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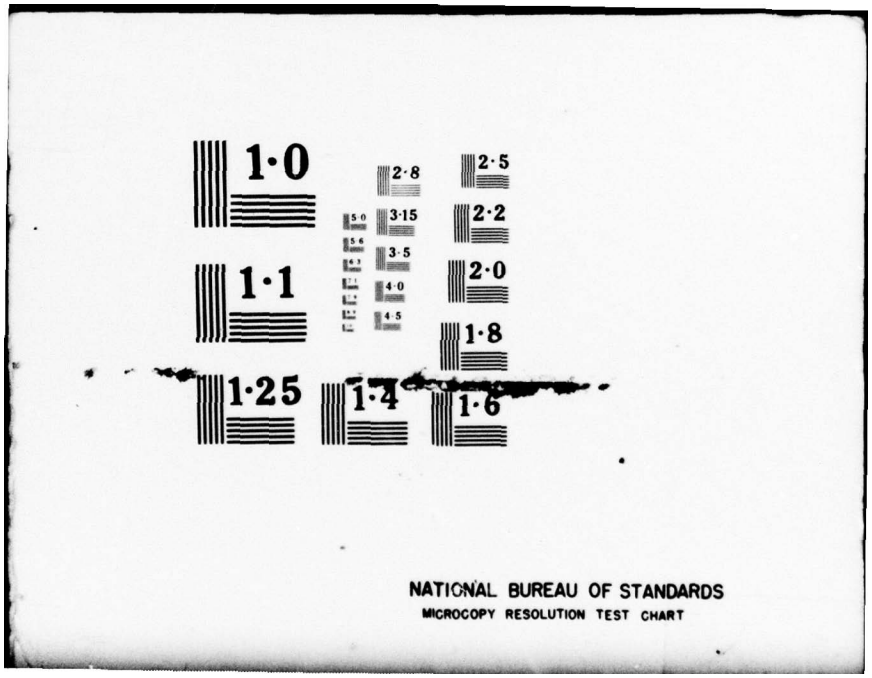
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NAVAL POSTGRADUATE SCHOOL
Monterey, California

THESIS

ZERO BASE BUDGETING -
A COMPARATIVE ANALYSIS

by

Richard Howard Gunderson

December 1977

Thesis Advisor: A. C. Crosby

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ZERO BASE BUDGETING - A COMPARATIVE ANALYSIS

by

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Submitted in partial fulfillment of the
requirements for the degree of

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ABSTRACT

Zero base budgeting is neither a new concept nor one founded in the traditions of private and public budget systems. It is, instead, the latest in a long series of budget reform movements bent upon rationalizing an otherwise incremental process. No longer a theoretical construct in search of an application, successful instances of zero base budgeting are more frequently being encountered in state government as well as private enterprise. Implementation in the federal sector, however, poses new difficulties which must be recognized lest zero base budgeting follow the course of previous reforms. By examining the budget reform movement as well as current zero base applications, this thesis attempts to identify those difficulties, offer possible solutions, and in so doing, outline an approach to federal implementation.

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I. INTRODUCTION

A. STATEMENT OF THE PROBLEM

This thesis concerns itself with zero base budgeting and its implementation in the federal sector, particularly in the Department of Defense. As such it contemplates rational economic choice, necessitated by scarcity, in a hostile environment characterized by complexity, time constraints and politics. The text which follows will seek to demonstrate that the success of zero base budgeting in private industry and state government does not automatically assure its success in the federal bureaucracy where numerous peculiar pitfalls lie in wait. Expectations of federal success can be substantially enhanced, however, by examining the underlying causes of failure in past attempts to rationalize the budget process. Knowledge of such causes coupled with the diverse experience to be gained from observing private and state applications can do much to improve the chance of survival in the federal arena.

B. SCOPE

The orientation of this thesis to the lessons of past reform and current applications provides the background for its central objective: developing a general approach to zero base budgeting in the federal sector. To this end Chapters II and III examine the history of budget reform

from several perspectives with primary emphasis on the Planning, Programming, Budgeting (PPB) reform as a precursor of today's Zero Base Budgeting (ZBB) movement. The primary purpose of such an examination is to isolate those factors which either impair or facilitate a rational approach. Having adequately searched the past in Chapters II and III, Chapter IV goes on to define zero base budgeting as it is commonly conceptualized today in terms of a systematic decision making process. The purpose of such a definition is to provide a model against which the many current and diverse applications can be compared. Such comparison is accomplished in Chapter V by first looking at applications in private enterprise, next reviewing the methodology in state government and finally drawing conclusions about the most useful aspects of each. Chapter V seeks to establish a foundation upon which the experience gained from past reforms and current applications can be brought to bear. Current federal and Defense plans are then explored and evaluated in Chapter VI with respect to this empirical construct. Finally, in Chapter VI, a proposed approach to zero base budgeting in the Department of Defense for the 1980s is offered.

C. METHODOLOGY

In preparing this thesis the author relied heavily on three sources of information. First, to adequately explore the facets of past reform efforts, considerable information and numerous ideas were drawn from existing literature (books, periodicals, congressional documents, etc.). For the comparison of private and state government applications of zero base budgeting, the author drew considerably from budget manuals provided by corporation and state budget offices. Lastly, data relevant to current plans for

implementing zero base budgeting in the federal sector, and particularly the Department of Defense, was obtained by interviewing cognizant Defense personnel in the Washington, D.C., area during the period 19 to 23 June 1977.

D. ACKNOWLEDGEMENTS

Before commencing, the author wishes to express his appreciation to those who have supported this endeavor. To RADM Stanley Fine (Director, Office of Budget and Reports), the author expresses his sincere gratitude for both the idea and access to the Washington decision making process. For his patience and helpful suggestions the author is indebted to CAPT Joel Smith, the Navy project officer for zero base budgeting. To those dedicated program, budget and systems analysts in the Navy Department headquarters go the author's profound admiration and thanks. Last but not least, the author is especially grateful to his thesis advisor, CDR Al Crosby, who was an ever ready source of ideas and advice. Finally, what follows in the text is solely the responsibility of the author and in no way should be construed as attributable to those mentioned above.

II. FROM THE PERSPECTIVE OF BUDGET REFORM

Comprehensive budgeting, more commonly referred to as zero base budgeting[1], is but the latest development in a long history of budget reform. To understand the former, one must first understand the latter. In this respect zero base budgeting has not

> "...come to us as Aphrodite from the sea, full blown, fresh, beautiful and topless."[2]

Instead budget reform has been an evolutionary process each phase of which has been profoundly affected by what went before it and by the particular environment in which it has occurred. The purpose of this chapter is to examine the history of budget reform and, by so doing, discover those lessons which if applied to zero base budgeting will further its chances of survival.

A. EARLY FOUNDATIONS OF BUDGETING

If defined as the allocation of scarce resources between alternatives, budgeting obviously had very early beginnings, for what does man do other than to make choices? Who is to say when budgeting was first recognized as such? Perhaps the first signs of fiscal consciousness emerged in biblical times in the Nile, Tigres and Eurphrates river valleys. There, taxes were levied by the ruling pharoahs, collected in the form of grains and other substances and subsequently disbursed in kind for services received.[3] Involving the

transfer of wealth from citizen to ruler and back again, such process conceptually differs only in degree of complexity from the experience of modern government.

Although conceptually similar, significant technical differences exist. The concept of "public" did not exist as clearly delineated today. The ruler's power, whether despotic or benevolent, and consequent control over the state, were dependent upon the size of his central coffers. As a consequence, and in the absence of an accounting technology or the desire for one, "public" and private resources were intermixed. Increasing one's wealth was a game played equally well by the king's own tax collectors and disbursing clerks as well as his enemies. Tax collections en route to the central treasury as well as disbursements to the local citizenry were pilfered by those also seeking wealth and power. Lacking an accounting mechanism whereby an agent's private resources could be differentiated from public collections, the ruler resorted to other techniques for imposing personal accountability. From the earliest pharoahs through the Roman Empire to Medieval times, punitive measures including execution, imprisonment, banishment or more hideous sanctions were imposed upon those who deprived "Caesar" of that which was "his." As an alternative, particularly where an agent structure was not feasible, states resorted to selling public offices and with it the right to collect and disburse "public" funds. In such a way the state was assured revenue in the form of fixed contract payments. The incentive for those who would purchase and hold public office as private property was the potential profit to be gained from exploiting their investment to the maximum extent. The loss of significant revenues by the state to such investors as well as the outcry of the exploited citizenry led to the demise of this practice and to the growth of a bureaucracy of accountable collectors and spenders.

From these earliest moments of fiscal consciousness are found the roots of the budget reform movement. Early attempts to gain greater control of the state's wealth, instigated by and for the king, were gradually replaced by greater controls over the king himself. Public awareness, first that of the vested few and subsequently of the general public, of the losses attendant in privately owned public offices, corrupt officials, mismanagement and inadequate administrative practices provided the impetus for development of the formal budget.

The evolutionary process culminating in a formalized budget paralleled the growth of representative government. The first movement in this direction occurred in Britain in 1217 with the signing of the Magna Charta. Its 12th article stated that

> "No scutage or aid shall be imposed in the kingdom unless by the common council of the realm, except for the purpose of ransoming the king's person, making his first born son a knight, and marrying his eldest daughter once, and the aids for this purpose shall be reasonable in amount."

While emphasizing control over revenue collection, such decree had the implicit effect of also controlling the king's expenditures. Since taxes were approved for specific purposes, it was expected that revenues collected were to be used solely for that purpose. Referred to as "earmarking", even to this day, such a procedure became impractical as the number of special taxes and objects of expenditure grew geometrically to meet society's needs.

Not until late in the seventeenth century did Parliament begin to establish explicit control over the crown's expenditures. In 1689 the Bill of Rights established the role of Parliament in authorizing all expenditures by the King. Clearly a precursor of the American tradition to follow, such authorizations were to be initiated in the more representative body, the House of

Commons. Hesitant to restrict the Crown's power too severely, the details of expenditure control, particularly with respect to purpose, was a gradual process applied first to the King's military.[4] Also in 1689 the Civil List differentiated the King's personal outlays, which were to be limited, from the state's expenditures. The break between public and private was made even more explicit some time after 1760 when the traditional Crown revenues were replaced by an annual stipend from Parliament. While refinements to the Crown's prerogatives continued in successive Parliaments, the foundations of budgeting had firmly been established in Parliamentary control.

Having both revenue and expenditure under control of Parliament provided a basis for passage of the Comprehensive Fund Act in 1787 whereby all revenue and expenditures were to be recorded to a single fund. More importantly the general fund provided a focal point for recording revenues and disbursements arising from a variety of tax bills and objects of expenditure. Much of the work during this period was accomplished by William Pitt the Younger, Chancellor of the Exchequer, whose reforms not only included the General Fund, but techniques of double entry accounting and control over the state debt. Through his efforts the first comprehensive accounting of governmental activity was brought about, thereby providing the means for establishing accountability to the public. It was not until 1822, however, that the Chancellor of the Exchequer provided to Parliament a formal statement of revenues, expenditures, expected surplus or deficit and financial plan for review and guidance. Such was the beginning of a budget discipline as it is widely recognized today.

Although not yet fully developed as a budget system by the time of the 1776 American Revolution, much of what happened in Britain was applied to the American scene. Unhappy memories of efforts dating back to the Magna Charta to control the powers of the British Crown were perhaps

responsible for excluding mention of the executive in the Articles of Confederation (1781) and for later delegation of fiscal responsibility to Congress in the Constitution (1789). In this regard, the Constitution specifies that

> "All bills for raising revenue shall originate in the House of Representatives" (Article 2, Section 7)

and that

> "No money shall be drawn from the Treasury but in consequence of appropriations made by law; and a regular statement and account of the receipts and expenditures of all public money shall be published from time to time." (Article I, Section 9)

Notwithstanding such explicit delineations of responsibility, the first decade from 1789 to 1799 saw several actions which might have resulted in the executive predominance which the Founding Fathers had so actively sought to avoid. The first was passage of the Treasury Act (1 Stat. L. 65) which not only enacted the requirement for financial reporting quoted above but established a Treasury Department within the Executive Branch with the tasking to

> "...digest and prepare plans for the improvement of the revenue ... (and) to prepare and report estimates of the public revenue and expenditures."

The second event was President Washington's appointment of Alexander Hamilton to the position of first Secretary of the Treasury. Hamilton's strong leadership in the financial affairs of the fledgling nation reflected a wide interpretation of the Treasury Act. Not only did he prepare the required estimates of needed revenues and proposed expenditures, but his actions foretold of an assumed role in deciding upon those programs which were deserving of support and those which were not. Furthermore, Hamilton's first

budget provided little detail, including only four major line items, that is, funds for a Civil List, for the Army and Navy, for outstanding Treasury warrants, and for all other federal activities.[5] Such a broad interpretation of duties and apparent short treatment of Congressional prerogatives significantly broadened presidential discretion and would have led to the development of a coordinated executive budget had it not been for Congressional disenchantment.

Initially Congress exercised its monetary powers in the House of Representatives through discussion in a committee consisting of all members. Only after this deliberation was a committee of select individuals appointed to translate such discussions into an appropriations bill. Such early deliberative bodies lacked the means to do other than ratify executive branch, i.e., Hamilton's, proposals. Prompted by growing disenchantment with the situation and by Jefferson's advice that

> "...it would be prudent to multiply barriers against their (the funds) dissipation by appropriating specific sums to every specific program susceptible of definition...",

Congress in 1792 acted to curtail executive practices by specifying in detail line items of expenditure indicating for what purpose funds might be used. Lacking periodic reports of public expenditures, executive discretion was nevertheless continued by transferring funds between line items. Without the means to monitor specific line items, it is not suprising that Congress rarely knew how funds were actually used. Having all but lost control, the House acted quickly to reverse the trend by temporarily establishing in the House of Representatives a Committee on Ways and Means charged with the handling of both revenues and expenditures.

The Ways and Means Committee proved more than adequate in balancing the growth of executive discretion and, with

the increasing number of specific line item controls, executive-legislative friction increased sharply. Gradually the executive departments were forced to deal directly with a growing Congressional committee structure. The Secretary of the Treasury's Book of Estimates, initially evolving toward a comprehensive budget recommendation, instead became merely a reflection of individual departmental requests. By 1802 the continuing friction between legislative and executive branches resulted in permanent establishment of the House Ways and Means Committee and increasingly detailed appropriations to further curb executive discretion.

Beginning in 1802

> "...budget making became an exclusively legislative function in national government and as such it continued for more than a century."[6]

Although continuing to dominate the budget scene until approximately 1910, the legislative branch experienced several significant changes. Having relegated the Treasury to a clerical role, Ways and Means continued to provide the only forum for comprehensive consideration of both revenues and expenditures simultaneously. Executive influence remained at a low, but continued to be expressed, however slightly, through the initial departmental requests and through leadership of an emerging political party structure. Not until 1865 did this comprehensiveness prove to be too much for the single Ways and Means Committee. Increasing financial activity paralleling the nation's growth and specifically the start of the Civil War necessitated separation of revenue and expenditure considerations. Starting in 1865 with creation of the House Committee on Appropriations and in 1867 a similar forum in the Senate, the number of committees authorized to recommend appropriations grew to ten and eight in the House and Senate respectively by 1885. Introduction of so many appropriating

committees fragmented the finance mechanism into a piecemeal process, replacing the comprehensiveness of the years before. The lack of a single point of coordination for revenue and expenditure decisions was to become one of the many focal points of the budget reform effort for years to come.

Actually the rise in the number of appropriations committees, particularly after the Civil War, can to some extent be attributed to a significant rise in revenues from a growing industrial and population base. Revenues substantially in excess of government expenditures created large surpluses available for disposal by ambitious and energetic Congressmen. Anxious to cultivate broader constituent bases, proposals for new standing committees and program legislation abounded. That such surpluses should also breed wasteful practices, irresponsibility and corruption within both branches of government is not suprising. In speaking of Congress James Bryce, historian and author of The American Commonwealth, advised in 1888 that

> "Under the system of congressional finance here described, America wastes millions annually. But her wealth is so great, her revenue so elastic, that she is not sensible of the loss. She has the glorious privelige of youth, the privilege of committing errors without suffering from their consequences."[7]

In speaking of the executive branch, Jesse Burkhead, an eminent observer of government budgeting, further indicates that

> "Congressional extravagances during this period were matched only by the profligacy of the executive departments."[8]

These early beginnings of budgeting as a discipline and of the American federal budget process provided the setting

upon which subsequent reform was to thrive. Congressional efforts to correct the deficiencies of the late 19th Century are but one segment of a pervasive process more appropriately described as part of the 20th Century reform movement. Before continuing with a description of that effort it may be beneficial to briefly summarize a few of the significant developments with which later reform efforts must deal.

-First, from the time of earliest fiscal consciousness to the dawning American experience and even to this date, a central theme of budgeting has been control. Its gradual evolution from executive control over tax collectors to legislative control over the executive has not occurred by chance but by design of the Founding Fathers. That such controlling tendencies are not likely to be changed easily is an important factor with which future reforms must contend.

-Secondly, the degree of workload imposed by a budget system had dramatic impact, particularly on the comprehensiveness of budget review. The rising workload faced by Ways and Means in the late 19th Century was at least in part responsible for fragmentation of an otherwise comprehensive mechanism. Future attempts to introduce a greater degree of comprehensiveness in the budget process must anticipate the impact of added workload if the process is not to become even more fragmented.

-Thirdly, fiscal setting has profound influence on the development of budget mechanisms. The significant surpluses of the period 1880-1909 did not prove conducive to stricter executive and legislative control. In fact the opposite occurred, with excessive wealth providing a political playground. Perhaps as surpluses are replaced by deficits, reform efforts will thrive and rational decision making will be found to play a greater role, and to a certain extent at least to replace politics.

-Lastly, what had been attained by 1910 had not happened overnight but through a gradual process of modification and change. That a budget process is rarely diverted from its historical past and evolutionary path, except in crisis, is a fact often lost on well intentioned budget reformers.

Having looked at much of the history of budgeting and its underlying characteristics, it is more meaningful now to look at budget reforms of the 20th Century.

B. PERSPECTIVES ON BUDGET REFORM

A most interesting and yet most disturbing aspect of budget reform is the number of diverse perspectives from which it is viewed. Take for example the budget reform movement's most recent offspring, zero-base budgeting. Coming of age in 1977, zero-base budgeting brought with it a plethora of literature describing what some advocates termed a radical departure from existing budget methodology. From an opposite vantage, public officials with whom the author has spoken point to aspects of the existing budget methodology which, they contend, are already zero-based and consequently see only slight change in business as usual. Viewed by itself neither perspective is sufficiently helpful in understanding zero-base budgeting, its conceptual foundation and subsequent growth. Instead, this author

contends that zero-base budgeting must be viewed from both perspectives, not just as a departure (one perhaps not so radical as is commonly thought) from the current methodology, but also as the latest increment in an evolving reform movement begun as early as 1906.

Viewed within the historical context briefly outlined in the previous section (and reemphasized here), budget reform has many dimensions, each of which must be examined if one is to benefit from past difficulties. A first dimension might be the changing external environment. Charles Beard (an American historian of the early Twentieth Century) wrote that

> "Budget reform bears the imprint of the age in which it originated."[9]

As will be seen in subsequent paragraphs, events of the last seventy years attest to the truth of Beard's prophetic statement. Another dimension is that of the uses to which the budget is put. Although first emerging as a device for limiting the powers of government, budgeting in the next seventy years was to pass through three fairly distinct stages - from control to management to planning.[10] In what follows each stage is addressed in the context of its principle product - line item budgeting, performance Budgeting, and Planning, Programming and Budgeting (PPB). The third stage, Planning, can by itself be an important perspective from which to view the last seventy years of budget reform. It too will be examined by showing that the initial purposes underlying line item budgeting and Performance budgeting and PPB were planning oriented. While the initial intent in each case was not fully achieved, the result of each effort was to push the budget progressively further in the planning direction. Each of these dimensions can be better visualized in the totality of the reform movement as

"...a struggle to develop program data and tc link it with resource data."[11]

Zero-Base Budgeting is the product of this struggle and as will be seen can provide the linkage that has been sought fcr so lcng.

C. THE EXECUTIVE BUDGET

Althcugh an evclutionary process in itself, budgetary development described in the first section of this paper is test viewed as the setting for a succession of reform efforts extending from 1906 to the present. Viewed frcm the perspectives and in the dimensions described above, the budget reform movement of the last seventy years represents a significant departure from pre-1906 practices. As the reader may recall, budgeting pricr to 1906 was characterized as fragmented in the sense that neither a coordinated executive budget ncr ccordinated Congressional review was in existence. Instead Congress was given the budget directly by each of the federal agencies. After uncoordinated reviews by each of numerous committees, funds were allccated directly to the agencies by specific appropriations. Presidential recommendations either on the request itself or subsequent allocations resulting therefrom were incidental and unsystematic. Not by accident but rather by design, the fragmented budget was a device for limiting the powers of gcvernment and particularly its chief executive. The ccrrupticn and waste of the late 19th Century, the revelaticns cf the "Muckrakers" and the impact of a growing national deficit following the Spanish American War all however, were to stimulate a reorientaticn of the budget process. In contrast to the cumbersome and largely ineffective traditions cf control, budgeting subsequent to

1906 was to assume a more positive role. Faced by the hard economic and political facts of deficit spending but hand in hand with the activism of President Taft and the progressivism of the time, reformers saw no alternative to executive leadership through a more centralized and controlled budget. Typical of the early reformist view was that of Frederick Cleveland (member of the New York Bureau of Municipal Research) who argued that only one individual, the President,

> "...could think in terms of the institution as a whole" and therefore "...is the only one who can be made responsible for leadership."[12]

He was later to add that

> "The atmosphere of democracy must be filtered and made to flow into useful channels by the power of leadership which can be made accountable."[13]

Such was the birth of an executive budget characterized not just in terms of accountability as based in tradition but, more importantly, as a primary tool to be used by executive leadership in the planned and managed attainment of society's objectives. As will be seen, the desires of early reformers were not so easily implemented. Instead the leadership tasking provided the seeds for gradual pursuit of an executive budget evolving first as a refinement of object of expenditure control (1906-1935), secondly in terms of performance (1936-1960), thirdly as a planning tool (1961-1977) and finally as a consolidation of all three in zero-base budgeting (1977-?). Each is discussed more thoroughly in what follows.

1. Line-item Budgeting

Although budget reformers unanimously agreed upon the need for an executive budget, considerable divergence

continued to exist in the motives underlying such drives toward centralization. Far from expressing with one voice a shared concept of the budget as a mechanism of planning, management and control, unanimity existed only to the extent that different groups saw executive budgeting as the common solution to their separate objectives, that is, achieving control or management or planning. On the one hand was the progressive reformer who saw executive budgeting as a means for attaining social improvements and who, therefore, advocated a predominant planning orientation. On the other hand was the businessman who, worried by the increasing tax burden, graft and corruption, saw executive budgeting as a means of reducing expenditures and ensuring a continued role for that entrepeneur who, like himself, might otherwise be preempted by the "enterprising" politician. To him, executive budgeting as a mechanism of control was most important. The importance of this divergence in motives was not fully recognized until one tried to move from the theory of executive budgeting to reality.

The first movements in such a direction occurred at the local level of public finance with the pioneering work of the New York Bureau of Municipal Research. In its efforts to establish a budget system for New York City, the Bureau was forced to reconcile these divergent interests in planning and control. Somewhat biased by its progressive leadership, the Bureau initially pursued a program approach, concerning itself with the planning and execution of governmental functions. The functional approach however failed to satisfy that prerequisite of budget usage dating back to the times of earliest fiscal consciousness, i.e., that the budget first of all must provide a means of controlling the administration. The graft, corruption and "muckraking" of the times reaffirmed and perhaps deepened the conviction that control lies at the very heart of budgeting. As most succinctly stated by Allen Shick (Budget Specialist for the Congressional Research Service)

> "In an age where personnel and purchasing controls were unreliable, the first consideration was how to prevent administrative improprieties."[14]

Faced with overwhelming evidence of the above, the Bureau was forced to subordinate functional budgeting and its focus on rational planning to the control function. As the Bureau of Municipal Research was to state, functional budgeting

> "...must be left in abeyance until central control has been effectively established and the basis has been laid for careful scrutiny of departmental contracts and purchases as well as departmental work." [15]

Alternative means for providing such scrutiny including civil service reform and salary classifications, centralized purchasing through competitive bidding, financial audits and uniform acccunting techniques, were to appear and to parallel development of the executive budget. In the absence of these techniques at that time, stringent control over executive expenditures was considered a necessity. The precedent for such control, as had been developed throughout the earlier years of American History, was to appropriate by object of expenditure (also referred to as line items), that is, to put strict controls on the input side of the resource equation. so it was to be with New York city in its first departmental budget, that of the Health Department in 1907. Having been institutionalized, line itemization gained rapid acceptance and use.

Prior to continuing, examination of the advantages and disadvantages associated with objects of expenditure as a control technique is most desirable at this point. First of all, the object of expenditure classification serves very well to limit executive discretion. Where the executive budget specifies in detail the "things" to be bought and where such detail specification is perpetuated in

legislative appropriations, execution becomes perfunctory, leaving little management prerogative. It is in essence a means of transferring decision making power from lower levels to higher levels of the governing apparatus. Such centralization need not occur in the legislative branch (although it often does) but may be vested in a central budget office merely by specifying detail objects and accordant allocation of funds at that level. Secondly, as opposed to a functional-program orientation, governments tend to buy the same things albeit for different purposes. For example, all governments buy personnel services, fuel, airline travel, office supplies, utilities, computers, etc. Not all governments, however, finance a Public Safety Education Program. Therefore, objects of expenditure provide a common basis upon which uniform accounting structures can be developed for application throughout government. Thirdly, and perhaps most importantly, objects of expenditure are more easily understood by those who review the budget documents. For example, it is much easier to isolate the underlying reasons for and to grasp the meaning of a thirty percent increase in fuel costs then to understand the reason or meaning of a ten percent increase in the President's Energy Conservation Program.

Attendant in the last advantage cited is the first major disadvantage. Such disadvantage lies in the very fact that objects of expenditure are easier to grasp and therefor dominate the budget review process. The result can be that "one does not see the forest for the trees." Excessive attention devoted to detailed objects means increasingly less attention being devoted to the larger and more important program issues. A second disadvantage is that although facilitating control over executive discretion in fund expenditures, such control is of no use in determining whether those funds have been used responsibly toward an end objective. The executive may have, for example, spent the funds on fuel, but whether such expenditure contributed to

the attainment of an end objective is not apparent. This is a wider definition of accountability and is more in consonance with functional-program budgeting. Thirdly, the object of expenditure classification while providing sufficient control over the executive was, and is, susceptible to substantial abuse by the legislative branch. Influenced by constituency pressures, legislators increasingly relied upon the object classification to ensure that "their" specific line was included, thereby placing narrow constituency interests over those of the nation.

While forced to recognize the advantages of object classification, the Bureau did not immediately discard its own ideas. Instead it was to see a continued need for functional planning to compensate for those disadvantages of object classifications. In this regard the Bureau of Municipal Research was perhaps the first to recognize the need for

> "...a classification of costs in as many different ways as there are stories to be told."[16]

In attempting to satisfy those who would use the budget as a mechanism of control as well as those who would use it for planning and management, the Bureau developed a threefold classification scheme. Costs were to be identified by object of expenditure, by organizational unit and by function. In so doing, something was to be provided to everyone. Although conceptually desirable, such an approach was in a practical sense not feasible. Lacking sufficient numbers of planners, managers and "controllers", the system was simply overloaded with difficulties when faced with the

"3992 distinct items of appropriation"[17] and numerous subdivisions thereof in the 1913 appropriations act. In justifying its actions, the Bureau conceptually saw a difference between the operations underlying the budget and the process of appropriating. The former was to be a process of planning characterized by functions and analysis whereas the latter was to satisfy a predisposition for control. What had not been recognized was that the budget is driven by the informational demands of the appropriation's process and, therefore, if the latter is characterized by objects so will be the former.

While perhaps misinterpreting its own environment in many respects, the Bureau of Municipal Research did make several significant and pioneering contributions, both conceptually and empirically, at the earliest stages of budget reform. These were

a. First, a conceptual recognition of budgetary functions other than the traditional control, those being management and more importantly, planning.

b. Secondly, a recognition of the need for a multiclassification scheme to support those three functions.

c. Thirdly, an empirical recognition of the struggle between the advocates of the three functions in determining the optimum balance.

d. Fourthly, the empirical recognition that political and economic environments have a determinative impact on which function dominates. For example, given the absence of other mechanisms, the control function dominates.

e. Fifthly, the predominance of that function (control, management or planning) given explicit recognition in the appropriations act.

The above has dealt predominantly with budget reform at the municipal level, thereby identifying the point from which reform pressures were rapidly spread to both state and national levels. Furthermore those pressures at state and national levels were the same as those at the municipal level, finding their most visible support in individuals who advocated a positivist role and those who advocated retrenchment. So also did those pressures result in the same struggle for proper balance between planning, management and control that was pursued at the municipal level.

This paper does not discuss at length such events as President Taft's Commission on Economy and Efficiency, its report The Need for a National Budget and the Budget and Accounting Act of 1921. This is not by oversight. Such events certainly contributed to strengthening the executive budget concept, but they did not alter the dominance of object of expenditure control among the functions of budgeting. Change in the balance was not to occur until the advent of the performance budgeting era in the 1930s.

2. Performance Budgeting

Notwithstanding the sparse but continuing advocacy for a greater degree of planning , the control function with its concomitant objects of expenditure had become firmly entrenched in local, state and federal governments during the first three decades of the 20th Century. Changing only in degree of refinement and growing extent of application, budgeting clearly bore the mark of its time - a lingering distrust of government. But just as the emphasis on control was a product of its time, so also was a growing emphasis on

management tc be a product of the second three decades.

As an addition to, but never replacing, the ccntrol function, the managerial efficiency orientation was to be occasioned by several gradual developments. First among these was the rapid growth in public expenditures. Whereas in 1906 federal expenditures were only $570 million, they reached $4.2 billion in 1932 and by 1940 were at an all time high of $10 billicn. Rapid growth not withstanding, magnitude alone was substantial if nct sufficient impetus fcr continuing budget reform. As a ccntrol mechanism, objects cf expenditure and line items were to ccme to represent smaller and smaller segments cf the budget relative to an ever increasing total and thus a smaller degree cf leverage on the whole. Such leverage was diminished further by the growth of an increasingly more ccmplex gcvernmental structure. With the same organization providing a multitude of different services and vice versa, a single function being performed by a multitude of agencies, the cnce adequate object classification was proven tc be inadequate in untangling "who was dcing what with which rescurces." With its diminishing usefulness, however, came increasing numbers of line items and cbjects rendering the control function even less effective, more cumbersome and costly. This too was to be a stimulus fcr change.

Fortunately, paralleling the rapid budget growth and diminishing importance of line items were developments that wculd facilitate the required reorientation cf budget usage frcm control to management. Perhaps most important of these, expansion of the public sector reflected a growing recognitien that government was not necessarily an undesirable activity but did in fact provide substantial benefits. Budgeting, instead of a means tc restrict the government and its chief executive, came tc be recognized as a tool tc be used in achieving those benefits. The average taxpayer, particularly the businessman, althcugh quite

satisfied to receive the benefits, was however interested in paying as little as possible. Seeing in a management orientation possibilities of economy and efficiency, taxpayers were in the front lines of support. Administrators also recognized the advantages of the efficiency orientation or performance budgeting as it in time came to be called. In performance budgeting the official saw his opportunity to portray to the ungrateful taxpayer in detailed factual terms the products of his contributions. Finally a budget could be presented in "take it or leave it" terms, something very difficult to do when portraying costs on an object basis. Said one school official in rather flowery terms

> "Instead of thinking of money alone ... citizens should hear children singing in the spring concert, ...feel that school roofs are tight and walls are safe, see the pupils in the corridors washing their dirty hands and drying their clean ones ... A top performance budget paints pictures in words that justify the expenditure."[18]

Of no less importance, a myriad of smaller developments were also to be conducive to a greater management orientation. Whereas reformers of the 1910s had no alternatives to object of expenditure control, the same was not true of the late 1930s and early 1940s. By that time a number of administrative regulations and public statutes had been set forth to mitigate against public malfeasance. Civil service reform and the mail system, competitive bidding and centralized purchasing, wage scales, substantially improved accounting and audit procedures all served to free the budget from some of its control functions. These developments - both the growing magnitude of the public sector and the means of accommodating such growth - began to converge in the 1930s, reaching a focal point in the New Deal years.

The first comprehensive efforts to reorient budget usage came in 1934 at the hands of the U. S. Department of Agriculture and in 1938 by the Tennessee Valley Authority. As envisioned by the Bureau of Municipal Research, they too saw an increased program-planning role for the budget and consequently pushed the frontiers of budget usage in that direction. That they mistook a perceived need for planning in place of the actual efficiency-economy thrust of the times was not to change the end product. Just as the Bureau twenty-eight years earlier was to pursue planning but accept fiduciary control, so also were current reformers to pursue planning but accept management control. The Department of Agriculture effort was a restructuring of the budget in terms of projects and within projects, schedules of activities for accomplishment. Through this restructuring, the Uniform Project System, as it came to be called, portrayed resource requirements according to the work to be accomplished and the resulting specific products. The second effort was that of the Tennessee Valley Authority (TVA). By developing a program budgeting and accounting system that linked the organizational unit, its "activities" (smaller subdivisions of work) and encompassing programs, TVA was to provide and demonstrate the use of a mechanism for management control and progress measurement.

Even at the Bureau of the Budget, once "concerned only with the humble and routine"[19] tasks of fiscal control, times were changing. In 1937 President Roosevelt's Commission of Administrative Management, also known as the Brownlow Commission, severely criticized the Bureau's inadequate staffing (forty persons), predisposition towards control and lack of management orientation. Such predisposition was to change in 1939 with transfer of the Bureau from the Treasury Department to the Executive Office of the President. Simultaneous release of Executive Order 8248 on September 8 changed its role in the budget process and signaled a change in budget usage itself by directing

the Bureau

> "... to keep the President informed of the progress of activities by agencies of the government with respect to work proposed, work actually initiated, and work completed ...; all to the end that the monies appropriated by the Congress may be expended in the most economical manner possible ..."

The predominant concern for progress and economy as is evident in the above quote was to motivate increasing numbers of agencies during World War II to accept the management function as being as important if not more important than the traditional control function.

Accompanying the introduction of program and activity structure was the development of workload measures, unit costs and standards of performance. New York State for example, in its use of managerial accounting concepts, separated fixed from variable costs and by so doing was able to compute unit costs for the food service and laundry functions. Pioneered by agencies such as the Census Bureau, Bureau of Reclamation and Forest Service, these innovations were to provide the first indicators of effectiveness and efficiency by describing not only the degree to which given end objectives were accomplished but the manner in which accomplished. Further innovative use of these indicators was made by agencies like the Post Office which, by identifying the number of letters that could be processed by one individual, found a means of projecting future manpower requirements.

This new management orientation to budgeting was to spread rapidly through federal, state and local government in the years following World War II. Encouraged by the atmosphere of reform and the new role defined for the Bureau of the Budget, emphasis on fiscal control began to diminish and be altered by the new management orientation. All these developments culminated in the First Hoover Commission of 1949 whose report, Budgeting and Accounting, gave official

reccgnition to the budget's new "face" by its first reccmmendaticn:

> "we recommend that the whole budgetary ccncept of the Federal Government should be replaced by the adcption of a budget based on functions, activities, and projects: this we designate a 'performance budget'."

Perhaps more important than official recognitior of "performance budgeting" was the Commissicn's objective of altering budget classification away from the things tc be bought, persistently surviving despite the new emphasis, toward the work to be done. Such was not tc be an easy task and continues to this day. First steps in this direction cccurred in the same year with passage cf the Naticnal Security Act. Congress therein expressed its approval of performance budgeting by directing that the Department of Defense budget estimates

> "... shall be prepared, presented and justified, where practicable, and authorized programs shall be administered, in such form and manner ... so as to account for, and report, the cost of performance cf readily identifiable programs and activities ..."

That it was serious in its directive was attested to by the establishement of a ccntroller for the entire Department of Defense and each of its services, tasked explicitly with developing and implementing the new budget methodclogy. Congressional support for the performance budget concept was further demcnstrated by the Budget and Acccunting Prccedures Act of 1950, which extended performance budgeting tc the entire federal government. That the number cf Congressicnal appropriations shrank from approximately 2000 prior to World War II to 375 by 1955 was ample evidence that the above directives were more than mere formality but instead were a shift in the way budget offices and Congressicnal committees carried on their business.

Just as performance budgeting obtained its initial support from diverse advocates, so also was its success to be measured from different perspectives. Performance budgeting was initially conceived in the minds of budget reformers as the means of planning and pursuing national objectives. In this context it succeeded in leaving a legacy of program structure on which future reforms were to build but failed as a basis upon which top management decisions could be made. With its emphasis on the work to be accomplished (i.e., activities) and development of indicators to measure the performance of such work (i.e., unit costs and standards), performance budgeting came to be recognized as a tool of management control exercised predominantly at lower levels of an organization. While the work to be accomplished at the lowest levels of an organization was normally quantifiable, aggregates of such work become increasingly more difficult to quantify as one moves higher in the organization. Whereas knowing

> "...that it cost $.07 to wash a pound of laundry or that the average postal employee can process 289 items of mail per hour..."[20]

may be tremendously meaningful for those at the lowest levels charged with preparing and executing the budget, such knowledge would not be very helpful for those faced with choice between public investments - the policy makers. Not suprisingly performance budgeting has continued to be of use to lower management levels even to this day although referred to under different names such as productivity measurement and certain manpower management systems. Higher aggregations of costs and output (benefits) conducive to policy making and planning, were to be the product of the next era of budget reform - the Planning, Programming and Budgeting era.

III. PLANNING, PROGRAMMING AND BUDGETING (PPB)

Despite its apparent failure to meet the planning objectives of budget reformers, Performance Budgeting had pushed the frontiers of budgeting forward in two respects. First was its shift in budget emphasis from predominant concern with input, that is the resources to be used, to considerations also of output. Secondly, and largely a derivative of the first, was the appearance of a structured framework of programs, functions and activities from which the resource allocation question could be viewed. That neither aspect found much application at the time was perhaps not indicative of weakness in concept but, practically speaking, inability to accomodate such concept by "state of the art" management abilities. As a consequence, Performance Budgeting provided unused potential in the form of a program-planning concept and structure that lacked the proper environment for growth.

By 1961 the latent potentials of Performance Budgeting had been aroused sufficiently to provide a basis upon which the next decade and a half of budget reform was to both flourish and in the end flounder. The period's principle contribution, the Planning, Programming and Budgeting (PPB) concept, resulted from a significant shift in balance between the control, management and planning functions. This shift, definitely in the direction of greater planning emphasis, was as in previous reforms a product of the environment. One expert in both state and federal budgeting finds that

> "The critical mass for the change came from 3 sectors; economics, the new data sciences and planning."[21]

That the above developments were necessary for PPB is unarguable; that they were a sufficient basis for PPB cannot be argued if one is to review the evidence accumulated in the last fifteen years. In keeping with what has been written so far, it is the author's contention that PPB is the forerunner and not too distant relative of zero-base budgeting. That such is the case will become clearer as this paper progresses. Consequently what occurred during the PPB reform era, particularly the success, failures and their underlying causes, is most pertinent to the pursuit of zero-base budgeting and will therefore be explored in the following paragraphs. A most useful context for doing so is to first examine the rise of PPB and what some might consider its one real instance of success, the Department of Defense application; secondly to give an operational definition of PPB; thirdly to appraise civilian agency efforts, mostly unsuccessful, to implement PPB; and finally a comparison of successes and failures to determine the underlying causes.

A. THE RISE OF PPB

In that PPB or program budgeting, as referred to in a more generic sense, was always the ideal of early budget reformers, it is difficult to say when it first occurred. Perhaps uncharacteristic of its predecessors, this latest of reforms found its impetus not only in the budget reform movement itself but in developing technologies for the most part removed from concern for budgeting. The first of these was the growing school of macro- and microeconomic thought. Arising from the Great Depression period, Keynesian

economics gave explicit recognition tc the rule of governmental activity in maintaining the health of private sector econcmic conditions. Fiscal policy, the professed means by which government was to accomplish this maintenance, opened new horizons for the pursuit of eccncmic (e.g., full employment) and societal objectives. The relatively simple rules of Keynesian dcctrine - greater spending when employment is down and less spending when employment is up - were rapidly accepted by politician and civil servant alike. Inherent to both rules was the ability to contrcl the level cf government expenditures and, at the time, the accepted means of doing so was the budget. Whereas fiscal policy became the means to achieve eccncmic gcals, budgeting became the means to pursue fiscal pclicy. Furthermcre cnce one has agreed upon the budget as a means cf pursuing such policy, the next question to be asked is - in what way can the budget best pursue the stated pclicy, i.e., what is the optimum mix and level of expenditures? Mcving from macro level considerations, such as that of spending mcre or less, to the micro questions of mix and level, micrceconomics was introduced to the public sector and was tc become the essence of program budgeting. That it did not do so right away was the result of several factcrs. First, bcth macro- and microeconomic ccnsiderations of expenditure were ccnstrained by total revenue. Although the expenditure side of fiscal policy gained rapid acceptance, the concept of a flexible tax structure designed to consider the same macrc and micro questions was slower in evolving. As it gained acceptance, program budgeting was at least to scme degree freed from arbitrary totals, and both expenditure and tax policy were allcwed tc pursue a more natural, unccnstrained evolution.

Secondly, although the relationship cf macroeccncmic analyses and the microeconomic ccnsiderations of budgeting are evident, organizational accommodation of this relationship did not, and has nct, occurred. The 1946 Full

Employment Act established the Council of Economic Advisors and tasked it with fiscal analysis and policy making responsibilities. Separate and distinct was the Bureau of the Budget whose primary responsibility was that of aggregating, from the bottom up, and compiling a budget document. The lack of institutional arrangement between the two and, in consequence, the separate roles and behaviors precluded the systematic definition and pursuit of objectives.

Thirdly, just as an acceptance of Keynesian doctrine was to require time, so also was the application of microeconomics in the design of expenditure policy to require much work. As so aptly put by Shick

> "Microeconomics had been elevated to public prominence largely on the coattails of its macro partner. Yet considerably less is understood about the mix of public expenditures than about the aggregates."[22]

In hoping to find objective economic criteria for determining the optimum mix of programs, welfare economists were to be faced with a long uphill struggle of seeking to quantify the inherently unquantifiable government activities. Program budgeting is part of that uphill struggle.

That program budgeting was not overwhelmed by the troublesome difficulties outlined above attests to the presence of other significant and perhaps more supportive factors. Although not specifically designed to help the welfare economists in their pursuit, the separate maturing of a number of informational technologies was to be of substantial help. Developed by mathematicians, physicists and engineers as early as 1872 in British war gaming, the Operations Research discipline was to grow under the influence of World War II into a highly useful means of optimizing manpower, materials and equipment in repetitive, quantifiable operations. Its techniques of linear

programming and game theory, although highly quantitative, were particularly useful in the analysis of data. Cost-benefit analysis, dating as far back as 1844 but really coming of age in the 1950s, proved to be a useful means of analyzing costs and benefits of non-repetitive programs. General systems theory, arising out of work in the biological sciences in the 1920s, portrayed systems not as entities but as inter-connected units, each relating to the other in different but systematic ways. Cybernetics, another discipline, was developed as the science of communication and brought with it the concept of probabilism as a replacement of determinism.[23] Developed in 1823 by Charles Babbage, the beginnings of a computer technology and its subsequent evolution, although not an information technology itself, enabled the others to occur and at least to some extent served as the "matchmaker", bringing the diverse technologies together into what is often referred to as systems analysis. Borrowing from each of the other disciplines, systems analysis is often defined as

> "...nothing more than quantitative or enlightened common sense aided by modern analytical techniques."[24]

Although unable to establish a specific date for its appearance, it is clear that the problems of the Department of Defense in the 1950s provided the setting from which not only systems analysis was to emerge but also upon which the traditions of budget reform and economic thought were to converge.

E. THE DEFENSE SETTING

The Department of Defense was fertile ground for the growth of program budgeting. Although formal implementation of a "program package budgeting" system (as PPB was then

called) did not occur until 1961, Defense had gathered considerable experience in analysis and decision making along program lines. David Novick, considered by most to be the father of program budgeting, first developed the concept in 1941, called the Production Requirements Plan, in connection with allocation of commodities to competing needs. Although refined and used during World War II as the Controlled Materials Plan, its basic intent remained unchanged - the allocation of goods along program lines. From a more conventional perspective, the Navy Department in 1946 had gained considerable experience from its presentation of the fiscal year 1948 budget in both line item and program format, an effort that was to prove equally influential in the first Hoover Commission. Defense had also gained considerable experience in using the information technologies mentioned in the preceeding section. In fact many of them had been developed under the sponsorship of the Department and individual Services by such "think tanks" as the RAND Corporation. Not surprisingly it was under the auspices of the RAND Corporation that David Novick in 1956 recommended the development of a program budgeting system for Defense.[25]

These early pursuits of program budgeting and the various informational technologies were to prove anything but academic. They were instead responses to a growing need for management tools that would span all three services. By the end of World War II what had once been a peculiar mission of each service, whether it be land, sea or air, was no longer the exclusive province of that service. Air combat had, for example, become a mission of each of the three services and each was to compete fiercely for its own aircraft weapons systems. That such competition was to prove not only characteristic but also inefficient and costly prompted the consideration of cross service programs. Where three aircraft might normally satisfy the parochial interests of each service, one aircraft designed to meet the

requirements of all three services might best satisfy the national interest.

Furthermore, preoccupation with the fixed budget ceiling idea for Defense to which both Presidents Truman and Eisenhower were committed, did nothing to better the situation. As one reformer was to point out -

> "...prescribing a single fixed ceiling in advance for subordinate levels of the executive branch involves the danger of judging a case before the evidence is heard. ...how can one be sure that the ceiling for one function is not set too high and the ceiling for another too low?"[26]

In this regard performance budgeting did little to answer the soon-to-be-asked question, "How much is needed for defense more than it is needed for other purposes?"(26) For after all, how can one measure the degree of efficiency attained in the pursuit of deterrence. Although peace is an adequate measure of effectiveness, its maintenance may be achieved by expending sums substantially in excess of optimum, whatever that might be. The same goes for other concepts like massive retaliation and preparedness. The early experiences of the 1940s and 1950s both in program budgeting and the information technologies, although ad hoc in nature, were to provide the foundation for pursuit of budget reform and, in so doing, of solutions to many Defense problems.

1. Defense PPB - An Operational Definition

Despite the fertile ground provided by the Defense Department in the 1950s, the growth of program budgeting and development of the formal Defense Planning, Programming and Budgeting System (PPBS) were to await further impetus. Both the catalyst and agent for change was to be the appointment of Robert S. McNamara as Secretary of Defense. Faced with a blurring of missions, increasing costs, particularly those resulting from errors, shrinking response times and the

pernicious practice of fixed ceiling budgets, McNamara was presented with the decision of either managing the Department as a whole or continuing in the role, ineffectual though it was, of umpire in a highly fragmented, competitive game between the individual services.

In choosing the former, McNamara was faced with a second problem, how to manage the Department. He was later to write that the problem

> "...was not the lack of management authority... The problem was rather the absence of the essential management tools..."[27]

McNamara solved this difficulty by combining the legal authority vested in his position by Eisenhower's Defense Reorganization Message of 1958 and the considerable knowledge gained by a staff of former RAND Corporation employees. By "stacking" his staff with those who had pioneered the new decision making technologies, McNamara was to be able to more fully integrate not only the activities of Defense but also the overall functions of planning, control and management.

The problems to which McNamara and his staff turned were not new but revolved around the issue repeatedly emphasized in budget reform literature, i.e., the introduction of planning considerations at the front end of the budgetary process. Prior to his arrival there was, practically speaking, no connection between planning done by the military and budgeting, a responsibility of the civilian secretariat. What integration of planning and budgeting did exist was in name only. The Basic National Security Policy (BNSP) issued by the National Security Council was supposedly to kick off the budget process. Designed to be a complete and thorough statement of defense policy, it was for practical purposes, not able to resolve disagreements on what the defense policy should be. Instead of providing

specific guidance, it became a statement of generalities acceptable tc all who had a role in its preparation. Its utility as a basis for developing the second planning document, the Joint Strategic Objectives Plan (JSOP) was therefore sharply diminished. Prepared by the Joint Chiefs of Staff (JCS), the JSOP was to be a two volume document that first assessed the threat and then described the military force and weapon levels necessary to meet the threat and defense policies described in the BNSP. The JSOP was in turn to be used by each of the individual services as a basis for budget preparation. Unfortunately the general guidance of the BNSP was just as, if not more, acceptable to the Service Chiefs as to its preparers. Its generalities could be interpreted in many ways, and so they were by each of the individual services in preparing a budget that enhanced its own parochial interests. Lacking a mechanism for enforcing cross service plans and programs, each service could claim that it had to provide the bulk of national security. Notwithstanding the existing fixed ceiling budget concept, such philosophy led the individual services to frequently ask for more than their assigned allocation by as much as fifteen percent.[28] To meet the ceiling imposed by the President (Eisenhower steadfastly maintained that no more than than ten percent of the Gross National Product should go for Defense) the Secretary of Defense was forced into a budget cutting role, albeit without sufficient information to make reductions. It is not suprising that the reductions made were on a horizontal basis and that throughout the period 1947 to 1961 service budgets varied not substantially from a fixed twenty-nine percent for the Navy, forty-seven percent for the Air Force and twenty-four percent for the Army.

a. McNamara's Planning, Programming and Budgeting System

To correct the deficiencies of the period, including the inadequate integration of planning and budgeting and the resulting duplication, parochialism, protectiveness, short sightedness and irrational reductions, McNamara and his Assistants Charles Hitch and Alain Enthoven designed a formal decision making process referred to hereafter as the Planning, Programming and Budgeting System (PPBS). As PPBS was to evolve, it was to prove to be not just a reemphasis of the separate planning, management and control functions historically at the center of budget reform, but instead a systematic intermixing of these three functions with primary importance being attached to the planning segment. What is to follow will be a description, and therein a definition, of PPBS as it evolved in the Department of Defense. Consideration of the framework, both internal and external, in which the process operates will also be described.

At the heart of the entire process lay the Five Year Defense Program (FYDP). The FYDP in essence was, and still is, a scheduling of all Defense activities organized along mission lines and crossing service boundaries in terms of forces, projected for eight years, and resources (manpower and costs), projected for five years. The planning, programming and budgeting process was merely a systematic means of updating the FYDP base from which more detailed budgets could be prepared.

Just as the name implies, PPBS involves the three stages of planning, programming and budgeting as separate but nevertheless systematically related stages in a resource allocation process. Although changing somewhat in later years, McNamara's planning process (1961-1968) was to be a comprehensive analysis of intelligence, technological projections, military threat and strategic and tactical

designs. The product was to be the definition of forces and weapons needed to assure national security and the performance of subsidiary defense missions. To accomplish this, the planning process itself consisted of four consecutive phases best characterized by the documents produced therein. The first document, JSOP Volume I, reflected a mid-range (five year) threat assessment performed by the JCS. Like its predecessor before 1961 and even though the professed cornerstone of the budget process, JSOP Volume I was to continue as little more than an aggregation of the seperate Service assessments. As such it was to be given little attention by Secretary McNamara in his decision making process. The second and third stages including the Service-Unified Command and JCS (JSOP Volume II) recommended force levels were given equally short attention since they too had been based on the original planning document that McNamara, for non-partisan political reasons, was forced to tolerate. In reality the planning process was begun with McNamara's Draft Presidential Memorandum (DPM). Prepared by his systems analysts initially for review by the Secretary, then the Services and subsequent submission to the President, each DPM

> "...combined strategy, force requirements and financial considerations..." and "...spelled out concisely the assumptions, rationale and supporting analysis..."[29]

for each of the ten major programs, i.e., strategic forces, general purpose forces, etc. As such they were the basic tool by which McNamara was to gain control over and drive the resource allocation process within the Department of Defense.

In that the DPM combined both strategy, force and financial considerations, it represented not only the final stage of the planning process but also the beginning of the programming process. Beginning with the Secretary's

consideration of the DPMs, the programming process was to include further review by each of the services, subsequent recommendations for change to the DPMs and basic FYDP and finally Secretarial decisions. That the DPM would eventually become the Secretary's change to the basic FYDP unless otherwise challenged, was sufficient to cause both the individual Services and the JCS to promptly request changes, known as Program Change Requests (PCR). Averaging during these early years 300 annually from the Services alone, these PCRs were for the most part rejected by the Office of Systems Analysis as being either too costly, poor analyses and/or of insufficient priority when compared to the basic five year plan. The Secretary's responses to the PCR were called Program Change Decisions (PCD) and were the basis upon which the individual Services were to update the FYDP.

Following the PCDs and individual Service update of the FYDP came the budget phase. At least theoretically each of the Services was to convert its portion of the first program year in the FYDP to the more conventional, detailed line-item/object of expenditure format demanded by Congress. Driven by the old FYDP base and changes thereto as reflected in the DPM-PCR-PCD process, the budget was to be a "free-fall" document representing the nation's true defense requirements rather than aggregations of Service requests arbitrarily constrained by fixed ceilings as before. The Defense budget was not so easily to be completed however. Anxious to enhance their power, Service budgets frequently exceeded initial program estimates to a significant degree. Furthermore, McNamara's assertion that the country could afford whatever level of defense was required was perhaps true in theory but, as most of the flag rank and Service analysts recognized, a bit idealistic. Budget ceilings, although not explicitly set as in the Truman and Eisenhower eras, were implicitly recognized by those involved in the resource allocation process as a question of politics more

than analysis. An equally important factor behind the development of budget requirements was the continuing evolution of defense needs. Programs conceived in the initial planning stage as much as fifteen months earlier had changed to meet new conditions as had also the associated costs. This too was behind much of the budget "excess" requested by the Services. The job of separating the "wheat from the chaff" in Service budgets, complicated by all of the above, fell to the Defense Comptroller who in turn made recommendations to the Secretary by a Subject/Issue process which soon came to be called "Operation Snowflake."[30] Having reviewed the issues and having made a tentative decision thereon, the applicable Service was given the opportunity to accept or reclama. In either case the Secretary eventually finalized the Issue, the results of which were then reflected in the President's Budget submitted to Congress.

One can easily get lost in the acronyms and steps of McNamara's PPBS process. What has been outlined above is a somewhat abbreviated version of a much more complex decision making apparatus. It is however sufficient to illustrate the methodology McNamara used in introducing a greater degree of planning into the overall budget process. Prior to continuing with a quick look at the changes made by subsequent administrations, it would be meaningful to briefly summarize the more important characteristics of Defense PPBS at the time. These are:

-Perhaps first and most importantly was McNamara's extremely strong leadership.

-Secondly the considerable amount of preliminary work accomplished by the various "think tanks" before implementation.

-Thirdly, through joint effort of the above two, the development of a defense wide program structure oriented to national security purposes vice parochial service interests.

-Fourthly, the development and promulgation of strategic guidance, in the DPM if not by the JSOP, both from the top and front end of the decision making process.

-Fifthly, long range resource allocation decisions were to be a product of the planning and programming phase with budgeting confined to a detailed costing of those decisions.

Although a significant improvement over the pre-1961 budget methodology and its difficulties, McNamara's system with the above characteristics was also to have its difficulties. The most important problem, to which later Administrations addressed themselves, was the degree of centralization. In effect, strategic plans, program decisions and budget decisions were made by the Secretary with the aid of a Comptroller and Systems Analysis staff. A power unto itself, McNamara's group tolerated no intrusion by either the National Security Council (NSC) or the Bureau of the Budget (BOB). In fact some went so far as to state that national fiscal policy was forced to adapt to defense policy rather than vice versa.[31] Furthermore, McNamara's short treatment of the military's JSOP and reliance on the DPM relegated the JCS and the Services to the role of responding rather than initiating. Those who were to execute the plans had little to say as to what was or should be included - hardly a participatory management approach. That such an approach was an over-centralization of the decision making process is readily attested to by the symptoms that soon appeared, including

-systems overload. Simply too many decisions were required of too few in too short a time frame. Many program decisions were of necessity made concurrent with and subsequent to the budget process for which they were to be the driving force. Furthermore, many of these made during the proper phase, such as the 700 budget decisions made annually by McNamara[32], were of highly suspect quality.

-isolation. McNamara's preoccupation with analysis and its centralization left little room for the more subjective but nevertheless absolutely necessary influence of military experience. In addition to affecting the quality od decisions, the inability to participate in decision making at the highest levels was to seriously upset military morale.

In retrospect, the strengths and weaknesses of McNamara's PPBS apparatus can provide a wealth of experience upon which to base subsequent innovations. It was certainly to do so for the Nixon Administration which followed.

b. Laird's Planning, Programming and Budgeting System

The overall planning, programming and budgeting concept introduced by McNamara was retained by Melvin Laird under President Nixon's Administration. Concerned however with the weaknesses indicated above, Nixon and Laird were to make two significant changes to the Defense decision making apparatus. Both changes were to reduce the degree of centralization characteristic of the McNamara era.

The first such change, external to the Defense Department, occurred in the President's own national security affairs staff. Perhaps more properly characterized as renewed emphasis vice a change, the National Security Council (NSC) under the leadership of Henry Kissinger was once again to try its hand at providing strategic guidance to the JCS and Services. The means for accomplishment was the National Security Decision Memorandum (NSDM),

approximately 130 of which were issued from 1968 through 1972. Unlike the BNSP, its predecessor of the pre-1961 era, the NSDMs provided in fairly explicit terms defense policy. As President Nixon's Watergate problems intensified and as Kissinger's "globe-trotting" became more frequent, Presidential oversight decreased and the NSDMs became fewer and fewer. Nevertheless, the decision making apparatus became less concentrated than it had been and more a part of the President's policy making discretion.

Laird's second change was to be in the decision making process of the Department itself. In essence the JCS and Services were to be given back the role of defining force level structure instead of responding to the force proposals initiated by the Department's Systems Analysis Office. The Systems Analysis Office was relegated to a role of reviewing JCS and Service proposals and recommending changes to the Secretary as might be appropriate. JCS and the Services were however to pay a price for their more important role. It was in essence the acceptance of a budget ceiling within which balanced force proposals were to be submitted. No more "Wish Lists" were acceptable. In essence the roles of Systems Analysis and those of the Service Chiefs had been reversed. The professed concept of a "free-fall" budget had been replaced by a ceiling reflecting more closely the economic philosophy of the Administration.

The mechanisms by which Laird implemented this second change more clearly demonstrate its impact. JSOP Volume I was to continue as before as an assessment of threat and statement of strategies. So also was Volume II of the JSOP to remain as before. In that neither represented much change in their "blue sky" orientation, both also continued to be largely ignored by Secretary Laird and his staff. The old DPMs, however, were replaced by a series of three documents including

-First, the Strategic Guidance Memorandum (SGM). The SGM, promulgated by the Secretary, was intended to be a thorough strategic policy document for the Services based on the NSDMs and JSOP Volume I. (In practice and as mentioned before, the JSOP Volume I was largely ignored.)

-Second, the Tentative Fiscal Guidance Memorandum (TFGM). The TFGM provided tentative estimates of resource constraints five years in the future for each Service and certain major programs.

-Third, the Fiscal Guidance Memorandum (FGM). Based in part on the Administration's economic philosophy, the Secretary promulgates firm budget and in certain cases program constraints. Theoretically the FGM takes into consideration the unconstrained force levels depicted in JSOP Volume I/i. In practice there is little coordination. Nevertheless Service proposals are to be made within such constraints.

In essence, the DPM programming documents were to be replaced by budget ceilings. While perhaps reminiscent of the pre-1961 period such ceilings were less arbitrary since defined in conjunction with national economic policy and, at least theoretically, based on risk assessment provided by the JSOPs and Service comments.

Having received the budget ceilings both JCS and the Services were to prepare their recommendations for the Secretary. The JCS recommendation, the Joint Forces Memorandum (JFM), defined the forces and programs which JCS felt could be supported within the specified ceiling constraints and outlined the associated risks when compared to the unconstrained JSOP Volume II. Each of the Services, shortly thereafter, submitted its Program Objectives Memorandum (POM) outlining its recommended programs, forces and costs. In concept the JFM was to be an independent document providing a means of evaluating Service proposals.

In practice it was instead an aggregation of the Service POMs. The remainder of the PPBS process was to remain pretty much as before with only the name of individual documents being changed. The Program Change Decisions, for example, became Program Decision Memorandum (PDM) and the Subject/Issues of the old "Operation Snowflake" became Program Budget Decisions (PBD).

With the changes outlined above, Secretary Laird accomplished his objectives of decentralization. Just as over-centralization through PPBS brought on additional problems, so decentralization within PPBS was to cure many of these same problems. In essence Nixon and Laird had placed Defense more as an integral part of national economic policy, introduced guidance from above as well as the experience factor from below and through constraints decreased the decision requirements of the Secretary by forcing the Services to make many of those decisions.

The process and practices of PPBS as developed by McNamara and modified by Laird have been continued by Secretaries Schlesinger and Rumsfield and for the most part are practiced today by the Department of Defense. While PPBS has corrected many of the deficiencies of the pre-1961 period and Laird's innovations have made the entire process more workable, there remain several weaknesses in the existing Defense resource allocation process. They include

-an inadequate planning mechanism. As mentioned, the JSOP volumes have been for the most part ignored and strategic guidance issued independently thereof. That fiscal guidance can be issued without coordinated plans and related risk assessment, raises serious questions as to its validity for other than purely economic purposes.

-coordination problems. A single PPBS cycle is a highly coordinated decision process. There are however three such cycles on-going at any one point in time. During the June to October time period Congressional review of the budget year, PDM consideration of the program years and JCS consideration of the

planning years are simultaneously on-going. While decisions on any one will affect the other, there is no systematic process for relating one to the other.

-cycle length. Because the PPBS cycle extends over such a lengthy period of time, approximately twenty months, it becomes exceedingly important that plans and programs decided upon in the early phases be updated in the later phases to reflect changing scenarios. As such scenarios change more rapidly, a characteristic of today's environment, the supposedly technical considerations of budgeting necessarily give way to broader program issues. Try as one might, and should, programming and budgeting become intermixed.

-control subsequent to formulation. Comprehensive in the sense of being a systematic integration of decisions, PPBS significantly enhances the quality of budget formulation. Subsequent to Defense formulation however, appropriation and execution become increasingly fragmented. Reminiscent of traditional control and management philosophies, Congress reviews and appropriates funds in five categories - operations and maintenance; military personnel; research, development, test and evaluation; procurement; and military construction - a great portion of which are driven by line item considerations. Program elements remain of concern primarily to the Defense establishment which attempts to relate Congressional actions across and within program categories.

Perhaps not so much a weakness as a monument to the political (partisan and non-partisan), complex and temporal nature of budgeting, the above illustrates the opportunities as well as pitfalls to which zero-base budgeting must address itself. Furthermore, that these weaknesses are descriptive of the resource allocation process in Defense today is not to imply that the budget reform movement had stopped at the Pentagon. On the contrary, the initial successes of PPBS in the Department of Defense were sufficient to prompt President Lyndon Johnson to announce on August 25, 1965 that

> "This morning I have just concluded a breakfast meeting with the Cabinet and with the heads of federal agencies, and I am asking each of them to immediately begin to introduce a very new and revolutionary system of planning and programming and budgeting throughout the vast federal government..."[33]

This "revolutionary system", Defense PPBS, was to be plucked from the Pentagon and dropped in total upon the unsuspecting civilian federal sector. Its impact was to be substantial and its "failure" not surprising. Up to this point, only the evolving Defense experience and the associated Defense process have been explored. Prior to exploring civilian PPB it is first helpful to look at the system from a conceptual point of view as opposed to the process.

C. PPBS - A CONCEPTUAL DEFINITION

The conceptual underpinnings of PPB are found in two immutable truisms. First is the concept of scarcity. There are simply not enough resources, men and materials, to accomplish everything man, either in his individual or institutional capacity, desires. Even if there should be sufficient personnel and material resources, time alone would be a constraining factor. As a consequence choices must be made. The evidence and the product of such choices comprise, in the financial sense, a budget. The second immutable truism is the inescapable connection between national policy formulation and execution and the expenditure of resources. The choice of national objectives and the allocation of scarce resources by the budget process to carry out those objectives are but opposite sides of the same coin.

Implicit in the concepts of choice and budgeting is the need to ask such questions as

> "How much more is needed for defense than is needed for other purposes?"[34]

In perhaps a broader sense, governments must be concerned with the provision of a wide spectrum of services: defense, health care, general welfare, education, transportation, and recreation, just to name a few of its responsibilities. Since government can neither afford to support all of the needs of its populace nor devote all its resources to any one requirement, it necessarily follows that a compromise must be found. But by what method should this compromise be reached? That such choices will in fact be made is inescapable. The question which must be posed is

> "...whether the answer rests on intuition and guess, or on a budget system that presents relevant information so organized as to contribute to rational analysis, planning and decision making."[35]

Early reformers and advocates of program budgeting were to answer questions such as the above by saying

> "...let us be deliberate choosers, changing our budgets and reshaping our forces as long as a change appears to gain more than it costs."[36]

This idea of "deliberate" choice is at the heart of the Planning, Programming and Budgeting System (PPBS).

Planning, programming and budgeting is the means by which objectives (desired outputs) and resources (required inputs) are deliberately chosen and by which an acceptable balance of competing objectives and resource requirements is attained. More specifically PPBS is a three stage process. In its first stage, planning is to be a consideration of alternative strategies and objectives including both their expected costs and consequences. Following planning comes programming in which the adopted strategic objectives are to

be restated in terms of men and materials and their scheduled application over time. The final stage, budgeting, is concerned with translating the single budget year's portion of the long range program schedule to the detailed financial and resource input required by Congress.

By a systematic integration of these three stages, PPB attempts to assist the decision maker in choosing both the objectives to be pursued and the means by which they are to be pursued. This systematic integration is achieved through a combination of analysis and process by which top level agency management must annually assess the validity of its objectives, evaluate these objectives in terms of output, consider alternatives and relate its annual budget to longer term plans. PPBS accomplishes the above by providing a structured framework in which programs fulfilling a certain objective are grouped in major program categories, subcategories and program elements. Early in the PPBS process specific issues are identified by top management as requiring in-depth analysis. Identification of these issues is followed by special analytic studies identifying alternatives, costs, benefits and risks involved. Agency decisions or recommendations and analyses with respect to these special issues as well as the basic programs are then summarized in program memoranda presented to top management for final approval. With such approval, projected resource requirements as well as historical costs are displayed in a program and financial plan, thereby portraying on a multi-year (past, present and future) basis the impact of past and present resource allocation decisions. The budget year column of the program and financial plan then becomes the basis for development of the more detailed, input oriented budget documentation.

An alternative means of defining PPB in conceptual terms is to contrast it with the opposing view of budgeting offered by Charles Lindblom.[37] The decision process referred to as incrementalism and associated with Charles E.

Lindblocm wculd attack the rational appicach of PPB as unrealistic. The incrementalist's argument is based on several prcpositions. First, social objectives to be pursued and maximized by the rational approach are in conflict. One need only cbserve as evidence the conflict between environmentalists and oil companies surrounding construction of the Alaskan pipeline. Secondly, social values are tco complex to reduce to specific objectives. Even if cne could reduce values to specific objectives, the conflict emerging between proponents and cpponents wculd render such objectives unattainable. Therefore values should be allcwed to remain ambiguous, each party reading intc the value what he desires. Thirdly, because social values are sc complex, they can be interpreted only as the decision maker examines a specific proposal for pursuing a particular value. As a ccnsequence, the incrementalist defines his values as he considers specific alternatives whereas the rationalist seeks to define his objectives first. Fourthly, because of the complex nature and conflict surrounding social values, it is difficult if not impossible to foresee the consequences of resource allocations. It, therefore, behooves the decision maker to move in small incremental steps, correcting and modifying as he proceeds. Because of the inherent risk in large decisicns, analysis is confined tc those cpticns which differ not tcc significantly from the status quo. Implications for the budget process are that one does not "tinker" with the base itself but locks only at the increases or decreases.

In the preceding two paragraphs, two seemingly cppcsing ccncepts of budgeting have been compared - first PPB which professes rationalism and seccndly incrementalism which testifies to non-rationality. Actually the two are further appart in concept than in practice. In contrast with the incrementalist, advocates of the Planning, Programming and Budgeting (PPBS) approach to decision making would nct argue with the realistic interpretation given by the

incrementalist to the decision environment. They maintain instead that the conflict, complexity, and risk outlined in the previous paragraph are all the more reason to systematically ferret out the irrelevant factors and focus the decision maker's attention on the relevant issues. Recognizing the ambiguity and conflict surrounding values, the PPBS advocate contends that decision makers cannot effectively argue whether program characteristics will meet a given national need unless they are stated in terms of output. The process of moving from program characteristics to program output is the essence of PPBS. By systematically analyzing and offering the decision maker alternative programs and program levels, value judgements can be refined by a more educated debate in the political arena.[38] This is best summed up as

> "...render(ing) unto analysis the things that are analysis's and unto judgement the things that are judgement's."[39]

The fact that budgeting is, above all else, a political process renders the dichotomy between the rationalism of PPBS and the incrementalism of Lindbloom less significant than one at first might believe. That this is so can be illustrated. Incremental budgeting (budgeting from the bottom-up without top-down planning) is more than a little like "driving a car while looking in the rear view mirror." Decisions are based not so much upon where one wants to go as where one has been. By incrementalizing the base and thereby projecting past decisions into the future, it might be expected that the trend of appropriated funds for a stable organization from year to year would be linear. As reflected in Figure (1) a plot of Department of Defense appropriations over the period 1950-1978, and despite the anomalies of the Korean and Vietnam War years, such linearity does exist. In fact a linear equation of the type

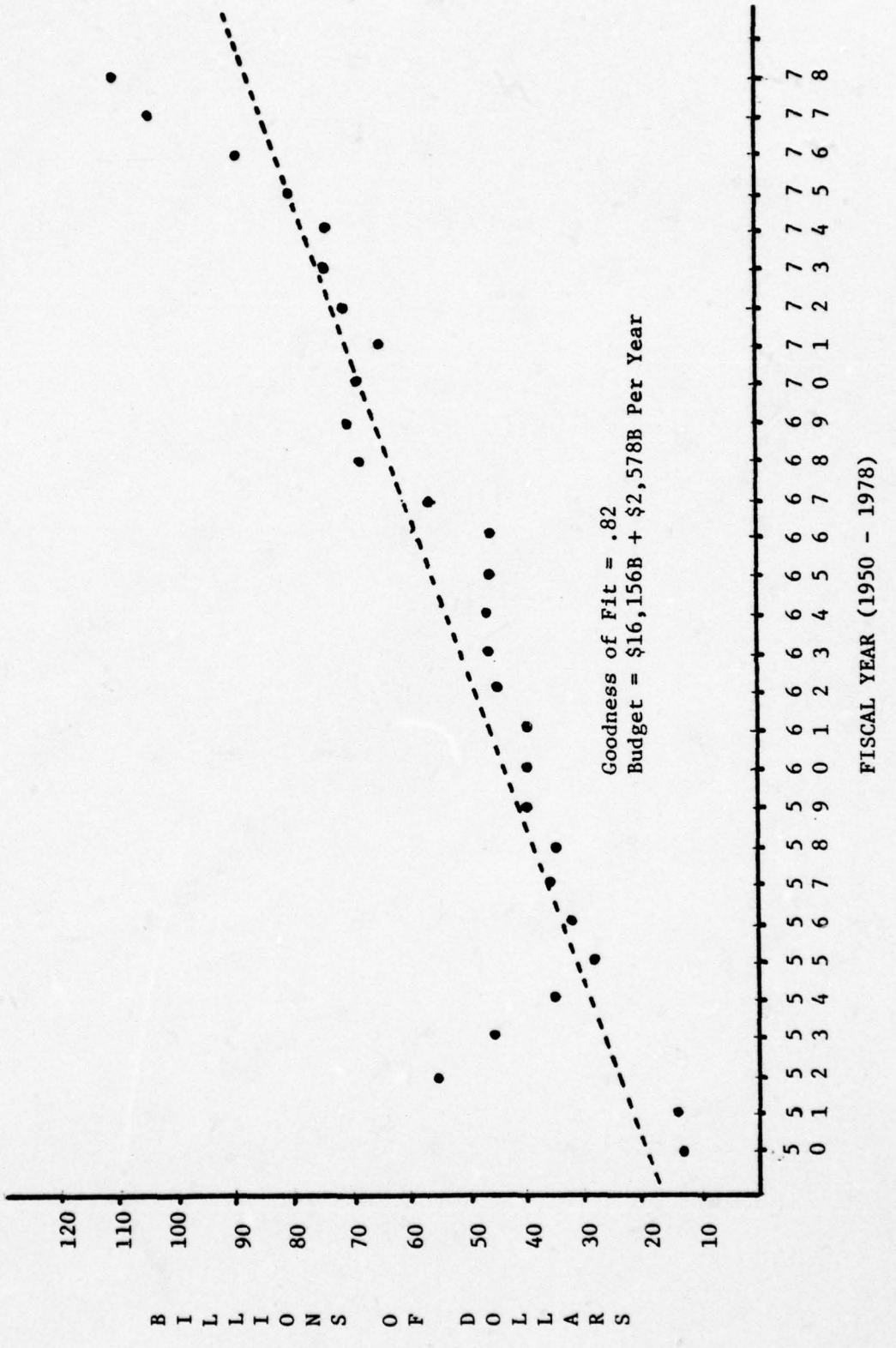


Figure 1 - DEPARTMENT OF DEFENSE APPROPRIATIONS (1950-1978)

$$Y = a + bX + c$$

where "a" equals the base, "b" equals the annual increment and "c" equals the unknown "noise", can be fitted to actual appropriation figures with a goodness of fit of .82 notwithstanding the two war anomalies. Whether a straight linear or perhaps better fitting curvilinear type, as explored in much greater sophistication by Aaron Wildavsky in his search for predictive models of budgeting [40] the relationship of past to present is nevertheless undeniably significant.

The most interesting and enlightening aspect of Figure (1) is found in a comparison of pre-PPB Defense budgets with those of the PPB era (1961-1977). As the reader may recall, PPB is concerned first of all with the setting of objectives and then analyzing the extent to which alternative programs and the assoviated full costs contribute to those objectives. In this context, the base is sacrosanct only to the extent that it continues to be not only consistent with the objectives but can in fact compete favorably with the alternatives. In such an environment it would not be unreasonable to expect that Defense appropriations might lack continuity from one year to the next. If true, a comparative analysis of time series data for the two eras, discarding the war perturbations for the sake of clarity, should show a substantial reduction in goodness of fit for the PPB period. However, as shown in Figures (2) and (3), pre-PPB and PPB eras repectively, the goodness of fit does not decrease but in fact increases slightly from .914 to .917. In further illustration is Figure (4) which depicts total Navy appropriations over the period 1965 to 1978 with a goodness of fit of .91.

That the character of the budget process appears to remain unchanged, and perhaps appears to be even more incremental during the PPB era, is not wholly unexpected nor

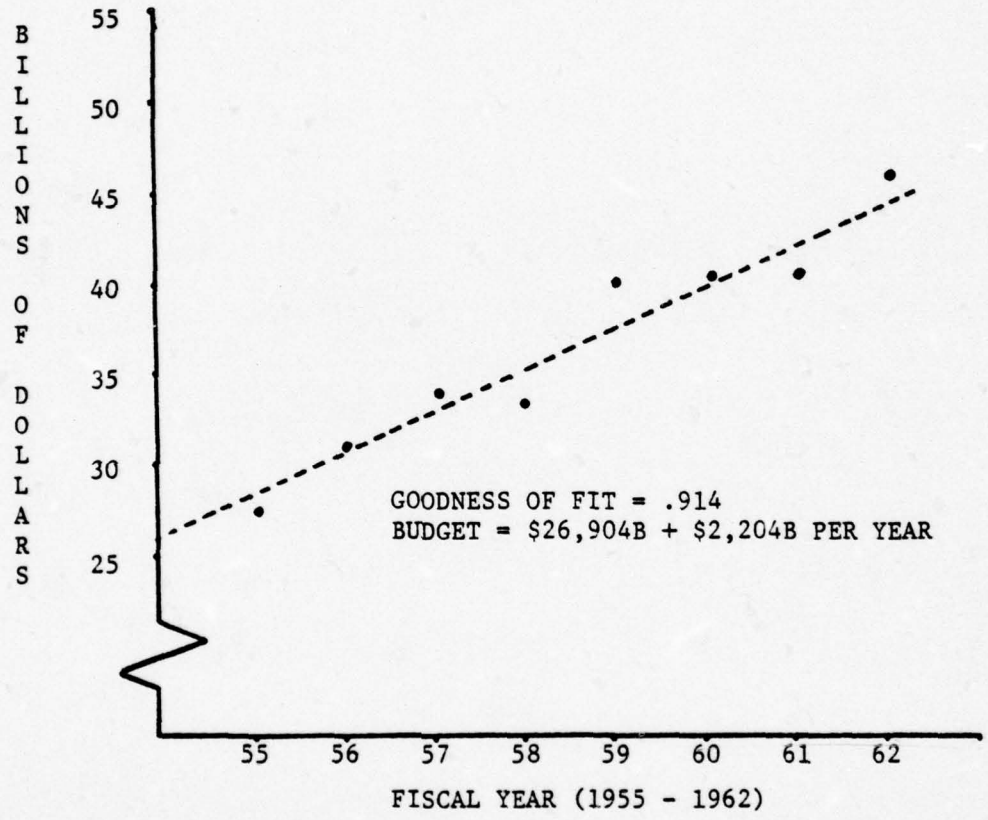


Figure 2 - PRE-PPB DEFENSE BUDGETS (1955-1962)

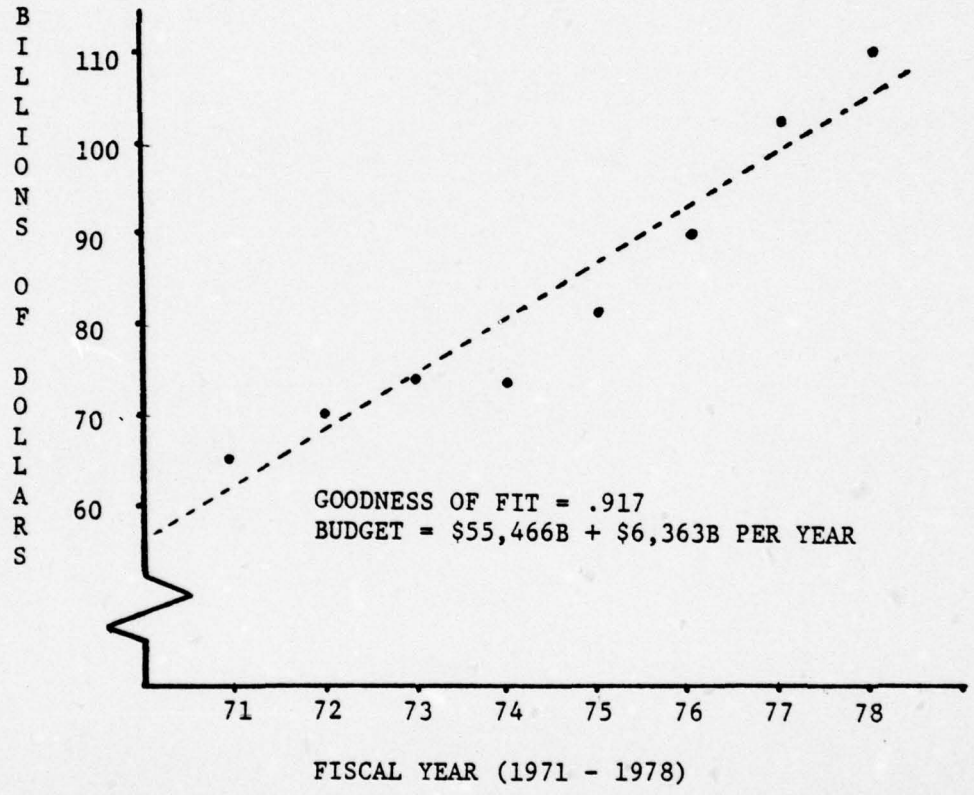


Figure 3 - PPB DEFENSE BUDGETS (1971-1978)

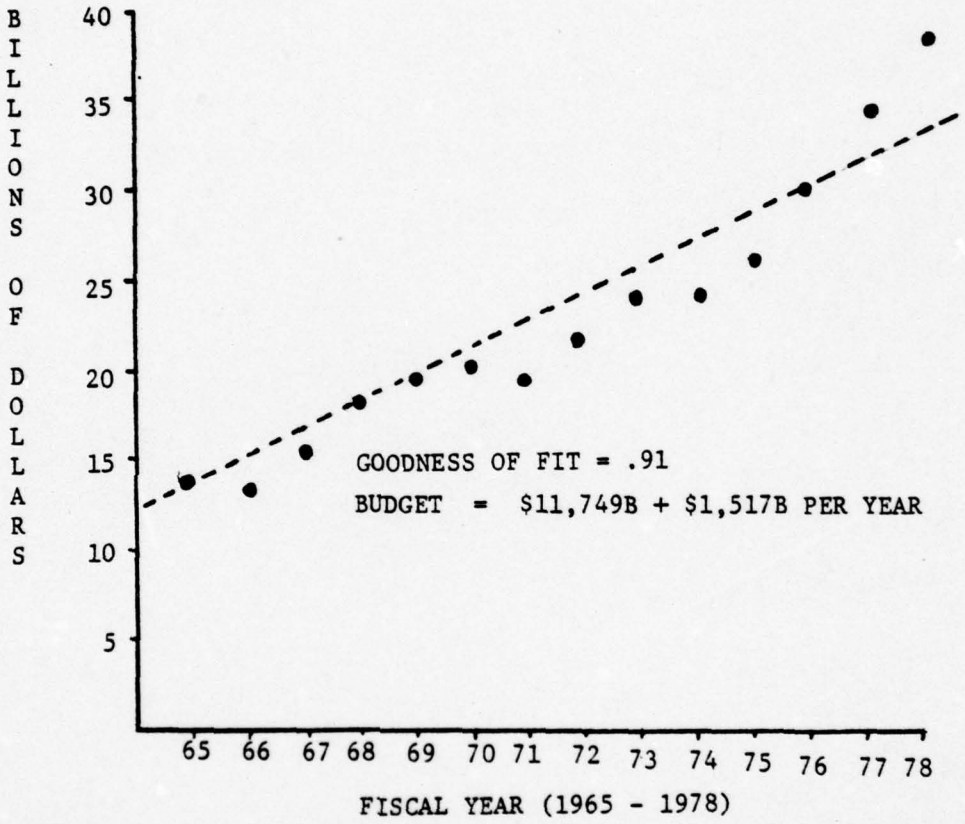


Figure 4 - NAVY DEPARTMENT APPROPRIATIONS (1965-1978)

should it be deduced that the rationalism of PPB has no impact. On the contrary, budgeting under PPB retains the appearance of incrementalism, notwithstanding the on-going analysis of the base and increment alike, for several reasons.

First of all, regardless of the process used in compiling the budget, the manner in which the ceiling itself is set is both incremental and political. Over eighteen months prior to the beginning of the fiscal year, the President and his Council of Economic Advisors project expected revenues and demands as a basis for assigning tentative ceilings to the various departments. In forecasting next year's expected revenues, which to a large extent are dependent upon the state of the economy, the President and Council necessarily start with the current state of the economy. In the same fashion expected demands for next year are derived by looking at the demands expressed by last year's budget. From a macro point of view then, the upcoming overall budget is an incremental one. How much of that increment goes to Defense is a question of values that is necessarily defined in a democracy by the political process. On the one hand is the liberal who would seek fulfillment of social and domestic needs while restraining massive defense expenditures. On the other hand is the conservative who, decrying the extent of governmental interference, would seek to limit social and domestic programs while strengthening national defense. The product of the President's early spring guidance and of the ensuing political process is the annual increment to the Defense budget. That the Defense increment should be distributed rationally by systematically analyzing old as well as new Defense programs, instead of merely building upon the old as Lindbloom professes, is the essence of PPB. At best the rationalism of PPB can assist the President and the political process in the conversion of values to attainable objectives. It cannot however be a substitute.

Secondly, in a more micro sense, Defense PPB is of necessity more incremental, albeit rationally so, than its theory would imply. There does exist a base, the Five Year Defense Program, to which increments and decrements are made. The key is that both the base and changes thereto are reviewed annually to ensure consistency with overall objectives. The base is composed of, as the name implies, long range programs or investment decisions with each year representing progressive implementation. The inclusion of such long range investments in the FYDP necessarily gives it continuity from year to year.

Finally the rationality of PPPS is constrained by a number of practical factors. Just mentioned was the number of long term investments. The sunk costs and commitments made under those programs also provide an anchoring effect which must be outweighed by expected benefits if change is to occur. That such change does not frequently occur is due to the intense pressure brought by interest groups, and as a result by politicians, who perceive a loss in sunk costs or future benefits if the program is terminated. Thus the dichotomy between Lindbloom's incrementalism and the rationalism of PPB is narrowed even further.

The purpose of the foregoing has not been to denigrate PPB or to imply that there is no difference between Lindbloom's "science of muddling through", as his incrementalism has come to be called, and PPB as implemented in Defense. Although both appear to be incremental, as illustrated in Figures (1) thru (4), one is characterized by "muddling through" while the other is characterized by deliberate choice. The intent however is to place the rational approach to budgeting in proper perspective and thereby prevent its being oversold as a panacea for all resource allocation problems. Evidence to the effect that the rational approach, such as PPB or zero-base budgeting (as will be seen), can work with substantial benefit is provided by the Defense experience. That the perspective

from which the Defense experience must be viewed is one of "bounded rationality", that is constrained by the political, social and economic environment, is not easily accepted by budget reformers who advocate choice on purely economic grounds. As demonstrated by the "apparent" incrementalism of the Defense PPB era, this "bounded rationality" must be accepted by budget reformers as the goal to be attained. That this fact was lost upon many budget reformers in the 1960s and 1970s has resulted in the overselling of PPB and currently zero-base budgeting.

Having given a conceptual definition of PPB and having contrasted it with the purely incremental and purely rational interpretations of budgeting, it is now appropriate to examine the fate of PPB in the civilian federal sector. The overselling of PPB was to be perhaps the most important of the factors contributing to its demise.

D. PPB IN THE FEDERAL CIVILIAN SECTOR

Notwithstanding President Johnson's news conference of August 25, 1965, PPB was launched on a short but not so sweet career in the civilian branches of the federal bureaucracy. Drawing upon the initial successes of the Defense department, the Bureau of the Budget's guidance depicted a system that closely resembled that of the Pentagon. In essence, the only changes made were in the names of the various decision processes and resulting documents. The FYDP became the Program and Financial Plan (PFP) and, regardless of name, continued to depict a structure of program elements, program subcategories and major programs. To replace the Draft Presidential Memorandums issued by McNamara were the Major Program Issues identified by the Bureau. In response thereto, the various departments were to prepare Program memoranda (PM), the civilian counterpart of the Defense Program Change Request

(PCR). Even the analyses supporting the Defense PCR were given a civilian counterpart, Special Analytic Studies (SAS). Unfortunately, the similarities between military and civilian PPB were more cosmetic than real.

Despite the gallant efforts of some agencies like the Departments of Agriculture, Health, Education and Welfare and the Office of Economic Opportunity, PPB was not long lived. Although not abandoning PPB, the new Nixon Administration of 1969 was to place a greater emphasis on the analytic side of PPB than on the structural aspects (PFP and program structure). Decline in the number of Major Program Issues from 400 in 1968 to 75 in 1969[41], was further emphasis of the decreasing interest in PPB on the part of top management.By June 21, 1971, the demise of federal civilian PPB was at hand with the annual Office of Management and Budget Circular A-11 advising that

> "Agencies are no longer required to submit with their budget submissions the multiyear program and financing plans, program memoranda and special analytical studies ... or the schedules ... that reconcile information classified according to their program and appropriation structures."[42]

Despite the Circular's reaffirmation of "multiyear program planning, analysis and evaluation", it had effectively eliminated the very means by which analysis and budgeting were to be interconnected. Without the linkage between the two, analysis would be for its own sake.

For purposes of this paper however, the important issue is not the actual demise of PPB but the reasons for its demise. The differences between military and civilian PPB, so substantial as to render one a success and the other a failure, provide a meaningful context in which to search for the underlying reasons. Accordingly what follows is first of all an attempt to isolate the basic differences between implementation of military and civilian PPB and secondly an explanation of the reasons for success in some civilian

agencies but failure in others.

1. Differences Between Military and Civilian PPB

The differences between military and civilian PPB were of two principle types, those pertaining to the environment and those pertaining to the manner in which implemented. With regard to the former, the defense and civilian program environments are first of all by nature different. The degree to which either is susceptable to to quantitative analysis varies significantly. At least in defense, program planning can be pursued in the context of a few ascertainable threats. For example, given the enemy's development of deep penetrating nuclear warheads, programs can be planned and pursued so as to offset any potential military advantage. The effectiveness of alternative programs can be evaluated in terms of the threats to be met or such overall strategies as preparedness and deterrence. Therefore certain criteria can be used as a basis for choice. The same characteristics are not so easily found in the civilian sector. As a general rule, the "threat" is not so much the hardware oriented man-machine system characteristic of Defense but instead a socio-economic problem that is much more nebulous and difficult to define. Additionally, the inability to isolate the causes for social and economic problems make their treatment even more difficult. Take for example the rise in murder rates nationwide which may be the result of either inadequate gun control, unpremeditated crimes of passion or the general decline in education. The determination of cause, however difficult to define, should be the basis upon which corrective programs (capital punishment or rehabilitation) are chosen. Regardless of its non-susceptibility to easy quantification, the need for more systematic analysis, planning and budgeting is evident. That it did not occur in the civilian sector is attributable to a second difference between military and civilian PPB, that is, capability.

Simply put, the planning and analytical capabilities of the Department of Defense were nearly non-existent in the civilian bureaucracies. Indeed, implementation of PPB in the Department of Defense had been preceded by efforts, to a large extent sponsored by Defense, dating back to the Production Requirements Plan of 1941. By the time McNamara had arrived on the scene, analysis and planning, although separate and distinct from budgeting, had become fairly well institutionalized. The same was not true of the civilian agencies. Not only were the personnel to conduct the planning and analysis of PPB not present, but their non-availability was to remain a significant weakness for considerable time to come. Even the raw materials of analysis and planning, that is time and data, were lacking due to the always impending budget cycle and inadequate information systems.

As if this was not enough to condemn civilian PPB, there was a third difference. It was to be the economic environment in which implemented. During the early 1960s, PPB in Defense was assisted by the availability of new funds to support additional strategic and conventional programs. Between 1961 and 1963 the Defense budget grew by a little over $8 billion (as compared to the $5 billion that an incrementalist might expect). Therefore, the pressure to contest past decisions was substantially lessened. In contrast, however, the civilian sector was to have no such advantage. Instead, the rising costs of defense particularly from the growing Vietnam War, Great Society programs and inflation were to point towards greater conflict in the civilian sector for which incrementalism had in the past proven an adequate remedy. As compared to the military resource question, the civilian issue was no longer

> "...whose ox should be fattened but whose ox should be gored."[43]

Unfortunately civilian PPB had not yet sufficiently matured to the point of being able to survive such issues.

Whether civilian PPB ever had a chance of maturing when confronted by the environmental problems outlined above is somewhat academic. The more practical problems of implementation were sufficient by themselves to render it inoperable. The more significant of these problems, particularly those relevant to the pursuit of zero-base budgeting, are explored in the following paragraphs.

The first, and perhaps the most serious problem facing civilian PPB, was the manner in which it was implemented. From the very start, civilian PPB was at a disadvantage in that its application had been directed rather than carefully nurtured. As previously mentioned, both President Johnson and his Budget Bureau were sufficiently enamoured with the Defense process to require its implementation, with only cosmetic changes, in civilian agencies that neither understood its principles nor had participated in its design. Faced with a new procedure that bore no resemblance to the existing methodology and that was not adapted to the idiosyncracies of each agency, implementers were forced to conclude that PPB was "just another requirement" to satisfy the Bureau of the Budget. The agencies were not alone. Even the Bureau itself had relegated the PPB function to a staff separate and distinct from the budget review and examination operations. Such distinction was further strengthened by the appearance of separate directives for budgeting and PPB with little reference between the two. The Bureau's guidance to

> "...establish an adequate central staff or staffs for analysis, planning and programming"

coupled with lack of preparation, inadequate understanding of what was to be accomplished and the Bureau's own example, was sufficient to exempt agency budget decisions from the

intended influence of PPB.

Top management support and leadership were lacking in other regards as well. One of the primary purposes of PPB as developed in Defense was to facilitate decision making on a program basis without regard to organizational boundaries. To this end McNamara and his compatriots played a central role in assuring the development of a cross service program structure. The same degree of central participation and leadership was not evident in the civilian PPB experience. Instead program structures were developed independently with little Bureau coordination or involvement. Thus a primary objective of PPB was to remain unfulfilled from the very start. For those who were led to believe that PPB was to support the information needs of the Bureau, this weakness was particularly distressing.

2. Reasons Underlying the Limited Success of Civilian PPB

The weaknesses outlined above were not the only ones to plague PPB in the civilian sector. Others including inadequately developed output and impact measures, intra-organizational political (non-partisan) struggles and inadequate consideration of Congressional requirements were but a few of the others contributing to its demise. Notwithstanding these weaknesses, PPB did have some limited success as is reported in a mid-1968 study conducted by the Bureau of the Budget. The study summarized in an article written by Edwin Harper, Fred Kramer and Andrew Rouse for Public Administration Review, found six factors characterizing those departments which experienced some success with PPB.(44) The characteristics of these departments (Agriculture, Health, Education and Welfare and the Office of Economic Opportunity) tend to emphasize the need to deal directly with the difficulties referred to in the previous section and include

-an adequate number of analysts

-well qualified analysts

-vertical and horizontal linkage to decision makers and the budget staff respectively

-analysis was supported by informal relationships

-top management support and use of analysis

-an attitude that PPB was of benefit to the department/agency as well as the Bureau of the Budget

Subsequent reform efforts, namely that of zero-base budgeting, might be substantially enhanced by due consideration of these characteristics.

E. PLANNING, PROGRAMMING AND BUDGETING - A CONCLUSION

For the most part PPB failed in the civilian bureaucracy and is perhaps not as strong as it might be in the military sector if planning improvements were made. Notwithstanding its weaknesses, PPB has left a legacy of analytic resources and a growing executive and legislative awareness of the need to use such resources. In looking ahead to the next era of budget reform, Allen Shick once said

> "With so much of the business of PPB undone, it is probable that under a different label and with somewhat different approaches and techniques there eventually will be a return to the aims of PPB."[45]

With a slightly different approach but certainly many of the same aims of PPB, zero-base budgeting is that return.

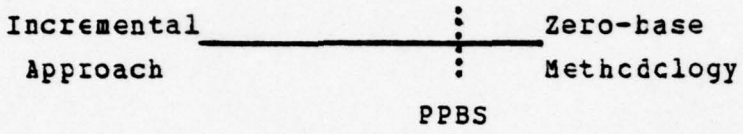
IV. ZERO-BASE BUDGETING

In the preceding chapters the author has dealt almost exclusively with the history of budget reform and more specifically with the products of the reform movement - line item budgeting, performance budgeting and Planning, Programming and Budgeting (PPB). The objective of the foregoing has been to identify the characteristics of each product and the political, social and economic reasons, underlying its success or failure. By so doing, perhaps the mistakes and environmental threats of the past can be avoided by the current attempts to implement zero-base budgeting.

Recognition, however, of the reasons for success or failure in past reform efforts is but half the key to successful implementation of zero-base budgeting in the federal sector. The other half will be the deliberate adaptation of new budget reform proposals to the existing environment. A necessary prerequisite for such action is an understanding of the latest reform proposal, zero-base budgeting, and its variations as reflected in private and state applications. By portraying zero-base budgeting as a systematic decision making model, this Chapter seeks to provide the necessary understanding and, in conceptual terms, to demonstrate the close resemblance of zero-base budgeting to PPB. The following Chapter will then examine a few of the more important private and state applications.

A. THE CONCEPT

Zero-base budgeting is best set in perspective by envisioning a spectrum of budget techniques. At one end is the incremental approach, that which is most commonly used today in state, local and private organizations.



At the opposite end of this spectrum lies the Zero-base methodology, increasingly being adopted by state and federal agencies as well as in the private sector. PPBS, persistently groping for a higher degree of comprehensiveness, lies close to the zero-base methodology.

Instead of concentrating on additions or deletions to the existing budget as in the incremental case, zero-base budgeting refers to a highly structured and systematic justification of all expenditures, current as well as proposed. Zero-base budgeting is structured in the sense that relevant information is deliberately channeled to the decision maker and is systematic in the sense that for each expenditure, objectives are specified, alternatives designed, costs and benefits identified, assumptions questioned and new alternatives and objectives considered. As a structured and systematic technique, zero-base budgeting concentrates on the contribution toward an activity's objectives derived from each initial and each additional unit of expenditure, doing so through a series of marginal analyses.

All of the above is accomplished in three basic steps - first, identifying decision units, secondly, developing a number of alternatives called decision packages and thirdly,

ranking those decision packages. A decision unit is in effect an economic representation of a discrete operation that can be either eliminated, reduced, allowed to remain as is or be expanded. Each of these options is supported by a decision package, i.e., an economic analysis of each option's impact on the organization. By ranking these decision packages, the activity develops a plan for optimum resource allocation within a given fiscal constraint. Each of these steps will be examined more closely in the text that follows.

E. THE PROCESS

Perhaps the first and most important step in developing a zero-base budget is identifying the objectives against which costs and benefits of various alternatives are to be measured. Albeit the most important, it is unfortunately the most overlooked aspect of government management today. By forcing lower levels of management to specify their goals in quantitative, output terms and to describe the contribution of such output to organizational goals, zero-base budgeting calls attention to the need for adequate planning and simultaneously provides the technical basis on which such planning can be developed. It does so by describing existing production functions (the ways in which capital and labor, or other factors, are converted to output) and facilitates a complete understanding of the limitations under which such production functions operate. Zero-base budgeting can be considered not only a tool of sub-optimization (by telling one how best to achieve a desired result, as will be explained later) but also of total optimization (by providing a rational basis on which to eliminate, reduce or expand a given goal).[46] In this respect, zero-base budgeting closely resembles the circularity of systematic analysis[47] i.e., specification

of objectives, statement of alternatives, identification and comparison of costs and benefits, questioning of assumptions and objectives and repetition of the process until the optimum solution is found.

Assuming that an adequate planning process has evolved from which objectives and planning assumptions are promulgated, lower management levels begin the process of identifying alternative means of achieving those objectives. Toward this end, management's next step, and perhaps the most difficult one, is to separate all of its operations into discrete decision units. Such decision units may be programs, organizations, activities, functions or any entity having an output and over which management has discretion. When documented, the decision unit becomes an economic representation of a discrete operation susceptible to manipulation by management. The decision unit is identified, and its documentation ideally prepared at the lowest levels of management for the purpose of providing to higher levels a series of economic analyses reflecting each unit's (current as well as proposed) contributions to organizational objectives at various levels of expenditure.

Once discrete decision units have been identified, the manager must consider and document alternative means and levels for accomplishing that discrete unit's mission. Each documented alternative is a decision package and certains the following information -

1. Objective
2. Description
3. Alternative means
4. Costs
5. Benefits
6. Measures of performance

7. Impact of not performing

Each of these, a common element in most economic analyses, is illustrated by the sample decision packages in Figures (5), (6) and (7), which taken together comprise a decision unit. It is this consideration of documented decision package alternatives, ideally at the lowest management levels, that is the key to zero-base budgeting and also the characteristic that differentiates it from other budgetary techniques. The basic goal is to provide higher levels of management with a substantial number of choices and the necessary information with which to make these choices. To do this, the decision unit's manager must examine two basic types of alternatives -

first, different means of achieving the decision unit's objective, and

second, different levels of effort for that objective.

The first type of alternative requires the manager to consciously construct what might be considered a production function for a given objective. Such a function is in essence a representation of how differing resources (capital, labor, contract support, etc) can be combined to produce a desired level of output or objective. In zero-base budgeting, management picks the least costly combination (while documenting the others) for a given objective as the basis for consideration of the second set of alternatives, namely multiple levels of effort.

Faced with limited resources, consideration of only one level of effort presents higher management with restricted options, that is, either eliminating the function or funding it at the requested level. Zero-base budgeting recognizes

F. Y. 1978

ZERO-BASE BUDGET REQUEST

DECISION PACKAGE – MINIMUM OBJECTIVE LEVEL

OPB - Budget - 30

BANKING (Department) | Examination (Activity) | Field Audits (Program)

Describe the Program in terms of its Major Objective

To examine every State Chartered Bank and Thrift Institution in Georgia on an annual basis and to investigate promptly all requests for establishing new institutions.

Describe the Program in terms of the Current Objective in F. Y. 1977

To examine 95% of all Banks and 100% of all Thrift Institutions during F. Y. 1977 and to average two weeks investigation time for new or expanded Banks or Thrift Institutions.

Explain the Minimum Level Limited Objective this Package provides

To examine 90% of all Banks and 84% of all Thrift Institutions during F. Y. 1978 and to average four weeks investigating time per request for new or expanded Banks or Thrift Institutions. Ten Examiners and four Secretaries will be employed.

Explain the service now provided that this Minimum Objective Level excludes

5% of the State Chartered Banks and 15% of the Thrift Institutions examined in F. Y. 1977 will not be examined in F. Y. 1978. New Banks and Thrift Institutions will be investigated over a four-week period rather than two weeks. Delete 2 Bank Examiners and related operating expenses.

Program Workload Evaluation Measures (Effectiveness and Efficiency)	F. Y. 1977 Current Objective	F. Y. 1978 Minimum Object.
% of Banks examined	95%	90%
% of Thrift Institutions examined	100%	84%
Average time to investigate new institutions	2 weeks	4 weeks
Average cost per Bank examination	$2,745	$2,890
Average cost per Thrift Institution examination	$348	$362
Average cost per new institution	$600	$550

Package Name: Field Audits — Package 1 of 3

Prepared By: John Doe — Activity Rank 4

Positions This Package 14

	Program F. Y. 77	This Pkg. F. Y. 78	Cum. Amount
A. TOTAL PERSONAL SERVICES	196,912	165,712	
1. M. V. Expenses and Repairs	2,900	2,300	
2. Supplies and Materials	3,900	3,300	
3. Repairs and Maintenance	500	500	
4. Communications	16,000	14,000	
5. Power, Water, Natural Gas	2,406	2,406	
6. Rents	12,916	13,208	
7. Insurance and Bonding			
8. Workmen's Comp. and Indemn.			
9. Direct Benefits			
10. Tuition and Scholarships			
11. Grants to Counties or Cities			
12. Assessments by Merit System	864	756	
13. Other Operating Expenses	1,000	750	
14. Extraordinary Expenses			
B. REG. OPER. EXP. (Add 1-14)	40,486	37,220	
C. TRAVEL	26,912	20,880	
D. MOTOR VEH. EQUIP. PURCH.	10,962	4,880	
E. PUBLICATIONS AND PRINTING	9,450	8,800	
F. EQUIPMENT PURCHASES	5,000	4,000	
G. PER DIEM AND FEES	2,000	2,000	
H. COMPUTER CHARGES	18,500	16,400	
I. OTHER CONTRACT. EXP.	1,600	1,600	
J. AUTHORITY LEASE RENTALS			
K. GENERAL OBLIGATION BONDS			
L. CAPITAL OUTLAY			
M. LIST OTHER OBJECTS:			
TOTAL EXPEND. (Add A - M)	311,822	261,492	
FEDERAL FUNDS	16,000	16,000	
OTHER FUNDS	4,000	4,000	
STATE GENERAL FUNDS	291,822	241,492	

Figure 5 - DECISION PACKAGE - MINIMUM OBJECTIVE LEVEL

F. Y. 1978

ZERO-BASE BUDGET REQUEST
DECISION PACKAGE – CURRENT OBJECTIVE LEVEL

OPB - Budget - 31

BANKING (Department) — Examination (Activity) — Field Audits (Program)

Describe the Program in terms of its Major Objective

To examine every State Chartered Bank and Thrift Institution in Georgia on an annual basis and to investigate promptly all requests for establishing new institutions.

Describe the Program in terms of the Current Objective in F. Y. 1977

To examine 95% of all Banks and 100% of all Thrift Institutions during F. Y. 1977 and to average two weeks investigation time for new or expanded Banks or Thrift Institutions.

Explain any cost change in the Current Level over the Minimum Level

Add 2 Financial Examiner I's and related operating expenses to find the Current Objective Level not including workload of additional Banks and Thrift Institutions described below.

Explain any Workload change in the Current Level over F. Y. 1977

Four new Banks and one new Thrift Institution were created in the State during F. Y. 1977. In order to maintain examination of 95% of the Banks and 100% of the Thrift Institutions, 1 new Financial Examiner I and 1 new Clerk-Typist I and related operating expenses are requested to maintain the Current Objective.

Program Workload Evaluation Measures (Effectiveness and Efficiency)	F. Y. 1977 Current Objective	F. Y. 1978 Current Objective
% of Banks examined	95%	95%
% of Thrift Institutions examined	100%	100%
Average time to investigate new institutions	2 weeks	2 weeks
Average cost per Bank examination	$2,745	$2,910
Average cost per Thrift Institution examination	$348	$376
Average cost per new institution	$600	$620

Package Name: Field Audits — Package 2 of 3

Prepared By: John Doe — Activity Rank 7

Positions This Package 4 **	Program F. Y. 77	This Pkg. F.Y. 78	Cum. Amount
A. TOTAL PERSONAL SERVICES	196,912	72,000	237,712
1. M. V. Expenses and Repairs	2,900	800	3,100
2. Supplies and Materials	3,900	1,300	4,600
3. Repairs and Maintenance	500		500
4. Communications	16,000	3,000	17,000
5. Power, Water, Natural Gas	2,406	594	3,000
6. Rents *	12,916	1,292	14,500
7. Insurance and Bonding			
8. Workmen's Comp. and Indemn.			
9. Direct Benefits			
10. Tuition and Scholarships			
11. Grants to Counties or Cities			
12. Assessments by Merit System	864	216	972
13. Other Operating Expenses	1,000	250	1,000
14. Extraordinary Expenses			
B. REG. OPER. EXP. (Add 1-14)	40,486	7,452	44,672
C. TRAVEL	26,912	7,120	28,000
D. MOTOR VEH. EQUIP. PURCH. *	10,962		4,880
E. PUBLICATIONS AND PRINTING	9,450	200	9,000
F. EQUIPMENT PURCHASES *	5,000		4,000
G. PER DIEM AND FEES *	2,000		2,000
H. COMPUTER CHARGES *	18,500	3,000	19,400
I. OTHER CONTRACT. EXP. *	1,600		1,600
J. AUTHORITY LEASE RENTALS			
K. GENERAL OBLIGATION BONDS			
L. CAPITAL OUTLAY			
M. LIST OTHER OBJECTS:			
TOTAL EXPEND. (Add A - M)	311,822	89,772	351,264
FEDERAL FUNDS **	16,000		16,000
OTHER FUNDS **	4,000		4,000
STATE GENERAL FUNDS	291,822	89,772	331,264

*Attach detailed schedule for F. Y. 1978 Current Objective Level (Including Minimum Objective Level) funds requested.
**Detailed schedule for the Current Objective Level is to be developed at the Activity Level.

Figure 6 - DECISION PACKAGE - CURRENT OBJECTIVE LEVEL

F. Y. 1978

ZERO-BASE BUDGET REQUEST
DECISION PACKAGE – IMPROVEMENT OBJECTIVE LEVEL

OPB - Budget - 32

BANKING (Department) | Examination (Activity) | Field Audits (Program)

Describe the Program in terms of its Major Objective

To examine every State Chartered Bank and Thrift Institution in Georgia on an annual basis and to investigate promptly all requests for establishing new institutions.

Describe the Program in terms of the Current Objective in F. Y. 1977

To examine 95% of all Banks and 100% of all Thrift Institutions during F. Y. 1977 and to average two weeks investigation time for new or expanded Banks or Thrift Institutions.

Explain the Improvement Level Limited Objective this package provides

To examine 98% of all Banks and 100% of all Thrift Institutions during F. Y. 1978 and to average one week investigation time for new or expanded Banks or Thrift Institutions.

Explain this Package in terms of cost

To examine an additional 3% of the Banks will require 2 new Financial Examiner I's and related operating expenses.

Program Workload Evaluation Measures (Effectiveness and Efficiency)	F. Y. 1977 Current Objective	F. Y. 1978 Improve. Obj.
% of Banks examined	95%	98%
% of Thrift Institutions examined	100%	100%
Average time to investigate new institutions	2 weeks	2 weeks
Average cost per Bank examination	$2,745	$2,900
Average cost per Thrift Institution examination	$348	$372
Average cost per new institution	$600	$620

Package Name: Field Audits Package 3 of 3

Prepared By: John Doe Activity Rank 10

Positions This Package 2

	Program F. Y. 77	This Pkg. F. Y. 78	Cum. Amount
A. TOTAL PERSONAL SERVICES *	196,912	24,499	262,211
1. M. V. Expenses and Repairs	2,900	300	3,400
2. Supplies and Materials	3,900	400	5,000
3. Repairs and Maintenance	500		500
4. Communications	16,000	800	17,800
5. Power, Water, Natural Gas	2,406		3,000
6. Rents *	12,916	150	14,650
7. Insurance and Bonding			
8. Workmen's Comp. and Indemn.			
9. Direct Benefits			
10. Tuition and Scholarships			
11. Grants to Counties or Cities			
12. Assessments by Merit System	864	108	1,080
13. Other Operating Expenses	1,000		1,000
14. Extraordinary Expenses			
B. REG. OPER. EXP. (Add 1-14)	40,486	1,758	46,430
C. TRAVEL	26,912	3,600	31,600
D. MOTOR VEH. EQUIP. PURCH.*	10,962		4,880
E. PUBLICATIONS AND PRINTING	9,450	500	9,500
F. EQUIPMENT PURCHASES *	5,000	900	4,900
G. PER DIEM AND FEES *	2,000		2,000
H. COMPUTER CHARGES *	18,500		19,400
I. OTHER CONTRACT. EXP. *	1,600		1,600
J. AUTHORITY LEASE RENTALS			
K. GENERAL OBLIGATION BONDS			
L. CAPITAL OUTLAY *		2,000	2,000
M. LIST OTHER OBJECTS:			
TOTAL EXPEND. (Add A-M)	311,822	33,257	384,521
FEDERAL FUNDS *	16,000		16,000
OTHER FUNDS *	4,000		4,000
STATE GENERAL FUNDS	291,822	33,257	364,521

*Attach detailed schedule for F. Y. 1978 Improvement funds requested in this package.

Figure 7 - DECISION PACKAGE - IMPROVEMENT OBJECTIVE LEVEL

the marginal nature of most service and support activities by explicitly identifying alternative levels of performance for each decision unit objective. It is not so much a question of either Unit A or Unit B but rather how much more of A at the expense of B (or vice versa). To this end, zero-base budgeting requires that decision units be subdivided into incremental levels of effort, i.e., decision packages. That is to say, Unit A includes a separate evaluation/package for a minimum level of effort (below which it is not feasible or realistic to operate) including a statement of the consequences of not performing at all, a current level of effort and an enhanced level of effort. By so doing management at all levels of the organization can view each increment of effort as a separate requirement for resources competing with all other activity increments. From a macro point of view, such individual increments become the means of accomplishing organizational objectives, i.e., the factors to be optimized in the total production function for the organization.

The advantage of having documented alternative performance levels becomes particularly apparent when looking at the costs and benefits associated with each level. Zero-base budgeting requires that not only all costs and benefits (stated as dollar savings or output) be identified for each decision package but that such costs and benefits be portrayed in marginal terms, i.e., arising from each additional increment of expenditure. The question now can be stated as not "how much more of A at the expense of B?" but rather by comparing marginal costs and benefits, "should an increment of A be added?" and "does an increment of A contribute more to the activity's objectives than an increment of B?." The choice might be relatively simple if all benefits were stated in commensurable terms. The fact that they are not however, does not negate the need for systematic analysis. It in fact increases the need to systematically present the decision maker with choices upon

which his experience and judgement can be brought to bear. This becomes most apparent in the process of ranking decision packages.

C. RANKING THE ALTERNATIVES

At this point in the zero-base budgeting process, managers at the lowest appropriate organizational level have identified in discrete terms all those activities that may be performed to achieve the assigned objectives. Such activities have been documented in terms of the best (and alternative) means of accomplishing the objective and alternative levels of performance, including marginal costs and benefits associated with each level. Each documented level of performance becomes susceptible to ranking by the decision maker, beginning at the lowest levels of the organization with successive consolidation and ranking at each higher level. For example, visualize that during the first stage of zero-base budgeting, Cost Center A of a government agency developed the alternative performance levels portrayed in Figures (5), (6) and (7). Visualize also for example that two other Cost Centers, B and C, also developed similar decision packages. The array of alternatives at conclusion of this stage might appear as follows -

Cost Center Decision packages	Priority
Cost Center A:	
DP A1 Minimum Level	1
DP A2 Current Level	2
DP A3 Enhanced Level	3
Cost Center B:	
DP B1 Minimum Level	1
DP B2 Current Level	2
DP B3 Enhanced Level	3
Cost Center C:	
DP C1 Minimum Level	1
DP C2 Current Level	2
DP C3 Enhanced Level	3

After ranking at the next higher level of management, the array of alternatives might appear as the following prioritized list -

Priority	Cost Center Decision Packages
1	DP A1 Minimum Level
2	DP C1 Minimum Level
3	DP A2 Current Level
4	DP C2 Current Level
5	DP C3 Enhanced Level
6	DP B1 Minimum Level
7	DP B2 Current Level
8	DP A3 Enhanced Level
9	DP B3 Enhanced Level

In prioritizing each potential resource allocation, the decision maker (in this case a division head) must start with the marginal contribution that each alternative makes toward accomplishing the division's objectives. Unfortunately the contributions arising from each alternative are not all stated in dollar terms, particularly in the public sector where such contributions may be quantities of services provided or some other form of output. Such noncommensurability makes the prioritization process more difficult and requires that maximum use be made of management's background skills and judgement. The ranking process outlined above is repeated at each higher level of the organization through consolidation and revision of rankings submitted by subordinate levels. The final result, a prioritized listing of performance alternatives for the entire organization, represents a plan for optimal allocation of resources in whatever amount appropriated. It is optimal in the sense that for each added increment of resources, an alternative with the greatest marginal benefit is to be funded.

As may be readily concluded from the above, considerable managerial resources would be required to rank each alternative level of effort particularly when considering the size of most federal agencies as well as the total federal budget. Techniques have been developed to reduce this drain on managerial talent.[48] For example:

> -the manager is not so much concerned with comparing the priority of package 14 with package 15, but is concerned more with the relative contributions of packages 4 and 5 as opposed to packages 20 and 21, or

> -a cut-off level is established at each organizational level with ranking of only those alternatives below that level being accomplished. So as to limit the number of packages being ranked at each higher level, the cut-off is increased correspondingly.

A further alternative might be the application of linear programming techniques as described in the following paragraph.

In those cases where costs and benefits of an added increment of effort can be stated in dollar terms, there is little difficulty in judging the contribution made. When the benefits to be gained are not stated in dollar terms, the value relative to the dollar benefits of other alternatives is very difficult to judge. When comparing a myriad of noncommensurable alternatives, the difficulties can well be appreciated. However, if the relative preferences of management at the agency level could be expressed by weighting one type of benefit in terms of another, an objective function for that agency might be constructed during the planning process.[49] Such a scheme might be based on the relative weights given to programs, functions or activities in previous budgets. Ideally, through linear programming techniques, such an objective function could be maximized by optimally ranking various combinations of weighted performance level contributions subject to various resource (dollar and people) and/or administrative (travel, public v. private maintenance, etc.) constraints. Such an approach if developed further might substantially reduce the expenditure of austere management resources on the mechanics of ranking and instead allow greater management emphasis on the review and unavoidable adjustment of computer produced rankings. This process would also assure the manager that consistent criteria had been applied to all alternative choices. The last but not least benefit of such an approach would be the creation of a decision model wherein the impact of changing preferences and constraints on resource allocation could be quickly evaluated. While the benefits from such an approach appear substantial, all the advantages of zero-base budgeting would be lost if management relinquishes its responsibility to

review and override the computer's ranking when necessary. Obviously the approach outlined above greatly over simplifies the problem of noncommensurables as well as many others including, for example, the interdependencies of federal programs. It nevertheless offers considerable potential for enhancing the zero-base budgeting process.

D. COMPARISON OF PPB WITH ZERO-BASE BUDGETING

Prior to concluding this chapter, a very brief comparison of zero-base budgeting with the Planning, Programming and Budgeting System may be worthwhile. In theory, PPBS closely resembles zero-base budgeting. Both are designed to accomplish the same goal, i.e., to facilitate optimal allocation of resources by the use of systematic analysis in the resource allocation process. In practice there are some distinct differences. First, in PPBS the systematic development and examination of alternatives occurs predominantly at top levels of management with lower echelons completing the many and various budget back-up displays to support top management's decisions. Although top management has made its basic planning and program decisions, there are still many policy choices and alternatives that need to be considered in budget preparation and execution. Zero-base budgeting recognizes that those best able to initially develop and analyze these choices and alternatives are at the lower organizational levels. Through its decision packages and ranking process, zero-base budgeting provides a systematic bottom-up analysis and arrangement of choices based on the top-down planning decisions.

Secondly, PPBS has focused analytical effort on specific issues. Zero-base budgeting would require, in its decision packages, analysis of all expenditures. Although in theory designed to be as comprehensive as zero-base budgeting, PPBS

has never attained this objective due to a lack of analytical resources, including personnel and the necessary information base. Zero-base budgeting provides a solution to this problem by, first, giving lower levels of management a primary role in the analytical effort (thus increasing the number of "players") and secondly, by means of its decision packages, increasing the quantity and quality of information.

Thirdly, PPBS does not provide for an explicit ranking of alternatives or levels of effort. As a consequence, the manager is unable to assure himself that resources have been or are being optimally allocated. For example, it is not uncommon for an agency to absorb a percentage reduction in its funds by applying that percentage as a horizontal reduction to all activities performed. Zero-base budgeting, by means of its priority ranked listings of alternative performance levels, allows the manager to select those levels of performance considered the least important for elimination/reduction. Resource allocation therefore becomes an act of deliberate choice vice a budget-balancing drill.

E. CONCLUSION

This chapter has attempted to portray zero-base budgeting not in terms of the mechanics by which it is accomplished but as a systematic decision making model. In effect it extends systematic analysis beyond the planning and programming phases to the budget preparation process and in so doing complements, in fact enhances, the existing PPBS approach. While this chapter has perhaps somewhat over simplified the mechanics and problems inherent to zero-base budgeting, its purpose will have been fulfilled if the reader more fully recognizes the potential of zero-base budgeting for better public sector resource allocation.

V. APPLICATIONS OF ZERO-BASE BUDGETING

A. INTRODUCTION

Zero-base budgeting, as defined and modelled in the preceding Chapter, was first used on an experimental basis in 1969 by Texas Instruments Inc. to evaluate the operating expenses of certain staff and research divisions. Considered a success, the new methodology was applied to all divisions of Texas Instruments in the fall of 1970 and is still in use today. From the Texas Instruments experience, the zero-base budgeting concept was to expand not only to other firms of the private sector but also to state government.

Following his election in November 1970 as Governor of Georgia, Jimmy Carter was to be frustrated in his search for comprehensive information about the costs and benefits of state programs. While searching for a more informative resource allocation process, Governor Carter was to read of the Texas Instruments' methodology, and shortly thereafter announce implementation of the same for development of Georgia's FY 1973 budget. From Georgia zero-base budgeting was to be adopted by eleven (as of August 1976) other states and eventually, with Carter's election in November 1976 to the U. S. Presidency, by the federal bureaucracy.

Today zero-base budgeting has become part of the planning and control procedures of a wide variety of commercial and governmental institutions. In adapting to these organizations, varying approaches to zero-base budgeting have evolved. Typical of these varying approaches are the innovations described in the following paragraphs.

The purpcse of this Chapter is not to provide an exhaustive listing cf options but instead to describe, through brief case examples, methods of implementation, particularly innovative techniques and some of the lesscns learned in fairly successful commercial and governmental applications.

B. PRIVATE SECTOR APPLICATICNS

In the fcllowing paragraphs, the authcr will briefly examine the various zero-base budgeting methodologies used in a few cf the companies that have implemented the prccess. Picked cn the basis cf their diversity, it is the author's intent tc illustrate varying approaches tc implementation, definitien and use of decision units and packages and varying ranking methodclogies that have prcven successful. The basic concepts in use at any of the companies tc be examined, however, closely resemble the model defined in the previous Chapter. Consequently in what fcllows, cnly the unique variations to that model will be illustrated.

1. Zero-base Budgeting at Texas Instruments Inc.

From an implementatien standpcint, zerc-base budgeting in Texas Instruments Inc. (TI) did not cccur overnight as one is led to believe by the existing literature. Instead implementation at TI was a gradual process cf ccnceptual development dating back to 1962.[50] In fact most of the elements of the prccess - decision units, packages and ranking - were developed as part cf TI's Objectives, Strategies and Tactics (OST) system. Under that system, the need arose for evaluating and trading cff strategic expenses, that is prcposed projects for research and product/process development projects. Tc satisfy this need, the use of decision packages was begun in 1966. Along with the use of decision packages came reccgnition cf the need for prioritizing and ranking and ccnsequently the

appearance of criteria and methcdology fcr that rarking. Systematic ranking, first acccmplished by TI's Equipment Group in planning for 1967 and 1968, was further refined and used across TI in planning for 1969. It was not until 1969 that TI's Chairman of the Board and President both expressed the need fcr a means of trading off operating expenses against strategic expenses. With such impetus, zerc-base budgeting as known today was born. The most impcrtant aspect of the foregoing is reccgnition of the fact that zero-base budgeting did nct "just happen" at TI. Ir many respects the development of zero-base budgeting in TI was nct too different from development of PPBS in the Department cf Defense. Both were designed to facilitate trade-cff analysis and both were designed internally to meet management's needs vice being imposed from external sources.

The zero-base budgeting methodclogy developed by TI ccnsists cf four basic steps.

-First, setting preliminary expense targets for the period being budgeted.

-Second, defining and developing "decision packages."

-Third, selecting thrcugh ranking, cost-benefit and trade-off analysis the mcst desirable packages.

-Fcurth, setting the budget as the sum of those "decision packages" approved.

With regard tc the first of these, TI has found that the setting of preliminary expense targets serves tc make the entire prccess more efficient. Although reminiscert of Lewis' ccmments relative to deciding the merits of the case

before the evidence is in, these preliminary expense targets serve some very practical purposes. The targets, products of business models using such factors as projected net sales and gross profit margins, focus decision package development efforts within the boundaries of expected funding. Serving as a guideline, not a firm ceiling, these targets have served to eliminate the expenditure of time and effort in developing packages which have a very low probability of being funded. Additionally the use of targets mitigate against the development of "shopping lists" and forces hard decisions from the very beginning of the process.

With respect to the second step indicated above, defining and developing decision packages, TI has developed not one but four approaches. Prior to examination of these four approaches it is important to recognize that in TI, zero-base budgeting is applied to service and support areas. It is not applied to those manufacturing operations which are volume dependent, volatile operation and where fixed/variable budgeting methodologies are more appropriate. Within the service and support area, operating expenses are analyzed according to four techniques depending on the type of expense. The first of these techniques, the Operating Decision Package (ODP), is much like that defined in the previous Chapter. In TI, it is used to depict in analytical terms specific task activities including projects and programs which are to be operated at a discrete level for a specific period to achieve a specific goal. An example of an Operating Decision Package[51] is provided in Figure (8). The second technique, depicted in Figure (9), is the Level of Effort (LOE) technique. It is similar in concept to the Operating Decision Package but is applied in those service and support areas where operations are more routine and are either operationally or legally required to support an on-going business. Examples in which the LOE technique is useful include payroll, legal services, maintenance, security and purchasing. The LOE technique can be

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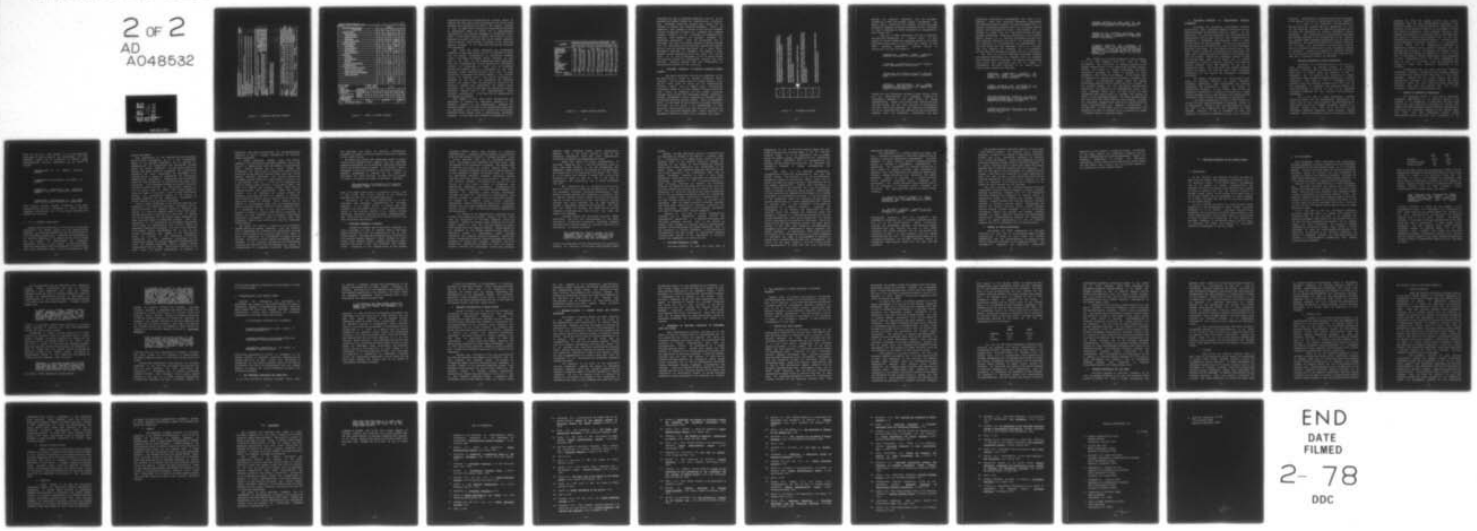

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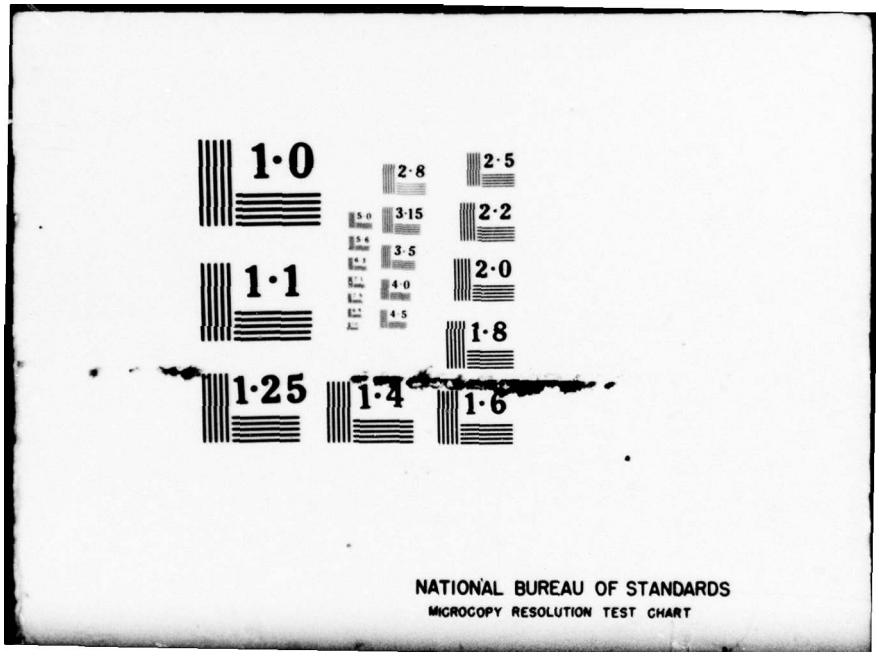
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NATIONAL BUREAU OF STANDARDS
MICROCOPY RESOLUTION TEST CHART

OPERATING DECISION PACKAGE ($000) TI-14321C

PACKAGE NAME: Product X Planning (1 of 3) — RANKING 10

PROGRAM AND GOALS:

Provide minimum level of planning effort for 5 million units of product X.
Maintain updated production and shipping schedules for two weeks in advance (currently maintaining schedules four weeks in advance).
Provide finished goods inventory level reports daily and in process inventory reports every other day (currently being done daily).
Maintain perpetual inventory system (computerized) on raw material to maintain a two weeks supply on hand and a two weeks supply on order.

IMPROVEMENTS: Reduce overtime and clerical effort due to perpetual inventory system. Replace professional with clerk.

BENEFITS: Activity required for minimum maintenance of planning function to deliver products on schedule.

CONSEQUENCES: Elimination of planners would force line foremen to do their own planning (zero incremental cost for foremen); but excessive inventories, inefficient production runs, and delayed shipments would result in excessive sales loss.

TRENDS	1971	1972	1973	
$M NSB/planner	1.2	1.3	1.6	
Avg Inv/M NSB	10%	12%	11%	
Pkg cost/NSB	2.1%	2.0%	1.8%	
Pkg cost/GPM	5.1%	8.0%	7.9%	

ALTERNATIVES:

- Combine production planning for departments X, Y, and Z.
- Package 2 of 3 ($15,000): add back long range planner.
- Package 3 of 3 ($15,000): add operations research analyst.

RESOURCES	1971 TOTAL	1972 TOTAL	4Q72 ANNUAL	1973 TOTAL	1Q	2Q	3Q	4Q
GROSS	60							
NET ($000)	50	40	44	45	11	11	11	12
EXEMPT	4	2	2	2	2	2	2	2
NONEXEMPT	1	2	2	2	2	2	2	2

ASSUMPTIONS/MILESTONES:
1. Product X NUB at 5 million 10% below 1972 projected level
2. X, Y and Z product mix will be essential same as 1972.
3. New products (Q and R) not released to production until 4th Qtr. 1973 and then only in sample quantities.

CC	ORGANIZATION	DIVISION	PREPARED BY	DATE/REV.
287	DTL Planning	Circuits	F. J. Boyles	

Figure 8 - OPERATING DECISION PACKAGE

LEVEL OF EFFORT ANALYSIS TP-81209

FUNCTION: PCC ABC Production Planning	LEVELS *				
ACTIVITY/TASK	1	2	3*	4	5
Compile Demand					
Customer Interface	F	D	[C]	C	B
International Inputs	C	B	B	B	A
Dallas Inputs	C	C	C	C	B
Derive Stocking Levels	D	D	D	[C]	B
Operating Planning					
Line Balancing	D	C	C	[B]	A
Demand Balancing	D	C	[B]	A	A
Work Scheduling	F	D	[C]	C	B
Photomask Operations	F	D	C	[C]	B
Forecasting					
Bar Billings	F	F	D	D	C
Mask Requirements	D	D	D	C	B
Materials	D	C	C	C	C
Excess Bar Inventory Control	F	C	[B]	A	A
Long Range Planning					
Capacity & Equipment Planning	F	D	D	C	C
Capital Investment Planning	F	F	F	D	C
Market Projections & Interpretations	F	F	D	D	C
Systems Development	D	D	D	C	C
			↑		
			Current		
			Level		

QUALITY LEGEND		197 2 TOTAL	4Q 72 ANNUAL	197 3				
A = EXCELLENT B = GOOD C = SATISFACTORY D = LESS THAN SATISFACTORY F = INSUFFICIENT	CUM. GR $K							
	CUM. NET $K	74	76	25	53	78*	103	128
* INDICATE CURRENT LEVEL	CUM. EX	3	3	1	2	3	4	5
USE [ ] TO INDICATE MOST IMPORTANT CHANGE IN LEVEL OF EFFORT.	CUM. NX	3	3	1	2	3	4	5

C.C.	ORGANIZATION	DIVISION	PREPARED BY	DATE/REV.
300	ABC Production Planning	Devices		

Figure 9 - LEVEL OF EFFORT ANALYSIS

effectively applied by categorizing the efforts within an expense area into broad tasks and functions and within which detailed work activities are listed. The quality achieved in each of these work activities is subjectively projected at alternative levels of effort and is quantitatively represented by the resources necessary to attain each level. Level 1 is the lowest level of effort, below which it is not feasible to operate, and level five is the highest realistic level of effort. While similar in concept to the Operating Decision Package, it is much less detailed and certainly more subjective.

The third and fourth techniques are conceptually different in that they involve more of a validation of costs vice an explicit consideration of alternative spending levels. The third, the Expense Matrix Analysis, is best used at any level of the organization where subordinate units use a consistent set of cost elements and performance indices. As illustrated in Figure (10), by comparing various cost elements (say as a percentage of net sales billable) across suborganizational units with the same objectives, the manager can assure himself of the relative validity of budgeted costs. The fourth technique is a variation of the third. The techniques for analyzing service and support costs are certainly not limited to the foregoing. Perhaps most importantly, the reader should recognize that there are many ways of organizing "decision packages", limited only to the characteristics (goal oriented, routine,etc.) of the cost and the imagination of the responsible manager.

With regard to TI's third major process step, two techniques of ranking are identified depending on the manager's position in the organization. Packages are initially ranked at the level of the organization where they are developed, thus giving the process the motivational advantages which accrue from a participatory management approach. At this level the ranking is accomplished by the

% of NSB	Marketing A		Marketing B		Marketing C		Marketing D		Total	
	1971	1972	1971	1972	1971	1972	1971	1972	1971	1972
Manager Wages	15.9	10.2	–	–	19.5	20.0	–	–	10.8	8.7
Supervisor Wages	10.0	6.6	20.7	15.7	12.7	13.3	23.0	16.1	15.3	11.7
Support Wages	7.5	5.1	12.8	10.2	14.6	17.1	6.6	4.8	10.5	8.6
Rent	2.5	1.6	2.6	1.8	2.0	1.9	5.0	3.2	2.8	2.0
Telephone	5.9	4.1	3.9	2.8	2.9	3.8	5.0	3.2	4.4	3.6
Office	4.6	2.8	3.2	2.3	4.9	4.8	4.1	2.8	4.3	3.1
Travel	5.4	3.6	2.6	1.8	2.0	2.9	3.3	2.1	3.5	2.8
HLV	1.7	1.3	2.6	1.8	2.0	2.4	3.3	2.1	2.2	1.8
Courtesy	2.7	1.8	3.2	2.3	1.0	1.4	1.6	1.1	2.1	1.7
Employee Benefits	15.1	9.7	9.7	7.4	10.7	11.4	19.7	12.8	13.5	10.1
Other Benefits	1.5	1.0	3.9	3.2	4.5	4.8	21.0	1.6	3.0	2.4
Depreciation	0.2	0.2	0.8	0.7	0.2	0.2	0.3	0.2	0.3	0.3
Total % of NSB	73.0	48	66	50	77	84	47	50	72	56
NSB	119.6	196.3	77.4	108.7	102.4	105.0	60.8	93.4	360.2	502.9
Avg People – Exempt	2	2	1	1	2	2	1	1	6	6
Nonexempt	2	2	3	3	3	4	1	1	9	1

Figure 10 - EXPENSE MATRIX ANALYSIS

individual who has the necessary expertise to do so. As the packages move upward through the organizational hierarchy, this individual expertise becomes more scarce and is replaced by reliance upon committee judgement. Within the committee, each package is ranked on the basis of weighted criteria as depicted in Figure (11). Through this ranking process, initially by the individual and subsequently by committee, both operating and strategic expenses are separately prioritized. After the prioritized list is developed, the level of allowable funding is finally decided upon for both operating and strategic expense and separate cut-off lines are appropriately drawn. As a final check, management exercises its judgement with respect to those packages falling immediately above and below the cut-off lines. By so doing TI management is able to assure itself that priority ranking was accomplished properly and that obviously required packages were not intentionally or unintentionally given too low a priority.

2. Zero-base Budgeting at Southern California Edison Company

Zero-base Operational Planning and Budgeting, as the new methodology is called at Southern California Edison (SCE)[52], had its genesis from two related factors. First was the rising costs of energy and the simultaneously declining growth rate in energy sales. Particularly troublesome trends in a utility company, SCE had reached the point where, in preparing its 1974 budget, projected earnings would not meet the established company objectives. Through considerable effort expenses were reduced to meet arbitrarily specified spending limits. While top management review of the impact of such reductions provided visibility as to what was not going to be accomplished, no such visibility was available as to what was going to be done in 1974. Such conditions prompted SCE's Budget Director and Management Committee to search for a technique that would

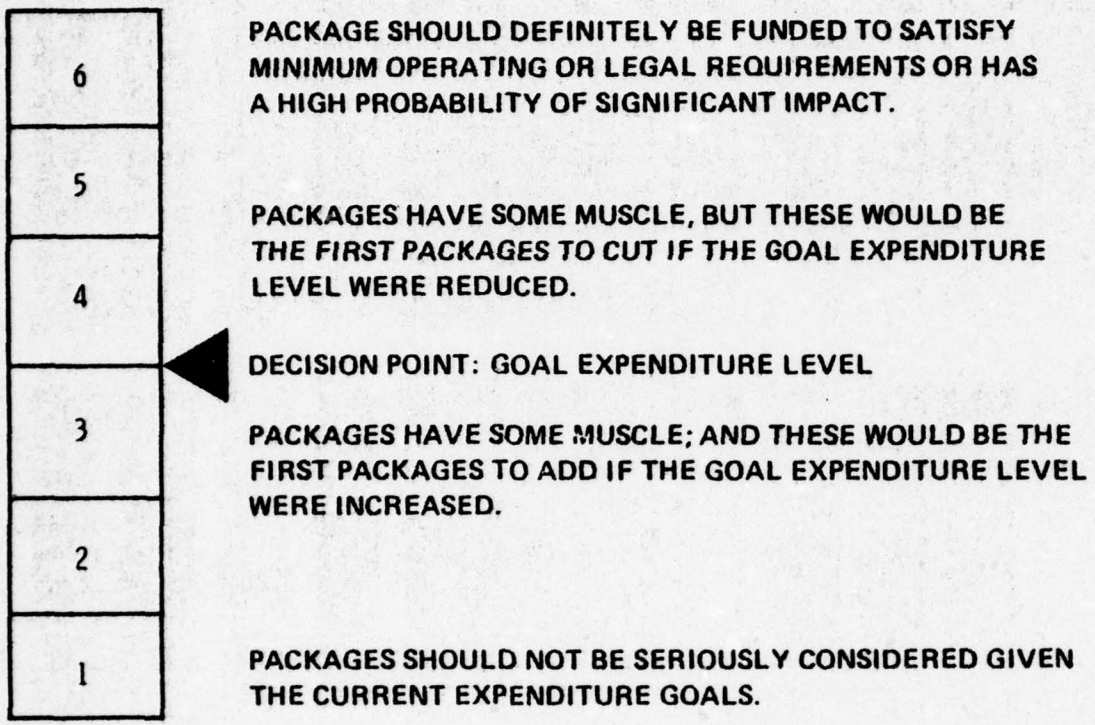

Figure 11 - WEIGHTING CRITERIA

provide the required visibility and the necessary flexibility to meet the changing energy environment. The second factor underlying the genesis of SCE's Zero-base Operational Planning and Budgeting system was the emergence of such a technique in Texas Instruments (as documented by Peter Pyhrr).[53]

Just as in Texas Instruments, SCE was to implement the zero-base methodology on a gradual basis. In this regard the entire process was completely tested in six staff departments while parts of the process were tested in the other remaining departments. Although limited in application, the test was useful in

- identifying factors which inhibited immediate acceptance by various managers.

- providing an opportunity to "sell" managers on the usefulness of the concept.

- converting the "numbers oriented", clerical budget process to a line oriented management tool.

- shifting responsibility for budget reductions from the staff to the responsible managers who were best able to assess the impact of such reductions.

Perhaps the most significant outcome of these initial tests was the identification and consequent devotion of considerable energies to the human factors of system implementation. During the initial test, indications were that the process had not been tailored to management's peculiar styles and interests, that training was inadequate but of key importance and that instructions and illustrative examples were not sufficient. Furthermore, and most

importantly, considerable "salesmanship" was found to be required. Faced with additional information requirements and associated efforts, middle and lower management were to require considerable persuasion that the new process offered benefits that outweighed the costs. Such benefits were to include an escape from the traditional across the board spending reductions, a chance to participate in the decision making process and an explicit performance contract with one's superior concerning the work to be accomplished and the resources to be provided for its accomplishment. Not only must middle and lower management levels be convinced that such benefits are available, but top management's actions must also demonstrate support and use of the system.

For 1975 and 1976 the Zero-base Operational Planning and Budgeting methodology was expanded with new managers being brought under the process. The lessons learned during this period were significant and can be useful in implementing zero-base budgeting in the federal sector. These lessons include the following:

-Zero-base Operational Planning and Budgeting's success was determined by the extent to which considered useful and rewarding to middle managers.

-Budget guidance was determined to be insufficient in terms of the mechanics and excessive in terms of the philosophy.

-The most significant benefits and use of SCE's methodology was at the lower and middle management levels where it could serve as a working guide throughout the year.

-Packages prepared in 1975 could be re-used during 1976 thereby significantly reducing the 1976 effort.

-Because benefits in many cases are not quantifiable, judgements pertaining to them should be accompanied by a risk assessment.

-Because of the increased visibility, many current as well as proposed packages were scaled down before submission to reviewing levels of management.

-Guidance encouraged the submission of increased level of effort proposals if substantial cost savings or benefits could be demonstrated. Most of these, which would have never been submitted under the old system, were approved under the current methodology.

With respect to the actual mechanics of SCE's process, it is not much different from that used by Texas Instruments. The definition of decision packages in SCE closely resembles that of TI's Operational Decision Package. However, with regard to ranking procedures, SCE uses a technique to minimize the number of packages to which management must devote its attention. At the lowest level of budgeting, the manager ranks all decision packages just as before. At subsequently higher levels the manager establishes arbitrary cut-off levels, say sixty percent of the upcoming budget, for that particular organizational subdivision. For example at the Departmental level, only those packages ranked below the 60% cut-off by each subordinate cost center would be reviewed and ranked in detail by the department manager. For those packages which the cost center had ranked above the sixty percent cut-off, the department manager would give only a cursory review to ensure appropriateness and adequate consideration of alternatives. At each higher level of the organization, the percentage cut-off is increased so as to minimize the number of packages subject to detailed review.

3. Zero-base Budgeting at Westinghouse Electric Corporation

In concept and philosophy, Westinghouse Electric Corporation's (WEC) application differs little from that of Texas Instruments and Southern California Edison. In its application of zero-base budgeting, Zero Base Planning and Budgeting[54], WEC has made explicit three considerations in determining a meaningful organizational level at which decision units are best developed. The first is the size of the operational and organizational level at which meaningful decisions can be made. In this respect decision units that might include fractions of people are too small since one cannot make a trade-off decision involving, for example, one tenth of a person. Neither can a decision, however, be made on an entire legal staff of 50 people who, in various subcomponents, provide different services. As a means of defining decision units, WEC suggests the use of an organization chart. The lowest level cost centers indicated thereon are perhaps the starting point since originally established for the control and management of specific activities.

The second consideration set forth by WEC is the degree of discretion available in making decisions. Government regulations, legal requirements and existing commitments may significantly reduce the number of alternatives available. If, as a result, there is only one "mandatory" alternative, it should be reflected in a single decision package, given a high priority, and thereby quickly relegated to higher levels for disposal as appropriate.

The third consideration is that of time available to develop and rank decision packages at successive levels of an organization. Because of the time constraints as well as the size of the organization and experience of those managers involved, it may be necessary to limit the application of zero-base budgeting at least when initially

installed. Subsequently as managers become more accustomed to the process, the depth to which applied can be expanded.

As a part of the definition and development of decision units and packages, WEC also emphasizes the need for non-financial workload and performance measures and in so doing, the importance of adequate management analyst assistance. The identification of appropriate performance and workload measures is the responsibility of the decision unit manager whose subsequent performance will be monitored accordingly. The adopted performance and workload measures are in effect the quantitative and qualitative means by which the relative contributions of each incremental package is evaluated. Without such measures no trade-off analysis can be objectively accomplished and zero-base budgeting will have lost a substantial reason for existence.

4. Zero-base Budgeting at Xerox Corporation

Confronted by a nationwide decline in the growth of labor productivity, the marginal success of existing personnel activities and an increasing number of activities from which to choose, Xerox was prompted to seek a systematic way of assuring the allocation of scarce resources to those personnel programs offering the greatest return.[55] First used in 1971 in development of the company's long range manpower strategy and by 1973 used in the development of personnel unit operating budgets, the Xerox methodology is similar to that of the companies previously described but also includes some significant innovations.

As in the case of Texas Instruments, Southern California Edison, and the Westinghouse Corporation, the first step of the Xerox process is the identification of each current as well as proposed personnel program as a discrete decison unit. Also as in the case of the previously described companies, those programs legally required, such as affirmative action or occupational safety

programs, are given the highest priority and thereby segregated from the more discretionary activities. The innovative aspects of the Xerox process are found not in the structure of the process so much as in the analysis to which each program is subjected. Using standard criteria, each program is evaluated in a range from high to low feasibility with respect to required and available state of the art, implementation ease and economic benefits. Included as part of the assessment of economic benefits is a cost-benefit analysis making use of probabilistic techniques in determining expected costs, expected benefits and net expected cost or benefit. Furthermore, the economic risk of not performing the package is assessed on a scale of from high to low based on criteria established by top management at Xerox. Subsequently all of the above assessments are used as input to a decision table that classifies each program as either very, moderately, marginally or not desirable.

As described above, the Xerox zero-base budgeting methodology provides a disciplined and systematic approach to evaluating and ranking staff functions, in this case, personnel. Perhaps its most novel aspects, the use of probabilistic techniques and decision tables, may prove especially useful for other staff activities, which like personnel, have costs and benefits that have proven difficult to quantify in deterministic form.

5. Summary of Commercial Applications

The foregoing review of four fairly successful commercial applications is, as indicated earlier, not intended to be exhaustive. In addition to the four large firms cited, other firms such as Standard Oil Company (New Jersey), New York Telephone Company, Rockwell International, Eaton Yale Ltd., Fibreboard Corporation, and Florida Power and Light have made substantial efforts toward implementation and, in so doing, have contributed to the

state of the art. The success of all such companies, regardless of their diversity, and particularly the four mentioned above, can be attributed to certain common characteristics. The most significant can be listed as follows:

-pre-existence of an adequate planning process.

-considerable top management involvement and support.

-imaginative adaptation of zero-base budgeting concepts to management styles and needs.

-substantial consideration of the human aspects surrounding the system's acceptance.

While perhaps somewhat general, recognition of the above characteristics and their embodiment in future zero-base budgeting applications will do much toward increasing the probability of success.

C. STATE GOVERNMENT APPLICATIONS

Perhaps even more applicable to the pursuit of zero-base budgeting in the federal sector are the implementation problems, the solutions tendered and the lessons learned in state government applications. Certainly the implementation of zero-base budgeting in the private sector of the economy was not without its difficulties and challenges. Application however of the concept to state government, while borrowing heavily from the experience of private firms like those mentioned above, was to be confronted by even

greater challenges.

Full appreciation of the difficulties and challenges faced by state governments, and to a more considerable degree by the federal government, can be obtained by examining both the similarities and differences between public and private budgeting. In both cases, public and private, the budget serves as a mechanism for establishing objectives and goals, identifying the weaknesses to be overcome and as a means of integrating and controlling organizational performance. Unfortunately the similarities extend not much further and the dissimilarities become more noticeable. The differences between the private and public resource allocation process are sufficiently numerous to fill an entire book, an effort that is well beyond the intent and scope of this paper. A few of these differences, however, are particularly germane to the pursuit of zero-base budgeting and are sufficiently troublesome to warrant mention in the following paragraphs.

First of these differences is the relative magnitude and complexity of the allocation processes. Initially tried at Texas Instruments, for example, zero-base budgeting was applied to a staff and research budget of about 1400 people and $50 million.[56] Introduction to the state of Georgia with 79,000 employees and a $5 billion budget represents, at least in dollar terms, a hundred-fold increase. Even more significant is the introduction in the federal bureaucracy with a budget of approximately $460 billion, almost an additional hundred-fold increase. Not only is the magnitude of the effort almost inconceivable but so also is the process substantially more complex in the governmental arena. In contrast to the relatively streamlined organization of most commercial enterprises is the tremendously complex and perhaps cumbersome bureaucracies of state and federal government wherein programs overlap organizations and vice versa. While little continues to be known about the direct relationships of programs to

objectives, even less is known about the interdependencies resulting in such a complex organization as state and federal government.

A second difference between public and private budgeting, and particularly zero-base budgeting, lies in the ability to express both costs and benefits in quantitative terms. Private industry has its profit motive and accordingly the firm is able to analyze and prioritize its activities on the basis of relative dollar costs and dollar benefits resulting therefrom. That Xerox's Service Job Enrichment program offers net annual benefits of $9,920 and a cost-benefit ratio of 1 to 24.3 [57] is meaningful in terms of overall profit criteria. In the public arena, the costs and benefits and criteria against which they are measured are much less quantifiable. Since most public projects are not marketed, for example defense and education, price does not exist as a measure of benefits. Other measures of benefit such as workload output and social impact must instead be defined. While benefits can be defined in non-financial terms, their non-commensurability makes the ranking process a matter of value judgements that, in a democracy, is left to the political process. In contrast to ranking in private firms which is predicated on finding the most efficient use of resources, prioritizing activities in government is based on factors other than efficiency, such as need, which might result in intentional inefficiencies.

The entree of politics is perhaps a third difference between public and private budgeting. Like the market's role in determining the production and distribution of goods in the private sector, the political arena is the means by which the production and distribution of public goods is directed. The extent to which adequate information is made available in the political process and the environmental conditions motivating its use will determine the degree of incrementalism or rationalism exhibited. Notwithstanding

the foregoing, the entree of politics substantially increases the number of decision makers involved as compared to the private sector.

The fourth and perhaps most significant aspect of public versus private budgeting that impacts upon the zero-base budgeting methodology is the different incentives motivating public and private decision makers. In the private sector, management is much more oriented to the profit criterion. a manager's performance is rewarded for the degree of efficiency and profit acheived. He knows that the greater the profit the greater his chance of survival. Therefore

> "The reallocation of resources in the name of survival becomes a much more easily achieved objective..."[58]

than in the public arena where an individual's status , and to some extent "GS" rating, depends on the number of employees and the size of the budget supervised.

Confronted by the above difficulties it is not surprising that successful implementation of zero-base budgeting in the public sector is perhaps even more dependent than the private sector on those characteristics listed in the previous section (i.e., testing, strong leadership, innovation, planning and human considerations). That this is so can be illustrated by a brief sketch of two state government applications.

1. Zero-base Budgeting in Georgia

Perhaps the classic case of zero-base budgeting in state government is that of Georgia where it was first adopted on March 15, 1971, for preparation of the FY 1973 budget request. Following the conceptual model developed in the preceding Chapter, Georgia's budget process is built around three program levels - program (the lowest level), activity (the middle level) and department (the highest level). Beginning at the program level, say for example

Emergency Medical Health, Food Services or Executive Administration, a separate decision package is prepared for each of three levels of effort - a minimum objective level, a current objective level and an improvement objective level. The minimum level represents that level below which the program is not worthwhile to perform. The minimum level is expected to be below the current funding level. The current objective increment brings total package funding to a level necessary to support the current level of service. The improvement objective increment represents a greater objective than that currently being provided. Detailed on each decision package, (see Figures (5), (6) and (7), are related line item detail, objects of expenditure and quantitative performance measurements. Accompanying each package (except the minimum) are more detailed schedules as necessary for justifying rental charges, contractual expenses, per diem, etc. Following its preparatinon, each decision package is ranked by the activity level manager, for example the Community Injury Control Activity. Subsequently activity rankings are merged into a Department ranking such as the Human Resources Department. Appropriate funding cut-off lines are drawn and exhibits submitted to the Legislature.

In contrast to the implementation strategies of the private firms previously reviewed, Georgia did not first test the application of zero-base budgeting before its expansion. Instead all agencies began preparing the FY 1973 budget request in June 1971 and were required to submit three months later the required rankings. George Minmier in his monograph on the Georgia experience [59], found that sixty-five percent of departmental budget analysts considered the advanced planning inadequate. During this initial implementation period, decision packages were poorly prepared and along with rankings, frequently had to be resubmitted. Furthermore the number of levels of effort, program structure and performance indices have undergone

numerous annual iterations before being appropriately defined. All of the above, factors in much of the resistance encountered, could have been substantially alleviated by adequate pre-implementation tests.

Sudden and across the board implementation of zero-base budgeting was to have its behavioral impact as well. Only after adoption of the new methodology were department heads advised of the reasons for its appearance. Any manager kept in the dark about a new system with which he is to operate will consider it second rate no matter how beneficial it might in fact be. And so the lack of participation and consultation was to further resistance even more.

Such resistance was to be caused not only by the manner in which the new system was implemented but also by the management practices following implementation. While decision package rankings were professed as a flexible tool in meeting changing resource levels (by moving the cut-off line up or down), it was not so used. New decision package rankings were often requested and old ones ignored as changes in departmental funding levels occurred. The fact that the Office of Planning and Budget did not use the rankings as advertised was a fact not lost upon lower and middle level managers.

A further problem with the Georgia zero-base budget methodology has been its non-acceptance by the state legislature. Without such acceptance, department managers know they have a "second chance" in obtaining funds from the Legislature. As Minmier indicated

> "One departmental analyst stated that his department was not too interested in the executive budget because it was the State Legislature that gave his department the money it needed to carry out its programs."

Without the commitment of both the Executive and Legislative Branches the viability of zero-base budget becomes highly

suspect.

Perhaps the most significant lesscn tc be learned from the experience in Georgia is the need for a planning phase as a prerequisite of the budget stage. Pricr to 1971 the planning stage of the resource allccaticn process was ccnducted by the Bureau of State Planning and Community Affairs while budget preparation was accomplished by the Budget Eureau. Both operated separately and concurrently with little cooperation. Not surprisingly there were no budget guidelines available on which to base budget preparaticr, plans were never implemented and incrementalism flourished. Implemented in 1971, zero-base budgeting, at least initially, continued the separate and concurrent planning and budgeting philosophy with the result that many decision packages and rankings did not reflect the goals and cbjectives cf the state. Beginning with budget preparation for FY 1974 the resource allccation process was reorganized into a planning phase followed by a budgeting phase. To this end, Governor Carter held a series of meetings with department heads and budget analysts to develop, establish and affirm goals, objectives and budgetary guidelines for each department. Subsequent to such meetings, departments were then tc formulate their decision packages.

Hampered by less than an optimal implementation strategy, with an inoperative planning process and unccoperative Legislature, it is somewhat surprising that zero-base budgeting survived. That it did survive is perhaps best evidence of Governor Carter's unquesticnable support, active involvement and strong leadership. That it has continued to survive subsequent to his departure is attributable to the high number of departmental analysts (seventy-eight percent of the respondents to Minnier's survey) who recommended its future use.[60]

2. Zero-base Budgeting in Texas

Zero-base budgeting in Texas was first used in

preparation of the FY 1976-1977 biennial budget and, with slight modifications, was again used in the FY 1977-1978 biennial budget. It is an application that is perhaps unique for several reasons including first the considerable design effort associated with its implementation and secondly its dual nature involving both the executive and legislative branches in design, implementation and operation.

Like most of its Georgian predecessors, implementation in Texas was accomplished in less than the optimal manner. Characterized by the use of consultants, substantial changes to the existing budget system and an across the board vice phased approach, implementation was to face immense difficulties. Perhaps most significant of these difficulties was defining the type of information needed to support the decision making process. Paralleling the dual executive and legislative involvement was a diverse requirement for information collection. On one hand members of the Legislature might be concerned with the level of program expenditures in a certain geographical area whereas the Governor might be more interested in the impact of expenditures on a specific clientele. Similarly the requirements of the Governor and Legislators are more oriented toward wide program and functional areas and associated measures of effectiveness whereas activity and program managers have a more narrow perspective and should be more preoccupied with measures of efficiency. During the design of the zero-base budgeting process, the needs and/or desires of top level (the Governor's and Legislator's) management were never communicated to agency personnel and budget examiners. In consequence, these staff personnel were placed in the frustrating position of either attempting to anticipate the needs of top management or designing a system which, although meeting their own requirements, did little for the upper echelons. This was a major problem with implementation in Texas and one still under-going

substantial improvements.

The development of a program structure in Texas was both a necessary prerequisite to zero-base budgeting and an attempt to cope with informational requirements. Zero-base budgeting in Texas actually served to formalize previous efforts at building a programmatic classification of information. The development of a program structure was a joint effort by program structure teams consisting of examiners from both legislative and executive budget staff offices, a program evaluation unit, consultant and agency personnel. Subject to oversight by a program structure review committee (including senior examiners and consultants), the program structure teams operated under a set of guidelines in developing agency programs and activities. Two approaches were used in the design effort including

- a top-down approach focusing on agency objectives and the grouping of agency activities into programs according to these objectives and

- a bottom-up approach focusing on the grouping of existing agency activities according to purpose.

Accomplished separately these two approaches were subsequently integrated into an acceptable program structure with all of the characteristics - needs, objectives, workload and performance measures. The resulting program structures were well received not only by both budget examiners and agency personnel but by the Governor and Legislators as well. So well accepted were the agency structures that the 1976 - 1977 appropriations format was of a program orientation. The previous line-item, object of expenditure appropriation format for the most part was abandoned.

The program structure developed consists of four levels - from lowest to highest, the activity (e.g., Outpatient Services), program (e.g., Bureau of Tuberculosis Services), program area (e.g., Preventable Diseases) and function (e.g., Health and Welfare). Within this framework the Texas zero-base budgeting process places considerable emphasis on an initial planning phase in which both agency and program managers seek to identify program needs and objectives. As part of this phase is the development of a Program Decision Package - Need Table that specifies the target population to which the need relates, a target population which will be affected immediately, an indicator of the severity of the need, an indicator of the urgency and an indicator of the demand for which services are not provided.

Once such planning and program guidelines have been established, activity managers formulate Activity Decision Packages accordingly, complete with all the features of zero-base budgeting and accompanied by special object of expenditure, method of financing and personal services exhibits. Program managers then rank the Activity Decision Packages on Activity Priority Tables. Subsequently, and based on the Activity Priority Tables, program managers develop Program Decision Packages. One of the primary differences between the Activity and Program Decision Packages is their respective efficiency and effectiveness orientations. Program Decision Packages are subsequently ranked by agency administrators to show the relative emphasis that is is recommended for each program level.

3. Summary of State Applications

The Georgia and Texas applications of zero-base budgeting are only two of an increasing number of state applications. A review of only these two however demonstrates that the characteristics of success are not totally different from those in the commercial sector. Top management's commitment and leadership, imagirative

adaptation of the concepts to needs and styles, cultivation of the human aspects and preliminary planning both in systems implementation and program requirements remain the essential ingredients of success. The additional experiences of other states such as New Jersey, Rhode Island and New Mexico, just to name a few, lend further support to the importance of these characteristics.

VI. ZERO-BASE BUDGETING IN THE FEDERAL SECTOR

A. INTRODUCTION

In the previous five chapters the author has dealt in depth with the budget reform movement, particularly that of the executive budget, in the United States. By examining each of its phases, the causes, characteristics and outcomes, the author has hoped to provide more than a lesson in history. Indeed it has been the author's purpose to portray budget reform as the product of an ideal, that is the rational budget, and the environment in which pursued. By so doing, the stage has been set for zero-base budgeting in the federal sector.

In what follows, the author will first provide a brief exploration of the environment in which federal zero-base budgeting is to be pursued. Following this will be an assessment of the process as currently being pursued by the Carter Administration. Moving from a macro to a micro point of view, the author will examine the FY 1979 approach to zero-base budgeting in one federal agency, the U. S. Navy. In conclusion the author will present an alternative approach to development of the Navy budget.

B. THE ENVIRONMENT

The considerable effort associated with implementing zero-base budgeting in private industry and state government was described by the case examples cited in the preceding chapter. That an increasing number of private corporations and public bodies are adopting the new methodology is evidence by itself of the benefits attainable. Discovery of those reasons underlying the relatively sudden emergence of a new reform era, however, requires further exploration.

From its very first implementation in Texas Instruments, Inc., zero-base budgeting has gained rapid acceptance because its techniques were consistent with the needs of the times. Faced by the recent recession, most companies sought a means of appraising and controlling overhead costs. The intrinsic features of zero-base budgeting whereby all costs, current as well as proposed, were revealed was found to be an ideal means for such an appraisal and control. This fact was not lost upon the federal sector wherein reform is again advocated by many.

As in the case of PPB and performance budgeting, zero-base budgeting draws its impetus from groups with diverse motives. On the one hand is the taxpayer who perceives government (particularly at the national level) as not only too big, ineffective and wasteful but as growing bigger and more ineffective. The resulting taxpayer resistance to any notion of higher taxes places a severe constraint on those who would propose new programs - the politician. As indicated in the following table[61], the growth in government spending has been paralleled by an increase in "uncontrollable" expenditures (for example Social Security payments).

	1966	1976
Spending	$134b	$375b
Permanent Approp	55b	165b
Uncontrollable	59%	77%

Faced by the rapid growth of uncontrollable spending and the commensurate shrinkage of discretionery funds, it has become apparent to bureaucrat and politician alike that new mechanisms of choice and management are necessary. That such a change is occurring is attested to by the comments of Senator Abraham Ribicoff (Democrat, Conneticut) who, having watched Congress cater to each program's narrow constituencies for thirteen years, now states -

> "sure there are small constituencies behind each program, but there's a bigger constituency out there that's tired of toc-big government, and those small constituencies can't stand up against that."[62]

A further indicator of change was the passage of the Congressional Budget and Impoundment and Control Act of 1974. While having as its primary impetus the excesses of the Nixon Administration, uncontrollable and backdoor spending were to be no small factors. Furthermore, following in the wake of the macro perspectives of the 1974 Budget Act, came a proliferation of micro budget review techniques, the most important being Senator Muskie's Government Economy and Spending Reform Act of 1976 (proposed) which included both Sunset and zero-base budgeting provisions. Sponsored by over 50% of the Senate, and with similar support in the House, Muskie's proposal was no small measure of Congressional support for the zero-base rationale.

On the other hand, and not unrelated to the taxpayer's concern, certain politicians have lent to zero-base budgeting a more positivist role. Take for example President Carter who finds in zero-base budgeting a means of reducing the uncontrollable portion of the budget and inefficiencies so as to provide more discretionery funding to be used in new, much needed programs. Witness Carter's comment that

> "...there is no inherent conflict between careful planning, tight budgeting and constant management reassessment on the one hand, and compassionate concern for the deprived and afflicted on the other. Waste and inefficiency never fed a hungry child, provided a job for a willing worker, or educated a deserving student."[63]

Indeed it is President Carter's stated objective to increase public services by reducing such waste and inefficiency through the budget review process.

Regardless of whether the end objective is to return funds to the taxpayer's pocket or reallocate them to social welfare programs, zero-base budgeting fits nicely into the political, social and economic trends of the 1970s. Even more than a method of attaining such objectives however, zero-base budgeting offers both legislator and bureaucrat a means of coping with the massive detail of information implicit in review of the federal budget. Indicative of Congressional concern in this regard are the comments of Senator Hollings (Democrat, South Carolina) -

> "Everyone in this body is familiar with the difficulty of trying to evaluate and decide upon hundreds and hundreds of budget line items and programs, and fit them into a coherent and adequate picture of where we are...and where we should be heading..."[64]

and Senator Brooks (Republican, Massachusetts) -

> "...Congress also needs to have available appropriation requests on a simplified basis. Appropriations reported on a program basis would be far more meaningful to us than those reported on an object classification basis, such as we follow today. Appropriations requests relating to expenditures for personnel, travel, supplies, equipment, etc., of an entire department are meaningless so far as determining program priorities is concerned. Appropriations priorities must be based upon activity needs and benefits."[65]

Through its decision packages and rankings, zero-base budgeting provides a perspective from which the budget can be viewed as a whole with program and activity needs and benefits clearly defined. Whereas the program orientation of PPB was somewhat premature and viewed with suspicion by Congress, the package structure of zero-base budgeting may be just "what the doctor ordered." That such a new approach was accepted as more than the musings of budget critics, is reflected in the following comments contained in Government Executive -

> "Even on Capitol Hill, past critics of line item programs, usually on the basis of cost overruns, will find themselves increasingly out of tune with their colleagues. In short, a greater number of Congressmen than in more than a decade will be paying greater attention to threat estimates than to pet hardware projects."[66]

Thus from both the wider perspective of economic, political and social trends and the mechanics of budget review, zero-base budgeting appears to have found fertile ground for growth.

Perhaps most significant to the survival of zero-base budgeting, is the fact that its support has come from not only the Chief Executive but from politicians and legislators, a circumstance not so evident in previous executive reforms. With President Carter having placed himself at the helm of a reform movement paralleling Congressional interests, one sees a fortuitous linkage of

the zero-base budgeting process and the environment in which it is being pursued.

C. IMPLEMENTATION IN THE FEDERAL SECTOR

Although not discounting the contribution of environment, the lessons of past reform efforts also place a substantial premium on implementation strategy. From both these lessons and those of of current zero-base budgeting applications, certain basic ingredients for successful implementation have been defined and include

- top management commitment and leadership.

- adequate consideration of human factors in system implementation.

- adequate planning in both systems design and development of program objectives.

- imaginative adaptation of the system to management needs and styles.

Using these ingredients as a guide, an assessment of the current efforts to implement zero-base budgeting in the federal sector can be made. Rather than reiterating a description of the federal approach, which can be found in OMB Bulletin 77-9 and is not surprisingly like the concept defined in Chapter IV, such an assessment is made in the following paragraphs.

1. Top Management Leadership and Commitment

In his 1976 presidential campaign, President Carter vowed

to achieve a complete overhaul and reorganization of the federal bureaucracy and its budget system. Following his election, any doubts as to his commitment were dispelled by his immediate application of the concept to the White House and subsequent memorandum, dated 14 February 1977, to all departments and agencies advising each

> "...to develop a zero base system within your agency in accordance with instructions to be issued by the Office of Management and Budget."[67]

Appointed to head the Office of Management and Budget, two individuals, Mr. Bert Lance and Mr. James McIntyre, who had both been deeply involved in the Georgia process, immediately began to prepare these instructions. To meet the immediate problem of promulgating budget guidance, design of the system and development of instructions was not accomplished in a vacuum by a special staff but instead assigned to the permanent Budget Review and Examination Divisions. By so doing President Carter, Lance and McIntyre have demonstrated that zero-base budgeting is to be "the decision making process." Such commitment has further been emphasized by an unprecedented Spring Budget Review in which agency and department heads participated with President Carter directly in the definition of those issues to be highlighted by the Fall zero-base reviews. As if this were not sufficient to demonstrate his commitment, President Carter has furthermore established as ground rules for the fall budget appeals the primary role to be played by departmental and agency rankings.

To date the commitment of top management to zero-base budgeting has been quite evident. While zero-base budgeting will not in its first year, in all probability, have permeated too deeply into the federal bureaucracy, the demonstration of top management support will certainly facilitate further expansion in the future. At least it is clear that the Carter Administration has put to work many of the lessons derived from past reform efforts.

2. Adequate Consideration of Human Factors

Having followed on the heels of the failings and controversy of PPB, zero-base budgeting has most assuredly encountered considerable resistance. Perhaps in anticipation of such resistance, President Carter, Director Lance and Deputy McIntyre have attempted to incorporate into the systems design, to the greatest extent possible, the participation of all those involved. For instance, both Carter and Lance have met repeatedly with Cabinet officials to explain the process and emphasize Presidential commitment. The fiscal officers of federal agencies have been given the opportunity to comment on draft OMB instructions. . Liaison between OMB budget examiners and agency budget personnel has been firmly established. On May 23, 1977, these agency personnel, numbering several hundred, were to meet with President Carter and to be assured of his commitment.

Perhaps most indicative of the joint participation has been the extensive involvement of all parties, OMB (at both examiner and division level) and agency, in accomodating agency needs and achieving joint agreement on specific aspects of the zero-base budgeting process. Such agreements have included, but have not been limited to, the specific issues of decision package preparation, consolidation, ranking and justification as well as a host of more technical budgeting issues. Furthermore such involvement has not been limited to OMB and agency staffs

but has extended to the Congressional Appropriations Committees, Budget Committees, the General Accounting Office and Congressional Budget Office. The existence of such close working relationships and dialogue between all involved is substantial evidence that zero-base budgeting is not following the same path as PPB. Whether such relationships can be perpetuated to lower levels of the bureaucracy remains to be seen. Clearly though, zero-base budgeting has had a good beginning.

3. Adequate Planning in Systems Design and Program Objectives

With respect to systems design, zero-base budgeting in the federal sector has not had the luxury of pre-implementation tests characteristic of private sector applications. Instead, following the example of Georgia and necessitated by the perceived political time constraints of the four year presidential term, zero-base budgeting has been applied across all agencies subject to executive budget review. Having had little time for adequate preparation, it is probable that success in its first year of implementation, FY 1979, will be somewhat limited. Perhaps just as in Georgia, considerable time will pass before all of its problems have been fully identified and solutions found. Whether zero-base budgeting can survive the problems and associated frustrations arising from untested, across the board implementation will depend a great deal upon the persistence of the considerable top management commitment already witnessed.

Not unrelated to the above is the planning of activity objectives. Despite the legacy of analytical resources remaining after PPB, program planning and its linkage to budgeting remains a critical weakness in federal budgeting. For all the reasons cited in Section C of Chapter III and Section C of Chapter V, the development of objectives upon which to base budgeting has never been fully

accomplished except in a few instances such as Defense. For this reason alone, it would be wise not to expect too much from zero-base budgeting in the immediate future. While statement of specific objectives and quantifiable measures of performance may be lacking in the initial years, zero-base budgeting should soon force improvements in this regard. As indicated in Chapter IV, zero-base budgeting will serve not only to call attention to the lack of planning but will also through its decision units and packages facilitate definition of the input-output relationships that enable such planning. Until such time as this can be accomplished and institutionalized, strong top management leadership and persistence will remain at a premium.

4. Adaptation of Zero-base Budgeting to Management Needs and Styles

OMB's implementation strategy, including all of the above, can best be characterized as a decentralized one. In this regard OMB has taken the position that while the conceptual framework and general rules can be specified, the diversity of federal organizations, each with its idiosyncracies, renders the promulgation of a single detailed approach unwise. Instead each agency has been allowed to address its own requirements and to develop its own application of zero-base budgeting. Unlike PPB however, agencies have not been left entirely on their own but instead have been guided by the President's Spring Budget Review decisions and by the not unsubstantial agency-OMB liaison concerning decision packages, consolidations and rankings. Since the rigidity of PPB as applied in civilian agencies was one of the principle factors in its demise, the flexibility is particularly evident in the way zero-base budgeting is being approached in the Department of Defense.

D. THE DEPARTMENT OF DEFENSE APPROACH TO ZERO-BASE BUDGETING

Shortly after its release, the President's 14 February 1977 memorandum was relayed by the Secretary of Defense to each of the Services. In so doing each Service was advised to prepare plans for implementing zero-base budgeting as part of the FY 1979 budget process. Accordingly, each service developed a unique approach, consistent with its own decision making requirements. One such approach, that of the U.S. Navy, is described in some detail in the following paragraphs. An alternative approach is then offered for implementation in the 1980s.

1. Current U.S. Navy Approach

The Navy's approach to zero-base budgeting is not substantially different from the way prior year budgets have been developed except in terminology (e.g., decision units, decision packages, etc.) used. OMB officials have been thoroughly briefed on Defense PPBS and have agreed that it, to a very large extent, accomplishes what zero-base budgeting proposes. In this regard, much of the Navy's budget has been subjected to a zero-base evaluation during the programming phase. Certainly the major procurement accounts (Weapons Procurement Navy, Aircraft Procurement Navy and Ship Construction Navy) and Research, Development, Test and Evaluation account are zero-based during the programming phase. These alone comprise approximately 44% of the Fy 1978 Presidential Budget. Adding to this the personnel appropriations whose requirements arise out of force level decisions and the Military Construction appropriation request which is justified from zero up each year, the percentage increases to about 63%. Additionally certain portions of the operating accounts have been

zero-based, for example, flying and steaming hours and depot maintenance (ships and aircraft). Because the programming phase of PPBS accomplishes much of what zero-base budgeting sets out to do, the Navy's approach has been to use PPB as a framework to which certain of zero-base budgeting's more useful attributes are added.

In view of the above, the Navy's approach to FY 1979 budget development is to use the FY 1979 Program Objectives Memorandum (POM 79) as a starting point (assuming that most of what is included has been subject to a zero-base review). Throughout the programming process, adjustments to the Department of the Navy Five Year Program (DONFYP) are made by program element, adjustments which can be tracked by budget activity, appropriation and major claimant. The POM represents the SECNAV recommended program and is supported by recommended changes to the Defense FYDP. As such, major claimant and budget activity control totals are derived from the POM and provide the constraints for claimant budget development. The Secretary of Defense then promulgates a Program Decision Memorandum (PDM) which either approves the Navy POM or makes adjustments thereto, thus requiring subsequent adjustment of claimant constraints. Because the PDM is issued after the claimants have commenced budget development, the POM claimant and budget activity totals are the foundation of the Navy's FY 1979 zero-base budget.

With respect to the major claimants, the Navy has generally defined the decision unit to be each appropriation or fund. (For submission to the Secretary of Defense, however, major claimant inputs are consolidated by Navy headquarter's analysts into decision units closely resembling the Program Budget Decision (PBD) structure of previous years.) Additionally each claimant's budget submission is to include a prioritized listing of increments and decrements to meet varying levels of funding for each appropriation. These proposed increments and decrements are considered the equivalent of claimant decision packages.

With respect to the varying levels of funding for each appropriation, three alternative levels have been specified for FY 1979 budget development by the claimants. The Basic Level, is as in previous years and will reflect the POM claimant totals as adjusted for pricing changes (pay raises, etc.). The Minimum Level is defined as the FY 1978 President's Budget as augmented for pay raises. A prioritized listing from the Basic Level to the Minimum Level is to be reflected in each claimant's submission. The Addendum Level will include those programs which could not be accomodated within the Basic Level and is attained by adding a prioritized listing of increments (not to exceed 3% of the Basic Level) to the Basic Level. The range of budget alternatives provided by the above for FY 1979 is approximated by the following:

	Total Navy	O/MN
Addendum	$47.2B	$12.3B
POM	43.6	11.9
Minimum	39.7	10.9

For the FY 1979 budget development exercise, major claimants are assigned the initial responsibility for ranking/prioritizing increments from the Basic Level to the Minimum Level. No prioritization of programs within the Minimum Level will be accomplished. Upon receipt of the claimant submissions both the Minimum Level budget and first and second incremental listings thereto will be "scrubbed" by Navy budget analysts to ensure correct pricing and validity. At this point the impact of the Navy's approach to zero-base budgeting is most recognizable. Both the submission of increments and decrements by each claimant; the necessity to coordinate program and organizational interdependencies; and the building and ranking of balanced

alternatives represent a substantial change to the normal way of doing business. Since these increments and decrements represent proposed changes to the SECNAV POM, program analysts as well as numerous sponsors must be brought more explicitly into the budget review process. What will result may very well be a new decision structure, incorporating more of a program emphasis, superimposed on the budget phase of PPE.

Perhaps the most difficult problem generated by the Navy's approach to zero-base budgeting is that of defining and ranking decision packages. Unlike Texas Instruments Inc. and various state governments, discrete decision units are difficult to define in DOD except at such macro levels that their utility is doubtful. Interdependencies of programs, functions, activities, etc., appear the rule vice the exception. How one sorts out these dependencies is a crucial unanswered question. If, for example, an increment for additional F-18s is identified by one claimant in the Aircraft Procurement Appropriation, increments should also be included by other claimants for aircraft maintenance and training in the Operation and Maintenance Appropriation and for direct military pay in the Military Personnel Appropriations. Inclusion of one decision package increment without all other interdependent packages would result in an imbalanced budget. With numerous claimants involved, the coordination problems become substantial if not overwhelming. What is attempted is the construction, not of a listing of discrete decision packages as in the case of Texas Instruments, but instead a list of alternative balanced budgets, each consisting of numerous cross-organizational and cross-program units.

2. Proposed Alternative for the 1980s

The Navy's approach to zero-base budgeting in FY 1979 is somewhat difficult to fit into the conceptual model defined in Chapter IV. From a budget perspective, the

approach taken appears not so much as zero-base budgeting, but instead as a continuation of PPBS with a form of incremental analysis completing the process. Certainly the time constrained atmosphere within which zero-base budgeting implementation has been required is a primary factor leading to this approach. Perhaps from a wider perspective it can be argued that, since a large portion of the Navy's programs are subjected to a zero-base evaluation, the current approach is not inconsistent with Chapter IV's model. However, since OMB has decided not to force substantial changes on Defense PPBS, it does not appear appropriate to proceed through the detailed analysis of alternatives in the programming phase and <u>then</u> develop a zero-base budget which subjects the approved programs to an unsystematic reformatting into decision units, packages and alternative levels.

In the following paragraphs, the author outlines a recommended approach to zero-base budgeting in the 1980s. In so doing, FY 1979 is treated as a transition period and not used as a basis for further development. Instead the author strays not too far from the existing Defense PPBS process, placing emphasis on that information and analysis which flows through the process vice changes to the process itself.

a. Planning

First of all, the existing planning phase of PPBS need not be changed but should instead be strengthened by greater White House, National Security Council and Congressional policy guidance. If budget development and subsequent budget review is to serve a purpose, that is, the attainment of national security, each must be based upon objective threat assessment, agreed upon strategies and policies and the assignment of specific responsibilities for strategy execution. Until the threats, strategies and policies have been identified, the alternative means (that

is, decision units) and alternative levels of performance (decision packages) for strategy execution cannot be defined. Although PPBS has accomplished much toward this end since 1961, considerably more remains to be done in the way of linking JSOP assessments and secretarial guidance. Notwithstanding the need for such improvements, zero-base budgeting can be effectively used within the existing planning framework not only to define the optimum mix of activities in pursuit of a given strategy, but as indicated previously, as a better basis for definition of that strategy.

b. Decision Units

A product of the planning process should be the identification of basic missions for which the Department of Defense is to be held responsible. An example within the Navy might be Sea Control with subordinate missions of Anti-Air Warfare, Anti-Submarine Warfare and Anti-Surface Warfare. Within each mission classification there are various required capabilities necessary to meet the potential threat(s). Within Anti-Air Warfare for example there is the need to destroy anti-ship missiles and aircraft. The means to accomodate such needs are found in the various groupings of program elements, i.e., integrated combinations of men, equipment and facilities which together constitute an identifiable military capability.

Since it is the smallest aggregation of men, equipment and facilities whose output contributes directly to mission needs and to which activities can be related without regard to appropriation or claimant, the program element is ideally suited for and is recommended as the decision unit. Program elements are an inherent part of the existing resource allocation decision process, are an integral part of the existing computerized Five Year Program structure and are under the control of specifically assigned program element sponsors. They are therefore tailor made as

the decision units of zero-base budgeting.

c. Decision Packages

Given the massive coordination problems inherent in the Navy's current approach to zero-base budgeting, an alternative to the use of Minimum, Basic and Enhanced dollar threshholds is needed. An appropriate alternative methodology is to assign the definition of performance levels to the program-planning stage vice the budgeting stage. Based upon planning guidance (threat assessment, strategy, etc.), program issues from the Secretary of Defense and on-going force analysis, alternative performance levels, specific and programmatic in nature, should be identified for each mission and contributing program element or aggregations thereof. For example, a Minimum Level of steaming hours, flying hours or sortie rates might be established, below which a particular program element ceases to be cost effective in counteracting a given threat. The Current Level might reflect either the existing performance level or that which can be supported by anticipated funding. An Enhanced level would represent a performance capability in excess of current mission need; for example, a switch from defensive to offensive capability. Within the program element, each alternative performance level would constitute a decision package for which the standard zero-base budgeting analysis must be accomplished.

The necessary analysis of each decision unit/program element and decision package (alternative performance level) can be completed in one of two ways. Given adequate cost estimating techniques, the costs and effectiveness of each performance level can be determined by headquarters program, mission, appropriation sponsors and budget analysts. Having completed such analysis, decision packages would be ready for ranking. If such cost estimating technology is not available at the headquarters level, the programmatic guidance for each alternative

performance level would be promulgated to the applicable major claimants. Major claimants would then build the appropriate decision packages and submit them after ranking to Navy headquarters for review and consolidation. The latter method would appear most desirable in that it introduces bottom-up participation within top-down structured guidance. In either case those decision units having force level implications would be analyzed first, followed by those involving operations and lastly, those involving support.

d. Decision Package Ranking

Having completed the structured decision package analysis, each would be ranked within mission area according to its relative contributions in satisfying mission needs. Top Navy management would then have available to it the raw materials with which to formulate a Program Objectives Memorandum at three levels - a minimum, current and enhanced level. Included therein would be rankings of Minimum, current and enhanced capabilities that would provide a means of allocating resources optimally within any given funding level with full knowledge of the risks at that particular level.

e. Budgeting

Having defined in the POM the alternative performance levels and associated funding requirements, preparation of annual budget exhibits by subordinate commands could proceed in a structured and guided manner. Knowing the levels of performance to be achieved and their relative priorities, claimants could then build decision packages and supporting schedules, in such a way (perhaps functionally) as to achieve end objectives most efficiently. Budgeting would then become not just a drill in balancing

the books, but instead an organized and systematic process by which decision unit/program element line managers may pursue end objectives.

f. Summary

The foregoing proposed approach to zero-base budgeting is not without its difficulties. First of all it assumes the avilability of adequate measures of effectiveness which in many areas, particularly in support programs, have not been developed. A second problem is the multi-purpose nature of certain forces and the difficulty of portraying them within any one mission area. A third problem is the time constraints within which any system must function. With adequate analysis and systems design effort these problems as well as the many others can be overcome. While such difficulties are hopefully temporary in nature, the benefits to be derived from the above approach would be fairly long lasting. Perhaps the most significant of these is that decision unit/package development and ranking is the product of considerable systematic analysis, which having been accomplished in the existing decision making process, can be brought directly to bear on the resource allocation process.

VII. CONCLUSION

The preceding five chapters have sought to place zero-base budgeting in the broad context of an evolving executive budget reform movement. The author's purpose in doing so has been two fold - first, to isolate those factors in previous reform efforts as well as current zero-base budgeting applications that have either facilitated or hindered the pursuit of rational resource allocation and, secondly, to assess the current federal zero-base budgeting effort, its progress, problems and prospects.

With respect to the former, environment and implementation strategy have emerged as the prime determinants of nearly every past reform success or failure. Political, social and economic trends have been the catalyst for (as well as inhibitor of) change, with top management support, adaptability, human factor considerations and adequate planning as the essential ingredients. Recognition of the foregoing can surely enhance the probabilities of success in future implementations of zero-base budgeting. Indeed it is the author's conclusion that initial efforts toward zero-base budgeting in the federal arena are being pursued not only within a conducive environment but with all the essential ingredients.

The extent to which zero-base budgeting can be implemented as conceptualized in Chapter IV is a matter of conjecture for which history must be the judge. Whether the persistence of the Carter Administration can successfully compete with the ancient, but surprisingly enduring prophecy of Ecclesiastes 1:9 -

> "The thing that hath been, it is that which shall be; and that which is done is that which shall be done; and there is no new thing under the sun."

-remains to be seen. Just as the more useful aspects of previous reforms have survived, it is nearly certain that the more useful aspects of zero-base budgeting will survive. In so doing, another step toward the rational budget will have been made. Perhaps this is as much as can be hoped for.

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