

*Synopsis Of Productivity Seminars
Conducted At The Second*

Financial Management Conference

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1) SYNOPSIS OF PRODUCTIVITY SEMINARS
CONDUCTED AT THE
FINANCIAL MANAGEMENT CONFERENCE
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PREFACE

This booklet on the proceedings of the productivity workshops is the second publication on the activities at the Financial Management Conference sponsored by the Joint Financial Management Improvement Program on January 31, 1973. The first booklet entitled "Principal Addresses Presented at the Second Financial Management Conference" is available from the Executive Secretary, Joint Financial Management Improvement program, 441 G Street, N.W., Washington D.C. 20548

EDITOR'S NOTES

This booklet is a synopsis of the productivity seminars presented at the Financial Management Conference on January 31, 1973. Opinions and beliefs expressed in this book are those of the authors and do not necessarily reflect the views or policies of the Federal Government or agencies of the Federal Government.

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SEMINAR I
ENVIRONMENTAL CONDITIONS AFFECTING
FEDERAL PRODUCTIVITY MANAGEMENT

Mr. William H. Corbett
U.S. Civil Service Commission

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University of Maryland
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Mr. William Parsons
U.S. General Accounting Office

Dr. Robert S. Wiseman
U.S. Army Electronics Command

Mr. Corbett:

Mr. Corbett recounted briefly the background of a study by the Joint Productivity Project. Fieldwork by Project members showed that Federal managers believed their "management milieu" was a negative stimulus; i.e., there were more incentives not to improve productivity than to improve it. This impression was based on conversations with members of 11 Federal Executive Boards visited by the Project staff during 1971 and early 1972.

The disincentives mentioned by members of the Boards could be listed under several titles, one of which--"Rewards"--suggested itself during the early days of the fieldwork. The Project team was told that the only reward for productivity improvement was an inner sense of accomplishment but that the system contained a number of rewards for being wasteful. Two examples frequently cited are (1) the manager who has effectively streamlined his operations may be faced with an across-the-board cut which ultimately penalizes this efficiency; and (2) the manager who spends less than his annual budget through efficient cost cutting is often penalized the following year by having his budget estimated reduced.

With these preliminary findings, the team decided to make a detailed study throughout the United States conducted by regional offices of the Civil Service Commission. Through management interviews and questionnaires administered to 239 managers and supervisors at all levels of the field establishment in 5 Federal agencies, the team hoped to determine how managers viewed the pressures of their management environment and the incentives and disincentives for improving organizational productivity.

Dr. Gannon:

Dr. Gannon was one of the two codirectors of the study of managerial attitudes. He explained that field managers perceived authority and responsibility as their greatest unfulfilled needs. Also managers needed information on (1) work expected of them and resources available and (2) means of measuring performance against expectations.

Dr. Gannon presented an analysis of 468 critical incidents cited by the 239 managers interviewed, in response to a request that they cite "typical examples of situations in which managers or supervisors in your organization (above you, at your level, or below you) succeeded or did not succeed in taking action * * * to improve productivity * * *." The incidents cited were about two-thirds negative. As revealed in a previous questionnaire, field managers believed that productivity would be markedly improved if they had more authority over their work and such personnel actions as hiring, firing, and assigning.

Managers felt so strongly on these matters that--to the surprise of the investigators--they placed pay and recognition at the bottom of the list. Whereas the practice of accomplishing reductions by across-the-board cuts was generally criticized, protecting poor performers by "putting them where they can do no harm" was criticized even more.

Dr. Gannon concluded that managers generally believed productivity would increase sharply if they were granted more authority in (1) assigning priorities and work, (2) choosing employees, and (3) dealing with substandard performers.

Mr. Parsons:

Mr. Parsons gave examples of how managers were overcoming obstacles to improve productivity. One example involved a change in an agency's handling of delinquent accounts. Previously, the agency had attempted to collect through personal contact all amounts over \$10. Now it makes its first contact by telephone, and only 20 percent of the cases require personal contact. Interestingly, the agency making this change reflected a 66 percent productivity increase in the last 4 years.

Another example involved a change in methods of handling mail from overseas. Formerly, incoming parcels on the west coast were processed by the San Francisco mail division of Customs, which then routed them to the districts nearest the addressees. The parcels now receive final processing in San Francisco and are routed directly to the addressee. Although the size of the San Francisco office increased, savings resulted from an overall reduction in personnel, and career opportunities and job interest improved.

Several examples tied directly into Dr. Gannon's presentation, including one that involved delegating the final disposition of claims from regional to district offices. This change eliminated a level of review, enriched jobs with responsibility, expedited service, and improved productivity.

Dr. Wiseman:

Dr. Wiseman explained how project "Reflex" affected the operation of the U.S. Army Electronics Command (ECOM) laboratories. Essentially, Reflex freed ECOM from manpower ceilings. The wording of

the document which initiated Reflex was sufficiently nonspecific to allow the local manager to say "if it isn't forbidden, it's authorized," thus enabling him to clear out a number of hobbling administrative practices that had accumulated over the years.

Lifting manpower ceilings has allowed the manager to manage by dollars, with a number of direct and tangible benefits. To save money, managers tend to fill positions with employees in lower grades and make concerted efforts to reduce overhead. Services formerly paid for by overhead charges, such as computer time and graphics, are now charged direct to the projects using them. Users now have to make cost-benefit decisions, and economies result.

The change to dollar management stimulates managers to look ahead realistically to determine what products will be in demand, because they will be dependent upon customers to support their operations. Previously, planning tended to be a paper exercise performed by staff offices to meet administrative requirements and the relationship between plans and actual operations was remote. The plan for a laboratory is now an operating document against which line managers continually assess performance. As implemented in ECOM, planning and evaluation are delegated down the line under project Reflex. Projects are developed with input from the team leaders, who are responsible for predicting costs and for performing according to their predictions. Not only does this practice result in more watchdogs over economy, but it also contributes to managerial development. All levels of line management have responsibilities to balance the total resources of funds, manpower, contracts, and facilities whereas before such a scope of management was restricted to top levels.

Reflex did not affect the balance of internal and contracted research. Some predicted that removing manpower ceilings would encourage managers to "empire build" and use their funds to hire staffs to do in-house research. In fact, Reflex and its accent

upon economy have caused managers to consider such factors as (1) relative capability to undertake projects, (2) need to acquire skills and equipment, (3) direction and duration of effort and (4) need to prepare the civilian economy for production, etc.

Mr. Corbett:

Such words as "given authority commensurate with their responsibility, Federal managers will discharge those responsibilities well" summarize the panelists' messages. Dr. Gannon presented the Federal managers' consensus that restrictions placed upon their exercise of initiative and judgment hampered productivity. Mr. Parsons cited examples of how these same managers were moving ahead despite these restrictions. Dr. Wiseman gave a firsthand case history of how removing manpower ceilings had enabled and stimulated an organization to achieve astounding improvements in productivity.

SEMINAR II

MEANING, DEVELOPMENT, AND IMPLICATION OF PRODUCTIVITY MEASURES

John Moundalexis
U.S. General Accounting Office

Productivity is taking on a new meaning in this country. In a land of seemingly endless growth potential and resource availability, it has been easier to enjoy the results of productivity than to be concerned with efficient use of our resources. Technological advancements have more than compensated for operating techniques that have been growing obsolete over the years. U.S. productivity, although still rising, is much below current productivity rates of Japan, Germany, and many other countries. America is at the crossroads. We can continue in our present path, which appears to be headed toward decline, or we can recognize the value of productivity and create a higher standard of living through better use of our resources. If we choose the latter path, then productivity measures are tools to help us achieve our goals.

Productivity is quickly becoming a household word, yet the body of knowledge which surrounds it is not fully understood. Most often each discipline understands and uses productivity procedures based on its own evolved knowledge. Measurements rang from precise measurement of specific activities to proxy measurement of total manpower based on limited data.

The purpose of this seminar is to discuss the meaning, development and implications of productivity measures. To help achieve this objective three subjects will be discussed. These are: (1) Productivity Measures and Their Implications, (2) Productivity Measurement for Local Government, and (3) Practical Interpretation of Productivity Measures.

Productivity Measures and Their Implications

Jerome A. Mark
Department of Labor

There is a growing belief that productivity improvement plays a key role in stabilizing the economy and a growing recognition that long-term growth in productivity is the only way to satisfy our increased needs within the limits of our resources. As producers of basic data on the economy, we in the Bureau of Labor Statistics deal with questions about the significance of changes in productivity and the implications of these changes. I will discuss these questions by examining statistics on past productivity changes and some of the implications of the trends.

Productivity measures can be grouped into two broad classes:

- Productivity as the ratio of output to one type of input, such as labor or capital.
- Output related to a combination of inputs extending to all associated inputs.

Because of its relevance to most economic problems, particularly manpower planning and labor cost movements, output per unit of labor time is a most useful measure.

The record shows four outstanding patterns of productivity.

1. Output per man-hour in the U.S. economy has grown persistently and has risen every year in the past 2 decades, averaging 3 percent a year.

2. Within this period productivity has fluctuated widely with cyclical changes in production and capacity use. The cyclical pattern is classic. In the early stages of a decline, output per man-hour falls sharply. Later, as cost cutting is pursued more vigorously, the decline is arrested. In recovery, productivity rises rapidly and peaks when bottlenecks emerge reducing the gains. Developments over the last 3 years followed this pattern.
3. Productivity growth varies considerably among industries. Agriculture has sustained the highest growth and footwear and cigarettes have had very low growth rates.
4. Productivity growth differs greatly between the United States and other industrialized countries. For example, the United States has generally lagged in manufacturing in the last 5 years particularly behind Japan.

What are the implications of movements for stability of economy?

1. Gains in manpower output have been smaller than those in hourly compensation, so unit labor costs have risen. Unit labor costs are very sensitive to productivity changes, and price changes, in turn, are sensitive to unit labor cost changes. Real wages, therefore, are tied very closely to productivity gains.
2. Productivity, costs, and prices move differently in different sectors of the economy. Again, unit labor cost increases highest in sectors with low productivity gains. Price increases, in turn, were higher in those sectors with higher unit labor cost increases.

3. Disparity between United States and other countries' productivity movement is reflected in unit labor cost differences and has affected the U.S. competitive position adversely.

Productivity improvement is essential to improve the American people's level of living. It provides the means for all groups to have larger shares in the Nation's products without taking from one group to give to another.

Productivity Measurement
for Local Government

Harry P. Hatry
The Urban Institute

Improving local government productivity presents a major opportunity for improved efficiency and effectiveness within the United States.

RECENT ACTIVITY IN LOCAL GOVERNMENT
PRODUCTIVITY MEASUREMENT

Productivity is not new; it has been around for decades. However, there have been few organized, systematic approaches to its measurement and improvement. Few incentives exist for improving productivity within local governments.

If productivity was measured at all it was restricted to workload measurements and occasionally workload per unit of input. Almost no attention was paid to explicitly measuring the quality aspects of services along with the workload. The Program-Planning-Budgeting System and program budgeting have generated a considerable interest in output measurement at both the local and State government levels. Recent GAO audit standards with emphasis on efficiency and program results auditing may further spur productivity measurement. Productivity bargaining is growing in local governments; and where attempts are made to link wage increases to demonstrated performance in productivity, a considerable burden will be placed on identifying meaningful productivity measurements.

After decades of use in the private sector, work measurement and work standards in the Government are now being used, or are being considered for use, for such things as typing standard forms and records, keypunch data processing operations, sanitation and housing inspections, various maintenance

services such as park and street maintenance, and vehicle repair.

New York City may have the only government currently measuring productivity and improvement, with several dozen industrial engineers in a variety of projects and functional areas. Progress reports are provided quarterly to the mayor. Many other governments are beginning to talk about productivity projects.

Last year the National Commission on Productivity, which has a small part in the local government sector, sponsored The Urban Institute productivity measurement project on solid-waste collection and police crime control. It has just begun a project with the International City Management Association to place a productivity liaison man in two cities. The Commission is also sponsoring a group of background studies in a number of functional areas starting with crime control and solid-waste collection to identify opportunities for productivity improvements nationally.

SOME PRODUCTIVITY MEASUREMENT PROBLEMS

Many exist. Two major ones are:

1. The need to determine whose productivity is to be measured and on what basis. Inevitably many external factors affect productivity measurement values for any activity. Measurement of workers' productivity needs to be contrasted with that of a government service as a whole, such as solid-waste collection or police crime control.
2. The major single dilemma is what output units should be used. Public officials have been increasingly concerned with considering quality as part of productivity measurement. Even with workload

measurements such as typing output, the output needs to be adjusted for quality (e.g., for typing errors). Meaningful productivity measurement for any government service will require the use of multiple measurements (i.e., a measurement profile) to provide an adequate perspective to management. This will help avoid perverse measurements such as solely using "arrests per policeman" without considering the quality of the arrests or the crime prevention function.

Currently available techniques permit many qualitative aspects of services to be at least partially measured. For example, citizen surveys can be used to obtain feedback on many quality aspects of service.

Input measurement is easier than output measurement, but it still has many problems. For local governments it is necessary to measure dollar inputs as well as man-hours to provide a perspective on the total government burden. Problems arise in insuring that all appropriate man-hours and dollars are included, such as fringe benefits, supplies, equipment, capital facilities, and support. Existing cost accounting systems often are not adequate to provide the types of input information for measuring specific government activities such as distinguishing costs of street cleaning from garbage collection and residential collection from commercial collection.

THREE GENERAL RECOMMENDATIONS

1. A systematic attempt at annual, comparative, intercity productivity measurement should be developed for each of the major local government services. Almost no data exists at the national level to permit adequate comparisons among cities. Making such comparisons is complex; data from different cities must be reasonably comparable, and cities should be classified and grouped by various

key characteristics so that fair comparisons can be made. For example, cities with backdoor collection should be distinguished from those with curbside solid-waste collection.

2. National productivity measurement and analysis teams should be established for each local service area. These teams would not only be responsible for the measurement procedures discussed in recommendation 1 but would also analyze the data to identify reasons for high productivity which might be transferable to other localities. Field visits to cities identified through the data base as high productivity cities might be one major component.

3. Provision should be made for a systematic search, evaluation, and dissemination for innovations underway within local governments for each functional area. Currently there is almost no such provision, thus greatly wasting existing experiences in the United States.

Practical Interpretation of Productivity Measures

Nestor E. Terleckyj
National Planning Association

I. The purpose of productivity measurement.
Government is a slow productivity growth industry. According to recent estimates, the overall productivity growth rate per man-hour is 1.9 percent a year. (With proper adjustment for shifting mix in the postal service output, it may be closer to 1.5 percent a year.) The long-term growth rate in the private economy is 3.4 percent. At the same time the fiscal problems of the Government are serious.

Most of the Federal budget is committed in advance to ongoing programs, and the so-called budget margin from which all new needs would have to be financed is now estimated to be only \$2 billion for fiscal year 1975 and only \$35 billion for fiscal year 1978. Productivity improvements can have large effects on the budget margins. Through the experience of other sectors of the economy, one can hypothesize that acceleration in Government productivity by 1 or 2 percent may be technically feasible. Two-percent acceleration in Federal Government productivity related to total expenditure of \$270 billion would yield productivity dividends and would increase the budget margin by \$5 billion in the first year, \$10 in the second, \$15 in the third, and \$20 in the fourth--or a total of \$50 billion over a 4-year period. Even a 1-percent acceleration related only to the direct operations part of the Federal budget of \$112 billion would expand the budget margin by \$10 billion over 4 years. The actual magnitude of possible changes in governmental productivity are presently unknown, but these calculations suggest that the potential for productivity improvements may be very important.

II. Role of productivity measurement in raising productivity. Productivity measurement is one of the following four ingredients which in my view are necessary to raise productivity:

1. Seriousness of intent.
2. Ability to insure that other values are maintained.
3. Technological knowledge.
4. Ability to know productivity (measurement).

At various times and in various situations, these ingredients may have different effects on productivity growth. Probably, the limiting factor explaining the currently low rates of growth of government productivity has been the seriousness of intent. Although technical knowledge can be provided, the ability to interpret the probable effects of proposed changes on the more basic policy values can also be provided, and measurements exist in sufficiently good quality; the top people must be sincerely involved in raising productivity and the decisions required to improve productivity must actually be made.

One often hears about dangers of biasing objectives toward the quantifiable indicators. It is a real and unavoidable danger and it would be present in any efforts oriented to productivity improvement. But, these dangers have to be weighed against the dangers of not quantifying, such as the risk of automatically yielding ground to something that is always quantifiable (i.e., cost), and thus biasing incentives toward higher expense or the various risks of omission or commission resulting from operating in the dark. Moreover, these dangers can be alleviated. Probably, the best insurance against distorted view of the objectives is to quantify more than one dimension of output and to work with profiles of a few crucial indicators

rather than a single one, especially including quality indicators to reflect objectives at the more basic policy levels.

III. Levels of policy measurement. Productivity, which is a ratio of output to input, can be defined at any level of organization starting with the individual worker and ending with an overall appraisal of all governmental functions. Within this continuum perhaps three bands can be usefully distinguished. The first, which I call managerial, deals with subunits of agencies and includes internal operating and support functions of these subunits. Most of the governmental productivity measurements so far have been addressed primarily to this level. A second level, program evaluation, requires different types of indicators and effectiveness analysis. Quality control variables can be derived from this level to evaluate prospective or past productivity changes at the managerial level. A considerable number of indicators produced in various program evaluation efforts exist now throughout the Federal Government. Finally, the third level, policy analysis, is where policies are open to alternatives. Productivity gains can be obtained at all of these levels, but perhaps in the short run many gains have to be obtained at the managerial level. However, to implement such gains, high-level decisions are needed for the simple reason that information regarding the effect on the more basic policy values is always highly uncertain and no amount of measurement will provide a clear-cut guide to policy. But somebody has to take the responsibility.

In summary, the basic question about government productivity at present seems to be how serious the efforts to raise it will be.

SEMINAR III

IDENTIFYING, JUSTIFYING, AND FINANCING
PRODUCTIVITY IMPROVING INVESTMENTS

D. L. Scantlebury
U.S. General Accounting Office

As most of you know the General Accounting Office, the Office of Management and Budget (OMB), and the Civil Service Commission have for the past 2 years been jointly sponsoring a study to measure and enhance productivity in the Federal sector. Since capital investment is recognized as one of the primary means for increasing productivity, it was decided that as one of its projects the joint team would evaluate any problems agencies were having in investing in labor-saving equipment, systems, and processes which would increase Federal employees' productivity.

In our first year's work, we found that many agencies were having difficulty in financing productivity-enhancing investments in competition with mission and current expense requirements. Our goals for this second year are to document the magnitude of the problem and to study further the need for improved agency investment programs and alternate means of financing. If necessary, we plan to be prepared to fashion suggested courses of action commensurate with the problems identified. To accomplish these goals we have asked 10 departments and 5 independent agencies to make an inventory of unfunded productivity investments. In addition, we plan to visit selected activities to evaluate agency procedures for identifying, justifying, reviewing, executing, and financing such investments. We also plan to make a management engineering study at selected activities to test for additional investment opportunities and to demonstrate the need for qualified personnel and a deliberate systems approach in identifying investments with a fast payback.

Preparation of Economic Analysis

Lt. Col. Howard Sivils
Air Force Logistics Command

INTRODUCTION

Economic analysis can be a useful management tool in a capital budgeting program but will probably not be very effective unless certain prerequisites are met. This presentation covers a brief history of difficulties and pitfalls experienced in implementing a program of economic analysis, a thought process which has been found to be useful, and certain key considerations which are important to the successful use of economic analysis.

Part I

After deciding to implement a program of economic analysis to assist in evaluating requests for capital assets, the question immediately arose as to how to institutionalize such a procedure. It was decided to emphasize the directives already in existence, such as OMB Circular A-94 and implementing departmental and agency directives.

Initial results were less than satisfactory and we noted four principal deficiencies:

1. A general lack of understanding of what was needed and why.
2. A lack of competence in how to do it.
3. A low level of participation and commitment by management.
4. Difficulty in relating the results of the analysis with appropriation budgets.

The first attempt to improve the program concentrated on solving the mechanical aspects. First, the structure of analysis was formalized which aided those who had to prepare and review analyses. Secondly, the structure was carefully aligned with the appropriation budget and with the existing management information system to (1) involve managers at all levels, (2) make the analysis relevant to decisionmakers in terms of impacts on future budgets, and (3) provide a mechanism for discipline in enforcing decisions. Tying the economic analysis into the budget process is essential in using analysis as a tool for enforcing the depicted decisions and for insuring that the predicted savings are accomplished. If this is not done, preparation of the analysis can easily become an academic exercise.

Structuring the analysis and aligning it with the budget resulted in noticeable improvement. However, it was still apparent that many of those who were preparing the analyses did not have a thorough understanding of what was needed and why.

The next attempt concentrated on explaining the thought process of economic analysis (as opposed to the mechanical process).¹ It was emphasized that the purpose of economic analysis was to assist in making decisions of choice and supporting those decisions. The following 11 steps help explain the thought process.

1. Identify the problem opportunity.
2. Describe the relevant environment.

¹This thought process is summarized in a Memorandum for Secretaries of the Military Departments dated October 13, 1971; Subject: Economic Analysis of Proposals Supported by Automated Data Systems.

3. Postulate the objectives.
4. Identify assumptions and constraints.
5. Determine cost.
6. Determine benefits.
7. Compare alternatives.
8. Test for sensitivity.
9. Present the results of the analysis.
10. Update.
11. Iterate.

Although this process has been divided into steps for convenient discussion, it is most useful when considered as an entity. In essence, the process involves an interaction of steps to produce a continuing synthesis.

Using the techniques discussed above, practical and useful programs have been developed. The conclusion drawn from this experience is that, to make economic analysis a useful management tool, the following must be accomplished:

1. Structure the mechanical process to provide a degree of consistency and a basis for reconciliation with the budget process.
2. Make the analysis a part of the established management process.
3. Develop an understanding of the thought process among those who prepare the analysis and those who will use it.

4. And most importantly, orient the analyses to the decisionmaker--this includes the budget office.

Alternate Means of Financing
Productivity Investments

Frank W. Krause
Executive Management Service, Inc.

The financing of capital investments within the Federal Government in competition with current expenses has been a long recognized problem. There are many apparent contributing factors but the most pervasive is the high initial impact of many capital investments on the surplus-deficit result of the unified Federal budget, especially in relation to the restrictive budget ceilings imposed in recent years. What can be done to facilitate financing capital investments which will increase Federal employees' productivity? This question has been considered many times in past Federal budget reform efforts.

Use of a capital budget

Chief among the ideas for resolving this problem has been the adoption of the capital budget concept, which would finance current expenses from current revenues and segregate capital investments from financing by borrowing. The alternative proposal has been to separately identify capital outlays in the budget without segregating them for separate funding.

The capital budget approach has been proposed in legislation introduced by many Members of Congress, but such proposals have not been enacted. In contrast, Presidents and presidential and legislative-executive study commissions generally have recommended only the separate identification of capital outlays in the budget as in the present unified budget.

One of the major problems in the capital budget approach (as practiced in a number of foreign governments) is the problem of defining capital expenditures. Opponents maintain that there are

difficulties in deciding where to draw the line, particularly in national defense and public works. In addition, it is argued that it would be difficult to maintain the self-discipline required to keep the definitions from being manipulated through the years to accommodate special points of view. Further, it is believed that in a capital budget, additions to physical assets (financed by borrowing) would receive more favorable consideration in the allocation of resources than would developmental investment-type outlays in social programs (which would be included in the current budget).

Proponents of this concept argue that the capital budget approach is good business practice in the private sector and that the problem of defining capital expenditures in the Federal budget would be solved by limiting capital expenditures to productivity increasing investments. It is suggested that the opportunity to reduce the cost of Government operations is of primary importance and should be of common interest to all points of view. Despite these arguments and considering the present atmosphere, it would undoubtedly be difficult to gain acceptance for adoption of a capital budget even if it were limited to productivity increasing investments.

Alternate means of financing

Under current budget procedures virtually all capital investments are financed on a cash basis. Thus, the usually high outlay impact that occurs in an appropriation acquiring productive capital equipment generally acts against approval of such a proposal because of the heavy impact on Government-wide budget outlays in 1 year despite the fact that the equipment would likely pay for itself through increased productivity in succeeding years.

This situation could be improved if the budget outlay impact in the appropriation acquiring the equipment could be spread over the life of the equipment in relation to the higher productivity

benefits derived. This might be done by (1) leasing equipment, which would spread payments over succeeding years and stimulate investment in the private sector, (2) using lease-purchase agreements or additional contracting which would have similar effects, (3) amending existing budget formulation procedures to highlight desirable productive capital investments for early consideration in the allocation of available resources, or (4) using additional financing techniques, such as a central revolving fund or a Government-sponsored corporation (a productivity bank) with working capital provided by appropriations or through use of debt authority. As a further possibility, the productivity bank might be set up so that its transactions would be considered as "outside the budget totals" not affecting the budget's surplus-deficit.

With appropriate legislation, either the central revolving fund or the productivity bank could advance funds to executive agencies to acquire capital equipment and the budgetary impact of the agency appropriations' outlay for the equipment would occur when the advance was repaid. Agencies would justify using this source of financing for productive capital equipment investment through OMB's budget review process. OMB approval might be in terms of specific individual proposals or a general agency plan.

A significant feature of this approach is that money (advances) could be obtained promptly when the investment plans were approved and the agency would not have to await the lengthy budget cycle for obtaining approval of an appropriation.

There are a number of precedents for the creation of additional financing techniques. For example, GSA has a number of intragovernmental revolving funds, including an ADP Fund and a Federal Telecommunications Fund, which provide financing for designated central services to executive agencies. Government-sponsored

corporations also have been commonly used for financing a variety of Government activities. Some currently in operation include the Commodity Credit Corporation, the Export-Import Bank, the Postal Service, and the Tennessee Valley Authority. A number of these have authority to use public or agency debt receipts for financing and, notably, the transactions of the Export-Import Bank and the Postal Service are considered as "outside the budget totals." More recent examples include the Securities and Exchange Commission authority to use public debt receipts for financing the operations of the Securities Investor Protection Corporation and the Environmental Financing Authority in the Annexed Budgets for fiscal year 1974.

In summary, it would appear the experience with the foregoing funds and corporations provides evidence of the feasibility of gaining acceptance for using these techniques for financing capital equipment investments which have high productivity potential.

A Productivity Investment Program

Dave Gray
U.S. General Accounting Office

A productivity investment program is one of the most important and most difficult areas of management. This became very evident during the past year as we consulted numerous technical journals, books, and bulletins and visited many Government activities and private businesses.

Relatively few agencies have productivity programs to increase capital investments, probably because of many factors, including lack of personnel, lack of funds, and delays due to the funding process. There is usually no separate system for productivity projects which, under normal funding practices, are submerged with other investments and are not always visible to upper levels of management and budget where funding decisions are made. Productivity projects usually compete with priority projects and are not often funded.

How many private businesses can you name which have operated successfully simply by exhausting assets? New productivity investments are normally vital to the success of any operation including the Government. Thus, it stands to reason that productivity investments are among the most important decisions that management is called upon to make. Such investments often involve large commitments of capital, and, since operations are affected for years to come, mistakes are expensive.

Does your agency have a productivity investment program for minimizing mistakes? During our research we found a test of good investment policy applicable to a productivity investment program. Try to answer these questions.

1. Does your agency have a comprehensive knowledge of available opportunities for investment in the improvement of operations?

2. Does your agency have a reliable technique for appraising these opportunities and ranking them in the order of payback and urgency?
3. Does your agency have an organizational setup that keeps it continuously and fully informed of new investment opportunities?

If you can answer yes to these questions, then your agency has the basis for a good productivity investment program.

Two basic requirements for a good productivity investment program are: a good administrative setup to provide management with timely and comprehensive information on investment opportunities, and a reliable technique for assessing the merits of individual investment proposals and ranking them by priority.

Top management must sponsor and organize the program, see that it is properly administered, insure that it is staffed by qualified people who are to communicate the importance of the program to all levels of the organization, and insure control and evaluation of each segment of the program.

A systematic capital investment program provides for identification, justification, review and approval, execution, and postaudit. Most of my remarks will be about identification and postaudit.

Identification is probably the most important area. Without it, you cannot have justification, review and approval, execution, or postaudit. No matter how simple or complex a system of analysis of capital expenditures may be, it is useless if there is nothing to analyze.

Only in a relatively few instances have we found activities with a systematic program for identifying productivity-increasing projects. If you do not actively search for productivity investment opportunities you lose one of the best ways to keep your organization on its toes and moving forward.

In most of our visits, we found that management left the search for such projects to operating personnel and made no effort to stimulate the activity. From our research, we found that a private study had been made of 48 large companies, 47 of which indicated that they made no effort to stimulate ideas for capital expenditures. These companies simply assumed that the general pressure for cost reduction and competitive efficiency would generate such ideas without special stimulation.

Again we come back to the importance of top management support and involvement. Interest in cost reduction and alertness for opportunities must be an integral part of the organization. Everyone should be brought into the act.

Systemize the identification function. Investment-opportunity research is usually viewed as a creative process, not one in which procedures are applicable. However, certain phases of the identification activity can be formalized. Organization manuals and management policy can specify those parts of the organization that are responsible for development and improved methods. Also, individuals' job descriptions can stress responsibility for ideas and activities leading to new investments.

We found a few activities that have developed and used procedures for systematic equipment review, repair and maintenance cost studies, and employee suggestions.

Projects can and should originate in many ways--beginning with the suggestion system--to use the knowledge of workers. The best suggestions for removing bottlenecks and consequent capital expenditures come from workmen and supervisors. Industrial engineers often develop useful ideas in the course of their daily work.

Indicators can also be used to spot productivity opportunities and management information systems can include a variety of indicators--age of equipment, maintenance costs, downtime, product rejects,

variances from standard costs, and overloads. The most useful indicators can be selected but must be watched carefully and systematically.

However, there can be a problem if complete reliance is placed on workers and key indicators. Most projects using these methods related to deterioration which is easily detected by workers and by surveillance of key indicators. Problems are likely to be brought to management's attention. The squeaky wheel gets the oil.

But what about obsolescence? This is difficult to identify, yet most productivity potential is probably in this area. Because it consists of improving available alternatives to existing facilities, it is not observed daily. It usually must be spotted by special study and by observing alternatives. This normally takes more time than the operating personnel can spare and therefore must be, for the most part, a staff responsibility.

In our work to date, this is the area in which many improvements can be made. Have sufficient qualified personnel to be effective in this area. It takes people and time. Operations should be surveyed systematically to identify projects which can increase productivity. There should be an interchange of ideas with external sources. Keep track of developments outside the agency also. There must be constant updating to keep abreast of the state of the art. Change is the most prolific generator of productivity-increasing opportunities. You should have a system which focuses on areas and situations where changes are taking place.

Maximum increases in productivity cannot usually be achieved by simply substituting the latest state-of-the-art equipment in the existing shop. Modernization of facilities must also include redesigning entire areas to take advantage of new equipment. This type of planning must be from the top down. For example, an agency should be concerned not only with buying furniture to install in a house but improving the basic house in which the furniture is to be installed. The shop supervisor may be able to recommend the latest machine tool available to replace an existing item of

equipment in his shop, but he could not be expected to evaluate the effect of a total rearrangement of shops in his division. Yet, the improvements to be gained by considering an entire division or an entire process line or total material flow may far outweigh the cost savings realized by replacing isolated items of equipment.

The greatest advances in productivity do not usually result from introducing a single machine to the process line but from introducing an entire process layout or material-handling scheme to modernize the overall process.

In a nutshell, an agency's success in identifying the best productivity investments depends on top management interest and on how well the agency is organized and staffed to meet the challenge. A productivity investment program is only as good as the projects it identifies. Few things would do more to vitalize the investment process and speed the improvement of facilities than a general intensification of the identification activity.

A couple of remarks should be made on justifications and the review and approval process for a productivity investment program. Justifications, to some extent, should be standardized so that all projects could be evaluated equally. The justifications should have adequate supporting documentation and include a description, a purpose, and a good economic evaluation to determine desirability in relation to other projects. The projects should then be reviewed and ranked in the preferred order of funding, using the criteria of economic return on the investment.

The execution phase of capital-investment management is the time between the date of final approval and the date the completed project is put into operation. Some kind of systematic followup is required to see that work proceeds on the projected time schedule and stays within the estimated costs.

Equipment purchasing, installing, debugging, and breaking-in are time consuming, often costly, and require considerable planning and coordination.

Top management must control significant cost changes and changes in the objectives of capital projects to prevent (1) use of funds for purposes other than those intended, (2) expansion of projects outside management objectives, and (3) extravagance by transferring funds from underexpended or canceled projects to other projects.

Extremely important to effective execution is the assignment of responsibility for project execution to a competent individual--a project manager.

The project manager should prepare progress reports for management which measure actual performance and costs against planned performance and cost. He should also prepare final reports on completed projects, summarizing planned and actual results.

Postaudits are management's best tools for self-evaluation. The postaudit of capital projects is a check on whether the planned benefits are being realized after the project has become fully operational.

Postaudits develop information about the predictive bias of project analysts and originators, aid in improving estimating procedures and increasing estimating proficiency, and are used to measure abilities of those preparing economic analyses. Postaudits accumulate information which will be used in developing improved postauditing procedures; identify corrective actions needed for projects; and provide an overall framework of control so that project origination, approval, and implementation will be a disciplined management process.

Top management must establish a policy for timing postaudits. Because audits are instructive and beneficial, there is no point in unnecessary delay; however, premature audits waste time and money and may be misleading as to project results. It would be best to follow the general rule that postaudits be scheduled as soon as reasonably conclusive results can be obtained.

Thus, the time probably should be assigned on an individual project basis.

Auditing all projects for a large activity which constantly upgrades existing equipment and introduces new equipment would be very costly. Because careful audits are time consuming and expensive, some activities audit only major projects and others employ random sampling of all projects. Possibly a combination of these two methods would be most effective; that is, a postaudit of all major projects, such as those meeting a prescribed dollar criteria, with a random sampling of others.

One basic question is whether the investment analyst should audit his own work. Having developed the analysis originally, he would have the advantage of being familiar with the project. He understands the assumptions and estimates used in the analysis and, therefore, could do the job faster than anyone else. One major disadvantage is that the analyst has an interest in making his own estimates look good in retrospect. Therefore, a fresh, impartial, and independent observer should perform the postaudit.

In summary, a good productivity investment program is functional in nature. Projects should be aggressively pursued in hopes of improving operations by replacing deteriorated and obsolete equipment. Proposals should be justified on the basis of the investment's economic return and should be ranked according to desirability. Justification should be subjected to a rigorous submission, review, and approval process to screen out undesirable proposals. After funding is approved, proposals should be closely monitored during execution to enable management to limit problems that may arise and respond quickly to those that do. Finally, completed projects should be scrutinized to determine the actual benefits obtained.

With the implementation of such a productivity investment program tailored to fit the needs of Federal agencies on an individual basis, but still containing all the vital functions of a good investment policy, the Federal Government should take a giant step forward toward increasing employee productivity.

SEMINAR IV

PRODUCTIVITY MOTIVATION

Dr. Brian L. Usilaner
Office of Management and Budget

Mr. Edwin Mills
National Commission on Productivity

Mr. Neal Herrick
Department of Labor

Mr. Terence Jackson
National Commission on Productivity

Dr. Usilaner:

Dr. Usilaner discussed the human side of productivity. He spoke of the need to come to grips with social systems in organizations in conjunction with the existing technical system.

Mr. Mills:

Mr. Mills provided background on the current problems of alienation in organizations, including the "father-knows-best syndrome" as opposed to the more open and democratic atmosphere in society. He provided statistics from Lou Harris polls of 1965 and 1971 concerning attitudes toward leadership in the U.S. For example, faith in businessmen dropped from 77 percent to 38 percent and faith in America's leadership from 52 percent to 22 percent. Institutional values are changing but institutions are not. Mr. Mills believes that underuse of our human resources has much to do with the problem of alienation.

Mr. Herrick:

Mr. Herrick provided case studies of one corporation in Norway and two in the United States that

utilized job enrichment and other behavioral science techniques to improve motivation and productivity. The Norway firm found itself in a very noncompetitive position--worldwide, in producing fertilizer. After a year of study, in which jobs were rearranged, its production costs dropped 30 percent and job satisfaction rose from 58 percent to 100 percent of the work force.

In the United States, Pet foods, a division of General Foods, democratized the working environment; whereas industrial engineering techniques had ascertained the need for a staff of 248, applying behavioral science reduced the requirement to 182, and first-year savings amounted to \$810,000.

Texas Instruments had a problem of turnover in its cleaning crews of 100 per quarter year. Through redesigning the jobs, turnover per quarter was reduced to 10 percent and where 120 people were previously required, only 71 were needed subsequent to the redesign effort.

Mr. Jackson:

Mr. Jackson summarized the problems facing companies and other organizations today, emphasizing that education is creating an overqualified work force having high aspirations. He briefly discussed the improvement efforts of several large companies. He spoke on establishing organization development panels and the need for consultative review. Mr. Jackson felt that autonomy and equity were needed in the working environment to motivate employees to higher levels of productivity.

Questions and Answers:

Question: Workers are demanding more freedom of action and humane treatment. I wonder if this conflicts with the profit motive and the need to compete at home and abroad. In the auto industry,

for example, procedures are systematized. Management can show, through studies, the most economical way to produce. If we allow workers to do mostly everything they want, we will have a breakdown of the system. Is it really possible to give workers this freedom of action?

Answer: Anyone who tells management to restructure work so that its operation will be less profitable will be thrown out on his ear. Enormous increases in profits, though, are by-products of increased attention to motivation. You don't "give workers their head," you make them a part of instead apart from the organization; give them a chance to participate interdependently with their supervisors. The best-run companies in America verify this approach.

Question: We are asked to increase use of our personnel and at the same time face average grade reductions. Isn't this a ridiculous situation?

Answer: Basically, yes. Average grade controls, through OMB and the Civil Service Commission guidelines, are not consistent with decentralized authority. As a matter of fact, documentation shows that the average grade has actually had an adverse effect on productivity.

Question: Could you comment on how human-resource accounting has changed organizational financial concepts?

Answer: Briefly, most companies put a dollar value on the replacement of personnel. At American Telephone & Telegraph, (AT&T) for example, the replacement costs for a telephone operator was \$1,500. By bringing all indirect factors into play, the budgeted replacement cost is now valued at \$12,500. This is carried as an actual cost to the company.

Question: What facts do we have on the effects of overeducation? We promise students "pie in the sky." Are there any studies along this line?

Answer: A study at one company included a task force on overeducation. It came up with startling statistics for 1980--a society with all generals. Yet education is in our American ethos. It is a tremendous dilemma.

Question: Were some of the failures of introducing participative management 10 years or so ago based on the fact that the work force was not ready to assume responsibility, as it now is?

Answer: Yes, but failures were often caused simply by how it was tried. Now, though, the time does seem ripe.

Question: It is possible to estimate the actual number of companies using behavioral science techniques for improving their organizations' effectiveness?

Answer: We know of about 50 specific companies. There are, however, several companies who are not publicizing their efforts. This is part of the phenomenon that exists in private industry. Companies who are doing something say they are doing nothing. If they are unsuccessful, no one knows about it. If they are successful, others will hear about it, but these kind of successes are hard to steal; i.e., human feelings in a particular company.

Question: What effect do classification requirements have on job redesign?

Answer: We looked into this at the Civil Service Commission and found that they had no effect.

SEMINAR V

USE OF PRODUCTIVITY IN THE BUDGET PROCESS

Gordon T. Yamada
Office of Management and Budget

Recently, there has been much concern with efficiency and effectiveness in the Federal Government which has led to efforts to assist and promote the use of management tools for enhancing productivity in Federal Government operations. The President recently stated that, "we can and we will begin now to realize * * * the increased efficiency in economy which thinned out organization charts and leaner personnel rolls would bring to the whole executive branch under full-scale reorganization." The President and senior Federal personnel emphasized the need for us, as Government employees, to more efficiently and effectively discharge our daily responsibilities.

We will discuss from the agency, department, and OMB levels, the actions which are underway to develop and use quantitative techniques in such areas as productivity, unit cost, and work measurement to enhance rationale decisionmaking in the resource allocation process. Our analysis to date reveals that present department and agency budget submissions regarding quantitative techniques have limited usefulness. The data we have examined is not presented in a format which is easy to analyze. Furthermore, the program examiners must follow very tight schedules.

OMB Circular No. A-11 which represents the budget bible defining the preparation and submission of budget estimates, contains the necessary words to promote the use of quantitative techniques. Because it lacks the definition of a specific format, agencies are free to develop formats to suit their own needs. This results in a situation where it is extremely difficult to track manpower, workload, and

dollars relating to overall programs. OMB and program examiners are now examining current deficiencies and developing procedures and data requirements which will better define these manpower requests and workloads. We will be working with certain agencies to examine their input and determine how it can be properly applied in the resource allocation process. Hopefully, our efforts will result in more specific and uniform guidance to be contained in Circular A-11--improved procedures, specific data requirements, clearer definition of goals, and other data.

Since this is a very complex area, we cannot expect overnight results. As we develop and refine our efforts, we plan to conduct training workshops so that agency personnel are familiar with any changed requirements. If our effort enhances the resource allocation process, there will be obvious benefits to both the agency and OMB which will result in a more efficient and effective Government.

Productivity Measures as They Relate to the
Federal Aviation Administration

Donald B. Rock
John Walk

Department of Transportation

The Federal Aviation Administration (FAA) has been participating in the Joint General Accounting Office, Office of Management and Budget, and Civil Service Commission productivity effort since its inception through the current phase (Phase III). In the initial phase, FAA's participation consisted of collecting and analyzing available input/output data (i.e., input data consisting of resources used and output data consisting of services provided) on our major programs. In the current phase, we have detailed one of our industrial engineers to work with the Management Systems Staff, OMB, to develop a basis for using productivity indexes or other objective measures effecting the budget process. The uses of productivity measures in FAA's internal management and in our budget process are not new; however, the scope and emphasis of the current effort are different.

A little background information on our major programs and resources might be useful. We have a variety of missions which include controlling the Nation's air traffic; certifying aircraft, airmen and airports; installing and maintaining navigational facilities; and developing a national system of airports. However, each of these individual programs can be viewed as a part of a single major objective: the safe and efficient movement of civil and military aircraft in the National Airspace System. This objective establishes a basis within which FAA can measure its services or outputs for productivity purposes and the input or resources necessary to provide these services (measured in manpower or man-years).

FAA's workforce bears directly on the approach taken to measure agency productivity. First, almost 47 percent are air traffic control specialists concerned with the control and movement of aircraft. Second, an additional 17 percent are electronic engineers or technicians who install and maintain the navigational facilities which directly support air traffic control. Another 9 percent are inspectors or engineers concerned with aircraft-airport-airmen certification and airport development. Consequently, about 50 percent can be directly related to our measure of air traffic services provided and another 23 percent can be indirectly related.

As a measure of FAA service or output, we have used a single indicator, defined as air traffic services. Air traffic services represent a composite of the air traffic control activities at all of our en route control centers, terminals, and flight service stations. To provide these services, our measure of input is total agency man-years, adjusted for trainee man-years in the system. For fiscal year 1967 we applied these two measures for input and output to derive a base productivity index. Subsequently, we applied the same measures to fiscal years 1968 through 1972. Using 1967 as the base year, the resulting productivity indexes are as follows:

| <u>Fiscal year</u> | <u>Percent</u> |
|--------------------|----------------|
| 1967 | 100 |
| 1968 | 115 |
| 1969 | 126 |
| 1970 | 128 |
| 1971 | 117 |
| 1972 | 117 |

Problems associated with the current index

From the results of this effort, we have identified several problems in the productivity index concept, the most significant one dealing with the quality of services. No factor has been developed to

represent the changes in quality of output from the base-year through the current period.

Also other factors have had an adverse effect on the indexes. These items include such things as demand for our services, recruitment lags, and training leadtime. As pointed out, our productivity index began to drop after 1970. This was caused, in part, by the economic recession (i.e., less demand for services), influx of a large number of trainee controllers (2- to 3-year training periods), and imposed traffic quotas at selected high-density airports.

Even considering the above problems, the index has potential use as a broad measure of agency programs but has limited use for internal management purposes.

Productivity as it relates to
our current budget process

In the FAA budget formulation, we provide for reporting and taking into account productivity savings, where applicable, including identifying specific positions and dollar savings. The above task is in addition to specific programs which are included in the budget because of least-cost analysis and specific programs designed to reduce future years' costs. Within FAA, primary emphasis is placed on such major program areas as air traffic control, airway facilities, and flight standards although other areas are also included as part of our continuing review.

For example, introducing an automated effort within the air traffic system reflects productivity improvements. The current phases of these efforts are designed to handle functions which have been or are being performed manually, including such items as processing of flight strips, radar handoffs and reducing air-to-ground communications, and inter/intra center controller-to-controller coordination. Our current 10-year plan projects productivity improvements of 3 percent for fiscal years 1975-76 and

5 percent thereafter. It should be noted that this does not necessarily mean a reduction in our present staffing level, but it does mean that more services can be provided per employee.

In our airway facilities program, productivity relates to the time required to maintain the various equipment in our air traffic control and navigational systems. This equipment is valued at just under two billion dollars and consists of approximately 9,800 facilities. In this area, the major effort is to reduce the maintenance time required by replacing our old tube-type equipment with modern solid-state devices and equipment. In addition, we also have ongoing efforts in research and engineering and development which are designed to improve circuitry and reduce maintenance costs.

For several years now, as a result of the enactment of the Airport/Airway Development Act, our airport improvement program has been \$250 million per year which is designed to provide increased airport capacity at existing, as well as new, locations.

In our flight inspection area, the agency operates a fleet of aircraft which is used periodically to flight-test navigational and landing aids. At the present time, this work is being performed mostly by a fleet of DC-3 aircraft. As a result of budget approvals within the past few years, we are now in the process of replacing the DC-3 fleet with more modern aircraft. When fully implemented, we expect that the new fleet will reduce FAA budget requirements by about \$7 million per year. In addition to this specific program, through analyses, we have been able to achieve increased productivity in that more facilities are inspected each year with a continued reduction in costs. Part of this savings results from introducing solid-state equipment into the system.

The Use of Productivity Measurement in the
Development of Departmental Budget Estimates

Jerome A. Miles
Department of Agriculture

To examine the usefulness of productivity measurement in developing departmental budget estimates, we must begin by briefly examining the role of the departmental budget office in formulating the annual budget.

The development of a budget is similar to an engineering project where construction crews build a tunnel through a mountain by starting one at each side of the mountain, hoping to meet in the middle. The budget office represents the juncture in the middle of the mountain. At one end, agencies prepare estimates based on known workload requirements and new initiatives which they would like to undertake in the budget year. At the other end, top level Government officials are reviewing overall Federal spending and are establishing preliminary budget targets for each agency. These two sets are received at the departmental level and invariably the requested total submitted by individual agencies exceeds the planning figure provided by OMB. The role of the budget office in this process is to review and analyze these two sets and to provide the Secretary of the Department and his policy officials with alternatives and options for making maximum use of planning figures to carry out the highest priority programs. Some programs are mandatory. For these, workload statistics and productivity measurement are extremely valuable. They assist budget analysts in developing minimum cost data for carrying out such programs.

Other programs involve costs which are controllable; these programs can be run at one of several different levels of effort. Here again, workload data is invaluable in developing the costs associated with each alternative level of effort.

Other programs represent new initiatives. For these, estimates are generally less precise and workload data less valid. In some instances, engineered standards can be developed to provide more precise information. In other instances, new programs are similar enough to existing programs to permit valid cost comparisons.

Frequently, no other constraints can be directly related to the program itself which must be considered in the analysis of agency budgets. Personnel ceilings represent one such constraint. In periods when decreases in personnel are mandated, those programs which are largely labor intensive must undergo exhaustive analysis. Since productivity measurement normally relates to using personnel in carrying out programs, productivity measurement systems become particularly valuable when operating under personnel ceilings. When rigid ceilings are imposed on Federal outlays, the emphasis tends to shift away from labor intensive programs since personnel costs often represent only a relatively small percentage of an agency's total outlays.

Productivity measurement becomes more useful as a budget tool when the program to which it is applied is reasonably predictable. When the number of units produced can be accurately forecasted or controlled, productivity measurement can provide an extremely accurate estimate of the program costs. When it is not possible to forecast or control work volume, productivity measurement provides the means for establishing benchmarks. If workload exceeds these benchmarks, it is often possible to obtain supplemental appropriations. The Congress and OMB recognize the difficulty in providing estimates in these types of programs. Consequently, they normally are willing to consider supplemental appropriations requests when evidence can be provided to support an increase.

In summary, productivity measurement is an invaluable tool to a departmental budget office in

evaluating agencies' budget requests and in attempting to provide options and alternatives to the Secretary's office in the budget formulation process. Perhaps its greatest benefit is that it provides a means of communication among those involved in the budget process. There are not only many different individuals who, in one way or another contribute to budget decisions, but there are also several organizational levels through which these estimates must flow. They proceed from an agency to a department to OMB and are returned when budget allowances are determined. The budget is then printed and submitted to the Congress for consideration. Throughout this process, it is absolutely necessary that those responsible for making budget decisions have the information to do so. When the information is sketchy, poorly designed, or highly subjective in its presentation, it is not likely to be persuasive; but if it is factual and supported by detailed measurement data, it is more likely to be considered favorably. Even in those instances where dollar constraints do not permit allocating the full amount of resources requested, decisionmakers can determine, through the use of measurement systems, the effect their actions will have on agency programs. If there were no other reason for productivity measurement, other than as a communications device, it would be well worth the time and effort which it requires.

Productivity Measurement and the
Office of Management and Budget

Jack Besansky
Office of Management and Budget

I believe I can understand the frustration of agencies who resist the installation or improvement of costly productivity measurement systems. Why not, when OMB "whacks" these programs with no evident regard to the relationship between dollars spent and output achieved?

To begin with, I would like to explain how it might happen that OMB arrives at seemingly irrational decisions. Emphasis shifts from time to time in OMB, but at all times it has been guided by three principles--economy, efficiency, and effectiveness.

The first principle, economy, is an arbitrary, brutal approach, but there are times when fiscal conditions in the society dictate severe restrictions on spending. Often desirable and efficient programs find themselves cut back by arbitrary manpower ceilings. Even then, it is much better for OMB to be aware of exactly what the impact of the arbitrary ceiling is on the volume and quality of the particular agency's output.

The second principle, effectiveness, means optimizing goal achievement by the choice of alternative programs. A single agency is not usually expected to appraise its own effectiveness in terms of alternative programs which might involve other agencies. But some of the seemingly irrational OMB decisions are explained if the agency understands that the perspective of OMB permits it to favor a less efficient program if it is more effective in attaining a goal common to both.

The third principle, efficiency, is the principle that evokes productivity measurement. It is the primary subject of the rest of my comments.

An ideal work-measurement system should permit OMB to bypass the arithmetic behind the budget estimates and to focus primarily on output, goals, and performance. Unfortunately, even among the best agencies, no system has been developed to give OMB the confidence to accept work-measurement data without question.

The problem comes in two general varieties:

1. The workload mix. Most workload systems report work output two ways: first, a weighted workload--a single figure, generally expressed in man-years, weighted for the frequency of the various workload elements. Then they may also report the volume of the several end-products.

Although the weighted workload is easy to use, particularly in measuring overall productivity improvement, it is usually too general to support budget estimates. The amount of end-products may be too crude and still too general. The elements responsible for change in cost may be one of several operations which are aggregated into a general class of end-products before being reported in the budget. How many, and how discreetly defined, end-products must be reported to satisfy the OMB examiners' need for detail in the estimate?

2. The workload substance. The man-year requirement for each workload element is usually not an engineered figure. Most often, this work rate is simply the actual record of the past year. To determine whether the work rate was recorded at optimal efficiency would require an engineering study which is usually too costly, especially if there are many different operations changing frequently.

Moreover, each change in the operations renews the question of manpower requirements--this time for the incremental change. Frequent changes threaten not only the validity, but also credibility in the manpower requirements for processes and operations, because of the many opportunities to manipulate the outcome. Improvements in acceptable quality or new legislative requirements are constantly changing the characteristics that define a workload element.

Nevertheless, it is impossible to accept the idea of major agencies operating without work-measurement and productivity control. Imperfect as the systems may be, they are the only advantage in the public enterprise that substitutes for profits in controlling wild growth and misallocation of resources.

OMB needs agency work-measurement reports to appraise agency efficiency, but OMB decisions are not based exclusively on these reports because most of the reports need more sophistication. Some other reasons why OMB may turn its main efforts to other considerations may be:

1. A continual need on the part of legislators to bring home good marks. They are always improving or otherwise changing Federal programs. The pressure has become even greater since the use of computers and the illusion that, with computer assistance, a program can handle any administrative complexity.

For example, social security has become so overburdened with legislative complexity that claimants and beneficiaries no longer know what benefits they are likely to receive, or how to deal with their entitlement. Meanwhile, as fast as the computer spins out special data required for this complexity, manpower requirements must be increased to do something with additional data.

It would seem more appropriate to simplify the legislative complexity than to improve the efficiency of an unnecessarily complex operation.

2. Encouragement to measure and improve manpower productivity in public agencies has been going on for years but without parallel encouragement to measure the total cost of the product. Salaries are the predominant cost item for most agencies, and so the control of manpower provides the best advantage for total costs. However, too much exclusive concern with manpower costs drives resources into capital investment without regarding whether it is more efficient for that particular operation.

3. Work-measurement systems are of no advantage to anyone if they are manipulated to self-serving ends or if the readout is misinterpreted. Unreliable or misinterpreted work-measurement reports go not only to OMB but also to Congress and the public where corrections seldom catch up to earlier claims. For example, social security for years publicly prided itself that its administrative costs were only 2 percent of its benefit costs. OMB vainly pointed out that, if that were the measure to use, it could double its productivity in a day by increasing the benefit levels. It is important to limit the acceptability of work-measurement systems until all users understand fully what goes into the system as well as what it seems to report.

4. Finally, OMB often has to put its major efforts where the greatest payoff is likely to be. In some agencies, manpower is the key to both the agency's program and policies. Police or investigatory functions are examples. In such programs, focus on manpower surveys both efficiency and policy issues.

Some agencies--for instance, social security--have substantive programs which are essentially unaffected by the administrative program's efficiency. Social security pays out more than \$50 billion in benefits. The program for administering the benefits costs about \$1.2 billion and deserves close OMB examination for efficiency. But no matter how efficient the program is, it has little effect on savings

(or equities) in the benefit program which spends 50 times as much money. The real question is how to divide OMB time on this.