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The "buy vs. lease" controversy and its effect on government computer acquisition policy

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THE "BUY VS. LEASE" CONTROVERSY AND I

EFFECT ON GOVERNMENT COMPUTER

ACQUISITION POLICY

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THE "BUY VS. LEASE" CONTROVERSY AND ITS EFFECT ON GOVERNMENT COMPUTER ACQUISITION POLICY

by

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CHAPTER I

INTRODUCTION

The Federal Government has long been a leader in the field of automatic data processing, and is today the world's largest user of computers.[1] Billions of dollars have been invested by, or at the expense of, Federal agencies in efforts to develop and install computers and computer systems for use in a wide range of government activities.

During the 1940's, the force of modern technology and the needs of World War II led to the development of the first electronic digital computer.[2] As experience was gained with this device, and its potential recognized, demands were placed on the electronics industry to further its development. Following a period of almost exclusive scientific utilization it was discovered that the computer could also be used as a tool in business. As a result, a whole series of developments in equipment and systems design followed, making it possible to adapt electronic systems to office routines. These advances enabled managers to perform routine

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[1]U. S., Comptroller General, Management of Automatic Data Processing Facilities in the Federal Government, Report to the Congress, August, 1965, p. 1.

[2]Robert G. Van Ness, Principles of Punched Card Data Processing (Elmhurst, Illinois: The Business Press, 1962), p. 17.

decision making and business operations in an automatic and integrated fashion.

The machines developed to perform these operations came to be known as business-oriented, or general purpose computers. The first of these, UNIVAC I, was delivered to the Federal Government in 1951 (the Bureau of Census).[1] Since that time the numbers of computers in the Federal Government have steadily increased. Present governmental expenditures for computer systems have been estimated by the Bureau of the Budget to be running at a rate of three billion dollars annually.[2] This includes not only the agency operated systems, but also an estimate of those operated in classified and military operational applications, and government contractors.

The rapid growth of Federal Government computer systems can be seen in Exhibit 1, taken from the latest Bureau of the Budget Inventory. This growth can be explained primarily by the learning process which has taken place since the early 1950's. The computer was originally looked on as having a limited number of applications; in fact, the original market survey conducted by Remington Rand Corporation preparatory to UNIVAC I indicated a

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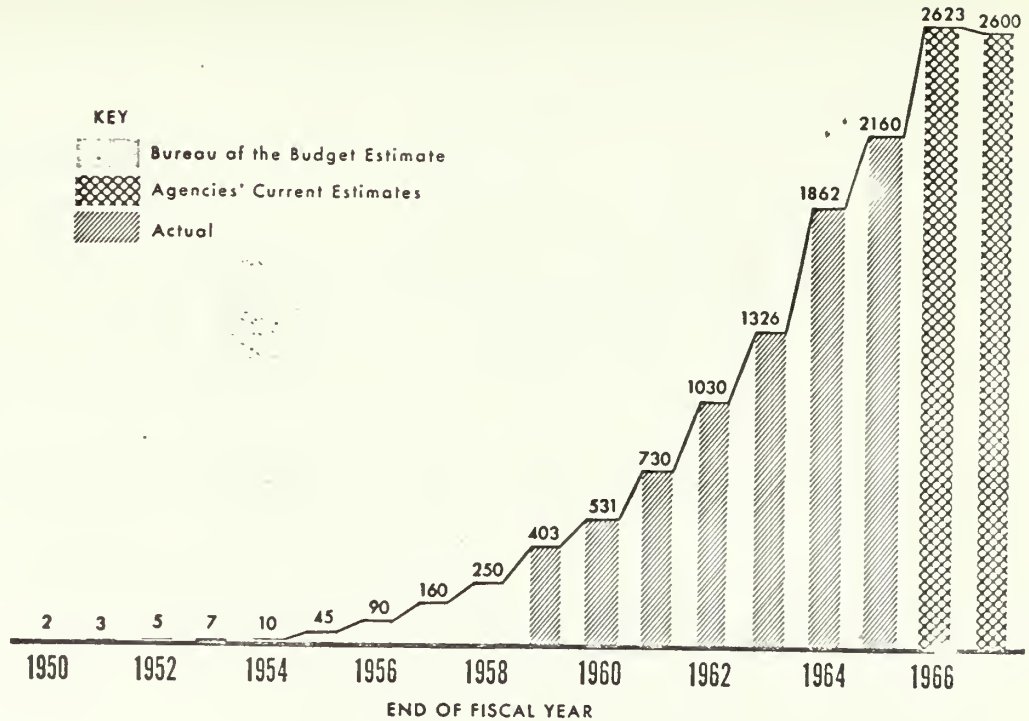
[1]U. S., Comptroller General, Survey of Progress and Trend of Development and Use of Automatic Data Processing in Business and Management Control Systems of the Federal Government, a Special Report to the Congress, December, 1957, p. 1.

[2]U. S. Congress, House, Committee on Government Operations, Hearings on H. R. 4845, Automatic Data Processing Equipment, 89th Cong., 1st Sess., March and April, 1965, p. 46.

CHART 1

Growth in Number of Computers in the Federal Government



The sustained growth of computers in the Federal Government reflects the continual blending of this tool into the Federal management process. Also, the conversion of data processing and computational services formerly performed by punch cards into the computer technology is demonstrated by the decline in punch cards and the increase in the number of ADP units using computers.

For the first time, this inventory has recognized the concept established in the *Report to the President on the Management of Automatic Data Processing in the Federal Government.* Chapter 1 discusses the need for a "classification system which recognizes the essential differences among computer installations." Not included in the inventory summary, but included in Table 5, are those computers which are integral to the function of broader technological systems such as process control, communications control, etc. For this latter category of computers it is difficult to develop computer cost and utilization data independent of the total process which the computer serves.

Projections for 1967 recognize (*a*) planned closing of a number of defense installations, and (*b*) the anticipated impact of the "time-shared" central computer which will provide computational services to a large number of users from one central location, thereby eliminating a number of smaller individual computers. The extent to which the agencies' estimates are valid for fiscal year 1967 is dependent upon whether these plans materialize on schedule and upon the ability of the technology to achieve its announced objectives.

Exhibit 1.

market for less than twenty general purpose computers in the entire world![1] This estimate was soon proven to be a gross miscalculation, for no sooner had organizations started using computers than they began seeing their vast potential.

In order to give some dimension to the multiplicity of data processing applications performed by computers, a list of these from Ned Chapin's book An Introduction to Automatic Computers is reproduced as Exhibit 2. Not included in this list is an equally lengthy list of applications in the scientific, military/operational, process control, and engineering fields. Indeed, an article by Neil Macdonald was published on this very topic in 1962; its title speaks for itself--"Over Five Hundred Areas of Application of Computers."[2]

As the amount of automatic data processing (ADP) equipment in government has increased, so has its cost. Quite appropriately, these costs have concerned those whose job it is to insure economy and efficiency in government. Unlike some costs, such as personnel salaries, or building maintenance, those associated with ADP are not always easy to identify. On the one hand there are some direct costs which can be accurately accounted for; equipment rental or operator salaries are examples of these. On the other hand there are many

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[1]Interview with Warren S. Gailbreath, Manager, Marketing Services, UNIVAC Corporation, Washington Division, February 27, 1967.

[2]Neil Macdonald, "Over Five Hundred Areas of Application of Computers," Computers and Automation (June, 1962), p. 140.

Abstracting
Accounts receivable
Actuarial computations
Advertising effectiveness analysis
Air traffic control
Amortization
Appropriation accounting
Budgeting
Business simulation
Capital investment analysis
Census analysis
Check processing accounting
Claim and loss accounting
Concordance construction
Cost allocation and analysis
Cost variance analysis
Credit card accounting
Data reduction
Demand and time deposit accounting
Dispatching
Dividend accounting
Election return analysis
Expense accounting
Factory operation simulation
File maintenance
Flight simulation and pilot training
Flow control
Fund accounting
Information retrieval
Inventory control
Labor utilization
Language translation
Linear programing
Loan accounting
Machine loading and utilization
Machine tool control
Maintenance scheduling
Management games
Management control
Management strategy analysis
Map construction
Market research
Materials and parts control
Motor vehicle registration
Operations analysis and simulation
Operations research applications
Parts cataloging
Patent accounting
Payroll
Pension accounting
Performance evaluation
Portfolio evaluation
Premium accounting
Price analysis
Process controls
Product demand analysis and forecasting
Product mix profitability
Product performance experience
Production control and forecasting
Production line balancing
Property accounting
Purchase order writing
Quality control
Repair analysis
Reservations
Revenue accounting
Route accounting
Sales analysis
Shop scheduling
Stock analysis
Stockholder records
Tax accounting
Teaching
Test grading
Transportation optimization
Traffic violation record maintenance
Trust accounting
Warehousing
Work-in-process accounting

Exhibit 2. Common Data-Processing Applications of Automatic Computers[1]

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[1]Ned Chapin, An Introduction to Automatic Computers (Princeton: D. Van Nostrand Company, Inc., 1963), p. 203.

indirect, or hidden, costs which often go unassigned; costs of systems design, planning, and site preparation fall into this category.

The recognition of the tremendous amount of hidden, or uncontrollable, costs brought about an early effort to economize on those which could be identified and controlled. In order to accomplish this an effort was made to scrutinize closely what has come to be known as "planning prior to installation of equipment."[1] It was felt that many costly mistakes could be avoided if extra effort was expended before the computer was installed. Early computers especially required expensive installation sites which, if not properly designed, could involve costly modification.[2] In order to assess properly all of these costs/benefits, a device known as the "feasibility study" was originated. As the General Accounting Office defines it,

> This study was conducted by a group of employees at the executive level. The study usually lasted for a period of several months. During this time, most of the major functions of the organization were studied to determine which functions could be adapted to ADP and what improvements and savings could be expected. As a result of the recommendations of this group top management decided whether to launch a detailed study in any or all of these areas preparatory to obtaining an ADP machine, or ruled out the use of electronic equipment as not justifiable.[3]

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[1]Letter from David N. Henderson, Chairman, Subcommittee on Census and Statistics, Committee on Post Office and Civil Service, House, 87th Cong., cited in Hearings of the Committee, 87th Cong., 2nd Sess., p. 2.

[2]Comptroller General, Survey of Progress and Trend of Development, op. cit., p. 64.

[3]Ibid., p. 61.

The number of people normally participating in a feasibility study varied from four to twenty, while the elapsed time for the study ranged from two to ten months.[1] It is during the feasibility study and the detailed systems study which follows that the methods of equipment acquisition are considered.[2] This is the time when the benefits of leasing, leasing with option to buy, and/or purchasing are weighed for their relative applicability.

In the early days renting was the normal practice, a fact that is borne out by Exhibit 3. The primary reason for this was the policy of the International Business Machines Corporation, who controlled the majority of data processing, to only lease its equipment.[3] After a civil court action forced IBM to offer its equipment for sale (United States vs. International Business Machines, Civil Action 72-344, Southern District, New York, 1956), purchasing began to be used more often. As computers users gained experience with their equipment and became more adept at predicting the life spans of their systems, and as the General Accounting Office and the Bureau of the Budget applied pressure on agencies to consider purchasing as a possible method of acquisition, the trend

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[1] Ibid., p. 62.

[2] U. S., Bureau of the Budget, Automatic Data Processing Program of the Executive Branch: Studies Preceding the Acquisition of ADP Equipment, Bulletin 60-6 (March 18, 1960), p. 12.

[3] U. S., Comptroller General, Study of the Financial Advantages of Purchasing over Leasing of Electronic Data Processing Equipment in the Federal Government, Report to Congress, March, 1963, p. 7.

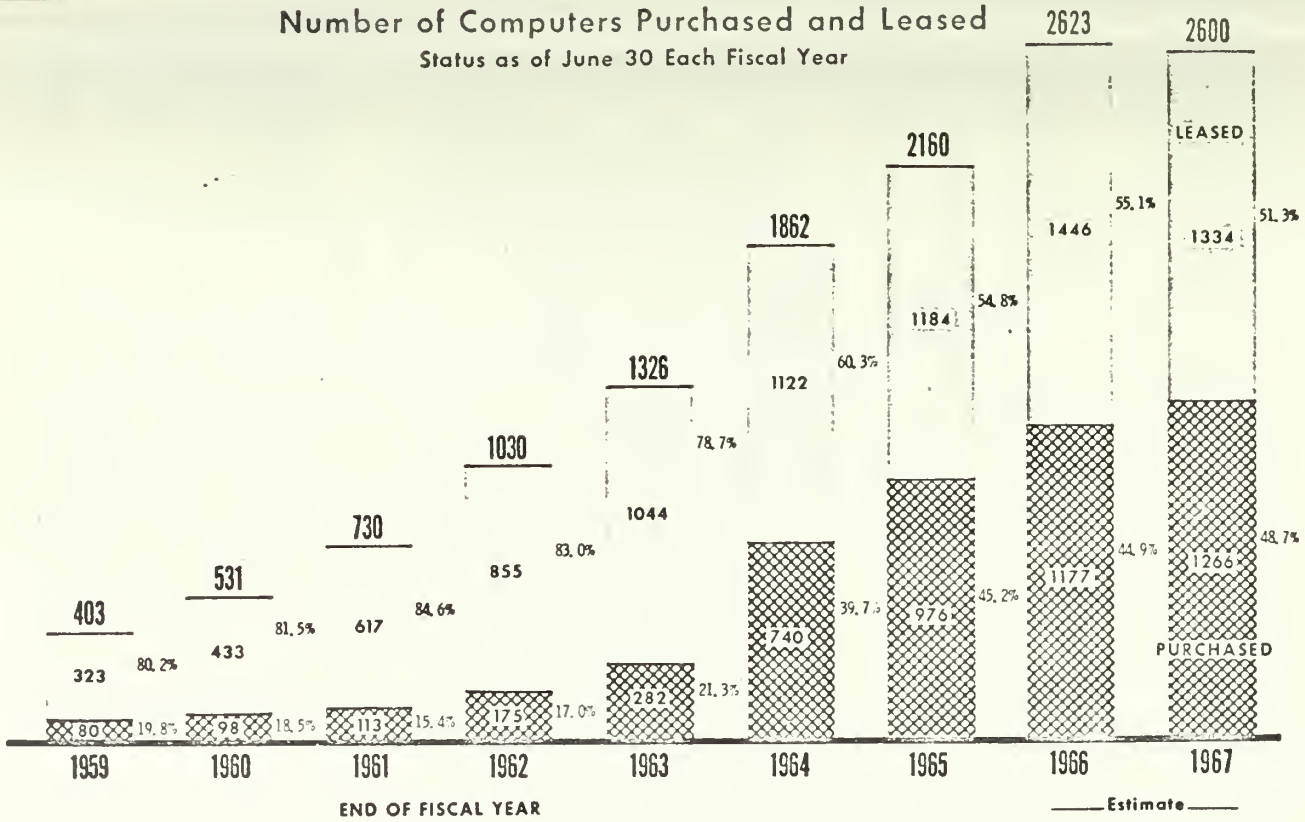

Exhibit 3.

The increase in Government ownership of computers which began in fiscal year 1962 continued through fiscal year 1966 and is anticipated to continue through fiscal year 1967.

The decisions to purchase or lease computers are based on the probable length of time the equipment can be used advantageously and the comparative costs of purchase or rental for that period. Future programs, projected workload requirements, estimated hours of computer use per month (appropriate to the term of the lease) and maintenance costs, cost of money, the relationship of manufacturers' pricing structure for rental and purchase, and the impending improvements in computer technology must be considered. Even though computers of the process control, communication control, etc., are not included in the inventory summary for the reasons explained in Chart 1, these computers should be considered in the purchase/lease comparison because such decisions are pertinent to the acquisition of all computers regardless of the ultimate ability to identify use and costs. When they are considered, the owned portion of the total is: fiscal year 1965—50%, fiscal year 1966—51.9%, and fiscal year 1967—56.5%.

Projections for fiscal year 1967 are conditioned by the same factors which condition the overall inventory and, in addition, the availability of funds to effect the anticipated purchases.

has been for the percentage of purchased computers to increase. This did not come about without a struggle, however. As emphasis and pressure came to bear on the acquisition process, many arguments began to appear over the most economical method. The arguments and discussions surrounding the question of purchasing and/or leasing of computer equipment came to be known as the "buy vs. lease controversy."[1]

One may logically ask, Why is this so important? The answer to this is an economical one which can best be answered by a statement in the Comptroller General's letter to the Congress accompanying his 1963 report:

> Our study shows that very substantial amounts of money could be saved if the Federal Government purchased more of its data processing equipment needs. The detailed cost analysis of sixteen different electronic machine models, which constituted the principal part of our study, indicate potential savings of about $148 million over a five year period. These significant possible savings apply to only five hundred twenty-three of approximately one thousand electronic data processing systems installed or planned for installation on a lease basis by June 30, 1963. For additional use of the five hundred twenty-three machines after five years, there would be further savings at the rate of over one hundred million dollars annually.[2]

Thus, the question of computer acquisition takes on an entirely different dimension. As one might imagine, with any complex

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[1]Alan D. Meacham, "Editorial," Data Processing for Management, May, 1963, p. 58.

[2]U. S., Comptroller General, Financial Advantages of Purchasing, Cover Letter, 1963.

problem there is no simple definition or solution. "Buy vs. Lease" is not merely a simple accounting calculation; on the contrary, it bores to the very roots of government management theory and practice. In doing so it becomes involved in such concepts as Centralization versus Decentralization, roles and responsibilities of Executive Branch agencies, budget appropriations, and monopoly versus competition. Within the ADP field itself, it involves such functions as procurement, cost analysis, budget requests, equipment utilization and sharing, property disposal, and the cost of money. The problem can be stated in the following manner: Should the ADP facilities of government agencies come under central control with respect to purchase and lease decisions? If they do, then the agencies lose control of their vital management communications systems to someone else, for ADP systems are nothing more than management communications systems. If, on the other hand, these decisions are left for the individual agencies to make, then considerable diseconomies will accrue to the government as a whole.[1] The reason for the latter stems from the rule in logic called the "Fallacy of Composition." What is true in part may not be true in general. This is at the heart of the "buy vs. lease" controversy. An individual decision to lease a computer might be an extremely good decision <u>for that particular agency</u>; from the government-wide

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[1]U. S., Comptroller General, <u>Management of Automatic Data Processing Facilities</u>, <u>op. cit</u>., pp. 24-25.

viewpoint, however, it might be a poor one. The leasing agency might be turning in the leased computer after such a short time as to make purchasing uneconomical. At this time, however, there might be another agency somewhere else in the government negotiating for that very same model computer. If the equipment had been purchased originally it could merely be transferred to the second agency with a tremendous savings once the equipment was amortized.

In recent years there have been two opposing views on the control of purchase/lease decisions. These positions have been expounded in numerous government publications, reports and hearings of congressional committees. Public Law 89-306 was enacted to solve, among other things, the problems associated with purchase/lease. The purpose of the Law spells this out explicitly:

> To provide for the economic and efficient purchase, lease, maintenance, operation, and utilization of automatic data equipment by Federal departments and agencies.[1]

This paper will show, however, that the problems underlying the "buy vs. lease" controversy have not been solved. Public Law 89-306, while improving upon previous policy, does not encompass all of the problems. Therefore, the controversy will continue to affect the government ADP acquisition policy, as diseconomies continue to be uncovered. More legislation will no doubt be needed

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[1]U. S., Public Law 89-306, 89th Cong., H. R. 4845, October 30, 1965, p. 1.

as this becomes more generally apparent.

This thesis will analyze the total "buy versus lease" controversy, and try, through research and interviews, to develop a more satisfactory insight to the problem, and to indicate both the progress that has been made and the work that remains to be done.

The approach used in this analysis will be as follows: the first chapter has been a general introduction and statement of the significance and breadth of the problem; Chapter II gives a history of the controversy, what caused it, and significant historical events and participants; Chapter III explores the various considerations affecting "lease versus purchase" decisions, along with the government's current guidelines; and Chapter IV analyzes reasons why the "buy vs. lease" problem has not been solved. In doing this, the Public Law 89-306 will be assessed, along with agencies' conflicting interpretations of its intent. In conclusion, the controversy will be evaluated in its present form and recommendations will be offered for its eventual solution.

CHAPTER II

HISTORY OF THE BUY VS. LEASE CONTROVERSY

Origin and Early Developments

As stated in the last section, the original tendency in acquiring computer systems was to lease rather than purchase the necessary equipment.[1] This practice dates back to the electric accounting machines era, when most punched card machines were supplied by the International Business Machines Corporation. This company's policy for years had been to lease rather than sell their equipment.[2] The reason IBM, then as well as now, prefers leasing is that they consider themselves as primarily a service, rather than a manufacturing organization. According to Assistant Treasurer Hilary Faw, they like to visualize themselves as marketing a service similar to the telephone company.[3] Their product development and production planning are geared to return a certain percentage on each equipment line, annually. This is

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[1]U. S., Congress, House, Subcommittee on Census and Government Statistics, Hearings, 86th Cong., 1st Sess., Testimony of Edward J. Mahoney, June 5, 1959, p. 14. Also see Exhibit 3.

[2]U. S., Comptroller General, Financial Advantages of Purchasing . . . ,op. cit., p. 7.

[3]Interview with Hilary Faw, Assistant Treasurer, International Business Machines Corporation, Armonk, New York, October 27, 1966.

calculated on leasing these equipments for a given number of years. The sale of a computer returns all investment in the first year, and consequently disrupts the company's predicted cash flow.[1]

The Justice Department had different views of this practice, however, and on January 21, 1952, entered a complaint against this company in the District Court of the United States for the Southern District of New York, charging violations of Sections I and II of the Sherman Anti-Trust Act.[2] Their contention was that IBM's lease-only policy constituted monopolistic practice in restraint of trade.

The final judgment took four years of litigation and was eventually filed and entered as a consent decree on January 25, 1956, by which time IBM was also manufacturing electronic computers.[3] The judgment required that IBM must offer all data processing equipment (including computers) for sale as well as lease.

This policy change did not have any immediate effect on the government's tendency to lease rather than purchase; in fact, it was not until between 1962-1963 that any noticeable change took place.[4] What it did do was bring people's attention to the fact

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[1] Ibid.

[2] U. S., Comptroller General, Financial Advantages of Purchasing, op. cit., p. 8. Also see U. S. vs. IBM (Civil Action 72-344, Southern District, New York).

[3] Ibid.

[4] U. S., Bureau of the Budget, Inventory of Automatic Data Processing Equipment, op. cit., p. 14. Also see Exhibit 3.

that ADP equipment could henceforth be purchased. IBM, at this time, had such a significant portion of the government's computer business (82% in 1957),[1] its name was almost synonymous with ADP. Although other less "lease-oriented" manufacturers were beginning to garner some of the government's business about this time, there were only five such companies supplying computers by 1957.[2]

With all that has been said about the tendency to lease in the early days of data processing, some mention should be made of the purchasing that was done. IBM was the only company which refused to sell; all others had offered the purchase choice from the beginning. Notable among the early purchases of computers was the UNIVAC I purchased jointly by the Census Bureau and the Internal Revenue Service in 1954.[3] This system, incidentally, had excellent service and continued in use until 1963 when it was finally replaced.[4]

The "buy vs. lease" controversy, as such, emerges during the late fifties as a result of several government-wide studies and Congressional hearings. The first significant mention of the need for more careful evaluation of purchase/lease decisions appears in a Comptroller General Letter to the Heads of Departments and

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[1]U. S., Comptroller General, Trend of Development and Use in Business, op. cit., Appendix C, Table 4.

[2]Ibid.

[3]Ibid., p. 60.

[4]U. S., Bureau of the Budget, 1964 Inventory of Automatic Data Processing Equipment in the Federal Government, for the Subcommittee on Census and Government Statistics, 88th Cong., 2nd Sess., p. 214.

Agencies dated September 18, 1957. The subject of this letter was "Accounting and auditing aspects of automatic data processing."[1] Under the paragraph entitled "Feasibility Studies," the following is stated:

> Feasibility studies attempt to bridge the gap between what is thought to be best and what can be done economically. Such studies are part of any analysis to determine whether an investment in new equipment and related system should be made. . . .
>
> In the course of our audit work in agencies using ADP equipment, we will review feasibility studies made to determine whether adequate planning preceded the purchase or rental of costly equipment.[2]

With the exception of the above quoted letter, very little appears in the "buy vs. lease" literature until 1958. At this time, the Comptroller General completed a two-year study with a report to Congress entitled Survey of Progress and Trend of Development and Use of Automatic Data Processing in Business and Management Control Systems of the Federal Government as of December 1957. This survey, conducted throughout 1956-1957, covered every major area of ADP operations. In order to gain some knowledge as to the extent of the government's ADP program, the General Accounting Office requested an inventory from each agency of all their installed (or soon to be) equipment.[3] This was to be

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[1]U. S., Comptroller General, Letter to the Heads of Departments and Agencies, Accounting and auditing aspects of automatic data processing, September 18, 1957, cited in testimony of Edward J. Mahoney before Subcommittee on Census and Government Statistics, op. cit., p. 8.

[2]Ibid.

[3]U. S., Comptroller General, Trends and Development, op. cit. p. 2.

accompanied by a special narrative report covering the reasons for installing these systems.

The statistics gathered during this survey indicated that one hundred twenty-one electronic (business-oriented) systems had been installed as of December 31, 1957, with an annual rental cost of twenty million dollars.[1] Additionally, nine million dollars had been expended for the purchase of equipment.

The General Accounting Office, in this report, was mostly interested in learning how to better utilize the computer technology in order to increase its use in administrative and decision-making operations. This is in contrast with their later reports which concern economizing the use of computers. One mention of "buy vs. lease" appears in the report, however, under the heading "Need for Research and Development."[2] Recommendation Number Five of this section entitled "Need for Development of Criteria--Lease Vs. Purchase" proposed the following:

> With regard to General Services Administration's responsibilities for contract negotiation with suppliers of electronic equipment, we feel that there is need for General Services Administration to cooperate in studies to develop criteria for use by agencies in connection with decisions to purchase or lease electronic equipment.[3]

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[1] Ibid., pp. 2, 3.

[2] Ibid., p. 17.

[3] Ibid., p. 20.

1959 Hearings

The controversy begins to really pick up steam in June of 1959 when the House Subcommittee on Census and Government Statistics of the Committee on Post Office and Civil Service began hearings on the Use of Electronic Data Processing Equipment. Although these hearings were originally intended to study the "subject of how the use of such equipment affects manpower requirements throughout the government,"[1] by the time the second witness had begun his testimony, the discussion had switched to "buy vs. lease." The following testimony from that hearing marks what can be called the beginning of the Congressional phase of the controversy.[2] Congressman Porter from Oregon is questioning Edward J. Mahoney of the General Accounting Office, Accounting and Auditing Policy Staff:

> Mr. Porter: Mr. Chairman, I am of course an admirer of GAO and of the Comptroller General. I think they do a lot of good and I want to follow up a little bit more what you asked about rental. I think the answer that it becomes obsolescent fast does not come up to the standards of the GAO usual answer on these things. . . . It is the policy to rent, is it not?
>
> Mr. Mahoney: Yes. It is the policy not only in the Government, but in industry.
>
> Mr. Porter: That does not make it right, though, does it?
>
> Mr. Mahoney: No. It does not.

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[1]U. S., House, Subcommittee on Census and Government Statistics, Hearings, Uses of Electronic Data Processing Equipment, op. cit., p. 1.

[2]Ibid., pp. 14, 16.

Later on:

> Mr. Mahoney: It is a policy among each individual agency (i.e., renting).
> Mr. Porter: It seems to be pretty generally the same, to rent, not to buy.
> Mr. Mahoney: I think you are right.
> Mr. Porter: I hope it is based on a good study and that sometime I will have a chance to see it. Are you making a study of it now?
> Mr. Mahoney: We are not at this time making a study of this point.
> Mr. Porter: Would you make a study of it and share your findings?
> Mr. Mahoney: We would be delighted to.
> Mr. Porter: If we have bought some in the past and then project into the future, as I think you people do this all the time, tell us whether you think that changing this policy of renting would save the Government some money over the years?

Finally, further on, Mr. Porter modifies his request:

> Mr. Porter: I suppose that could be a joint study, you and your friends in the Bureau of the Budget, because I suppose you are both interested in it.
> Mr. Mahoney: Yes, we are. We are very interested in this. We would like to reach a solution just as you would. At this point it hasn't been very clear.

This then was the beginning of Congressional interest in "buy vs. lease," a subject which is to be debated in every subsequent hearing on ADP. As instructed, the General Accounting Office and the Bureau of the Budget shortly thereafter commenced on a joint study of the whole "buy vs. lease" question. Several other developments were underway at this time, however, which make their appearances before the joint study is completed. These will be discussed first.

Bureau of the Budget Automatic Data Processing Responsibility Study

Just prior to, but not in time for inclusion in, the previous hearings, the Bureau of the Budget completed a one year study on the ADP responsibilities of the various agencies. The objective of this study was to:

> . . . identify and clarify the Government-wide functions performed, or to be performed, in the utilization of automatic data processing (ADP) equipment and to propose assignments of these functions to specific agencies.[1]

As with most of these studies, this one starts out with a description of the huge monetary outlays involved in the ADP program, and how closer control is needed if utmost economy and efficiency are to prevail. It also emphasized how impossible it was to tell how large the ADP complex was, for there was no reporting system in effect.

"Buy vs. lease" enters the study during a discussion of varying acquisition habits of the different agencies. Among the "Findings and Recommendations" of the study is a statement on the "Phases in Equipment Acquisition." According to the report

> . . . there is a logical sequence of phases and steps leading to the acquisition and use of ADP equipment; eliminating or downgrading the importance of any of these steps usually creates undesirable results.[2]

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[1] U. S., Bureau of the Budget, A Report of Findings and Recommendations Resulting from the Automatic Data Processing (ADP) Responsibilities Study, a President's Management Improvement Fund Project, September 1958-June 1959, p. 1.

[2] Ibid., p. 14.

Number two under these phases is "The Initial Planning Phase" which they state is sometimes called a study of feasibility. One of the questions outlined to be asked during this phase is as follows:

> (f) Regarding costs: What will the ADP system cost? What is the current cost of the systems to be replaced? If the ADP system saves resources, what happens to the savings? If the ADP system will cost more, how much more? Would it be advantageous to buy or to rent the ADP equipment under consideration?[1]

The report goes on to recommend government-wide policy on a number of issues, "buy vs. lease" being one of them. In its summary, a high priority was attached to the need for policy criteria and planning guidance in these areas of consideration. Number Four under these was:

> 4. Rental versus purchase of ADP equipment: Do we rent in all cases? Buy in all cases? Start on rental and then switch to ownership after shakedown? If none of these, then what criteria are used to determine the decision?[2]

This, then, is the same conclusion arrived at by the General Accounting Office in their 1958 report (i.e., need for a policy). Although both agencies outlined the problem very carefully, neither put forth any recommendations as to the specific action needed. In other words, both GAO and BOB in their 1958 and 1959 reports respectively have identified the WHAT of the problem, but have refrained from developing the WHY and the HOW. This will be coming later as the controversy gains in intensity.

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[1] Ibid., p. 16.

[2] Ibid., p. 22.

Bureau of the Budget Bulletin No. 60-6

Following close on the heels of the 1959 report, the Bureau of the Budget published Bulletin 60-6, entitled Automatic Data Processing (ADP) Program of the Executive Branch: Studies Preceding the Acquisition of ADP Equipment. Attached to the Bulletin was a set of Guidelines for conducting these studies which had been developed by the Interagency Committee on Automatic Data Processing.[1] This latter Committee, composed of representatives of most major agencies of the government, assisted BOB with the 1959 Responsibilities Study, and, consequently, became aware of the need for such a device. Taking as a point of departure those needs sighted in the previous report, the Committee develops a set of guidelines usable "for all agencies contemplating or planning to use ADP systems."[2] This was indeed an historical achievement. As we have seen, both GAO and BOB in their early studies had called for such policy guidelines. Here they were spelled out in Bulletin 60-6 for the first time on a government-wide basis.

While the Bulletin gives considerable attention to the systems justification, or the applications evaluation, very little is actually said about equipment. This is a bit ironical in view of its subject title. The only mention of the "buy vs. lease" question is near the end in Section VII, paragraph 10, Adequacy of

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[1]U. S., Bureau of the Budget, Bulletin No. 60-6, op. cit.

[2]Ibid., Preface.

the ADP Systems Study. Item (g) under this heading merely asks the question "Were the relative merits of purchasing and renting equipment considered?"[1] There is nothing on how this should be compared, or what elements should be considered. What can be said for it, however, is that this is the first official policy statement to all government agencies that "buy vs. lease" should be considered prior to acquiring ADP equipment. Although much had been said unofficially, and much had been done internally in various agencies, this is the first official government-wide pronouncement on need for "buy vs. lease" analysis.

Joint General Accounting Office/Bureau of Budget "Buy vs. Lease" Study

By the summer of 1960, the joint GAO/BOB study ordered by the Subcommittee on Census and Government Statistics in 1959 had progressed to the stage where GAO issued an interim report (General Accounting Office Report B-115386 of August 26, 1960). This report was addressed to the Chairman of the Subcommittee and generally outlined the progress that had been made to that point. The significant points brought out by this report can best be illustrated by the following quotations:

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[1] Ibid., p. 12.

In our studies, we have found that in some instances agency regulations favor leasing as a matter of agency policy by considering leasing to be the normal practice and requiring specific cost study justifications for the purchase of equipment. Also, our reviews have disclosed that some agencies have recently concluded studies which support the contention that purchase of certain kinds of equipment is less costly in the long run, particularly where extra shifts of usage of the equipment is involved.

In view of the results of these agency studies, we plan to pursue our review along the lines of attempting to more specifically develop the criteria which should be considered in arriving at lease vs. purchase decisions in the agencies. At the present time, since the preponderance of all Government EDP equipment is leased, it is apparent that under existing agency programs, present practices favor leasing rather than outright purchase of equipment. We feel, therefore, at this point in our studies, that agencies should give more favorable consideration to purchasing ADP equipment in those instances where savings can be demonstrated over a period of several years even though large capital outlays would be involved initially. This requirement can be established through Bureau of the Budget regulation, or other Executive Branch action; and provision could be made for a review of individual agency determinations during the regular budget review cycle, using criteria established by the Bureau of the Budget as an outgrowth of our present study.

This status report has been reviewed with representatives of the Bureau of the Budget and the information discussed herein has their concurrence. We will continue to carry out our studies of this matter and we will keep you advised as further developments occur.[1]

General Accounting Office 1960 Report of Data Processing Developments in Government

Simultaneous to this, the General Accounting Office was conducting another government-wide survey which ultimately produced a report titled Review of Automatic Data Processing Developments in

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[1]U. S., Comptroller General, Lease versus Purchase of Automatic Data Processing Equipment (Interim Report), B-115386, August 26, 1960, p. 3.

the Federal Government. Essentially, this report echoed the findings of the report just discussed. There was, however, one significant addition. Until now, the discussion of "buy vs. lease" had been exclusively addressed to the cost analysis associated with a particular acquisition: in other words, whether or not purchasing was economical for a particular agency or installation. In this GAO 1960 report, a new concept is introduced; that is, whether or not purchase is economical for the government as a whole, regardless of the individual agencies' situation. The following quotation is significant in this regard.

> Generally, the practice of each Government agency is to procure equipment for its own needs (on either a purchase or a rental basis) and to trade in purchased equipment or exchange older rented equipment for newer models in accordance with its own particular needs. Possible needs of other agencies for the traded-in or exchanged equipment are generally not considered. However, it is possible that such equipment can be used to serve the needs of other Government agencies.
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> At least one major equipment supplier offers terms under which used equipment can be purchased at a reduced price depending on the period of time the equipment has been in use. However, we believe that a Government-wide approach is needed to determine which machines should be purchased at the reduced prices and retained for Government use in lieu of new procurement. Likewise, before trading in purchased equipment which is no longer suitable for the original using organization, efforts should be made to determine the possibility of transferring the purchased equipment to other Government organizations requiring such equipment in lieu of new procurement.
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> We believe that a mechanism should be established in the Government to provide the necessary arrangements whereby the procurement and transfer of data processing equipment between government activities would be fully coordinated so as to keep costs as low as possible consistent with obtaining needed processing facilities.[1]

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[1] U. S., Comptroller General, Review of Data Processing Developments in the Federal Government, Report to Congress, December, 1960, p. 21.

This new consideration in the lease/purchase decision will continue to be voiced by GAO and will grow into the fabric of its overall ADP acquisition philosophy. It will also become one of the central points of disagreement between GAO and BOB, along with the individual agencies of the Executive Branch.

Results of the Joint General Accounting Office/Bureau of Budget Buy vs. Lease Study--Circular A-54

In the fall of 1961, two things happened which will spur the "buy vs. lease" controversy. Since they both happened within a month of each other, they will be discussed together. One of these events was the completion of the joint GAO/BOB "buy vs. lease" study. The report of this study was sent to Congress by GAO in November. It was rather brief because the findings of the study had been translated into action in the form of BOB Circular A-54. The Comptroller General explains this in his accompanying letter:

> On October 14, 1961, the Bureau of the Budget issued its Circular No. A-54 to the heads of executive departments and establishments on policies on selection and acquisition of automatic data processing equipment. A copy of this circular is enclosed for your information and use. This document establishes executive branch policy with regard to not only the question of lease vs. purchase of ADP equipment, but also the matter of selection and acquisition of such equipment by the agencies.
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> We believe that with the release of this circular the initial joint study with the Bureau of the Budget of this matter has been completed. However, our Office plans to carry out additional reviews in individual agencies with respect to the utilization of ADP equipment, including the lease vs. purchase subject, and we will keep you informed on the results of this work.[1]

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[1]U. S., Comptroller General, Report B-115386, op. cit., p.1.

This is the first comprehensive government policy on the selection and acquisition of ADP equipment that had been promulgated. It is important to note that GAO was continuing on alone in further study of the "buy vs. lease" question. The results of this probe will have major impacts later on.

The purpose of Circular A-54 is as follows:

> This Circular prescribes policies on (a) making selections of equipment to be acquired for use in the automatic data processing (ADP) program of the executive branch, and (b) making determination as to whether the ADP equipment to be acquired will be leased, purchased, or leased with an option to purchase.[1]

The equipment covered was that owned or operated by the Government, or that used for processing strictly Government data in contractor plants. It did not include a whole host of computers acquired in conjunction with government contracts, or by educational institutions, or those used for classified or military tactical operations.[2] These omissions will also have some impact later.

The section dealing with equipment acquisition is very precise, offering the agency clear-cut policy guidelines to follow. In order to preserve the integrity of these, they will be quoted verbatim:

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[1]U. S., Bureau of the Budget, Policies on Selection and Acquisition of Automatic Data Processing (ADP) Equipment, Circular A-54, October 14, 1961, p. 1.

[2]Ibid., p. 1.

5. Policies on equipment acquisition. Most commercially available ADP equipment can be acquired by purchase or lease, with or without an option to purchase. The General Services Administration has contracts with principal manufacturers, listed in Federal Supply Schedules (FSS), for the rental of ADP equipment. GSA currently is negotiating contracts for the purchase (including provisions for trade-in allowances) and maintenance of ADP equipment. Until such time as these contracts appear on the Federal Supply Schedule, it will be necessary for departments and agencies to negotiate purchase and maintenance transactions. All ADP equipment acquisition transactions are subject to prevailing policies, laws and regulations governing procurement by Federal Government agencies. In addition, except for equipment that can be acquired by the purchase method only, the following policies are applicable:

a. The method of acquiring ADP equipment will be determined after careful consideration of the relative merits of all methods available (i.e., purchase, lease, or lease-with-option-to-purchase). The method chosen will be that which offers the greatest advantage to the Government under the circumstances which pertain to each situation. In this connection, the following general guidelines will be taken into account.[1]

Following this is a whole series of criteria which, if followed, will dictate the method of acquisition to use in all cases. Since these criteria will be discussed in detail in Chapter III, they will not be reproduced at this time.

In addition to guidelines for the acquisition of equipment for new systems, the Circular establishes policy on systems already in place. This essentially calls for a review of such systems, with an eye toward conducting renegotiations of contracts where the Government would stand to benefit:

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[1]Ibid., p. 4.

a. Lease or lease-with-purchase-option transactions in effect at the time this Circular is issued, and which are expected to remain in effect until fiscal year 1964, will be reviewed in the light of paragraph 5. If it is found to be to the advantage of the Government to purchase leased ADP equipment in this category, steps will be taken to make such purchases during the earliest fiscal year in which funds for this purpose are available to the agency. Reviews of current lease transactions should be undertaken as soon as practicable and completed by June 30, 1962.

b. The method of acquisition of ADP equipment selected but not yet accepted for delivery at the time this Circular is issued, will be reviewed for adherence to the policies herein stated, and, when indicated, the basis of acquisition will be changed to conform if permitted by the terms of the contract or agreement.[1]

Thus, we can see that with the advent of Circular A-54, the Federal Government has put itself squarely behind a policy of purchasing ADP equipment in as many cases as feasible. Not only has it required this "buy vs. lease" analysis for new systems, but also for those already in operation. To insure top level consideration of these policies, the Circular contains a separate paragraph for those who might be tempted to ignore it:

> Administration of policies. The head of each executive department and establishment will establish the necessary framework of procedures, including appropriate reviews and controls, that will assure compliance with the policies herein stated.[2]

The significance of Circular A-54 is that, whereas Bulletin 60-6 stated that the lease-purchase question should be considered

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[1] Ibid., p. 5.

[2] Ibid.

in setting up an ADP system, Circular A-54 says that you will do it and then provides the specific criteria to follow. This is exactly what the GAO 1958, and the BOB 1959 government-wide studies had requested.

Historically, it might be said that this ends the strictly accounting, or mechanical, phase of the controversy. The criteria provided, and the calculations outlined, will provide the proper answer to the accounting, or cost analysis. From here on, the arguments of the controversy will become more subtle. One example, previously discussed, was brought out in the 1960 report: whether the analysis should be applied at the agency level or higher. Each situation could possibly produce opposite decisions. Another type of argument will revolve around the definitions of the terms expressed in A-54. Despite the seeming airtightness of the Circular's language, it will be discovered that diverse results will grow forth from it. As a result of this, the response to A-54 was neither immediate nor thorough. This caused considerable concern in some areas, not the least of which was in the House Subcommittee on Census and Government Statistics. This subcommittee's instructions for the Hearings on the Use of Data Processing Equipment listed this among several topics needing discussion:

> Attention will be directed (1) toward agency planning prior to installation of equipment (the extent and effectiveness of feasibility studies, the background of decisions to shift to new or different equipment, etc.); (2) effectiveness of the policies outlined in the

Bureau of the Budget Circular A-54 and agency compliance therewith (efficient utilization of the equipment, lease versus purchase of equipment, inter-agency arrangements for machine use, etc.).[1]

Hearings Before the Subcommittee on Census and Government Statistics 1960

Although intended to cover a wide variety of subjects, these hearings were seriously concerned with economy in equipment acquisition. Setting the stage for what was to become a general finding of the hearings was the testimony of GAO's Edward J. Mahoney. When asked whether the "buy vs. lease" situation had changed materially since 1960 (hence prior to the issuance of Circular A-54), he replied:

> Mr. Mahoney: . . . The latest percentages indicate that while there has not been an increase on the purchase side, there is an indication that the tendency toward leasing has slowed down. It is a very difficult thing to change overnight.[2]

In this same testimony, Mr. Mahoney also makes reference to the position GAO took in its 1960 report. This, it will be recalled, amounted to the recommendation that the purchase/lease decision be made according to the government-wide, as opposed to the particular agency, viewpoint. The following statement further clarifies this emerging GAO philosophy:

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[1]U. S., Congress, House, Subcommittee on Census and Government Statistics, Hearings, the Use of Data Processing Equipment, 87th Cong., 2nd Sess., October 2, 1962, p. 2.

[2]Ibid., p. 11.

Mr. Mahoney: Our basic philosophy is this, which goes a step beyond the Bureau of the Budget's policy at the moment: We feel this is a very large Government and we recognize there are some cases where the original equipment may no longer be the best equipment for the job. However we feel there are less demanding tasks in the Government that could use the older equipment if we had purchased it in the first place.

It is a very complicated situation because it involves the funding and transferring of funds and transferring of equipment and asking people to use equipment which is not the latest technologically available equipment. For example, in a very crucial kind of a problem we would not want the agency to continue to use the older equipment. We are in favor of progress and of going on to the newer equipment. However, it is still economically feasible to use the older equipment on the less demanding tasks. That is why we are not in favor of purchasing everything that comes along. Some equipment does not pay off.[1]

When questioned as to who GAO felt should coordinate the government-wide ADP program, he answered:

Mr. Mahoney: On the matter of the procurement and the transferring of equipment and all these features we feel GSA is the logical place. The matter of the long-range planning with regard to developing an action program for the Government as a whole is the part we feel belongs to the Bureau of the Budget.[2]

As will be pointed out later, this position is somewhat altered by the next hearing.

Following GAO, the Bureau of the Budget representatives were called upon to testify. As part of their testimony they submitted a copy of Circular A-54. Questioning on this document followed, particularly as to its effect on "buy vs. lease" decisions. Mr. Harold Seidman testified for BOB as follows:

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[1] Ibid., p. 11.

[2] Ibid., p. 13.

Mr. Seidman: . . . With regard to the question of lease versus purchase, we do not expect any significant change as a result of Circular A-54 to be apparent until fiscal year 1964 and fiscal year 1965, due to the substantial leadtime involved in budget preparation. We do know that agencies are now making objective evaluations of the alternative methods of acquiring ADP equipment.

In addition, the agencies are reviewing existing contractual arrangements to determine whether leasing should continue. The Bureau of the Budget staff has been alerted to the economic implications of lease versus purchase.[1]

This justification for the delay in response to A-54's directives, although not challenged during this hearing, will later be questioned by GAO. This same justification was also given by most of the other agencies as well.

The General Services Administration next was questioned on its role in ADP equipment acquisition. Testifying for GSA was Edmond J. Rouhana who answered as follows:

Mr. Rouhana: . . . From a Government-wide standpoint, GSA is involved in several facets of ADP. First, on the procurement side, which is handled by our supply service, we have issued in the past, or negotiated FSS schedule contracts, for the guidance of all agencies, with as many as 17 computer manufacturers. . . . We are also involved, of course, with the utilization of excess ADP equipment which is owned by the Government, but to the best of our knowledge up until recently, probably not more than ten or fifteen percent of ADP equipment was owned by the Government. With the issuance of Budget Bureau Circular A-54, this percentage is bound to increase.

As we all know, whenever you have Government-owned equipment, sooner or later it becomes excess to the using agency. Under normal procedures, excess equipment is reported to GSA, to our Utilization and Disposal Service, and we attempt to get utilization within the Government, and if we are not able to, sometimes we will donate it to a school, or educational institution, or, lacking that, we would sell it.

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[1] Ibid., p. 21.

> We are anticipating increases in the excess category, and are trying to work out some procedures to get the best out of the excess.
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> For example, some agencies own equipment. They may want to trade it in on a new piece of equipment. There is a good question whether they should be allowed to trade. Perhaps the trade-in allowance could be minor in amount and we could use that piece of equipment someplace else. In any event, we are working with the Budget Bureau on some general policies to govern the utilization and the methods and so on and how to best accomplish the utilization of excess in the Government.[1]

There are several significant items in this testimony. The recognition that A-54 would increase GSA's role in the area of excess ADP equipment utilization is important, because for several reasons this will become central to later debate on purchase policy. In attempting to dispose of, or transfer, anything, it is necessary to know what that "anything" is. Later on in his testimony, Mr. Rouhana admits that there would need to be more information on "what is owned and leased" by the various agencies.[2] At this time, there was an extremely limited body of information on the ADP equipment installed in the Government.

The final comment on Mr. Rouhana's statement is that the whole question of control over agencies' computer acquisition prerogatives such as the one mentioned concerning trade-ins will come under much discussion in later hearings. It is only beginning to be noticed at this point. Representative Johansen touches on this with Mr. Rouhana:

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[1] Ibid., pp. 60, 61.

[2] Ibid., p. 66.

Mr. Johansen: Let me be more specific. Do you have any voice in saying to a department, "We do not think you ought to have this equipment?"

Mr. Rouhana: No, sir; we have not.

Mr. Johansen: Or do you have any voice in saying "We think this is the type of equipment that will meet your needs?"

Mr. Rouhana: No, sir.[1]

The hearings closed without any report, to await the findings of the Defense Department and its related agencies, National Aeronautics and Space Administration, and the Atomic Energy Commission. In the meantime, the General Accounting Office was finishing a report which will bring the "buy vs. lease" controversy into the forefront of ADP policy discussions.

General Accounting Office's 1963 Study on the Advantages of Purchase Over Leasing

As mentioned earlier, at the conclusion of the joint BOB/GAO study of "buy vs. lease," the GAO stated it would continue investigation into the matter. The results of this effort were published in March, 1963, under the title Study of Financial Advantages of Purchasing over Leasing of Electronic Data Processing Equipment in the Federal Government. The principal part of this Report consisted of an analysis of eighteen different computer models, which GAO considered generally representative. They computed the costs of these models over a period of five years, for either purchase or lease.[2] In addition, several other reviews were

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[1] Ibid., p. 65.

[2] U. S., Comptroller General, Report on the Financial Advantages of Purchasing, op. cit., p. 1.

made. One was a survey of agency responses to price reductions announced by manufacturers for the purchase of their equipment. Another is an analysis of the effectiveness of Circular A-54 with respect to agency acquisition habits. Finally, the whole list of advantages and disadvantages of purchase or lease was analyzed.

On the subject of Circular A-54's effectiveness, the Report is not too optimistic:

> Normally, most systems would be purchased under this policy [i.e., A-54]. However, the application of the policy is dependent upon the user's having a continued need for the particular equipment through the six-year period. If a user anticipates changes in data processing requirements which might necessitate equipment changes prior to the expiration of the amortization period, he need not purchase.
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> As indicated by the statistics on computers in use or planned, the Bureau's Circular has apparently had little effect so far on lease-purchase decisions by individual agencies.[1]

This certainly did not speak well for A-54, or for the Bureau of the Budget's supervisory abilities; nor did it speak well for the agencies over which A-54 exercises control. As one might imagine, the report caused a considerable stir among the latter groups, particularly since they predicted A-54's impact would be delayed by the budget cycle until 1964.

The principal finding of this report also proved to be controversial. This finding, reached through the detailed analysis of the sixteen computer systems, is outlined as follows:

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[1] Ibid., p. 11.

> Our study shows that very substantial amounts of money could be saved if the Federal Government purchased more of its data processing equipment needs. The detailed cost comparisons of sixteen different electronic machine models, which constituted the principal part of our study, indicate potential savings of about $148 million over a five year period. These significant possible savings apply to only 523 of approximately one thousand electronic data processing systems installed or planned for installation on a lease basis by June 30, 1963. For additional use of the 523 machines after five years, there would be further savings at the rate of over one hundred million dollars annually.[1]

The impact of the report in general will be so great that legislation will be introduced to remedy some of the problems it presents. The legislative effort will be long and involved, stretching over two sessions of Congress. Its final outcome will be Public Law 89-306, commonly known as the Brooks Bill.

H. R. 5171 Hearings

In May, 1963, the Government Activities Subcommittee of the House Committee on Government Operations held hearings on a bill, H. R. 5171, the purpose of which was:

> To authorize the Administrator of the General Services Administration to coordinate and otherwise provide for the economic and efficient purchase, lease, maintenance, operation and utilization of electronic data processing equipment by Federal departments and agencies.[2]

In his introductory statement, Chairman Jack Brooks outlines the influence the Comptroller General's report had on the bill:

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[1] Ibid., p. 1.

[2] U. S., Congress, Subcommittee on Government Activities, Committee on Government Operations, Hearings, on the Economic and Efficient Use of Automatic Data Processing Equipment, 88th Cong., 1st Sess., May 28, 1963, p. 3.

> The provisions of H. R. 5171, its purpose, and potential effect, stem from a recent report of the Comptroller General and the continuing interest of this subcommittee in getting a full dollar's worth of efficient, responsive Government for every tax dollar paid. In his report, the Comptroller General emphasized in the strongest terms the need for centralized management, acquisition, and utilization of this costly but highly useful data processing equipment.[1]

The Hearing on this bill consisted of testimony of the Comptroller General, Joseph Campbell, and the Administrator of the General Services Administration, Bernard L. Boutin. Opinions of other agencies and authorities were presented in written form.

The Comptroller General expressed general agreement with the bill; however, he suggested several modifications.[2] These were mostly aimed at strengthening the bill, and had been conveyed to the subcommittee in a letter prior to the hearings.[3] The significant changes recommended by the Comptroller General were to include "such equipment or systems required by contractors in the performance of negotiated contracts with the Federal agencies where the whole or a substantial part of the cost of such equipment or systems would become a part of Government contract prices;" and to remove the provision which would take ADP acquisition out from under annual appropriation review.[4]

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[1] Ibid., p. 2.

[2] Ibid., p. 5.

[3] Letter from Comptroller General to Honorable W. L. Dawson, Chairman, Committee on Government Operations, of May 15, 1963, cited in Hearings on Economic and Efficient Use, op. cit., p. 164.

[4] Ibid.

The Administrator of the GSA was also in favor of the Bill, and also agreed with the GAO recommendation to include contractors. Administrator Boutin points up this position in his opening statement; at this point, speaking of the Comptroller General's 1963 "buy vs. lease" report, he states:

> Mr. Boutin: . . . The General Services Administration concurs in this conclusion of the Comptroller General. We believe that in order to achieve for the Government the full use potential of automatic data processing equipment, the requirements for which have shown stupendous growth during recent years, to assure full coordination of procurement by and use within the Government and to obtain for the Government the most economical cost possible, it is essential that centralized management of and control over the procurement and utilization of all such equipment be established. We are therefore in complete accord with the purpose of H. R. 5171 which would accomplish these objectives.[1]

Many of the other agencies did not share this enthusiastic view of the bill, however; in fact, GAO and GSA were the only agencies which did. The Bureau of the Budget, speaking for the dissenting majority, stated their views as follows:

> In the circumstances, and for reasons outlined in the views letters of the Departments of Defense, Agriculture, Labor, and Post Office, and the Atomic Energy Commission, Federal Aviation Agency, and Tennessee Valley Authority transmitted herewith, the Bureau of the Budget does not favor enactment of H. R. 5171 in its present form. While we do not believe additional legislative authority is necessary, we will be glad to work with the committee and with other agencies concerned to develop amended or substitute legislation which might assist in the more effective use of automatic data-processing equipment without creating the problems which we believe are inherent in this bill.[2]

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[1] U. S., Congress, House, Hearings on Economic and Efficient Use, op. cit., p. 23.

[2] Letter from Director, Bureau of the Budget to Chairman, Committee on Government Operations, of 27 May 1963, cited in Hearings, op. cit., p. 169.

Despite this wide disagreement, the subcommittee approved the Bill, reporting it out to the entire House of Representatives on June 19, 1963.[1] The final form of the bill contained numerous modifications; only a few are worthy of note, however. The Committee went along with the Comptroller General's recommendation and modified the Bill to include contractors. It also changed the wording so that "automatic" data processing was substituted for "electronic" data processing.[2]

In order to dispel the overwhelming agency criticism of the Bill, the committee cited the following:

> Following receipt of the Bureau of the Budget report forwarding the comments of certain agencies opposing H. R. 5171, the committee requested information as to the effectiveness of the ADP programs in progress in these particular agencies. Not only do these agencies lack effective programs providing for the full utilization of equipment now on hand, but they are not in every instance complying with the Comptroller General's equipment purchase recommendations. . . . In addition, these and other agencies have been subject to serious criticism in a series of Comptroller General audit reports over a period of more than three years for poor utilization practices which can be remedied through an efficient centralized management program as provided in H. R. 5171.[3]

Hearings of the Subcommittee on Census and Government Statistics of the Committee on Post Office and Civil Service, June 1963

Approximately two weeks after the Brooks subcommittee hearings, the Subcommittee on Census and Government Statistics began

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[1] U. S., Congress, House, Committee on Government Operations, Report to Congress, June 19, 1963, Union Calendar 186, p. 1.

[2] Ibid., p. 2.

[3] Ibid., pp. 20-21.

hearings on Use of Electronic Data Processing Equipment.

These hearings were quite comprehensive, covering a span of approximately one month. During this time, there were five separate meetings, hearing testimony from different agencies within the Department of Defense, the Bureau of the Budget, the Comptroller General, and several representatives from private industry. Some of the testimony given to the Brooks subcommittee was covered again by this Committee, particularly in the case of the Comptroller General. Since H. R. 5171 was pending in the House at this time, the Committee members were particularly interested in the feelings of the various agencies as to its desirability. The Comptroller General's view in this regard paralleled those covered during the last hearing with little or no exception. He stressed once again the urgent need for centralized control of "buy vs. lease" decisions at the highest levels:

> Rep. Olson: So that the permission to buy or the permission to procure equipment or lease equipment should be at the presidential level:
> Mr. Campbell: Yes, sir.[1]

The other agencies continued to voice their belief that legislation was unnecessary and that the desired result of increased purchasing would be accomplished in the near future. One interesting testimony typifying the feelings of user agencies was given by John P. Abbadessa, Controller, Atomic Energy Commission. Mr. Abbadessa ironically had "spent fifteen years with the General Accounting

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[1]U. S., Congress, House, Subcommittee on Census and Government Statistics, Hearings, Use of Electronic Data Processing Equipment, 88th Cong., 1st Sess., Part 1, June 11, 1963, p. 15.

Office prior to joining the Atomic Energy Commission."[1] In questioning Mr. Abbadessa on the ADP management system at AEC, Representative Johansen asked the following, concerning the proposed "centralization" of ADP policy.

> Mr. Johansen: Now, could such strong management leadership within a given agency not have its strength increased and its efforts sustained by having a Government-wide policing agency breathing down their necks?
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> Mr. Abbadessa: I am sorry, sir, but I do not think so. I do not agree with the recommendation in the GAO report. The objectives of the GAO recommendations, however, I subscribe to fully.
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> The problems I have with this are several. First of all, it has been my view that the implementation of a program should rest with the agency that has responsibility for the program. In the AEC, a large percentage of our computer work is done in the scientific area. These are very complicated machines and complex applications. It is our judgment that these machines have to be designed and specifications developed by the scientists who actually use the machines. We cannot conceive that a central group elsewhere in the Government could discharge this responsibility efficiently.[2]

Faced with mounting disagreement over this issue, the subcommittee concluded that more thorough study of the whole problem was needed prior to legislation. Making reference to the Brooks hearings and H. R. 5171, Representative Johansen commented as follows:

> Mr. Johansen: Before we proceed with the testimony, I want to commend the chairman for the vigor and devotion with which these hearings have been pursued. . . . I would like to ask the chairman if it is not true that this is the only committee, or subcommittee, of Congress that has held any comprehensive hearings on this subject.

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[1] Ibid., Part III, p. 402.

[2] Ibid., p. 392.

Mr. Olson: That is my understanding.

Mr. Johansen: It is my understanding that another committee, or subcommittee of the Committee on Government Operations, has held extremely perfunctory hearings with witnesses from two agencies, and on the basis of that very comprehensive investigation of a very complex problem, it is now proposing legislation that is to come before the floor of the House under a limitation of one hour debate on next Thursday.

Mr. Olson: That is my understanding, and I regret it as you do.

Mr. Johansen: I want the record to show, as the record will in the House on Thursday, that I oppose that kind of legislative procedure.[1]

The tone of the dialogue is carried through into the Subcommittee's report. Although considerably interested in solving the Government's ADP management problems, particularly the "buy vs. lease" problem, this committee favored no legislative action until the whole field was subjected to a major investigation. Specifically, on "buy vs. lease" the following was included in the Committee's report:

> During the course of its hearings, the subcommittee's attention was directed toward the principal trouble spots in Federal EDP management and operations. Although the subcommittee gave considerable attention to the much discussed problem of whether these machines should be leased or purchased (lease versus purchase), it was quickly recognized that excessive leasing was only one aspect of one problem and was the result rather than the cause of poor management and operations. Members of the subcommittee were impressed, for instance, with the testimony of the vice president of a large insurance company who stated that his company finds it more efficient to lease EDP equipment. This testimony is somewhat at variance with that of the Comptroller General who in his March 1963 report stated that "very substantial amounts of money could be saved if the Federal Government purchased more of its data processing equipment needs".[2]

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[1] Ibid., Part V., p. 486.

[2] U. S., Congress, House, Committee on Post Office and Civil Service, Interim Report on the Use of Electronic Data Processing Equipment in the Federal Agencies, 88th Cong., 1st Sess., August, 1963, p. 2.

As a final recommendation, the Subcommittee drafted a letter to the President of the United States requesting that he consider the findings of their hearings before taking action on any legislation. They, of course, were referring to the bill, H. R. 5171, which by this time had passed the House and was awaiting consideration in the Senate.[1] The following is a significant excerpt from that letter:

> The enclosed report emphasizes the need for improving the Federal Government's management of electronic data processing and its peripheral equipment, and for a coordinated, Government-wide approach to the many problems faced by the Federal agencies. There is widespread disagreement in Congress and among the agencies as to how best to resolve such basic problems as central management, employee dislocations, standardizations and compatibility of equipment and programs, the efficient utilization of installed computers, and other matters. Because of this, this committee feels that the enactment of legislation is undesirable at this time since it could conceivably retard the development of this new technology, especially in its scientific and technical applications.
>
> We believe that before Congress legislates on electronic data processing, an opportunity should be given to the executive branch, in the exercise of its management responsibility, to evaluate the present system and to develop guidelines for future Federal policy. We are therefore recommending that you request the Director of the Bureau of the Budget to review these matters and to report to you and to Congress, on or before June 30, 1964, with such recommendations for management and administrative improvements, and for legislative action, as are determined to be in the public interest. We further recommend that, in conducting the review, the Director of the Budget consult with Members of Congress and with representatives of the principal Federal agencies, industry, business, labor, professional groups and others concerned.[2]

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[1] U. S., Bureau of the Budget, Report to the President on the Management of Automatic Data Processing in the Federal Government, March 4, 1965, submitted by U. S. Congress, Senate, Committee on Government Operations, 89th Cong., 1st Sess., p. 83.

[2] Letter from Chairman, Committee on Post Office and Civil Service to President of United States, cited in Interim Report on the Use of Electronic Data Processing Equipment, op. cit., p. 4.

President Kennedy agreed with the proposal and on September 19, 1963, sent the following reply:

> . . . I agree with your recommendation and I have requested the Director of the Bureau of the Budget to initiate a study of the administration of automatic data processing in the executive branch of the Government along the lines you have suggested. The Director will submit appropriate recommendations to me and to the Congress by June 30, 1964.[1]

The Study conducted under these directives began in December 1963 and was completed in March of 1965.[2] The study was perhaps the most comprehensive of its kind ever undertaken, drawing on the resources not only of the Federal Government, but also of private industry and the academic world.[3]

A considerable portion of the study was devoted to the question of "buy vs. lease." Consequently, the whole spectrum of arguments for and against both methods are evaluated in considerable depth. The final recommendations with respect to this question are six in number; however, the first two are the most important.

> 1. Present policy and criteria governing the decision to buy or rent should be continued, except that the cost of money should be included as a factor in cost comparisons. Provision also should be made for a general suspension of purchase activity in respect to certain computer models when it becomes evident that superior equipment is about to become available, or when potential excesses of Government-owned equipment are sufficiently imminent to warrant only the temporary rental of equipment, pending the availability of such excesses.

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[1]Letter from President, United States to Chairman Murray of the Committee on Post Office and Civil Service, September 19, 1963, cited in U. S. Bureau of the Budget Report to the President, op. cit., p. 79.

[2]U. S., Bureau of the Budget, Report to the President, op. cit., p. III.

[3]Ibid., p. 101.

2. Agency heads should take appropriate steps to assure that decisions to rent equipment remain under constant review, and that prompt action is taken to purchase the equipment if, in accordance with published criteria, it becomes advantageous to do so.[1]

Notably absent from these recommendations is any mention of centralized control over acquisition; nor will this appear in the legislative recommendations of the study. Under the "Recommendations for New Legislation," the report states that the purpose of such legislation should be "to make present work more effective by removing doubts as to its authorization," and, "to provide a clear statement of congressional policy respecting ADP matters."[2] The subject of lease versus purchase is indirectly mentioned further when the first general recommendation states that the management of ADP within the executive branch could be strengthened by legislation "providing an expression of congressional policy on the acquisition and use of automatic data processing equipment."[3] The tone of this recommendation is very clear. It does not call for centralized control of selection and acquisition, but rather a mere statement of policy. This will be later incorporated into the legislation, Public Law 89-306.

The report of this study was not enthusiastically received by the GAO. In fact, it became the subject of a complete report by

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[1] Ibid., p. 39.

[2] Ibid., p. 75.

[3] Ibid.

GAO in 1965. In his transmittal letter accompanying this later report, the Comptroller General outlines its purpose:

> An underlying reason for preparing this report is to summarize the more important divergences in the views of the Bureau and of this Office on certain phases of the subject in order to provide a basis for promoting further understanding of the nature and significance of the problems involved.
>
> The principal difference in our views and the conclusions recorded in the Bureau's report concerns the degree of centralization of management authority and responsibility with respect to automatic data processing. We have felt that the cost factors are so significant in themselves as to warrant the establishment of a central office which would have appropriate authority and responsibility for providing management coordination of the acquisition and use of general purpose automatic data processing facilities needed in the operations of the Federal Government with the objective of minimizing costs.[1]

With regard to "buy vs. lease" specifically, the GAO completely disagreed with the Bureau's findings, especially the Bureau's recommendation that "present policy and criteria governing the decision to buy or rent should be continued."[2] GAO explained this position as follows:

> Neither our recommendation [to establish a centralized ADP office] nor the basis for it--management on a Government wide rather than on an individual agency basis--has been accepted.[3]

Consequently, the GAO felt that the government could not realize available savings if it continued present policy and

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[1]U. S., Comptroller General, Letter to President of the Senate and Speaker of the House, cited in Management of Automatic Data Processing, op. cit., p. 1.

[2]Ibid., p. 5.

[3]Ibid., p. 21.

procedures:

> On the basis of our continuing examinations and studies, we believe that the application of these policies results in many instances of substantial amounts of unnecessary expenditures of public funds and thus cannot be regarded as setting a prudent course to follow.[1]

Their recommendations once again were for a Government-wide centralized approach to acquisition policy.[2]

Brooks Bill

During the First Session of the Eighty-ninth Congress, H. R. 4845 was introduced by Representative Jack Brooks. This bill was in many ways identical to the H. R. 5171 bill passed by the House, but not the Senate, in the Eighty-eighth Congress.[3] Several important additions and deletions had been made to this bill, however, and deserve mention. Whereas H. R. 5171 stated in Section III "the Administrator is authorized and directed to coordinate and control the purchase, lease, maintenance, and use of electronic data processing equipment,"[4] H. R. 4845 reads as follows: "The Administrator is authorized and directed to coordinate and provide for the economic and efficient purchase, lease, and

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[1] Ibid., p. 39.

[2] Ibid., pp. 39-40.

[3] U. S., Congress, House, Committee on Government Operations, Hearings on H. R. 4845, Automatic Data Processing Equipment, op. cit., pp. 1-4.

[4] U. S., Congress, House, Committee on Government Operations, Hearings Economic and Efficient Use, op. cit., p. 3. (Italics added).

maintenance of automatic data processing equipment."[1] In addition, a completely new section was added into H. R. 4845. Of importance in this new section (III/g/) are two sentences, reading as follows:

> Authority so conferred upon the Administrator shall not be so construed as to impair or interfere with the determination by agencies and other users of their individual automatic data processing equipment requirements. The Administrator shall not interfere with, or attempt to control in any way, the use made of automatic data processing equipment or components thereof by any agency or user.[2]

As can readily be seen, the authority of GSA's Administrator is greatly reduced in H. R. 4845 compared with H. R. 5171. This did not go unnoticed by the Comptroller General. During the hearings held on this bill, Comptroller General Campbell had the following to say in regard to Section III(g):

> We believe that this provision would place undue restrictions on the Administrator which would preclude the most effective and economical procurement and use of data processing equipment.
>
> We believe also this provision conflicts with other authorities granted to the Administrator. For example, it could negate the authority granted to the Administrator elsewhere in the bill to require joint utilization of data processing equipment by two or more agencies or to establish and operate equipment pools and data processing centers for the use of two or more agencies.[3]

The Bureau of the Budget representative, Mr. Elmer Staats, testified in favor of the bill. In his prepared statement, Mr.

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[1]U. S., Congress, House, Hearings on H. R. 4845, op. cit., p. 2. (Italics added).

[2]Ibid., pp. 3, 4.

[3]Ibid., p. 7.

Staats elaborated that BOB believed "the enactment of H. R. 4845 would assist in carrying out the policies and programs for improving the acquisition and use of automatic data processing"--as set forth in their 1965 report to the President.[1] He furthermore expressed his relief that the bill reflected broad authority conducive to flexible policy formulation:

> It is broad authority, and we are happy to see the broad authority in the bill, because we want to move to as much centralization as we can, consistent with the dual objectives of maximizing central procurement, but at the same time recognizing that this is a highly complicated piece of equipment in virtually all cases, and where the operating departments of agencies also have to be taken into account. . . .[2]

The General Services Administration was represented at the hearing by the Administrator himself, Mr. Lawson B. Knott, Jr. His testimony indicated that GSA was entirely in favor of the H. R. 4845 "without object."[3] More precisely, on the subject of lease versus purchase and how it would be affected by the bill, Mr. Knott had the following to say:

> The enactment of H. R. 4845 would enable those agencies mentioned above [BOB and GSA] which are assigned central responsibilities under the bill, in cooperation with all executive agencies to develop and employ an aggressive and much needed program for such things as:
>
> 1. Assuring that the Government realizes economies available to it through purchasing and leasing of ADP equipment based on consideration of the Government's

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[1] *Ibid.*, p. 39.

[2] *Ibid.*, p. 55.

[3] *Ibid.*, p. 79.

total requirements rather than considering each individual agency's requirement separately.[1]

The Chairman of the Committee questioned Mr. Knott on this subject at considerable length, since this had been one of the key problems with H. R. 5171. The other agencies, it will be recalled, voiced concern over the centralized control of computer selection and acquisition. Since the wording of H. R. 4845 had removed the word "control" from the section under question, it was assumed those fears would be dispelled. Chairman Brooks, however, to insure a clear understanding of his Committee's intent, forced testimony on this subject for further clarification. In this connection, Administrator Knott had this to say:

> In our judgment H. R. 4845 does not place GSA in any different position from the standpoint of what it does now than what it did before. GSA does not now consider it has the authority to tell other Federal agencies what their program requirements are and how they can best be satisfied.
>
> We think we have an obligation as an incidence of our procurement responsibility and because of the knowledge we have gained through our negotiations with the various suppliers to call to the attention of Federal agencies the qualities and the availability of different kinds of equipment. But we do not feel that we have the authority to control what these agencies will need and what they will require and what we will acquire for them to satisfy their program needs.[2]

Since H. R. 4845 cleared up the majority of objections voiced by the executive branch, particularly through the addition of Section III(g), and since the hearings further clarified the intent of the bill, it had no real opposition.

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[1] Ibid., p. 80.

[2] Ibid., p. 83.

The GAO was not completely satisfied with it, however; in the interim between the hearings and final action on the bill, they produced a Report to the Congress on Management of Automatic Data Processing Facilities in the Federal Government, August, 1965.[1] This report was essentially a step-by-step refutation of the recommendations in the Bureau of the Budget 1965 Study. This study, one will recall, is the basis upon which H. R. 4845 rested. The primary theme running through the GAO Report is that the present law, although somewhat of an improvement, would not solve the major problems; that the central management office concept would still be the only way to accomplish this.[2] Despite these last-ditch efforts on the part of GAO, the bill remained intact. That is, it remained intact except for one change: for reasons yet to be found, the wording which would have included government contractors under the law was excluded.[3] With this modification, H. R. 4845 passed the Congress and became Public Law 89-306 on October 30, 1965.

This, then, is the historical development of the Federal Government's computer acquisition policy as affected by the "buy vs. lease" controversy through 1965. The developments since the passage of the Law and the current status of the controversy will be discussed in Chapter IV. In the interim, it is necessary to discuss the factors affecting "buy vs. lease" analysis in general.

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[1]U. S., Comptroller General, Management of Automatic Data Processing Facilities, op. cit.

[2]Ibid., pp. 102-106.

[3]U. S., Public Law 89-306, 89th Cong., H. R. 4845, October 30, 1965, Section III (a).

CHAPTER III

COST/BENEFIT OF PURCHASING AND LEASING

Traditional Approaches

The 1965 Bureau of the Budget Study on the Management of Automatic Data Processing in the Federal Government made the following statement:

> Public controversy over the management of electronic data processing in Government has centered primarily on the following question: Should computers be purchased or should they be leased?[1]

This sentence indicates the scope of the problem with "buy vs. lease." Never has a subject been more discussed and less understood than this. As was shown in the previous chapter, every congressional hearing discussed it, every agency wrestled with it, and the central regulating agencies (BOB/GSA) tried to solve it. But still it endures. This chapter will take up the elements of the question and try to illuminate why the problem is so difficult.

The unfortunate aspect about "buy vs. lease" is the seeming simplicity of the problem. "Buy vs. lease" has the same deceptive pitfalls as "right vs. wrong," "good vs. bad," or any other logical

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[1]U. S., Bureau of the Budget, Study on the Management of Automatic Data Processing, op. cit., p. 27.

dichotomy. When one looks behind the words, the problem, like an iceberg, spreads to enormous proportions. A second misunderstanding is caused due to the question originally being one of "cost accounting" mechanics. In discussion of "buy vs. lease," many still concern themselves with the formula to be applied, when the real problem is determining the inputs to the formula. It is true that the ultimate decision is usually based upon cost, but cost in this case is an extremely broad term stretching horizontally across the entire government, and vertically through time.

Early attempts to grapple with "buy vs. lease" questions dealt with advantages and disadvantages. The approach was to list advantages and disadvantages and then tally up the decision by finding the side with the highest "vote." Unfortunately, many of the advantages and disadvantages, although related to each other, were treated as separate and distinct in analysis. For purposes of illustration, an early list of advantages for leasing and purchasing will be produced from a 1960 GAO report:[1]

> Advantages for leasing:
>
> 1. Leased equipment can more easily be replaced by new improved equipment, thereby encouraging the use of the most modern equipment.
> 2. Maintenance of the equipment is the supplier's responsibility, which carries with it the need for the supplier's organization, rather than the Government, to retain a trained maintenance staff and to supply maintenance material and spare parts.

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[1]U. S., Comptroller General, Interim Report, Lease versus Purchase of Automatic Data Processing Equipment, op. cit., pp. 2, 3.

3. Modification and improvement of leased equipment can be more readily provided by the trained maintenance staff of the equipment supplier.
4. Systems and procedures help is more readily available from the equipment supplier if the equipment is being leased.
5. Leasing is a hedge against obsolescence.
6. Capital is not required.
7. The risk of major loss by fire or other disaster is avoided.
8. Leasing provides a hedge against failure of the system to operate as expected.
9. Leasing provides a hedge against changing missions and military or other requirements.

Advantages in favor of purchasing:
1. Overall costs to the Government are lower over a long period of time.
2. Data processing systems that were installed six and seven years ago are still in use and performing dependable service.
3. If equipment ceases to be economically efficient for the original activity, the equipment might well be used in another government activity.
4. If it is necessary to exchange equipment for any reason, the trade-in allowance can be applied to the purchase price of the new equipment.
5. Purchase prevents additional charges by the suppliers for multi-shift usage.
6. There is no danger of being unable to renew a lease or having to pay a premium rental for renewal.[1]

Beginning with the advantages for leasing, we can see that each is listed separately, but upon closer inspection, there is a distinct relationship between several items. For example, advantages numbers 1 and 5 are really concerned with obsolescence, which, in turn, is related to the expected life of the equipment. To a certain extent, numbers 8 and 9 are also related to this. In the case of number 8, while failure to plan a system adequately (so that the machine does not fulfill the intended purpose) has no

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[1] Ibid.

bearing on the obsolescence of the machine per se; however, from the user's point of view if the machine does not do the job, it is obsolete--for that job. In the same way, number 9 is related. Although the machine has no direct cause in the changing of a mission, if that mission is changed so that the machine is no longer adequate, the machine for all purposes of that job is obsolete and will need changing. One can therefore see that what began as four advantages of the lease method very quickly melted into one element of advantage, which is: if the life expectancy of a machine is uncertain, leasing will insure against the loss of a sizable capital investment.

This same problem is evident when considering the so-called advantages of the purchase method. Here, once again, items 1, 2 and 3 are all related to the question of useful life expectancy of equipment, yet they are listed as three distinct advantages.

One of the biggest problems with grasping "buy vs. lease" analysis is that this advantage/disadvantage "listing" has beclouded the true picture. Conversely, another approach equally confusing has been to relate all problems to ONE factor, which happened in the Bureau of the Budget 1965 Report. Their position is that everything ties into the expected life of the equipment:

> The answer to this question [buy vs. lease] involves the basic problem of deciding how long a given computer can be used advantageously in the Government. If during this period the costs associated with purchase are less than the costs associated with rental; the computer should be purchased; if not, the computer should be rented.[1]

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[1] U. S., Bureau of the Budget, Management of Automatic Data Processing, op. cit., p. 27.

While this is essentially a true statement, it begs the question, since everything hinges on the definition of the word "advantageously." It is in defining this word that much misunderstanding and disagreement arise. For example, who is to say what is advantageous and what is not? What may be advantageous to one is disadvantageous to another; there are trade-offs that need to be made, and these will be the responsibility of some one or some agency. As for the word itself, some say "advantageous" would be savings in cash, others would say it is increased speed and performance. In summary, this BOB approach to defining the problem is over-simplified.

A third approach was outlined by Martin Hochdorf in his highly circulated article prepared for the Interagency Committee on Automatic Data Processing.[1] This approach takes a specific situation, in this case the Tennessee Valley Authority, and computes all the costs and benefits as they relate to the situation. While this provides a clear-cut understanding of the problem at the agency level, it fails to provide a total government-wide grasp.

From actual studies, such as Hochdord's, however, those items which are common to all situations may be extracted in an effort to arrange them in some sort of meaningful pattern. After

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[1]Martin Hochdorf, Purchase or Rent a Computer? A Case Study. (Washington, D. C.: 1963), for presentation to the Interagency Committee on Automatic Data Processing.

doing this several times, it is apparent that what may be advantageous for leasing or purchase in one case may be disadvantageous in another; or what may be an advantage for purchase in one case may or may not be a disadvantage for leasing in that same case, in maintenance, for example. Certain equipments, such as tape drives, require considerable maintenance;[1] other items, however, are relatively maintenance free. The fact that maintenance is included under leasing and not included when an item is purchased is a considerable advantage in the case of the tape drive. At the same time, its absence would be a disadvantage for purchase. Now, if the item is relatively maintenance free, the fact that it is included under lease may be considered an advantage, but if it were not included, it is of such negligible importance as to not be considered a disadvantage.

Factors Bearing on "Buy vs. Lease" Analysis

In order to understand better the elements of the buy/lease question, the model in Exhibit 4 was constructed. Basically, it is an outline of criteria mentioned throughout the "buy vs. lease" literature arranged in such a manner as to show their interrelationship.

First are the factors. Factors are defined as elements which affect cost, which are subdivided into Direct and Indirect

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[1]U. S., Comptroller General, Financial Advantages of Purchase over Lease, op. cit., pp. 23, 24 and Exhibit 3.

Factors. By "direct factors" is meant items which bear directly on a computer system. "Indirect factors," in many cases, are equally as important; however, they make themselves felt through one of the direct factors. For example, a change in Manufacturer's Pricing Policy (Indirect Factor) would make itself felt through a change in Charges (Direct Factor). The ultimate effect would be on cost, but in order to trace the line of causality accurately it is necessary to categorize the factors.

Rather than step into the pitfall of previous "advantage listing" attempts, this analysis will attempt to explain how any of these factors can be an advantage or a disadvantage (for either method) depending upon the environmental circumstances. This way, a stereotype of any of the factors as pertaining only to one or the other method will be avoided.

The items listed under "Variables" are changeable influences which determine the factor's effect on the "buy vs. lease" decision. In any given decision of this sort, it will be the mix of Factors, as determined by the influences of their variables, which will dictate the proper alternative (buy or lease) to choose.

For clarification, it was decided to use the term "Charges" (second Direct Factor) rather than "costs," since the latter word denotes a much broader concept. Costs in the final decision would be determined not only by charges, but also by the timespan over which the charges were paid, i. e., the life of the system. Cost could also be influenced by the Indirect Factors as previously explained.

FACTORS BEARING ON BUY VS. LEASE ANALYSIS

Direct Factors	Variables
Life Expectancy	Obsolescence Technological Mission Maintenance Support and Parts Breadth of Viewpoint Agency-wide Government-wide Utilization Number of Shifts Utilized Re-utilization Configuration of Equipment Age at Disposal Location Compatibility Configuration Manufacturer Application Scientific General Purpose Process Control
Charges	Rent Purchase Price Maintenance Cost of Money Software Systems Support Other Considerations
Indirect Factors	
Monopoly/Competition	Government Policy Economic Conditions
Manufacturer's Pricing Policy	Cost of Money Government Policy Money Market
Budgeting	Congressional and Administration determination
Susceptibility to Loss	Fire Environmental Conditions
Inventory, and Statistical Information Available	

Exhibit 4.

Direct Factors

Life Expectancy

Obsolescence

Technological. Variables have had a changing influence on the factors as the technology of computers evolved. Early in the development of computers, obsolescence was perhaps the greatest direct factor in a "buy vs. lease" analysis, the reason for this being the machines were developed at such a rapid pace they were being technologically surpassed by the time of installation. During the 1962 Hearings of the House Subcommittee on Census and Statistics, virtually every agency listed this as a primary determinant of lease versus purchase decisions.[1] Most indicated that the threat of this obsolescence had prevented purchasing on a greater scale. During 1960, however, the introduction of the transistor to the computer field had a stabilizing effect on equipment turnover.[2] As the technology stabilized, so did the influence of technological obsolescence. This factor has normally contributed toward the decision to lease, but this was not true in every case. The Atomic Energy Commission as far back as 1958 had accepted the risk of obsolescence with a resultant savings of over

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[1]U. S., Congress, House, Hearings, Use of Electronic Data Processing Equipment, 87th Cong., 2nd Sess., op. cit., pp. 130, 157, 187, 234.

[2]U. S., Congress, House, Hearings, Use of Electronic Data Processing Equipment, 88th Cong., 1st Sess., op. cit., p. 295.

a half million dollars.[1] In the same respect, GAO discounts the validity of foregoing purchase on grounds of technological obsolescence by citing the following:

> As to technological obsolescence, it should be pointed out that the Federal Government has more conventional punch-card machines installed at the present time than were installed ten years ago, at a time when the electronic computer was widely heralded as a replacement for punched-card equipment. Another fact of interest to be noted is that the first general-purpose, business type electronic computer--UNIVAC I, Model I--was installed in the Bureau of the Census in 1951 was not retired until October 1963 after twelve and one half years of around-the-clock service. In addition, despite the fact that new and faster models of electronic computers and punch-card machines are constantly being developed, thousands of the earlier models of punched-card machines and many early models are still in use throughout the Federal Service.[2]

Mission. Mission change, or mission requirements, are other reasons causing obsolescence of ADP equipment. Mission change is in many cases an unpredictable development; for this reason it cannot always be accurately provided for in a lease purchase analysis. Mission requirements, however, are known and whether or not they are adequately planned for rests with the system designers. Early in the history of computer systems when experience with ADP was scarce, many systems were designed and installed, only to find

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[1] Ibid., p. 350.

[2] U. S. Comptroller General, Review of Problems Relating to Management, op. cit., p. 19.

the equipment inadequate for the mission.[1] The mission was not changed in this case, but the machinery required changing in order to accomplish the mission (i.e., mission requirements).

Maintenance Support and Parts. Maintenance support and parts support is a major cause of obsolescence. After producing a particular model of equipment for several years, manufacturers start diverting productive resources to newer models. Eventually the manufacturer will cease support of certain models in favor of newer models, and the owner of these discontinued models must seek support elsewhere or acquire new equipment. In the case of IBM, the consent decree of 1956 ordering them to sell as well as lease their equipment also provided that they give service on this equipment. The key section of this judgment states that IBM is required:

> . . . to offer to sell at reasonable and nondiscriminatory prices and terms, to owners of IBM tabulating and electronic data processing machines [whether or not the purchaser receives IBM repair and maintenance service] and to persons engaged in the business of maintaining and repairing such machines and during the period when IBM has such parts and subassemblies available for use in its leased machines, repair and replacement parts and subassemblies for any tabulating machines or electronic data processing machines manufactured by IBM.[2]

The key then is how long IBM intends to keep a machine on the leasing market. Although this decree pertains strictly to IBM,

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[1] U. S., Congress, House, Hearings, Use of Electronic Data Processing, 88th Cong., 1st Sess., op. cit., pp. 295-296.

[2] U. S., Civil Action No. 72-344, Paragraph (c), Section IV, as cited in U. S., Comptroller General, Financial Advantages of Purchase, op. cit., p. 36. (Italics added).

other manufacturers have taken it as a precedent and generally followed its direction. If a company does not lease equipment, however, it has no requirement for parts support. Experience has indicated that there has been some difficulty with maintenance parts support. General Robert N. Tyson, testifying for the Army, stated the following in 1963:

> Financial losses can result from discontinuance by the manufacturer of equipment and spare parts to support the equipment, failure of the manufacturer to provide either new or used additional components to be installed on-line, such as magnetic tape storage, disk or drum, or withdrawal of maintenance support for obsolescent equipment. This latter may possibly involve specially built components for replacement purposes, which may equal or even exceed the rental cost of second generation equipment.[1]

Another more specific example of this was supplied by the Air Force in 1965. They had purchased a UNIVAC 1103 computer in 1953 and disposed of it in 1960.[2] To show the depreciation of such a machine, the purchase price was $850,000, and after numerous attempts to find second users failed, the machine was sold for surplus at a price of $1,061. The reasons why efforts to find a user within the entire Federal Government failed were that maintenance of the machine was practically impossible. In order to

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[1]U. S., Congress, House, Hearings, Use of Electronic Data Processing, 88th Cong., 1st Sess., op. cit., testimony of Brigadier General Robert N. Tyson, U. S. Army, Director of Management, Office of the Comptroller of the Army, p. 69; also written statement of General Tyson for Part 4 of Hearings, p. 443, citing specific examples.

[2]U. S., Congress, House, Automatic Data Processing, 89th Cong., 1st Sess., op. cit., pp. 183-184.

keep the machine in operating condition, parts had to be specially manufactured by the Air Force. The manufacturer in this case had discontinued supplying such parts.[1]

Breadth of Viewpoint

An extremely important factor affecting life expectancy estimation is the viewpoint from which the situation is considered.[2] From an individual agency's point of view, the need for a particular machine may be temporary. On the basis of this viewpoint, the agency can lease a machine since total cost for leasing is less for a short period than the purchase cost. Simultaneous to this, a government-wide viewpoint may dictate a purchase decision, since on the basis of additional information, it might be discovered that another agency has requested delivery of an identical machine at the time the first agency is turning in its! Several specific cases of this were pointed out by GAO in its 1964 Report. One noteworthy example is as follows:

> In november 1959 . . . the Army installed two IBM 704 systems on a rental basis at the White Sands Missile Range. Later, when the Army exchanged its IBM 704 system in September 1963, the Navy was acquiring through purchase a refurbished IBM 704 that was scheduled for delivery in September.[3]

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[1] Ibid., pp. 184-190.

[2] U. S., Comptroller General, Management on Automatic Data Processing, op. cit., p. 21.

[3] U. S., Comptroller General, Review of Problems Relating to Management, op. cit., pp. 48-49.

GAO goes on to point out that had the machinery been purchased in the first place, considerable money would have been saved.[1] This, then, points up the importance of viewpoint in the "buy vs. lease" analysis. Chances are both the Army's original lease decision and the Navy's later purchase decision were soundly based on analysis of their immediate situations. Had a wider viewpoint been used, the decision would have definitely changed.

Utilization

Utilization affects computer life expectancy in several ways. If a computer has been determined to be needed it should be utilized to the greatest degree possible, since, due to pricing structures, per hour costs decrease as utilization increases. Manufacturers' charges are based upon the number of hours machines are used. Up to one hundred seventy-six hours per month, known as "prime time," the charges are at one level; beyond this hundred and seventy-six hours, the prices drop off, becoming only a percentage of the "prime time" rate. For example, IBM's extra use charge is thirty percent on 1401/7090 series computers and ten percent on 360 family computers. The rate varies for other manufacturers since the procurement contracts are separately negotiated.[2]

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[1] Ibid.

[2] Interview with Mr. Elliot Gold, Procurement Officer, Automatic Data Processing Procurement Division, General Services Administration, February 23, 1967.

Life expectancy becomes affected when charges are matched against expected utilization. From these two figures, a break-even point can be projected. Depending upon the time span to the break-even point, determinations can be made as to the "buy vs. lease" desirability. BOB Circular A-54 has set six years as the cut-off point; if the break-even point falls within this period, purchase is preferable.[1] Thus, utilization can determine whether a computer is purchased, which, in turn, determines its life expectancy within the government. GAO goes a bit further and states that between computers of like capacity, if a choice is required, the computer with the greatest utilization should be purchased.[2] By doing this, they say, the greatest savings would accrue to the government.

Re-utilization

This is very similar to utilization; however, in this case the problem is once-removed. Any discussion of "buy vs. lease" during Congressional Hearings has led to a discussion of this point. Usually it is offered as a reason for going slowly on "general" purchasing policy. In these cases, it is contended that costs incurred finding second users for excess equipment cancel out

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[1]U. S., Bureau of the Budget, Circular A-54, op. cit., p. 4.

[2]U. S., Comptroller General, Management of Automatic Data Processing Facilities, op. cit., pp. 28-29.

potential savings.[1] Another contention is that, in view of high obsolescence rates, the government would find itself flooded with used computers for disposal.[2] When asked to comment on the present computer surplus situation, Mr. Edward J. Mahoney of GAO stated that he very seldom saw modern computers in the GSA Excess Property Bulletin. From this, he concluded that, despite the substantial increase in government purchasing, fears of excess surpluses have not borne fruit.[3] Re-utilization has, in other words, not been a deterrent to computer purchasing.

Another determinant affecting re-utilization is variable equipment configuration. The 1965 BOB report remarked on this as follows:

> Thus, although equipment may carry the same model number, equipment capability within that model can and does vary substantially. It is therefore unlikely that an equipment configuration used at one installation could be used as is by another. This is supported by discussions with one equipment manufacturer who indicated that one half of all computers in a popular model returned by lessees needed some modification before they were usable elsewhere.[4]

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[1]U. S., Congress, House, Hearings, Use of Electronic Data Processing, 88th Cong., 1st Sess., testimony of Brigadier General Robert N. Tyson, op. cit., p. 443.

[2]Ibid., Part I, Testimony/statement of Edmond D. Dwyer, Chief of Navy Management Office, Department of Navy, p. 114.

[3]Interview with Edward J. Mahoney, Associate Director, Accounting and Audit Policy Staff, General Accounting Office, February 20, 1967.

[4]U. S., Bureau of the Budget, Management of Data Processing, op. cit., p. 35.

Further variables influencing re-utilization are the physical location of the equipment and its age at disposition. If a computer is located in an inaccessible location, either geographically or, as in one case, so encased within a building as to require the removal of an entire wall to remove it,[1] the feasibility of re-utilization would be thereby reduced. Certainly, if a computer is so old as to require considerable upkeep, despite the availability of parts, this would affect the re-utilization and hence the life expectancy of the equipment.

Compatibility

This variable has already been covered in the last section. Considerable remodification requirements can make a computer worthless in a short period of time.[2] On the other hand, a highly compatible computer will find its life span lengthening each year.

Application

Considerable concern is shown in all the Hearings with respect to this variable. Primarily at the forefront of these discussions are the representatives of the scientific agencies. First of all, there is certain computer equipment which is not included under BOB Circular A-54 because of its application.[3]

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[1]U. S., Congress, House, Hearings on H. R. 4845, op. cit., p. 196.

[2]Ibid., pp. 184-185.

[3]U. S., Bureau of the Budget, Circular A-54, op. cit., p. 1.

These, generally speaking, are equipments incorporated in weapons systems and those used in intelligence applications. Over and above these, however, are a body of computers used in such agencies as AEC, NASA, Bureau of Standards, etc., which are used in scientific applications. In most cases, these agencies are against restrictive acquisition regulations because of the need to stay at the forefront of the "state of the art." An example of this was the prepared statement of the National Bureau of Standards before the Subcommittee on Census and Government Statistics hearings in 1962. Speaking in behalf of experimental and scientific applications, the following was offered:

> In situations where EDP equipment is used primarily as a tool applied to constantly changing problems of increasing complexity rather than as a production element, increased emphasis must be given to the availability of a flexible capable machine without undue delay.[1]

Other special treatment based upon peculiarities resulting from unusual application was brought out during this Subcommittee's 1963 hearings. At this time, NASA representatives showed through rather complex analysis that in their particular case, continual modification of equipment tipped the balance in favor of leasing.[2] Representative Watson indicated his perception of this application distinction in the following statement:

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[1]U. S., Congress, House, Hearings, Use of Data Processing Equipment, op. cit., Statement of National Bureau of Standards, p. 234.

[2]U. S., Congress, House, Hearings, Use of Electronic Data Processing, 88th Cong., 1st Sess., op. cit., Part 5, pp. 543-544.

Mr. Watson: Mr. Chairman, I think at this time we should like the record to show that although his study on these very sophisticated intricate, and complicated technical machines used in the space program might indicate that it certainly would be to our advantage to rent rather than to purchase, that it would not necessarily follow that the same would be true of the more commonplace automatic data-processing equipment.[1]

Charges

Rent, Purchase Price and Maintenance

The impact of the factor "Charges" on the "buy vs. lease" decision is derived through a process of accounting analysis, which, since 1961, has been spelled out by the BOB Circular A-54. Inputs to the cost analysis (prices of purchase or leasing) are predetermined by the individual manufacturers, while terms of the contracts are in most cases negotiated by the GSA.[2] Once selection is made, BOB Circular A-54 directs that the following criteria be followed in deciding the method of acquisition:

(1) The Purchase method is preferred when all of the following conditions exist:

(a) The system study which preceded the selection of the equipment has established a reasonable expectancy that the ADP equipment under consideration can be successfully and advantageously used.

(b) A comparative cost analysis of the alternative methods of acquisition, of the types illustrated by Attachments A and B, indicates that a cost advantage can be obtained by the purchase method in six years or less after the date of delivery.

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[1] Ibid., p. 547.

[2] U. S., Comptroller General, Financial Advantages of Purchase, op. cit., pp. 16-17.

This analysis usually will include the following cost elements under each method: for the lease method--rental costs, including maintenance; for the purchase method--purchase costs, including purchase price, maintenance, and other one-time costs applicable only to purchase; for the lease-with-option-to-purchase method--rental costs, and purchase costs less credits applicable upon purchase. In addition to the cost elements described above, the residual value of equipment to the Federal Government will be considered as a factor in a comparative cost analysis. Trade-in allowances quoted by manufacturers may be used as a representation of the residual value.

(c) The capabilities of the ADP equipment will continue to be needed and will be sufficient to satisfy the system requirements, current and projected, for a period beyond the point in time at which the purchase method begins to provide a cost advantage. The possibility that future technological advances will render the selected equipment comparatively obsolete before the cost advantage point is reached should not rule out purchase if the selected equipment is expected to be able to satisfy the system requirements.

(2) The lease-with-option-to-purchase method is indicated when it is necessary or advantageous to proceed with the acquisition of the equipment that meets system specifications, but it is desirable to defer temporarily a decision on purchase because circumstances do not fully satisfy the conditions which would indicate purchase. This situation might arise when it is determined that short periods of operational experience are desirable to prove the validity of a system design on which there is no previous experience, or where decisions which might substantially alter the system specification are imminent.

(3) The lease method, without option to purchase, is indicated only when it is necessary or advantageous to proceed with the acquisition of equipment that meets system specifications and it has been established conclusively that any one of the conditions under which purchase is indicated is not attainable.[1]

Attachments A and B of this circular are included as Exhibits 5 and 6. Exhibit 5 illustrates a lease versus purchase calculation based upon one-shift usage, whereas Exhibit 6 deals with lease versus

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[1]U. S., Bureau of the Budget, Circular A-54, op. cit., p. 4.

LEASE VS. PURCHASE
REPRESENTATIVE ADP COMPUTER SYSTEM
BASED ON TWO-SHIFT USE

ITEM OF COST	COSTS BY FISCAL YEAR					
	1962*	1963	1964	1965	1966	1967
1. Purchase basis:	$	$	$	$	$	$
a. Purchase costs.	600,000	0	0	0	0	0
b. Maintenance, cumulative.	45,000	90,000	135,000	190,000	245,000	300,000
c. Cumulative, purchase basis.	645,000	690,000	735,000	790,000	845,000	900,000
2. Lease basis, cumulative (including maintenance).	200,000	400,000	600,000	800,000	1,000,000	1,200,000
3. Purchase basis exceeds lease basis.	445,000	290,000	135,000	--	--	--
4. Lease basis exceeds purchase basis.	--	--	--	10,000	145,000	300,000

* Year acquired, utilized full year.

Exhibit 5.

(No. A-54)

LEASE VS. LEASE-WITH-
OPTION-TO-PURCHASE
REPRESENTATIVE ADP COMPUTER SYSTEM
BASED ON ONE-SHIFT USE

ITEM OF COST	COSTS BY FISCAL YEAR					
	1962*	1963	1964	1965	1966	1967
1. Lease basis, with-option-to-purchase: (Option exercised at end of first year).	$	$	$	$	$	$
a. Lease.	150,000	--	--	--	--	--
b. Less, credit upon purchase.	-75,000	--	--	--	--	--
c. Purchase costs.	600,000	0	0	0	0	0
d. Maintenance, cumulative.	26,000	52,000	78,000	108,000	138,000	168,000
e. Cumulative, lease/option basis.	701,000	727,000	753,000	783,000	813,000	843,000
2. Lease basis, cumulative (including maintenance).	150,000	300,000	450,000	600,000	750,000	900,000
3. Lease/option exceeds lease basis.	551,000	427,000	303,000	183,000	63,000	--
4. Lease basis exceeds lease/option basis.	--	--	--	--	--	57,000

* Year acquired, utilized full year.

(No. A-54)

Exhibit 6.

lease-with-option-to-buy on a two-shift usage. In each case, the cost inputs are "given." The fact that the cost elements are given without an adequate explanation of their derivation, plus the fact that only three charges are included has raised the criticism that the A-54 calculation is oversimplified.[1] Rental charges, Purchase Price and Maintenance Charges are included; Cost of Money, Software, and Systems Support, however, are not.

Cost of Money

The General Accounting Office pointed out the need for including the cost of money as early as 1963:

> It is our position that interest is a cost which is related to all Government expenditures. In our calculations of applicable interest costs, we used the average rate of marketable obligations of the outstanding public debt as of December 31, 1961 (3.146 percent).[2]

In 1965, the Bureau of the Budget Report to the President also mentioned the need for the inclusion of the cost of money:

> Current policies do not require that the cost of money be included in determining whether to lease or purchase ADP equipment. It would be desirable to require consideration of the additional factor, although there will probably be few instances when such consideration will be significant enough to alter the decision.[3]

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[1]Interview with Sidney Weinstein, Acting Director, Automatic Data Processing Procurement Division, General Services Administration, Washington, D. C., February 23, 1967.

[2]U. S., Comptroller General, Financial Advantages of Purchase, op. cit., p. 18.

[3]U. S., Bureau of the Budget, Management of Automatic Data Processing, op. cit., p. 29.

Software

Software is also an important determinant of total "charges" to a system. The BOB 1965 Report discusses the significance of software in pricing activities of the manufacturers, and recommends that the GSA require the manufacturers to specify more clearly this whole area of software charges.[1] The GAO likewise recognized the problem.[2]

Systems Support

Systems Support is finally an additional influence on total charges. This is a hard variable to define. An opinion poll of ADP managers would point out definite preferences with respect to manufacturers. Whether the basis of this would be the number of representatives tending to one's system, or the alacrity with which they accomplish requests is a matter of personal preference. There are strong indications that certain manufacturers are better than others, but it would not be proper to single them out in this analysis. The absence of manufacturer systems support can cost a user money; that is why it is mentioned under charges.

Other Considerations

Two other considerations affecting the cost analysis of lease versus purchase are "Residual Value" and "Individual Component Consideration." GAO made particular reference to these in its 1965

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[1] Ibid., p. 44.

[2] U. S., Comptroller General, Management of Automatic Data Processing, op. cit., pp. 68-69.

report. First, on the need for individual component consideration:

> Neither Bureau of the Budget Circular No. A-54 nor the Bureau's study report (1965) specifically deals with the need for individual agencies to consider alternative lease-purchase investment decisions on an individual component basis.[1]

They further outline the rationale behind this position:

> Some components of smaller computer systems often showed no cost advantage through purchasing on a one-shift basis for a five year period; whereas, most of the components of the larger systems, particularly the central processing unit and other large components, showed a high rate of cost advantage from purchasing. Also, for a two and three-shift operation for a five year period, the cost advantage for the higher cost components showed that generally a higher percentage of advantage (ratio of savings if purchased to purchase cost) could be achieved by purchasing these components rather than by purchasing some of the components of smaller computer systems and most electromechanical components.
>
> We have noted in our studies of agency practices that frequently entire systems are considered in making lease-purchase cost calculations, and consequently the results of the comparisons cannot be relied upon to distinguish the particular components that should be purchased from the ones which should be rented. Because of not separately considering individual components, entire systems, in some cases, have been rented instead of some components being rented and some purchased.[2]

With regard to residual value, GAO criticized Circular A-54 for being unrealistic. They singled out the provision that "Trade-in allowances quoted by manufacturers may be used as a representation of the residual value."[3] This, they claim, is inadequate since

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[1] Ibid., p. 34.

[2] Ibid., p. 33.

[3] U. S., Bureau of the Budget, Circular A-54, op. cit., p. 4.

agencies are not including residual values in their purchase versus lease analysis. In addition, they reference their continuing recommendations on this problem:

> In a letter to the Director, Bureau of the Budget, dated March 31, 1964, and in our April 30, 1964 report to the Congress, we recommended that Circular No. A-54 be revised to require, in making comparative cost analyses as a basis for lease-purchase decisions, the use of more realistic estimates of residual value based on continued effective use of this equipment by Government agencies.[1]

Nor is GAO the only source of criticism on this point. Mr. Sidney Weinstein of the General Services Administration, in a recent interview, indicated that this has been a constant source of conflict in reviewing lease versus purchase determinations. To remedy this, GSA is currently devising a cost model which will include a more realistic estimate of residual value.[2]

Indirect Factors

Monopoly/Competition

Monopoly/Competition can ultimately cost the Government in the same manner as it costs the private consumer. If the ADP equipment industry becomes dominated by one or few companies, the result can be detrimental (price-fixing, etc.). This can particularly harm the government's position in view of the reliance

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[1] U. S., Comptroller General, Management of Automatic Data Processing, op. cit., p. 35.

[2] Interview with Mr. Sidney Weinstein, op. cit.

that it has come to place on certain manufacturers. Congressman Brooks alludes to this dependence during the H. R. 4845 hearings in 1965:

> Mr. Brooks: Do you not also think that there are a couple of suppliers that we are no more likely to quit doing business with for one year than I am to jump flat-footed out that window and hop to the top of the Capitol?[1]

Nor is this the only reference to the fear that government policy on lease versus purchase would affect monopoly/competition balance; the prepared testimony of the Army Department in 1963 related it to equipment trade-in. Their contention was that if a general government policy of purchase were effected:

> . . . in each case of installed equipment, trade-in generally would have to be limited to the same manufacturer whose equipment is being traded, and this is at his discretion. Continuation with the same manufacturer may not always be to the best interest of the Government where another manufacturer's equipment better serves the purpose.[2]

The implication that could be drawn from this is that if this were to happen, the manufacturer with the greatest percentage of the market at the outset would tend to retain that percentage.

Manufacturer's Pricing Policy

This is very closely akin to the previous factor; however, it is sufficiently specialized as to merit separate discussion.

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[1]U. S., Congress, House, Hearings on H. R. 4845, op. cit., p. 61.

[2]U. S., Congress, House, Hearings, Use of Electronic Data Processing, 88th Cong., 1st Sess., op. cit., p. 87.

Manufacturer's pricing policies are, of course, confidential to the companies themselves. As will shortly be pointed out, much second guessing has circulated around these policies, in an effort to identify motives. Several references have been made on this subject beginning with the GAO report published in March of 1963:

> The possibility that prices would be increased if the Government purchased more equipment is a factor that cannot be fully evaluated at this time. We believe that there is some protection against increased purchase prices under the terms of the consent decree filed and entered in 1956 by the United States of America against the International Business Machines Corporation.[1]

This decree had enjoined IBM to offer equipment for sale at a price that would "not be substantially more advantageous to the International Business Machines" than its leasing charges.[2] As IBM's share of the Federal Government computer market has dwindled over the years from 67% in 1963[3] to 35% in 1966,[4] so, it would seem, the influence of the GAO statement has also.

During the June, 1963 hearings before the House Subcommittee on Census and Government Statistics, Edmond Dwyer, testifying for the Navy Department also addresses this problem:

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[1]U. S., Comptroller General, Financial Advantages of Purchase, op. cit., p. 34.

[2]Ibid.

[3]Ibid.

[4]U. S., Congress, House, Subcommittee on Government Activities, Hearings, Government Electronic Data Processing Systems, 89th Cong., 2nd Sess., June 14, 1966, p. 8. (Testimony of Harold Seidman of the Bureau of the Budget).

> Mr. Dwyer: There are of course more subtle aspects of the purchase-lease dilemma. Thus manufacturers' computer pricing policies might well be investigated to the advantage of the Government. If, indeed, economics consistently favor purchase, then it might be wise to determine why. Would examination of current pricing structures possibly disclose that equipment costs are inflated to cover software, or would it reveal some significant tax advantages to the companies? Or, is it possibly in the manufacturer's best long-range interest to promote a purchase situation wherein the Government, in effect, is ultimately forced into assuming the costly and annoying burden of administering a used computer market?[1]

Another indication that manufacturer's pricing policy is affected by lease/purchase is a recent article in The Wall Street Journal. Commenting on how IBM's pricing policy affected customers, particularly leasing companies, the following was stated:

> Last fall, IBM announced a cut of about 3% in the sales price of most system 360 elements, following on January 1 by an increase of about 3% in monthly rentals. This reduced the leasing companies' investment costs and also allowed them to raise their prices to some customers. IBM's price changes, which were evidence of its own pressing need for cash, were followed by most other manufacturers.[2]

While company policy would preclude divulging motives for price changes, it can be concluded from the above that the money market conditions can also play a role in the determination of manufacturer's pricing policies.

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[1]U. S., Congress, House, Hearings, Use of Electronic Data Processing, 88th Cong., 1st Sess., op. cit., testimony of Edmond Dwyer, p. 114.

[2]"Computer-Leasing Firms Offer Discounts by Gambling on Long Lives for Machines," The Wall Street Journal, February 20, 1967, p. 30.

Budgeting

As previously mentioned in Chapter II, budgeting has a considerable effect on purchase or lease activity. Not only is the decision to lease or purchase dependent upon the budget, but also its timing. The GAO on occasion had discounted the appeal to budgetary considerations as valid reason for deferring purchase, an example of which is as follows:

> As to obtaining funds for the capital required for outright purchase of electronic equipment, it is our opinion that when well-justified requests to purchase EDP equipment are presented they will receive serious consideration. Some congressional appropriation subcommittees have advocated a purchase policy and have requested agencies to consider purchasing rather than leasing of EDP equipment.[1]

The Bureau of the Budget, however, expanded on the budgetary problem in its 1965 Report, showing what a difficult and involved relationship really existed between "buy vs. lease" and the budget:

> Decisions with respect to the purchase or rental of a computer inevitably become involved in budget considerations. In most cases, budgets can be prepared or adjusted to accommodate either decision. In other cases, an administrator with limited funds available to perform his mission may find it undesirable to devote a substantial portion of his funds to a capital investment if doing so will force him to forego an essential element of his operating program. In these cases, the choice reflects a decision on whether the purchase of equipment will yield a return in the form of long-range savings that is greater than the return to be obtained by devoting the funds to another purpose. In Government--unlike most industries where similar judgments must be--this decision often cannot be validated by agencies because the benefits resulting from public service functions usually can be measured only by value judgments. Although it is recognized that budget considerations may, at times, cause a temporary deferral of a decision to purchase, the

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[1]U. S., Comptroller General, Review of Problems Relating to Management, op. cit., p. 20.

> circumstances should be fully documented to show justification for such action, and steps should be taken to effect the budget adjustments which would permit purchase as early as practicable.[1]

Susceptibility to Loss

Although one of the minor indirect factors, susceptibility to loss appears often enough to merit attention. Early in the "buy vs. lease" literature, this had perhaps more importance than it does today. First generation computers requiring "hard sights," extensive air conditioning, and special power facilities were extremely vulnerable to damage.[2] In the 1960 Joint BOB/GAO Interim Report on lease versus purchase quoted earlier, the avoidance of "the risk of major loss by fire or other disaster" was mentioned as one of the advantages of leasing.[3] The threat of such losses was mentioned also by the Bureau of Labor Statistics during the 1962 Hearings:

> The Bureau of Labor Statistics system involves about a million dollars of capital investment subject to accidental loss, such as fire. Although such losses do not occur very frequently, they have occurred in the past; they will probably occur in the future.[4]

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[1]U. S., Bureau of the Budget, Management of Automatic Data Processing, op. cit., p. 33.

[2]U. S., Comptroller General, Report on Trend of Development and Use, op. cit., p. 64.

[3]U. S., Comptroller General, Interim Report, Lease versus Purchase, op. cit., p. 2, #7.

[4]U. S., Congress, House, Hearings, Use of Electronic Data Processing, 87th Cong., 2nd Sess., op. cit., p. 159.

To combat the risks mentioned above, the GSA had by 1962 set up certain safety regulations designed at preventing such losses:

> We have standards for fire protection, air conditioning, floor load, and things of that nature. Very recently we issued a fire-protection handbook to be used by the agencies in setting up their ADP installations.[1]

In this same area would be included the problem of not only preventing loss through fire or damage, but also guaranteeing that it has not happened--in the case of used machines. This important problem was broached by Mr. Edmond C. Buckley testifying for NASA at the H. R. 4845 hearings:

> Mr. Buckley: I see problems about warehousing and providing a supply of equipment for secondary users, one of which, of course, is the certifying of machines. They will have to be sure that nobody has modified the machines, or they have not been damaged in transit. I think that you will have a problem of determining who insures that a machine is in the proper condition, and certifies it.[2]

Inventory and Statistical Information Available

The dearth of information has consistently been mentioned as a major deterrent to effective policy formulation. The BOB Report to the President underlined the problem as follows:

> The lack of availability of essential information on a timely basis constitutes an important obstacle to attaining effective management of automatic data processing equipment in the Federal Government. While the annual inventory produced by the Bureau of the Budget is useful, it was not intended to provide current and full information needed for management purposes. . . .

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[1] Ibid., testimony of Edmond J. Rouhana, Administrator, General Services Administration, p. 61.

[2] U. S., Congress, House, Hearings on H. R. 4845, op. cit., p. 126.

> The trend toward purchasing focuses attention on a relatively new need for assuring that detailed information on the engineering and performance characteristics of each component of equipment is properly recorded and reported to reflect maintenance activity and modifications. Such information is essential, of course, for keeping Government-owned equipment in good operating condition, but it also facilitates decisions on the redistribution of the equipment as it becomes excess.[1]

The General Accounting Office in its 1965 report listed specific instances where, for lack of an effective flow of information, lease decisions were erroneously made:

> 1. Government agencies were contracting out for computer time with commercial service bureaus while available time on Government equipment remained unused.
> 2. Government agencies were releasing models of equipment while other agencies were ordering the same models of equipment from the equipment manufacturer.
> 3. Government agencies were installing computers while available time on other agency equipment went unused.
> 4. Government agencies were installing equipment similar to that released by contractors.[2]

This last indirect variable is all encompassing in its impact. It only stands to reason that decisions made on insufficient or inaccurate data will be poor ones. The need for this additional detailed information referred to in the BOB report has been recognized by the General Services Administration.[3] Problems related to locating second and third users for purchased equipment are

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[1]U. S., Bureau of the Budget, Report on Management of Automatic Data Processing, op. cit., pp. 63-64.

[2]U. S. Comptroller General, Management of Automatic Data Processing Facilities, op. cit., p. 58.

[3]Interview with Sidney Weinstein, op. cit.

directly related to this information requirement. In order to accomplish this objective, the GSA is reworking the present reporting system with an eye toward introducing more detailed, usable management information.[1]

Thus, it is apparent that the question of "buy vs. lease" is an elusive one, being influenced by a mix of interdependent and inter-related factors. While attempts in the past were made to associate certain of these factors with one or another method, it has been shown that these were superficial evaluations. The "buy vs. lease" decision can only be made as it relates to a particular system, at a particular juncture in time. In order for this decision to be accurate it must consider both Direct and Indirect Factors as influenced by a number of variables.

Although this is a seemingly impossible task, some progress has been made. The next chapter will analyze this progress as it has been affected by current developments in Government policy.

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[1] Ibid.

CHAPTER IV

"BUY VS. LEASE": PRESENT AND FUTURE

The Bureau of the Budget and General Accounting Office Philosophies

The solution to an individual "buy vs. lease" problem is possible so long as the criteria relating to that problem are confined to the immediate environment; once an individual "buy vs. lease" decision is related to the entire governmental environment, solutions become practically impossible. The magnitude of such a problem can be approximated by multiplying the number of variables discussed in the last chapter, by the number of different systems in the government. The resulting quantity would represent the amount of potential considerations necessary to decide a government-wide problem effectively. Nor is this the only problem.

For years, the individual agencies have had to manage their systems with great difficulty because of a conflict of policy between the two regulatory agencies, the Bureau of the Budget and the General Accounting Office. Since BOB is, in a sense, the source of operating funds, and GAO is a judge of how these funds are utilized, it behooves an agency to abide by their dictates. The trouble has been, however, that their policies have been contradictory.

These differences between BOB and GAO were brought out in the Brooks' Subcommittee Hearings in 1965. The Comptroller General outlined GAO's position as follows:

> Mr. Campbell: The Bureau (of the Budget) in Chapter 5 recognizes the need for lease versus purchase evaluations prior to ADP acquisitions. However, the Bureau differs with us, or we differ with the Bureau, in the scope of evaluations to be made.
>
> We recommend evaluations based on the prospective benefit of the equipment to the Government as a whole. The Bureau states that this would require detailed information at time of acquisition of secondary users' requirements, and their identity.
>
> In other words, we think that our position calls for Government-wide evaluations of all ADP equipment to be acquired, not just the decision of the user agency, because through the use of effective and informed coordinated Government ADP management, Federal officials should be able to reasonably anticipate economical and efficient utilization of many ADP systems beyond the period the equipment is assigned to the initial user.
>
> Also since most ADP equipment installed or ordered for use by Government agencies is general purpose in nature--meaning it can be used to perform all types of work--Government-wide determinations are entirely feasible but only at a central point. If as a matter of policy these lease versus purchase evaluations are limited to the benefits to the initial user agency, we automatically and arbitrarily deprive the Government of the savings which would result from these instances where secondary utilizations can be reasonably and reliably predicted. Of course, this will not be in every instance. In some cases, authoritative evaluations based upon detailed accurate information will no doubt suggest the purchase option approach--in other instances, outright lease may be the most economical method of procurement.
>
> In other words, this is not a one-shot proposition by any means, and, therefore, there should be more than the judgment of one bureau head or one agency head in the choice of the system that we are about to purchase or lease.
>
> Mr. Brooks: Was it your conclusion that about ninety percent of the ADP equipment is of a general-purpose nature?
>
> Mr. Campbell: Yes, I believe that is our estimate.

Mr. Brooks: And your recommendation for Government-wide evaluation does not suggest that every system to be acquired is going to meet this test, does it?

Mr. Campbell: That is correct, Mr. Chairman, and while we are on this point, I would like to stress the fact that at no time have we recommended the purchase of all ADP equipment the Government needs.[1]

The Bureau of the Budget was represented during these hearings by Mr. Elmer Staats, who was questioned concerning the same subjects. In the following dialogue with Congressman Brooks, he summed up the traditional BOB outlook on purchase vs. lease analysis:

Mr. Staats: This will come down to case-by-case decision, Mr. Chairman. I do think there is a misunderstanding when we talk about ninety percent of the equipment being general-purpose equipment. General-purpose equipment ordinarily would be defined I think to be equipment that any agency could use. It would be like a Ford automobile. This is not the case here. General-purpose equipment in this case has been defined to be equipment that has more than one purpose. When it is purchased by an agency, it is a part of a system, a development program. It is a part of a special application, and, therefore, I would not want to be hasty in saying "yes" to your question. I think this is going to depend on a case-by-case negotiation.

Mr. Brooks: All right. Well, let's go, then, to the lease vs. purchase evaluations on an agency by agency basis. Relating to the need for Government-wide evaluation of a lease versus purchase, and other important procurement considerations, both the Bureau's report and the Comptroller General are in accord that lease versus purchase evaluations should be made, and the difference is in the scope or the level of the evaluations.

Now in your study, it is recommended that these evaluations continue to be made on an agency-by-agency basis. The Comptroller General has demonstrated on numerous occasions the advisability of making evaluations on a basis of the economic benefit of the system to the Government as a whole.

Now, as I understand the report, and your testimony, you see problems in a Government-wide approach, arising from the need to specifically identify secondary users and their requirements at the time of acquisition?

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[1]U. S., Congress, House, Hearings on H. R. 4845, op. cit., pp. 18-19.

Mr. Staats: That is correct.[1]

Nor have these differences been concerned only with scope of viewpoint. The last chapter discussed several GAO criticisms of Circular A-54: the absence of cost of money, and residual value determinations. In addition, A-54 does not apply to contractors who ultimately charge ADP costs back to the Government. The significance of this is that, in order to obtain funds for ADP, agencies have been required to follow Circular A-54, only to find their actions later criticized by GAO.

Public Law 89-306

Congressman Brooks sought to remedy this conflict through legislation. At the outset of the hearings on H. R. 4845, he states this position:

> This legislation is needed to carry out the Comptroller General's recommendations that ADP acquisition and utilization be coordinated on a Government-wide basis. In more than sixty audit reports to the Congress over the last seven years, he has outlined some of the costly deficiencies which have resulted from the present agency-by-agency approach to Government ADP management. In these reports he has repeatedly highlighted the vast savings possible through Government-wide coordination of this equipment. . . . At present, each agency operates independently in the acquisition and utilization of ADP with only Bureau of the Budget guidelines to follow. Some reporting requirements have been established, and there is an annual inventory published. But furnishing agencies these guidelines has not in turn provided the Bureau of the Budget with the data necessary to determine agency

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[1]Ibid., pp. 64-65.

compliance with existing policies. Nor does the Bureau have information sufficient to recognize new problems as they arise or to establish new policies as they are needed. And even were individual agency management no problem, under the present system the Government loses the benefits in economy and efficiency inherent in Government-wide coordination of certain aspects of ADP management.

These deficiencies can be avoided through use of the authority in this legislation. And this desired result can be achieved without compromise of user agency responsibilities or interference in ADP use. H. R. 4845 defines the Bureau of the Budget's authority to coordinate Government ADP acquisition and utilization delegating the operational aspects of the coordination program to the Administrator of General Services. The bill then provides the Bureau and the GSA with the operational means to effect this coordination.

The ADP inventory and the revolving fund will give the Bureau a continuous feedback of accurate, up-to-date information needed to determine effective management policies. Through the use of this information and the more effective operational techniques provided in the bill, the Bureau of the Budget would be for the first time able to deal effectively with Government ADP management problems, those that exist today and as may arise in the future.[1]

This bill became enacted into Public Law 89-306 in October of 1965. In June of 1966, the Subcommittee on Census and Government Statistics held hearings on Government Electronic Data Processing Systems. Commenting on the developments in ADP management since the passage of the legislation, Mr. Harold Seidman of BOB mentioned several key items relevant to "buy vs. lease." He, first of all, outlined the changes in BOB and GSA organization and staffing, particularly how the latter was being increased.[2] In addition, he

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[1] Ibid., pp. 1-2. (Italics added.)

[2] U. S., Congress, House, Hearings, Government Electronic Data Processing Systems, 89th Cong., 2nd Sess., op. cit., p. 7.

mentioned the increased effort in the area of management information, mentioned by Congressman Brooks as imperative to carrying out the intent of the legislation:

> Mr. Seidman: . . . To meet this need, the Bureau of the Budget is proceeding with the development of a new information system to replace the annual and supplementary reports required by the central agencies.[1]

In the area of procurement, he mentioned that GSA was studying the feasibility of separating "the pricing of hardware installation, training, technical service, and programming aids, separately from the rental-purchase prices."[2] He also stated that "with the passage of Public Law No. 89-306, changes are contemplated in the present purchasing arrangements to improve further the Government's bargaining position."[3]

The General Service Administration's Program for Action

In order to determine the actual steps being made toward compliance with the tenets of Public Law 89-306, several interviews were conducted. Mr. Sidney Weinstein, Acting Director of the GSA's Procurement Branch, spoke at great length on their planned program.

Mr. Weinstein called GSA's approach a "three-pronged" one to achieve eventually a central purchaser concept.[4] Acting under

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[1] Ibid., p. 8.

[2] Ibid., p. 9.

[3] Ibid.

[4] Interview with Mr. Sidney Weinstein, op. cit.

the guidance of a BOB policy letter (March 4, 1966) GSA is planning toward the central purchaser mode of operation, but because of prevailing conditions, only the first of the three "prongs" (which shall be called "categories" henceforth) can be even partially implemented.[1]

Category one is called "Evaluations before Procurement." This is a study of present procurement procedures with the intent of evaluating their effectiveness in relation to other possible procedures, e.g., separation of software charges from hardware, potential of leasing companies, and also third-party leaseback, and finally, potential of government-wide consolidation of purchases. Mr. Weinstein stated that while much work had been done on this category, it had not appreciably changed present procurement methods.

Category two is what Mr. Weinstein called the "Action" category. In this, BOB guidelines instruct GSA to assist agencies in procuring equipment, tempered by the following constraints:

(1) That the Government profits from prior negotiations experience (that information on previous experience be gathered in a central location for use by all);

(2) That all available equipment be utilized before new equipment is acquired;

(3) That agencies determine their own requirements.

Mr. Weinstein stated this category was almost impossible to carry out under the present system. In order to assist agencies in actual

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[1] Ibid.

procurement negotiations, GSA intends to use "negotiation teams." At present, there are not sufficient personnel or spaces available to staff all the required teams; however, there are plans to eventually accommodate them in the future, with one team being established this year to act on a management by exception basis.[1]

A second deterrent to the "Action" category is the lack of an adequate information system. The negotiating teams would require considerably more information than is presently available in determining second and tertiary users of equipment for use in calculating "buy vs. lease" decisions. While on this point, Mr. Weinstein stated that it still had not been clarified who would have responsibility for determining "How," "When," or "Who" would be secondary and tertiary users of equipment. This, he added, would be the whole key to single purchaser operation. He further said that unless this could be resolved, "buy vs. lease" could not succeed on a government-wide basis.[2] The information system problem was indicated to be near solution; a rather comprehensive system had been developed and would be implemented this year.

The third deterrent to this "Action" category is the lack of a sufficient revolving fund. Although the revolving fund is being capitalized this year for ten million dollars, it will be too small for the central purchase of all government ADP equipment.

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[1] Ibid.

[2] Ibid.

Finally, Category three of the GSA's program calls for a joint effort between GSA and the National Bureau of Standards to develop an unified, high-quality "Request for Proposal" (RFP). This would include the best parts of present RFPs in an effort to maximize the government's efforts.

This, then, is the GSA program outline. At present, the situation is much the same as before the passage of the legislation. Much is being done to develop guidelines for the central purchaser operation, but very little central purchasing has been accomplished. At present, the individual agencies are carrying out their own procurement as they had done prior to 1965. On the subject of government-wide "buy vs. lease," Mr. Weinstein foresaw considerable difficulty. As already mentioned, the problem of secondary and tertiary users looms very large at present. It was pointed out that in order to ascertain second users at the time of the primary purchase, a secondary agency would be required to sign up as second user. During the time span the primary user holds the machine, conditions may change either in the primary or secondary agency. For instance, if the primary agency would, due to circumstances, need the machine longer than originally estimated, would this be permitted? If the secondary user's programs change to the point where he no longer requires this computer, what should be done? This, Mr. Weinstein said, is central to a program of government-wide "buy vs. lease."

In order to cope with such problems, GSA is trying to develop a mathematical model, which Mr. Weinstein said was necessary because the government-wide "buy vs. lease" decision is dynamic and completely interdependent. This is the reason that Circular A-54 type analysis is not adequate. As of this writing, the mathematical model is far from developed, much depending upon information to be gotten from the proposed management information system.[1]

Future of "Buy vs. Lease"

Where does this leave "buy vs. lease"? Is it a closed issue? The GSA, BOB and GAO representatives displayed unanimous agreement on two points: 1) that the government-wide "buy vs. lease" controversy has not been, nor is even approaching being solved; and 2) that eventually the government will have central purchasing of ADP equipment (central procurement, presupposing centralized "buy vs. lease" decisions). The rationale supporting their positions, however, differed in each case. Beginning with Mr. Edward J. Mahoney of the GAO, the views of each representative will be discussed on both of these points.

Mr. Mahoney personally felt that the government-wide "buy vs. lease" controversy would continue due to several unsolved problems. First, he felt that present activity was inadequate to meet the overall problems. He cited the lack of an adequate revolving fund, or the specific requirement for agencies to work

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[1] Ibid.

through the revolving fund in procuring equipment. This, therefore, affords individual agencies the same autonomy with respect to computer acquisition as they have always had--despite Public Law 89-306. Consequently, GAO activities would continue to uncover diseconomies, as in the past, highlighting the inadequacies of present policy. When this happened, Congress would take notice with the possible result of further legislation.[1]

Secondly, he mentioned that several other areas in ADP would widen the "buy vs. lease" problem: The Federal-state-local sharing of ADP equipment, and the government contractor's ADP programs, etc. He particularly emphasized the latter, stating no one really realized the size of these programs. The GAO is still working in the area of government contractors and has not noticed any particular change in the problem. Mr. Mahoney felt, furthermore, that Congress would again take up this subject, perhaps at the next series of hearings.

When questioned why he thought central purchasing would eventually occur, Mr. Mahoney replied that it would result from the sheer magnitude of the ADP program, which he envisions as being still in its infancy. As it becomes an even larger part of the government's system, centralization in purchasing would have to result.[2]

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[1]Interview with Edward J. Mahoney, op. cit.

[2]Ibid.

Mr. Paul Kingston of BOB agreed that "buy vs. lease" had not been solved because he felt it is a constantly changing decision. He maintained that "buy vs. lease" was a part of every procurement decision, and, as such, would always need consideration. To him, it could not be divorced from the specific situation. The problem could actually be solved for a specific situation, but when one tried to generalize on these decisions, trouble began. Such he felt was the case with government-wide "buy vs. lease" policies. Although Mr. Kingston agreed that a government-wide concept would seem to be most economical in theory, he was skeptical that it could be ever achieved. He was in favor of the present efforts to find a middle ground (the GSA approach) but was not too confident of its success.[1]

On the central purchaser question, Mr. Kingston felt that it would eventually emerge after the following two developments: (1) experience must be gained at centralizing small portions of the purchases; and (2) individuals must tire of fighting over the issue.[2]

Mr. Weinstein of GSA felt that "buy vs. lease" was unsolved primarily for the reasons mentioned earlier: (1) the problem of assigning responsibility for locating and assigning secondary and tertiary users; (2) the purely physical problem of increasing GSA's

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[1]Interview with Paul Kingston, Management Analyst, Automatic Data Processing Staff, The Bureau of the Budget, Washington, D. C., March 1, 1967.

[2]*Ibid*.

capacity (both personnel and informational) to cope with their increased function; and finally (3) the problem of increasing the revolving fund to a magnitude large enough to accommodate the central purchaser function.

On the question of whether central purchasing would become a reality, Mr. Weinstein was confident and saw no reason why it could not be achieved given the proper time and resources. He felt that GSA had a good start on the problem, and expects to overcome many of the obstacles which presently exist.[1]

Since the Congress would no doubt play an important role in any future policy development, some further discussion of this is in order. At a recent meeting of the Financial Management Roundtable, Representative Jack Brooks spoke on "The Role of Electronic Data Processing in Government Management."[2] During the question and answer period which followed, Congressman Brooks discussed several questions relative to the future of "buy vs. lease." Notable among these was the question of government contractors' coverage under P. L. 89-306. Congressman Brooks stated that he originally included contractors under the bill, but had been persuaded by his committee to remove them; however, he still believed they should be, and had not given up on the idea of their

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[1]Interview with Sidney Weinstein, op. cit.

[2]Honorable Jack Brooks, "The Role of Electronic Data Processing in Government Management," presented to the Financial Management Roundtable, sponsored by the Institute of Internal Auditors, Washington, D. C., February 28, 1967.

inclusion in the future. He further stated that hearings would be held during the spring of this year to explore problems and to make an assessment of progress.[1]

In conclusion, one can see that the question of "buy vs. lease" on a government-wide scope is still at issue. Although much has been said about it in government reports and congressional hearings, it has been shown that these decisions are still being made at the agency level. The GAO Study which proposed the policy of government-wide purchase versus lease decisions was based on a hypothetical case,[2] and had never really been tested; a fact often cited by its opponents. Now that this is actually being attempted by GSA, many problems are being uncovered for the first time which require solutions before progress can begin. The lack of a statistical/informational base for analysis, and the responsibility for assigning secondary users are two of the most crucial problems, as indicated by Mr. Weinstein. These problems will require high level decisions as well as low level experience, which is still in the formative stages.

One optimistic sign displayed itself during these interviews, however, which will probably play an important part in reaching a final solution. There has developed in the last few years a new spirit of cooperation among the central agencies (BOB

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[1] Ibid.

[2] U. S., Comptroller General, Financial Advantages of Purchase, op. cit., p. 37.

and GSA) and the GAO. Mr. Mahoney stated that recently a more cooperative line had emerged in the GAO. Instead of strictly auditing and trouble-hunting, the GAO had set upon a course of trying to prevent problems before they develop.[1] In this regard, GAO is working closer with BOB in establishing more realistic guidelines.

This, then, is a recommendation that can be underlined for the future. Cooperation and perseverance with present efforts would seem to hold the answer to the problem. Up to now, the lack of communications, information, and hence, cooperation has perhaps contributed more toward prolonging the problem as any other factor. Until these are overcome, the "buy vs. lease" controversy will continue as an obstacle to a truly government-wide computer acquisition policy.

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[1]Interview with Mr. Mahoney, op. cit.

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