

92d Congress }
2d Session }

JOINT COMMITTEE PRINT

MEASURING AND ENHANCING
PRODUCTIVITY IN THE
FEDERAL SECTOR

A STUDY

PREPARED FOR THE USE OF THE

JOINT ECONOMIC COMMITTEE
CONGRESS OF THE UNITED STATES

BY REPRESENTATIVES OF THE

CIVIL SERVICE COMMISSION
GENERAL ACCOUNTING OFFICE

AND

OFFICE OF MANAGEMENT AND BUDGET



AUGUST 4, 1972

Printed for the use of the Joint Economic Committee

U.S. GOVERNMENT PRINTING OFFICE

WASHINGTON : 1972

81-339 O

270

JOINT ECONOMIC COMMITTEE

(Created pursuant to sec. 5(a) of Public Law 304, 79th Cong.)

WILLIAM PROXMIRE, Wisconsin, *Chairman*

WRIGHT PATMAN, Texas, *Vice Chairman*

SENATE

JOHN SPARKMAN, Alabama
J. W. FULBRIGHT, Arkansas
ABRAHAM RIBICOFF, Connecticut
HUBERT H. HUMPHREY, Minnesota
LLOYD M. BENTSEN, Jr., Texas
JACOB K. JAVITS, New York
JACK MILLER, Iowa
CHARLES H. PERCY, Illinois
JAMES B. PEARSON, Kansas

HOUSE OF REPRESENTATIVES

RICHARD BOLLING, Missouri
HALE BOGGS, Louisiana
HENRY S. REUSS, Wisconsin
MARTHA W. GRIFFITHS, Michigan
WILLIAM S. MOORHEAD, Pennsylvania
WILLIAM B. WIDNALL, New Jersey
BARBER B. CONABLE, Jr., New York
CLARENCE J. BROWN, Ohio
BEN B. BLACKBURN, Georgia

JOHN R. STARK, *Executive Director*

LOUGHLIN F. MCHUGH, *Senior Economist*

ECONOMISTS

LUCY A. FALCONE

ROSS F. HAMACHEK

JERRY J. JASINOWSKI

JOHN R. KARLIK

RICHARD F. KAUFMAN

COURTENAY M. SLATER

Minority: **LESLIE J. BANDER** **GEORGE D. KRUMBHAAR, Jr.** (Counsel) **WALTER B. LAESSIG** (Counsel)

LETTER OF TRANSMITTAL

AUGUST 3, 1972.

To the Members of the Joint Economic Committee:

Transmitted herewith for the use of the Joint Economic Committee and other Members of the Congress is a General Accounting Office study entitled "Measuring and Enhancing Productivity in the Federal Sector."

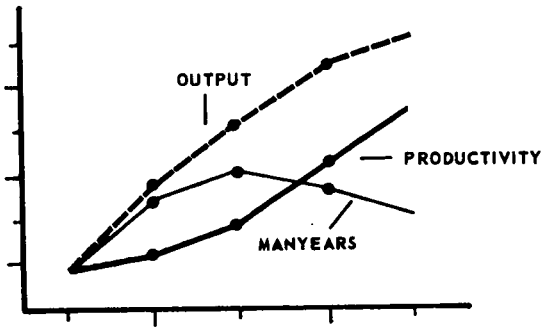
This study was initiated at my request in a letter dated September 21, 1970. In that letter I noted, "In view of the importance of the Federal sector to the economy as a whole and in view of the responsibility vested in Congress for controlling Federal expenditure, I find it distressing that we have no real measures of the efficiency of the Federal sector." This study represents the first major effort to measure productivity in the Federal sector.

I commend the Comptroller General on a job well begun. However, I would remind members of the committee, this study includes 55 percent of the Federal work force. The difficult work of measuring productivity in the other 45 percent remains. Moreover, the major task of measuring productivity of State and local government workers still lies ahead. I look forward to the General Accounting Office task force continuing its valuable work and improving the quality and completeness of this study in the future.

WILLIAM PROXMIRE,
Chairman, Joint Economic Committee.

(III)

measuring and enhancing productivity in the federal sector



REPORT OF A JOINT PROJECT

CONDUCTED BY

CIVIL SERVICE COMMISSION
GENERAL ACCOUNTING OFFICE
OFFICE OF MANAGEMENT AND BUDGET
AND
17 PARTICIPATING AGENCIES

JUNE 1972

THIS REPORT IS A STAFF STUDY

PREPARED BY

REPRESENTATIVES OF THE

CIVIL SERVICE COMMISSION
GENERAL ACCOUNTING OFFICE
OFFICE OF MANAGEMENT AND BUDGET

BASED ON DATA OBTAINED FROM
17 PARTICIPATING AGENCIES

C o n t e n t s

		<u>Page</u>
CHAPTER		
1	INTRODUCTION	1
2	MEASURING PRODUCTIVITY	9
3	ENHANCING PRODUCTIVITY	31
	A - Through the use of better measurement systems	31
	B - Through better methods of financing productivity-improving capital investments	57
	C - Through providing motivation to enhance productivity	66
4	SUMMARY OF RECOMMENDATIONS AND PLAN OF ACTION	72
APPENDIX		
A	Correspondence which initiated this project	79
B	Progress Report to principals, August 6, 1971	87
C	Progress Report to National Commission on Productivity, January 17, 1972	91
D	Brief history of Federal productivity measurement	106
E	List of 114 organizational elements by agency	109
F	Alternative methods of computing the overall index	113
G	List of 114 organizational elements by function	116
H	Detailed indices of measured sample of Federal sector	120
I	The concepts of measurement	123
J	Advantages and disadvantages of various methods of financing capital acquisitions	131
K	A proposal for grant evaluation	136

CHAPTER 1

INTRODUCTION

Why this survey was made

On September 21, 1970, Senator William Proxmire wrote the Comptroller General urging that a comprehensive evaluation be made of the possibilities for measuring productivity in the Federal sector of the economy. In his letter, Senator Proxmire made reference to a study by the Bureau of the Budget in the early 1960's. This study, which analyzed the potential for constructing overall productivity indices in five major governmental agencies, concluded:

"As a result of the study, it is believed that development of valid productivity measures is feasible for a considerable proportion of Federal Government activities. The principal obstacle in Government is the requirement that products or services be measurable over a period of time on a consistent basis." [This is possible] "**** if some form of cost accounting or work measurement system is in effect."¹

Preliminary inquiry revealed (1) that this promising beginning was not continued because the staff assigned was transferred to other functions in 1965 and (2) that there was no program currently being conducted by the executive branch to develop overall measures of productivity. Consequently the Comptroller General invited the Director of the Office of Management and Budget and the Chairman of the Civil Service Commission to join with the GAO in a project aimed not only at responding to Senator Proxmire's request for "an evaluation of the possibilities" but, if possible, to demonstrating the feasibility of achieving this objective and to searching out actions to enhance productivity in the Federal sector of the economy. These officials immediately accepted the Comptroller General's invitation.²

¹Measuring Productivity of Federal Government Organizations, 1964, page 4.

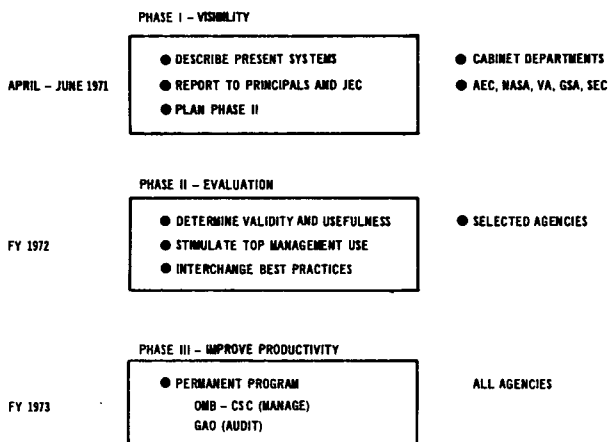
²See appendix A.

THREE-PHASED APPROACH

A steering committee of the three participating agencies was formed in March 1971, consisting of Executive Director Bernard Rosen of the Civil Service Commission, Assistant Director Dwight Ink of the Office of Management and Budget, and Assistant to the Comptroller General Tom Morris. This Committee appointed a joint staff to carry out the project, and invited 17 agencies¹ of the executive branch to join in a three-phased cooperative effort as described in Exhibit 1-1 below.

EXHIBIT 1-1

JOINT PROJECT PLAN



In early April 1971, Phase I was launched at a planning meeting with the 17 agencies, at which time each was requested to submit an inventory of its current usage of quantitative measurement systems, showing the percent of its civilian employees whose work effort is reasonably covered by such systems.

In order to assure that all significant measures were identified in the inventory, the agencies were asked to cover the following four types.²

¹The Cabinet Departments, Postal Service, NASA, AEC, GSA, VA, and SEC. NLRB contributed to the measurement project described in Chapter 2.

²After Phase I was completed effectiveness measures were added to the scope of the project.

1. "Overall Productivity Indexes"--These are measures of the final physical outputs of an entire organization (or component, subcomponent, etc.) divided by the physical inputs, in order to produce a productivity index which can be consistently computed from year to year in real terms (i.e., in constant dollars). Labor inputs will be used in all cases. Capital and other cost inputs will be included where significant to the activity (as in the case of industrial facilities and costly data processing installations).
2. "Work Measures"--These are measures of the physical work units produced by individual work centers (within an organization or component) which can be compared to an objectively derived standard of performance to assess performance efficiency on a current basis (such as daily, weekly, monthly). Example: Number of pieces of first class mail processed per hour in a Post Office, compared to an established standard.
3. "Unit Cost Measures"--These are obtained by relating physical work units produced to corresponding costs.
4. "Manpower Planning Measures"--These are systems of forecasting manpower requirements based on statistical data in respect to workload, activity rates, peakload requirements, safety standards, etc. (An example is FAA's technique of staffing Air Traffic Control towers, based on peak-hour traffic and human stress factors.)

All agencies invited agreed to participate in Phase I, and by late May the requested inventories had been submitted. Briefings were then held with agency representatives to discuss their practices in developing and using each type of measure.

Growing out of the Phase I review was a presentation to the principals in June 1971, by the steering committee, and a memorandum report (see app. B). The committee recommended to the Director of OMB, the Chairman of the Civil Service Commission, and the Comptroller General that fiscal year 1972 be devoted to a continued cooperative effort with the 17 agencies aimed at

- first, testing the feasibility (with assistance from the Bureau of Labor Statistics) of constructing overall productivity indices,

--second, conducting case studies and workshops to reveal opportunities for improving the use of existing measurement data, and

--third, making other special studies of ways to enhance productivity in the Federal sector.

The proposals were endorsed by the principals, and Phase II was launched at a conference of the participating agencies on September 8, 1971.

The accompanying report sets forth the findings and recommendations which have resulted from the Phase II studies. As background to the report, the remainder of this introduction briefly describes:

--The key findings from the inventory conducted in Phase I.

--The principal research projects conducted in Phase II.

KEY FINDINGS OF THE PHASE I INVENTORY¹

Exhibit 1-2 below shows a statistical summary of the usage of various types of measurement systems, as disclosed by the participating agencies.

Type	<u>Coverage by Type of Measure</u>			
	<u>Percent of personnel covered</u>			
	DOD [1,029,075]	Postal Service [718,014]	Civil Agencies [816,716]	Total [2,563,805]
Manpower				
Planning	45	64	63	50
Work Meas-				
urement	38	60	37	44
Unit Cost	38	60	23	39
Overall Pro-				
ductivity	0	60	8	20

Note: Figures in brackets represent total civilian employees.

¹See appendix D for a brief history of Federal Productivity measurement.

In summary, it was found that extensive use of quantitative measurement is now practiced (1) in planning future manpower requirements and (2) in establishing formal work measurement standards by which to gauge the operating efficiency of activities having repetitive, quantifiable outputs (50 percent and 44 percent, respectively).

A much smaller percent of employees was found to be covered by unit cost measures (39 percent). In respect to the use of overall productivity indices (the interest of Senator Proxmire) only 20 percent usage was encountered; notable exceptions were the Postal Service, Social Security Administration and certain Treasury Department activities.

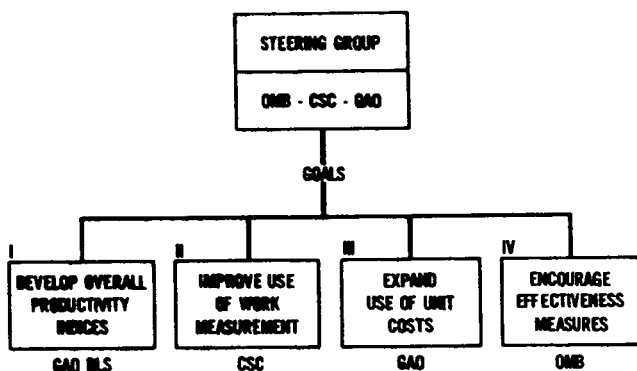
It was these specific findings from the reports of the 17 agencies that formed the foundation for Phase II. An oral report of these findings was presented to Senator Proxmire on September 21, 1971.

RESEARCH PROJECTS CONDUCTED IN PHASE II

Coordination of staff work for Phase II was assigned to four project leaders, as illustrated in exhibit 1-3 below.

SCOPE OF PHASE II

EXHIBIT 1-3



1. A team composed of GAO and BLS specialists devoted full time to developing overall productivity indices based on detailed data submissions from 17 agencies. Because of the exceptional cooperation of these agencies, this effort has produced a set of productivity

measures covering 1,560,000 Federal employees. (The results of this work are presented in chapter 2 of this report.)

2. A series of studies of ways to improve the use of existing measurement systems was coordinated by the Civil Service Commission member of the joint staff. These studies included detailed analyses of the validity and utility of work measurement systems at two major Defense installations which cooperated with the study. In addition, meetings were held with agency representatives assembled by the Federal Executive Boards in eleven cities: Philadelphia, New York, Cincinnati, Detroit, Denver, Chicago, New Orleans, Dallas, Seattle, San Francisco, and Los Angeles. These meetings were devoted to candid discussions of the value of measurement systems, and of ways of enhancing the performance of field activities. An extensive questionnaire and interview study was completed by the Civil Service Commission, covering the attitudes of Federal managers. Finally, a special study of the productivity improvement programs of twelve industrial organizations was performed by the Army Management Engineering Training Agency under a special contract.¹
3. The third project was concerned with improving the use of unit cost measures and capital project planning. These studies were conducted by GAO, and included case studies at 10 agency locations in Washington, D.C., plus several installations in the Norfolk area.
4. The fourth project, coordinated by the OMB representative, was aimed at documenting and encouraging current best practices in applying effectiveness measurement techniques, especially to activities whose outputs cannot be readily quantified such as health, education, welfare, law enforcement, research and development, policy development, etc. A two-day workshop was held in November 1971, and case studies resulting therefrom have been separately published. In addition, a collection of case studies of effectiveness evaluation has been assembled by the Northern Virginia Chapter of the Federal Government Accountants Association and published under the auspices of this project.

¹The results are published in a staff study titled "Survey of Productivity Measurement in Non-Government Organizations."

ASSISTANCE OBTAINED

During the execution of the above projects, the joint staff has benefited from frequent advice of advisory panels composed of the Agency officials, as shown in exhibit 1-4 below.

EXHIBIT 1-4

AGENCY ADVISORY PANELS

-I- DEVELOP PRODUCTIVITY INDICES OF THE FEDERAL SECTOR	-II- IMPROVE USE OF WORK MEASUREMENT SYSTEMS	-III- EXPAND USE OF UNIT COSTS	-IV- ENCOURAGE MEASURES OF EFFECTIVENESS
GAO	CSC	GAO	OMB
COMMERCE	DEFENSE (DSA)	VETERANS ADM.	STATE
DEFENSE	HUD (FHA)	INTERIOR	LABOR
VETERANS ADM.	GSA (PBS)	TREASURY (IRS, CUSTOMS)	MASA
POST OFFICE	SEC		JUSTICE
AGRICULTURE	TRANSPORTATION	TRANSPORTATION (FAA)	HEW
ATOMIC ENERGY (GOCO)		POST OFFICE	

Reports of progress have been made to the President's Advisory Council on Management Improvement beginning with Phase I, and members of Advisory Council have been helpful in the conduct of the Phase II studies discussed above. The President's National Commission on Productivity has reviewed and encouraged the project from the beginning, and allocated \$50,000 to support the Phase II research program. A status report furnished to the Productivity Commission on January 17, 1972, is enclosed as appendix C.

The climax of Phase II in terms of agency involvement occurred on May 11 and 12, 1972, when representatives of participating agencies met for a two-day workshop at Airlie House. The recommendations set forth in the remaining chapters of this report are in large measure an outgrowth of discussions held at this conference.

Special note should be taken of revised OMB Circular A-44 dated May 24, 1972. This landmark document requires an annual report from each agency with 200 or more employees setting forth its progress in improving six areas of management--one of which is productivity--and stating its

goals for the budget year. These reports will include "productivity indices, better use of work measurement systems, expanded use of unit cost measures, and productivity justification of capital investments."

CONTENTS OF THIS REPORT

The remainder of this report sets out findings and recommendations as follows:

- Chapter 2 describes a tested methodology for annually measuring trends in the productivity of 55 to 60 percent of Federal civilian employees and reports the trends found for the fiscal years 1967-71.
- Chapter 3 discusses five major approaches to enhancing the productivity of Federal employees, based on the Phase II studies.
- Chapter 4 presents a plan of action designed to act upon the findings and proposes to build upon the findings through further joint effort.

CHAPTER 2

MEASURING FEDERAL PRODUCTIVITY

The research conducted in Phases I and II showed that the performance of organizations--both in the public and the private sectors--can be sharply improved by defining and evaluating measures of accomplishment in quantitative terms. While we found that Federal agencies were making extensive use of work measurement and manpower planning measures, we found relatively little use of overall productivity measures of the type published for the private sector by the Bureau of Labor Statistics.

Why Has the Federal Government Lagged in Using Overall Productivity Measures?

During Phase I we asked agency officials why they had not developed, or continued to use, overall productivity measures. They gave three reasons:

First, they appear technical and mysterious

Such measures have this appearance because of the statistical weighting techniques used to aggregate output units having different values and characteristics so as to obtain a composite expression of outputs of an entire organization. A simple example is shown in Exhibit 2-1 which depicts 10 different methods of preparing checks and bonds in the Bureau of Accounts of the Treasury Department. A total productivity index in this case is based on the number of checks and bonds produced by all methods, per man-year (see heavy black line).¹

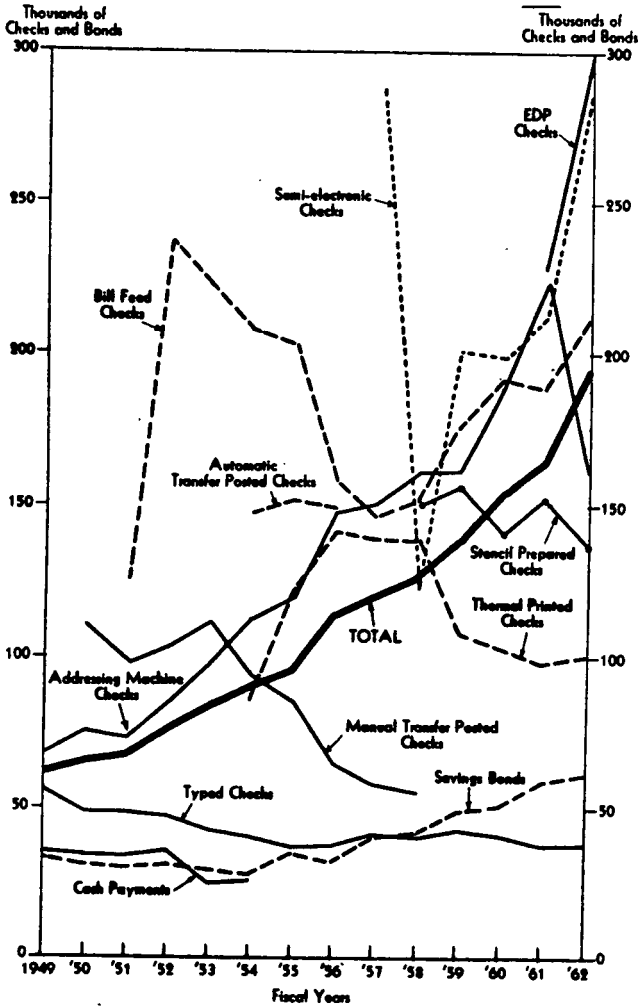
Second, previous misuse of total productivity measures

We were told of instances in which productivity improvements were "forced" during the budget process by reducing manpower in spite of continuing growth in workload, or without labor saving or system improvements to justify such reductions. While a superficial short-term improvement in output per man-year appeared to result, the long-term impact was a degradation in quality, followed subsequently by a crash program to rebuild staff.

¹Today, 97 percent of checks and bonds are electronically processed.

EXHIBIT 2-1

Division of Disbursement CHECKS AND BONDS PER MAN-YEAR BY PROCESS OF PREPARATION, 1949-1962



Third, lack of management understanding of the uses of overall indices

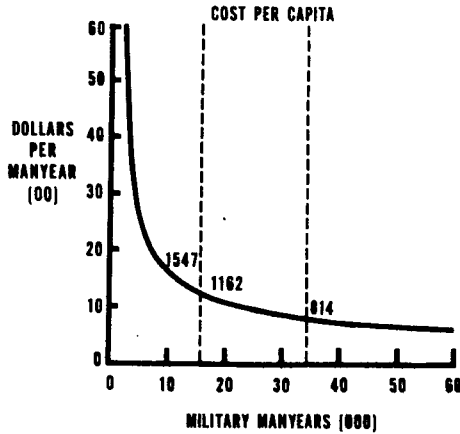
Most agency managers, both at headquarters and in the field, need current information (weekly or monthly) on workload, output, and staffing in order to meet their commitments while living within their budgets. These tools are essential to managing an organization and cannot be displaced by overall productivity measures. Most managers, however, have not understood that overall measures provide an additional insight into the operations of an activity. This leads to the next question.

What Are the Uses of Overall Productivity Measures?

Such measures serve an entirely different purpose from those concerned with current performance. In the Federal setting, we found that, when applicable, they can offer five values:

1. First, they enable the manager to review trends in overall productivity from year to year on a consistent basis.
2. Second, they reveal the results of all past actions to improve productivity, including investments in labor-saving equipment, changes in organization and systems, upgrading of employee skills through training, etc. Thus, the measures provide a scorekeeping technique which managers would otherwise lack.
3. Third, they reveal emerging trends and permit managers, where possible, to take steps to influence those trends. If workload is increasing more rapidly than the manpower applied then the productivity per man-year will increase. Conversely, if workload is dropping while manning remains fixed, productivity per man-year will decline. Exhibit 2-2 illustrates this problem at the Army's Fort Campbell in Kentucky.

**COST PER CAPITA OF OPERATING
FORT CAMPBELL, KENTUCKY**



As noted above, the most efficient level of operation at this base occurs when between 16,000 and 34,000 soldiers are stationed there, thus making full use of the facilities. Productivity (measured here in unit costs) declines almost 50 percent, however, if only 10,000 soldiers are stationed at Fort Campbell--because of the fixed overhead staffing and costs of running the base, such as utilities, maintenance, guard protection, etc.

4. Fourth, productivity data may be used effectively at the various stages of the budget process: (1) by providing a vehicle for systematic projection of resource needs based on outputs, (2) by providing better information on the unit cost trends of alternative services, (3) by making possible a rational selection of improvement goals, and (4) by providing a progress report on how the goals are being achieved.
5. Fifth, overall indices can provide to Federal top managers, Congress, economic analysts and the public, knowledge of productivity trends for the first time. It is important to stress that the absence of such measures materially detracts from the ability of the

executive branch to communicate trends in its performance to the Congress and the public. In fact, economists must assume that productivity change in the Federal sector is zero.

An article in Fortune magazine in February 1972 stated that the failure to measure the productivity of many service industries (including the public sector) leads to an understatement of the real gross national product, and leads to overestimating the rate of inflation.

Public apprehension about the lack of improvement in Governmental productivity appears to be widespread. The CBS Evening News Show of March 29, 1972, reported that increases in the pay of Government workers "have an extra inflationary impact because they are not matched, or anything like it, by increases in worker productivity as they often are in industrial production." The Chairman of the Price Commission stated to the Joint Economic Committee on April 26, 1972, "While Government at all levels continues to grow, its measured productivity gains are zero."

These are disturbing charges--not only because they imply a lack of confidence in Federal managers, but also because the public sector as a whole (Federal, State, and local government) constitutes a large and growing percent of civilian employment in the United States--13 million out of 79 million civilian workers, or 16 percent.

It is obvious that the absence of total measures deprives the Congress, the public, and Federal managers of an important tool, as stated in Senator Proxmire's request. The question is whether--and to what degree--such measures can be developed. The remainder of this chapter describes:

- How the data for this first set of productivity indices was obtained, and the coverage achieved.
- How the indices were developed.
- What these indices tell us about the productivity trends since fiscal year 1967,¹ and what they appear to suggest as to trends in the near future.

¹The base year used by BLS for private-sector and industry indices is calendar year 1967.

--How we suggest that this type of measurement system be further developed and refined.

How Were the Data for the First Set of Productivity Indices Obtained?

The joint team concluded, following Phase I, that over-all measures might be feasible covering about 50 percent of the executive branch civilian work force, including the Postal Service. This envisioned obtaining "output/input" data on at least 750,000 more man-years of effort than was available from the agencies using productivity indices (i.e., the Postal Service and a few other civilian agencies).

It was determined that three conditions were required to assure reasonable success from this effort:

First, the basic data should be collected, and the indices developed, by one central technical staff--just as it is for the private sector. The Bureau of Labor Statistics was invited to join in this effort, so that it might contribute its expertise and later become the permanent agent for collecting and publishing indices on the Federal sector, as it does on the private sector.

Second, individual agencies should be asked only to submit readily available data, and not to make the statistical computations.

Third, the development and publication of initial indices should be based on common functions performed in many agencies or components of agencies; and individual agency indices should not be disclosed without the agency's permission. (This again is typical of the practice of the BLS in those instances where data are directly collected from individual companies.) In the Federal sector, most large agencies are so conglomerate that total agency indices would not be as meaningful in portraying total Federal sector productivity as are indices of homogeneous functions. Furthermore, in most agencies only segments can be measured by quantitative outputs. In this regard all 17 of the participating agencies were able to contribute significant data to one or more of the functional indices described later.

The participating agencies furnished data under the above conditions for the fiscal years 1967-71, showing (1) definition of outputs, (2) the quantity of "output products" produced each year, on a uniform basis, (3) the man-years of effort consumed in producing each output product,

and (4) the wage costs (including fringe benefit costs) of producing each output.

Altogether, the 17 agencies identified 114 organizational elements (appendix E) which have readily measurable outputs. These 114 elements furnished data on 605 output products.¹ This formed the basis for the indices which have been developed.

The Defense Supply Agency is one example of an organizational element. It has seven output products:

DSA OUTPUT PRODUCTS

- (1) Procurement actions, i.e., purchase orders and contracts issued.
- (2) Requisitions processed, i.e., customer orders filled.
- (3) Line items received and shipped, i.e., number of times each item is received by, or issued from, DSA warehouses.
- (4) Contracts on hand requiring administration.
- (5) Contractor invoices paid.
- (6) Value of purchased materials inspected.
- (7) Earned revenue--clothing manufacturing.

In order to qualify for inclusion in a productivity index, we required that each output product meet the following tests to an acceptable degree:

- It can be counted easily and consistently, year after year.
- It is mutually exclusive of any other output product, so that double counting will be avoided.
- It is the final product (or an intermediate product contributing to the final product) of a significant group of workers, whose time and costs can be directly identified with the output.

¹A complete list of these products is contained in a separate staff paper being developed entitled "Federal Productivity--Methods, Measurements, and Results."

--Its quality requirements can be defined.

Outputs produced by outside contracts were excluded.

The data accepted for the study covered 1,560,000 man-years, or 56 percent of the civilian personnel employed by the 17 participating Executive agencies. The coverage by agency is shown in Exhibit 2-3. Data covering an additional 58,000 man-years for fiscal year 1971 were rejected since they failed to meet one or more of the above criteria.

In future years, we believe that it may be possible to add over 100,000 additional man-years, by including (1) agencies which were not invited to participate in Phase II (such as the Tennessee Valley Authority, regulatory agencies, and the Government Printing Office),¹ (2) organizations where more research is needed to develop adequate data, and (3) increased coverage in common functions such as data processing installations, printing and publication activities, and other operating services. We also wish to explore the possibility and desirability of developing indices for Government-owned contractor-operator plants of NASA, AEC, and DOD.

How Were the Indices Developed?

The indices were developed in three steps:

1. Step one--a "building block" index by organizational element. For each of the 114 organizational elements, an index was constructed, using fiscal year 1967 as the base year. These are "building block indices" which are not being disclosed separately, but which are combined in various groupings as described later. An illustration of how such an index is developed is shown below:

Index Based on Requisitions Processed by DSA

<u>Fiscal year</u>	<u>Millions of requisitions</u>	<u>Thousands of man years</u>	<u>Requisitions processed per man year</u>	<u>Productivity index</u>
1967	19.7	3.8	5,184	100.0%
1968	19.7	3.2	6,156	118.8
1969	20.3	3.1	6,548	126.3
1970	19.0	3.1	6,129	118.2
1971	18.6	2.8	6,643	128.1

^aIncluded with permission of DSA.

¹These agencies employed 143,000 man-years in fiscal year 1971.

COVERAGE BY PARTICIPATING AGENCIES

	Total Civilian Man-Years 1971	Man-Year Coverage of Indices 1971	
	NUMBER (000)	MAN-YEARS (000)	PERCENT OF COVERAGE
1. Agriculture	103.8	28.6	27.6
2. AEC	7.3	.2	2.7
3. Commerce	36.4	6.7	18.4
4. Department of Defense	1,215.2	388.1	32.0
5. GSA	38.7	28.9	74.7
6. HEW	115.5	67.4	58.4
7. HUD	16.8	9.5	56.5
8. Interior	69.2	30.0	43.4
9. Justice	40.5	6.9	17.0
10. Labor	11.2	5.1	45.5
11. Postal Service	723.6	723.6	100.0
12. State	25.1	1.4	5.6
13. Transportation ^{a/}	106.9	31.7	29.7
14. Treasury	98.0	77.7	79.3
15. VA	165.1	151.0	91.5
16. SEC	1.4	1.4	100.0
17. NLRB	2.2	2.2	100.0
Total	2,776.9	1,560.4	56.2

^{a/} Also includes 37,300 Coast Guard uniformed personnel of which 19,600 are covered in this sample.

SOURCE: Manyears and Personnel Costs, Executive Branch, FY 1971.
Based on Circular A-93.

Many of the organizational elements had two or more output products. (DSA had seven for example.) In order to combine these we used the 1967 man-years required per unit of output as the weight.

2. The second step was to group the 114 organizational elements by functions which have similar output characteristics. Each of the 114 organizational elements was assigned to one of three broad functional classifications and within these to one of seven subgroups. Details of this functional classification are shown in exhibit 2-4.

Studies of other ways to classify the data will continue for some time to seek the most meaningful correlations between type of outputs and inherent productivity characteristics as well as the type of presentations which will be of value to users. However, the initial functional indices are exposing many useful observations and questions.

3. The third step was to develop one overall index for all organizational elements. There are various ways of aggregating the 114 elements into a single index. These are discussed in appendix F.

What Do These Initial Productivity Indices Reveal?

The aggregate of the productivity trends for the 1,560,000 employees in 17 agencies is as follows:

	Index for fiscal year 1971 (fiscal year 1967 base year)
Total output	110.3
Total man-years	102.5
Productivity (output per man-year)	107.7

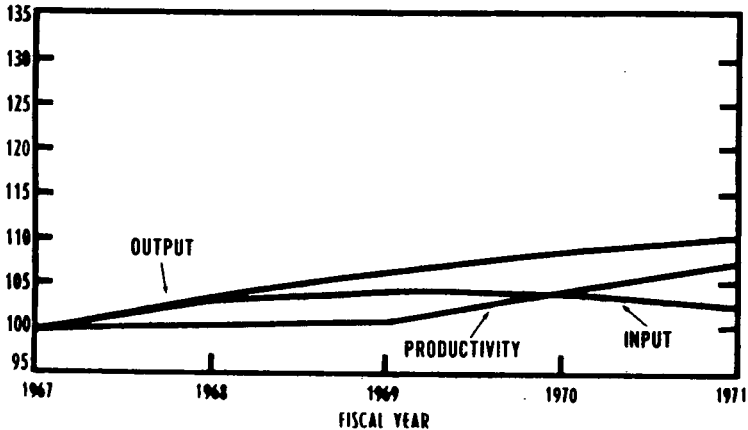
FUNCTIONAL CLASSIFICATIONS FOR INDEX DEVELOPMENT

<u>Functional Groups</u>	<u>No. of Organizational Elements</u>	<u>No. of Output Measures</u>	<u>Man-Years Covered in F.Y. 1971</u>	
			<u>Number</u>	<u>Percent</u>
<u>I. Public Services</u>				
A. Operating facilities (hospitals, schools, parks, Post Offices, etc.)	18	83	954,565	61.2
B. Processing Activities (loans, grants, mortgages, insurance, etc.)	39	304	195,934	12.5
Total	57	387	1,150,499	73.7
<u>II. Support Services to Governmental Agencies</u>				
A. Management (finance, personnel, legal, etc.)	15	69	39,633	2.5
B. Procurement and Supply	16	53	157,307	10.1
C. Maintenance (bases, buildings, equipment)	10	21	91,481	5.9
Total	41	143	288,421	18.5
<u>III. Industrial</u>				
A. Major overhaul and repair (ships, aircraft, equipment)	5	39	102,669	6.6
B. Manufacturing (power maps, charts, coins, currency, etc.)	11	36	19,004	1.2
Total	16	75	121,673	7.8
GRAND TOTAL	114	605	1,560,593	100.0%

These results are graphically portrayed by year in exhibit 2-5 below.

EXHIBIT 2-5

AGGREGATED INDICES FOR 1.56 MILLION EMPLOYEES IN 17 AGENCIES



The above presents the first finding resulting from this initial effort to develop productivity indices. It tells us that, in the measured sample, productivity per man-year increased by 7.7 percent--or at an average annual rate of 1.9 percent--between fiscal year 1967 and 1971.¹

This resulted from the fact that while output increased 10.3 percent, man-years applied went up only 2.5 percent.

An analysis of the overall index has been made using labor costs instead of man-years. The analysis shows:

--Gross labor costs in current dollars increased 43.7 percent between fiscal year 1967 and fiscal year 1971.

¹Detailed data by year appears in appendix H.

--Unit labor costs in current dollars increased only 29.5 percent, reflecting the impact of productivity improvement.

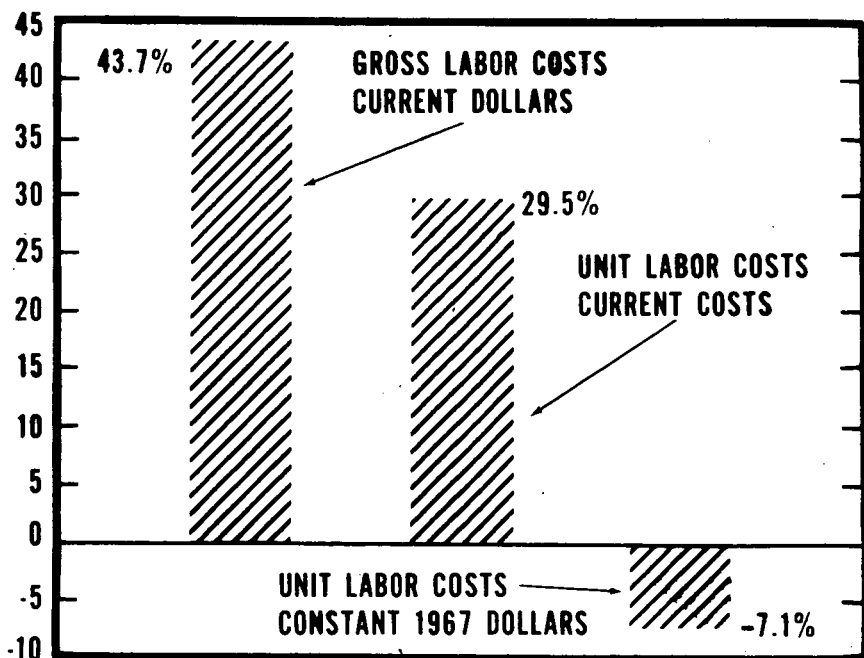
--Unit labor costs in constant 1967 dollars dropped 7.1 points to 92.9 percent.

These trends are graphically illustrated in exhibit 2-6 below.

EXHIBIT 2-6

TREND BASED ON LABOR COSTS

FY 1971 VERSUS FY 1967 (BASE YEAR)



The above findings show that if the productivity gain had not occurred, 119,000 more man-years would have been required in fiscal year 1971 compared to fiscal year 1967, worth in current dollars about \$1.3 billion.

These overall findings pose the question of what has produced this productivity improvement, and whether it can be perpetuated in future years. This is the purpose of the additional analyses discussed below.

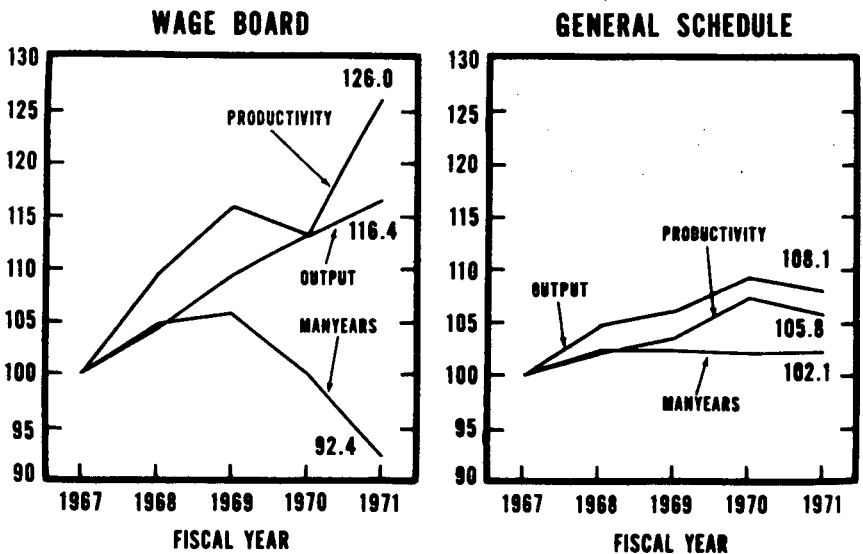
Trends in Productivity By Pay Systems

Exhibit 2-7 displays the productivity trends when the 114 organizational units are separated between those where the employee content is preponderantly:

- Wage Board--our sample contains approximately 254,000 employees, or about 48 percent of all wage board employees in fiscal year 1971.
- General Schedule--our sample contains approximately 583,000 employees, or about 45 percent of all GS employees in fiscal year 1971.

EXHIBIT 2-7

PRODUCTIVITY TRENDS BY PAY SYSTEM GROUP



These analyses reveal that in both pay systems the reason for improved productivity is increased output with (1) a level man-year expenditure in the case of GS employees, and

(2) a sharp decrease in man-years applied in the case of wage board employees.¹

As will be indicated in other analyses, the greater gain in productivity in the wage board category would appear to be attributable to:

- The more rapid adjustment of wage board manning to workload fluctuations.
- The greater opportunities to apply labor-saving equipment to these activities, which are heavily industrial in type.

This observation also calls attention to the need to collect data on capital costs related to productivity changes so that "total factor" productivity indices can be developed in future years.

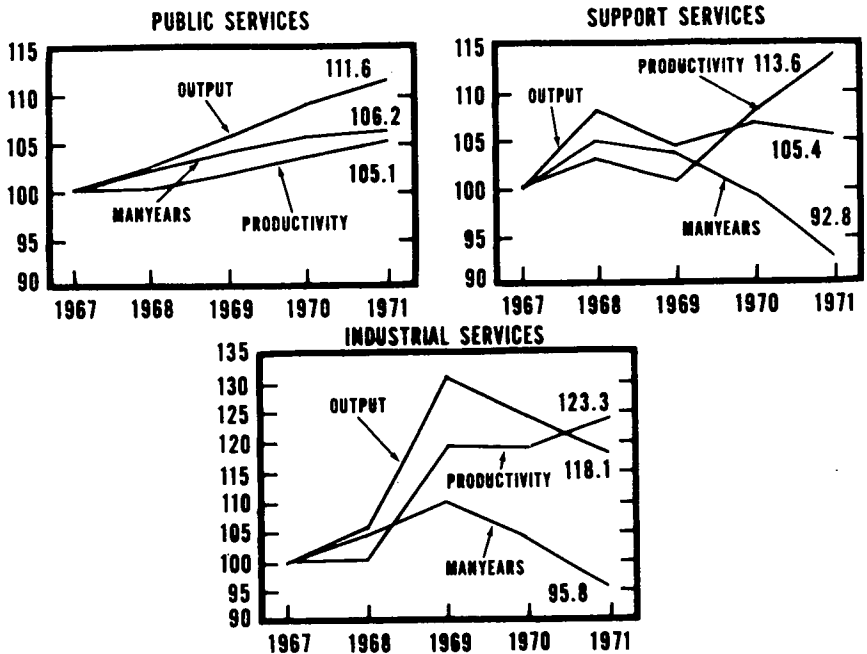
Trends in Productivity By Functional Grouping

The functional indices indicate other factors which influence productivity.

As described above, functional classifications were developed based upon (1) public services, (2) support services, and (3) industrial activities. Exhibit 2-8 below portrays the trend in output, man-years, and productivity per man-year for these three broad classifications during the period fiscal years 1967-71.

¹Detailed data by year appears in appendix H.

PRODUCTIVITY TRENDS BY FUNCTIONAL GROUPINGS



The highlights illustrated by the above graphs are:

- With respect to output, we find three different patterns. Public services have shown a steady upward increase, and it is probable that this will continue to be the trend since this area embraces population related activities such as the Postal Service, and social programs. By contrast output in the Government's internal support services has tended to fluctuate in a narrow range; while the workload in industrial activities has begun to decline after a major increase in 1969. The latter reflects the reduction in Defense logistical workloads.
- With respect to man-years applied, only the public services show a steady increase, while substantial decreases have occurred in the other two areas.
- Productivity per man-year follows directly from the above trends. The smallest increase occurred in the public services (5.1 percent), and the largest in the

industrial area (23.3 percent), followed by internal support services (13.6 percent).

--Unit labor costs. The most important story in terms of budgetary impact is measure in the cost per unit or work produced. Productivity gains have sharply reduced the impact of wage increases and inflation in the past five years, as the following data show, comparing fiscal year 1971 to 1967.

<u>Function</u>	<u>Increased total labor costs</u>	<u>Increased unit labor cost (current dollars)</u>	<u>Decreased unit labor cost (1967 dollars)</u>
Public Services	49.0%	33.7%	-4.1%
Support Services	24.6	18.1	-15.3
Industrial	<u>41.0</u>	<u>9.6</u>	<u>-21.4</u>
Total	43.7%	29.5%	-7.1%

Trends in Seven
Sub-Functions

Our research continued by selecting seven functional subdivisions within these three broad groupings.¹ Exhibit 2-9 shows the results within the three broad categories; there are sharp departures from the general pattern. The following highlights are noted:

¹See appendix G.

OVERALL TRENDS — FY 1971 VERSUS FY 1967 (BASE)

CATEGORIES	OUTPUT			MANYEARS			PRODUCTIVITY		
	-10%	+10%	+20%	-10%	+10%	+20%	-10%	+10%	+20%
I. PUBLIC SERVICES AS A GROUP		111.6		106.2			105.1		
A. OPERATING		109.9		106.3			103.4		
B. PROCESSING				105.3			115.3		
II. SUPPORT SERVICES AS A GROUP		121.4		92.8			113.6		
A. MANAGEMENT	98.2			93.1			105.4		
B. PROCUREMENT & SUPPLY	93.0			89.0			104.5		
C. MAINTENANCE	128.4			100.5			127.8		
III. INDUSTRIAL AS A GROUP	118.1			95.8			123.3		
A. MAJOR OVERHAUL & REPAIR		113.4		93.1			121.8		
B. MANUFACTURING	143.8			111.6			128.8		

1. The public service "operating" activities, with a productivity gain of only 3.4 percent, are dominated by the Postal Service. However, another activity of major size is the health services--over 200,000 man-years--where a flat productivity¹ existed during fiscal years 1967-71 period. This underscores the need for a continued vigorous search for labor-saving break-throughs in these institutions.
2. The public service "processing type" activities, by contrast, show major gains in output--21.4 percent--with less than half this increase (5.3 percent) in man-years. This reflects the impact of automation and systems improvements on mass processing functions, such as Social Security and other activities with transaction-type workloads.
3. Support services of the "management type" have shown a small decline in workload, but a favorable productivity ratio has resulted from proportionately larger personnel reductions.
4. "Procurement and supply" activities have shown trends similar to the management services.
5. "Maintenance" of bases, buildings, and equipment shows a large increase in workload with a stable personnel manning. This produced a significant gain in productivity.
6. The "major overhaul" segment of the industrial category--highly defense related--reflects increases in workload, with a downward trend in man-years. This is an area which, if properly supported by competent industrial engineering and timely capital investments, should continue to show significant productivity gains.
7. Finally, the area of "manufacturing", with the smallest total man-years (19,000), has the largest gains in productivity (28.8 percent). The efficiency of such manufacturing enterprises as the Bureau of Engraving and Printing and the Mint accounts for this outstanding performance.

It must be stressed that the above observations are but starting points for further studies which should be carried

¹The fiscal year 1971 index for the Health Services represented in our sample was computed at 101.2 percent of 1967.

on in individual agencies. These preliminary observations would be incomplete without some attempt to estimate future trends.

What Do the Data Suggest As To Future Trends in Productivity?

The joint team believes the following trends may occur in fiscal year 1972 and 1973:

- Defense workloads will continue to drop. While substantial civilian personnel reductions were achieved in fiscal year 1970 and fiscal year 1971, this rate may be less rapid in the future. Also, many installations which have been fully utilized during the Vietnam period may be less heavily loaded. These factors may have a downward influence on Federal productivity indices in fiscal years 1972 and 1973.
- The Postal Service has shown a steady workload increase in each of the past four years, with a leveling off of man-years between fiscal years 1970-71. If one assumes a further workload growth with little gain in man-years, this would have an upward influence on Federal productivity.
- With respect to the civilian agencies, it is assumed that workloads in many public service programs (health, education, environmental, etc.) will grow, while employment levels will be held even or perhaps show a small decrease under the President's personnel reduction program. Such trends would boost the productivity indices.

The assumptions and judgments discussed above, suggest that the indices for fiscal year 1972 should show some growth, although perhaps at a slower rate than 1967--1971.

This ability to speculate on potential trends is one of the values of this measurement tool. This capability should stimulate managers to ask sharper questions and prepare more effective advance plans. This is particularly true, as discussed in the next chapter, of the need for timely planning of productivity enhancing capital investments.

Summary of Findings and Proposed Next Steps

1. While continuing refinements will be required for at least one more year, we believe that a technique has

been developed which can measure trends in productivity of 55 to 60 percent of Federal civilian employees--from year to year on a consistent basis.

2. Perpetuation of this technique will require the issuance of an OMB data call requesting all departments and agencies (of 200 or more employees) to submit the required data--shortly after the conclusion of each fiscal year--to a central agency for statistical aggregation and index construction. We recommend that the Bureau of Labor Statistics (BLS) evaluate the technique developed, and the quality of data available. If it believes that they meet acceptable standards then BLS should propose plans--including the resources required--for assuming this responsibility on a permanent basis. In the meantime, the data gathering and analysis should be conducted by the joint team with the aid of BLS.
3. Regardless of whether BLS becomes the central collection and publishing agency--it is recommended that OMB, CSC, and GAO continue this joint project for at least one more year with the following principal objectives:
 - a. To work cooperatively with all agencies to increase the coverage thus far achieved to the maximum extent practical (an additional 100,000 man-years or more is estimated). In those areas where quantitative productivity measures are not feasible, studies should be conducted by the joint team of other ways of assessing productivity and performance trends. Such assessments might be used as supplementary data in the preparation of periodic reports to Congress and the public on total Federal productivity.
 - b. To improve the quality of the output measures, and to experiment with techniques of reflecting quality changes in computing the indices.
 - c. To develop additional or alternative functional indices for programs and activities where comparison among Federal agencies--and between the Federal, State, local, and private sectors--is possible and useful. The desires and needs of prospective users both in and outside of Government will be sought.

- d. To collect data, not only in terms of man-year and labor costs, but also to include capital and other costs affecting productivity, if possible.
 - e. To prepare plans for (1) the annual analysis of the productivity data, and (2) a report to the Congress and the public of significant trends.
 - f. To educate managers on the uses of such indices, particularly for planning, operating, and capital budgeting.
4. Finally, it is recommended that the joint steering committee work with the National Commission on Productivity to seek ways of developing a wide range of productivity measures covering common functions performed at State and local government levels. It is recommended that funding of such research be drawn from the grant programs, where possible, and that highly practical research projects be launched. Selected military installations and the D.C. Government may be useful as laboratories for the development of such measures. If this program is successful it will extend productivity measures to another 10 million employees in the State and local sectors.

CHAPTER 3

ENHANCING FEDERAL PRODUCTIVITY

Measuring Federal productivity was only part of what the joint team set out to do. Its other task was to determine how Federal productivity might be enhanced and improved. The work of the joint team showed several areas into which Federal management might move to bring about improvements in Federal productivity. These were:

- A. Through the use of better measurement systems including work measurement data, unit costs, and effectiveness measurement methods.
- B. Through better methods of financing productivity - improving capital investments.
- C. Through providing motivation for enhancing productivity.

Each of these topics is discussed separately below.

A. Enhancing productivity through the use of better measurement systems

One of the key conditions that is needed to enhance productivity is good management decisions. Management--at various levels--makes decisions on such things as whether existing practices are efficient or whether new methods should be found; whether existing equipment is sufficiently economical or new equipment should be purchased; and whether workers have appropriate skills or whether additional training is needed to make them appropriately productive. Decisions such as these are the ingredients of increased productivity. Without careful, informed decisions at all levels, little more than level or even sagging productivity can be expected.

To make good decisions, managers need facts. Managerial decisions for the most part are based upon comparisons of information on their function or operation with some standard or criterion. Often the standard or criterion is past performance. For example, if a manager's goal is to keep his costs from rising, an across-the-board Federal pay raise will mean that he will have to take some productivity-improving action if he is to meet his goal--assuming no change in workload. Without facts on that past cost performance, the manager would not know where he was, or what he

could expect from any decision he might make to keep his costs from rising.

The type of information that management needs to make decisions varies with the type of decisions required. Three types of measurement data that came to the attention of the joint team were deemed particularly useful for productivity-enhancing decisionmaking. These are:

1. Work measurement data.
2. Unit costs.
3. Effectiveness measurement.

Work measurement data consists of stating quantities of work performed in terms of hours consumed as compared to a standard. For instance, if the standard for reproducing pages of photo copy is 50 per hour and the operator produces only 47 per hour, he is working at 94 percent of standard.

Unit costs relate the volume of work to the funds required to produce the work. For example, the cost of producing 1,000 one dollar bills is \$7.69. The particular genius of unit costs is that they take out of the cost picture, fluctuations that occur because of differences in quantities. For example, if the total cost for producing a product were \$10,000 in 1971 and \$12,000 in 1972, it would look as if costs increased if only total cost is viewed. However, if 1,000 units were produced in 1971 and 1,500 units in 1972, the use of unit costs would show that, while costs in total dollars increased, the unit cost actually decreased, as shown below:

$$1971 = \frac{\$10,000}{1,000 \text{ units}} \text{ or } \$10 \text{ per unit}$$

$$1972 = \frac{\$12,000}{1,500 \text{ units}} \text{ or } \$8 \text{ per unit}$$

The third area of measurement involves effectiveness measures. Effectiveness measures involve comparisons of achieved results with predetermined goals or objectives.

All three measures are related and all three serve useful purposes. With all three, the manager can have comprehensive information about his organization and those areas in which he can make decisions to enhance the productivity of that organization. A presentation on the relationship of these measures is included as appendix I. Our findings in the use of these measures are described below.

WORK MEASUREMENT SYSTEMS

Work measurement systems can contribute to effective management decisionmaking by providing information on how much time is actually spent to perform certain tasks as compared to a standard. With this information managers can decide such things as how many men will be needed to perform predicted future workloads and whether work performed has been accomplished efficiently. To be useful such systems must be soundly conceived and accurately maintained and the results must be effectively used. In performing its work, the joint team made a number of inquiries into such systems to obtain some insight into whether the work measurement systems in use by governmental organizations are functioning as intended and whether effective use is made of the results. These approaches involved analysis of measurement systems in selected agencies, questionnaires administered to about 100 members of Federal Executive Boards, and management interviews of approximately 250 managers at various levels in the field establishments of five agencies.

Some of the data we obtained at one installation we visited illustrates how such data can be used. At that installation daily reports are produced on such functions as loading items to be shipped on railroad cars. Actual time spent is compared to the standards established for the steps involved, such as loading containers on pallets, to determine the degree of efficiency achieved in performing the work.

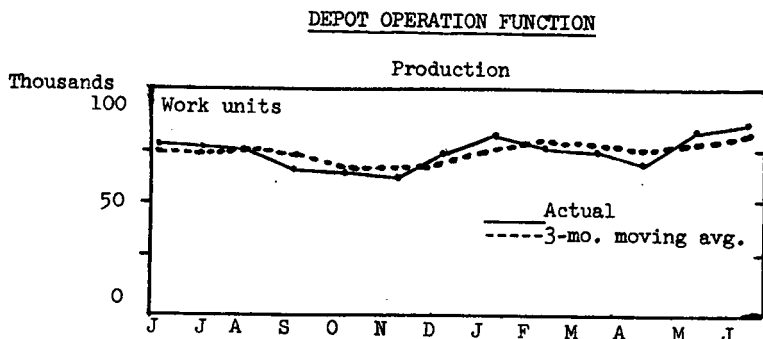
This data is summarized into broader categories as it goes up the line. For instance, it is summarized by branch and reported weekly to the division level. At the division level it is summarized monthly and reported to the directorate level. An example follows:

1. Actual man-hours for the month	2,551
2. Standard hours for work accomplished	2,025
3. Percentage of efficiency (line 2 ÷ line 1)	79%
4. Actual man-months required for work accomplished	15.1
5. Man-months required for work at standard	12.0

The agency's Director gets information on problems within any of the agency's functional areas in a monthly

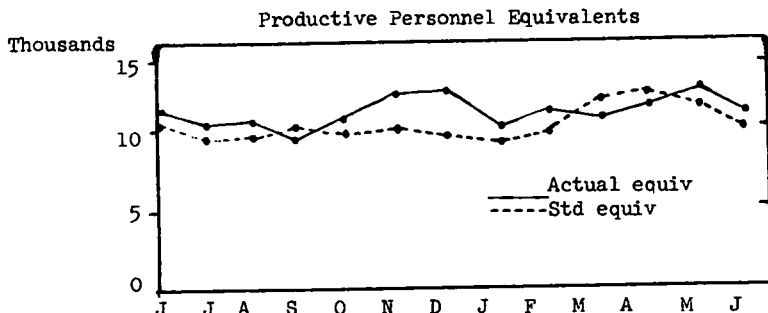
formal briefing. These briefings involve comprehensive performance appraisals which examine the status of each major program in terms of relative indicators of progress. The briefings include assessment of the performance of individual installations as well as organization-wide accomplishments. While certain items are reviewed regularly, the content of each briefing varies to be fully responsive to the changes in operational environment and to the current needs of management. Data are presented on (1) current trends in workload and performance efficiency, (2) status in meeting key program objectives, (3) qualitative indicators of mission performance, and (4) status of progress in special interest areas.

The following charts are examples of the type of information utilized in the briefings.



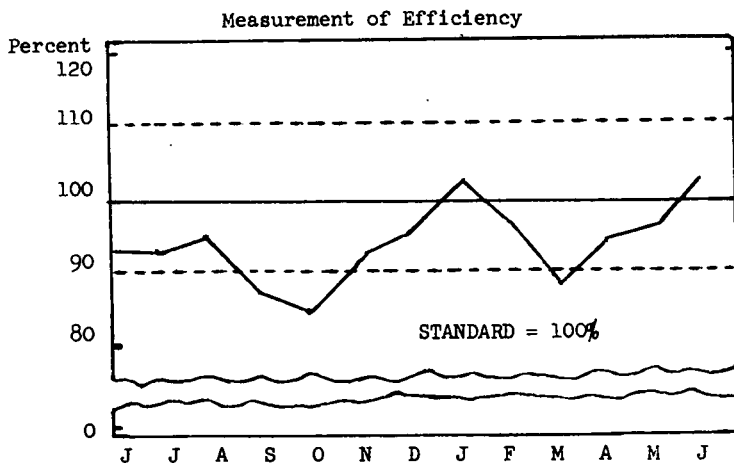
This chart displays 13 months' information. The solid line depicts the actual workload while the dotted line is a 3-month moving average which smooths out the peaks and valleys and provides a better basis for trend analysis or forecasting.

DEPOT OPERATION FUNCTION



This chart shows productive personnel equivalents used to accomplish the workload displayed on the preceding chart. If an activity is 100 percent efficient, the dotted line, which represents standard equivalents, would be identical to the solid line, which represents actual equivalents. If the solid line is above the dotted line, efficiency is less than 100 percent. Conversely, when the dotted line is above the solid line, efficiency is more than 100 percent.

DEPOT OPERATION FUNCTION



This chart is an example of how the overall efficiency of a major function is reported to top management. Ranges (acceptable tolerances shown by the dotted lines) provide a basis for evaluation of the function's performance and, as warranted, action - usually on the management-by-exception basis.

The charts and supporting data form a basis for decisionmaking in terms of planning for manpower needs; scheduling work; and identifying, investigating, and correcting problems that are preventing achievement of the agency's performance goals.

Results of our studies

Comparison of two systems

Our inquiry indicated that there is considerable variation in the accuracy and use of the output of the work measurement systems included in our inquiry. The range of these variations is perhaps best illustrated by comparison of the results of our work at two organizations at which we looked into the work measurement systems in considerable detail. Both of these organizations have similar missions. They are responsible for buying, stocking, and issuing supplies and materials. To work efficiently, they must have the necessary stocks and transmit them quickly to using organizations. With the purpose of accomplishing these functions in the most efficient and effective manner, both organizations establish standards to do the work, accumulate data on time spent and work produced, compare the work produced with the standards, and prepare a series of work measurement reports. However, there were significant differences between the organizations as to the validity and utility of the data.

At the first installation we found that by and large the standards were accurate. Moreover, management was consistently seeking ways to make the standards more reliable and useful. Also our tests disclosed that management control over data reported on work actually performed was sufficient to ensure reasonable accuracy. As a result, the output of the system had the confidence of and was used by various levels of management which included management at the work centers, division level, directorate level and the installation head.

At the second installation, the situation was almost directly the opposite. The work measurement system at the second organization was separate and distinct with an insignificant degree of integration into the overall management system. Moreover, the accuracy of the data in the system was doubted by management at all levels. Lack of confidence in the accuracy of the system appeared to result primarily from two causes.

--First, the standards were not kept current. Because of changing work conditions, standards need to be

reexamined frequently to see that they are still appropriate to the tasks being performed. At the time of our review 57 percent of the standards had not been reexamined within the last two years. Moreover, in many cases there was a lack of documentation to support the standards and where documentation did exist we found a number of errors.

- Second, the data on actual work performed was not verified by independent check. Our tests disclosed several instances in which there were errors in this data.

As might be expected, the difference in confidence in the accuracy of the data made a significant difference in the extent to which the system was used. At the first installation the system was an integral part of the management system and was used by management at all levels on such things as

- translating workloads into manpower needs
- preparing schedules for performing workloads
- planning future needs for manpower and other resources
- determining efficiency of performance attained in carrying out specific functions.

At the second installation, limited use was made of the work measurement data and most subordinates thought its primary use was as a basis for reductions-in-force. Of 116 managers at various levels that we asked about the system, 80 (69 percent) felt it was not worthwhile.

We also learned that the training course for managers in the use of the system had been reduced from 20 hours to 2 hours and that those below the management level received no formal training at all. The paucity of training in the use of the system appeared to us to be a substantial factor in the failure to use it.

We do not know if either of the above systems is typical of Government work measurements systems. However, they do illustrate the considerable differences that can occur depending upon whether the system is kept reasonably accurate, the people who use it are adequately trained and the output from the system is made a part of the information which management uses in decisionmaking.

Results of additional inquiries

The briefings and questionnaires we obtained from other agencies indicate that there is substantial room for improvement in the data produced by governmental work measurement systems and the use of that data. Some of the information we obtained from the briefings and questionnaires follows:

- Briefings obtained at nine other organizations disclosed instances in which work measurement systems did not exist or covered only part of what was possible.
- Members of the Federal Executive Boards were asked to identify the reasons why managers are not making greater use of measurement data in the management process. Of 47 who commented: (1) 28 percent noted that there were problems in obtaining valid data and (2) 26 percent cited the lack of knowledge, training, skill, and interest.
- Members of the Boards were asked to provide suggestions for making measurement data more effective. Of 54 who responded: (1) 17 percent suggested additional and more complete training and (2) 15 percent suggested that more feedback data was needed.
- Managers at five agencies were asked to comment on areas needing better technical advice and assistance. There were 159 responses. The area cited most often (31 percent) was the need for improvement in the use of work standards and measurement of productivity.

We also found that managers at different levels need different data. For example, the first line manager is usually interested in data in sufficient detail to effectively evaluate and supervise groups of workers. He is interested in data such as the output per employee. On the other hand, the middle manager usually does not need or want this much detail. He is interested in summary data such as the total number of units produced for the day. The top level manager wants his data even more succinct. He wants to know only such things as whether shipments are getting out on time and is concerned with the number of units produced this year to date compared to last year to date in order to examine long term trends.

Conclusions

Effective planning for manpower needs and effective scheduling of work are important means of improving

productivity because they tend to make the best use of manpower and avoid lost time and wasted effort. Work measurement systems are prime tools for management in achieving effective planning and work scheduling, and therefore the use of such systems should be encouraged. To obtain effective use of work measurement systems, both management and their subordinates must have confidence in the systems. Securing such confidence requires an accurate, up-to-date system and sufficient training of personnel to permit them to understand how it works and know how to use the results. Management needs to ascertain that the data produced by existing systems is reliable enough to be accepted.

Extending work measurement techniques to susceptible functions not now covered and improving the reliability of the data for those systems whose veracity is challenged would in our judgment make a worthwhile contribution to the productivity of the Federal Government. Our recommendations for achieving increased use of work measurement techniques follow.

Recommendations

1. To improve the accuracy of the data in existing systems, we recommend that evaluations of the validity of the data be made on a regular basis. The joint team has developed "Guidelines for Evaluating Work Measurement Systems" during the course of its study and these guidelines will be provided to interested agencies. We recommend that the joint team, in its next phase of work, organize a Government-wide evaluation effort and provide assistance to agencies in making such evaluations.
2. To improve the value of work measurement systems, we recommend that the joint team, in its next phase of work, sponsor a research project to design a system to meet the specific requirements of managers at all levels. The results of this will be used in recommendation number 3 below.
3. To improve the skill and knowledge of employees in the use of measurement methods and interpretation of results, we recommend that the CSC, with the assistance of GAO and OMB, modify existing and develop new training programs.
4. To promote increased use of work measurement systems, we recommend that OMB increase its efforts to obtain such data for use in the budget review process, as provided in Circular A-11.

UNIT COSTS

As previously indicated, unit costs are a very useful tool for management decisionmakers because they reduce costs to a common denominator, namely the unit. This common denominator enables the manager to better interpret what is happening to his costs than would be possible if total costs were used without the common denominator. Some examples follow.

Unit Costs as a Decisionmaking Tool

Bureau of Engraving and Printing

The Bureau of Engraving and Printing uses unit costs extensively as a management tool. The effectiveness of the Bureau's use of unit costs is shown by a comparison of the unit costs of printing bank notes (dollar bills and other bills of various denominations). In 1952, the cost per 1,000 notes was \$9.92. At the close of fiscal year 1971, the cost per 1,000 notes was \$7.69, or \$2.23 lower, despite the substantial inflation that has occurred in the intervening years.

The system of data reporting on operations generated by the Bureau's cost accounting system brings to the attention of management those conditions which may be hampering a cost center from achieving maximum operating efficiency. Mr. James A. Conlon, Director of the Bureau, attributes much of the Bureau's ability to reduce its costs to management decisions resulting from effective use of unit costs.

Some examples of how unit costs are used follow:

- In one case, the unit cost rates showed the printing costs for numbering currency notes were about 20 cents per thousand units while the unit cost of the manual finishing operations was nearly 9 times as great, or \$1.76 per thousand units. By identifying the manual operations which constituted most of the cost, the Bureau was able to concentrate engineering studies towards automation of those operations. Custom-designed equipment was developed which the Bureau predicts will result in reductions in cost of \$2 million annually.
- In another case, one machine appeared to be operating economically, but, through use of unit costs, Bureau managers identified that the cost of required additional labor at another stage in the process made the

total unit cost uneconomical. A new procedure was installed which eliminated the need for additional labor and resulted in a lower total unit cost.

- Custom-designed automatic equipment was introduced in the Bureau for the manufacture of postage stamps in coil form which combined a number of operations (many of which were hand operations) previously performed separately.
- In a similar vein, the Bureau intends to invite bids in the coming fiscal year for the construction of specialized equipment for the mechanization of the many manual operations currently employed in manufacturing postage stamps in booklet form--all at considerable savings in manpower and associated costs, as identified in cost-benefit analysis predicated on unit cost data.
- As a result of an in-depth analysis of production costs, a special committee appointed by the Director to conduct studies on surface printing equipment has made several recommendations as to the optimum mix of new presses which should be acquired by the Bureau to produce more economically and effectively the wide variety of miscellaneous products printed by the off-set and letterpress process.

Bureau of Accounts

The Treasury Department's Bureau of Accounts has long supported its appropriation request to the OMB and the Congress with unit costs of operations for central disbursing activity.

Bureau officials believed that substantial benefits would accrue to the Government if the nearly 500 million pieces of mail each year were made available to the Postal Service in ZIP Code sequence. By use of unit costs, the Bureau was able to compute these benefits. As a result, with the full support of OMB and the Congress, the Bureau now spends over \$250,000 a year (about 1.004 cents per unit of output) to presort its mailings, thus enabling the Postal Service to save about \$3,250,000 of sorting costs annually--a cost benefit ratio of 13 to 1. The use of unit costs made it possible to identify this interagency savings.

General Accounting Office

The General Accounting Office in its Transportation Division has used the concept of unit costing for a number of

years to measure the efficiency of its procedures and techniques for auditing transportation vouchers for overcharges. By relating hourly audit costs to overcharges recovered from carriers, the GAO managers have implemented various actions which have made its transportation auditors twice as productive as they were in 1962. For example, net overcharges on audit of freight bills increased from \$12 per hour of audit effort in 1962 to \$27 per hour in 1971. In the audit of passenger bills the net amount of overcharge revenue increased from \$4 an hour in 1962 to \$24 an hour in 1971.

One example of past management actions which was predicated on this relation of costs to returns is the development of a computerized system for audit of domestic household goods shipments. It was determined that a significant overcharge potential existed in bills submitted for shipment of household goods but that this potential could not be economically recovered by manual audit. Management, therefore, developed a method of doing this audit through use of a computer, resulting in an economical audit that has produced increased revenues averaging \$100,000 annually and is projected to produce a total increase in revenues of about \$300,000 annually when fully implemented.

In another example it was found that significant savings could be achieved by a change in procedures initiating correspondence to clarify unsupported and questionable changes before resorting to the expensive process of computing and billing for the overcharges. As a result of this and other policy changes the overcharge cancellation rate decreased from 17 percent to 9 percent on freight items, and from 50 percent to 5 percent on passenger transactions. The resultant savings in manpower is estimated to be about 20,000 man hours per year.

In another example, management knew through relation of its "cost to return ratio" that the rising cost of salaries was significantly increasing the cost of auditing small dollar claims and was therefore adversely impacting on overall productivity. Although not economical, a surveillance type audit of such claims is required. To meet this problem, management introduced statistical sampling in the audit of these small value claims. Statistical sampling makes it possible for management to maintain the cost at minimum levels, consistent with the required degree of audition.

Unit Costs as a Basis for Setting Charges

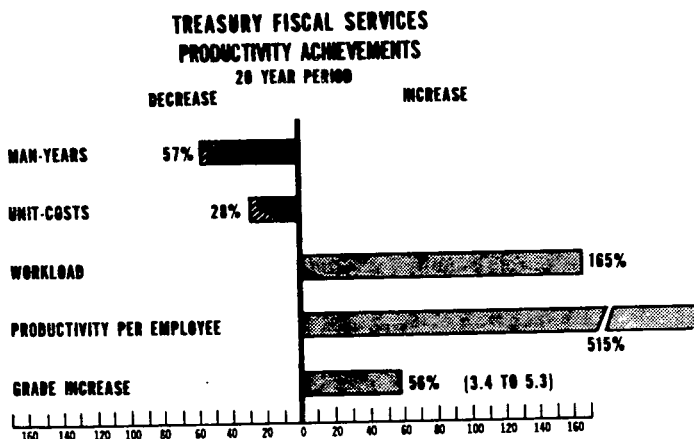
Many Federal agencies perform special services for particular segments of the population that are beyond those which accrue to the general population. It is the general

policy of the Federal Government to charge fees for such services. It is also the policy of the Federal Government that when such fees are charged, they ordinarily should be commensurate with the cost of performing the service. In some cases, the law providing for the service specifies that the fee to be charged should be just what is required to recover the cost. Unit costs are tailor made for providing such information. However, a number of GAO reports have shown cases where agencies did not have good unit costs and were not recovering the costs of performing the services.

Unit Costs as a Means of Demonstrating Efficient Performance

Unit costs can be very effective as a means of demonstrating how efficiently management has performed. Effective use was recently made of this attribute of unit costs by the Treasury fiscal services. The fiscal services felt that the overall reduction of one tenth of a grade ordered by the President for all Government agencies for fiscal year 1972, would be unduly harmful to their operation. In a meeting with OMB to gain exemption from this requirement, they showed with unit costs and supplementary data that over the past 20 years unit costs had dropped 28 percent while workload had increased 165 percent. The reason was a 515 percent increase in productivity. The table below shows the pertinent figures.

EXHIBIT 3-1



As a result of the excellent showing they had made in increasing productivity and decreasing unit cost, the exemption was granted.

Potential for Further Use of Unit Costs is High

In phase one of the study, the joint project team found that about 39 percent of the employees of the participating agencies were covered by unit costs, as follows:

<u>Agency</u>	<u>Percent of coverage</u>
Department of Defense	38
Post Office	60
Other civilian agencies	<u>23</u>
Overall average	<u>39</u>

The joint team in Phase II of its study undertook to assess the potential for extending the use of unit costs. The study was limited to civilian agencies. From the study of 10 civilian agencies with annual operating funds of about \$5.5 billion, the team concluded that \$4.7 billion (or about 85 percent) of the operating funds could be brought under unit costing.

As part of a further effort to identify the potential use of the unit cost concept, a demonstration project with Commerce Department's National Technical Information Service was undertaken. The objective was to develop and test the methodology for systematically identifying the levels and types of unit cost data required at all managerial levels. For example the areas where unit costs can be used are such as pricing of documents, forecasting inventory policy, storage policy and cost estimation. The managerial levels considered range from the unit supervisor, to the director. By constructing a matrix between needs and users, definitive unit cost data were identified. The results to date, which are preliminary, show that an information system of unit costs and related factors can be developed on an interrelated basis considering the impact of decisions made from time to time.

Disincentives to Greater Use of Unit Costs

Many reasons are expressed or suggested as to why agencies do not use unit costs more widely in the preparation of their budget and in the management of their activities. In the following paragraphs we have attempted to interpret some

of the disincentives which appeared to be the most real or were mentioned with the greatest frequency.

Perhaps the primary disincentive is the fear that use of unit costs would tend to produce tighter budgets because it would make it easier for reviewers to understand the programs and to reduce budgets to minimum levels. Tighter budgets are not only more difficult for a manager to operate under but also produce other disincentives. In this respect, there is a prevailing belief that in Government the rewards in terms of prestige, promotions, and the ability to hire better people and to carry out more effective programs, are awarded to those who can justify the largest budgets. Officials are reluctant to expose their budgets to reductions by adopting unit costs without compensating incentives.

A second factor of equal or greater significance is the belief among agencies that use of unit costs in the budget process would bring about lower quality program output and loss in program effectiveness. This fear seems to stem from the feeling that use of unit costs would cause reviewing authorities to become overly concerned with efficiency to the detriment or disregard of program effectiveness, and that the unit costs would be used to effect unjustified budget reductions. The officials also fear that the unit cost measures may not be realistic and, thus, could be improperly used to justify budget cuts which would reduce program effectiveness.

A third and related factor is the belief that the use of unit costs in its budget would build rigidity into agency programs and its management would make it more difficult for the agency to respond to unforeseen changes in situations and to congressional or public wishes for program changes.

A fourth disincentive concerns the question of cost versus benefits. The establishment and maintenance of a cost accounting system needed to develop good unit costs is not without a cost of its own. Many agencies feel that it is not worth the added benefits or information that unit costs would provide. In particular, many agencies with well developed work measurement systems believe that unit cost measures would not provide them with sufficient additional information to warrant the added costs.

Another related factor is the rather generally accepted proposition that there is no critical need at lower management levels in the organization for unit costs to manage low volume operations. Evidence indicates that where such information has been needed it has been developed.

One of the most frequently mentioned difficulties deterring wider use of unit costs is that some programs are considered very difficult, if not impossible, to measure in terms of unit costs and in particular it is questioned whether the results would be meaningful. Examples are research programs and some types of grant-in-aid programs.

There seems to be some built-in reluctance of people to attempt to measure programs for which they have responsibility. This perhaps relates to the fact that people tend not to like to be measured.

In a special study performed for the joint project it was found that some of these fears which act as disincentives to the use of unit costs were unfounded. In very brief terms one conclusion of the study was that users of unit costs in the preparation and support of their budget requests certainly fare no worse in budget reviews than non-users, and there is considerable evidence that they fare better.

Extending the Use of Unit Costs

With the available evidence on the benefits of unit costs as a basis for sound decisionmaking, there seems little doubt that extending their use would be a productivity enhancing endeavor. The problem of getting more extended use of unit costs seems to be primarily one of providing sufficient incentives to managers to use this tool to offset their apprehensions about making their operations more visible to higher management levels and budget examiners. The type of incentive the team deems most practical is that of greater managerial freedom. As indicated previously, there are limitations on managers which prevent them from making certain types of decisions notwithstanding how much more productive an alternative arrangement might be. Such limitations are personnel ceilings which prevent managers from hiring additional personnel in cases where such hiring would improve productivity. Other limitations are appropriation limitations which prevent money appropriated for one purpose from being used for another no matter how extreme the exigency or potential saving.

Another matter which the joint team recognized as needed to provide managers with incentive for effective use of unit costs was the relating of budgetary costs with actual costs. As the situation now generally exists in Government agencies, budgeting and accounting for costs are not correlated effectively. If unit costs or similar data are used to justify budgetary presentations there is no follow-through to the actual costs incurred after the budget has been approved. Once the budget has been approved, the details of the data

used in justifying it is forgotten and is not used as a control over operations in the budget execution phase. The joint team believes that this is largely because the agencies are not held accountable for how well they follow-through on budget objectives once the budget has been approved.

The team believes that managers might be motivated to further use of unit costs if they could manage on the basis of cost without other restraints. The team also believes that extended use of unit costs could be attained by greater use of such data in the budgetary process. Accordingly, we are making the following recommendations.

Recommendations

We recommend that:

1. The OMB establish a pilot project in which a selected volunteer agency is permitted to have maximum potential flexibility in managing on the basis of unit costs and other valid measurement data and be relieved of personnel ceilings, grade controls and other arbitrary restraints. The objective is to establish whether this is not a superior means of controlling Federal managers while still permitting managers maximum flexibility to adjust their operations to maximize productivity.
2. The OMB enforce Circular A-11 requirements that unit costs be used in budget submissions to justify appropriation requests where such costs can be prepared from existing data. The objective is to promote the use of better measurement data in the process by which resources are made available to agencies.
3. A demonstration project be undertaken under the aegis of the Joint Financial Management Improvement Program to develop the techniques and methods for relating actual performance on unit costs with data used in obtaining budget approval to determine the extent to which such accountability would provide an incentive to more effective use of unit cost and hence better management decisions and improved productivity.

ENCOURAGING EFFECTIVENESS MEASUREMENT

The purpose of this project was to determine the extent to which Federal agencies measure the impact or effect of their programs and to encourage more valid and useful means of measuring effectiveness.

It was found in Phase I of this project that most efforts to evaluate programs or organizations have been concerned with measuring productivity in terms of input-output relationships. The outputs are usually expressed in units of goods or services immediately produced, such as number of claims processed, number of persons trained, etc. These measures assume that the activity is doing what it should be doing and provide no means for evaluating the contribution or success of the activity relative to its cost.¹ Therefore, this project was added in Phase II to emphasize the importance of developing effective measures in conjunction with productivity measures.

Most of the existing measurement systems deal with aspects of organizational efficiency, which are determined by comparing actual performance (unit costs, for example) with some standard. The major problem in progressing from efficiency to effectiveness measurement is that the latter involves establishment of complex external and internal cause-effect relationships with the external tending to be the more difficult to determine. For example, the mission of the National Highway Safety Bureau, DOT, is "to reduce the mounting number of deaths and injuries resulting from traffic accidents on the Nation's highways." Establishing a direct relationship between the outputs of the Bureau's three programs and the incidence of traffic deaths and injuries appears feasible, but not easy.

Effectiveness measurement provides the means of determining whether the agency is proceeding toward the objectives and of establishing a relationship between management actions and mission accomplishment. Both efficiency and effectiveness measurements are thus essential tools of managers in assessing true productivity, the former determining the cost of producing the agency's outputs and the latter the value of the agency's outputs to the recipient of its goods and services.

¹For a complete discussion of the interrelationship between all measures see Appendix I.

Measures of effectiveness will provide information on:

- Whether programs are accomplishing their intended objectives.
- Ways to improve the operation of the program.
- Which programs should be abolished and which new programs should be undertaken.
- How well programs are operating for which no final output can be readily defined.

In developing recommendations for encouraging the utilization of effectiveness measurement, we have attempted to profit from the experiences of Programming Planning and Budgeting (PPBS). In summary, the implementation of a Government-wide PPB system in the mid-60's had the following deficiencies:

- Rigidly forced from the top-down, on a Government-wide basis, it was adopted rather than adapted.
- Not well understood, supported, or used by top management.
- Perceptions of PPB's purposes not clear at all levels (OMB, Agency heads, managers).
- Little impact on resource allocation decisions, and not related to any system of rewards or penalties.
- Not integrated with the decisionmaking process within a department or agency.

Unfortunately, PPBS was often viewed as a single, well-defined system based on sophisticated techniques of analysis and intended to produce an optimal plan of Government activity.

Since the introduction of PPBS, there have been several attempts to develop effectiveness measurement for program evaluation and analysis. For example, in President Nixon's May 1970 memorandum to agency heads, he asked for program evaluation involving three steps:

- First, a critical examination of the objectives of the program.
- Second, an analysis of the effectiveness of the program. Does the program adequately serve its target

population? Does the program achieve its objectives in an economical manner?

- Third, consideration of alternative approaches to achieving the objectives which would produce the same or greater benefits at the same or lesser costs.

While several program areas were identified for termination, reduction, or reform as a result of the President's memorandum, there was no significant quantification of objectives or measures of effectiveness.

In September 1970, OMB developed a system for assessing results of Federal domestic programs. The approach, called the Performance Management System (PMS), has been installed in selected programs. With OMB staff working with agency personnel in developing definitions of objectives and performance measures, the Narcotics Control Program was the first system to become operational.

In developing our recommendations and action plan we are advocating no particular approach or technique for effectiveness measurement but simply building a foundation for the continued development of effectiveness measurement.

An initial step in developing recommendations was to assess what techniques and systems agencies had devised for evaluating effectiveness. As a result a workshop on effectiveness measurement was held in November 1971, with representatives from 17 departments and agencies in attendance.

The purpose was threefold:

- To learn what agencies are doing in the field of effectiveness measurement.
- To provide for an interchange of ideas on the subject.
- To initiate plans for encouraging effectiveness measurement throughout the Federal Government.

The workshop lessons can be summarized as follows: First, there is evidence of strong and increasing interest among Federal managers in determining the effectiveness of their programs. This interest is being given an impetus by OMB, CSC, and GAO, who are devoting more of their efforts toward helping agencies measure their effectiveness in accomplishing assigned objectives.

Second, the benefits of effectiveness measurement are many. In no other way can a manager objectively assess the extent to which his programs are meeting the needs of the public.

Third, there are a number of ways to approach the task of effectiveness measurement. The systems discussed at the workshop vary in scope and detail. This is as it should be, because agency needs differ. What is important, however, is that they have in common the quantification of objectives and some provision for holding managers accountable for results.

The proceedings of the workshop were published as a separate staff paper and copies were distributed to all departments and agencies.

Two effectiveness measurement systems discussed at the workshop serve to illustrate the varying approaches and levels of sophistication that can be taken in developing a system for measuring effectiveness.

HEW Operational Planning System

HEW has developed a management-by-objectives system in order to assess performance against objectives. The approach, called the Operational Planning System (OPS), provides a mechanism in HEW for management by objectives and towards results. HEW defines objectives as concise statements of what the HEW dollar is buying for the concrete, measurable achievements stated in terms of impact on a problem or progress towards a long-term goal.

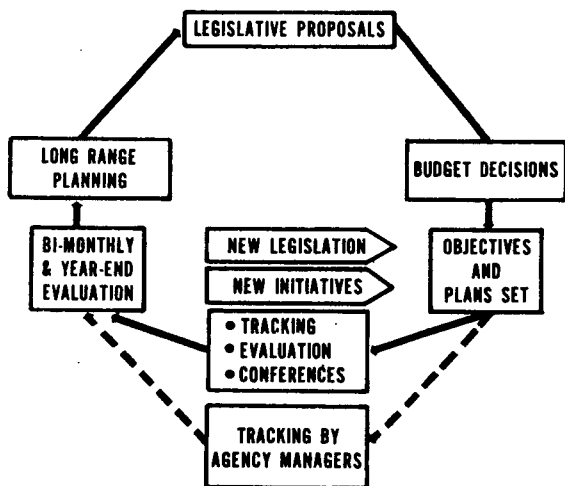
Basically, the system communicates the Secretary's program priorities to all operating managers. In response to these priorities, managers submit operating objectives and an operating plan which shows all the critical milestones necessary to achieving the objectives for the fiscal year to the Secretary. These objectives are drawn from the budget and state, in measurable results-oriented terms, what will be done during the fiscal year to carry out the Secretary's priorities at the field level. The Secretary reviews all of the objectives and selects those which he personally will monitor during the year. The keystone to this system is the bimonthly management conference between the Secretary and program heads. The Secretary uses them to review progress to date on each objective. The program head details problems and successes in meeting those objectives and corrective action is identified where required. This provides accountability by clearly identifying the individual who is responsible for the achievement of that objective.

It is, of course, difficult in HEW to quantify effectiveness measures for all their programs. They have looked at each program carefully to see whether it makes sense to try to define its effectiveness in measureable terms or to simply rely on an output measure. They have had some success in developing effectiveness measures and will continue to work in this direction.

The operating cycle using OPS is depicted in the diagram below (exhibit 3-2).

EXHIBIT 3-2

HEW OPERATIONAL PLANNING SYSTEM



FAA Goal Planning System

Another approach is the system being developed by the Federal Aviation Administration. Their system, while it is also built around management by objectives, differs from the HEW system in that FAA has expressed all goals and objectives in the form of impact on the public--a goals-oriented approach to decisionmaking. The goals approach requires:

- Clear articulation of the public benefits to be achieved for each major program.

- Determination of appropriate indication of goals achievement.
- Translation of goals into specific activities.
- Goals-oriented resource allocation.
- Establishment of a reporting system.
- Evaluation in terms of goal achievement.

For the goal or objective to be meaningful, it must:

- Be relevant to higher objectives or goals.
- Lead to identification of activities.
- Permit measurement of achievement.
- Be expressed, communicated and understood.

A specific example will help to clarify FAA's approach.

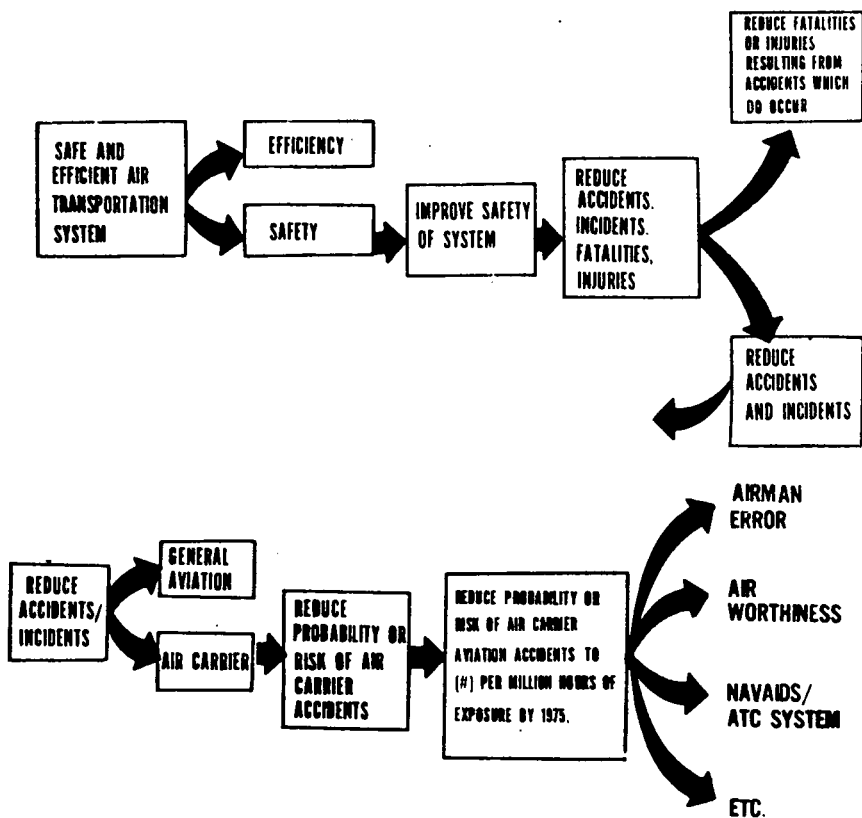
The FAA approach traditionally started with the general ideas of safety and efficiency in air transportation. But this provides no real direction or frame of reference to assess the relative impact of any proposed or ongoing programs. Therefore, the next step is to change the broad goal to something more tangible. The diagram in Exhibit 3-3 illustrates this process. As a result of the application of this type of procedure, the goal "Improve Safety" can be supported with a group of objectives expressed in terms of specified reductions in the probability of an accident. Activities to be undertaken can then be identified and related to these objectives by their impact on reducing the probability of aviation accidents.

This system is not operational as yet, but goals and objectives have been developed and comprehensive training has been provided to most managers on the management-by-objectives approach.

In addition to the Workshop Proceedings, a compendium of articles on Effectiveness Auditing has been published in cooperation with the Northern Virginia Chapter of the Federal Government Accountants Association. (The compendium is a separate publication.)

An important aspect of effectiveness measurement is the auditing of program results to see whether the programs accomplished prescribed objectives and goals and did so with

DEVELOPING A USEABLE GOAL



due regard to efficiency and economy; such audits provide management with unbiased information on how well they are achieving the results they set out to accomplish and whether they have used their funds wisely. The compendium of articles provides a reference work that can be used to gain insight into effectiveness auditing, its conceptual basis and its usefulness.

Based on discussions at the workshop and followup discussions with the agencies having some form of effectiveness measurement system; interviews with groups who have looked into this area such as the Committee for Economic Development, the Urban Institute, and Senator Roth's staff; and discussions with staff from the General Accounting Office and the Office of Management and Budget--a series of recommendations have been developed which, we hope, will encourage the development and use of effectiveness measurement. The recommendations are divided into three categories.

Recommendations

- A. Provide Assistance on how to Design, Install, and Operate.
 1. OMB should strengthen its capability to assist agencies in designing, installing, and activating an effectiveness measurement system. Design teams should be formed and include agency personnel having experience in effectiveness measurement.
 2. Through OMB's Management Review and Improvement Program, each department and agency should be encouraged to develop a management-by-objectives reporting system which articulates the top priorities of the department head.
 3. The CSC should design a series of carefully planned training courses on the development of effectiveness measurement systems, covering such areas as the selection and use of effectiveness measures, definition of goals and objectives, and techniques for obtaining measurement data. The training should be structured around workshops consisting of agency teams who can translate the training into actual program application and develop, during the course, preliminary measures of effectiveness.
 4. The Bureau of Intergovernmental Personnel Programs of the CSC should consider providing funds for

the training of State and local government officials in assessing and evaluating the accomplishments of grant-in-aid programs. Ways in which to best provide this training on a national basis should be explored with the Public Interest Groups.

5. A demonstration project on measuring the effectiveness of Federal grant-in-aid programs at all levels of Government should be initiated. A proposal for this project is enclosed as Exhibit K. Funding of the project should be explored with agencies such as HEW.
 6. The joint team, in its next phase of work, should investigate the need for establishment of a clearinghouse of effectiveness analyses, techniques, models, research, significant completed studies, and internal reviews of studies.
- B. Build Requirements into the Decisionmaking Structures.
1. OMB and GAO, in reviewing and evaluating new and proposed legislation, should assure that new program legislation:
 - a. Includes criteria for evaluating the effectiveness of the new program.
 - b. Authorizes expenditures for evaluation of program effectiveness, including grant-in-aid programs. The President's legislative program should be carefully reviewed to assure that these two factors have been addressed properly. For example, up to one percent of program funds are earmarked for evaluation for HEW health programs and several Social and Rehabilitation Service Programs. Another example of this type of action is when the Congress, in the 1967 OEO Amendments, gave explicit instructions that the Director of OEO make a continuing effort to evaluate OEO efforts. These same amendments required evaluation by the Comptroller General. In addition, the Model City supplemental grant funds designate a minimum of three percent of the funds for use in evaluations by the cities.

C. Monitoring Progress in Using Effectiveness Measures.

1. The General Accounting Office should continue to emphasize independent reviews of program effectiveness and program results. For fiscal years 1971 through 1973, GAO estimates that of their 3,000 professional staff members, about 21 percent, 28 percent and 32 percent, respectively, were, or will be, concerned with assessing whether Federal programs are accomplishing their intended purposes. The GAO expects this trend to continue.
2. A significant area in OMB's onsite management survey program should be the assessment of agency effectiveness evaluation practices. The definition of goals and objectives, measures of effectiveness, work plans for evaluations, evaluation methodology, and related reporting systems should be investigated. This should provide an assessment of systems already established and identify agencies requiring assistance from OMB's design teams.
3. The CSC, as part of its emphasis in personnel manpower evaluations, can stress the influence of effectiveness evaluations, and provide agencies with written guidance and training in evaluating personnel programs in terms of their contribution to program objectives.

B. Improving Productivity Through Capital Investment

In its policy statement of September 1971 the National Commission on Productivity outlined a series of actions designed to promote a concerted effort by all elements of the economy to foster productivity growth in the future. Among these was the need to stimulate improved productivity in the Federal Government and, particularly, to

"Assess the extent to which individuals, businesses, governments and other institutions will have access to an adequate supply of funds in this decade to realize their investment plans and identify means to assure that any deficiencies in the supply of capital required to promote adequate economic growth are corrected."

This policy statement recognizes that investment in capital improvements, particularly for labor saving equipment,

is one of the primary ways of increasing productivity and that maximum and efficient use of available capital and financing is essential to optimize acquisition of such equipment. In this regard the Commission noted in its first annual report in March 1972 that the availability of capital not only affects productivity directly through investment in labor saving devices but that it also affects economic growth--which can be looked at as contributing to the same goal.

In keeping with this goal and recognizing that within the Federal Government financing of high initial cost capital investments has been a long recognized problem, the joint team directed its efforts to identifying ways to facilitate financing of capital investments which will increase the productivity or efficiency of services provided by Federal employees. Examples of such investments are the purchase of automated equipment to reduce the cost of disbursing Federal checks, modernization of buildings and equipment to reduce the cost of jet engine overhaul, and the replacement of existing reproduction equipment with more sophisticated equipment which will reduce the amount of waste and increase the output per man. This excludes capital investments in public works projects, e.g., a flood control dam or a highway or, in social programs, a loan to a small business.

Problems in Financing Capital Investments

Within the Federal Government financing of capital investments in competition with current expense program requirements has been a long recognized problem. There are many apparent contributing factors but the most pervasive are (1) restrictive budget ceilings and (2) the high initial cost impact of many capital investments.

Under current budget procedures virtually all capital investments are financed on a cash basis. Although the funds for some outlays are obtained by borrowing, the expenditures are not linked to Government borrowing. In operating on a cash basis the high impact that occurs in an appropriation may act against approval of such proposal because of its heavy impact on budget outlays in one year (despite the fact that the equipment would pay for itself through increased productivity in succeeding years). Hence, many proposals for productive capital equipment are not included in the budget. Often they are not even considered for approval in the budget process above the bureau level. Even where they do reach higher levels, the budget procedures do not provide for special reviews of such projects.

In some agencies the long budget review cycle for approval of capital investments apparently also acts to limit opportunities for increasing productivity. A major agency of the Army reported that many self-amortizing investment opportunities were being lost because of the 21 month lead-time required for project approval and funding.

Another deterrent to the financing of capital investments is the current budget procedures wherein a capital investment project must be funded through more than one appropriation. For example, in DOD a capital investment project must often be funded through three appropriations, i.e., Military Construction, Procurement, and Operation and Maintenance. This precludes such projects from being funded as an entire package, thus reducing the visibility of the total investment requirements. It also fragments fund control and reporting.

Many of the activities experiencing problems in obtaining funds for capital investment are financed through revolving funds. This is of particular significance since most production and many service-type activities of Federal agencies are funded through revolving funds. It is in these areas that capital investment in labor saving devices has a particular potential for increasing productivity. Although most (but not all) revolving funds are authorized to finance improvements in equipment, the funds often do not have resources to pay for the investments, and with few, if any, exceptions the funds are not authorized to finance investments by borrowing. This shortage of resources is attributed to several factors which vary within each fund; however, the three most often cited reasons are (1) rising prices attributed to inflation, (2) advanced technology, i.e., the equipment and facilities being acquired are more sophisticated and expensive than that being replaced, and (3) the need for additional equipment, e.g., for expansion, automation of manual operations, etc. Since the funds are not allowed to include a factor for replacement in their charges or to retain "profits," they are not able to accumulate a cash reserve to finance the added costs. In this regard available evidence indicates that "replacement cost" is not widely used as a costing or pricing factor by the private sector. The reason given was that there are too many variables and assumptions to arrive at a meaningful evaluation on which to base a replacement cost factor. Instead the private sector apparently is more concerned with the return on investment.

It was generally felt that the skeptical attitude held by many toward the reliability of cost savings predicted by

economic analysis also acts as a constraint in funding capital investments. The need for verification of the predicted savings was stressed by agency officials contacted as being essential to any technique which might be adopted to facilitate the acquisition of more productive capital improvements. In this regard a survey of a limited number of commercial firms disclosed that many companies make a post-audit to measure the actual accomplishment of a capital investment. Many of the companies also placed considerable emphasis and value on the training needed to prepare realistic and comparable economic analysis.

Potential for Increasing Productivity Through Capital Investment

No Government-wide requirement exists for agencies to identify investments that will increase productivity thus, it is not possible to readily determine the potential for increasing productivity in the Federal sector through capital investment. Although the agencies encourage acquisition of equipment investments having a short economic payback potential, the proposals are not summarized for funding consideration throughout all levels of the budget review process. In fact many such proposals do not surface above the bureau level. Further, individual agencies often do not identify the economic benefit or savings attributed to proposed investments, i.e., they often do not prepare an economic analysis or disclose that the investment will have an economic return.

While the agencies do identify capital outlays in their budgets these figures are not particularly meaningful because of the wide variety and lack of uniformity in the types of items included. Further, these figures do not include investment proposals which lose out in the interagency competition for budget dollars and thus are not included in the President's budget.

Although it was not possible to arrive at any firm estimate of existing unfinanced proposals for capital investments having a high potential for increasing the productivity of Government operations the joint team identified numerous examples wherein proposed investments having a high economic return were losing out in the competition for budget dollars.

One such example concerns the underfinancing of a Navy program for modernization of its shipyard complex. Based on Navy calculations the current rate of funding (being requested by the Navy) will not produce sufficient annual operating savings to repay the planned investment. The Navy

estimates that by 1985 accumulated investment costs will be about \$682 million while accumulated benefits will total about \$400 million or \$282 million less than cost. In contrast, funding of the program in accordance with the Navy's original capital investment plan, which called for a total investment of \$1,050 million over a ten year period (1970 through 1979), would have resulted in the investment being repaid by 1985. Annual benefits of between \$110 and \$143 million were expected to accrue after 1985. Full funding of the program is being deferred because the Navy has given high priority to other projects. Since all programs must compete for the available funds, the Navy has reduced its requests for shipyard modernization funds. The operation of Navy shipyards is financed through the Navy Industrial Fund (NIF), however, the NIF is precluded by law from acquiring capital investments. Accordingly the modernization program is being funded through normal budget channels. This requires that funds be obtained from three appropriations; Military Construction, Navy Procurement, and Operations and Maintenance.

In a survey of 12 installations including six command headquarters, the project team identified 24 construction-type projects with economic returns that had been approved but were being delayed from inclusion in the budget. These projects were estimated to cost \$59.4 million and were expected to repay the investment in from one to ten years. The amount of accumulated economic returns or savings attributed to these projects that were expected to be lost during the period of delay was computed by the agencies as totaling \$31.6 million. The period of delay was considered to be the period between the budget year of original approval and the year the projects were currently programed for inclusion in the budget. The following are two rather typical examples of the type of projects identified.

One example concerns the deferral of funding for construction of an aircraft assembly facility. The facility was originally programed for completion in fiscal year 1971 at an estimated cost of \$6.3 million. It was predicted to achieve a one-time savings of \$4.5 million and to accrue annual savings of \$1.1 million. Had this project been funded on schedule, estimated savings of \$5 million would have been realized by the end of fiscal year 1972 and the initial investment would have been repaid by the end of 1973.

Another example concerns the deferral of funding for an Engineering-Systems Analysis Addition having a benefit cost ratio of 3.8. This addition was originally programed for completion in fiscal year 1970 at a cost of \$1.5 million

and was predicted to achieve an annual savings of \$653,000. Had this project been funded on schedule the investment would have been repaid by the end of fiscal year 1973.

On the strength of such examples and discussions with agency officials the Project members are convinced that a large number of unfinanced capital investment proposals exist--both in quantity and dollar value--which would have a significant impact on improving productivity in the Federal sector.

Alternative Financing Techniques

The Project members believe that the problem of financing productive capital investments could be improved if the high initial budget outlay impact could be spread over a reasonable payback period. Accordingly, the project members endeavored to identify and evaluate several alternative financing techniques which would serve this purpose. Those evaluated are listed below.

1. Lease, rent, and lease-purchase.
2. Contracting with private industry for products or services which would eliminate agency needs to acquire the investment.
3. Adoption of a Capital Budget.
4. Special budget identification and review of proposals having high productivity and devotion of a portion of available resources to such proposals.
5. Authorize existing revolving funds to finance capital equipment investments and to do so by borrowing.
6. Establish a corpus--"productivity bank"--perhaps in the form of a Government-sponsored corporation which would provide financing to agencies for equipment having a high productivity potential.

While this list of alternatives is not exhaustive we believe it is fairly comprehensive in that it covers the generally accepted concepts. These techniques were discussed with representatives from a few executive agencies and their opinions are incorporated in the discussion of each technique which appears in appendix J. The project team advocates consideration of the "Productivity Bank" which is discussed below.

Productivity Bank

This approach contemplates the establishment of a corpus (which might be termed a "Productivity Bank") that would provide financing to agencies having capital investment proposals with high productivity potential. To avoid a large outlay impact on the budget upon inception the operating capital should be provided through use of authority to spend public debt receipts. The bank could be set up as a Government corporation or as a separate entity within the executive branch. Whichever, it would appear suitable that the Secretary of the Treasury serve as Chairman of the Bank. Agencies could obtain approval for use of this source of financing through the OMB budget process, preferably in terms of a general plan rather than on the basis of individual proposals. However, actual advances to agencies from the Bank would be made on an individual project basis under the type of scrutiny ordinarily exercised by bankers in the private sector and each project would be considered on its own economic merits without regard to the sponsoring agency. Repayments to the Bank, including interest, would be spread over an agreed-upon payback period--generally five years or less. To assure repayment, the Bank would need to have first lien on agency appropriations in the amount of the loan. For example, if the predicted cost savings did not materialize, or if the activity involved were discontinued, the agency would still be required to repay the Bank for the amount of the loan.

Advantages

1. Provides an immediate source of financing outside of the normal budget ceilings.
2. The establishment and operation of the Bank would have no outlay impact on the budget.
3. Outlay impact on the budget would only occur as the advance from the Bank was repaid, i.e., in future years in relation to benefits derived from use of the investment.
4. It represents a straight-forward, business-like approach to financing capital investments.
5. Would be self-policing in that the approval procedures and requirements to repay the advance plus interest would tend to screen out proposals having questionable productivity potential.

Disadvantages

1. Would be difficult to obtain congressional acceptance since it might be viewed as "backdoor" financing and contributing to a loss of congressional control.
2. The approach can be attacked as a means of augmenting agency appropriations in the year in which the advance is received.
3. Would require legislation for creation of the Bank, and general legislation authority for agencies with annual appropriations to receive advances and to repay them over time.
4. A priority system would be required as there would undoubtedly not be enough money to finance all worthy projects.

The consensus among the team members and agency officials with whom we talked was that the concept of establishing a Productivity Bank had considerable merit, and that it could serve as a useful and workable alternative for financing capital investments having high productivity potential.

Conclusion

The team members believe that considerable potential exists for increasing productivity in the Federal Government through timely capital investment. This potential is believed to be particularly great in production and service-type activities financed through revolving funds. Evidence indicates that this potential will not be fully realized under the current budget procedures. Thus the team members believe that an alternative financing procedure is needed to facilitate acquisition of capital investments, particularly for laborsaving equipment, having a high productivity potential. To be effective it is felt that such a financing system must (1) provide an additional and immediate source of funds above normal budget ceilings, (2) spread the high initial budget outlay impact, associated with purchase, over an agreed-upon payback period--generally five years or less, and (3) be implemented as a formal part of the budget system.

The joint team believes that a "Productivity Bank" which would provide financing to agencies for acquisition of investments having a high economic return would be a very effective instrument for increasing productivity in the Federal Government. It meets all of the requirements cited

above. An added advantage of this technique is that it would provide a source of funds for activities financed through revolving funds.

The team agrees that leasing and contracting out have some application for increasing productivity in the Federal sector. Accordingly, we recommend that, whenever appropriate, they should be considered as alternatives in searching for ways to finance capital investments having a direct economic return.

The reliability and validity of an economic analysis is heavily dependent on the techniques and factors used, and the background and training of the analyst. Since the operating savings attributed to proposed capital investments are based on such analyses it is important that the results be reliable, and comparable among agencies. The joint team believes that the preparation of more reliable and comparable analyses could be enhanced by providing central training in the preparation of analyses for capital investments. The joint team recommends that such training be provided by the Civil Service Commission and that the techniques and factors incorporated in the course be approved by the Office of Management and Budget.

To further erase the skepticism that is often exhibited toward the savings predicated upon economic analysis the joint team believes that some form of verification system is needed to measure the actual accomplishments of capital investments. Such data could also be used as input to improve the reliability of future analyses.

Recommendations

1. The joint team is of the opinion that a Government-wide program, under the direction of OMB, should be established to facilitate financing of capital investments in laborsaving equipment that will increase productivity. To be effective it is recommended that the program be implemented as a formal part of the budget system. As a first step the OMB should request agencies to submit a separate list of unfinanced investments having a significant potential for increasing productivity of Government operations. It is suggested that the joint team, in its continuing efforts, work with the agencies in this first submission.

2. It is also recommended that strong leadership be provided within OMB by designating a senior official to assist agencies in identifying productivity-enhancing investments (generally, those with a payback of five years or less) and to be an advocate for these programs in OMB. In

compliance with existing circulars (A-76 and A-94) OMB would continue to encourage the agencies to consider, when appropriate, leasing and contracting out as desirable ways of increasing productivity.

3. To enhance preparation of more reliable and comparable economic analysis it is recommended that the OMB issue instructions in the preparation of such analyses for justifying capital investments. It is also recommended that the Civil Service Commission incorporate the essentials of this instruction in its training programs on preparation and support of economic analysis and that the OMB should encourage agencies to attend the CSC course.

4. To facilitate financing of such investments it is recommended that the OMB give consideration to requesting legislation for creation of a "Productivity Bank," (or special fund) to be devoted to financing capital investments having a high productivity potential. The legislation might provide for:

- a. The transactions of the Bank to be excluded from the President's budget.
- b. The operating capital to be provided in the form of authority to spend public debt receipts to avoid a large outlay impact on the budget at the inception of the Bank.
- c. A special group to be appointed as directors of the Bank to be responsible for approving financing from the Bank and for monitoring the accomplishment of the projected savings.
- d. Agencies with annual appropriation to be authorized to receive advances from the Bank and to repay the loan plus interest over a prescribed payback period.
- e. The Bank directors to require a post-audit to measure the actual accomplishment of approved investments.

C. Providing Motivation To Enhance Productivity

In embarking on the Productivity Project the team members were aware that the environment in which Federal managers function presents a number of obstacles to the measurement and improvement of productivity. The team therefore

made an inventory of the views of over 300 managers toward productivity improvement.

The inquiry was conducted by several of the project participants employing different techniques. At our request, the Agency Management Analysis Officer's Group (AMAOG) surveyed Washington Headquarters managers for their views on the incentives and disincentives to productivity improvement and documented several case histories on the subject. A discussion was held with members of the Executive Officers Group. Members of the joint team visited eleven of the Federal Executive Boards to explain the project and elicit their views. The Civil Service Commission conducted a questionnaire-interview study in the Spring of 1972 of 239 managers in the field organizations of five agencies.¹

The following paragraphs summarize the viewpoints encountered both at headquarters and in the field, and outline further work which the joint team recommends be undertaken in Phase III.

Confirming the findings made in Phase I, over 50 percent of those contacted in the field were using one or more types of quantitative performance measurement. These managers were first asked whether there are obstacles to making greater use of measurement data. 60 percent feel that there are, and stated the following reasons:

- Lack of knowledge, training, skill, and interest on the part of users.
- Lack of incentives to use measurement data.
- Uncertainty as to the validity of data, or difficulty in obtaining valid data.
- Concerns that the data would be misused or misinterpreted at higher levels.

Field managers were then asked to offer suggestions for making measurement data a more effective aid in stimulating productivity. Two-thirds had suggestions to offer, the principal of which are as follows:

- Provide additional or more complete training to managers in the use of the data.

¹A separate paper is being published covering this study--its methodology and findings.

- Provide incentives and rewards to managers who make significant, sustained improvements in productivity.
- Give more feedback to managers on their performance.
- Give managers more flexibility to use resources so as to improve performance.
- Set realistic performance standards and enforce them.
- Provide more top-management support in improving productivity.

In interpreting the views and suggestions of field managers, we believe that four matters deserve emphasis:

1. Limitations on the participation of field managers in agency management. The field study made by the Civil Service Commission showed that more than 75 percent felt a need for more authority if their effectiveness is to be increased. Specifically, they desired more authority in respect to:

- Use of personnel ("hiring and firing").
- Revising their organizational structure.
- Making changes in methods and procedures.

One regional director characterized the management environment in which he must work as follows:

He has broad authority over the disbursement of several hundred million dollars of program funds. His current operating budget is about 40 million dollars. But he has discretionary authority over only about 6 percent of that sum, and controls the duty assignments of only 12 employees. He must receive authority from Washington to change the grade of a secretary.

The importance of effective delegations to field managers causes us to feel that the joint project should inquire more deeply into these problems in Phase III.

2. Limitations on personnel resources. Perhaps the most widely cited limitations are the "arbitrary controls" represented by personnel ceilings, across-the-board-personnel cuts, and average grade reductions.

Managers understand the necessity for tight controls, but they feel that when uniformly applied they penalize the efficient manager who has already made reductions in his staff. Thus general reductions affect the "fat and the lean" equally. It is also reported that they result in uneconomic practices, such as substitution of military for civilian employees, substitution of blue collar for white collar employees, costly overtime, and unjustified contracting out.

During Phase III, it is believed that the joint team should attempt an assessment of the kinds of actions which were taken under the 5 percent personnel cut and the average grade reductions imposed in 1971.

3. Need for education and training. We were somewhat surprised at the frequency with which this subject was mentioned. Not only did 20 percent express a specific interest in technical training, but another 31 percent stated the need for assistance in developing valid measures of productivity. Still another group expressed fear that the data would be misunderstood and misused. This finding suggests the need for training--not only in how to develop measures but also in how to use them at each significant level of management.

These findings relate to those found in our case studies at two major installations. At one installation we found that an otherwise sophisticated system was not being fully utilized because it had not been designed to meet the requirements of each level of management.

4. Inadequacy of rewards. Finally, the field comments highlight the importance of positive recognition of those who perform well under measurement criteria. One point brought out by a number of field managers is that they get mostly "negative feedback" on their performance. This leads to disinterest or distrust.

Another frequently stressed point is that field managers should be given an opportunity to share in some of the benefits of their improved performance--through reuse of savings and more favorable consideration when personnel and budgetary retrenchments are necessary.

By way of contrast, the National Labor Relations Board regional representative in Cincinnati described the way in which the performance measurement system of the NLRB enables him to evaluate his performance in comparison with that of other field offices. Apparently, the way in which NLRB headquarters feedbacks to its field offices has proved beneficial. This type of experience should be pursued in depth in Phase III.

Comments by Headquarters' Officials

At a meeting with a group of the administrative assistant secretaries (Executive Officers), the question of how to optimize the use of measurement systems was discussed. The following principal viewpoints were expressed:

1. Involve all levels of management. They stressed that effective systems must be used and understood throughout an organization--not just by the budget office or the management staff.
2. Do not penalize the most efficient managers when budget and personnel reductions are necessary. This is the same theme that field managers stressed. Headquarters officials recognize that field managers must share some of the benefits of their efficiency.
3. Do not force unnatural or illogical measurements systems in the name of uniformity. This is another way of saying that each system should be tailored to meet the needs of each level of management and confirms other findings, including those dealing with the "program planning and budget system."
4. Pay particular attention to quality. The Executive Officers group pointed out that it is easy to beat any system based strictly on numbers without quality checks.

Recommendations

Progress in removing disincentives and providing positive motivation to the enhancement of productivity will not prove easy.

It is recommended that, during Phase III, imaginative work continue to document the consequences of the problems which have been cited and to define effective techniques of overcoming disincentives. Three objectives are proposed:

- a. Reward managers for exceptional productivity improvements, including: appropriate forms of recognition, some opportunity to use savings achieved, special consideration when personnel reductions and grade cuts are imposed, etc.
- b. Grant more flexibility to regional officials to utilize personnel and funds. The adverse impact of unnecessary restrictions on their authority should be documented with actual cases, in order to demonstrate the improvements which can be obtained.
- c. Obtain positive support and involvement of nonsupervisory employees in achieving greater productivity. A case study in one major agency is recommended as the first step.

Illustrations of special studies which have been proposed to the joint staff for pursuit during Phase III are: (1) research into the "motivational" and "behavioral aspects" of productivity; (2) studies of productivity improvement opportunities in ADP and administrative service activities; (3) assessment of the impact of the 5 percent personnel cut and the average grade reductions imposed in the past year; (4) assessment of the adverse effect on productivity of procedures governing appointments, promotions, terminations, and reductions in force; (5) assessment of the Defense Department experience in relaxing personnel ceilings at selected Army laboratories; (6) assessment of the incentive awards system as a spur to productivity; (7) study of measurement practices suitable for research-type activities; and (8) review of the desirability of establishing a central clearing-house for productivity improvement techniques.

CHAPTER 4

SUMMARY OF RECOMMENDATIONS AND PLAN OF ACTION

For more than one year the joint staff, with outstanding cooperation from 17 agencies and technical assistance from the staff of the Bureau of Labor Statistics, has explored a variety of approaches to measuring and enhancing productivity in the Federal Sector.

For convenience, the principal findings and recommendations are recapitulated below, and this chapter concludes with a proposed action plan for the year ahead.

A. SUMMARY OF RECOMMENDATIONS

1. While further refinements are required, we believe that a workable technique has been developed, capable of measuring trends in productivity of 55 to 60 percent of Federal civilian employees, from year to year, on a consistent basis. (See p. 28.)
 - a. Perpetuation of this technique will require endorsement of the Director of the Office of Management and Budget and the issuance of an official data call. It is recommended that all agencies with 200 or more employees be requested to participate in the program henceforth, and that data for fiscal year 1972 be submitted by October 1, 1972.
 - b. The Bureau of Labor Statistics should be asked to assess the data and the methodology, and to propose plans for assuming the collection and publication responsibilities--if it considers that the data and methodology meet acceptable standards.
2. It is recommended that the joint project be continued one more year to refine and improve the initial productivity indices (see p. 29), with the following objectives:
 - a. Increase coverage to the maximum extent practical. (An additional 100,000 man-years is believed feasible.) In those areas where quantitative productivity measures are not feasible, studies should be conducted by the joint team of other

ways of assessing performance trends. Such assessments might be used as supplementary data in the preparation of periodic reports to Congress and the public on total Federal productivity.

- b. Improve the quality of the data, and experiment with techniques of reflecting quality changes in adjusting future indices.
 - c. Develop additional or alternative functional indices, especially functions common to several Federal agencies--and between Federal, State, local, and private sectors.
 - d. Collect input data not only on man-years and labor costs but, if possible, on capital and other costs affecting productivity.
 - e. Prepare plans for (a) the annual analysis of the productivity data, and (b) a report to the Congress and the public covering significant trends.
 - f. Educate managers on the uses of such indices.
3. As a new initiative in Phase III, it is recommended that the joint project work with the National Commission on Productivity to find practical means of developing productivity measures covering common functions performed at State and local levels. It is recommended that funding of such research be drawn, where possible, from the grant programs and that highly practical projects be launched. Selected military installations and the District of Columbia can be used as laboratories for such research. If this program is successful, it would extend productivity measures to another ten million employees in the State and local sectors. (See p. 30.)
 4. In order to obtain greater value from existing work measurement systems, it is recommended that: (See p. 39.)
 - a. The "Guidelines For Evaluating Work Measurement Systems" developed during Phase II be disseminated through OMB, and that the joint team sponsor seminars on its uses and provide assistance to agencies in evaluating existing systems.
 - b. The joint team, in cooperation with an interested agency, conduct a research project on how to

design systems to meet the specific requirements of managers at all levels.

- c. The lessons learned from the above be incorporated in new or revised training programs, under the leadership of the Civil Service Commission.
 - d. OMB promote increased use of valid work measurement data in the budget review process, as provided in Circular A-11.
5. In order to expand the use of unit costs as a tool of management, it is recommended that OMB: (See p. 47.)
- a. Establish a pilot project to give a selected agency (or agencies) maximum practical flexibility to manage on the basis of unit costs and other valid measurement data and be relieved of personnel ceilings, grade controls, and other arbitrary restraints.
 - b. Require a feedback from agencies on how well they actually perform compared to their unit cost budget plans. The design of such a reporting system might be a logical project for sponsorship by the Joint Financial Management Improvement Program (JFMIP).
6. To encourage the adoption of effectiveness measures, it is recommended that: (See p. 55.)
- a. OMB provide expert assistance to agencies on how to design, install, and operate a variety of effectiveness measures (including the "Performance Measurement System" as applied to Narcotics Control Program, the "Operational Planning System" as being applied by the Secretary of HEW, and the more sophisticated FAA goal-setting system).
 - b. The joint project sponsor a special demonstration project to measure the effectiveness of Federal grant-in-aid programs (see appendix K), and to investigate the need for a clearinghouse of efforts to develop and evaluate effectiveness measures.
 - c. OMB require agencies to incorporate a requirement for effectiveness evaluation in new program

legislation. GAO should encourage Legislative Committees to do the same.

- d. OMB, CSC, and GAO encourage the use of program evaluation and effectiveness evaluation techniques in their ongoing audit and review programs.
7. To improve productivity through timely capital investments, it is recommended that: (See p. 65.)
 - a. OMB appoint a senior official to seek out ways to improve productivity, and particularly to stimulate timely identification of fast payback (5 years or less) productivity projects.
 - b. OMB require an annual review of all such projects, as a formal part of the budget process. It is suggested that the joint team work with the agencies in preparing the first submission.
 - c. CSC should provide special training in economic analysis techniques, in accordance with instructions issued by OMB.
8. In addition to the above steps, it is recommended that OMB give consideration to requesting legislation for creation of a "productivity bank" (or special fund), the purpose of which would be to: (See p. 66.)
 - a. Loan funds for fast-payback projects, to be repaid out of annual appropriations over an agreed-upon period--generally five years or less.
 - b. Exclude such financing from the President's budget by providing authority to the bank to spend public debt receipts. A special group would be appointed as directors of the bank, to be responsible for approving project financing and for monitoring the accomplishment of the projected savings.
9. To reduce the most frequently-cited disincentives to improved productivity (especially those cited to us by regional officials), it is recommended that studies be continued in Phase III to develop ways to: (See p. 70.)
 - a. Reward managers for exceptional productivity improvement, including: appropriate forms of recognition, some opportunity to use savings achieved, special consideration when personnel reductions and grade cuts are imposed, etc.

- b. Grant more flexibility to regional officials to utilize personnel and funds. The adverse impact of unnecessary restrictions on their authority should be documented with actual cases in order to demonstrate the improvements which can be obtained.
- c. Obtain positive support and involvement of non-supervisory employees in achieving greater productivity. A case study in one major agency is recommended as the first step.

Illustrations of other projects which have been proposed to the joint staff for consideration during Phase III are (1) research into the "motivational" and "behavioral aspects" of productivity; (2) studies of productivity improvement opportunities in ADP and administrative service activities; (3) assessment of the impact of the 5 percent personnel cut and the average grade reduction imposed in the past year; (4) assessment of the adverse effect on productivity of procedures governing appointments, promotions, terminations, and reductions in force; (5) assessment of the Defense Department experience in relaxing personnel ceilings at selected Army laboratories; (6) assessment of the incentive awards system as a spur to productivity; (7) study of measurement practices suitable for research-type activities; and (8) review of the desirability of establishing a central clearinghouse for productivity improvement techniques.

B. PLAN OF ACTION

Twenty-seven actions have been suggested to carry out the above recommendations. Their execution will benefit, we believe, from continuing the joint effort which has characterized this project to date. In order to avoid any loss of momentum, the following time table is recommended. (It should be noted that the Civil Service Commission will participate in each phase in developing and fostering improved training programs.)

1. Phase III-A--Review of this Report (July--September)
 - a. Submit report to Senator Proxmire, the participating agencies, and the Secretary of Labor.
 - b. Hold a briefing session with agency representatives, and with other agency officials as desired.

2. Phase III-B--Develop and Publish Productivity Indices for Fiscal Year 1972 (July--December).

- a. OMB issue a call for fiscal year 1972 data, to be submitted by October 1, 1972, by all agencies with 200 or more employees.
- b. Consult with economists and other prospective users of the data (in and out of Government) to obtain suggestions for analyzing and presenting the data.
- c. Work with selected agencies on use of indices in future planning and in evaluation of performance.
- d. Publish a report covering indices for period fiscal year 1967-72. Accomplish this, if possible, by January 1973.
- e. Hold a major workshop of agency users in January 1973.

3. Phase III-C--Inaugurate new projects (October--May).

A final plan will be developed and presented to the Steering Committee in September 1972, as to how to attack the numerous projects cited in the above recommendation. It is anticipated that:

- GAO will continue to give leadership to (1) the expansion and refinement of productivity measures, (2) expanded use of unit costs, and (3) documenting the importance of timely capital investments.
- OMB will give primary leadership to (1) promulgation of Executive Branch regulations to support all projects, (2) extension of the program to state and local governments in collaboration with the National Commission on Productivity, and (3) continued emphasis upon development and use of effectiveness measurement.
- CSC will participate in, and monitor the results of all of the above, with the objectives of (1) obtaining materials useful for training purposes and fostering initiation of such training, either in CSC-conducted courses or in those conducted by individual agencies; and (2) evaluating more effective ways of motivating managers and nonsupervisory employees to achieve productivity improvements.

Maximum agency participation in the above projects will be encouraged.

Progress reports to the principals will be made in January, March, and June of 1973.

JOHN SPARKMAN, ALA., CHAIRMAN
 WILLIAM PROSSER, WIS. WALLACE F. BOWEN, ILL.
 HARRISON A. WILLIAMS, JR., N.J. JOHN G. TOWER, TEX.
 EDWARD S. MUEKLE, MAINE EDWARD W. BROOKE, MASS.
 THOMAS J. MCINTYRE, N.H. CHARLES W. PERCY, ILL.
 WALTER F. MONDALE, MINN. CHARLES S. GOODALL, N.Y.
 ERNEST F. HOLLINGS, S.C. ROBERT W. PACKWOOD, ORE.
 HAROLD E. HURWITZ, IOWA
 ALAN CRAMPTON, CALIF.

DUDLEY L. O'NEAL, JR.
 STAFF DIRECTOR AND GENERAL COUNSEL

United States Senate

COMMITTEE ON BANKING AND CURRENCY
 WASHINGTON, D.C. 20510

September 21, 1970

The Honorable Elmer Staats
 Comptroller General of the United States
 General Accounting Office
 Washington, D. C.

Dear Elmer:

In light of our recent conversation regarding the importance of better information relating to the productivity of government workers, I am writing to urge that the General Accounting Office undertake a comprehensive evaluation of the possibilities for measuring productivity in the Federal sector of the economy.

In view of the importance of the Federal sector to the economy as a whole and in view of the responsibility vested in Congress for controlling Federal expenditure, I find it distressing that we have no real measures of the efficiency of the Federal sector. I recognize that there are major conceptual and practical difficulties involved in the measurement of government productivity. These stem particularly from the fact that performance of many of the service activities in which government workers engage is difficult to describe in quantitative terms.

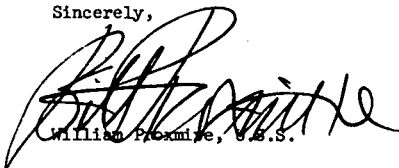
Yet, productivity measures have been developed for the private sector of the economy despite similar conceptual difficulties. Furthermore, studies undertaken by the Bureau of the Budget in the early 1960s identified a number of areas of government activity where productivity measurement was feasible. These areas included the Post Office, the disbursement activities of the Treasury and the Social Security Administration, and the reforestation activities of the Bureau of Land Management. I also understand that some studies were undertaken earlier within the Department of Defense. However, with the exception of the Post Office studies, these efforts have now largely been abandoned.

It puzzles me that at a time when there is such concern over the growth of Federal expenditures, when vital programs are stymied and important appropriations vetoed in an effort to hold down spending, we should abandon efforts to measure the productivity of Federal workers. The President has recently appointed a National Commission on Productivity, but to my knowledge, they have been given no mandate to examine the productivity of the government sector.

APPENDIX A

Because of the responsibility of the General Accounting Office to advise Congress on the efficiency with which Federal monies are expended and particularly because of the apparent failure of the Executive Branch to pursue further productivity studies, the GAO would provide an important service to Congress and the Nation by virogously attacking this problem of productivity measurement.

Sincerely,



William P. Exum, U.S.S.

WP:hsb



COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-163762

DEC 31 1970

Dear Senator Proxmire:

On September 21, 1970, you wrote me urging that the General Accounting Office undertake a comprehensive evaluation of the possibilities for measuring productivity in the Federal sector of the economy. We have looked briefly into the current status of such efforts in the Executive Branch. I am summarizing below our findings to date and our plan for continuing work on this subject.

There is strong recognition in the issuances of the Office of Management and Budget and the General Accounting Office of the importance of performance measurement. OMB Circular A-44, revised and reissued on February 16, 1970, requires the establishment of a formal, organized program in each agency for "...identifying quantitative measures of performance, establishing performance goals, measuring performance, analyzing the results, and initiating corrective actions."

GAO's pamphlet on "Accounting Principles and Standards for Federal Agencies" published in 1965 (with 1968 revisions) provides that:

"Cost accounting techniques should include, wherever appropriate and feasible, the production of quantity data relating to performance or output so as to make it possible to relate costs of performance with accomplishments and to disclose unit cost information. Such information is essential in implementing the planning-programming-budgeting system prescribed by the President for executive agencies and can be of great value in setting performance standards and managing current performance."

The use of productivity measurement is probably most extensive in the Post Office Department, Department of Defense supply and logistic activities, Social Security Administration, Veterans Administration insurance functions, Treasury Department disbursing, and Federal Aviation Agency equipment maintenance. In addition, many agencies utilize work measurement and performance standards to plan the staffing and evaluate the efficiency of selected functions, generally those involving repetitive operations.

APPENDIX A

B-163762

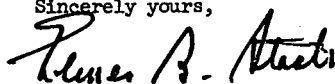
However, the degree to which existing programs are effectively related to financial management, or used by top management to improve operating efficiency, appears to vary widely. Furthermore, only rarely is productivity measurement used, as proposed in the 1964 Budget Bureau report, to relate outputs to all associated inputs in physical terms, in order to reflect overall trends in the productivity of large activities or organizations. In the absence of such trend data, economists must assume a zero growth rate in the productivity of the Federal sector.

Hence, I believe that renewed and expanded progress in the use of productivity measurement is very timely. As your letter suggests, there are many difficulties to be surmounted, and new techniques may need to be developed and tested. I believe that this can best be accomplished by joining the efforts of the Office of Management and Budget, the Civil Service Commission, and the General Accounting Office. The purpose of this joint project would be to identify, for each principal agency, the types of productivity measures which are feasible and significant, and then to plan a long term program to develop and utilize such measures. This joint project should begin in the near future.

In addition, I am instructing our audit divisions to consider on-going work measurement and productivity measurement programs in connection with our management reviews in the departments and agencies. In this connection, we will inquire into whether comparisons are made with other Government agencies or private enterprises where agency performance standards or productivity measures lend themselves to such comparisons.

I will keep you informed of our progress on the above projects, and will welcome your further comments.

Sincerely yours,



Comptroller General
of the United States

The Honorable William Proxmire
United States Senate

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

APPENDIX A

Honorable Elmer B. Staats
Comptroller General of the
United States
General Accounting Office
Washington, D. C. 20548

JAN 20 1971

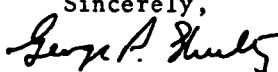
Dear Mr. Staats:

Thank you for your letter of December 31, 1970, on the subject of productivity measurement in the Federal sector. As you know, the President and I are vitally concerned with this subject.

The timing of your proposal to launch a joint OMB/CSC/GAO project on this matter is very opportune. I believe such a project would complement the work of the National Commission on Productivity recently appointed by the President. In particular, the government activities group of the Commission, which is exploring the question of improving productivity in the Federal Government, would be interested in participating in the project you have proposed. I also believe that this project should draw on the experience and expertise of the Bureau of Labor Statistics' Office of Productivity and Technology, and that the industrial experience of the President's Advisory Council on Management Improvement might make a useful contribution to this project.

While I believe we need to specifically define the objectives, scope, and participation before formally launching this project, I concur with your suggestion that Messrs. Morris, Ink, and Oganovic should constitute a Steering Committee to plan this project. I have requested that Mr. Ink contact Mr. Morris to discuss arrangements for the first meeting of the Steering Committee. I have further requested that the Steering Committee submit to us a formal project plan in sufficient detail to provide us with a basis to officially launch a joint project.

I hope these actions meet with your approval and are responsive to your intent in suggesting this joint project.

Sincerely,

Director

APPENDIX A



COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20543

DEC 31 1970

Dear Mr. Shultz:

I am enclosing an exchange of letters with Senator Proxmire on the subject of Productivity Measurement in the Federal sector.

In my reply to Senator Proxmire I am proposing that the Office of Management and Budget, the Civil Service Commission, and the General Accounting Office join their efforts to promote a renewed and expanded program in the use of productivity measurement.

Mr. Tom Morris of my staff has discussed this proposal informally with Mr. Dwight Ink of OMB and Mr. Nicholas Oganovic of the CSC.

With your concurrence, I suggest that these individuals constitute a Steering Committee to plan and launch this project, keeping each of us informed on their progress at least quarterly. I suggest a target date for completion of the joint project by March 31, 1972.

Your cooperation in this matter will be greatly appreciated.

Sincerely,

A handwritten signature in dark ink, appearing to read "Elmer B. Staats".

Comptroller General
of the United States

Enclosures

The Honorable George P. Shultz
Director, Office of Management and Budget



UNITED STATES CIVIL SERVICE COMMISSION

WASHINGTON, D.C. 20415

January 27, 1971

IN REPLY PLEASE REFER TO

YOUR REFERENCE

Honorable Elmer B. Staats
 Comptroller General of the
 United States
 General Accounting Office
 Washington, D. C. 20548

Dear Elmer:

This is in response to your recent letter proposing the establishment of a steering committee to be responsible for promoting productivity measurement within the Government service.

Mr. Nicholas J. Oganovic, Executive Director, of the Civil Service Commission, and Mr. Tom Morris of your staff have had a number of discussions on the subject and Nick has agreed to serve on the steering committee. I am thoroughly in accord with the idea, and you can expect full support from the Commission and its staff.

I had a very pleasant luncheon with Tom Morris on Monday.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "R. Hampton".

Robert E. Hampton
 Chairman

1920 THE CIVIL SERVICE RETIREMENT SYSTEM 1970
 FIFTY YEARS OF PROGRESS

APPENDIX A



COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

DEC 31 1970

Dear Mr. Hampton,

I am enclosing an exchange of letters with Senator Proxmire on the subject of Productivity Measurement in the Federal sector.

In my reply to Senator Proxmire I am proposing that the Office of Management and Budget, the Civil Service Commission, and the General Accounting Office join their efforts to promote a renewed and expanded program in the use of productivity measurement.

Mr. Tom Morris of my staff has discussed this proposal informally with Mr. Dwight Ink of OMB and Mr. Nicholas Oganovic of the CSC.

With your concurrence, I suggest that these individuals constitute a Steering Committee to plan and launch this project, keeping each of us informed on their progress at least quarterly. I suggest a target date for completion of the joint project by March 31, 1972.

Your cooperation in this matter will be greatly appreciated.

Sincerely,

A handwritten signature in dark ink, appearing to read "F. L. ...", is written over the word "Sincerely,".

Comptroller General
of the United States

Enclosures

The Honorable Robert E. Hampton
Chairman, United States Civil
Service Commission

APPENDIX B

EXECUTIVE OFFICE OF THE PRESIDENT OFFICE OF MANAGEMENT AND BUDGET WASHINGTON, D.C. 20503

Honorable Robert E. Hampton
Chairman
Civil Service Commission
Washington, D. C. 20415

August 6, 1971

(see note
on page 90)

Dear Mr. Chairman:

This letter outlines the plan of action contemplated for Phase II of the Measurement Systems Project which is being jointly conducted by the staffs of the Office of Management and Budget (OMB), the Civil Service Commission (CSC), and the General Accounting Office (GAO). A brief review of this plan was presented at your meeting of July 12 on the Joint Financial Management Improvement Program. Since then we have met with representatives of the 17 agencies who participated in Phase I. We are counting on their continued cooperation in the Phase II tasks discussed below. We will also review our findings and proposed next step with the President's Advisory Council on Management Improvement at its September meeting.

Phase II of the Measurement Systems Project has three primary objectives, each of which will involve several implementing tasks.

FIRST OBJECTIVE - Test Feasibility of Developing Overall Productivity Indices.

It was concluded in Phase I that the Bureau of Labor Statistics and our own staffs should collaborate in testing the feasibility of utilizing existing output data in the construction of overall productivity indices.

In addition to the Post Office (which can now prepare such indices covering about 440,000 employees) we believe that another 800,000 employees are producing services or measurable products which can be related to resources consumed in order to develop productivity indices somewhat comparable to those which BLS develops for industry categories in the private sector. We propose initially to develop indices by broad functional groupings such as (1) services to the public, (2) administrative outputs, and (3) industrial outputs.

APPENDIX B

If we are successful in developing indices covering all of the potential areas identified, about 50% of the Federal employees in the United States will be covered. This task will be launched in September and conducted over a period of approximately six months.

Two other tasks are planned. One of these will be a review of the productivity measures available in Government-owned contractor-operated (GOCO) plants and facilities, primarily those of the National Aeronautics and Space Administration, the Atomic Energy Commission, and the Department of Defense. We estimate that 200,000 workers in such activities are not now covered in the productivity studies of the BLS.

The final planned task is to test the value of requiring that a "productivity demonstration plan" be submitted to OMB with capital project proposals of significant cost, if the project is justified on the basis of improved productivity. The productivity demonstration plan must be sufficiently precise that it can be audited after the project has become operational.

SECOND OBJECTIVE - Improved Use of Existing Measurement Data.

A principal finding of Phase I is that extensive measurement data are developed by lower and intermediate levels of management. The questions posed are--how valuable are these data in actual practice and, if valuable, should greater use be made of them by upper levels of management? In order to answer these and related questions, four tasks are planned during Phase II:

1. Test the validity and utility of existing measurement data through two techniques:
 - a. First-hand review in several agencies by (1) informing those who originate and those who review reports incorporating the data, and (2) determining what kind of decisions and actions result. OMB will supervise these reviews.
 - b. Inspect the validity and use of measurement data during the normal audit programs of GAO, the personnel management evaluations of CSC, and OMB budget examinations.
2. Hold Workshops with agency personnel to exchange best practices in respect to the operation of measurement systems, including (1) work forecasting techniques, and (2) the presentation of reports to upper levels of management in such form as to obtain attention and use. OMB will direct this task.

APPENDIX B

3. Improve the present Manpower Estimating Course by drawing on case materials from agencies having the outstanding systems. CSC will direct this task.
4. Examine the value of making more extensive use of the unit cost measures. In over half of the agencies surveyed, work measurement data are developed but are not being related to costs so as to take advantage of unit cost measures as a management tool. GAO will lead this study.

THIRD OBJECTIVE - Special Studies to Develop More Comprehensive Productivity Measures.

Three other areas will be examined in Phase II. These are:

1. Identify policies and practices which may be creating disincentives to the use of measurement data and improving productivity. An example, frequently cited, occurs when personnel ceilings cause the performance of work by contract which might be performed more economically by direct hire personnel. An inventory of such disincentives (and recommendations for improvement) will be prepared by drawing upon the experience of OMB, CSC, GAO, and the agencies.
2. Encourage the development of measures of program effectiveness. Several agencies are developing effectiveness measurement systems (for example, HEW and Labor), and OMB's "Performance Measurement System" appears to be a valuable approach. In Phase II it is planned to appraise the status of such measures in a representative number of agencies and to develop recommendations as to how they might be applied more broadly in the future.
3. Begin developing local government productivity indices. Studies in this area are being considered by the National Commission on Productivity, with the assistance of the Urban Institute. Because of their potential significance to Federal Grant-in-Aid Administrators, we plan to follow this work closely and lend it our support.

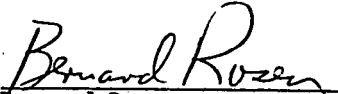
APPENDIX B

It is our plan to report progress on the above tasks in January 1972.

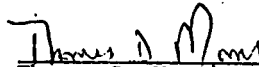
Sincerely,



Dwight A. Ink
Assistant Director
Office of Management and Budget



Bernard Rosen
Executive Director
Civil Service Commission



Thomas D. Morris
Assistant to the Comptroller
General
General Accounting Office

NOTE: This letter was sent to each of the Principals.

Honorable Robert E. Hampton
Chairman, Civil Service Commission

Honorable George P. Shultz
Director, Office of Management and Budget

Honorable Elmer B. Staats
Comptroller General of the
U.S. General Accounting Office

APPENDIX C

IMPROVING FEDERAL PRODUCTIVITY

-A Joint OMB/CSC/GAO Project-

Status Report

January 17, 1972

APPENDIX C

INTRODUCTION

The Director, Office of Management and Budget, the Chairman Civil Service Commission, and the Comptroller General established a joint project aimed at improving productivity in the Federal Government.

The project has been designed as a three-phased approach. In Phase I, a factual summary was prepared describing the extent of use of productivity measurement systems in 17 Federal agencies, and to identify the value of these systems to management. This was developed through the use of questionnaires and personal discussions with each agency.

Four major recommendations were reported at the conclusion of Phase I in June 1971: (1) inquire into selected agency systems to validate further and extend use of measures by identifying disincentives and designing corrective action; (2) encourage the development and use of unit cost measures wherever practical for improving ways of allocating and controlling resources including capital investment decisions; (3) improve the measurement of agency effectiveness in accomplishing public benefit outputs; and (4) test the feasibility of constructing a set of productivity indices of the Federal Sector of the economy for national planning purposes along functional rather than agency lines. These four recommendations were enthusiastically approved by

APPENDIX C

Messrs. Hampton, Shultz, and Staats and formed the base for the organization of Phase II. Each agency is contributing substantially to the effort in Phase II. Agency advisory panels have been established for each task to provide guidance and assistance and to review results. In addition, economists and specialists in other disciplines and management societies from private industry, academic and Government areas are being consulted for their advice.

Phase III will consist of implementing the recommendations of each of the four studies and continuing to identify potentials for productivity improvement.

The status of each of the four studies follows:

I. Validity and Utility of Productivity Measurement Systems

The study Validity and Utility of Existing Productivity Measurement Systems in the Federal Government had its origin in a tentative finding during Phase I of the Productivity Measurement Project--that higher levels of management made little use of measurement systems in the management process. The data was being used almost exclusively by first-line supervisors and higher level staff offices, for work scheduling and budget development, respectively. If our initial impressions were correct, managers above operating division level were not using the data in evaluating accomplishments, making decisions, on improving productivity or other aspects of the management process.

APPENDIX C

The Study Team therefore decided that a major effort of Phase II should be an inquiry into the validity and utility of agency productivity measurement systems. Hopefully we would not only answer the questions of "how good" and "how much" but develop recommendations for improvement. Our motivation, of course, was to stimulate productivity improvements through enabling managers at all levels to measure the results of their management decisions.

The initial project in this study was a "saturation coverage" of a DOD installation, selected because it seemingly had one of the most fully developed systems of productivity measurement within the Federal service. The plan involved, first, tracing the course of selected functions from work site, through each management level to the agency headquarters, in order to determine who was getting what information in what form and to what use the information was being put. A major finding of this effort is that, in the installation visited, information is provided weekly on the performance of the next subordinate echelon against engineered or statistical standards. However, above the first supervisory level, this information receives little attention because managerial performance is evaluated against another standard -- one developed by the agency for comparing the performance of all its field installations. This measurement system is not devised for use within installations; but because

APPENDIX C

each manager from the installation head down is evaluated by this tool, he uses it to measure performance of those below him.

This finding, that by whatever a manager is measured he will measure others, is one of a body of disincentives to good management thus far discovered as by-products in the study. The gathering evidence was so compelling, in fact, that we are undertaking a corollary study of incentives and disincentives to the improvement of productivity, in particular and of good management practices in general. This inquiry is multipronged, because we must develop a thoroughly documented case to support any legislative and administrative changes we conclude are needed. One probe, just described, is the study of existing productivity measurement systems. The team conducting the effort in the Defense agency is at the same time inquiring into the reasons for using or not using the data provided by the systems.

Another inquiry is being conducted in several other agencies. The agencies selected are documenting specific instances where current regulations or procedures have encouraged uneconomical management decisions or no actions to improve productivity. It is too early to prejudge the results of this inquiry, scheduled for completion this month. However, findings to date indicate there may be more penalties than rewards for Federal administrators to manage prudently.

APPENDIX C

Examples of disincentives to productivity improvement include:

- Budget requests are related not to the accomplishment of specific mission objectives but to keeping the agency operational for another year.
- Agency managers are not required to account for their stewardship in terms of objectives accomplished for resources applied.
- Rank and status are related to the size of a manager's program, measured by the quantity of manpower and funds he has been able to aggrandize under his control.
- Frugality in the consumption of resources will result in the reduction in allocations and, in turn, can lead to a reduction in status and salary of the manager.
- There is no established system for evaluating a manager's stewardship from the standpoint of efficiency in producing outputs or effectiveness in performing his assigned mission.

While this effort is in progress, we are interviewing and distributing questionnaires to members of Federal Executive Boards (FEB) throughout the Nation, asking about their use of measurement systems and their perception of the rewards for good management.

APPENDIX C

Still another probe into the incentives to good management is being directed from the ten regions of the CSC. During February and March, representatives of these offices are conducting structured interviews of approximately 300 Federal managers at all levels, Nation-wide.

The study is on schedule. By the end of June we expect to produce three major outputs. One will be an assessment of current practices, gained from our broad base of interviews. A second will be a set of recommendations for legislative and administrative changes, to encourage managers to increase productivity. A third will be a set of instructions to help agencies develop productivity measurement systems which are adapted to their own specific managerial needs.

II. Improving Unit Cost Measurement

The principal objective of the unit cost project is to encourage the development and use of unit cost measures, where practical, for increasing productivity through the allocation and control of resources.

The results of Phase I showed that approximately 39% of the Federal Sector was covered by unit cost measures. Essentially unit costs relate volume of work to the total funds required to produce the costs.

APPENDIX C

Both the Postal Service and DOJ had a high coverage to the extent of 60 and 38% respectively. However, the use by civilian agencies was determined to be only 23%. Generally, the full use of unit cost was not being made by operating and top management.

During Phase II through comprehensive analyses it was determined that there existed a significant potential for increasing the coverage of unit costs in civilian agencies. For example, \$4.8 billion out of a total \$5.5 billion covering 10 agencies were susceptible to unit cost measurement. This includes the following activities (a) Consumer and Marketing Service, (b) Bureau of Customs, (c) Federal Aviation Administration, (d) Forest Service, (e) Bureau of Indian Affairs, (f) Internal Revenue Service, (g) National Park Service, (h) Bureau of Prisons, (i) Social Security Administration, and (j) Veterans Administration.

Even though high coverage is possible, the agencies indicated a concern in terms of (a) who needs it, (b) for what purpose, (c) does value justify cost, and (d) won't there be a misunderstanding. The project team shares this concern and accordingly the project plan was broadened to determine the usefulness of unit cost measurement for improving productivity.

APPENDIX C

In this regard a two-day workshop with eight agencies using unit cost measurement was held to exchange experiences on uses and benefits. Further, several demonstration models will be developed jointly with interested agency management and tested. Hopefully the objective will be to provide agency management with unit cost information to explain quantitatively (a) inflation, (b) workload content, (c) real production change, (d) quality change, and (e) opportunities for a more rapid modernization. In addition, the development of unit costs will provide more accurate user charges for Government services. This will, in turn, increase the funds coming into the Government from the charges for Government services.

It is conceivable that unit costs can be used to provide resources control thus eliminating the need for ceilings on personnel and average grade. Certainly, if properly used, unit costs can improve budget planning and execution. For example from unit cost data being collected from six agency activities, it shows that to achieve the production quantity in 1971 over the base year of 1967, \$48 million additional funds would have been required.

Further a review of unit cost practices will be made of the private industry to learn from their experience.

APPENDIX C

Improving Capital Investment Procedures

The major cause of productivity improvement is investments in structures, machinery, and equipment in which much of technological advance is embodied.

There is evidence to show that proposed agency investment programs with high rates of returns are not being funded or are being cut back significantly. In competition with program dollars, investment items are frequently the first to be cut, since they do not noticeably affect current operations.

Two steps are involved in this area.

The first step is to improve the justification procedures for capital investment proposals. An OMB Management Bulletin is being prepared which will provide guidance to agencies on justifying capital investment proposals. Unit cost measurement is an essential part in developing the expected rates of return or the present value of future cost-savings. Examples are being developed to test the guidelines.

The second step will be to explore various funding arrangements for capital investment proposals having high rates of return. For example, the concept of a revolving fund is being investigated so that capital expenditures would not have to compete with program dollars. Several private firms are being contacted to determine how they handle the budgeting of capital investments.

III. Improving Measures of Effectiveness

The purpose of the study is to determine the extent to which Federal agencies measure the effects of their programs upon society and to encourage and develop more valid and useful means of measuring the results of agency efforts to advance the public interest.

It was found in Phase I that most efforts to evaluate programs or organizations have been concerned with measuring productivity in terms of output-input relationships. The outputs are expressed in units of goods or services, the inputs in units of man-effort (man-hours, man-years) or in dollars which represent costs of certain resources consumed in production. The resources costed may range from employee salaries alone up to total budgeted dollars.

These measures of productivity usually assume that the organizational element being evaluated is doing what it should be doing and provide no means for evaluating the contributions that they make to society relative to their cost.

In other words, most of the existing productivity measurement systems deal with aspects of organizational efficiency, which are determined by comparing actual performance (unit costs, for example) with some standard. The major problem in progressing from efficiency to effectiveness measurement

APPENDIX C

is that the latter involves establishment of complex external and internal cause-effect relationships with the external tending to be the more difficult to determine. For example, the mission of the National Highway Safety Bureau, DOT, is "to reduce the mounting number of deaths and injuries resulting from traffic accidents on the Nation's highways." Establishing a direct relationship between the outputs of the Bureau's three programs and the incidence of traffic deaths and injuries appears feasible, but not easy.

Effectiveness measurement provides the means of determining whether the agency is proceeding on course and of establishing a relationship between management actions and mission accomplishment. Both efficiency and effectiveness measurement are thus essential tools of managers in assessing true productivity, the former determining the cost of producing the agency's outputs and the latter the value of the agency's outputs.

Several recommendations are being developed to encourage the development and quantification of measures of program effectiveness. They cover provisions for practical training at all levels of management, increased emphasis by OMB, GAO, CSC, and the Congress on program effectiveness, changes in program legislation, and research into means for collecting impact data. In addition, a Government-wide workshop was

APPENDIX C

held in late November to provide for an interchange of ideas and techniques on measuring and assessing effectiveness of Government programs. Proceedings of the workshop will be published in February. The final recommendations and proposed action program will be completed in February.

IV. Developing Federal Productivity Indices

Lack of production indices for the Federal Sector has forced economists to assume zero changes in Federal productivity and has deprived Federal managers of the means of measuring the overall impact on productivity of capital investment, technology and other factors. In contrast, development of productivity indices is expected to yield benefits: (1) provide productivity data to national planners, economists and industrial analysts; (2) provide top Government managers with displays of overall trends; (3) obtain greater public confidence in Federal management; and (4) provide incentives to state and local jurisdictions to measure productivity.

The task of developing productivity indices for the Federal Sector consisted of the following organizational arrangements: (1) agencies to provide input-output data; (2) experts to provide advice on format and methodology; (3) agency advisory panel to provide guidance and; (4) Joint OMB/CSC/GAO Committee to review results and approve funds as the

APPENDIX C

National Commission on Productivity allocated (\$50,000) for activities support.

Phase I indicated an estimated potential for productivity measurement coverage about 1.3 million or approximately 50% of the total Federal employees. Nineteen Federal programs representing all departments and agencies were selected to submit data covering over 300,000 man-years in order to test methodology and format of the input-output data. See attachment for list of agency programs used in this test.

A data processing program was tested to compute indexes of output, input and a set of productivity indices for the total Federal Sector and by functional areas of services, administrative and industrial outputs.

Based on the test results it was agreed that functional area productivity indices are feasible for the Federal Sector, also that unit costs and other input/output relationships are feasible to develop.

Productivity indices are now being developed on the remaining available data elements, with the methodology and the detail substantially the same as tested.

The action plan calls for submission by the agencies of additional data packages in February, verification and

APPENDIX C

analysis of results in March, Joint Committee Review in April and a prototype publication of Federal productivity covering the 1.3 million Federal employees in June 1972. The project plan anticipates a permanent program with participation by all agencies starting in FY 1973.

Future Study Areas

The project team has done some preliminary thinking on additional study areas aimed at improving Federal productivity for accomplishment during calendar year 1972.

- Provide assistance and advice to smaller agencies on improving productivity and developing related work measurement systems (Industrial Engineering Techniques), e.g., regulatory agencies.
- Extend further the coverage of productivity indices for Federal employees for publication by the Bureau of Labor Statistics and develop agency productivity indices.
- Dissemination of inventions and new or improved producers' goods in the fields of office machines, materials handling equipment, transportation equipment, ADP etc., which have made applicability for improving productivity within the Federal Government.
- Improve the measurement of quality of Government output in assessing productivity change.
- Implement a program for improving the utilization of ADP equipment in the Federal Government.

APPENDIX D

BRIEF HISTORY OF FEDERAL PRODUCTIVITY MEASUREMENT

The Federal Government was a pioneer in developing measures of private industry productivity, and in stimulating private firms to measure their own productivity. However, it has only been in recent years that Federal Government agencies have made a concerted effort to measure their own productivity.

Beginning in the late 19th century, and again during the inter-war period, there were a number of governmental ad hoc statistical studies of changes in the relationship of employment to the physical volume of production, as a result of mechanization and other factors, in various industries, particularly in the commodity-producing variety. In 1940, responsibility for continuing productivity estimates and studies was put in the Division of Productivity and Technological Developments in the Bureau of Labor Statistics. After the war, the Bureau's studies were expanded, and in 1959 productivity estimates prepared for the entire private economy, by major sectors, as well as for several dozen individual industries.

It should be noted that the Bureau's studies were confined to the employment or man-hour relation to output, due in part to the focus of the Department of Labor. Also, the studies were confined to the private economy, with the exception of estimates of productivity in the Post Office Department, published in 1932.

In the post-World War II period, a number of economists connected with universities and with the non-profit National Bureau of Economic Research, developed estimates of capital as well as of labor, and related output not only to capital but also to labor and capital by means of statistical "production functions," and "total productivity" ratios. By these means, it became possible to measure the rate of technological advance as regards unit real-cost reduction (given certain assumptions as to the nature of the production function, as well as to measure changes in requirements per unit of output for each of the broad factor input classes. This work, which continues, provided powerful tools for analyzing the processes of economic growth, in aggregate and by industry, and thus increased ability to project and to devise policies to influence the casual forces and economic impact of technological change.

The first broad attempts to measure the productivity of producing units--in this case private establishments or firms--came after World War II. The Productivity Division of the Bureau of Labor Statistics inaugurated a series of direct plant-level studies of output per man-hour and related variables, in order to compile composite industry measures, and also to be able to analyze the factors responsible for differential levels and rates of change in "labor productivity" among establishments of the same industry. Management interest was aroused through contacts with the Bureau, and through reprinting of the results of the studies by the Bureau of Labor Statistics and by business media. In recent years, many companies have commenced measurement programs.

APPENDIX D

Efforts by Government agencies to measure the productivity of administrative components or the whole organization came somewhat later. There were a few isolated cases of output per employee measures during the 1950's but no concerted effort.

In 1962 the Bureau of the Budget became interested in the possibilities of developing total productivity indexes for Government organizations to use in determining the efficiency with which the agencies produce their output. Accordingly, a proposal was made to explore the feasibility and usefulness of productivity measurement in Government organizations. The project was conducted in five agencies:

- Division of Disbursement, Bureau of Accounts, Treasury Department
- Department of Insurance, Veterans Administration
- Post Office Department
- Systems Maintenance Service, Federal Aviation Administration
- Bureau of Land Management, Department of the Interior

The completed study Measuring Productivity of Federal Government Organizations was released in September 1964. The study demonstrated that usable and useful productivity measures could be prepared for four out of five of the pilot agencies (which accounted for 44% of the Federal civilian employment, due to the inclusion of the Post Office Department). As a result of the study, it was concluded that development of valid productivity measures is feasible for a considerable proportion of Federal Government activities.

Since the initial report was published, the Bureau of the Budget continued to work on developing productivity measures with a number of additional organizations among which were the Meat Grading Program and the Soil Conservation Service of the Department of Agriculture, the VA's Department of Medicine and Surgery, Social Security Administration, Defense Supply Agency, the Bureau of Engraving and the Mint in the Treasury Department. However, the work in the Budget Bureau was slowed down after 1965 when the staff specifically assigned to this area was disbanded. This eliminated, for the most part, any further development of total productivity measures by the agencies.

In March 1968, however, the Bureau initiated studies of the relationship of composite output to man-hours worked in organizational units of 15 agencies. The emphasis of this study was on manpower productivity measurement. The study showed that statistical estimating techniques can be used effectively to convert workload output data to estimates of manpower requirements with relative ease, objectivity, and efficiency. Manpower productivity measures can be readily developed from the statistical estimates.

APPENDIX D

In January 1971 Senator Proxmire wrote to Elmer Staats, Comptroller General of the General Accounting Office, requesting that GAO undertake a comprehensive evaluation of the possibilities for measuring productivity in the Federal sector of the economy. Mr. Staats, in his reply to Senator Proxmire, proposed a joint effort of the Office of Management and Budget, the Civil Service Commission, and GAO to identify the types of productivity measures which are feasible and significant, and then to plan a program to develop and utilize such measures.

APPENDIX E

LIST OF 114 ORGANIZATIONAL ELEMENTS BY AGENCY

1. Department of Agriculture

Stabilization and Conservation Service
Conservation, Technical Assistance
Flood Prevention Program
Watershed Planning Program, PL 566
Watershed Works of Improvement, PL 566
Resource Cons & Development Project Operation
Snow Surveys & Water Supply Forecasts
Great Plains Conservation Program
Planning Resource Cons & Development Program
Farmers Home Administration
Forest Service Recreational Public Use
River Basin Survey Program
Conservation Plant Materials Centers
Soil Surveys

2. Department of Commerce

Patent Office
National Weather Service
Economic Development Administration
Bureau of Census, Personal Census Service Br
National Tech Inf Svc. Sales & Order Processing
Maritime Administration
National Ocean Survey

3. Department of Defense

Department of the Air Force

Air Force Logistics Command, Materiel Mgmt
Air Force Logistics Command, Distribution
Air Force Logistics Command, Cent Procurement
Air Force Logistics Command, Maintenance AMA

Department of the Navy

Marine Corps Finance Center
Navy and Marine Corps Supply Centers
Navy Finance Centers and Offices
Naval Air Rework Facilities
Navy Public Works Centers
Naval Ordnance Activities
Shipyards

APPENDIX E

LIST OF 114 ORGANIZATIONAL ELEMENTS (cont'd)

Department of the Army

- Professional Education
- Patient Care in Army Facilities
- Service Academy
- Oversea Education of Dependents
- Central Procurement Activities
- Supply Depot Operations
- Water Port Operations
- Maintenance of Material
- Base Services
- Supply Operations
- Personnel Support
- Operation of Utilities
- Other Engineering Support
- Administration
- Maintenance and Repair of Real Property
- Supply Management Operations (ICP)
- Recruiting and Examining
- DA Depot Maintenance Activities
- Maintenance, Trucks

Defense Supply Agency

Total DSA

4. Department of Transportation

- Coast Guard, Aids to Navigation
- Coast Guard, Search and Rescue
- FAA, Flight Traffic Services
- FAA, Airport Traffic Services

5. Department of Health, Education and Welfare

- Social Security Administration
- Indian Health Service, Health Care of Indians
- Federal Health Service, Hospital & Clinic

6. Department of Housing and Urban Development

- Housing Production and Mortgage Credit (FHA)

LIST OF 114 ORGANIZATIONAL ELEMENTS (cont'd)

7. Department of the Interior

Bureau of Indian Affairs
National Park Service, Info & Visitor Service
National Park Service, Resource Mgmt Visitor
National Park Service, Maintenance
Office of the Solicitor
Geological Survey, Topographic Division
Bonneville Power Administration
Sport Fisheries and Wildlife, Fish Hatcheries
Southeastern Power Administration
Southwestern Power Administration

8. Department of Justice

Immigration and Naturalization Service

9. Department of Labor

Emplmt Std Adm, Federal Employees Compensation
Manpower Adm, Job Corps Headquarters
Manpower Adm, Bur of Apprenticeship & Training
Employment Std Adm, Fair Labor Stds Enforcement
Bureau of Labor Statistics

10. Department of State

Visa Office, Bureau of SEC & Consular Affairs
Office of Operations
Office of Financial Services

11. Department of the Treasury

U.S. Savings Bonds, Sales Promotion
Bureau of Accounts
Bureau of Customs, Cargo Processing & Control
Bureau of Customs, Processing Mail
Bureau of Customs, Processing Persons
Comptroller of the Currency
IRS, Revenue Accounting and Processing
IRS, Alcohol & Tobacco Regulatory Controls
IRS, Audit of Tax Returns
IRS, Taxpayer Assistance
IRS, Delinquent Accounts & Returns Compliance
Office of the Treasurer of the U.S.
Bureau of Pub Debt, Savings Bonds & Notes

APPENDIX E

LIST OF 114 ORGANIZATIONAL ELEMENTS (cont'd)

Bureau of Pub Debt, Other Treasury Securities
Bureau of Pub Debt, Maint & Aud of Debt Accts
Bureau of Engraving & Printing
Bureau of Mint, Coinage Activs. & Depositories

12. Atomic Energy Commission

Publishing of Technical Information

13. General Services Administration

Public Building Service, Buildings Management
Office of Finance, Accounting Centers
Public Building Service, Office of Space Mgmt
National Archives & Records Service
Office of Audits & Investigations (Administ)
OAD, Personnel Services
Transportation & Communications Service
Federal Supply Service, Supply Distribution
Federal Supply Service, Procurement
Federal Supply Service, Supply Control
Federal Supply Service, Inspection
Federal Supply Service, Supply Standardization

14. Postal Service

Total Postal Service

15. Veterans Administration

Department of Veterans Benefits
Department of Medicine and Surgery

16. Securities and Exchange Commission

Total SEC

17. National Labor Relations Board

Total NLRB

APPENDIX F

ALTERNATIVE METHODS OF COMPUTING THE OVERALL INDEX

The overall measured sample index (107.7) composed of 1.56 million man-years, was computed by aggregating the weighted output and man-years of 114 organizational elements. The measured sample was not conditioned on sampling procedures, thus not adjusting it by some criteria raises questions as to what the index represents. For example the Postal Service sample constituted 46 percent of the total sample, but reflects only 27 of the Federal sector employment. Thus, the repeatability to a common framework could present distortions as the coverage or employment ratios change from year to year. Therefore, another approach would be to adjust the overall index by major employment segments of the Federal sector.

The segments considered for population adjustment include (1) Postal Service, (2) Defense, and (3) all other agencies. For example the Table below shows the relationships of each of these segments in the measured sample and the total Federal sector.

Exhibit F-1

Population Coverage by Sample and Federal Employment, F.Y. 1971

Segment	Percent of Measured Sample to Total	Percent of Federal Sector Employment (U.S. Only)
Postal Service	46	27
DOD	25	38
All Other Agencies	<u>29</u>	<u>35</u>
TOTAL	100	100

APPENDIX F

The measured sample, adjusted to population as shown above, would produce a productivity index of 108.8 in F.Y. 1971, or a gain exceeding one percent over the unweighted measured sample. Productivity and related indices are shown in Exhibit F-2.

Exhibit F-2

Population Adjusted Measured Sample Indices of the Federal
Sector, F.Y. 1967 - 1971 (Base year F.Y. 1967)

	Fiscal Year				
	1967	1968	1969	1970	1971
1. Weighted Output	100.0	105.0	107.6	109.4	110.1
2. Input (Manyyears) 1	100.0	103.0	104.2	102.9	101.3
3. Compensation	100.0	107.4	116.7	128.6	141.2
4. Productivity (Output/Manyyear)	100.0	101.8	103.4	106.4	108.8
5. Unit Labor Cost (Current \$)	100.0	102.5	108.5	117.2	127.2
6. Unit Labor Cost (Constant \$)	100.0	97.5	96.0	91.3	91.3

1
Includes wages and fringe benefits.

An alternative method based upon pay systems (Postal Service, Wage Board and GS) was also computed, but the agency data did not precisely distinguish between GS and Wage Board in all cases; thus, this method is not as accurate as the population weight method. However, we will explore ways to refine and use the Pay Systems Method in future years. The computed index based on pay system employment distribution is shown on the next page. (Exhibit F-3)

APPENDIX F

Exhibit F-3

Pay System Adjusted Measured Sample Indices of the Federal Sector, FY 1967-1971 (Base Year, F.Y. 1967)

	Fiscal Year				
	1967	1968	1969	1970	1971
1. Weighted Output	100.0	105.3	108.4	110.0	110.9
2. Input(Manyyears)	100.0	103.2	104.2	102.9	101.0
3. Compensation ¹	100.0	107.2	116.5	128.2	140.7
4. Productivity (Output/Manyyear)	100.0	102.0	104.0	106.9	109.7
5. Unit Labor Cost (Current \$)	100.0	101.8	107.4	116.6	126.9
6. Unit Labor Cost (Constant \$)	100.0	97.0	95.0	90.9	91.0

¹
Includes wages and fringe benefits.

APPENDIX G

LIST OF 114 ORGANIZATIONAL ELEMENTS BY FUNCTION

I. Public Services

A. Operating Activities

Forest Service, Recreational Public Use (Agr.)
Conservation Plant Materials Centers (Agr.)
Professional Education (Army)
Patient Care in Army Facilities (Army)
Service Academy (Army)
Oversea Education of Dependents (Army)
Coast Guard, Aids to Navigation (DOT)
Coast Guard, Search and Rescue (DOT)
FAA, Flight Traffic Services (DOT)
FAA, Airport Traffic Services (DOT)
Indian Health Service (HEW)
Federal Health Service (HEW)
Bureau of Indian Affairs (Interior)
National Park Service, Visitor Service (Interior)
National Park Service, Resource Management (Interior)
National Park Service, Maintenance (Interior)
Postal Service
Department of Medicine and Surgery (VA)

B. Processing Activities

Stabilization and Conservation Service (Agr.)
Conservation, Technical Assistance (Agr.)
Flood Prevention Program (Agr.)
Watershed Planning Program (Agr.)
Watershed Works of Improvement (Agr.)
Resource Conservation and Development Project (Agr.)
Snow Surveys and Water Supply Forecasts (Agr.)
Great Plains Conservation Program (Agr.)
Planning Resource Conservation & Development Program (Agr.)
Farmers Home Administration (Agr.)
River Basin Survey Program (Agr.)
Patent Office (Commerce)
National Weather Service (Commerce)
Economic Development Administration (Commerce)
Bureau of the Census, Personal Census Service Branch (Commerce)
National Technical Information Service, Sales & Order Processing
(Commerce)

APPENDIX G

B. Processing Activities (cont'd)

Social Security Administration (HEW)
FHA, Housing Production and Mortgage Credit (HUD)
Immigration and Naturalization Service (Justice)
Employment Standards Administration, Federal Employee
Compensation (Labor)
Manpower Administration, Job Corps Headquarters (Labor)
Manpower Administration, Apprenticeship & Training (Labor)
Employment Standards Administration, Fair Labor Standards
Enforcement (Labor)
Bureau of Labor Statistics (Labor)
Visa Office, Bureau of Secular & Consular Affairs (State)
U.S. Savings Bonds, Sales Promotion (Treas.)
Bureau of Accounts (Treas.)
Bureau of Customs, Cargo Processing & Control (Treas.)
Bureau of Customs, Mail Processing (Treas.)
Bureau of Customs, Processing Persons (Treas.)
Comptroller of the Currency (Treas.)
IRS, Revenue Accounting & Processing (Treas.)
IRS, Alcohol and Tobacco Controls (Treas.)
IRS, Audit of Tax Returns (Treas.)
IRS, Taxpayer Assistance (Treas.)
IRS, Delinquent Accounts and Returns Compliance (Treas.)
Department of Veterans Benefits (VA)
Securities and Exchange Commission
National Labor Relations Board

II. Support Services

A. Management Activities

Marine Corps Finance Center (Navy)
Navy Finance Centers and Offices (Navy)
Administration (Army)
Recruiting and Examining (Army)
Office of Finance, Accounting Centers (GSA)
National Archives & Records Service (GSA)
Office of Office of Audits and Investigations (GSA)
Personnel Services (GSA)
Office of the Solicitor (Interior)
Office of Operations (State)
Office of Financial Services (State)
Office of Treasurer of the U.S. (Treas.)
Bureau of Public Debt, Savings Bonds and Notes (Treas.)
Bureau of Public Debt, Other Securities (Treas.)
Bureau of Public Debt, Maintenance and Audit of Debt
Accounts (Treas.)

APPENDIX G

B. Procurement and Supply Activities

Air Force Logistics Command, Material Management (AF)
Air Force Logistics Command, Distribution (AF)
Air Force Logistics Command, Procurement (AF)
Navy and Marine Corps Supply Centers (Navy)
Central Procurement (Army)
Supply Depot Operations (Army)
Waterport Operations (Army)
Supply Operations (Army)
Supply Management Operations (Army)
Defense Supply Agency
Office of Space Management (GSA)
Federal Supply Service, Supply Distribution (GSA)
Federal Supply Service, Procurement (GSA)
Federal Supply Service, Supply Control (GSA)
Federal Supply Service, Inspection (GSA)
Federal Supply Service, Supply Standardization (GSA)

C. Maintenance Activities

Maritime Administration (Commerce)
Maintenance of Material (Army)
Base Services (Army)
Personnel Support (Army)
Operation of Utilities (Army)
Other Engineering and Support (Army)
Maintenance and Repair of Real Property (Army)
Public Buildings Service, Buildings Management (GSA)
Public Buildings Service, Transportation and Communications
Service (GSA)
Public Buildings Service, Public Works Centers (Navy)

III. Industrial Services

A. Major Overhaul or Repair Activities

Air Force Logistics Command, Maintenance (AF)
Air Rework Facilities (Navy)
Depot Maintenance (Army)
Truck Maintenance (Army)
Shipyards (Navy)

B. Manufacturing Activities

Soil Surveys (Agr.)
Printing and Publishing of Technical Information (AEC)
National Ocean Survey (Commerce)
Naval Ordnance Activities (Navy)
Geological Survey, Topographic Division (Interior)
Bonneville Power Administration (Interior)
Sport Fisheries and Wildlife, Fish Hatcheries (Interior)
Southeastern Power Administration (Interior)
Southwestern Power Administration (Interior)
Bureau of Engraving and Printing (Treas.)
Bureau of the Mint, Coinage Activities (Treas.)

APPENDIX H

DETAILED INDICES
FOR
MEASURED SAMPLE OF THE
FEDERAL SECTOR
FY 1967 - FY 1971

APPENDIX H

DETAILED INDICES OF THE MEASURED SAMPLE OF THE FEDERAL SECTOR FY 1967 (BASE YEAR) - FY 1971

	<u>Overall Indices</u>		<u>Fiscal Year</u>		
	1967	1968	1969	1970	1971
1. Weighted Output	100.0	103.7	106.5	109.1	110.3
2. Input (Manyears)	100.0	103.1	104.4	103.9	102.5
3. Compensation ¹	100.0	107.7	117.3	129.6	143.7
4. Productivity (output/manyear)	100.0	100.6	102.0	104.9	107.7
5. Unit Labor Cost (Current \$)	100.0	103.9	110.1	118.5	129.5
6. Unit Labor Cost (Constant \$)	100.0	98.9	97.4	92.5	92.9

	<u>General Schedule</u>		<u>Fiscal Year</u>		
	1967	1968	1969	1970	1971
1. Weighted Output	100.0	104.7	106.1	109.3	108.1
2. Input (Manyears)	100.0	102.4	102.5	102.0	102.1
3. Compensation ¹	100.0	107.9	116.5	131.1	143.4
4. Productivity (Output/Manyear)	100.0	102.2	103.5	107.1	105.8
5. Unit Labor Cost (Current \$)	100.0	103.1	109.8	120.0	133.0
6. Unit Labor Cost (Constant \$)	100.0	98.2	97.1	93.6	95.4

	<u>Wage Board</u>		<u>Fiscal Year</u>		
	1967	1968	1969	1970	1971
1. Weighted Output	100.0	109.6	115.8	113.1	116.4
2. Input (Manyears)	100.0	104.8	105.9	100.0	92.4
3. Compensation ¹	100.0	105.0	114.1	119.4	125.0
4. Productivity (Output/Manyear)	100.0	104.6	109.4	113.1	126.0
5. Unit Labor Cost (Current \$)	100.0	95.8	98.5	104.6	103.0
6. Unit Labor Cost (Constant \$)	100.0	91.2	87.1	81.6	73.9

¹Includes wages and fringe benefits.

APPENDIX H

DETAILED INDICES OF THE MEASURED SAMPLE OF THE FEDERAL SECTOR FY 1967 (BASE YEAR) - FY 1971

<u>Public Services</u>					
	1967	1968	Fiscal Year 1969	1970	1971
1. Weighted Output	100.0	102.5	105.8	109.2	111.6
2. Input (Manyyears)	100.0	102.4	104.1	105.4	106.2
3. Compensation ¹	100.0	107.9	117.4	131.6	149.0
4. Productivity (Output/Manyyear)	100.0	100.1	101.7	103.6	105.1
5. Unit Labor Cost (Current \$)	100.0	105.3	111.0	120.6	133.7
6. Unit Labor Cost (Constant \$)	100.0	100.3	98.1	94.1	95.9
<u>Support Services</u>					
	1967	1968	Fiscal Year 1969	1970	1971
1. Weighted Output	100.0	108.1	104.5	106.8	105.4
2. Input Manyyears	100.0	105.1	103.9	99.3	92.8
3. Compensation ¹	100.0	106.4	114.5	121.3	124.6
4. Productivity (Output/Manyyear)	100.0	102.9	100.5	107.6	113.6
5. Unit Labor Cost (Current \$)	100.0	98.3	109.5	113.5	118.1
6. Unit Labor Cost (Constant \$)	100.0	93.6	96.8	88.5	84.7
<u>Industrial Services</u>					
	1967	1968	Fiscal Year 1969	1970	1971
1. Weighted Output	100.0	105.9	131.0	123.9	118.1
2. Input (Manyyears)	100.0	104.8	110.1	104.3	95.8
3. Compensation ¹	100.0	108.4	124.0	131.5	141.0
4. Productivity (Output/Manyyear)	100.0	101.1	119.0	118.8	123.3
5. Unit Labor Cost (Current \$)	100.0	102.4	94.6	104.1	109.6
6. Unit Labor Cost (Constant \$)	100.0	97.5	83.6	81.2	78.6

¹Includes wages and fringe benefits.

THE CONCEPTS OF MEASUREMENT

The effectiveness of management depends upon the correctness with which decisions are made. Decisions are based on inputs of information compared to previous knowledge. The more effectively these inputs are expressed in accurate quantitative terms, the better the probability of good business. Work, unit cost, productivity and effectiveness measurement provide the means of quantifying many aspects of organization performance needed for making correct management decisions.

An important conclusion of this project has been that all four types of measures--work, unit cost, productivity and effectiveness--should be developed and integrated into a total measurement system with carefully defined uses of each measurement for all levels of management.

The project team used the following definitions of the four measurements:

Work Measurement--The conversion of a quantitative statement of work load to a quantitative statement of the manpower to produce that work load.

There are, basically, two major categories of work measurement techniques available:

- Engineered work measurement techniques set a specific amount of time per resource for a specific job, considering method, working conditions, and a designated degree of expected worker diligence and utilization necessary to achieve such a performance. Specific techniques include time study, work sampling and predetermined time systems.
- Historical work measurement techniques attempt to establish a relationship between past performance and time usage. Statistical analyses and estimates based on technical judgment are the basic techniques used for estimating this relationship.

Unit Cost Measurement--Relates a work unit to the costs or resources consumed in producing that unit. Unit costs

APPENDIX I

may include, in addition to personnel costs, the cost of supplies, travel, equipment, etc. Thus, unit costs reflect the ratio of personnel, materials, travel and other costs to the output produced, and will be stated in the dollars required to produce a unit of work. When the dollars are deflated to take account for inflation, they are called constant dollars.

Productivity Index Measurement--Is the relationship between total output and one or more associated inputs. This is expressed as a ratio of total output to resource input. Output measures are based on the volume of products or services produced for use outside the organization, with due allowance for differences in the value of individual products or services. Measures of input may be based on the amount of manpower alone or on a more comprehensive measure of resource inputs which include nonlabor costs.

The ratio of output to input in a base period is compared to the ratio in succeeding periods. This comparison establishes the change in productive efficiency, which is defined as the rate of conversion of resources into output.

Effectiveness Measurement--Is the ratio between achieved result and some end objective or goal. Thus, the output of programs is measured in terms of units of achievement of specified objectives and goals of those programs resulting in a measure of the degree of goal fulfillment.

RELATIONSHIP BETWEEN THE FOUR MEASURES

Before the concept of total measurement is developed it is important to distinguish between some of the measurements.

A. Relationship between productivity measurement and work measurement.

Productivity measurement and work measurement are alike in that they permit comparisons of resource usage to benchmarks.

The primary difference between the two is that the productivity benchmark is not changed to reflect expected resource usage as authorized changes in operating procedures are made. The work measurement benchmark is revised for each significant change in resource requirements resulting from new procedures.

A second important difference is that the productivity benchmark can reflect all dollar and man-hour resource usage while the work measurement benchmark is limited to personnel only.

As a result, the productivity index is useful in measuring the effect of all changes in the method of operating, diligence of personnel, equipment used, etc., as reflected in the use of dollar or personnel resources. Productivity indices provide overall information on historical trends and permit forecasts of resource usage which were not previously computed. On the other hand, a detailed analysis of such trends as well as the information requirements for day-to-day operations is, in part, dependent on detailed estimates of personnel requirements resulting from work measurement.

Unfortunately, all personnel usage is not always evaluated against previous performance; methods are introduced which are not as efficient as first expected; sub-optimization occurs which reduces the overall efficiency; etc. Productivity measures are needed to reflect changes of this nature. These changes are often lost in the traditional control systems based on work measurement and need to be supplemented by productivity measurement.

APPENDIX I

Let us examine the similarities in more detail. First, consider the way in which the total output of a productivity measure is computed. The output of an activity is counted and converted to total output by multiplying each output by an appropriate weight. The weight usually chosen is the actual man-hours or dollars used to produce a unit of output in an arbitrarily chosen "base" year.

The development of man-hours per unit used in productivity measurement is analogous to a statistical work measurement estimate for a particular unit of output. The multiplication of units of output by man-hours per unit results in what has been called "earned hours" in work measurement and has always been the basis of evaluating actual performance when used in a control system. The ratio of earned hours to actual hours in work measurement systems is termed efficiency. The productivity measures are used in a similar fashion. Outputs for any given year can be converted to "earned hours of dollars" and a comparison made to the actual input of hours or dollars. (Adjustments are usually made for dollar inflation.)

In both measures the level of activity or organization at which outputs and inputs are measured is somewhat arbitrary depending on the particular informational need of management. However, work measurement has usually been developed for restricted groups of personnel at detailed levels of activity while productivity measures have been developed at program or agency levels and accounted for all resources.

Work measurement and productivity measures both provide a convenient means of adding up apple- and orange-type of outputs so that meaningful comparisons can be made for an organization with a constantly changing output mix in terms of common resource categories.

Productivity and work measurement do differ, but they complement each other in providing a means of gaining broad, long-term evaluations of resource usage as well as more specific evaluations of personnel usage for current operations. A fuller understanding of an organization requires a knowledge of both these aspects of resource usage.

B. Relationship between productivity measurement and effectiveness measurement.

The main difference between the concepts of productivity and effectiveness is that the former includes no evaluation in relation to some overall goal. A measure of productivity does not indicate anything about the appropriateness of the activity itself. The program or activity, and consequently, the output is taken as given. Thus an interest only in questions of productivity can result in efficiently carrying out the wrong functions. For example, if the goal of a program is to reduce crime, several activities may be chosen to achieve this goal. If one of the activities is to install new lighting systems, productivity measures may show that lighting systems are being efficiently installed but these lights may have little or no impact on reducing crime.

Using an analogy between the private and public sectors, a business enterprise is judged successful when it makes a profit. Two conditions have to be satisfied for a business enterprise to make a profit. First, it has to produce products or services which people will buy. That means they have to choose effectively among the alternative goods to be produced. But that in itself is not enough. They also have to be able to produce efficiently, i.e., at a cost low enough to find buyers and meet the competition. They cannot price themselves out of the market. Analogous problems, though perhaps more complicated, face Government programs. First, the Government program has to serve a public need, i.e., it has to be effective. And, secondly, it needs to be performed efficiently enough, i.e., at a cost which will justify its existence. Productivity measurement, though not directly related to the questions of effectiveness of program choice, addresses itself to the questions of efficiency. Specifically, the productivity indicators provide information on how the efficiency of Government organizations changes in the course of time.

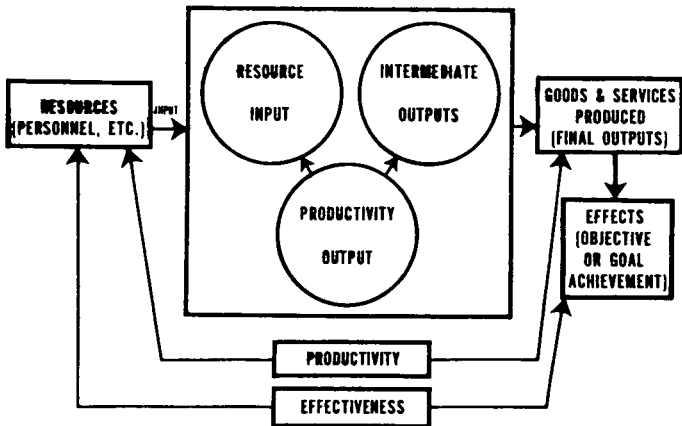
Another way of establishing the relationship between productivity and effectiveness is to view the performance of an agency as a processing flow-system. This means that the organization presumably converts resources (inputs) into different forms of activity. Goods and services (outputs)

APPENDIX I

are thus produced. These outputs can be either intermediate or final. Intermediate outputs are used further within the agency, whereas final outputs are the final product which leaves the agency to be consumed or used elsewhere.

The output(s) of an agency are then expected to produce certain effects on the public either directly or indirectly which are the ultimate goals of agency performance. While productivity is only concerned with the outputs produced, effectiveness carries the process one step further by measuring the effects of the outputs. This flow-system is illustrated below.

RELATIONSHIP BETWEEN PRODUCTIVITY AND EFFECTIVENESS



C. Relationship between all four measures.

The concept of a total measurement system can be viewed as two interrelated subsystems. The first subsystem is oriented to measurement of efficiency. Three of the measures--work, unit cost, and productivity--are concerned with the efficiency with which programs are being carried out. Each measure builds on the other. Work measurement, the lowest level of measurement, deals with man-hours per unit of output. Unit cost measurement deals with all costs required to produce the output and, therefore, it is not limited to just manpower costs. However, unit cost measurement builds on work measurement in that work measurement is used to support the acceptability of manpower costs. Finally, productivity measurement deals with total outputs and total cost to provide an overall measure of efficiency. In addition, productivity measurement can be used to develop a measurement of total output per dollar cost. Since manpower is usually by far the most important resource in Government programs, indexes of output per man-hour are always computed and represent a partial measure of efficiency.

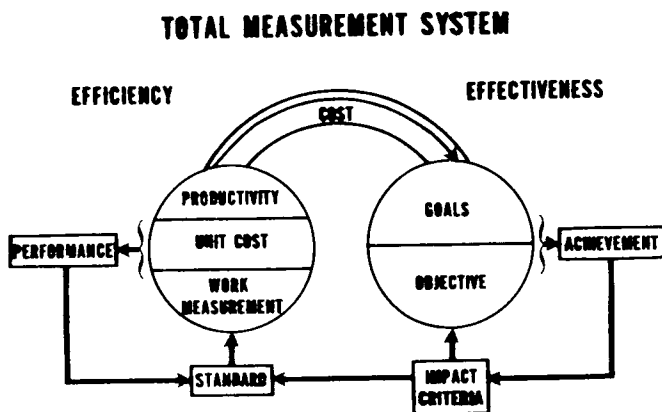
The question of efficiency is relevant to the purpose of budget determination and manpower control and to the more general evaluation of how efficiently the Government's organizations are operating compared to their previous experiences, or compared to their counterparts elsewhere in the Government or in the private sector.

The second subsystem is related to the achievement of specified goals and objectives. While the first subsystem measures, for example, the efficiency of manpower training, this subsystem measures the numbers of jobs successfully filled by the trainees or the increment of the average income for the trainees. The purpose of this type of measurement is to help evaluate alternative approaches, alternative designs, and the need for the program itself.

The two subsystems are related by the measurement of cost-effectiveness which identifies the alternative that yields the greatest effectiveness for any given cost.

APPENDIX I

Efficiency is measured by comparing operational performance to some standard. Effectiveness is measured by comparing program achievement to impact criteria. If adjustments are necessary, the goals and objectives and operational procedures are changed. Feed back to the system is provided by a carefully planned management information system. The total system of measurement is illustrated below.



ADVANTAGES AND DISADVANTAGES OF

VARIOUS METHODS OF FINANCING CAPITAL ACQUISITIONS

A. Rent, Lease, and Lease-Purchase

Under this approach agencies having investments with high productivity potential would be encouraged to lease, rather than buy, the desired equipment whenever the cost of leasing is economically justified, considering the savings to be achieved through increased productivity.

Advantages

1. It eliminates the high initial budget outlay impact implicit in a purchase proposal.
2. Payments would be spread over the period in which benefits and income are derived.
3. Provides increased flexibility.

Disadvantages

1. It is not always economical.
2. Not all types of equipment can be leased.
3. The agencies and the Congress would be "locked into" requirements for lease payments in succeeding years.

The consensus of opinion is that leasing should be encouraged where appropriate but that it does not provide a comprehensive solution to the problem.

B. Contracting Out

This approach contemplates that agencies which have capital investment proposals with high productivity potential would be urged to seek out private firms that could provide the needed services or products at a competitive price. This would have the effect of transferring the responsibility for acquisition of productive equipment from the Government to private industry.

APPENDIX J

Advantages

1. It eliminates the high initial budget outlay by spreading the payment over the years in which the benefit is derived.
2. Contributes to reduction in the size of Federal employment.
3. Provides increased flexibility in that it is often easier to discontinue a service performed under contract than one performed in house.

Disadvantages

1. It does not inherently assure that the private firm would acquire more productive equipment.
2. In actual practice the Government often provides the plant and/or equipment to the contractor, e.g., Department of Defense GOCO plants.
3. May be significantly more expensive.
4. Special circumstances, particularly in the military, preclude use of contracting out.

The consensus is that for certain types of situations contracting out is a feasible method of getting governmental work performed. However, there are many governmental functions which cannot be contracted out for one reason or another and contracting out, therefore, has limited applicability. It should be recognized also that while contracting out may increase governmental productivity in the broad sense, it does not affect the productivity of Government workers because contracting out removes the work from the Government sector and puts it in the private sector.

C. Adoption of a Capital Budget

Under this concept capital outlays would be isolated from current expenses and the capital investments would be financed by borrowing, while taxes would be used to finance current expenses. This approach has been used in many

foreign government budgets, with varying degrees of success, and is widely used by private industry.

Consideration has often been given in the United States to adoption of a capital budget but because of the considerable opposition which has been expressed over the years by the Congress, Presidential Commissions, the OMB and others it has not been adopted. The Joint Project gave consideration to this method as a possible financing technique but believes it may not be feasible because of the widespread opposition.

D. Special Budget Identification Review and Financing

This approach contemplates that OMB would obtain proposals from agencies identifying capital investments having high productivity potential and that a portion of available resources would be devoted to such investments. The proposals would be developed as part of the formal budget process but would be submitted for special consideration in the off budget season. The amount dedicated to approved proposals would be considered as over and above the agencies' "budgetary ceiling" for the budget year. Amounts to be allocated to agencies could be determined in two ways, (1) based on OMB approval of overall agency plans or (2) based on OMB approval of specific agency proposals. This technique is a partial adoption of the "Capital Budget" concept except that capital investments would not be linked to Government borrowing.

Advantages

1. Provides a source of funds above normal budgetary ceilings.
2. Provides for special consideration and financing of highly productive capital investments.
3. Provides the President and the Congress with a measure of the resources which could be identified as being dedicated to the goal of cost reduction and increased productivity.

APPENDIX J

Disadvantages

1. This approach would undoubtedly run into considerable opposition because it would further reduce the portion of total estimated resources available for new or expanded program proposals.
2. The requirement for OMB approval of agency plans or specific proposals to be covered by this dedicated allocation of resources would constitute a laborious paperwork job and in effect injects OMB into the agency management process.
3. It would be time consuming to monitor the predicted cost savings.

The consensus among the Project members and agency officials with whom this alternative was discussed was that it would be difficult to make this alternative work effectively.

E. Authorize Existing Revolving Funds to Adopt a Capital Budget

This approach contemplates that existing fully self-sustaining revolving fund activities would be authorized to adopt a capital budget for acquisition of capital investments. That is, the funds would be authorized to finance capital investments by borrowing, preferably from the Treasury at an established rate of interest. To repay the loan plus interest the funds would include a factor for depreciation and interest in their charges. It is generally not recommended that a factor for replacement be included because of the difficulty in arriving at an acceptable rate. The rationale for this approach comes from private industry wherein extensive use is made of a capital budget to finance capital investments. Since the operations of Federal revolving funds are patterned after private industry this approach is considered to have considerable merit in that it further simulates the real business environment.

Advantages

1. Acceptance of this concept would make a significant impact on increasing productivity in the Federal

sector as many of the areas in which the greatest potential exists for increasing productivity through capital investment are financed through revolving funds.

2. It provides an immediate source of financing.
3. It represents a rather straight-forward, business-like approach to financing capital investments.
4. It overcomes many of the problems associated with adoption of a capital budget as part of the President's budget in that the authority to borrow would be limited to the business type activities of the Federal Government, i.e., production and inter-agency service activities.
5. Transactions of the funds would have no impact on the budget; the impact on the budget would only occur when payments were made to the funds from agency appropriations.

Disadvantages

1. Would require legislation to authorize revolving funds to utilize public debt receipts.
2. The use of public debt authority could be viewed as "backdoor financing" and as contributing to a loss of congressional control.
3. To the extent that the predicted operating savings were not realized the cost to the agency appropriations would be increased.

The joint team believes that the concept of authorizing revolving funds to adopt a capital budget represents a sound financing technique and that proper use of such authority could have a significant impact in increasing productivity in the Federal Government.

F. Productivity Bank

See main report for full discussion of this alternative.

APPENDIX K

INTERGOVERNMENTAL MEASURES OF EFFECTIVENESS

A PROPOSED PILOT PROJECT

I. Problem

The Federal Government, and State and local government counterparts, have become increasingly concerned with the need to evaluate programs in terms of their effects upon the citizens within their jurisdictions. The ability to evaluate existing programs and to estimate the results of new proposals depends upon measures of program effectiveness which can throw substantial light on how programs are performing in relation to their objectives.

Evaluation of the effectiveness of Federal grant programs is complicated by the fact that most are administered by State and local governments or other public agencies. This trend will continue with greater decentralization of programs. In such cases, Federal funds often lose their identity and become a part of State grants to localities. Yet Federal responsibilities in most of these programs extend beyond financing of services to improving the capability of State and local levels to manage their funds and reach their objectives. The lack of Federal monitoring of grant-in-aid programs often leads to reluctance on the part of Federal managers to measure the effectiveness of such programs.

The Federal Government, in its role as a major granting agency and as a catalyst to encourage State and local governments to improve their own way of doing business, should seek to identify and support practical effectiveness measures at the various levels of government which are relevant and compatible from one level to another.

The proposed research project is intended to provide:

- Identification of the data collection procedures that would permit reasonably practical data gathering.
- Identification and discussion of the use of these measures and the data in terms of assisting in policy and planning formulation. It is thus both a proposal

for methodology development as well as for a test and demonstration effort.

II. Proposal

The proposed work is intended to be done in two phases.

Phase I

Phase I would involve identification and selection of

1. The pilot problem area. The criteria suggested for its selection are:
 - a. The problem should be of importance at all three levels of government and involve programs that interrelate at the three levels.
 - b. To the extent possible, it should avoid falling into a narrow, single, functional area, but rather would involve a complex set of interrelationships such as typically occur with complex governmental problems.
 - c. It should be sufficiently confined so as to be replicable within the proposed research period and understandable as a pilot for other program areas.
2. An initial set of clientele groups for which the measures of effectiveness should be disaggregated. This would be done for each of the three levels of government. The viewpoints of these groups would suggest the measures of effectiveness to be included. Our initial belief is that there will be considerable similarity in the clientele groups among levels of jurisdictions, though the locational aspects of these groups will differ significantly.
3. An initial set of relevant measures of effectiveness identification involving an examination of the various research, literature, and thinking available on the problem area as well as development of

APPENDIX K

empirical data. This would also be done from the perspective of each of the three layers of government--Federal, State and local--respectively. Our supposition is that there will be considerable similarity between the measures of effectiveness for the three levels. However, verifying this hypothesis would be one of the purposes of this test.

4. An initial set of procedures for collecting data on each of the selected measures of effectiveness, for each of the clientele groups. Existing data collection procedures would be utilized as much as possible.
5. The methodology and techniques for developing practical measures of effectiveness for grant programs and of uses to which the effectiveness measurement data could be put. This investigation will discuss uses at each governmental level and show the interrelations of the various levels of government decision-making.
6. Finally, during this first phase, specific State and local governments to participate in the test effort of Phase II.

This project will emphasize use of indicators which measure the effects of programs on citizens and the public--and identification of all such potentially relevant measurements. These should include measures not only of intended but also potential unintended effects, both negative as well as beneficial.

The researchers will avoid making value judgments that might eliminate from consideration any measures of possible relevance to other clientele groups.

In many cases surrogate measures may be needed. Furthermore, qualitative measures will not be excluded merely because they appear to resist quantification.

Phase I will be complete when a report is accepted on the findings and recommendations on steps one through six, above.

Phase II

Phase II will consist of validating steps one through six of Phase I and submitting a report of findings and recommendations based upon the results of executing the plan developed during Phase I. Prior to initiation of Phase II, however, the contractor must receive approval of his report submitted in compliance with the terms of Phase I, or may be modified by the recipient.

Prior to initiating Phase II, the contractor must also submit and receive approval of a new proposal for continuing the study beyond Phase I. Since the study is in some ways proceeding into unknown territory, it is not possible to predict conditions with sufficient accuracy--in terms of specific products or estimated costs--to consummate an agreement on the particulars of Phase II at this time.

The proposal for Phase II, which may be submitted on or after the date the contractor submits the final report on Phase I, will include the following, in addition to any other matter the contractor deems relevant:

- How he proposes to carry out the plans, as approved or modified, developed in Phase I.
- The end-product of Phase II, with sufficient specificity for the proposal to be evaluated in terms of costs and its benefits in terms of its contributions to practical knowledge in such matters as
 - selection of effectiveness measures
 - application of such measures
 - gathering, assembling, reporting, and evaluating the results
 - use of the results in management decisions
 - interagency coordination of actions
 - etc.