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STATEMENT OF

ELMER B. STAATS

COMPTROLLER GENERAL OF THE UNITED STATES

BEFORE THE

JOINT ECONOMIC COMMITTEE

SUBCOMMITTEE ON PRIORITIES AND ECONOMY IN GOVERNMENT

ON

MEASURING AND ENHANCING FEDERAL PRODUCTIVITY

Mr. Chairman and Members of the Subcommittee:

I am pleased to appear with my colleagues today to report to you on a joint effort--begun at the request of this Committee in the fall of 1970--to assess the feasibility of measuring and enhancing Federal productivity.

In making the request, Chairman Proxmire said:

> "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 expenditures, I find it distressing that we have no real measures of efficiency for the Federal sector."

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After receiving this request, I suggested to the Director of the Office of Management and Budget (OMB) and to the Chairman of the Civil Service Commission (CSC) that we conduct a joint review of the feasibility of measuring the Federal sector productivity. They readily agreed.

I am accompanied this morning by the three Directors of this joint effort.

- Mr. Dwight Ink, Deputy Administrator, General Services Administration (formerly Assistant Director, OMB)
- Mr. Bernard Rosen, Executive Director, Civil Service Commission
- Mr. Thomas D. Morris, Assistant Comptroller General

I am also pleased to be joined this morning by Mr. Frank Zarb, Assistant Director of OMB, and Mr. Jerome A. Mark, Assistant Commissioner for Productivity and Technology, Bureau of Labor Statistics, and several agency officials. We have also had excellent cooperation from the National Commission on Productivity.

On behalf of all those who have been concerned with this effort, we should like to express our appreciation for the initiative which the Joint Economic Committee has taken in this area. Your Committee has had a long-standing interest in private sector productivity. It is important that the Congress have an equal concern in the public sector.

Your hearings should be most helpful in highlighting this important effort, the progress which it has made, and the work which lies ahead.

I will cover four points today:

--First, why is productivity measurement an important tool for managers in the Federal sector and in the public sector in general?

--Second, what have we learned about the measurability of the Federal sector?

--Third, what are the factors which cause change in Federal productivity, and how can we influence such changes in the future? To illustrate this point, I will cite several case examples.

--Fourth, how are we planning to perpetuate the lessons we have learned to date?

A. WHY ARE PRODUCTIVITY MEASURES IMPORTANT IN THE PUBLIC SECTOR?

Productivity in the public sector is beginning to receive the serious attention which it deserves. We have come a long way from the once-held concept that productivity measurement and analysis is synonymous with the stop-watch and work measurement of employees. Appropriately, there is growing recognition of the fact that improved output performance is a product not only of labor efficiency but, even more, a product of improved capital equipment, technological changes, and improved supervision. In short, it is an indicator of output as affected by all of these factors.

Here are a few reasons why we stress the importance of public sector productivity:

--Over the past decade, the public sector expenditures at all levels of government have increased at a faster rate than any other major category of expenditures which make up the Gross National Product. Governments, either directly or through others who receive government funds, now buy approximately one-third of all the goods and services which make up the Gross National Product.

--At the same time, official national indices in the past have shown a zero growth in public sector productivity. As one economist has put it, past studies have assumed a "regrettable negative productivity rate in local, State, and Federal governments."

--The Federal Government has an obvious interest in the performance and productivity of State and local government, highlighted by the fact that there has been an increase of about 10 percent a year in Federal assistance over the past decade. Currently, the Federal Government provides over 20 percent of the total revenues of State and local government through various forms of grant assistance and through revenue sharing.

--The Federal Government has devoted a great deal of attention and effort to steps to increase productivity in the private sector as one way of improving the United States competitive position in world markets and to reduce inflationary pressures. We believe that Government should apply the same admonitions and efforts to its own operations and hopefully even set an example in its efforts to improve productivity in the public sector.

--The potential for savings through increased productivity is highlighted by the fact that Federal, State, and local payrolls now approximate $149 billion. Thus, even a small change in productivity has tremendous potentials for savings or offsets to increased costs.

B. TO WHAT EXTENT IS FEDERAL PRODUCTIVITY MEASURABLE?

The challenge to the joint project team in the past 2-1/2 years has been to identify those Federal activities for which quantitative outputs can be consistently counted from year to year and can be related to the manpower resources consumed in their production. We are interested not in the profusion of statistical data, such as one finds in budget appendixes, but in the significant indicators which reflect the overall output of organizational units. For example:

--The Postal Service keeps detailed data on the numbers of pieces of mail and parcels of each class which it delivers. These are the final products of the work of its 700,000 employees.

--Similarly, the Social Security Administration (SSA) keeps precise data on the number of actions taken to provide payments and other services to the millions of beneficiaries of its various programs. These are the final outputs of its 62,000 employees.

--The Bureau of Engraving and Printing keeps complete records of the currency, stamps, coupons, and other documents which are the final products of its 3,500-man workforce.

After a period of trial and error, and with valuable guidance from the staff of the Bureau of Labor Statistics (BLS), we began the first Government-wide collection of productivity data in September 1972. We requested the best available data for the 6 years 1967-72 from all agencies with 200 or more employees. We asked for the actual

quantitative information, in consistent terms, on (1) outputs, (2) man-years, and (3) wages consumed in producing these products.*

As a result:

--We obtained reports from 187 organizational elements in 45 agencies. A list of these agencies appears as Attachment 1.

--The reports cover over 1.7 million man-years of employment, representing 60 percent of the civilian man-years worked in fiscal year 1972 and accounting for $20 billion in civilian payroll costs.

--The data identified 776 different work outputs. When this data was aggregated, using techniques such as those BLS employed in the private sector, the Federal activities in the 6-year sample showed annual rates of productivity improvement which varied from 1.1 percent to 2.8 percent, with an average annual gain of 1.7 percent. Data for fiscal year 1973 is now being gathered, but it is too early to predict the year's trend. It is interesting to note, however, that each 1 percent improvement in productivity of the Federal sector equals a payroll savings of approximately $200 million.

An overall review of the data reveals that the Federal sector is undoubtedly the world's largest, most diversified conglomerate. It includes a number of organizations which have been increasing their productivity as much as 5 percent or more annually--an excellent record. It also includes activities which have shown declining productivity and others

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*The detailed findings of this study are contained in a report entitled "Measuring and Enhancing Productivity in the Federal Government--Phase III Summary Report" and published June 30, 1973.

which have tended to remain constant in their output per man-year. In fact, between 1971 and 1972, the number of organizational elements showing increases and decreases was approximately equal. Thus, one must observe that a simple overall index of Federal productivity change, like trends in the productivity and profits of business enterprise as a whole, includes wide extremes. Although it is incorrect to assume that past trends can be automatically projected into the future, they are nevertheless important in analyzing individual sectors of the total.

We conclude that productivity indices should be used primarily as trend indicators and are not conclusive as to overall management or program performance. The numbers require considerable interpretation along with other indicators of performance--especially those concerned with program results, effectiveness, and quality. We believe that the most important use of productivity indices is in analyzing the causes of productivity change and in taking management action, when possible, to correct conditions that are causing productivity to lag. It is also apparent that we should expect fluctuations both up and down among Federal activities from year to year as a result of numerous factors, only some of which are controllable by Federal managers. Because of these

characteristics and the limitations of productivity indicators, we believe that the analysis of Federal productivity should deal with trends in cross-cutting functions rather than with agencies as a whole. The agencies themselves should use the individual data in assessing their own performance and in reporting on that performance to OMB and the Congress, as appropriate.

This brings me to the most important aspect of our joint research project:

C. WHAT FACTORS CAUSE PRODUCTIVITY CHANGE IN THE FEDERAL SECTOR?

Productivity measurement would be rather meaningless if it consisted only of gathering statistics and adding up the results.

The important point is: What do we do about the index after we obtain it? We have discovered that this is the most important value of productivity measurement in the Federal sector.

The relevant questions are:

--Is the change which occurred the result of planned actions to improve either quantity or quality of performance? Or is it simply a happenstance result?

--What are the positive and negative factors which produced the result?

--How can we optimize productivity in relation to service to the public, accuracy of output, or other essential quality criteria?

--What will be the trend? What can we do about it now?

The Joint team has addressed questions of this type to a number of Federal managers. We grouped the 187 reporting organizations into functional categories which have similar work processes, or program missions. Altogether, 16 such functional categories were identified, a list of which appears as Attachment 2.

Let me select a few of the categories to illustrate the kinds of insights which productivity research is giving to Federal managers.

1. Computerization and paperwork systems improvements have been significant factors in raising the productivity of the Federal Government's massive clerical operations.

Several of the functional groups analyzed fall into this category:

FUNCTION	MAN-YEARS	ORGANIZATIONAL ELEMENTS	ANNUAL INCREASE 1967-72		
			OUTPUT	MAN-YEARS	PRODUCTIVITY
			(percent)		
Citizens Records	108,000	14	5.6	1.9	3.3
Loans and Grants	26,000	12	14.1	3.1	9.5
Regulatory Activities	68,000	36	5.7	0	5.7
Total	202,000	62			

These activities are characterized by steadily increasing workloads accomplished with only small changes in manpower. In every case, computerization has been the major factor in improved productivity, along with associated systems improvements.

One of the most dramatic case studies is improvement in SSA, which services 30 million retirement survivors and disability beneficiaries and provides health insurance protection for 20 million individuals. SSA has measured its productivity since the mid 1950s and has been among the Federal leaders of better management. A detailed discussion of its productivity trends is contained in a separate statement which I am submitting for the record. In summary, this review indicates that:

--In fiscal year 1973, SSA required 61,777 man-years to service its beneficiaries. At productivity levels prevailing in 1964 SSA would have required 31,919 additional man-years to perform this work.

--These gains are attributed to:

. Automation.

. Systems improvement, including assisting beneficiaries by telephone rather than requiring office visitations.

. Statistical analysis to eliminate or short-cut reviews of claims which have minimum errors.

. Use of new techniques to measure and foster improved service to beneficiaries.

In reviewing the experience of the organizational elements which are involved in these functional areas, one is impressed with the fact that the leadtime between initiating the improvement and finally realizing it in terms of greater productivity may be 2 or more years and that forward planning is essential for continued productivity improvement.

2. Mechanization has been the dominant factor behind productivity gains in industrial and manufacturing-type operations.

What the computer has done for mass paperwork activities, other forms of mechanization and automation are doing for the Government's numerous manufacturing and industrial-type activities. Examples are:

Function	Man-years	Organizational elements	Annual Increase 1967-72		
			Output	Man-years	Productivity
			(percent)		
Power	29,657	5	18.4	7.7	7.7
Specialized Printing	7,911	4	7.8	2.3	4.9
Transportation	111,458	4	5.7	2.2	3.6
Overhaul and Repair	94,808	5	4.3	-2.0	7.0
Total	243,834	18			

These activities have enjoyed a high workload growth and possess a high potential for automation which its managers have provided in a timely manner. The power group is led by Tennessee Valley Authority (TVA), transportation by the Federal Aviation Administration (FAA), overhaul and repair by the military services.

Two very revealing case studies were made of agencies in the specialized printing function:

--The Department of the Interior, Geological Survey, Topographic Division, each year maps over 100,000 square miles. Since 1967 the Division has steadily reduced its personnel while maintaining a relatively constant output. The result is that the number of square miles mapped per man-year has risen from 67 in 1967 to 85 in 1972--an annual gain of better than 5 pe cent. The reasons for this improvement are:

. 20-year-old plotting instruments were replaced by new and more versatile equipment which is more accurate and productive since it permits the use of superwide-angle cameras.

. Improved stereo-projection equipment was developed as a result of the Division's own research program.

. A nationwide system of computers was installed to service the four mapping centers in performing intricate computations needed for precision mapping, as well as to substitute computer plotting for manual plotting.

. Visual aids were developed to assist individual workers and to prevent deterioration in their eyesight, thus prolonging their years of high productivity.

--The Bureau of Engraving and Printing (BEP) has increased its output of currency, stamps, and other instruments by better than 50 percent since 1967--achieving volumes of 3 billion items of currency and 26 billion stamps. To support this expansion, it has had to increase manpower by less than 25 percent, thus achieving an annual productivity growth exceeding 5 percent a year. This represents a savings of

1,000 employees. The most significant increase has been in currency production; former wet-printing-process equipment which turned out sheets of 18 subjects has been replaced by a faster dry-process printing which produces sheets of 32 subjects.

As will be discussed later, timely capital investment in labor-saving devices is an essential requirement for sustained productivity improvement in the Federal Government.

3. Fluctuations in the volume and complexity of work are a significant factor in productivity change from year to year

Our studies reveal that activities experiencing continuous growth in workload--such as those involved in maintaining citizens' records, grant programs, power-generating activities, transportation, and the Postal Service--have improved steadily in their output per man-year. The pressure of continuous growth appears to foster systems improvements and to provide incentives for innovation which increase the output per person. However, we find real concern among these activities that standards of service to the recipient, or minimum levels of quality, not be reduced at the expense of achieving efficiency gains. We encountered excellent techniques for measuring quality being developed by SSA, IRS, and the Postal Services, among others.

In contrast to activities whose productivity benefits from workload increases, we have found that activities experiencing sharply declining workloads--or those with a highly uncertain pattern--tend to have productivity deterioration. We noted, for example, that the Government's in-house printing plants had shown a steady drop in output since 1968, with no reduction in employment and a consequent decrease in productivity per man-year. A major contributing factor to this decline in productivity was the fact that more of the larger jobs and the easier work (longer runs, single-color jobs, work without short deadlines) were being contracted out, leaving the smaller jobs and the more difficult work to be performed in-house.

Another example involves the large number of activities which purchase, store, and issue supplies to Federal users throughout the world. They employ 155,000 personnel and manage several million items. These supply activities are located primarily in the military services and in the General Services Administration. With the winding down of Vietnam, thei workload dropped steadily--at a rate, recently, of 6 percent a year. Surprisingly, however, these agencies avoided an overall loss in their productivity per man-year by reducing personnel assigned at least as fast as workload decreased,

as well as by comprehensive programs of mechanization in warehousing and inventory control activities.

D. ENLIGHTENED MANPOWER MANAGEMENT IS A KEY FACTOR IN PRODUCTIVITY CHANGE IN THE FEDERAL SECTOR

I am sure we all agree that productivity improvement will not succeed if it is simply and primarily aimed at driving employees to work harder. Richard Gerstenberg, Chairman of General Motors, captured this very important point in the following statement:

> "I regard productivity as a measure of management's efficiency, or lack of efficiency, in employing all the necessary resources--natural, human, and financial."

In our discussions with several hundred Federal managers during the past 2 years, we have been told that the initiative to improve productivity is sharply reduced when:

--Arbitrary personnel ceilings make it impossible to maintain adequate service standards or result in the accumulation of intolerable backlogs.

--The requirement to reduce average salaries results in employing less-qualified personnel who have higher attrition in the first year and less promotion potential.

--Mandatory personnel cuts are applied equally to those who have achieved greater efficiency and to those who have not.

Such complaints have no easy solutions since they indicate the need for more skill in managing and in rewarding good performance. In our future studies we plan to highlight good and poor experience through case examples.

Another source for future productivity improvement will arise from providing employees broader opportunities to be involved in the final products of their organization--through such techniques as job enrichment, job restructuring, upward mobility, and participative management. We have noted that the organizations which are successful in improving productivity are also emphasizing better working conditions or better opportunities for their employees. Each such agency cited thus far (SSA, BEP, and Geologic Survey, Topographic Division) has had a significant program or project devoted to this objective.

Another good management example encountered during our phase III work was the progress of the Treasury Department's Bureau of Customs, which has experienced a doubling in foreign mail parcels processed since 1967. The Bureau has been able to assimilate this increase with an addition of only 44 percent in staffing by having better management systems and, particularly, by offering its employees opportunities to develop specialties in this function. This has afforded upward mobility to personnel who formerly were blocked in dead-end jobs.

E. THE IMPORTANCE OF CAPITAL INVESTMENT IN PRODUCTIVITY IMPROVEMENT

Authorities have concluded that improved technology and the availability of more capital per worker have been the major sources of productivity growth in the private sector over a long period of time. In light of this finding, the joint project team studied ways in which Federal agencies now select capital investment items for inclusion in their annual budgets. The team found that Federal managers sometimes lack the incentive and opportunity to seek funds for cost-reducing capital investments. Such projects tend to drop out of tight budgets when they have to compete with items related to program requirements or current priorities, such as pollution abatement, health, and safety. This contrasts sharply with the experience in the private sector, where top management and boards of directors keep the spotlight on such investments.

To document opportunities for more timely financing of productivity-improving investments, the joint team obtained data on unfunded projects from 14 agencies and selected a number for analysis.* In this sample the team identified

*The detailed finding of this study are contained in a report entitled, "Analysis of Productivity Enhancing Capital Investment Opportunities (Special Report #4)" and published September 1973.

392 projects which would be self-liquidating in less than 3 years--with one time savings of $62 million and recurring annual savings of $66 million. The team believed that this sample covered only about half of the opportunities which might have been discovered in a complete inventory. Examples of the investment possibilities are modern materials-handling equipment, tape-driven machine tools, automated laboratory equipment, mechanized warehouse equipment, consolidation of facilities, and others.

Concurrent with the team's study, the Army conducted its own test by allocating a $500,000 fund, available only for fast payback capital investments, to its Ammunition Procurement and Supply Agency (APSA) in Joliet, Illinois. APSA was allowed to make immediate decisions on proposed investments by the Government Owned Contractor Operated (GOCO) ammunition-loading plants where the payback could be achieved in 2 years or less. In a few months, 24 projects were approved which would return $1.8 million in annual savings. The majority of these projects have paid or will pay for themselves in less than 180 days following installation. Illustrations are:

--An automatic nailing machine costing $38,185 saved 20 men in constructing pallets for bombs. The annual savings of $240,000 resulted in an amortization period of 57 days.

--A machine for automatically loading small-arms ammunition costing $50,000 saved 42 personnel engaged in packing ammunition rounds into ball clips. A savings of $453,000 amortized the cost in the first 41 days of operation.

--An automatic laundry clothes dryer costing $25,000 saved five people amounting to annual savings of $50,000. This project repaid the investment in 180 days.

--An automatic scrap compactor costing $29,000 increased the recovery price for scrap brass and reduced storage space, saving over $47,000 and repaying the investment in 160 days.

We were advised that the Air Force and the Navy are considering similar tests. The experience revealed here is of such value that we are submitting a more detailed writeup on it for inclusion in your hearing record.

After considering these findings, the joint team concluded that several actions were necessary to insure timely capital investments in support of future productivity improvements:

--First, the need for clear visibility in the Federal budget process, through a separate declaration to OMB and the Congress, of capital items with productivity-enhancement potential.

--Second, expert attention to developing high-payoff capital investment opportunities. This means adding to agency organizations personnel trained in identifying such opportunities.

--Third, better audits of actual results obtained to insure credibility and achievement of the results anticipated.

--Fourth, timely financing. A study of ways to achieve this objective is continuing. It may be that legislation may be necessary to allow certain activities, particularly those operating under industrial or revolving funds, the authority to borrow or otherwise establish reserves for new equipment purchases.

F. FUTURE PLANS

On July 9, 1973, the Director of OMB issued a memorandum to heads of departments and agencies, directing the continuation of the productivity measurement and enhancement efforts and spelling out roles and responsibilities.

The Joint Financial Management Improvement Program task force, in which GAO will actively participate, has been assigned the responsibility of analyzing the factors which have caused productivity changes and preparing an annual report to the President and the Congress. The report will analyze productivity trends and present case studies to illustrate factors contributing to productivity increases and decreases. The task force will also continue to seek opportunities for expanding the coverage of the indices.

In addition, GAO plans to report annually to the Congress on the agencies' progress in (1) identifying opportunities for using labor-saving equipment and (2) acquiring it. We believe such visibility is necessary to insure attention to such investments, without which the Government will fall short of achieving its full potential for improved productivity.

We are most appreciative of the continued interest and support of this Committee in this effort and hope that these hearings will stimulate still greater progress in measuring and enhancing Federal productivity.

At this time, Mr. Chairman, I would like to suggest that Mr. Dwight Ink and Mr. Bernard Rosen elaborate on the future plans and roles of their respective agencies.

We will then welcome an opportunity to answer your questions.

ATTACHMENT I

LIST OF AGENCIES PARTICIPATING IN PHASE III STUDY

AGENCY:	Total man-years	Measured man-years	Percent measured	Number of elements
	(000 omitted)			
Postal Service	707.7	707.7	100.0	1
Defense	1,169.2	365.2	31.2	30
Agriculture, Department of	103.8	34.3	33.0	14
Atomic Energy Commission	7.3	0.1	1.4	1
Civil Aeronautics Board	0.7	0.08	11.4	1
Civil Service Commission	5.7	4.4	77.2	6
Commerce, Department of	32.8	6.6	20.1	7
Export-Import Bank	0.4	0.15	37.5	1
Farm Credit Administration	0.2	0.02	10.0	1
Federal Communications Commission	1.6	0.1	6.3	2
Federal Maritime Commission	0.3	0.3	100.0	1
Federal Mediation and Conciliation Service	0.4	0.4	100.0	1
Federal Power Commission	1.1	0.8	72.7	1
Federal Trade Commission	1.4	1.4	100.0	1
General Accounting Office	4.5	0.6	13.3	2
General Services Administration	39.7	33.1	83.4	12
Government Printing Office	8.7	8.7	100.0	1
Health, Education, and Welfare, Department of	108.4	79.0	72.9	11
Housing and Urban Development, Department of	17.1	9.3	54.4	3
Interior, Department of the	72.7	35.8	49.2	19
Interstate Commerce Commission	1.7	1.7	100.0	4
Justice, Department of	44.8	14.3	31.9	11
Labor, Department of	12.6	8.3	65.9	5
National Aeronautics and Space Administration	29.8	0.03	0.1	1
National Credit Union	0.3	0.3	100.0	1
National Foundation on the Arts and the Humanities	0.2	0.2	100.0	1
National Labor Relations Board	2.4	2.4	100.0	1
National Science Foundation	1.1	1.1	100.0	1
National Transportation Safety Board	0.3	0.3	100.0	1
Office of Economic Opportunity	2.4	2.4	100.0	1
Office of Emergency Preparedness	0.4	0.07	17.5	1
Panama Canal Company	15.7	15.7	100.0	2
Railroad Retirement Board	1.9	1.9	100.0	1
Renegotiation Board	0.2	0.2	100.0	1
Securities and Exchange Commission	1.4	1.4	100.0	1
Selective Service System	6.2	6.2	100.0	1
Small Business Administration	4.7	4.7	100.0	1
Smithsonian Institution	2.8	0.7	25.0	1
State, Department of	25.1	2.7	10.8	4
Tariff Commission	0.3	0.04	13.3	1
Tennessee Valley Authority	26.1	26.1	100.0	3
Transportation, Department of	109.2	95.8	87.7	3
Treasury, Department of the	104.9	80.1	76.4	18
United States Information Agency	9.8	2.3	23.5	3
Veterans Administration	177.5	169.8	95.7	3
Total	2,865.5	1,726.8	60.3	187
Nonparticipating agencies	18.1	0.0	0.0	-
Total	2,883.6	1,726.8	59.9	187

SIXTEEN FUNCTIONAL CATEGORIES SELECTED FOR ANALYSIS

Function	Number of man-years (000)	Percent of estimated coverage
Public Services--by process:		
1. Citizens records	108	100
2. Hospitals and clinics	192	94
3. Loans and grants	26	43
4. Postal service	708	100
5. Power agencies	30	100
6. Printing, specialized	8	45
7. Reference services	7	20
Public services--by program:		
8. Agriculture and natural resources	34	34
9. Educational assistance	49	60
10. Regulatory activities	68	52
11. Transportation	111	80
Internal support services:		
12. Maintenance of facilities	73	82
13. Overhaul and repair of heavy equipment	95	55
14. Procurement and supply	153	80
15. Printing, standard	13	88
16. General support	53	18