear all those costs, and the effect of payment delays and cost float<sup>1</sup> on contractor financing costs. From this model, DFAIR concluded that contractors historically incurred a cost equal to approximately 2 percent of the total contract cost to finance a government contract.

To address this contract financing cost, DFAIR recommended establishing a profit negotiation factor based on the progress payment rate, the length of the contract, and the prime interest rate. Thus, DFAIR linked contractor investment in working capital, contract financing policies (i.e., progress payment rate), interest rates, and DOD's contract profit policy. We believe it is important to note, however, that contract financing costs could be reimbursed through an increase in the progress payment rate rather than through an additional profit factor.

As discussed in the next section, although DFAIR evaluates contractor profit, DFAIR does not directly link DOD's contract profit policy to contractor profitability as measured by ROA.

<sup>1</sup>Cost float—the term "float" refers to the delay in transfer of value from the payer to the payee

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## ROA Was Used to Compare Profitability

DFAIR determined that return on capital and ROE were not practical measures of the profitability of defense contractors' business segments. It concluded that the remaining option, ROA, would provide an appropriate comparison of defense contractor and commercial manufacturer profitability at the segment level. We agree. However, as discussed in chapter 3, we disagree with DFAIR's calculation of "economic" profit as well as with its calculation of the ROA base.

We agree with DFAIR's choice of ROA as its measure of profitability at the segment level. We also agree that ROE is a useful measure at the firm level. But since DFAIR's analyses are at the segment level, and it is very difficult to determine the amount of equity to assign to each segment, we believe it is not practical to use ROE at this level of analysis.

ROS is another alternative. However, ROS is a measure that is based on output, not input or how effectively a firm invests its capital. A rate of ROS is less likely to be related to a return on an investor's capital but more to the products being sold, or the specific industry. Thus, an ROS comparison across industries is of questionable value. Because our objective is to measure profitability as it relates to a firm's investment in its business, ROA appears to be the measure that best meets that objective.

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## Reporting and Evaluating Government Contractor Profitability Can and Should Be Done on a Recurring Basis

In chapters 3 and 7 of this report we point out the need for periodic profit reporting by government contractors. We believe the reporting of verifiable, auditable data is fundamental to meaningful profit studies. We also believe that the contractor response rate to DFAIR's request for data—76 responses from the 126 contractors surveyed—demonstrated that the data needed to analyze the profitability of government contractors can be obtained on a regular basis. The length of time separating major studies, the voluntary participation of contractors, and the inconsistent analytical methodology applied to contractor data by DOD's most recent study, highlight the need for a more structured and more accountable system of determining the effect of government profit policy. We believe DFAIR should be the last agency directed ad hoc attempt to evaluate profitability of voluntarily participating government contractors. Future studies should be done as a result of legislation that establishes a mandatory government contractor profit reporting program. The studies must be done on a consistent basis and in such a fashion that the results are fully creditable to the Congress, the executive branch, and the public. We believe, as a minimum, the statutory program should require:

- major government contractors report annually, by segment, auditable and verifiable data needed to analyze profitability and some elements of efficiency;
- an Office of Profit Studies and Analysis designated by the President, develop regulations to implement and administer the profitability reporting program;
- the Office of Profit Studies and Analysis develop adequate safeguards for the data provided by contractors to prevent unauthorized disclosure of proprietary and confidential information;
- the Office of Profit Studies and Analysis or its representatives, must have the expertise needed to perform studies of the data provided annually by the contractors; and
- every 3 years, using data covering at least a 3-year period, the Office of Profit Studies and Analysis prepares reports so as not to disclose individual company, but aggregated data to demonstrate the general profitability of government contractors. The reports should include, but not be limited to (1) calculations of profitability using the ROA of the business segments comprising the reporting universe, (2) profitability comparisons between types of government business and other business as well as a comparison with the general line profitability of other companies in the private sector for similar goods and services, and (3) an analysis of whether variations between levels of profitability are reasonable under the circumstances and an evaluation of whether profit policy is motivating cost efficiency and investment.

The legislation establishing the profitability reporting program should include authorization for the Office of Profit Studies and Analysis and the Comptroller General to access all papers, documents, and records of the agency used in conducting the study, and of the company and its certified independent public accountant used in providing the annual data report. Our draft report, GAO/NSIAD 87-46<sup>2</sup> provides the framework for, and proposed legislation to implement, a mandatory profit reporting program. The report is currently out for comment.

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## **Other DFAIR Recommendations**

There are a number of recommendations in the DFAIR report that appear to be independent of the profitability analysis done in the DFAIR study. It appears possible to implement these recommendations without explicit approval of the DFAIR study or adapting the remainder of the profit

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<sup>2</sup>Government Contracting. A Proposal For a Program to Study the Profitability of Government Contracts (GAO/NSIAD 87-46, November 1986).

policy recommended by DFAIR. We did not analyze these recommendations, and therefore, we have no comment on them. They are

- Making the progress payment rate for foreign military sales contracts conform to the rate of other DOD prime contracts. DFAIR stated there is little evidence that indicates current profit policy is preventing adequate foreign military sales profits.
- Continuing the efforts to motivate contractor productivity on an extra contractual, plant-wide basis. DFAIR determined that the industrial modernization incentives program is moving in the right direction and should continue to receive top management support.
- DFAIR recommended that DOD better define critical needs of the subcontracting base and provide productivity enhancing incentives directly to critical subcontractors and ensure that prime contractors are doing so.
- Strengthen the DOD Form 1499 reporting system. DFAIR found the DOD Form 1499 reports to be invaluable in doing its study and believes they are vital as a management tool. However, DFAIR encountered major reporting system weaknesses during its study and said it expended a great deal of effort to ensure the data base provided a reliable basis for comparison.
- Report actual results achieved under DOD contracts. DFAIR concluded that profit studies like DFAIR can be successful only if access to actual contractor results are available.
- The Navy's profit policy should be consistent with DFAIR's proposed overall DOD profit policy. DFAIR believes shipbuilding contracts should be priced on the same basis as other contracts, and with the adoption of its recommendations, DFAIR believes there will no longer be a need for the unique shipbuilding contract pricing approach.

# DFAIR Understated the Profitability of Defense Contracting

Because DFAIR's methods of asset valuation and profit calculation were not consistent with conventional accounting and finance methods, it understated the profitability of defense contracting. While we agree with DFAIR's decision to use the ROA—the ratio of operating profit to total assets—to measure profitability at the segment level, we do not agree with the assumptions and methodology used to calculate ROA. DFAIR made two significant assumptions in its calculations which dramatically reduced defense contracting's apparent ROA:

1. It included in the contractor's asset base the amount of inventory considered to belong to the government through progress payments.
2. It developed its own definition of profit called "economic profit."

By making the adjustments referred to above, DFAIR concludes that defense contracting's profits were very similar to those of commercial business except for the "abnormal" period of 1980-83. DFAIR stated that, in general, the current contract pricing, financing, and mark-up policies are balanced economically, are protecting the interests of the taxpayer, and are enabling U.S. industry to achieve an equitable return for its involvement in defense industry.

We disagree with DFAIR's conclusion. Our analysis of DFAIR's data showed that defense contracting was 35 percent more profitable than commercial manufacturing from 1970 to 1979, and 120 percent more profitable from 1980 to 1983.

## DFAIR's Calculation of ROA Understated Profitability of Defense Contracting

As discussed in chapter 2, DFAIR decided to use ROA to compare the profitability of defense contracting to that of commercial manufacturing. We agree with that decision, however, we disagree with DFAIR's treatment of progress payments and with its definition of economic profit. We also believe the imputed interest factor DFAIR added to its economic profit was inadequate and does not fully represent the benefits contractors get from the interest free financing provided through progress payments. These items cause DFAIR's calculation of defense contracting's ROA to be understated which leads to an inaccurate conclusion regarding defense contracting's profitability.



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Progress Payments Were  
Included in Asset Base

Assuming that progress payments are a form of financing and should be treated as a liability, DFAIR added the payments to the amount contractors showed as total assets. This procedure is inconsistent with conventional financial analysis, generally accepted accounting practices, government contract provision, and the Profit '76 study, which all indicate that progress payments should be subtracted from assets to determine the asset base in making any ROA calculation.

Conventional Financial Analysis

In conventional financial analysis, ROA is considered a measure of management's efficiency in using the company's capital. To measure this efficiency, the company's operating income is divided by the assets the company owns.

When DFAIR increased contractors' assets by the cost of inventories which are applicable to government progress payments, it increased the amount of assets used in the ROA calculation which reduced defense contracting's apparent ROA. Understating ROA results is an inaccurate indication of a company's profitability and management efficiency.

DFAIR contended that to compare the profitability of defense contracting with that of commercial manufacturing, an adjustment must be made to consider the effect of progress payments. DFAIR increased the asset base and partially offset this with an increase to income. DFAIR failed to recognize that conventional financial analysis and generally accepted accounting practices have already made the necessary adjustment — reducing inventory by progress payments. This is especially important because progress payments equal about 56 percent of defense contractor assets, but about only 4 percent of nondefense firms' assets.

Generally Accepted Accounting  
Practices

Data available through the American Institute of Certified Public Accountants shows that a commonly accepted practice for accounting for progress payments is to show them as reducing inventories. The financial statements of the contractors participating in the DFAIR study—available through the Institute's National Accounting Research System—showed that none of the 36 firms whose accounting treatment could be identified increased their inventories by government progress payments as DFAIR did.

For long-term contracts, contractors set up profit centers to which they charge costs and expected revenues. This can be done through a combination of accounts receivable and inventory accounts. Progress payments are then charged against those accounts—reducing their balance. The contractor is exchanging one asset for another. It generally exchanges inventory for the cash paid in the progress payment.

Therefore, the preferred treatment of progress payments is not to show them as liabilities, as DFAIR would, but as reimbursements to the contractor for expenses incurred. These reimbursements would offset inventories and accounts receivable and show contractors' total asset figures at appropriate levels.

DFAIR cites the Bureau of Census Quarterly Financial Report (QFR) as one reason for including progress payments in the assets of the contractor. They correctly point out, that the QFR treats progress payments as contractor liabilities. The Commerce Department acknowledged that this treatment of assets was not consistent with generally accepted financial reporting. However, the reason for such different treatment was clear. The Bureau of Economic Analysis needs to know the total level of inventories in the United States at any given time. According to a Bureau official, if reported inventories were reduced by the amount of inventory transferred to the government through progress payments, those transferred inventories would be lost to the view of the Bureau. Therefore, so that the Bureau can track all inventories for its overall national productivity analysis, the normal financial reporting rules are changed and contractors are directed to include, for QFR reporting, progress payments as liabilities. However, we believe that this treatment of progress payments for a specific national statistical analysis should not affect the method of calculating financial rates of return for individual companies.

#### Government Contract Provision

As stated earlier, data from the American Institute of Certified Public Accountants showed that none of the 36 firms whose accounting treatment could be identified increased their inventories by government progress payments as DFAIR did. The reason usually cited for this practice is that government contracts provide that upon the contractor's receipt of progress payments, title to inventories associated with such payments is vested in the United States government. Section 52.232.16 of the Federal Acquisition Regulation requires that fixed price contracts contain a clause which gives the government title to property, including inventories, associated with the progress payments.

DFAIR's methodology ignored this contractor practice and calculated ROA using assets that were no longer regarded as belonging to the contractors. Such practice is the consequence of government required contract provisions concerning progress payments.

Previous DOD Study

DFAIR's treatment of progress payments is not consistent with the progress payment treatment of DOD's previous profit study—Profit '76. Profit '76 subtracted progress payments from assets to calculate the denominator of its ROA equation. In the Profit '76 ROA calculations, the denominator consisted of total assets minus cash minus progress payments. DFAIR did not subtract progress payments from total assets.

We believe DFAIR should have treated progress payments in a manner consistent with the Profit '76 treatment. We see no rationale that supports the very significant change made in DFAIR. The lack of consistent methodology in DOD's profit studies points out the need for regular, recurring studies done on a consistent basis using generally accepted methodology.

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Economic Profit

In addition to including progress payments in the asset base, DFAIR developed a measure it called "economic profit" that reduced the apparent profitability of both defense business and commercial manufacturing. It calculated "economic profit" by subtracting the following items from commercial and defense sales figures.

- Allowable costs.
- Unallowable costs—other than interest.
- Imputed interest on fixed assets.
- Imputed interest on working capital.<sup>1</sup>

DFAIR substituted imputed interest for actual interest. It calculated the imputed interest on fixed assets by multiplying the average net book value of fixed assets by the interest rate developed by the Treasury for Cost Accounting Standard 414 purposes. It calculated the imputed interest on working capital by multiplying the average gross value of inventories and accounts receivable by the short-term commercial loan rate.

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<sup>1</sup>DFAIR defines working capital as the average gross value of inventories and accounts receivable

DFAIR's calculation of economic profits introduces a new set of numbers based on a rarely used concept, without producing any significant change in the relationship between defense and nondefense profits. While economic profit may be valuable from a theoretical standpoint, given the data available, DFAIR's calculation of economic profit introduces arbitrary assumptions that are unnecessary. A proper calculation of economic profit would vary with each firm as that firm's debt/equity ratio, and therefore its cost of capital varies. DFAIR did not consider this in their calculation.

In a calculation of economic profit, the normal rate of return necessary to attract capital into that industry is subtracted as a cost. Therefore, it is expected that the results of the economic profit calculation will average zero for all firms. A positive result—DFAIR calculated 4.73 percent for defense contracting in 1980-83—indicates that firms are making more than is necessary to attract capital. The negative result DFAIR calculated for durable goods manufacturers—a minus 3.65 percent for 1980-83—indicates that during 1980-83 these firms did not make a return that was adequate to sustain their business. Because DFAIR's calculation of economic profit merely reduces the level, not the disparity between defense contracting's and durable goods' profits, we believe that it adds no new information to the profitability comparison and confuses more than it clarifies. We believe that since accounting data is available, is regularly used in ROA calculations, and is not dependent on DFAIR's multiple assumptions, then accounting data should be used in profitability analyses that compare the profits of defense contracting and durable goods manufacturing.

DFAIR's "economic profit" also subtracts unallowable costs from profit. While this may be appropriate for analyses that simply compare ROA for defense business and commercial manufacturing, we believe it is inappropriate for a comparison that is intended to establish DOD profit policy. By calculating ROA after subtracting out unallowable costs, DFAIR would establish a profit policy that will allow defense contractors to be paid profit on costs which are unallowable. This overriding of public policy is accomplished by the use of DFAIR's unique "economic profit" to determine comparable profitability. This would put DOD in the position of subsidizing contractors' unallowable cost by providing profits in excess of those necessary to provide a comparable profit when only allowable costs are incurred.

**DFAIR's Process for  
 Adjusting ROA**

DFAIR went through a five step process to convert conventional ROAs to the ROA DFAIR used in its analysis. The information on conventional ROAs was provided to DFAIR by Touche Ross and Company and is contained in appendix I to the DFAIR study. As shown in this section, DFAIR's five step process included its adjustments for progress payments and economic profit.

**Starting Point:**

The voluntary data collected from 76 defense contractors by Touche Ross and Company showed that defense contracting has an ROA (operating profit to assets net of progress payments) of 22.6 percent. The QFR data shows commercial manufacturing had an ROA of 12.9 percent. This was the average for the 9 year period 1975 to 1983

**Step 1.**

DFAIR added 5 years to the comparison by including the data developed for the Profit '76 study. As shown in table 3.1, and in exhibit 14 of chapter 5 of DFAIR, this reduced the average ROA (over 14 years) for defense contracting to 20.5 percent, and increased the ROA for commercial manufacturing to 13.3 percent. Since the DFAIR study's objective was to evaluate profit policy in the time period after Profit '76, we do not believe it was appropriate to include this data in the DFAIR analyses. Including the earlier data obscures the effect of profit policy and economic changes since the Profit '76 study.

**Table 3 1: DFAIR's ROA Process (Step 1)**

| Figures in percent       |                        |                             |               |
|--------------------------|------------------------|-----------------------------|---------------|
|                          | <b>Touche<br/>Ross</b> | <b>DFAIR (step<br/>one)</b> | <b>Result</b> |
| Defense contracting      | 22.6                   | -2.1                        | 20.5          |
| Commercial manufacturing | 12.9                   | +0.4                        | 13.3          |

**Step 2**

DFAIR's methodology included progress payments as a form of financing for defense contractors. DFAIR increased total assets by the amount of the progress payments (i.e., progress payments are not netted against inventories). To complete the logic of the assumption, DFAIR attempted to adjust for the increase in the asset base by adding an imputed interest factor to the operating profit. This factor was calculated by multiplying the amount of the progress payments by the short-term commercial loan rate. The result was to dramatically raise the denominator (assets), moderately raise the numerator (operating profits), and, as shown in table 3.2, significantly lower the ROA ratio.

**Table 3.2: DFAIR's ROA Process (Step 2)**

| Figures in percent       |                            |                         |        |
|--------------------------|----------------------------|-------------------------|--------|
|                          | Result After<br>(step one) | Effect of<br>(step Two) | Result |
| Defense contracting      | 20.5                       | -4.1                    | 16.4   |
| Commercial manufacturing | 13.3                       | •                       | 13.3   |

The data Touche Ross provided to DFAIR—shown in table 3.3—isolates the effect of adding progress payments back into assets before the earlier 5 years of data from Profit '76 is included in the sample. Our analysis of that data shows that by adding progress payments into assets DFAIR cuts defense contracting's ROA by 56 percent while commercial manufacturing's ROA is cut by only 4 percent.

**Table 3.3: Touche Ross and Company's  
 Calculation of ROA for 1975-1983**

| Figures in percent                   |                        |                             |
|--------------------------------------|------------------------|-----------------------------|
|                                      | Defense<br>contracting | Commercial<br>manufacturing |
| Progress payments treated normally   | 22.6                   | 12.9                        |
| DFAIR treatment of progress payments | 10.0                   | 12.4                        |

Result of Step 2 by Time Period

Table 3.4 shows the results of DFAIR's step 2 on the data related to the periods 1970-79 and 1980-83.

**Table 3.4: DFAIR's ROA Process by  
 Time Period (Step 2)**

| Figures in percent       |         |         |                    |
|--------------------------|---------|---------|--------------------|
|                          | 1970-79 | 1980-83 | Total<br>1970-1983 |
| Defense contracting      | 15.2    | 19.4    | 16.4               |
| Commercial manufacturing | 14.3    | 10.7    | 13.3               |

Step 3.

DFAIR then developed the "economic profit" and substituted it for operating profit in the ROA comparisons. It calculated economic profit by subtracting four items from the annual sales figures reported through Touche Ross and Company.

- Allowable cost
- Unallowables other than interest
- DFAIR's imputed interest on fixed assets
- DFAIR's imputed interest on working capital

**Step 4:** DFAIR then substituted economic profit for operating profit in its ROA calculation. DFAIR added an imputed interest factor to the economic profit to compensate for the larger asset base—this parallels step 2. DFAIR then computed the ratio of economic profit to assets.

**Result of Step 4 by Time Period** The result of step 4 was to reduce defense contracting's ROA for 1970-79 from 15.2 percent to 6.52 percent, and to reduce commercial manufacturing's ROA from 14.3 percent to 5.76 percent. For 1980-83, the ROA for defense contracting was reduced from 19.4 percent to 4.73 percent, and the ROA for commercial manufacturing was reduced from 10.7 percent to a negative 3.65 percent, as shown table 3.5.

**Table 3.5: DFAIR's ROA Process by Time Period (Step 4)**

|                          | Figures in percent  |                  |                     |                     |                  |                     |
|--------------------------|---------------------|------------------|---------------------|---------------------|------------------|---------------------|
|                          | 1970-79             |                  |                     | 1980-83             |                  |                     |
|                          | Result after step 2 | Effect of step 4 | Result after step 4 | Result after step 2 | Effect of step 4 | Result after step 4 |
| Defense contracting      | 15.2                | -8.68            | 6.52                | 19.4                | -14.67           | 4.73                |
| Commercial manufacturing | 14.3                | -8.54            | 5.76                | 10.7                | -14.35           | -3.65               |

**Step 5:** DFAIR used its ratio of economic profit to gross assets less cash to present its final results which are shown in table 3.6 under DFAIR ROA. DFAIR concluded that these final results show that profitability for DOD business was very similar to that of durable goods manufacturers when the "abnormal" 1980-83 period is excluded from the comparison.

**Table 3.6: DFAIR's ROA Process by Time Period (Step 5)**

|                          | Figures in percent |         |                  |         |
|--------------------------|--------------------|---------|------------------|---------|
|                          | DFAIR ROA          |         | Conventional ROA |         |
|                          | 1970-79            | 1980-83 | 1970-79          | 1980-83 |
| Defense contracting      | 6.52               | 4.73    | 19.4             | 23.3    |
| Commercial manufacturing | 5.76               | -3.65   | 14.4             | 10.6    |

We, however, would conclude from DFAIR's "conventional" ROA analysis (shown in table 3.6) that defense contracting has been consistently more profitable than commercial manufacturing—35 percent more profitable during the 1970s and 120 percent more profitable from 1980 to 1983.

**Example of Effect of DFAIR Assumptions and Methodology**

To provide an example of the effects of DFAIR's assumptions and methodology, we applied them to the 1985 financial statements of one major defense contractor. Table 3.7 shows that DFAIR's methodology would cut the contractor's conventional ROA from 15 percent to a DFAIR ROA of 5.2 percent. This points out the effects of DFAIR's treatment of progress payments and its economic profit on ROA. The imputed interest values used for economic profit have a significant effect in this case—imputing interest costs of \$647.1 million when a net interest expense of \$17.2 million was the contractor's actual experience

**Table 3.7: Effect of DFAIR Assumptions and Methodology for 1985 in Millions of Dollars**

| <b>Balance sheet</b>                                       |                           |                        |                  |
|--|---------------------------|------------------------|------------------|
| <b>Assets</b>  |                           | <b>Liabilities</b>     |                  |
| Current assets   |                           | Current liabilities    | \$1,867.2        |
| Cash and equivalents                                       | \$13.4                    | Noncurrent liabilities | 1,245.1          |
| Net contracts in process                                   | 1,181.9                   | Shareholders' equity   | 1,335.8          |
| Inventories  | 529.9                     |                        |                  |
| Other current assets                                       | 452.4                     |                        |                  |
| Property, plant, equipment                                 | 1,173.1                   |                        |                  |
| Other noncurrent assets                                    | 1,097.4                   |                        |                  |
| <b>Total</b>   | <b>\$4,448.1</b>          | <b>Total</b>           | <b>\$4,448.1</b> |
| <b>Income statement</b>                                    |                           |                        |                  |
| Net sales  |                           |                        | \$8,163.8        |
| Operating costs & expenses                                 |                           |                        | 7,495.8          |
| Operating earnings   |                           |                        | 668.0            |
| Interest (net)   |                           |                        | <17.2>           |
| Other income (net)   |                           |                        | 3.6              |
| <b>Income before taxes</b>                                 |                           |                        | <b>\$654.4</b>   |
| <b>Conventional analysis:</b>                              |                           |                        |                  |
| <b>ROA =</b>   | <b>Operating earnings</b> | <b>668.0 = 15.0%</b>   |                  |
|  | <b>Total assets</b>       | <b>4,448.1</b>         |                  |
| <b>Economic profit</b>                                     |                           |                        |                  |
| Sales  |                           |                        | \$8,163.8        |
| Less   |                           |                        |                  |
| — allowable cost and unallowable costs other than interest |                           |                        | 7,495.8          |
| — imputed interest on average fixed assets                 |                           |                        | 99.3             |
| — imputed interest on average working capital              |                           |                        | 547.8            |
| <b>Economic profit</b>                                     |                           |                        | <b>\$20.9</b>    |



**Asset base**

|                                 |                  |
|---------------------------------|------------------|
| Net current assets              | \$2,177.6        |
| Net property, plant & equipment | 1,173.1          |
| Plus progress payments          | 5,936.6          |
| Less cash                       | 13.4             |
|                                 | <b>\$9,273.9</b> |

**DFAIR analysis:**

$$\text{ROA} = \frac{\text{economic profit \& imputed interest on progress payments}}{\text{Net property plant and equipment + net current assets + progress payment-cash}^a}$$

$$\text{ROA} = \frac{20.9 + (.077)(5936.6)}{9,273.9} = 5.2\%$$

<sup>a</sup>Cash is subtracted from the denominator of this equation to duplicate DFAIR's segment level analysis. Cash would normally not be subtracted in a firm level analysis. The difference in ROA is small—5.147% when cash is not subtracted, 5.154% when cash is subtracted.

## Our Analysis Shows Higher Contractor Profitability

Because we did not have access to the raw data collected by Touche Ross and, therefore could not audit and verify the data we could not, with confidence, draw conclusions based on analyses of those data. We feel this limitation underscores the need for the Profitability Reporting Program.

We were forced to use publicly available data which limited the range and precision of our comparisons. However, our conclusions based on public data are consistent with our conclusions based on the aggregated Touche Ross data. While this may allow us to consider the Touche Ross data to be representative of the actual experience of defense contractors, we cannot, because of the limitations mentioned above, evaluate the accuracy and validity of the Touche Ross data.

As discussed earlier, the aggregated data available through Touche Ross shows defense contractors were consistently more profitable than commercial manufacturers. It was DFAIR's adjustments of these data that made defense contractors' profitability appear somewhat more profitable than commercial business in 1970-79 but substantially more profitable in 1980-83. Our comparisons show that

- at the firm level, as well as the segment level, defense business is more profitable than commercial business (see app. IV),
- defense contractors were more profitable than commercial manufacturers during 1975-79 as well as in 1980-83 (see app. IV),

- defense contracting is generally no riskier than commercial manufacturing (see app. IV), and
- many defense contractors take greater advantage of favorable federal income tax treatment than commercial manufacturers—DFAIR's calculations did not consider this.

Our total company comparisons were done using data available through the COMPUSTAT data base for 84 defense firms and 228 commercial firms. Fifty-nine of the 84 defense firms participated in the DFAIR study. Of the remaining 25 firms in our sample, 23 were part of the original 126 DFAIR sample firms but declined to participate in the DFAIR study. The time period for our total company level comparison's was 1975 to 1983, which is the same period used by Touche Ross, but not the same as used by DFAIR (1970 to 1983).

Our segment level analyses compared the profitability of defense and nondefense segments of the 84 defense firms in our sample. Segment level data was available only for the period from 1979 to 1984. Also, COMPUSTAT does not provide detailed data regarding the amount of defense and commercial business within a segment—Touche Ross collected such detailed data. Therefore we assumed that segment level data—taken from COMPUSTAT—is less precise than the Touche Ross data.

Most of our analyses are done using data which relates to the business firms as a whole. We refer to this data as firm level data. We also did a profitability analysis on the segments of the 84 defense firms in our example. These segments are subunits within the firm that are used by the firms to comply with the Securities Exchange Commission 10-K reporting requirement. We refer to our analyses using data from these subunits as segment level analyses. Because of limitations of segment data, certain calculations were not performed at the segment level. For example, figures for equity, after-tax income and market return are available only at the firm level. Allocation of these amounts to the segments would be arbitrary at best. Therefore, comparisons are only made for overall profitability, risk and after tax income at the firm level and of profitability at the segment level.

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**Profitability at the Firm  
Level**

As shown in table 3.8, the 84 defense firms showed higher returns than the 228 commercial firms for all 6 measures used by the Logistics Management Institute (LMI)—DFAIR's consultant —except the market return.

**Table 3.8: Our Comparison of Firm Level/Overall Profitability (1975-1983)**

| Figures in percent                              |                  |               |
|---|------------------|---------------|
|   | Commercial firms | Defense firms |
| Net income ROA                                  | 5.1              | 5.8           |
| Net income return on stockholders' equity       | 9.9              | 12.8          |
| Net income ROS                                  | 4.0              | 5.7           |
| Cash flow ROA                                   | 9.4              | 11.9          |
| Cash flow return on stockholders' equity        | 20.0             | 26.4          |
| Market return price appreciation plus dividends | 16.5             | 15.9          |

We also computed a weighted average ROA, stockholders' equity, and sales for each year. The results, presented in table 3.9, show that defense firm profitability exceeded the return to commercial firms for all three measures.

**Table 3.9: Our Weighted Average Comparison of Overall Profitability (1975-1983)**

| Figures in percent             |                  |               |
|--------------------------------|------------------|---------------|
|                                | Commercial firms | Defense firms |
| ROA                            | 6.7              | 8.3           |
| Return on stockholders' equity | 10.4             | 12.7          |
| ROS                            | 3.7              | 5.4           |

One of DFAIR's conclusions was that defense contracting and commercial manufacturing were equally profitable during 1970-79. Our analysis covered half of this period—1975 to 1979.

Table 3.10 shows, again, the profitability of defense firms exceeded that of commercial firms for each of the three measures in 1975-79. Our analysis for the period 1975-79 does not support the DFAIR conclusion that defense contracting was about as profitable as comparable commercial manufacturing during the 1970s.

**Table 3.10: Comparison of Firm Level Profitability (1975-79)**

| Figures in percent             |                  |               |
|--------------------------------|------------------|---------------|
|                                | Commercial firms | Defense firms |
| ROA                            | 6.6              | 8.1           |
| Return on stockholders' equity | 11.7             | 13.8          |
| ROS                            | 4.2              | 6.0           |

**Profitability of Firms' Defense and Nondefense Segments**

We also compared the profitability of the defense and nondefense segments of the 84 defense firms in our sample. Because of reduced data availability, the time period for the segment analysis was limited to 1979-1984. As shown in table 3.11, the defense segments' ROA was 17.6 percent, which is approximately 57 percent higher than the commercial segments' ROA. Although table 3.11 shows commercial segments to have higher ROS we believe ROA is the preferable measure of profitability.

**Table 3.11: Our Comparison of Segment Level Profitability (1979-1984)**

| Figures in percent |                     |                  |
|--------------------|---------------------|------------------|
|                    | Commercial segments | Defense segments |
| ROA                | 11.2                | 17.6             |
| ROS                | 10.2                | 8.5              |

We would expect the segment level ROA shown in table 3.11 to be higher than the firm level ROA shown in table 3.10 for several reasons. First, the analysis at the firm level is done after taxes, whereas the analysis at the segment level is done using profit before taxes. Second, the profit used for the firm level ROA is reduced by corporate overhead expense while at the segment level no portion of corporate overhead would have been deducted from income. The Touche Ross and Company data did allocate corporate overhead to segments and this is another reason why the Touche Ross data should provide more precise ROAs for defense business and commercial manufacturing. (See table 3.3.) In addition, it should be noted that tables 3.9 and 3.11 use different data bases and different time periods.

**Riskiness of Defense Versus Commercial Firms**

DFAIR, through LMI, evaluated the riskiness of defense business by analyzing six measures of rate of return for defense contractors and commercial manufacturers. Risk was measured by the variability of returns over time based on the standard deviation about the mean rate of return. As shown in table 3.12 LMI found that defense contractors faced less risk for all measures except ROS, where DFAIR claims they were comparable to commercial firms.

We also evaluated risk using the standard deviation<sup>3</sup> measure. (See table 3.12.) Our results generally support DFAIR's conclusion. Because the

<sup>3</sup>Standard deviation is a measure of dispersion in a frequency distribution equal to the square root of the mean of the squares of the deviations from the arithmetic mean of the distribution

standard deviations for the defense sample are below those for the commercial firms, defense firms are less risky than commercial firms for all measures, including ROS.

**Table 3.12: Risk Measures for Defense Firms Versus Commercial Firms**

Figures in percent

|   | <b>LMI analysis (1974-1984)</b> |                      | <b>Our analysis (1975-1983)</b> |                      |
|---|---------------------------------|----------------------|---------------------------------|----------------------|
|   | <b>Commercial firms</b>         | <b>Defense firms</b> | <b>Commercial firms</b>         | <b>Defense firms</b> |
| Net income on assets                      | 5.6                             | 2.9                  | 3.2                             | 2.2                  |
| Net income return on stockholders' equity | 18.9                            | 7.9                  | 12.2                            | 5.1                  |
| Net income on sales                       | 20.4                            | 21.7                 | 2.6                             | 2.1                  |
| Cash flow ROA                             | 5.5                             | 2.9                  | 3.2                             | 2.2                  |
| Cash flow return on stockholders' equity  | 18.4                            | 7.5                  | 11.2                            | 4.8                  |
| Market return <sup>a</sup>                | 62.7                            | 49.2                 | 37.8                            | 31.6                 |

<sup>a</sup>Market return is the stock price at end of the year minus the stock price at the beginning of the year plus any dividends paid during the year. This quantity is then divided by the stock price of the beginning of the year to get a percentage return. The market return measure is for the period 1965 to 1985.

## Income Tax Treatment

DFAIR did not perform an after-tax analysis or make an evaluation of the tax treatment used by defense contractors. DFAIR stated that making an allocation of federal income taxes to negotiated contracts would have been exceedingly difficult, if not impossible, and that requesting such data may have reduced contractor participation in the study. DFAIR also stated that it has long been DOD's policy to maintain a neutral stance on tax laws applicable to the economy as a whole.

We agree that allocating federal income taxes to contracts, or even to segments, would have been difficult or arbitrary at best. We note, however, that defense contractors use favorable federal income tax treatments that should have been given some consideration by DFAIR. To compare profitability across industries, it is important to calculate rates of return after taxes. This after-tax rate of return (or what a firm gets to keep) determines the firm's ability to pay dividends to shareholders or retain earnings for future investment and expenses.

A recent report issued by the Joint Economic Committee of Congress indicates that defense firms, on the average, pay a much lower effective income tax rate than firms in most other industries. The principal explanation for this outcome is the use of the completed contract method of accounting, which defense contractors use to defer income tax liabilities

to a much greater extent than commercial firms. We believe that because of the deferred taxes resulting from the tax treatments used by defense contractors, it is important to use after-tax rates of return when calculating profitability ratios.

Table 3.13 shows that if an adjustment for tax deferral is made, the effect on rates of return is larger for defense firms than for commercial firms, which results in an increase in defense firms' relative profitability. The terms used in the table are defined below.

$$\text{ROA (tax)} = \frac{(\text{net income} + (1-t) \text{ interest} + \text{tax deferral})}{\text{assets}}$$

$$t = \frac{\text{total taxes} - \text{deferred taxes}}{\text{pretax income}}$$

$$\text{ROE (tax)} = \frac{\text{net income} + \text{tax deferral}}{\text{stockholders' equity}}$$

The tax deferral was calculated by the amount of change in the annual tax deferral amounts shown on the firm's financial statements.

**Table 3.13: Comparison of Profitability Considering Tax Effect (1975-1983)**

| Figures in percent |     |          |      |          |
|--------------------|-----|----------|------|----------|
|                    | ROA | ROA(tax) | ROE  | ROE(tax) |
| Defense firms      | 8.3 | 9.8      | 12.7 | 15.7     |
| Commercial firms   | 6.7 | 7.4      | 10.4 | 11.4     |

### Navy Study Indicated Higher Contractor Profitability

The Assistant Secretary of the Navy for Shipbuilding and Logistics commissioned a study, Financial Analysis of Major Defense Contractors, by RRG Associates. The study, published August 20, 1985, analyzed the annual reports and Form 10-K data for 22 defense contractors. The report showed the following ROA rates for 1984.

**Table 3.14: Navy Study ROA Results for 1984**

| Figures in percent  |      |
|---|------|
|   | ROA  |
| Composite ROA for all U S government only segments <sup>a</sup> | 26.7 |
| Composite ROA for mixed U S government/ commercial segments     | 15.1 |
| Composite ROA for selected commercial segments                  | 11.3 |

<sup>a</sup>Contractor business segments with sales, the study's authors determined, primarily to the U S government

The Navy study also stated that the ROA for government business segments was higher than that for commercial business segments from 1977 to 1984. According to the Navy study, the government business ROA was over 1.4 times the commercial ROA even in the best years for commercial ROA.

A review of data collected from the contractors of the DFAIR study indicates a close correlation between the Touche Ross ROA data unadjusted for progress payments and the ROA data in the Navy study as shown in table 3.15.

**Table 3.15: ROA**

Figures in percent

|                | Defense segments (Navy Study) | Defense (Touche Ross)   | Defense segments (GAO) | Selected commercial segments (Navy Study) | Durable Goods (Touche Ross) | Non-defense segments (GAO) |
|----------------|-------------------------------|-------------------------|------------------------|---|-----------------------------|----------------------------|
| 1975           | •                             | 18.9                    | •                      | •   | 12.3                        | •                          |
| 1976           | •                             | 20.7                    | •                      | •   | 16.5                        | •                          |
| 1977           | 23.8                          | 23.6                    | •                      | 15.6                                      | 18.2                        | •                          |
| 1978           | 23.4                          | 13.2                    | •                      | 15.8                                      | 17.5                        | •                          |
| 1979           | 22.5                          | 20.8                    | 16.5                   | 15.5                                      | 14.6                        | 13.1                       |
| 1980           | 21.1                          | 18.8                    | 15.6                   | 13.8                                      | 11.0                        | 10.1                       |
| 1981           | 23.3                          | 22.7                    | 19.1                   | 9.8                                       | 12.4                        | 10.5                       |
| 1982           | 22.5                          | 25.0                    | 17.8                   | 7.9                                       | 8.6                         | 10.3                       |
| 1983           | 26.4                          | 28.8                    | 18.6                   | 7.9                                       | 10.2                        | 11.2                       |
| 1984           | 26.7                          | •                       | 17.3                   | 11.3                                      | •                           | 12.5                       |
| <b>Average</b> | <b>23.7</b>                   | <b>22.6<sup>a</sup></b> | <b>17.6</b>            | <b>12.2</b>                               | <b>12.9<sup>a</sup></b>     | <b>11.2</b>                |

<sup>a</sup>These averages were calculated by Touche Ross (see app. VI)

We did not evaluate the Navy study but we believe that the Navy study results, which are consistent with the unadjusted Touche Ross ROA data, are another indicator that government contractors have consistently earned a higher rate of return than commercial manufacturers.

## Conclusions

DFAIR used ROA as the measure to compare the profitability of defense contracting and commercial manufacturing. We agree with the decision to use ROA as the basis for this comparison. DFAIR found that the ROAs for these two groups were generally comparable in the 1970s—with defense contracting maintaining its ROA levels in the 1980s while those of commercial manufacturers declined. In contrast, our analysis showed that defense contracting was more profitable, both in the 1970s and in the

1980s. Furthermore, we believe DFAIR should have considered the effects of the beneficial tax treatments defense firms use. We agree with DFAIR that defense business is no more risky than commercial business.

DFAIR's methods of calculating ROA led to a significant understatement of contracting profitability. By increasing contractor assets by the amount of progress payments contractors received from the government, DFAIR doubled the asset base of their ROA calculation. Doubling the asset base cut the ROA percentage in half and DFAIR's adjustment to the income portion of the calculation was not large enough to show the profitability enhancement contractors get from progress payments. The effect of these two adjustments alone was to reduce defense contracting's ROA from 20.5 percent to 16.4 percent, while the ROA for commercial business remained at 13.3 percent. DFAIR also added 5 years of earlier data that reduced contracting's ROA and developed its unique definition of profit that cut the ROA of both defense contracting and commercial manufacturing.

This understatement of profitability allowed DFAIR to conclude that the profitability—measured by ROA—for defense contracting was very similar to that of durable goods manufacturers when the abnormal 1980-83 period is excluded from the comparison. Using this conclusion as the underlying theme of its report, DFAIR addressed its recommendations to a slight disparity in profitability when a significant disparity exists.





# DFAIR Recommendations to Reduce Unintended Increases in Profit Negotiation Objectives Will Not Meet That Goal

DFAIR determined that contract profit negotiation objectives were higher than intended from 1981 to 1983. It concluded that the unintended 0.5 to 1 percent increase—as a percentage of contract cost—in profit negotiation objectives occurred in 1981 through 1983 due to the implementation of Defense Acquisition Circular 76-23.

DFAIR's recommendations would change the weighted guidelines substantially. Among other things, it reduced the number of profit elements related to contractor effort from 11 to 3. It would change the profit factor related to facilities investment to provide more profit on equipment than for buildings, and no profit on land; it also broke out a separate profit factor for contract financing costs.

DFAIR believes that its recommended changes to the weighted guidelines policy will reduce profit negotiation objectives by 0.5 to 1 percent. Based on its DOD Form 1499 data, DFAIR concluded that its recommendations would reduce the profit negotiation objective to 11.5 percent of total cost, which would be 0.8 percent lower than the 12.3 percent total markup average for fiscal years 1981-83.

Our analysis of the same DOD Form 1499 data showed that the profit objectives developed under DFAIR's recommendations would not decrease. In fact, they could increase to as much as 12.7 percent of total cost.<sup>1</sup> If the 12.7 percent profit objective accurately predicted actual contractor profits and if the weighted guidelines were used on the \$81 billion in fiscal year 1983<sup>2</sup> contracts to which they could apply, then DFAIR's recommendations would result in \$972 million in unintended contractor profits.

We believe DFAIR understated the probable profit negotiation objectives because it

- used negotiation objectives at the lower end of the possible ranges of individual weighted guidelines factors,
- did not consider the effects of its recommendation to include shipbuilding under its proposed profit policy, and
- recommended a policy that is very sensitive to the mix of contract types and based the 0.5 to 1 percent reduction on an unrealistic mix of contract types.

<sup>1</sup>DOD is developing another profit policy which may result in a different level of profit objectives.

<sup>2</sup>The total amount of fiscal year 1985 contracts to which weighted guidelines could apply is also \$81 billion

**DFAIR Assumed Low  
 Profit Objectives  
 Would Be Used—  
 History Proves  
 Otherwise**

In doing its analysis, DFAIR used profit negotiation objectives that fell in the lower end of the possible ranges of individual weighted guidelines factors. For example, if a direct labor profit negotiation factor could range between 6 to 10 percent of cost, DFAIR determined the factor would average 6.8 percent. DFAIR calculated the profit negotiation factors by arbitrarily reducing the average profit objectives used from 1981 through 1983. For example, the DOD Form 1499 data for 2,994 firm fixed-price nonship contracts—with a total estimated cost of \$31.1 billion—showed an average direct labor profit objective of 9 percent. DFAIR then multiplied this rate by 75 percent (an arbitrary 25 percent reduction), to obtain a 6.8-percent objective. We disagree with this calculation. We determined that based on historic patterns, the profit objective used was 8.5 percent, and we believe this would be a more appropriate predictor of future profit negotiation objectives.

We used the DOD Form 1499 data to determine what the actual profit objectives were in the past. We found that the weighted average of the profit objectives for labor was 8.5 percent— rather than the simple average of 9 percent calculated by DFAIR. Nothing in the DFAIR study justified an arbitrary reduction in the average profit negotiation objectives. Therefore, it is likely that contracting officers can be expected to continue using, on average, a profit negotiation factor of 8.5 percent and that DFAIR overstated the reduction in negotiation objectives that can be expected from its revised profit policy.

Table 4.1 provides an example of the effect of DFAIR’s methodology.

**Table 4.1: DFAIR Methodology Effect on Labor Profit Negotiation Factor**

| Direct labor cost (billion) | Direct labor profit factor (percent) | Direct labor profit objective (million) | Profit objective as a percent of total cost |
|-----------------------------|--------------------------------------|---|---|
| <b>Our Analysis</b>         |                                      |   |   |
| \$4.0                       | 8.5                                  | \$370                                   | 1.1   |
| <b>DFAIR analysis</b>       |                                      |   |   |
| \$4.0                       | 6.8                                  | \$272                                   | 0.9   |

As shown in table 4.1, DFAIR’s methodology understated probable profit objectives by 0.2 percent of total cost for the labor costs on firm fixed-priced contracts. Similar distortions occurred in the material and indirect cost categories and for other contract types. Table 4.2 shows, in the row labeled “cost element profit objective,” that the net effect of these

distortions for all cost categories and all contract types is 0.3 percent—the net difference between our calculations and DFAIR’s calculations.

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**Related  
Recommendation Was  
Not Considered**

One of DFAIR’s recommendations is that shipbuilding contracts should be priced on the same basis as other DOD contracts and that the Navy should adopt DFAIR’s recommendations. Notwithstanding this recommendation, however, in calculating the expected results of its proposed policy, DFAIR did not consider the effect of its recommendation to include shipbuilding contracts in the policy.

Our calculations showed that under the proposed policy, the profit objective for shipbuilding contracts would be 14.1 percent. DFAIR did not include these contracts to calculate the overall profit objective of 11.5 percent.

DFAIR stated that the shipbuilding data available to them was significantly different from that of other product groups, and that shipbuilding profit reporting practices caused shipbuilding profits to appear substantially higher than their actual level.

We examined the shipbuilding data available from the DOD Form 1499 data base and found that profit objectives reported on shipbuilding were not substantially higher than those of other product groups. In fact, the DOD Form 1499 data base shows that profit objectives on shipbuilding contracts—exclusive of the cost of money factor—are slightly lower than profit objectives for other products. Therefore, we concluded that DFAIR’s concerns about the raw data did not justify excluding shipbuilding data from our calculations. As shown in table 4.2, excluding shipbuilding contracts has a significant effect on our estimates of overall profit objectives—particularly the cost of money factor. Therefore, in addition to the inadequacy of the guideline revisions DFAIR proposed, the absence of shipbuilding data from the equation which determines the degree of correction necessary limits the extent of DFAIR’s guideline revisions.

**Table 4.2: Comparison of DFAIR and Our Estimates of Recommended Profit Policy Results**

Figures in percent

|  | DFAIR estimate              | Our estimates               |                        |               |
|--|-----------------------------|-----------------------------|------------------------|---------------|
|  | Contracts less shipbuilding | Contracts less shipbuilding | Shipbuilding contracts | All contracts |
| Cost element profit objective              | 4.0                         | 4.3                         | 5.0                    | 4.4           |
| Cost risk                                  | 3.1                         | 3.2                         | 1.9                    | 3.0           |
| Facility capital                           | 1.1                         | 1.1                         | 2.5                    | 1.4           |
| Working capital                            | 2.0                         | 2.1                         | 1.9                    | 2.0           |
| <b>Total profit objective</b>              | <b>10.2</b>                 | <b>10.7</b>                 | <b>11.3</b>            | <b>10.8</b>   |
| Cost of money                              | 1.3                         | 1.2                         | 2.8                    | 1.5           |
| <b>Profit objective plus cost of money</b> | <b>11.5</b>                 | <b>11.9</b>                 | <b>14.1</b>            | <b>12.3</b>   |

**DFAIR's Recommended Profit Policy Is Complex and Sensitive to Changes in Input Variables**

One of DFAIR's goals was to simplify the method by which contracting officers establish profit objectives. To achieve this goal, the methods recommended were to

- eliminate the 30 percent offset factor,
- bring research and development and service contracts back under the revised weighted guidelines,
- reduce the number of weighted guideline profit elements from 11 to 3, and
- eliminate the use of special factors from weighted guidelines.

However, this simplification was offset by DFAIR's other recommended changes to weighted guidelines related to risk profit. DFAIR's proposed policy is complex and sensitive to changes in contract mix.

**Contract Mix**

DFAIR's new profit objective for risk varies by type of contract, such as firm fixed-priced, fixed-price incentive, or cost reimbursement. Therefore, the result of the new profit policy will change as the mix of contract types changes. In projecting the results of its new policy, DFAIR used the contract mix shown in the DOD Form 1499 data base for fiscal years 1981 through 1983. However, we believe the DOD Form 1499 data base did not provide a representative contract mix. Using a different contract mix based on more current data—average total prime contract awards for fiscal years 1981 to 1984—we found that as the proportion of fixed-price contracts increased from 44.5 percent (DFAIR's sample) to 65 percent (fiscal year 1981-84 data), the total profit objective increased

from 12.3 percent to 12.7 percent. We believe the 65 percent figure is a more appropriate projection of the total fixed-price contracts because it comes from the DOD PO3 report which addresses prime contract awards DOD-wide. DFAIR used the DOD Form 1499 data base which does not contain all DOD contract actions over \$500,000, and is not adequate for projecting results.

We believe that the 65 percent factor for fixed-price contracts is more consistent with historical data than DFAIR's 44.5 percent. As shown in table 4.3, the percent of fixed-price contracts has, for the last 10 years, never been lower than 52.9 percent and for the last 5 years, never been lower than 63 percent

**Table 4.3: Firm Fixed-Price Contracts as a Percent of Total Prime Contract Awards**

| <b>Years</b> | <b>Percent</b> |
|--------------|----------------|
| 1974         | 52.9           |
| 1975         | 55.8           |
| 1976         | 57.1           |
| 1977         | 54.2           |
| 1978         | 55.7           |
| 1979         | 59.6           |
| 1980         | 65.8           |
| 1981         | 67.2           |
| 1982         | 63.8           |
| 1983         | 63.0           |
| 1984         | 65.9           |

By using a contract mix with a lower proportion of firm fixed-price contracts, DFAIR underestimated the effect its new policy could have on profit objectives.

### **DFAIR Did Not Clearly Relate Profit Policy to Contractor Profitability**

DFAIR stated that the profitability for defense business was very similar to that of durable goods manufacturers when the abnormal 1980-83 period was excluded. DFAIR also stated that the net effect of Defense Acquisition Circular 76-23 was to increase profit objectives by 0.5 to 1 percent and that the 30-percent offset factor was insufficient in fiscal years 1981-83.

DFAIR stated its recommended profit policy alternative will cause overall average profit objectives—as a percentage of cost—to be approximately 0.7 percent lower than the average during 1981-83.

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**Chapter 4**  
**DFAIR Recommendations to Reduce**  
**Unintended Increases in Profit Negotiation**  
**Objectives Will Not Meet That Goal**

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DFAIR did not, however, relate its changes to profit policy to the profitability—measured by ROA—of defense contractors and did not indicate to what extent its proposals would have reduced the profit realized in defense business from 1980-83. Some means is needed to relate profit policy to contractor profitability.

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## Conclusions

DFAIR's proposed profit policy would not significantly reduce the current total profit negotiation objectives. Based on assumptions most favorable to a potential reduction, the profit objectives under DFAIR's recommendations would not be lower than 12.3 percent of total contract cost—rather than the 11.5 percent reported by DFAIR. Because the complex nature and sensitivity of the proposed policy, and use of other assumptions, the profit objectives could range as high as 12.7 percent.<sup>3</sup>

In addition, we believe that some means is needed to relate profit policy to contractor profitability.

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<sup>3</sup>The profit objective level may be different under DOD's latest proposal

# DFAIR's Recommendations Could Overcompensate Contractors for Financing Costs

In evaluating contractor financing costs, DFAIR developed a "typical" contract model. From this model, it concluded that contractors historically incurred a cost equal to approximately 2 percent of the total contract cost to finance their working capital requirements.<sup>1</sup> We question the validity of this conclusion because historic data indicates that these costs are less than 2 percent. Moreover, in devising methods to reimburse contractors for the 2 percent factor, DFAIR failed to recognize the effect of related recommendations that would lower contractors' working capital financing costs.

## Historic Data Dispute DFAIR's Estimate of Contractor Financing Needs

By applying the past progress payment rates and actual short-term commercial loan rate for each year since 1954 to its model, DFAIR concluded that contractor financing costs had been roughly 2 percent of total costs. The data used to develop the contract model's pattern of cost incurred and delivery schedule were based on 12 contracts with 5 contractors.

Our analysis of historic data indicates that DFAIR's estimate may be overstated. COMPUSTAT data for the top 11 defense contractors — publicly held companies that accounted for 54.22 percent of total DOD sales from 1980 through 1983 — shows that these contractors incurred net interest expenses that were substantially less than 2 percent of their total cost of goods sold. For 1983 and 1984 the net interest expenses averaged 1.2 percent and 1.1 percent respectively. The Touche Ross data shows a similar pattern. Although the Touche Ross data does not show corporate level interest income or expenses, the data does show that at the segment level contractors incurred total interest costs equal to 0.86 percent of total costs during the period 1975 to 1983.

This historic data indicates that DFAIR may have overestimated contractors' working capital financing needs. We believe that the historic figures raise questions about this financing cost and that it should not be accepted without further study. Our position is further supported by

- The Conference Board report (app. III to the DFAIR study) which states that contractors have ample liquidity and little need for financing.
- The fact that some defense contractors have minimal net interest expenses. The contractor from the example in chapter 3 earned a net profit on interest in 1984 and incurred a net interest expense of about

<sup>1</sup>DFAIR's definition of working capital, in this case, is 1 minus the progress payment rate multiplied by the contract cost



one quarter of 1 percent of total cost in 1985—after acquiring a major subsidiary for cash and short-term notes.

- The fact that defense contractors have a higher return on equity than commercial manufacturers—13.8 percent versus 11.7 percent during 1975 to 1983—which indicates that defense contractors have not damaged their equity position. While contractors probably finance part of their working capital requirements through equity—and therefore do not incur a 2 percent cost that is entirely interest—the historic data indicates that contractors are not excessively relying on equity to finance assets.

## Contract Model Did Not Consider Related Recommendations

DFAIR's typical contract model showed a contractor's working capital cost of \$175,323 on a \$10 million contract—approximately 1.75 percent of the total contract cost—using the following assumptions.

- A 40-month contract
- A 90-percent progress payment rate.
- A 5-day progress payment delay.
- A 15-day delivery payment delay.
- Four delivery payments in the last 7 months of the contract.
- A 12.02 percent short-term commercial interest rate.
- An average float time of 3 days.

In making these assumptions, DFAIR did not consider related profit policy changes that it had recommended. These changes affect three of the assumptions used in the model contract: (1) progress payment rate—85 percent rather than 90 percent, (2) delivery payment delay—30 days rather than 15 days, and (3) delivery payment frequency—beginning 6 months after contract start and made monthly. The most significant of these changes is the frequency of delivery payments. DFAIR recommended that delivery payments start 6 months after contract start, with payments made monthly or quarterly. On the contract model this would result in 29 monthly payments—in addition to the 3 regular payments—which, as shown in table 5.1, cut the contractor's working capital costs dramatically.

To demonstrate the effect of these policy changes we did an analysis of the model contract using the following assumptions which reflect DFAIR's recommendations, and using the current interest rate at the time of our analysis. Based on these assumptions and the same \$10 million contract model, we calculated that the contractor's working capital cost would be reduced from \$175,323 to \$19,339. (See table 5.1.)

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**Chapter 5**  
**DFAIR's Recommendations Could**  
**Overcompensate Contractors for**  
**Financing Costs**

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- A 40-month contract.
- An 85-percent progress payment rate.
- A 5-day progress payment delay.
- A 30-day delivery payment delay.
- Interim delivery payments—consisting of 10 percent of costs incurred plus profit<sup>2</sup>—beginning 6 months after contract start and made monthly.
- A 9.75-percent<sup>3</sup> short-term commercial interest rate.
- An average float time of 3 days.

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<sup>2</sup>Based on discussions with DOD officials, we assumed the interim delivery payments would consist of 10 percent of cost—which allows a 5 percent reserve—plus profit

<sup>3</sup>We used a lower, more current interest rate—9.75 percent. Had we used the DFAIR rate of 12.02 percent, contractor costs would have increased to \$23,847 rather than \$19,339

**Chapter 5  
DFAIR's Recommendations Could  
Overcompensate Contractors for  
Financing Costs**

**Table 5.1: Effect of DFAIR's Proposed Profit Policy Changes on Its Typical Contract Model**

| Month | Costs incurred | Progress payment billed | Delivery payment received | Portion of mark-up | EOM* unbilled invntry | Contractor Simple Int. |                |               | Total Int. on cont.'s investment |
|-------|----------------|-------------------------|---------------------------|--------------------|-----------------------|------------------------|----------------|---------------|----------------------------------|
|       |                |                         |                           |                    |                       | Pd cost float(-)       | Payment delays | Unbid invntry |                                  |
| 1     | 46,648         | 39,651                  | 0                         | 0                  | 6,997                 | (38)                   | 54             | 57            | 73                               |
| 2     | 74,137         | 63,016                  | 0                         | 0                  | 18,118                | (60)                   | 85             | 147           | 172                              |
| 3     | 83,300         | 70,805                  | 0                         | 0                  | 30,613                | (68)                   | 96             | 249           | 277                              |
| 4     | 188,552        | 160,269                 | 0                         | 0                  | 58,896                | (153)                  | 217            | 479           | 543                              |
| 5     | 250,576        | 212,990                 | 0                         | 0                  | 96,482                | (204)                  | 288            | 784           | 868                              |
| 6     | 271,250        | 230,563                 | 0                         | 0                  | 137,169               | (220)                  | 312            | 1,114         | 1,206                            |
| 7     | 271,250        | 230,563                 | 41,000                    | 112,516            | 24,340                | (220)                  | 645            | 198           | 623                              |
| 8     | 271,250        | 230,563                 | 41,000                    | 33,375             | 0                     | (220)                  | 645            | 0             | 425                              |
| 9     | 271,250        | 230,563                 | 41,000                    | 33,375             | 0                     | (220)                  | 645            | 0             | 425                              |
| 10    | 271,250        | 230,563                 | 41,000                    | 33,375             | 0                     | (220)                  | 645            | 0             | 425                              |
| 11    | 271,250        | 230,563                 | 41,000                    | 33,375             | 0                     | (220)                  | 645            | 0             | 425                              |
| 12    | 293,583        | 249,546                 | 41,000                    | 33,375             | 0                     | (239)                  | 671            | 0             | 432                              |
| 13    | 306,743        | 260,732                 | 41,000                    | 36,122             | 0                     | (249)                  | 686            | 0             | 437                              |
| 14    | 311,130        | 264,461                 | 41,000                    | 37,742             | 0                     | (253)                  | 691            | 0             | 438                              |
| 15    | 311,130        | 264,461                 | 41,000                    | 38,281             | 0                     | (253)                  | 691            | 0             | 438                              |
| 16    | 311,130        | 264,461                 | 41,000                    | 38,281             | 0                     | (253)                  | 691            | 0             | 438                              |
| 17    | 311,130        | 264,461                 | 41,000                    | 38,281             | 0                     | (253)                  | 691            | 0             | 438                              |
| 18    | 311,130        | 264,461                 | 41,000                    | 38,281             | 0                     | (253)                  | 691            | 0             | 438                              |
| 19    | 311,130        | 264,461                 | 41,000                    | 38,281             | 0                     | (253)                  | 691            | 0             | 438                              |
| 20    | 311,130        | 264,461                 | 41,000                    | 38,281             | 0                     | (253)                  | 691            | 0             | 438                              |
| 21    | 308,632        | 262,337                 | 41,000                    | 38,281             | 0                     | (251)                  | 688            | 0             | 437                              |
| 22    | 307,161        | 261,087                 | 41,000                    | 37,974             | 0                     | (250)                  | 687            | 0             | 437                              |
| 23    | 306,670        | 260,670                 | 41,000                    | 37,793             | 0                     | (249)                  | 686            | 0             | 437                              |
| 24    | 306,670        | 260,670                 | 41,000                    | 37,733             | 0                     | (249)                  | 686            | 0             | 437                              |
| 25    | 306,670        | 260,670                 | 41,000                    | 37,733             | 0                     | (249)                  | 686            | 0             | 437                              |
| 26    | 306,670        | 260,670                 | 41,000                    | 37,733             | 0                     | (249)                  | 686            | 0             | 437                              |
| 27    | 306,670        | 260,670                 | 41,000                    | 37,733             | 0                     | (249)                  | 686            | 0             | 437                              |
| 28    | 306,670        | 260,670                 | 41,000                    | 37,733             | 0                     | (249)                  | 686            | 0             | 437                              |
| 29    | 306,670        | 260,670                 | 41,000                    | 37,733             | 0                     | (249)                  | 686            | 0             | 437                              |
| 30    | 258,835        | 220,010                 | 41,000                    | 37,733             | 0                     | (210)                  | 631            | 0             | 421                              |
| 31    | 230,646        | 196,049                 | 41,000                    | 31,847             | 0                     | (187)                  | 599            | 0             | 412                              |
| 32    | 221,250        | 188,063                 | 41,000                    | 28,379             | 0                     | (180)                  | 588            | 0             | 408                              |
| 33    | 221,250        | 188,063                 | 41,000                    | 27,223             | 0                     | (180)                  | 588            | 0             | 408                              |
| 34    | 221,250        | 188,063                 | 41,000                    | 27,223             | 0                     | (180)                  | 588            | 0             | 408                              |
| 35    | 221,250        | 188,063                 | 41,000                    | 27,223             | 0                     | (180)                  | 588            | 0             | 408                              |
| 36    | 221,250        | 188,063                 | 140,245                   | 27,223             | 0                     | (180)                  | 1,394          | 0             | 1,214                            |
| 37    | 221,250        | 188,063                 | 0                         | 0                  | 0                     | (180)                  | 255            | 0             | 75                               |

**Chapter 5  
DFAIR's Recommendations Could  
Overcompensate Contractors for  
Financing Costs**

| Month        | Costs incurred    | Progress payment billed | Delivery payment received | Portion of mark-up | EOM* unbilled invntry | Contractor Simple Int. |                |               | Total Int. on cont.'s investment |
|--------------|-------------------|-------------------------|---------------------------|--------------------|-----------------------|------------------------|----------------|---------------|----------------------------------|
|              |                   |                         |                           |                    |                       | Pd cost float(-)       | Payment delays | Unbid invntry |                                  |
| 38           | 143,998           | 122,398                 | 140,245                   | 54,445             | 0                     | (117)                  | 1,305          | 0             | 1,188                            |
| 39           | 98,474            | 83,703                  | 0                         | 0                  | 0                     | (80)                   | 113            | 0             | 33                               |
| 40           | 129,115           | 0                       | 140,244                   | 45,720             | 0                     | (105)                  | 1,139          | 0             | 1,034                            |
| <b>Total</b> | <b>10,000,000</b> | <b>8,390,266</b>        | <b>1,609,734</b>          | <b>1,230,403</b>   | <b>0</b>              | <b>(8,125)</b>         | <b>24,436</b>  | <b>3,028</b>  | <b>19,339</b>                    |

\*End of month

The effect of DFAIR's recommendations, particularly the establishment of interim/milestone payments, would be to provide almost all of contractor working capital needs because the payments would reimburse most of contractor costs—plus an amount of profit.

In addition to recommending the interim/milestone payments, DFAIR recommended that contractors get 2 percent of the total contract cost to cover imputed working capital financing costs. As a result, on the contract model with costs of \$10 million, the contractor would receive \$200,000 in profit as compensation for \$19,339 in financing cost

If the DFAIR recommendation to provide contractors' interim/milestone payments was implemented, and at the same time 2 percent of contract cost was provided to reimburse working capital financing costs, and if these recommendations are implemented on the entire \$81 billion in fiscal year 1985 contracts to which they could apply, then DOD could (depending on prevailing interest rates) reduce contractor financing costs by 1.8 percent, or \$1.46 billion, and at the same time, reimburse contractors 2 percent, or \$1.62 billion.

## Conclusions

If the contract financing provisions DFAIR recommends are implemented without regard for the effect of interim/milestone payments, then contractors could be overcompensated for their contract financing costs. Adjusting DFAIR's typical contract model to reflect the effect of all related recommendations causes DFAIR's projected financing cost for a \$10 million contract to fall from \$175,323 to \$19,339—approximately 0.19 percent of the total contract cost.

Also, DFAIR has not made a convincing argument that contractors' financing costs are roughly 2 percent of the total contract cost. Actual data and the current financial position of defense contractors indicate that this cost may be substantially less than DFAIR's estimate.



# Defense Contractor Investment and Efficiency

One of the issues that DFAIR examined was the amount of capital investment undertaken by defense contractors. The capital intensity of defense contractors has been of great interest to us because it can have a substantial effect on efficiency. A major disincentive to defense contractor investment is the cost-based nature of DOD profit policies. Under these policies, contractors' profits could decline if their investment in productivity enhancing equipment reduced costs, particularly labor expenses. A second disincentive is the uncertainty created by annual contracting. Under this arrangement, defense contractors could have a series of expected annual contracts terminated and be left with unrecoverable investment expenses

To help overcome the disincentives to investment, the contracting policy was changed in 1976 with Defense Procurement Circular 76-3 and again in 1980 with Defense Acquisition Circular 76-23 to compensate contractors for their capital investments. We believe these policy changes raise two questions:

1. Has the capital intensity of defense contractors increased?
2. How does the capital intensity of defense contractors compare with that of comparable commercial firms, and how has this comparison changed over time?

DFAIR's answer to these two questions was:

"The defense sector has become more capitalized in the last nine years as evidenced by the increase in the FCE [facilities capital employed] to sales ratio. It still does not use as much facilities capital per dollar of sales as does the non-defense sector, but its rate of increase has been substantially higher than the non-defense sector, and much more consistent."

LMI, in appendix II to the DFAIR report, disagreed with DFAIR's implication that the gap between the rates of investment for defense contractors and commercial manufacturers is lessening. LMI concluded there was clear evidence of a high rate of investment by defense contractors between 1978 and 1982 when the remaining book value of facilities capital (fixed assets) grew at 20 percent a year for defense contractors compared to 13 percent for durable goods manufacturers

But, LMI observed that business base growth for durable goods manufacturers was 6.1 percent annually during 1978-1982, which was considerably lower than the government contractor rate of growth. LMI found that as a consequence, the ratio of facilities capital book value to total

cost grew at 6.8 percent annually for durable goods manufacturers, which was somewhat higher than the rate of 6 percent for their defense sample. Therefore, LMI determined that the gap in the ratios of facilities capital to business base between government and commercial segments did not narrow during the 1978-1982 period.

Measures of Capital  
 Investment and Efficiency

One measure of capital intensity and efficiency is the capital labor ratio, which, when tracked over time, can reveal whether the defense industry is becoming more capital intensive. Comparing the average capital/labor ratio of comparable commercial firms with that of defense firms provides some indication of the efficiency of defense firms relative to commercial firms. In our opinion, the competitive marketplace will probably discipline nondefense firms to operate in the most efficient manner and to minimize costs. Therefore, their average capital/labor ratio provides a benchmark for measuring defense firms' efficiency. (It should be noted that the DFAIR study did not use the capital/labor ratio to measure capital investment and efficiency )

Tables 6.1 and 6.2 summarize our results. Table 6.1 shows that investment, as represented by the capital/labor ratio, is lower for defense firms than nondefense firms over the entire period 1975-1983. In addition, the disparity between these two sectors widened in the early 1980s as nondefense firms increased their investment relative to labor at a faster rate than defense firms.

Table 6.1: Capital/Labor Ratios

|                  | 1975-1983 | 1975-79 | 1980-83 | N <sup>a</sup> |
|------------------|-----------|---------|---------|----------------|
| Defense firms    | 2 755     | 2 817   | 2 677   | 40             |
| Nondefense firms | 3 115     | 2 956   | 3 314   | 60             |

<sup>a</sup>N = number of firms reporting capital/labor ratios

Besides checking the capital intensity of defense and comparable commercial firms, we also stratified the defense firms by the percentage of total sales represented by government business to examine whether defense firms' capital intensity varied with this percentage. When we stratified by thirds and compared the capital/labor ratio (table 6.2) and the capital/sales ratio (table 6.3), we found that firms whose government sales accounting for the largest percentage of their total sales were the least capital intensive. Thus, these comparisons raise questions about defense contractor efficiency.

**Table 6.2: Capital/Labor Ratios for Defense Firms**

|                             | 1975-1983 | 1975-79 | 1980-83 | N  |
|-----------------------------|-----------|---------|---------|----|
| Low defense <sup>a</sup>    | 2 964     | 3 020   | 2 894   | 28 |
| Medium defense <sup>b</sup> | 1 846     | 1 753   | 1 9614  | 8  |
| High defense <sup>c</sup>   | 1 468     | 1 472   | 1 464   | 4  |

<sup>a</sup>These firms' defense sales are less than one-third of total sales

<sup>b</sup>These firms' defense sales are between one-third and two-thirds of total sales

<sup>c</sup>These firms' defense sales comprise more than two-thirds of total sales

Table 6.3 summarizes our calculations for the capital/sales ratio. These results are generally consistent with those from table 6.2; that is, as the percentage of a firm's defense business increases, its investment declines. Furthermore, defense contractors with more than one-third of their revenues derived from DOD had lower capital/sales ratios than nondefense firms during 1975-1983. The capital/sales ratio for all defense firms combined is higher than for nondefense firms. We believe this is not an appropriate indicator of the relative investment because our sample is dominated by low defense firms—53 out of a total of 84.

**Table 6.3: Capital/Sales Ratios**

|                   | 1975-1983 | 1975-79 | 1980-83 | N   |
|-------------------|-----------|---------|---------|-----|
| Low defense       | 1 0285    | 1 0129  | 1 0480  | 53  |
| Medium defense    | 0 6702    | 0 6562  | 0 6877  | 17  |
| High defense      | 0 5791    | 0 5966  | 0 5571  | 12  |
| All defense firms | 0 9731    | 0 9627  | 0 9860  | 84  |
| Nondefense firms  | 0 8226    | 0 8125  | 0 8352  | 228 |

## Conclusions

Relying on two measures of investment, we conclude that although defense contractor investment has increased over the period 1975-1983, it has lagged behind the corresponding rate of increase for nondefense firms. Therefore, defense firms continue to exhibit low relative investment compared with nondefense firms, and the gap appears to be widening. This contradicts DFAIR's suggestion that the gap is narrowing. Moreover, as the percentage of a firm's total sales represented by defense increases, its relative investment declines.





# Conclusions, Recommendations, and Agency Comments

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## Conclusions

The DFAIR report was based on data that was submitted voluntarily by contractors, was reviewed by the contractors' public accounting firms but not by the government, and was not retained after being summarized by Touche Ross and Company. To facilitate and enhance the credibility of future studies of defense profit and financing policies, a Profitability Reporting Program should be established to provide verifiable, auditable data tied to contractors' financial statements and confirmed by their independent certified public accountants. These data would be the basis for periodic profit studies. Such studies, done at least every 3 years using appropriate assumptions and methodologies, should provide a sound basis for future changes to DOD profit policy.

We agree with the DFAIR report that contract pricing, financing, and profit policies are related and should be examined on an integrated basis. However, we believe the report inaccurately portrays the comparative profitability of defense firms, understates contractor profit objectives under DFAIR's proposed weighted guidelines policy, and overstates contractors' contract financing requirements.

The DFAIR report selected durable good manufacturers, as reported in the Bureau of Census' QFR, as the group to which defense contractors' profitability would be compared. DFAIR used ROA to measure profitability, and we agree that ROA is the proper measure to use. After analyzing data from 76 contractors, DFAIR concluded that

"profitability for DOD business is very similar to that of durable goods manufacturers when the abnormal 1980-1983 period is excluded from the comparison "

DFAIR further concluded that the profit policy (Defense Acquisition Circular 76-23) in use during the abnormal period of 1980-83 caused average markups to increase above the expected level by .5 to 1 percent. To remedy this excess, DFAIR structured a profit policy that was designed to "yield results which are on the average 0.5 to 1 percentage point lower than the results achieved under DAC 76-23." In essence, this approach was designed to lower profits for defense contractors back to "when they were similar to that of durable goods manufacturers" that is, up to 1979. From our review of data collected by Touche Ross, we conclude that, in terms of ROA, defense contractors were 35 percent more profitable than commercial manufacturers during 1970-79 and 120 percent more profitable during the 1980-83 period. In addition, our analysis of publicly available data indicates that defense business was substantially more profitable than comparable nondefense firms during the periods of 1975-1983.

DFAIR implied that a 0.5 to 1 percent reduction in negotiated profits would bring defense contractors into a profitability position similar to that of durable goods manufacturers. We do not agree. Our analysis of available data, indicated that achieving approximate comparability will require a new DOD profit policy that will reduce average negotiated markups by more than 1 percent.

Had DOD adopted DFAIR's recommended changes to the weighted guidelines profit policy, it could have resulted in an average profit objective of 12.7 percent. If this 12.7 percent profit objective accurately predicted actual contractor profits and if the weighted guidelines were used on the entire \$81 billion in fiscal year 1985 contracts to which they could apply, then DFAIR's recommendation would have resulted in \$972 million in unintended contractor profit.

In addition, had DOD implemented DFAIR's recommendation to provide contractors with interim/milestone payments and at the same time provide 2 percent of contract cost to reimburse working capital financing costs (part of the 12.7 percent discussed above), and if this recommendation were also applied to the entire \$81 billion in fiscal year 1985 contracts, contractor costs would have been reduced by 1.8 percent, or \$1.46 billion.

If DFAIR's recommendation had been in place during fiscal year 1985, the increase in profits and the decrease in costs could have resulted in \$2.43 billion in unintended profits for DOD contractors.

Subsequent to its receipt of a draft of this report, DOD published a proposed profit policy. The proposed policy was announced in the September 18, 1986, Federal Register and was to become effective January 1, 1987. In commenting on the proposal (see app. IX), we expressed the view that DOD should not implement the new policy until it had access to, and could evaluate, the DOD Form 1499 data for fiscal years 1984 and 1985 and could assure itself that the proposed policy would result in appropriate levels of profit.

On November 14, 1986, DOD published a new interim policy retroactively effective on all solicitations issued on or after October 18, 1986. The interim policy—like the proposed policy to become effective January 1, 1987—is designed to reduce profit objectives by 1 percent. The DOD briefing that accompanied the announcement of the initial policy stated that this reduction would cause profit objectives to go from 12.3 percent to 11.3 percent. However, recent DOD analysis shows that average DOD

profit objectives are now about 13.7 percent. Therefore the 1 percent reduction would result in profit objectives of 12.7 percent—not 11.3 percent.

A goal of a reduction in profit objectives of one percent was sought by DFAIR. That goal has remained consistent in the proposed profit policy promulgated in September 1986, and the more recent interim policy. We are concerned that DFAIR's methods of estimating ROA led to a significant understatement of defense contractor profitability and DOD's subsequent actions have addressed a slight disparity in profitability between defense and private sectors when a significant disparity exists.

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### Recommendation to the Congress

We recommend that the Congress establish a legislative requirement for a Profitability Reporting Program and periodic profit studies.

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### Recommendations to the Secretary of Defense

We recommend that the Secretary:

- initiate, on an expedited basis, new analyses using conventional methods to evaluate profitability;
- based on these analyses make appropriate modifications as soon as possible to the interim policy; and
- develop a means to show in contract negotiations, the effect of government contract financing (for example rate of progress payments, payment frequency, speed of payment, etc.) and the use of interim/milestone payments on contractors' ROAs.

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### Agency Comments

In its comments on a draft of this report, DOD generally disagreed with all of our findings, conclusions, and recommendations saying that we did not give consideration to actions they have taken since DFAIR. They requested that their comments be included as a separate appendix to our final report. DOD's comments and our evaluation of them are included in appendix I.

We recognize that DOD has adopted an interim profit policy. The recommendations contained in the draft of this report were pointed toward the DFAIR report. Where information available made it possible, we have

modified our recommendations because of the actions taken by DOD subsequent to the issuance of the DFAIR report. We are currently performing a review of the interim profit policy as congressionally requested.

We believe that DFAIR is a very significant study. It collected a significant body of data from major defense contractors. It includes an evaluation of the relative profitability of defense contractors and commercial manufacturers and recommendations for major changes to DOD's contractor profit policy. Since DFAIR was issued, DOD has undertaken additional efforts to develop an improved DOD-wide contractor profit policy. We believe, however, that the data collected through the DFAIR study is the best data available to make the comparisons of profitability and should define the objectives of these other efforts. DFAIR should be viewed as the foundation for the current efforts undertaken by DOD. For example, DFAIR stated that profitability of defense contracting and commercial manufacturing was comparable except for the abnormal period of 1980-83. It is our understanding that DOD's subsequent efforts use this overall conclusion as a basic premise. Since we do not agree with this conclusion, we believe that our analysis of DFAIR and its methodology continues to be germane to DOD's profit policy decisions.

# Comments From the Assistant Secretary of Defense and Our Response



ACQUISITION AND  
LOGISTICS  
DASD(P) (CPF)

ASSISTANT SECRETARY OF DEFENSE

WASHINGTON DC 20301 8000

23 JUL 1986

Mr. Frank C. Conahan  
Director, National Security and  
International Affairs Division  
United States General Accounting Office  
Washington, D. C. 20548

Dear Mr. Conahan:

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) draft report entitled "GAO Assessment of DoD's Defense Financial and Investment Review," dated July 24, 1986, OSD Case No. 7073, GAO Code 396104.

The DoD generally does not agree with the findings and recommendations in the draft report. The Defense Financial and Investment Review (DFAIR) presents an in-depth, objective review of the impact of DoD contract financing, pricing and profit policies, and includes needed reforms to these policies, which should be implemented as soon as possible. The enclosed detailed responses to the findings and recommendations of the draft report set forth the basis for, and support for, the DoD decision to proceed with implementing profit and contract financing policy changes based on the DFAIR recommendations.

In addition, the DoD is concerned with the presentation of factual matters in the report and the total lack of acknowledgment of decisions relating to proposed changes in the DoD contract financing and profit policies made by the Deputy Secretary of Defense on May 27, 1986. This memorandum was entered into the Congressional Record during the GAO testimony on DFAIR on June 26, 1986, before the Subcommittee on Legislation and National Security of the Committee on Government Operations. Failure to disclose the Deputy Secretary of Defense decisions is misleading and would cause the readers of the draft report to reach erroneous conclusions regarding both the intent of the DoD, and the actions already taken by the DoD, in reforming its contract financing and profit policies.

The draft report, for example, contains an analysis of the application of interim billings. Subsequent to the DFAIR final report, however, the Deputy Secretary chose not to implement the interim billing procedure. The GAO report also fails to indicate that the Deputy Secretary did not increase the progress payment rate to 85 percent (as recommended in DFAIR) and chose to not recognize any increase in profit objectives to compensate for leaving the progress payment rate at 80 percent (as also recommended in DFAIR).

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**Appendix I  
Comments From the Assistant Secretary of  
Defense and Our Response**

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The Deputy Secretary of Defense directed the Assistant Secretary of Defense (Acquisition and Logistics) to form a Joint-Service Implementation Committee (JIC) to implement his May 27, 1986, direction. The DFAIR was one of many sources used by the JIC to develop a new proposed DoD profit policy. This policy, published in the Federal Register on September 18, 1986, includes many significant changes in the DoD profit policy.

The findings and recommendations are addressed in greater detail in the enclosed comments. The DoD requests that the response be included as a separate appendix in the final GAO report. The DoD appreciates the opportunity to comment on the draft report.

Sincerely,

*Thomas P. Christie*  
for James P. Wade, Jr.

## DOD's Detailed Comments and Our Evaluation

Finding A: Use of the Defense Financial and Investment Review (DFAIR) to Evaluate DOD Profit Policy. The GAO identified three aspects of the DFAIR report that relate to an evaluation of DOD profit policy.

- (1) The report recognized the interrelationship among contractor investment in working capital, contract financing, and profit policy;
- (2) The report relied on return on assets [ROA] to measure comparative profitability; and
- (3) The report showed that relevant financial data on defense business could be gathered from a contractor's segment or division level

The GAO concluded that overall the DFAIR [study] provides a good basis for evaluating DOD profit policy, but that because of major flaws identified in DFAIR (see findings B through E), the DFAIR recommendations are not based on adequate analysis and should not be implemented. The GAO also concluded, however, that the data needed to analyze the profitability of Government contractors is readily available and can be obtained without excessive costs if studies are done on a frequent and regular basis. The GAO identified several requirements that should be included in a legislatively required government contractor profit reporting program, and noted that it is presently working on the framework for such a program.

DOD response: Partially Concur The DOD agrees that DFAIR recognized the interrelationship among contractor investment in working capital, contract financing, and profit policy and provides a good basis for evaluating the impact of these policies. The DOD does not agree, however, that major flaws exist in DFAIR, which would preclude the implementation of proposed changes to the profit policy. The DFAIR report is only one item that was used in determining the proposed changes to the DOD contract financing and profit policies. The proposed changes outlined by the Deputy Secretary of Defense in his May 27, 1986, memorandum are being implemented by a Joint-Service Implementation Committee, which is considering inputs from many sources, including the DFAIR report. While the decisions in the May 27, 1986, memorandum are similar to, and based on the DFAIR recommendations, other considerations are being addressed in the policy revisions.

The DFAIR recommendations are based on adequate analysis and should be implemented as soon as possible. The financing recommendations of the DFAIR report have either been published for public comment in the



Federal Register or already implemented. All financing related recommendations will be implemented by the end of calendar year 1986

A proposed rule relating to profit policy was published for public comment in the Federal Register on September 18, 1986, with a proposed implementation date of January 1, 1987. The DOD responses to findings B through E set forth the basis for, and support for, the DOD decision to proceed with implementing the contract financing and profit policy changes based on the DFAIR recommendations.

Our Evaluation. We continue to believe that the DFAIR report does have value. However, we also believe that DFAIR's comparisons of the profitability of defense contracting and commercial manufacturing is flawed and should not be used as the basis for developing a profit policy.

We recognize that DOD has, despite concern expressed in our draft report and in a report issued by the House Committee on Government Operations, continued with plans to develop and implement a new profit policy based on these erroneous comparisons.

Finding B: DFAIR Understated the Profitability of Defense Contracting. The GAO reported that DFAIR used the ROA method to determine contractor profitability at the segment level, which the GAO agreed is an appropriate method. The GAO found, however, that DFAIR made two significant assumptions in its calculations which dramatically reduced the ROA of defense contractors:

- (1) DFAIR included in the contractor's asset base the amount of inventory owned by the Government through progress payments; and
- (2) DFAIR developed its own definition of profit called "economic profit."

The GAO disagreed with the DFAIR conclusion that profits on defense contracts were similar to those of commercial manufacturers except during 1980-1983. Based on its analysis, the GAO found that Defense contractors were 35 percent more profitable than commercial manufacturers during 1970-1979, and 120 percent more profitable during 1980-1983. Further, the GAO found that [publicly] available data indicate that defense business was substantially more profitable than comparable non-defense firms during 1975-1983. The GAO also cited an August 1985 Navy study as a further indication that contractor ROA for Government business was higher during 1977 to 1984 than for commercial business.

The GAO concluded that DFAIR's methods of calculating ROA led to a significant understatement of contractor profitability, which in turn caused DFAIR to address its recommendations to a slight disparity in profitability when a significant disparity actually exists.

DOD response. Nonconcur. The DFAIR report presented a full range of data using traditional financial measurement techniques to evaluate the profitability of both defense and non-defense firms (see pages V-26 through V-42 of the DFAIR report). The DFAIR report also presented a full analysis of these results and supplemented them to determine and explain the impact of the DOD contract financing, pricing, and profit policies on defense contractors. The supplemental analysis included in the DFAIR report was necessary to address the different accounting methods, financing practices, and pricing provisions of commercial and defense manufacturers. As the GAO well knows, the use of generally accepted accounting principles applied consistently period to period ensures an ability to compare a specific firm's financial results from one period to another, but does not ensure any ability to compare like firms even in the same period.

The DFAIR report results 'that were based on typical techniques' were very similar to those determined by the GAO and the August 1985 Navy study. These results, however, do not provide a true comparison of defense and non-defense firms (or of the firms included in either category) due to their differing accounting methods, financing practices and pricing provisions. The "economic profit" concept used in the DFAIR report was to truly compare the profitability of defense and non-defense firms by removing the differences discussed above. It does not understate profits, but establishes comparable profitability values. A true analysis of comparable defense and non-defense firms would not be possible if the difference were not removed.

The DFAIR recommendations, as modified by the Deputy Secretary of Defense on May 27, 1986, make needed reforms to the DOD contract financing and profit policies which should be implemented and are separate from, and independent of, an argument over "profitability" measures.

Our Evaluation. DOD did include the conventional data developed by Touche Ross and Company in one chart in its report. The data, however, was combined with 5 years of data from an earlier DOD study. (See chapter 3 of this report.) In addition, the graphs including the data were physically separated from the conclusionary graphs that were based on

other data. The ROA data developed by Touche Ross was not used in developing the graphs and analysis leading to the conclusion that "these measures [economic profit/assets] demonstrate that profitability for DOD business is very similar to that of durable goods manufacturers when the abnormal 1980-1983 period is excluded from the comparison." Therefore, in our view, DFAIR does not present a full analysis or draw conclusions based on the unadjusted data developed by Touche Ross. The aggregated data, which showed defense contracting was 75 percent more profitable than commercial manufacturing for the 9 year period 1975-1983, was so obscured by DFAIR's adjustments that the final figures fail to provide any meaningful or in DFAIR's words, "true" comparison.

We cannot agree with DOD's position that the use of generally accepted accounting principles applied consistently does not provide the ability to compare like firms. The return that an investor expects to receive for the assets invested certainly must be viewed on a comparative basis when deciding where to commit one's assets. Investors continually make these comparisons using financial statements based on generally accepted accounting principles.

DOD states that economic profit concept was necessary to truly compare the profitability of defense and nondefense firms by removing the differences in accounting methods, financing practices, and pricing provisions. Although it is true that accounting methods, financing practices and pricing provisions may vary from company to company, we fail to see the merit in DOD's economic profit concept. DOD uses the defense contractors' (and commercial manufacturers') figures for sales, allowable and unallowable expenses, fixed assets, inventories, accounts receivable, and progress payments. No adjustments are made to these figures to address the typical accounting method variations that cause differences in asset valuation or the timing of revenues or expenses. The only adjustments DOD makes is to increase the assets by the amount of progress payments and then adjust interest expenses to try to show imputed revenue and expense. We continue to believe that DOD's economic profit calculation is unnecessary and that DOD should use conventional analytical techniques in its profitability calculations.

We also continue to believe that DFAIR's methods of calculating ROA led to a significant understatement of defense contracting's profitability and that DFAIR addressed its recommendations to a slight disparity in profitability when a significant disparity exists. We are concerned that DOD's new profit policy proposals may use the DFAIR calculations as the starting point for developing the objectives of the new policy.

Finding C: DFAIR Recommended Changes Will Not Reduce Unintended Increases in Profit Negotiation Objectives. The GAO reported that, because DFAIR determined that contract profit negotiation objectives were higher than intended from 1981 and 1983, it recommended several changes in the weighted guidelines policy. According to the GAO, the DFAIR believes its recommendations would reduce profit objectives from 12.3 to 11.5 percent of total cost. Based on its analysis of DFAIR, however, the GAO concluded that the probable profit negotiation objectives are understated for three primary reasons:

- (1) Negotiation objectives at the lower end of the possible ranges of individual weighted guideline factors were used;
- (2) The effects of the DFAIR recommendation to include shipbuilding under its proposed profit policy were not considered; and
- (3) The policy recommended is very sensitive to the mix of contract types, and is based on an unrealistic mix of contract types.

The GAO further concluded that not only would profit objectives not decrease under the DFAIR recommendations, but in fact could increase to as much as 12.7 percent of total cost.

DOD response: Partially Concur. The DFAIR changes in the profit policy are not based on factor values at the lower end of the ranges and are not based on an unrealistic mix of contract types. All numbers involved in the DFAIR analysis were based on the actual data included in the DOD Form 1499 (Report of Individual Contract Profit Plan) for Fiscal Years 1981-1983. Furthermore, while shipbuilding contract data was evaluated separately in DFAIR to prevent distortions, the DOD profit policies will encompass shipbuilding.

The individual factors used to evaluate the impact of the proposed profit policy changes were derived from actual results of over 6,000 DD Form 1499 submissions over a 3 year period. The framework of the new policy will be based on the same trends developed from the historical data; i.e., individual factors and ranges of values will be structured to recognize contracting officer tendencies to pick values near the midpoint of the range. The revised profit policy will change historical patterns of assigning profit factors by establishing a normative value for each factor. The impact of shipbuilding will be included in any new policy developed by the DOD. The GAO must remember that the DFAIR report served only as the basis for the Deputy Secretary of Defense's decisions

on financing and profit policy reforms in the DOD. The decisions included in the May 27, 1986, decision memorandum contain direction to reduce overall profit objectives even more than the recommendations in the DFAIR report. In addition, the Secretary of Defense has already taken action, in April 1985, to offset the .5 to 1 percent unanticipated increase in profit objectives. The combination of actions already taken by the DOD and the decisions included in the May 27, 1986, memorandum will cause a significant reduction in defense contract profits.

The DOD agrees that the profit policy is sensitive to the mix of contract types; however, the GAO used contract mix statistics generated from a DOD data base that includes all DOD contract awards. The vast majority of contract actions included in this data base do not even use the Weighted Guidelines Method to determine profit objectives and do not include negotiated profits. The DFAIR Report used the DOD data base for contracts that used the Weighted Guidelines Method to determine profit objectives and then negotiated profit based on those objectives. It is inappropriate for the GAO to conclude that the DFAIR results are incorrect based on comparisons with a noncomparable data base. Furthermore, if the fixed price percentages were as high as the GAO indicates, the average profit DOD-wide would have been higher because the Weighted Guidelines Method produces higher profits on fixed price type contracts to reflect the higher contractor risks involved in those contracts.

Our Evaluation. We continue to believe, for the reasons stated in chapter 4 of this report, that the profit objectives resulting from DFAIR's proposed policy could range as high as 12.7 percent of total cost. We used DFAIR's DOD Form 1499 data base for our review. Our analysis of the data shows that, contrary to DOD's statement, contracting officers have historically awarded profit values at the upper end of the possible profit ranges for the cost elements in the weighted guidelines method, that the shipbuilding data has a large effect on the results of the profit policy, and that the profit policy is sensitive to the mix of contract type.

The historic data derived from the DOD Form 1499 data base shows that contracting officers tend to adopt values higher than the midpoint range. DFAIR, for no explainable reason, reduced those values by 25 percent when developing the DFAIR proposed policy. This reduction caused the values to fall in the lower end of the possible range which contradicts the pattern shown by the actual data.

DOD says shipbuilding will be included in any new policy it develops. This approach is consistent with a DFAIR recommendation that shipbuilding be included in the overall policy. We believe, however, that DFAIR should have included shipbuilding in its evaluation of the effects of its proposed policy.

DOD agrees the DFAIR proposal is sensitive to the mix of contract types but criticizes the contract mix we used. As indicated in this report, we believe the DOD Form 1499 data base did not provide a representative contract mix. We believe the DOD P03 report provides a more appropriate projection of the total of fixed price contracts. We do not believe DOD can substantiate their assertion that "the vast majority of contract actions do not even use the Weighted Guideline Method to determine profit objectives....". FAR, section 15.902(a) provides that contracts over \$100,000 shall use a structured weighted guideline method approach. DOD's P03 report for 1985 indicates that contracts over \$100,000 represent approximately 95 percent of the Prime Contract Awards made by DOD. We believe this is a more valid sample to use than the DOD 1499 data base. DFAIR acknowledges that the DOD 1499 files are inadequate and contains a recommendation that the system needs to be strengthened. Our objective in that section of our report was to point out this sensitivity and to indicate its potential effect. We believe DFAIR should have recognized, and disclosed, the possible increase in profit objectives that could result from a change in contract mix.

We assume that the "action taken by the Secretary of Defense in April 1985 to offset the .5 to 1 percent unanticipated increase in profit objectives" was the reduction of progress payments from 90 percent to 80 percent which was referred to in the letters sent to Senator Roth and Congressman Brooks on this same subject. DOD answers this point in its own DFAIR report when it cited a DOD report on progress payments as follows:

"Although some short-term reductions in outlays could be achieved by either lowering progress payment rates or delaying payments, concomitant and very achievable price increases would cause the out year outlays to be substantially higher."

As mentioned earlier DOD has published a new profit policy proposal which makes significant changes to the weighted guidelines method proposed in DFAIR. It is important that any new policy be evaluated independently to ensure that the desired profit goals are achieved. We will evaluate DOD's latest weighted guidelines method profit proposal.

**Finding D: DFAIR Recommendations Could Overcompensate Contractors for Financing Costs.** The GAO reported that in evaluating contractor financing costs, DFAIR developed a “typical” contract model for a \$10 million contract. From this model, the GAO noted that DFAIR concluded that contractors historically incurred a cost equal to two percent of the total contract costs to finance their working capital requirements. Based on its analysis, however, the GAO concluded that this view is questionable for three reasons:

- (1) DFAIR used only a rather narrow sample of 12 contracts with 5 contractors to develop the model;
- (2) Actual data collected by Touche Ross indicate DFAIR overestimated contractor’s financing costs; and
- (3) DFAIR failed to recognize the impact of a related recommendation that would substantially lower contractors’ working capital financing costs.

According to the GAO, related recommendations, particularly the establishment of interim acceptance payments, would effectively provide almost all of contractor working capital needs. In addition to making interim payments, however, the GAO noted that DFAIR recommended that contractors get an additional two percent of contract costs as profit to cover working capital costs. Using the DFAIR’s model contract with costs of \$10 million as an example, the GAO concluded that a contractor would get \$200,000 in actual profit as compensation for its working capital financing costs when those costs had been substantially reduced by interim acceptance payments, thus resulting in overcompensation to the contractor.

**DOD response: Nonconcur.** The purpose of the simulation model used in DFAIR was to establish a baseline for evaluation purposes where no actual data base exists and, to establish the relative impacts of the interrelationships of the variables and their values in differing circumstances. The relative differences of the impact of contract financing would be the same whether the baseline was established on actual, hypothetical, or estimated data. In other words, the model was designed to measure changes from a baseline, rather than the baseline itself, and would not have varied significantly using different baselines. In fact, subsequent to DFAIR, the same model was applied to other contract data (different and more contracts than used in DFAIR) and the model produced virtually identical results. As long as all other policy changes incorporate the baseline amount and reflect the relative change rates

among variables, the simulation approach guarantees the consistency and validity of the relationships. The proposed profit policy changes issued on September 18, 1986, incorporated the baseline amount and reflect the relative change rates among all variables.

The actual data collected by Touche Ross included interest expense. The GAO analysis reflects a belief that interest expense reflects the total cost of all capital required by a contractor and does not account for the cost of equity financing. Interest expense reflects only the cost of borrowed (debt) capital. The DFAIR simulation model computes a cost of working capital that is indifferent to whether the contractor borrows the capital or provides working capital from equity. The GAO approach does not recognize such equity financing, and is not based on an accounting concept shared by others who evaluate the cost of capital in either a defense or a non-defense firm.

In addition, the GAO analysis of the impact of interim billings on contract financing did not apply all of the criteria stated in the DFAIR report (i.e., “where there are more than three years from contract start to first delivery—” the GAO example has the first contract delivery before the three year point). The GAO analysis also does not recognize the more stringent criteria that would be applied to restrict the use of interim billings. On the other hand, the GAO assumed that interim billings (based on less stringent criteria) would apply to all DOD contracts when that is not true. The GAO also states that DFAIR includes an “additional” 2 percent of profit for working capital when, in fact, the amount to be recognized for working capital was removed from the contract risk factor and results in a net impact of 0 percent, not +2 percent. Finally, the Deputy Secretary of Defense did not implement the DFAIR interim billing recommendation. Instead, the Deputy Secretary of Defense chose to restore milestone billings on a very restrictive basis (i.e., high dollar value, deliveries do not occur for more than three years after start of contract, limited to significant, measurable events).

Our Evaluation. In evaluating contractor financing costs, DFAIR developed a “typical” contract model. From this model, it concluded that contractors historically incurred a cost equal to approximately 2 percent of the total contract cost to finance their working capital requirements. We question the validity of this conclusion because historic data indicates that these costs are less than 2 percent. Moreover, in devising methods to reimburse contractors for the 2 percent factor, DFAIR failed to recognize the effect of related recommendations that would lower contractors’ working capital financing costs.



DOD indicates that their model was designed to show the interrelationships between variables and that the results would not have varied using different baselines. However, since the DOD profit policy proposals are supported by conclusions of the DFAIR study, we believe that the model drawn from only 12 contracts from 5 contractors has a major impact on determining the baseline of 2 percent used in the proposed policy. In this context, we continue to disagree with the results of DFAIR's simulation model. Actual data shows interest costs are not as high as those calculated using DFAIR's model. In addition, if the model had taken interim/milestone payments into consideration then the costs calculated using the model would have been substantially lower.

Contrary to DOD's comment, our draft report did recognize that some working capital could be financed through equity. Although we doubt that a substantial portion of a firm's short term capital needs—working capital—would routinely be financed through a long term source—equity—we recognize that financing of this type probably occurs to some extent and we have recognized this in chapter 5 of our report.

DOD states that the Deputy Secretary of Defense implemented milestone billings rather than interim billings. DOD's contention that the Deputy Secretary of Defense chose not to implement interim billings is misleading. The DFAIR study does not differentiate between these two payment plans, as shown in the following recommendation quoted from DFAIR.

"4 Milestone or interim acceptance payments should be permitted on large dollar contracts where there are more than three years from contract start to first delivery If the above markup policy changes are made, a milestone or interim acceptance policy should be established to allow contractors to receive payment, including some portion of markup or fee, based on physical progress. This is necessary to prevent undue financing burden on the contractor and to avoid unduly high contract markup. Milestone/Interim acceptance should be:

- a. Scheduled to commence not earlier than six months after contract start.
- b. Based on clearly identifiable events whose completion can be verified and whose costs can be reasonably estimated.
- c. Should occur not more frequently than monthly and preferable on a quarterly basis "

From the wording of this recommendation, it appears that milestone and interim acceptance payments are the same thing, and merely dropping

the name "interim acceptance" does not constitute a change in the recommendation.

DOD stated that our analysis of interim billings is incorrect because they would only be applied to contracts where these are more than 3 years from contract start to first delivery. Our analysis consisted of applying the DFAIR milestone/interim acceptance payment recommendation to DFAIR's typical contract model which has its first delivery in the 34th, rather than the 36th, month. We were incorrect and have changed our example to correct this error. This change, however, did not have any significant effect on the results of our analysis.

DOD says that we failed to recognize the stringent criteria that would be applied to restrict the use of these payments. The criteria, however, do not appear to be very restrictive. In fact, the criteria appear to be very similar to the characteristics of DFAIR's typical contract. We believe that the high dollar value criteria is very subjective and would indicate that these payments would apply to only significant contracts. The 3 year criteria nearly matches the typical contract used in the DFAIR report. We believe that if that length is typical, then it should not be considered restrictive. The significant event payment trigger is limited to no more "frequently than monthly or preferably on a quarterly basis." We believe that milestones that can occur monthly in a long-term contract should not be classified as restrictive.

DOD indicates that our assumption that interim billings would apply to all contracts is incorrect. We did not assume that interim billings would apply to all contracts, however we have modified our recommendation in this area.

Finding E: Capital Investment by Defense Contractors. The GAO reported that capital investment by defense contractors is of great interest because it can have a substantial impact on efficiency. The GAO reported that, beginning in 1976, Defense contracting policy was changed to overcome existing investment disincentives to defense contractors. According to the GAO, DFAIR analyzed the effect of these changes and concluded that the defense sector has become more capitalized over the last 9 years. Based on its own analysis, the GAO agreed that defense contractor investment has increased during the period 1975 to 1983; however, the GAO found that when growth in investment is compared to sales growth, defense contractors' investment growth has lagged behind the rate for non-defense firms. The GAO pointed out that its finding is

consistent with that of Logistics Management Institute (LMI), a consultant to the DOD on preparation of the DFAIR report. While acknowledging the overall increase in defense contractor investment, the GAO concluded that contrary to DFAIR, defense firms continue to exhibit low relative investment when compared to non-defense firms and the gap appears to be widening.

DOD response: Partially Concur. The GAO agreed that defense contractor investments have increased during the 1975 to 1983 period, which was the primary DFAIR finding in the investment area, and the DOD agrees with this aspect of the finding. The DOD, however, does not agree with ultimate GAO conclusions. The GAO conclusions are based on a comparison of growth rates in the Facilities Capital Employed to Sales ratio over time. This comparison is not a meaningful way to compare defense and non-defense firms, because of the much higher volatility in the behavior of the ratios for the non-defense durable goods manufacturers, caused largely by changes in the sales base rather than the [Facilities Capital Employed] value. As pointed out in the LMI report, which is part of the DFAIR report and included as an appendix, "the behavior of the ratio of facilities capital to business base in the commercial sector is highly sensitive to the period selected for this computation." Exhibit 7 (Page VI-12) in the DFAIR report shows that the durable goods manufacturer [Facilities Capital Employed] to sales ratio is much more volatile than the defense sector over the 1970 to 1983 period and, in fact, would show a net decline between 1970 and 1983 while defense businesses show a net increase between those years.

Our Evaluation. We agree with DOD that other measures are preferable to the capital to sales ratio when evaluating a company's capital investment. Reference was inadvertently made to capital to sales ratio analysis in the executive summary of our draft report. This has been corrected. Our conclusions, however, are based on our analysis of capital to labor ratios, not capital to sales ratios. In chapter 6 of this report, we include two tables that present the capital to labor ratios for defense and nondefense firms. These tables show that nondefense firms have increased their investment relative to labor faster than defense firms and that those firms with a higher percentage of defense sales to total sales have lower capital intensity

We also included one table that addresses capital to sales ratios. The overall ratio showed—for our sample—that defense firms had a higher capital to sales ratio than nondefense firms. However, as discussed in

chapter 6 of our report, we believe that this is not an appropriate indicator of relative investment because our sample is dominated by firms with a low percentage of defense business, and as the percentage of the sample firms' business derived from defense declined, the capital to sales ratio increased. (See table 6.3.)

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## Recommendations

Recommendation 1. The GAO recommended that the Congress establish a legislative requirement for a Profitability Reporting Program and periodic profit studies.

DOD response. Nonconcur. The DOD does not agree that any convincing evidence is now available to support the GAO-recommended program and studies. The GAO, however, is performing a separate study of these issues, and proposes to collect substantially more information than the DOD currently receives on a routine basis. The information, for example, will include data on non-defense operations, which the DOD does not currently have access to on a routine basis. The GAO review will also address the cost of a profitability reporting system. The DOD will review this GAO study when it is completed and will support a reporting system if one is shown to be beneficial and cost effective.

Our Evaluation. At this time DOD does not have a mechanism to regularly and routinely collect the data necessary to evaluate the profits defense contractors realize from DOD's profit policies. Previous DOD profit studies have been based on inconsistent evaluation of unverified data, volunteered by contractors willing to participate; many contractors refused to support DOD data requirements. To build more credibility into future profit studies, we believe such data should be regularly collected and analyzed. Consequently, we see the need for a legislative requirement for a Profitability Reporting Program and periodic profit studies which we believe are necessary for an equitable DOD contractor profit policy. We recently released an exposure draft outlining our profit reporting proposal.

Recommendation 2. The GAO recommended that the Secretary of Defense not implement the DFAIR report's recommendations that are based on the DFAIR profitability analysis.

DOD response. Nonconcur. While differing opinions about profitability measures will continue, they should not be the basis for delaying needed action when the only disagreement concerns the extent of the actions. The proposed policy changes outlined in the Deputy Secretary's May 27,

1986, memorandum can be clearly and objectively evaluated and will produce reductions in the objective profit levels on all types of DOD contracts, which the DOD and the GAO agree are needed. The DOD, therefore, intends to continue implementing its proposed changes by January 1, 1987.

Our Evaluation. Because of the actions taken by DOD subsequent to the DFAIR report we have deleted this as a separate recommendation. It is combined with the recommendation to initiate a new analyses using conventional methods to evaluate profitability.

Recommendation 3. The GAO recommended that the Secretary of Defense rescind Defense Acquisition Circular 76-23 and, on an interim basis, reinstate the policy in effect as a result of "Profit 76"—Defense Procurement Circular 76-3.

DOD response. Partially Concur. The DOD agrees that Defense Acquisition Circular (DAC) 76-23 should be rescinded and has developed a replacement policy, which was published in the Federal Register on September 18, 1986. The DOD does not agree, however, that Defense Procurement Circular 76-3 should be reissued on an interim basis. The Deputy Secretary's May 27, 1986, direction and the proposal published in the Federal Register on September 18, 1986, reflect more current and meaningful policy and should be adopted as quickly as possible.

Our Evaluation. Because of the actions taken by DOD pursuant to legislation, we have deleted this as a separate recommendation. It has been combined with the recommendation to make appropriate modifications to the interim profit policy based on analyses using conventional methods to evaluate profitability.

We have not yet completed our evaluation of DOD's profit policy direction contained in the May 27, 1986, memorandum (see app. VIII.), proposal printed in the September 18, 1986, Federal Register, or the interim policy issued on November 14, 1986. We plan to report the results of our evaluation as soon as possible.

Recommendation 4. The GAO recommended that the Secretary of Defense initiate, on an expedited basis, new analyses using the aggregated data developed by Touche Ross but using conventional methods to evaluate profitability. The GAO further recommended that these analyses give special emphasis to incentives for investment since the DOD profit policy

in effect before the issuance of Defense Acquisition Circular 76-23 may not adequately encourage investment.

DOD response. Nonconcur. The DFAIR report used conventional methods to evaluate profitability using the aggregated data developed by Touche Ross (See [DFAIR report] Exhibit 14, Page V-32). The contractors' differing accounting methods, pricing practices, and financing methods required additional analysis beyond the conventional approach (See DOD position on finding D). The DFAIR report supplements the conventional methods to evaluate and demonstrate the impact of DOD financing, pricing, and profit policies, thereby permitting a true comparison between non-defense and defense business profitability

Our Evaluation. As discussed earlier, DFAIR's additional analysis does nothing to resolve the inconsistencies in accounting data. We see no basis for DOD's statement that its methods provided a "true comparison" between nondefense and defense business profitability. In our view, DFAIR's adjustments obscure the conventional method's clear message—defense contracting was, from 1975 to 1983, significantly more profitable than commercial manufacturing.

The DFAIR policy addresses a 1 percent reduction in profit objectives which is based on DFAIR's unique profitability calculations. We continue to believe that DOD should use conventional analyses to accurately determine the relative profitability of commercial and defense business. The results of those analyses should be used to determine the appropriate profit objective to be awarded under DOD's profit policy proposals.

Recommendation 5: The GAO recommended that the Secretary of Defense develop a means to show, in contract negotiations, the impact of Government contract financing (for example, rate of progress payments, payment frequency, speed of payment, etc.) on contractors' [ROA].

DOD response. Nonconcur. [ROA is a financial balance sheet concept. The GAO recommendation would require implementation on a contract-by-contract basis, which would be neither possible nor practical. If the GAO believes a contract-by-contract evaluation of ROA is possible and practical, the DOD would be willing to consider such an approach if the GAO would provide its methodology and the details.

Our Evaluation. DOD selected ROA to compare the profitability of defense contractors with that of comparable durable goods manufacturers. We agree with that selection. DOD also has opted to retain the weighted

guidelines as the method of implementing contract/profit negotiations. We also believe this is the best approach for that activity. The ROA contractors achieve depends to a large extent on the contract pricing, profit, and financing arrangements agreed to during negotiations. Data on the existing weighted guidelines forms—and the weighted guidelines forms included in the new DOD profit policy proposal—is concentrated on cost, profit, and cost of money. The treatment of contract financing is limited to cost of money and an obscure reference to a working capital adjustment. No attention is given to the significant contract financing factors such as amount of progress payments, frequency of progress payments, timing of progress payments, timing of delivery billings, or interim/milestone billings.

DFAIR pointed out several times that contract financing can have a significant effect on a contractor's ROA. In its comments on our draft, DOD reiterated this view. We believe that those negotiating contracts for the government should be provided the tools to be able to visualize in one negotiating document, preferably the DOD 1547, Record of Weighted Guidelines Method Application, the entire contract scope, including cost, profit, and financing arrangements. All of this related data could be translated into a nominal ROA for the contract. This ROA computation would provide the negotiator some general idea of the profitability that would result from the contract configuration. Without this added evaluation, DOD's negotiators have no reliable overall measure of negotiated contract profitability.

We continue to believe that all aspects of contract financing should be considered when a contract is negotiated. Allocations of fixed assets are now done through the Cost Accounting Standard 414 formula. Allocation of working capital could be made through the formula proposed in DFAIR. Considering the composite asset base along with financing factors and the profit objective would provide an indication of the potential ROA of the contract.

Recommendation 6. The GAO recommended that the Secretary of Defense severely limit the use of interim payments to prevent overcompensating contractors.

DOD response. Nonconcur. The DOD does not agree that the use of interim billings would result in "overcompensating contractors" (See DOD response to finding D). Interim billings are not, however, included in the May 27, 1986, Deputy Secretary of Defense direction.

Our Evaluation. We have deleted this as a separate recommendation. It has been modified and incorporated as part of the recommendation to show in contract negotiations the effect of government contract financing.

Recommendation 7. The GAO recommended that the Secretary of Defense clearly describe the relationship between interim payments and the working capital profit factor in the proposed profit policy, and reduce or eliminate the working capital profit factor when interim payments are provided.

DOD response. Nonconcur. See the DOD response to Recommendation 6.

Our Evaluation. See our response to recommendation 6.

Recommendation 8. The GAO recommended that the Secretary of Defense, using actual data, evaluate DFAIR's projections of contractor financing costs.

DOD response. Nonconcur. Actual data was used to establish the simulation model that developed DFAIR estimates of contractor financing costs. The simulation approach would provide the same relative impact of all the selected variables no matter what data was used to establish the baseline. The simulation approach was necessary since there is not a data base to evaluate the impact of changes and relationships among the important variables associated with DOD's financing policy. The key in using the simulation approach is to use a baseline, and then evaluate all variables around the baseline. Using the baseline to establish policy ensures that the relative changes will be the same regardless of the individual conditions. This was done during the development of the proposed DOD profit policy, which was published in the Federal Register on September 18, 1986.

Our Evaluation. We have deleted this recommendation since we have been congressionally directed to conduct a review of this subject.



# Request Letter Dated April 3, 1984, From the Chairman, Senate Committee on Governmental Affairs

WILLIAM V. Roth, Jr., DEL., CHAIRMAN

|                             |                          |
|-----------------------------|--------------------------|
| CHARLES H. PERCY, ILL.      | THOMAS F. BASKETTEL, MD. |
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| JOHN S. BUNNELL, IOWA       | JOFF BURGESS, N. CAROL.  |
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**United States Senate**  
 COMMITTEE ON  
 GOVERNMENTAL AFFAIRS  
 WASHINGTON, D.C. 20510

April 3, 1984

The Honorable Charles Bowsher  
 Comptroller General  
 U. S. General Accounting Office  
 441 G Street, N. W.  
 Washington, D.C. 20458

Dear Mr. Bowsher:

As you know, my Committee has been holding a series of oversight hearings on the Defense Department's management of the acquisition process over the last two years. There are several matters concerning the department's cash management practices which have been of concern to the committee, in particular its decisions to raise progress payment rates, raise thresholds for required certification of cost or pricing data and for defective pricing audits under the Truth-in-Negotiations Act and continue the practice of paying contractors for accrued vacation costs months and even years before those vacations are taken by contractor employees. Each of these practices results in the loss to the government of hundreds of millions of dollars and I have repeatedly asked the Defense Department to change its policies in these areas. The Grace Commission has also reviewed the effects of higher progress payment rates and has recommended that the Department lower the rates back down.

My recommendations to the Defense Department to change its policies in these three areas have not been accepted but recently the Department informed me that it would be conducting a study on contract pricing, financing and profit policy which would, among other things, review the effects of higher progress payment rates and early payments of accrued vacation costs. I was informed that the study would also review the effects of cost allowability on pricing and profit, the relationship of contract pricing to capital investment and the use of pricing to motivate contractors to find cost efficiencies in their operations.

There has not been a comprehensive review of defense contract payment and profit policies since 1976 and I believe the study currently being undertaken by the Defense Department on these matters will greatly affect cash management and contract financing policies in the future. Because of the expertise of

Appendix II  
Request Letter Dated April 3, 1984, From the  
Chairman, Senate Committee on  
Governmental Affairs

the General Accounting Office in such matters, I am requesting that you evaluate the adequacy of the study, the validity of its findings and the appropriateness of its recommendations and report your findings to me as soon as your evaluation of the Department's study is completed. I would anticipate that GAO would monitor the study as it proceeds and review its methodology and supporting documentation in order to provide your views on the Department's report.

I appreciate your attention to this request. Please notify Mr. Link Hoewing of my staff at 224-4751 when you initiate the work and keep him informed of your progress.

Sincerely,



William V. Roth, Jr.  
Chairman

WVR/ssi

# Request Letter Dated September 17, 1985, From the Chairman, House Committee on Government Operations

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NINETY-NINTH CONGRESS  
**Congress of the United States**  
**House of Representatives**  
 COMMITTEE ON GOVERNMENT OPERATIONS  
 2157 RAYBURN HOUSE OFFICE BUILDING  
 WASHINGTON, DC 20515  
 September 17, 1985

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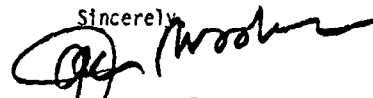
The Honorable Charles A. Bowsher  
 Comptroller General  
 General Accounting Office  
 Washington, D.C. 20548

Dear General:

In June 1985, the Defense Department, after a 17-month study, issued a report on its contract pricing, financing and profit policies. The Defense Financial and Investment Review (DFAIR) report generally concludes that the Department's current policies concerning these areas are (1) balanced economically, (2) protecting the taxpayers' interests, and (3) enabling U.S. industry to achieve an equitable return on defense business. It does, however, make recommendations which are aimed at refining these policies to bring them more in line with today's economic environment.

In view of the recent horror stories of waste, fraud and abuse in the defense procurement system, I remain skeptical about the validity of DDC's DFAIR conclusions. Further, because of the rapid increase in defense expenditures and the overburdening Federal deficit which is in large part a result of those expenditures, it is imperative that the Congress have a full assessment of the Department's pricing, financing and profit policies. Therefore, I request that you initiate a review to determine if the DFAIR report is complete and accurate and provide the Committee with your findings, conclusions and recommendations on these policies no later than April 15, 1986. Your assistance in this matter is greatly appreciated.

With best wishes, I am

Sincerely,  
  
 JACK BROOKS  
 Chairman

# Economic Analysis—Profitability

## Appropriate Measures of Profitability

A study of how defense contractor profits compare with those of nondefense firms and how this relationship has changed since the DOD policy modifications of the mid-1970s requires (1) a meaningful measure of profitability, and (2) a standard against which the measure of profitability in the defense industry can be compared.

The standard measures of profitability that have been used most frequently in studies of this type are: ROS and return on investment. ROE and ROA are two different measures of return on investment. Since all firms compete for funds in the capital markets, and these funds are likely to be attracted to those opportunities offering the highest expected rates of return, the preferred measure of profitability would be a return on investment standard. There are two ways to raise capital, i.e., by issuing debt and by selling equity shares. One frequently used ROI measure, ROE, indicates the return to equity. The other, ROA, represents the return to total assets, whether acquired by debt capital or equity capital.

In the first case, one can use ROE or the after-tax accounting profits of the firm divided by shareholder equity. This measure is imperfect, however, because firms have different capital structures (equity as a percentage of total capital). Thus, if we compared two almost identical firms (identical operating expenses, profits, etc.), the one that finances its investment with a larger percentage of equity (vs. debt) could appear to have a lower profitability, since the denominator in the ROE calculation would be larger. A second and related problem with the differences in the capital structure of the firms is the notion of “financial risk” introduced with debt instruments, since firms are required to make regular interest and principal payments. (This financial risk would be in addition to the “operating risk” faced by each firm regardless of the extent of its leverage.) Finally, the problem of allocating “equity” by line of business introduces significant additional complexities.

With respect to the other preferred ROI measure of profitability, ROA, profits would be divided by the book value of total assets. Both the numerator and denominator for this computation at the firm level are available from published financial reports. The information can be gathered from the appropriate lines of business of DOD contractors via questionnaires. The QFR, published by the Bureau of the Census of the U.S. Department of Commerce, also provide this information by industry classification. It should be noted, however, that one problem with the use of a book value measure for capital is that some firms use accelerated depreciation methods while others do not. Furthermore, the book

value of capital will also be a function of its age. One alternative measure for the book value of net property, plant and equipment is the market value of these facilities. Since the market value of assets are generally not available and difficult to estimate, this measure cannot be used.

The use of ROS as a measure is less desirable since it is a profitability measure based on output, and not input or how effectively a firm invests its capital. Therefore, ROS is not a reliable predictor of return on investment. As mentioned above, since firms compete for funds in the capital markets, investors (individuals and institutions) are concerned with the rate of return on their investment, which is an input measure to the firm. A rate of ROS is less likely to be related to a return on an investor's capital but more to the products being sold, or the specific industry. For example, retail food stores generally earn a relatively low return in sales, but an average return on invested capital. Thus, a ROS comparison across industries would appear to be of questionable value. On the other hand, comparing ROS among firms in the same industry may, in this limited case, provide useful information of the relative profitability of those firms.

Since ROA or ROE are the preferred measures of profitability, we must now establish a standard against which to compare the calculations for DOD firms or defense lines of business. This standard can be based on similar computations to be performed for the closely related nondefense lines of business of DOD contractors (from DOD questionnaires) as well as those for commercial durable goods manufacturers. The data at the firm level are available from the QFR's, Form 10-K filings with the Securities and Exchange Commission, and Compustat data tapes.

In order to perform profitability comparisons across industries, it is important to calculate rates of return after taxes. It is this after-tax rate of return (or what a firm gets to keep) which determines the firm's ability to pay dividends to shareholders or retain earnings for future investment and expenses. Another reason why it is essential to compute the effective tax treatment of defense contractors is these firms' ability to defer taxes through the completed contract method of accounting, thereby effectively increasing their relative rate of return.

Before profit rates of DOD contractors are compared with nondefense lines of business and firms, however, it is advisable to measure the relative risk of defense and nondefense business. This is important since investors tend to dislike risk and will demand a higher rate of return to

invest in firms or industries with higher risk. The risk of performing defense work may differ from that of nondefense lines of business because there are different sources of risk facing these two sectors of the economy. Whereas profits of nondefense firms are likely to be significantly affected by the business cycle, the profits of defense firms are primarily affected by the size of the defense budget and their share of that budget. The defense industry may experience higher or lower risk than would other lines of business. Since profit comparisons might be misleading without a risk measure being considered, the following approach is suggested.

Although there are several possible risk measures, one method for computing risk in the present context is to calculate the degree of earnings variability (standard deviation) of a given firm over time. This measure of risk should provide increased precision the longer the annual time series is used.

A more recent approach to addressing the issue of risk is the application of the capital asset pricing model (CAPM). This approach focuses on the risk of an individual security and relates it to the overall market portfolio.<sup>1</sup>

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## A Summary of LMI's Results

In chapter V DFAIR provides a summary of the rates of return and risk analyses provided by its consultants, LMI. LMI's analytical approach and data set differed from DFAIR's. They conclude:

"We looked at rates of return for individual companies. We found no differences in market return between defense contractors and commercial companies, with the exception of one group. We also found no differences between defense contractors and commercial companies in the ratio of net income to assets, to equity, or to sales, with the exception of one measure for one group. However, when the return on assets and the return on equity were calculated using cash flow instead of net income, defense contractors showed higher returns than did commercial companies."<sup>2</sup>

Since risk averse investors require a higher rate of return if firms face a higher risk, LMI attempted to measure the relative risk between defense and nondefense firms. The LMI analysis used the standard deviation as

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<sup>1</sup>Burton G. Malkiel, *A Random Walk Down Wall Street*, Fourth Edition, 1985, W. W. Norton Co., New York.

<sup>2</sup>LMI Report (App 2—DFAIR) pp 5-10

its risk variable, and as stated by DFAIR: "The sample of defense contractors never showed more riskiness than the commercial companies, except for one measure for one group. Defense contractors as a whole actually showed less riskiness for all measures except return on sales, where they were comparable to commercial firms." Thus, LMI did not find evidence that those rates of return which were higher for defense firms could be justified by a higher risk.

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## Our Analysis of Defense Profitability

In response to a congressional request, we performed our own analysis of defense profitability using the most complete data set available to us. We did not have access to the confidential data collected by Touche Ross, only the data from corporate financial reports were available. The firm level and segment level data we analyzed was obtained from the COMPUSTAT data base. We did not verify the data we obtained from COMPUSTAT.

A comparison was made between a sample of defense firms and commercial firms for various measures of profitability, similar to the approach used in the LMI study. Since we included 23 firms in our sample that were asked to participate in the DFAIR study but did not, we were also able to examine the profitability of these 23 firms relative to the profitability of the other defense contractors in our sample.

We divided the defense firms by segment, and split our sample into a defense group and a commercial group. We then compared profitability using both a ROS measure and a ROA measure.

The LMI study incorporated 65 defense firms and 149 commercial firms. The time period of the LMI study was 1974-1984, except for the market measure which was 1965-1985. The GAO analysis at the firm level included 84 defense firms and 228 commercial firms. For the LMI defense sample, 35 of the 65 defense firms participated in the DFAIR study. For our study 59 out of the 84 defense firms participated in the DFAIR study. Of the remaining 25 defense firms in our sample, 23 were part of the original 126 firms that were invited but declined to participate in DFAIR. The commercial firms analyzed by us included the same SIC codes used by LMI as well as additional similar industry groups.

For various measures of profitability, we compared our samples of defense firms and nondefense firms for the time period 1975-1983. In a

further attempt to determine the influence of defense business on profitability, we also stratified our defense firms by the percentage of total sales attributed to defense.

As a starting point, we used the same six measures of rate of return (at the firm level) as reported in the LMI study. It should be noted that in contrast to DFAIR, LMI used conventional definitions for its profit measures. We calculated these measures as well as several appropriate extensions with our larger sample of firms. The following presents a summary of LMI's definitions:

1. Net income ROA (after tax income divided by total assets).
2. Net income return on stockholders equity (after tax income divided by stockholders equity).
3. Net income ROS (after tax income divided by total annual sales).
4. Cash flow ROA (after tax income plus annual depreciation, divided by total assets).
5. Cash flow return on stockholders equity (after tax income plus annual depreciation, divided by stockholders equity).
6. Market return (the sum of the annual stock price appreciation plus the annual dividend, divided by the stock price at the beginning of the year).

Table IV.1 presents both LMI's and our results for these six measures of rates of return.

**Table IV.1: Rates of Return for Commercial and Defense Firms**

| Figures in percent                              |              |             |              |             |
|---|--------------|-------------|--------------|-------------|
|   | LMI<br>Comm. | LMI<br>Def. | GAO<br>Comm. | GAO<br>Def. |
| Net income ROA                                  | 5.2          | 6.5         | 5.1          | 5.8         |
| Net income return on stockholders' equity       | 9.2          | 13.3        | 9.9          | 12.8        |
| Net income ROS                                  | 4.6          | 4.7         | 4.0          | 5.7         |
| Cash flow ROA                                   | 7.6          | 10.2        | 9.4          | 11.9        |
| Cash flow return on stockholders' equity        | 15.2         | 22.1        | 20.0         | 26.4        |
| Market return price appreciation plus dividends | 22.5         | 19.6        | 16.5         | 15.9        |

Note: LMI results are for 1974-1984 except market return results are for 1965-1985. Our results are for 1975-1983.



From table IV.1, we, as well as LMI, found the rate of return for the defense sample to be greater than the returns for the commercial sample for all profitability measures except the market return calculation.

In addition, we computed a weighted average ROA, stockholders' equity, and sales for each year. Profitability calculations based solely on simple arithmetic averages can be misleading. For example, if one firm in an industry accounts for 50 percent of industry revenues (or assets, or equity), and has a much higher profit rate than its many smaller competitors, industry profits will appear lower if they are calculated by a simple arithmetic average of the firms. Using a weighted average, this large firm's profit would properly receive a 50 percent weight in the overall industry's profitability computations. The following table shows these results.

**Table IV.2: Profitability Results (1975-83)**  
(Weighted Average by Firm Size)

| Figures in percent  |                  |               |
|---|------------------|---------------|
|   | Commercial firms | Defense firms |
| ROA   | 6.7              | 8.3           |
| ROE   | 10.4             | 12.7          |
| ROS   | 3.7              | 5.4           |
| ROA = [net income + (1-t) interest]/total assets where t = (total tax expense - tax deferral)/pretax income |                  |               |
| ROE = net income/shareholders' equity   |                  |               |
| ROS = net income/sales  |                  |               |

As can be seen from table IV.2, defense firm profitability exceeded the returns to the commercial firms for all three measures. Thus table IV.2 is consistent with the results from the table IV.1, indicating that defense firms appear to be more profitable.

To perform profitability comparisons across industries, it is important to calculate rates of return after taxes (actually paid in a given year). It is this after-tax rate of return (or what a firm gets to keep) which determines the firm's ability to pay dividends to shareholders or retain earnings for future investment and expenses. One reason why it is essential to compute the effective tax treatment of defense contractors is these firms' ability to defer taxes through the completed contract method of accounting.

A recent report issued by the Joint Economic Committee of Congress<sup>3</sup> indicates that defense firms on average pay a much lower effective income tax rate than firms in most other industries. The principal explanation for this outcome is the use of the completed contract method of accounting which permits defense contractors to defer income tax liabilities to a much greater extent than commercial firms. We recently issued a report on the completed contract method of accounting.<sup>4</sup> As a result of this defense contractor tax advantage, it is important to calculate effective tax rates before computing after-tax rates of return. We have performed these adjustments to the Compustat tax data for the firms in our sample.

If an adjustment for tax deferral is made, the effect on defense firms' after tax rates of return is larger than for commercial firms' after tax rates of return. Table IV.3 shows this effect.

**Table IV.3: Profitability Results—With and Without Tax Deferrals**

| Figures in percent |     |           |      |          |
|--------------------|-----|-----------|------|----------|
| 1975-1983          | ROA | ROA (tax) | ROE  | ROE(tax) |
| Defense firms      | 8.3 | 9.8       | 12.7 | 15.7     |
| Commercial firms   | 6.7 | 7.4       | 10.4 | 11.4     |

$$\text{ROA (tax)} = \frac{\text{net income} + (1-t)(\text{interest}) + \text{tax deferral}}{\text{assets}}$$

$$t = \text{corporate income tax rate}$$

$$\text{ROE (tax)} = \frac{\text{net income} + \text{tax deferral}}{\text{stockholders' equity}}$$

The tax deferral is calculated from the firms financial statement

The definitions for ROA and ROE are the same as used in Table IV 2

As can be seen from table IV.3, the adjustment for tax deferrals results in an increase in the relative profitability of defense firms.

We also checked the profitability of the 23 firms that declined to participate in the DFAIR study to determine if their profitability was above or below those firms that did participate. We did not find any difference in the profitability of these two groups. Therefore, it appears that the omission of these 23 firms from DFAIR's analysis would not have affected their results.

<sup>3</sup>Joint Committee on Taxation, Study of 1983 Effective Tax Rates of Selected Large U S Corporations, 1984

<sup>4</sup>Congress Should Further Restrict Use of the Completed Contract Method, (GAO/GGD-86-34, Jan 1986)

Besides checking the relative profitability of defense and commercial firms, we also stratified the defense firms by the percentage of total sales represented by government business to examine whether defense firm profitability increases with this percentage. When we stratified by thirds and using both the ROE (tax) and the ROA (tax) measures, we found that firms with defense contracts accounting for the largest percentage of total sales were the most profitable. This is shown in table IV.4.

**Table IV.4: Profitability as a Percentage of Total Sales**

| Figures in percent |           |           |
|--------------------|-----------|-----------|
| 1975-1983          | ROE (tax) | ROA (tax) |
| Low defense        | 15.4      | 9.8       |
| Medium defense     | 17.0      | 9.6       |
| High defense       | 19.9      | 11.1      |

where ROE (tax) =  $\frac{\text{Net income} + \text{tax deferral}}{\text{stockholders' equity}}$   
 ROA (tax) =  $\frac{\text{net income} + (1-t) \text{ interest} + \text{tax deferral}}{\text{total assets}}$

Low defense = defense sales less than one-third of firm sales  
 Medium defense = defense sales between one-third and two-thirds of firm sales  
 High defense = defense sales more than two-thirds of firm sales

One additional check performed by us was to compare the profitability of defense and nondefense segments of the 84 defense firms in our sample. The two measures of profitability that were used were operating profit/sales and operating profit/assets. As a result of reduced data availability, the time period for the segment analysis was limited to 1979-1984.

The results are presented in Table IV.5.

**Table IV.5: Profitability at the Segment Level for 84 Defense Firms (1979-1984)**

| Figures in percent |                        |                         |
|--------------------|------------------------|-------------------------|
|                    | Operating profit/sales | Operating profit/assets |
| Defense            | 8.5                    | 17.6                    |
| Commercial         | 10.2                   | 11.2                    |

From this table, ROA for the defense segments was 17.6 percent, which is approximately 57 percent higher than the ROA of 11.2 percent for the commercial segments. Although this table also indicates that defense segments have a lower ROS than commercial segments, we believe that ROA is the more desirable measure of profitability.

## Risk

As discussed earlier, investors tend to dislike risk and will demand a higher rate of return from firms facing greater risk. Thus, if it can be shown that one industry is riskier than most others, then an observed higher rate of return for that industry may be needed to attract capital. With this consideration in mind, we analyzed two risk measures—standard deviation and beta. Our results are reported on table IV.6. LMI compares the risk of defense firms, as measured by the standard deviation of their six measures of profitability, to that of commercial firms.

**Table IV.6: LMI Risk Measures**  
(Standard Deviation)

| Figures in percent                        |                  |               |
|---|------------------|---------------|
|   | Commercial firms | Defense firms |
| Net income on assets                      | 5.6              | 2.1           |
| Net income return on stockholders' equity | 18.9             | 7.6           |
| Net income on sales                       | 20.4             | 21.1          |
| Cash flow return on assets                | 5.5              | 2.6           |
| Cash flow return on stockholders' equity  | 18.4             | 7.4           |
| Market return                             | 62.7             | 49.2          |

For all measures except net income on sales, the standard deviation is lower for defense firms than for commercial firms. Therefore, LMI concludes that defense firms are not riskier than commercial firms.

**Table IV.7: Risk Measures** (Standard Deviation)

| Figures in percent                        |                  |               |
|---|------------------|---------------|
|   | Commercial firms | Defense firms |
| Net income on assets                      | 3.2              | 2.2           |
| Net income return on stockholders' equity | 12.2             | 5.1           |
| Net income on sales                       | 2.6              | 2.1           |
| Cash flow ROA                             | 3.2              | 2.2           |
| Cash flow return on stockholders' equity  | 11.2             | 4.8           |
| Market return                             | 37.8             | 31.6          |

According to table IV.7, our results are consistent with LMI's. All of our standard deviations for the defense sample are below those for the commercial firms. The implications of these results is that defense firms appear to be less risky than commercial firms.

Next, we calculated a second measure of risk, that is, the average beta for firms in each of our two groups. The average beta for defense firms, 1.099, was almost identical to that of commercial firms, 1.091.

Therefore, using this measure, it does not appear that there is a substantial difference in risk between defense and commercial firms. This is the basic conclusion reached by DFAIR.

We have concluded that our results, based on the standard deviation and beta, indicated that defense firms are not riskier than commercial firms and, therefore, would not require a higher rate of return.

## Relative Profitability of Defense Contractors in the 1970s

One of DFAIR's conclusions is that defense contractors and commercial firms were equally profitable during 1970-79. Our analysis at the firm level covered 1975-1983. Until this point, we have represented only our results for the entire period. However, we also performed an analysis of relative profitability for the subperiods 1975-79 and 1980-83, respectively. By examining our data for the 1975-79 period, it can be determined if our results are consistent with DFAIR's conclusion.

Analyzing our sample of 84 defense firms and 228 commercial firms, our results are presented for both the 1975-79 and the 1980-83 time periods.

**Table IV.8: Relative Profitability of Defense Versus Commercial Firms**

|   | 1975-79 |            | 1980-83 |            |
|---|---------|------------|---------|------------|
|   | Defense | Commercial | Defense | Commercial |
| ROA   | 8.1     | 6.6        | 7.9     | 5.0        |
| ROA (tax)   | 9.4     | 7.3        | 9.7     | 5.7        |
| ROE   | 13.8    | 11.7       | 11.3    | 8.7        |
| ROE (tax)   | 16.5    | 12.8       | 14.6    | 9.8        |
| ROS   | 6.0     | 4.2        | 4.8     | 3.2        |
| ROS (tax)   | 7.3     | 4.9        | 6.5     | 4.2        |
| ROA = [net income + (1-t) interest]/total assets                      |         |            |         |            |
| ROA (tax) = (net income + (1-t) interest + tax deferral)/total assets |         |            |         |            |
| ROE = net income/stockholders' equity                                 |         |            |         |            |
| ROE (tax) = [net income + tax deferral]/stockholders' equity          |         |            |         |            |
| ROS = net income/sales  |         |            |         |            |
| ROS (tax) = [net income + tax deferral]/sales                         |         |            |         |            |

As can be seen from table IV.8, the profitability of defense firms exceeded that of commercial firms for each of the six measures over each time period 1975-79 and 1980-83.

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Therefore, the results from table IV.8 do not support the DFAIR conclusion that defense firms were about as profitable as comparable commercial firms during the 1970s. Our results, along with those of LMI, suggest instead that defense firms were more profitable.

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## Conclusions

We used several measures of profitability to compare the defense industry with commercial durable goods manufacturers. During this study (1975-1983), it appeared that defense contractor profitability was consistently and substantially higher than that of both nondefense firms as well as commercial segments of defense firms. Furthermore, our analysis of relative risk over the 9 year period indicated that defense contractors were not riskier than commercial firms and, therefore, did not require a higher rate of return.

The conclusions of this appendix only partially confirm those reported by DFAIR. Although DFAIR concludes that defense firms were more profitable than commercial firms for 1980-83, and there was no evidence of defense firms being riskier than commercial firms over the entire period of their study (1975-1983), they state that the profitability of defense and nondefense firms was approximately equal in the 1970s. We, by contrast, found that defense firms were substantially more profitable than commercial firms during both 1975-79 and 1980-83.

# Defense Contractor Investment

## Introduction

The Congress is concerned as to whether DOD's contract pricing, financing, and profit policies are encouraging defense firms to operate in the most efficient manner. Put differently, are defense contractors satisfying the procurement needs of DOD at minimum total cost? The question is too complex to be answered directly; instead, it must be approached by looking at indirect or intermediate measures of contractor behavior. In effect, the debate focuses on the validity of an alternative hypothesis about (1) whether past DOD contracting and profit policies might have encouraged inefficient production methods and (2) whether recent changes in these policies are likely to lead to contractor behaviors that are closer to those desired.

Approximately 90 percent of DOD expenditures on negotiated contracts covers incurred costs while the remaining 10 percent provides profits for defense firms. Therefore, if modifications of DOD payment policies encourage contractors to become more efficient by substituting capital for labor and thereby reducing incurred costs by 10 percent, DOD could lower its overall expenditures by 9 percent. By contrast, a parallel 10 percent reduction in contractor profits would save only 1 percent of total defense expenditures. This example clearly illustrates that the relative cost savings to DOD by encouraging contractor investment and efficiency are substantial.

Beginning in the mid-1970s, DOD introduced a series of modifications in the practices and procedures for reimbursing defense contractors. These changes were predicated on the assumption that pre-1976 contracting policies encouraged under-facilitization (or insufficient use of capital) in the production process, given the then current technology and the relative market prices of capital and labor inputs purchased by contractors. The adjustments in DOD policies were intended to increase facilitization by: (1) changing contract pricing procedures to increase the relative reward associated with substituting capital for labor, and (2) increasing the resources available to defense contractors to finance capital acquisitions.

The primary disincentive to defense contractor investment is the cost-based nature of DOD procurement policies. According to DFAIR:

"the current markup (profit) policy has been approximately 70 percent cost-based and 30 percent investment based since DAC 76-23 was issued. Thus, even though DAC 76-23 increased rewards to investment when it was introduced in 1980, contractors could see their profits decline if this investment results in a sufficient reduction of labor expenses (the major component of their "70 percent cost-based" payment) "

## Review of Past Studies of Defense Contractor Investment

During the past 15 years, we have issued several reports examining investment in the defense industry. In a 1971 study<sup>1</sup> we expressed concern over the inadequate incentives for contractor investment. We stated,

" . . . by relating profits to costs, contractors in noncompetitive situations are not provided with positive incentives to make investments in equipment that would increase efficiency and result in reduced costs, . . . such investments tend to lower, rather than increase, profits in the long run "

Our 1977 report<sup>2</sup> which reviewed the Profit '76 study concurred with DOD's recommended policy revisions encouraging contractors to increase investment in capital assets so as to reduce production costs. We noted,

" . . . approximately 90 percent of the prenegotiation profit objective is still based on costs. Since the higher dollar profit results from a higher cost estimated, it is questionable whether contractors will be sufficiently motivated to reduce their costs "

In a 1979 study of defense industry investment<sup>3</sup>, we stated,

" . . . cost reducing investments have not been made primarily because too much emphasis is still placed on estimated contract costs in establishing profit objectives " Also, "GAO believes that the emphasis given to capital investment must be substantially increased if desired results are to be achieved "

The Air Force, in its Profit '82 report, concluded:

"Our study revealed that capital investment within the defense industry has increased. Yet, we also found that such investment was still proportionately less than that attained in the commercial sector " "In spite of the DPC 76-3 revisions emanating from the Profit '76 study, capital investment as a percentage of total cost, did not change during the 1977-81 period . . . the capital employed profit was far too small, and the method of establishing capital employed on a given contract was too indirect."

Finally, in 1985, both the DFAIR report and a companion study by consultants to the Defense Department<sup>4</sup>, LMI, addressed this issue. The next two sections of this chapter will discuss and evaluate those findings.

<sup>1</sup>Defense Industry Profit Study (Mar 17, 1971, GAO, B 159896)

<sup>2</sup>Review of Profit '76, Feb 17, 1977, (GAO/PSAD-77-75)

<sup>3</sup>Recent Changes in the Defense Department's Profit Policy—Intended Results Not Achieved (GAO/PSAD-79-38, Mar 8, 1979)

<sup>4</sup>Logistics Management Institute, Facilities Capital As a Factor in Contract Pricing, May 1985



## DFAIR's Results on Contractor Investment

The principal measure used by DFAIR to examine defense contractor investment was the facilities capital employed/sales ratio. Table V.1 reports DFAIR's results for the years 1975 and 1983.

Table V.1: Facilities Capital Employed/Sales (DFAIR Study)

|                             | 1975  | 1983  |
|-----------------------------|-------|-------|
| DFAIR defense business      | 8.63  | 12.92 |
| Durable goods manufacturers | 20.10 | 23.17 |

Source: Data for defense business was derived from the Touche Ross survey. Data for durable goods manufacturers was derived from Quarterly Financial Reports.

DFAIR's conclusions with respect to defense contractor investment contradicts much of LMI's findings on this subject. According to DFAIR,

"The defense sector has become more capitalized in the last nine years as evidenced by the increase in the FCE (facilities capital employed) to sales ratio. It still does not use as much facilities capital per dollar of sales as does the non-defense sector, but its rate of increase has been substantially higher than the non-defense sector, and much more consistent." Also: "The mix of capital expenditures has changed over the sample period to some degree, with building expenditures increasing at the expense of equipment."

DFAIR relied upon the Touche Ross data for its measure of investment by defense firms, and the Census of Manufacturers for its nondefense firm measure.

## LMI's Results

LMI primarily relied on the facilities capital employed/sales ratio to examine defense contractor capital intensity. Table V.2 presents the results that LMI reports for 1978 and 1982.

Table V.2: LMI's Facilities Capital Employed/Sales

| Figures in percent   | Defense Firms |       |
|--|---------------|-------|
|  | 1978          | 1982  |
| Profit '82 Sample (Air Force Profit Study performed in 1982) | 5.76          | 9.74  |
| LMI Sample   | 13.51         | 14.14 |
| Combined Profit '82 and LMI Samples                          | 10.79         | 12.69 |

Source: LMI relied primarily on cost of money factor forms to calculate facilities capital employed.

LMI also calculated growth rates for both facilities capital employed and sales. They concluded that the rate of growth of defense contractor investment has lagged that of comparable durable goods manufacturers since the mid-1970s. Their conclusion contradicts DFAIR. LMI states,

"since 1976 . . . the amount of facilities capital used in relation to the amount of defense business increased by about 4 percent a year, indicating that the new pricing policies do encourage investment in facilities capital. But manufacturers of durable goods economy-wide increased their relative use of facilities capital by about 7 percent a year, showing that defense contractors still lag behind."

However, LMI obtains a similar result to DFAIR's with respect to an increasing percentage of annual defense capital expenditures being devoted to buildings at the expense of machinery and equipment.

There is another contradiction between the DFAIR report and the LMI study regarding the effect of the changes in profit policy upon investment. Quoting DFAIR, "The rate of change in capital investment (of defense contractors) has been driven by factors other than DOD markup policy." However, the LMI study stated, "The amount of facilities capital used in relation to the amount of defense business increased by about 4 percent a year, indicating that the new pricing policies do encourage investment in facilities capital."

To calculate defense firm investment, LMI primarily relied on "Cost of Money Factor" forms used by DOD to pay a business' or segment's cost of money pursuant to CAS 414. Quarterly Financial Reports were used to provide data on investment by comparable durable goods manufacturers.

Finally, LMI evaluated alternative types of policies to encourage cost reductions. They conclude, "By further lowering the importance of cost and raising the importance of capital in determining profit, DOD can increase a contractor's incentive to invest in facilities capital."

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## A Theoretical Approach to Measuring Investment and Efficiency

In order to make judgments about the relative use of capital and labor in the defense industry, consideration should be given to (1) an ideal measure of capital intensity if internal corporate data were available, (2) a meaningful measure of capital use that could be calculated from publicly available data, and (3) a standard against which the measure of capital intensity in the defense industry can be compared.

An ideal measure of the capital intensity of a specific line of business is the capital-to-labor ratio. Theoretically, capital would be measured by the market value of the property, plant, and equipment of a line of business. Given the unavailability of this data, capital could be represented by the book value of "net property, plant, and equipment" associated

with that line of business. Similarly, "total labor expenses" would ideally be used as a measure of "L" by line of business. Unfortunately, the above data for both capital and labor are publicly available only at the corporate level.

To obtain the capital-to-labor ratio for defense and nondefense firms, Form 10-K filings with the Securities and Exchange Commission provide both the book values of net property, plant, and equipment and total labor expenses at the corporate level. This information is also readily accessible from COMPUSTAT data tapes.

Since commercial durable good manufacturing lines of business of defense firms are likely to use similar technologies as the defense work, and these nondefense lines are likely to be disciplined by the marketplace to operate in the most efficient manner (i.e., produce at minimum cost) a calculation of capital/labor ratios for these lines would provide a standard or benchmark for an optional capital-to-labor ratio. To compare the capital intensity measure for defense business with other closely related lines of business would, therefore, provide an indication of whether DOD contractors are utilizing their factor inputs of capital and labor in approximately the same ratio. If capital/labor ratios for defense work is significantly below that for commercial work, this would suggest that the contractor may not be facing the proper incentives to minimize cost by incorporating the same capital/labor mix that is used in commercial work.

An alternative standard against which to compare capital intensity is to calculate capital/labor ratios for nondefense firms. This information is readily available from the previously mentioned 10-Ks. Once again, a comparison of K capital/labor ratios for defense firms with this ratio for durable goods manufacturers can provide information on whether defense contractors are operating close to the optimal capital intensity level and, therefore, minimizing total cost.

Since questions have been raised about the relative capital intensities between defense and related nondefense lines of business, both in the mid-1970s and today, these calculations and comparisons should be made for the two time periods. If defense contractors in the mid-1970s exhibited capital intensities that were significantly below those of the comparison commercial lines of business, then it would appear that under capitalization was a problem at that time. If similar comparisons today indicate an elimination or reduction in the difference between

these sets of ratios, then there would be evidence that DOD policy modifications since the mid-1970s have at least partially achieved their intended purpose.

It is important to note, however, that where possible, several adjustments, which were not made by DFAIR or LMI, should be made to the capital/labor (or capital/sales ratios) calculations. First, defense contractors frequently use government-owned facilities. Where this occurs, it would be necessary to estimate a book value (available from the Touche Ross questionnaires) for these facilities and then include the estimate in the calculation of capital for that firm. Second, the capital-to-labor ratio may vary by product mix for defense firms. That is, the production process for some equipment is less capital intensive than others. Therefore, it would be of interest to compare capital/labor ratios across defense contractors to establish whether there is a wide variance in this measure. If there is a large dispersion in capital/labor values (holding contract type constant) then there would be an indication that DOD products and the technologies required to manufacture them are too heterogeneous to be lumped into the same category. For example, optimal capital/labor ratios may differ greatly in the production of aircraft versus the manufacture of defense electronics. This problem would raise questions as to the usefulness of overall capital/labor comparisons across firms.

A third concern that should be examined is the "capacity utilization" of a firm's capital. For example, if firm A and firm B are identical in all respects except that firm A utilizes its capital during one 8-hour shift a day, while firm B hires additional labor for a second 8-hour shift, the capital/labor ratio for firm B would be lower than that of Firm A (unless an appropriate adjustment is made).

Finally, another consideration in comparing pre-1976 DOD contractor capital/labor ratios with those of today is the different technologies available. Since production technologies have changed over time, so might optimal capital-to-labor ratios.

Thus, before capital/labor (or capital/sales) ratios can be properly calculated and compared across firms, industries, and time, one should control for each of the above concerns.

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## Our Results

DFAIR examined the capital intensity as well as the capital investment undertaken by defense contractors. The issue of the capital intensity of

defense contractors was considered important by DFAIR because of previous concern that defense contractors were under capitalized and as a result were inefficient. If they were inefficient, procurement costs would be higher than necessary and taxpayers' money would be wasted. Since we did not have access to the Touche Ross data, we conducted an analysis of capital intensity at the firm level during 1975-1983, relying on the COMPUSTAT data base. There were 84 defense firms and 228 nondefense firms in our sample. Two measures of capital intensity were used: (1) capital/labor ratio and (2) capital/sales ratio. As discussed in the previous section, we prefer the capital/labor ratio to serve as the most reliable measure of capital intensity. However, only 25 percent of the firms in our sample could be used to calculate this ratio since only that percentage of firms report labor expense. Because of this low response rate and since DFAIR and LMI relied on a capital/sales ratio in their investment comparisons, we also examined this measure.

It should be noted that the primary reason for preferring a capital/labor ratio to a capital/sales ratio is that the former provides a measure of the relative use (and, therefore, efficiency) of two inputs (capital and labor), while the latter is a ratio of an input (capital) to output (sales). Furthermore, sales do not depend solely on input costs, but also on the price received for the end products.

In addition to the above calculations, we stratified the defense sample by the percentage of each firm's total sales represented by defense. The purpose of this exercise was to examine how investment varied with the degree of defense business.

Since we did not have access to the Touche Ross data, no adjustments could be made to account for government owned facilities as discussed in Section V. In addition, no data were available to GAO with respect to "capacity utilization" and how capital/labor ratios varied with specific technologies. (It is important to note that none of these adjustments were made by either DFAIR or LMI.)

Table V.3 summarizes our results.

**Table V.3: Capital/Labor Ratios (1975-1983)**

|                  | Capital/labor |           |           | N |
|------------------|---------------|-----------|-----------|---|
|                  | (1975-1983)   | (1975-79) | (1980-83) |   |
| Defense firms    | 2 755         | 2 817     | 2 677     | 4 |
| Nondefense firms | 3 115         | 2 956     | 3 314     | 6 |

<sup>a</sup>N=Number of firms reporting capital/labor ratios

From table V.3, capital intensity as represented by the capital/labor ratio, is lower for defense firms than nondefense firms over the entire period of 1975-1983. Furthermore, the disparity between these two sectors appears to be widening, with a larger difference occurring between 1980-83 than for the earlier time period of 1975-79. These results indicate that nondefense firms in the early 1980s have been increasing investment relative to labor at a faster rate than have defense contractors.

Next, table V.4 presents capital/labor ratios for our sample of defense firms.

**Table V.4: Capital/Labor Ratios for Defense Firms**

|                             | 1975-83 | 1975-79 | 1980-83 | N  |
|-----------------------------|---------|---------|---------|----|
| Low defense <sup>b</sup>    | 2 964   | 3 020   | 2 894   | 28 |
| Medium defense <sup>c</sup> | 1 846   | 1 753   | 1 961   | 8  |
| High defense <sup>d</sup>   | 1 468   | 1 470   | 1 464   | 4  |

<sup>a</sup>N = number of firms in each category

<sup>b</sup>Low defense = firm's defense sales are less than one-third of total sales

<sup>c</sup>Medium defense = firms's defense sales are between one-third and two-thirds of total sales

<sup>d</sup>High defense = firms's defense sales comprise more than two-thirds of total sales

From table V.4, as the percentage of a firm's total sales represented by defense increase, capital intensity (capital/labor ratio) declines. This relationship appears to hold over the entire period of 1975-1983.

Table V.5 summarizes the calculations for the capital/sales ratio.

**Table V.5: Capital/Sales Ratios for 1975-1983**

|                  | 1975-1983 | 1975-79 | 1980-83 | N <sup>a</sup> |
|------------------|-----------|---------|---------|----------------|
| Low defense      | 1 0285    | 1.0129  | 1 0480  | 53             |
| Medium defense   | 0 6702    | 0 6562  | 0 6877  | 17             |
| High defense     | 0 5791    | 0 5966  | 0 5571  | 12             |
| Defense firms    | 0 9731    | 0 9627  | 0 9860  | 84             |
| Nondefense firms | 0.8226    | 0 8125  | 0 8352  | 228            |

The results from table V.5 are generally consistent with those from table V.4. As the percentage of a firm's defense business increases, its capital intensity (capital/sales ratio) declines. Furthermore, defense contractors with more than one-third of their revenues derived from DOD had low capital/sales ratios than nondefense firms over the 1975-1983 time period. The reason that our total sample of defense firms had higher capital/sales ratios than the nondefense firms is because our defense sample is dominated by "Low Defense" firms. Finally, as reported in Profit '76 the percentage of total defense contractor assets owned by the government was very small and, therefore, would be unlikely to provide a significant explanation for the lower capital/labor or capital/sales ratios of these firms.

## Conclusions and Policy Recommendations

Our results and policy recommendations are in general agreement with LMI's and contradict DFAIR's. Relying on two different measures of investment, we conclude that although defense contractor investment has increased over the time period 1975-1983, it has lagged the corresponding rate of increase for nondefense firms. Therefore, defense firms continue to exhibit low relative investment as compared to nondefense firms and the gap appears to be widening. Moreover, as a percentage of a firm's total sales represented by defense increases, its relative investment declines.

# Touche Ross and Company Return on Assets Analyses

**Table VI.1: Exhibit VI-7 Operating Profit to Total Assets** (Assets Reduced by Progress Payments)

Figures in percent

|               | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 9-y<br>averag |
|---------------|------|------|------|------|------|------|------|------|------|---------------|
| Durable goods | 12.3 | 16.5 | 18.2 | 17.5 | 14.6 | 11.0 | 12.4 | 8.6  | 10.2 | 12            |
| DFAIR         | 18.9 | 20.7 | 23.6 | 13.2 | 20.8 | 18.8 | 22.7 | 25.0 | 28.8 | 22            |

Source: Bureau of Census  
DFAIR

**Table VI.2: Exhibit VI-2 Operating Profit to Total Assets** (Assets Not Reduced by Progress Payments)

Figures in percent

|               | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 9-y<br>averag |
|---------------|------|------|------|------|------|------|------|------|------|---------------|
| Durable goods | 12.0 | 16.0 | 17.7 | 17.0 | 14.2 | 10.6 | 11.9 | 8.2  | 9.2  | 12.           |
| DFAIR         | 9.1  | 9.9  | 10.8 | 5.9  | 9.2  | 8.2  | 10.2 | 10.8 | 11.9 | 10            |

Source: Bureau of Census  
DFAIR



# Touche Ross and Company Data Verification

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The data collected for the DFAIR report was subject to verification, editing, and validation procedures developed by Touche Ross and Company. The following is taken from the Touche Ross report to DOD and briefly describes those procedures.

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## Quality Control Procedures

### A. Certified Public Accountant Review

In order to achieve an acceptable level of assurance that the submitted data are reflective of the contractor's financial operations, submissions had to be accompanied by a report of the contractor's Certified Public Accountant. The Certified Public Accountant report stated that based on the procedures they applied, they became aware of no information that would cause them to believe that any material adjustments were required to the information submitted by the contractor. For those contractors included in the analysis, the Certified Public Accountant reports received were without any qualifications or exceptions.

The recommended review program for the contractor's outside accountants and their review letter are provided in attachments III and IV, respectively, in the data collection package in appendix V (of the Touche Ross report).

### B. Data Editing and Validation

The data submitted for inclusion into the survey were subjected to a series of manual and automated edit and review procedures. Any inconsistencies and questions were resolved with the contractor and the contractor's Certified Public Accountant before the data were incorporated into the final database. Appendix II (of the Touche Ross report) provides the detailed procedures for both the manual and automated edit and review processes performed by Touche Ross.

### C. Follow-up Procedures

To resolve questions that were identified during the edit process, Touche Ross contacted the contractor and the contractor's Certified Public Accountants to resolve all issues. Explanations and corrections were reviewed, and the appropriate adjustments were made to the data. Corrections and explanations were documented and verified with the contractor and Certified Public Accountant.

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The contractors' Certified Public Accountant firms applied the Touche Ross procedures to the contractor data and sent Touche Ross a letter indicating their position on the data. The following are excerpts taken from three of those letters.

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Letter A

Because the procedures outlined in the attached review program do not constitute an examination made in accordance with generally accepted auditing standards, we do not express an opinion on any of the Department of Defense DFAIR data collection forms. In connection with the procedures referred to above, no matters came to our attention that caused us to believe that any material adjustments are required to the information presented in the data collection forms. Had we performed additional procedures, or had we made an examination of the data collection forms in accordance with generally accepted auditing standards, matters may have come to our attention that would have been reported to you. This report relates only to the data collection forms specified above and does not extend to the financial statements of Corporation . . . or its components, taken as a whole.

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Letter B

Because the specified procedures referred to above do not constitute an examination in accordance with generally accepted auditing standards, we express no opinion on the data collection forms of the segments listed above of Corporation . . . for the nine-year period ended . . . either taken as a whole, or with respect to any specific item, to which the procedures relate. However, based on the procedures we have applied, as designated above, we have no information that would cause us to believe that any material adjustments are required to the information presented in the accompanying forms, other than as presented hereto as Attachment B, Results of Procedures. Furthermore, there can be no assurance that these limited procedures would reveal matters of significance with respect to the data to which the procedures were applied nor that subsequent events have not had a material effect on such data. Had we performed additional procedures or had we made an examination of the data collection forms in accordance with generally accepted auditing standards, other matters might have come to our attention that would have been reported to you and our conclusions as to the matters described herein might have been different.

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Letter C

Because the above procedures do not constitute an examination made in accordance with generally accepted auditing standards, we do not

express an opinion on the accompanying data collection forms. In connection with the procedures referred to above, no matters came to our attention that caused us to believe that the data collection forms might require adjustment. Had we performed additional procedures or had we made an examination of the data collection forms in accordance with generally accepted auditing standards, other matters might have come to our attention that would have been reported to you. This report relates only to the accounts and items specified above and does not extend to any financial statements of . . . taken as a whole.

# Deputy Secretary of Defense, May 27, 1986, Memorandum: Findings, Recommendations, and Decisions

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The 17 reform areas, with the DFAIR recommendations and Deputy Secretary of Defense decisions, are as follows:

1. Interest expense

DFAIR finding:

Contractor interest expense, although ordinary and necessary to the conduct of defense business, should not be an allowable contract cost.

DFAIR recommendation:

Contractor interest expense should continue to be an unallowable cost on defense contracts. Alternatively, if interest was made an allowable cost and no progress payments were provided, contract prices would increase roughly 10 percent (at 8 percent interest).

Deputy Secretary of Defense decision:

Continue to make interest an unallowable cost and alternatively handle through the combination of DOD's progress payment and profit policies.

2. Contract Financing and Profit Policy Integration

DFAIR finding:

DOD's contract financing and profit policies are not sufficiently integrated.

DFAIR recommendation:

The profit policy should be revised to provide explicit (not implicit) recognition of the cost of contractor financing and the amount of progress payments furnished by the government. This would be accomplished by decreasing the amount of profit presently awarded for contract cost risk and using that decrement for the new financing factor (zero-sum adjustment overall). The amounts to be subtracted from cost risk and added as a financing factor would be affected by decisions made on other recommendations. At this point, only the conceptual framework is being considered. The alternative is to keep policies separate and react to economic conditions through policy changes.

Deputy Secretary of Defense decision:

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Revise profit policy to integrate contractor financing, government-furnished progress payments, and changes in the interest rate.

### 3. Balance Between Profit and Progress Payments

DFAIR finding:

Current DOD progress payment and profit policies are not balanced enough to compensate contractors for financing requirements.

DFAIR recommendation:

There are three alternatives for balancing the profit and progress payment policies:

- 1: Set profit recognition at 2 percent and the progress payment rate at 85 percent. (DFAIR recommendation).
- 2: Leave progress payment rate at 80 percent and adjust profit recognition to offset increased cost to contractor.
- 3: Leave the progress payment rate at 80 percent and do not provide offsetting increase to profit. This would reduce profit objectives by roughly 0.5 percent of total costs.

Deputy Secretary of Defense decision:

Leave progress payment at 80 percent and do not provide offsetting increase to profit objective.

### 4. Foreign Military Sales Progress Payments and Profit

DFAIR finding:

The progress payment rates authorized on foreign military sales contracts are too high and should be the same as rates used on domestic defense contracts.

DFAIR recommendation:

Remove the differential between foreign military sales contracts and recognize unique risks within normal profit factors.

Deputy Secretary of Defense decision:

Remove differential in progress payment rates and recognize unique risks within normal profit factors.

5. Economic Price Adjustment Clause

DFAIR finding:

DOD has not effectively used economic price adjustment clauses during periods of substantial economic uncertainty.

DFAIR finding:

Economic Price Adjustment clauses should be used on all large dollar contracts whose period of performance is 3 years or longer. Alternatively, Economic Price Adjustment coverage could be left to case-by-case analysis.

Deputy Secretary of Defense decision.

Economic price adjustment clauses should be used for major elements of direct costs on all large dollar contracts whose period of performance is 3 years or longer. Policy needs to reflect pricing uncertainties that exist during periods of rising and declining inflation.

6. Small Business Customary Progress Payment Rate

DFAIR finding:

The differential between the progress payment rate for large and small businesses should be narrowed.

DFAIR recommendation:

DFAIR recommended restoring the 5 percent differential with the resultant progress payment rate dependent on the progress payment rate for large businesses. The alternative is to keep the differential at 10 percent.

Deputy Secretary of Defense decision:

Restore small business progress payment rate differential to 5 percent.

7. Flexible Progress Payments

DFAIR finding:

The flexible progress payment rate policy needs to be more closely calibrated with the standard progress payment rate.

DFAIR recommendation:

DFAIR recommend that the minimum level of contractor investment for computing flexible progress payments be set at 100 percent minus the standard progress payment rate. This was equated to 15 percent because the recommended standard progress payment rate was 85 percent.

Deputy Secretary of Defense decision:

Set minimum level equal to 100 percent minus the standard progress payment rate.

8. Progress Payment Frequency

DFAIR finding:

The current DOD policy for making progress payments no more frequently than monthly is reasonable.

DFAIR recommendation:

Contractors should be allowed progress payments on a basis no more frequently than monthly. The alternative is to return to a biweekly frequency.

Deputy Secretary of Defense decision:

Leave payment frequency at monthly.

9. Timing of Invoice and Financing Payments

DFAIR finding:

DOD's policies on timing of payment need to be revised.

DFAIR recommendation:

Invoice payments should not be made until 30 days after receipt of contractor invoice or government acceptance of related goods and services, whichever occurs later. Contract financing payments should continue to be made as expeditiously as possible, normally within 5 to 10 days after receipt of a progress payment request by the disbursing officer, but not earlier than 5 days.

Deputy Secretary of Defense decision:

For invoice payments: establish 30-day payment policy.

For contract financing payments retain payment policy of 5 to 10 days, but not before 5 days. This is subject to disbursing office's ability to accommodate such payment terms.

#### 10. Milestone Billings

DFAIR finding:

Milestone billing arrangements for long-term contracts with deliveries at the end of the contract need to be reinstated.

DFAIR recommendation:

Restore milestone billings to include partial profit payment.

Deputy Secretary of Defense decision:

Restore milestone billings and include partial profit payment.

#### 11. Simplification of Weighted Guidelines Method

DFAIR finding:

The weighted guidelines method should be simplified.

DFAIR recommendation:

DFAIR recommended reducing the number of profit factors and narrowing the range of the factors. There are other alternatives to the DFAIR recommendation.

- Keep current profit factors and current weight ranges.



- Keep current profit factors and narrow the weight ranges.

Deputy Secretary of Defense decision:

Reduce the number of profit factors and narrow the weight ranges.

#### 12. Defense Acquisition Circular 76-23

DFAIR finding:

The current weighted guidelines method 3-column approach for developing profit objectives is confusing and a disincentive to investment in capital assets. This approach also caused an unintended increase of 0.5 percent to 1 percent points in profit objectives.

DFAIR recommendation:

Rescind Defense Acquisition Circular 76-23 and adopt a single policy for all types of contract effort. This would reduce profit objectives 0.5 percent to 1 percent points. The alternative would be to keep the current multicolumn approach.

Deputy Secretary of Defense decision:

Rescind Defense Acquisition Circular 76-23 and establish a uniform method for manufacturing, research and development, and services.

#### 13. Contract Risk

DFAIR finding:

The current contract risk factor does not include consideration for risk relating to contract period of performance or contractor share of cost risk in incentive type contracts.

DFAIR recommendation:

Adjust the risk factor to recognize the effect of length of contract and establish a direct link between risk and the contractors' cost share ratio. The alternative would be to continue to recognize contract length and contractor's share of cost risk implicitly in the contractor risk factor.

Deputy Secretary of Defense decision:

For contract length, recognize contract length as a factor in determining profit objectives. This will redistribute profit objective amounts between short and long-term contracts.

For incentive (cost share of overruns and underruns) contracts, recognize the link between risk, and the contractors cost share of overruns and underruns. This will redistribute profit objectives for incentive type contracts by degree of cost risk sharing.

**14. Profit on Facilities Capital Employed**

DFAIR finding:

Current profit policy provides equal reward to all fixed assets regardless of their contribution to potential productivity increases.

DFAIR recommendation:

Establish a lowest-to-highest priority in the factors for fixed assets (as applied to net book value of capital assets employed):

**Table VIII.1: Profit on Facilities Capital Employed**

| Figures in percent |                       |                          |         |
|--------------------|-----------------------|--------------------------|---------|
|                    | <b>Current factor</b> | <b>Possible revision</b> |         |
| Land               | 16 - 20               | 0 - 0                    | Lowest  |
| Furniture/fixtures | 16 - 20               | 4 - 8                    |         |
| Buildings          | 16 - 20               | 6 - 10                   |         |
| Equipment          | 16 - 20               | 16 - 20                  | Highest |

This will result in a decrease in capital employed profit objectives for all contractors and an even larger decrease for contractors who do not have significant investments in equipment. The alternative would be to provide the same profit factor for all assets.

Deputy Secretary of Defense decision:

Establish factors for capital employed in relationship to the potential for cost reduction. Land should have the lowest factor and equipment the highest factors.

15. Profit on Indirect Expenses

DFAIR finding:

The profit recognition for indirect expenses (overhead and general and administrative expense) should be reduced.

DFAIR recommendation:

DFAIR recommended eliminating general and administrative expenses from the cost base for determining the profit objective and reducing profit factors for overhead.

Deputy Secretary of Defense decision:

Eliminate general and administrative expense from the cost base for determining the profit objective and reduce factors for overhead by 50 percent.

16. Special Factors

DFAIR finding:

Special factors in the current policy are rarely used and appear to be used as "fillers" to generate extra profit objective dollars.

DFAIR recommendation:

Remove the special profit factors from the profit policy. This will result in a minimal decrease in profit objectives.

Deputy Secretary of Defense decision:

Remove the special factors.

17. Cost Accounting Standard 414, Cost of Money on Facilities Capital

DFAIR finding:

Cost Accounting Standard 414, "Cost of Money as an Element of the Cost of Facilities Capital", and DOD Federal Acquisition Regulation Supplement 30.70, "Facilities Capital Employed for Facilities in Use", have not caused a significant increase in profits.

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**Appendix VIII  
Deputy Secretary of Defense, May 27, 1986,  
Memorandum: Findings, Recommendations,  
and Decisions**

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**DFAIR recommendation:**

**Cost of money should continue to be treated as an allowable cost.**

# GAO Comments on the September 18, 1986, Proposed DOD Profit Policy

**GAO**

United States  
General Accounting Office  
Washington, D.C. 20548

National Security and  
International Affairs Division

November 12, 1986

Lieutenant Colonel Richard J. Wall, USAF  
Chairman, Joint Implementation Committee  
ODASD(P)/CPF  
Room 3D1082, Pentagon  
Washington, D.C. 20301-3062

Dear Colonel Wall.

Because of GAO's continuing interest in DOD profit policy, and in view of our soon to be released report on DFAIR, we are providing the following comments on the proposed DOD profit policy published in the Federal Register of September 18, 1986.

DOD profit policy is a subject that is extremely complex and involves significant amounts of money. Experience shows that when a policy, such as this one, is adopted it remains in place, substantially unchanged, for an extended period of time. For that reason, we believe that DOD should not implement this new policy until it has access to, and can evaluate, the DOD Form 1499 data for fiscal years 1984 and 1985 and can assure the Congress that the proposed policy will result in appropriate levels of profit.

Although the lack of analysis of current data is a concern to us, the proposed policy has some beneficial aspects. These comments will address those aspects of the proposal that we believe are beneficial as well as our concerns about the new policy.

#### The Proposed Policy Gives More Emphasis to Facilities Capital Investment

In general, the concept of placing more emphasis on investment, rather than cost, proposed by DOD has merit. The use of profit to stimulate efficient contract performance has long been espoused as the policy of the Department of Defense. Most agree that higher utilization of productivity enhancing equipment produces increased efficiency and lower overall costs. To this end, and after a long study, DOD implemented a new profit policy, Defense Procurement Circular (DPC) 76-3, which took effect October 1, 1976. DPC 76-3 embodied a major change in the emphasis of DOD's profit policy. It was designed to place less emphasis on cost in determining profit and, for the first time, recognize investment in facilities capital as a major profit

determinant. In a 1979 report evaluating the effectiveness of the new policy, GAO recommended that to improve the policy's effectiveness, the emphasis placed on capital facilities investment should be increased and the emphasis placed on cost should be further decreased.

We continue to believe that it would be beneficial to place more emphasis on facilities investment and less emphasis on cost as profit determinants in DOD's profit policy. The proposed policy certainly meets those two criteria. However, whether the specific details of the DOD proposal are precisely those that should be implemented will require further study and analysis. Some of the specifics of the proposal will be discussed later in this letter.

DOD's Proposal Decreases  
Emphasis on Cost

Although the proposal reduces the consideration of cost in profit determination, cost does play a part in the calculations. The DOD proposal eliminates material, labor, overhead, and general administrative costs as specific factors to which profit is assigned. Having eliminated those cost elements as profit factors, it could be said that this approach entirely eliminates contract cost as a profit determinant. However, the profit objective to be awarded for contract type risk and performance risk is calculated as a percentage of total estimated contract cost. Therefore, cost does continue to play some part, albeit a much reduced part, in the determining of profit objectives.

Implementation is Practical

Retaining the Weighted Guideline procedures eases the implementation of this proposal. Any DOD profit policy must be implemented by several thousand contracting officers. These contracting officers have used, and are familiar with, a profit determination procedure called Weighted Guidelines (WGL). The WGL method provides contracting officers with a technique that will insure consideration of all appropriate profit factors in establishing profit objectives and conducting contract negotiations. We believe this stylized system is still viable and should be retained. The proposed policy contains significantly different profit determinant factors and factor weight ranges than the current WGL policy (DAC 76-23), however, it maintains the basic weighted guidelines structure and, as such, would be a viable approach.

Proposed Policy Provides  
For Exceptional Cases

Although the DOD proposal makes a dramatic shift from cost to facilities capital investment in determining profit, it includes provisions to use different profit objectives in exceptional cases. We believe a profit policy should make provisions for contractors that perform highly complex, difficult tasks with talented personnel but have a very small investment in facilities. A policy that assigns profit based on capital facilities investment must provide a means for recognizing exceptional cases where other considerations should be given some weight. We believe that the proposed profit policy contains such provisions. As with the previous profit policy, DAC 76-23, the proposal provides for other profit determination plans in special circumstances, such as architect-engineering contracts, management contracts, constructions contracts, cost-plus-award-fee contracts, etc. We believe this is appropriate.

Different Profit For Different  
Types of Capital Investment

The proposed policy assigns different profit ranges for different types of capital investments. In the previous two profit policies--DPC 76-3 and DAC 76-23--land, buildings, and equipment were all included as profit factors with equal weights. Under DOD's proposal, equipment is assigned a higher profit weight range than buildings and land is dropped as a profit factor. While we know of no empirical data showing that equipment has a more positive effect on productivity than buildings, the proposed approach seems reasonable.

DOD's Goal to Reduce Contractor  
Profit By 1 Percentage Point May  
Not Be Sufficient to Achieve  
Comparability of Profits

According to DOD, one principal objective of the proposed policy is to "reduce overall DOD profit objectives by 1 percentage point -- from 12.3 percent to 11.3 percent." We have not yet analyzed the proposal's profit factors with actual data from the DOD Form 1499 data file to determine whether the factors will achieve the 1 percent reduction. As discussed in the next section, we believe such an analysis must be done before a definitive opinion on the proposal can be provided. However, over and above the question of whether the factors in the proposal will produce a 1 percent reduction is the question of whether a 1 percent reduction is enough to bring defense contractors' return on assets in line with comparable durable good manufacturers.

The DFAIR report selected durable good manufacturers, as reported in the Bureau of Census' Quarterly Financial Report, as the group to which defense contractors' profitability would be compared. DFAIR used return on assets to measure profitability, and we agree that return on assets is the proper measure to use.

After analyzing data from 76 contractors, DFAIR concluded that

"profitability for DOD business is very similar to that of durable goods manufacturers when the abnormal 1980-1983 period is excluded from the comparison."

DFAIR further concluded that the profit policy (DAC 76-23) in use during the abnormal period of 1980-83 caused average markups to increase above the expected level by .5 to 1 percentage point. To remedy this excess, DFAIR structured a profit policy that was designed to "yield results which are on the average .5 to 1 percentage point lower than the results achieved under DAC 76-23." In essence, this approach was designed to lower profits for defense contractors back to "when they were similar to that of durable goods manufacturers" that is, up to 1979. In our review of DFAIR, and based on actual data collected by Touche Ross, we concluded that, in terms of return on assets, defense contractors were 35 percent more profitable than commercial manufacturers during 1970-79 and 120 percent more profitable during the 1980-83 period. In addition, our analysis of publicly available data indicates that defense business was substantially more profitable than comparable non-defense firms during the period 1975-1983.

DFAIR implied that a .5 to 1 percent reduction in negotiated profits would bring defense contractors into a profitability position similar to that of durable goods manufacturers. After the extensive analysis of available data performed in our review of the DFAIR report, we do not agree. To achieve any sort of comparability will require a new DOD profit policy that will reduce average negotiated markups by more than 1 percent.

The Projected Results of the New  
Proposal Should be Evaluated  
Before the Proposal is Implemented

This proposal establishes new, and substantially different, profit weight ranges for the profit factors used to calculate the weighted guidelines profit objective. The projected results of these new weight ranges should be evaluated--using



complete and current data--before this proposed policy is implemented.

The proposal's profit factors--which are divided into the categories of contractor risk and facilities capital employed--should be evaluated using the DOD Form 1499 data base. This data base, however, is not current for all 3 services. Current data--through fiscal year 1985--is available for Air Force contract actions. This Air Force data shows that profit objectives averaged 13.9 percent in fiscal year 1985. Data for the Army and Navy for fiscal years 1984 and 1985 is not available.

GAO's evaluation of the DFAIR report showed that the DFAIR proposed weight ranges would not have met their goal of a 1 percent reduction in profit objectives and without proper evaluation of current data we are concerned that the proposed policy may have similar results. DOD Form 1499 data for fiscal years 1984 and 1985 should be collected from all services and the projected results of the proposal should be analyzed before the new policy is put into effect.

The Proposed Policy Should  
Integrate Profit and Financing  
Policies

The proposed policy does not clearly integrate profit and contract financing policies. In its DFAIR report DOD integrated the Weighted Guideline policy with its contract financing policies. The September 18, 1986, proposal includes no consideration of contract financing policies except in the calculation of the working capital offset.

GAO believes that DOD took the correct approach in its DFAIR report and should continue in its efforts to develop an integrated profit policy. At a minimum DOD should consider the following factors in developing its new policy, and should structure its policy to recognize the affects of these factors on contractor profits:

- amount of progress payments,
- timing of progress payments,
- frequency of progress payments,
- timing of delivery payments,
- frequency of delivery payments,
- milestone billing arrangements,

- assumed length of contract,
- assumed interest rate,
- working capital adjustment rate,
- degree of government ownership of facilities, and
- amount of flexible progress payment if any.

DOD Has Not Established the  
Need for Compensating Imputed  
Working Capital Cost

In its DFAIR report, DOD failed to establish the need for a profit factor to compensate contractors for their costs of financing working capital. This new proposal includes profit for working capital in the risk portion of its Weighted Guidelines structure. DFAIR determined that since 1954 the level of working capital investment required of defense contractors yielded average imputed financing costs of 2 percent of total costs. With no explanation the current proposal assumes contractor financing costs to be 2.5 percent. Before this policy is implemented, DOD should determine what the actual working capital needs of contractors are. This could be done by studying the actual requirements of 20-30 contractors' defense business segments. GAO has been directed by the 1987 Defense Appropriations Act to give careful attention to this aspect of the new policy and we are initiating a review to address this subject.

Interest Rate for the Working  
Capital Adjustment Should be  
Established Outside DOD

According to the proposed policy, the interest rate used to calculate the working capital factor would be subject to change by the Assistant Secretary of Defense for Acquisition and Logistics or designee. If a legitimate need is found for the working capital factor, the interest rate used to calculate it should be established outside of DOD. Changes to the rate should be based primarily on economic factors. The interest rate should be a published rate--such as the Treasury Department's CAS 414 rate, or the prime rate published in the Wall Street Journal--not a rate that can be influenced by DOD.

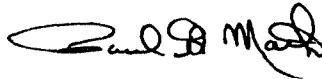
Conclusions

We agree in principle with the basic concept of the proposed profit policy. We have previously stated, and continue to believe, that in negotiating profit levels it is appropriate

Appendix IX  
GAO Comments on the September 18, 1986,  
Proposed DOD Profit Policy

to place more emphasis on facilities capital investment and less emphasis on contract costs. The new proposal achieves that goal. However, before any new profit policy is implemented, a thorough evaluation of all aspects of the policy should be conducted. First, DOD should determine the appropriate target levels for the proposed policy's profit objectives--using the Touche Ross data, gathered under DFAIR, and conventional analytical methods. Then, DOD should use Form 1499 data from the Army, Navy, and Air Force for fiscal years 1984 and 1985 to analyze the effects of the new factor percentages and relationships and to determine if the overall results of the proposed policy meet those targets.

Sincerely yours,



Paul F. Math  
Associate Director



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