

or purchase. These computations show that the cost advantage of purchasing some electromechanical components, such as printers, card readers, and card punches, is not as great as the cost advantage available through the purchase of electronic components. In some cases, it is clearly disadvantageous to purchase electromechanical components. This is due in part to pricing policies of equipment suppliers and to the greater need for maintenance on electromechanical components because of the inherent wearing characteristics of mechanical parts. These factors would have to be weighed heavily in considering the purchase of these components. It might well be that, for the small cost advantage available, it would not be worth the risk of purchasing a component that may cause a serious maintenance problem or one that may have to be completely replaced because of constantly increasing maintenance requirements.

Because of these factors, detailed computations such as those shown in exhibit C should be made in order to provide the financial information necessary for deciding which components should be purchased and which one should be leased.

SAVINGS AVAILABLE THROUGH FULL USE OF GOVERNMENT-OWNED FACILITIES

Our comparisons demonstrate two additional points that should be emphasized. First, the larger or more sophisticated a system, the greater the rate of purchase advantage. This point is illustrated in the following tabulation of selected IBM systems analyzed. The rate of purchase advantage may be expressed as the percentage the purchase advantage (savings) bears to the total cost of purchasing.

IBM system	Cost to purchase ¹	One shift		Two shifts		Three shifts	
		Amount of purchase advantage	Rate of purchase advantage	Amount of purchase advantage	Rate of purchase advantage	Amount of purchase advantage	Rate of purchase advantage
			Percent		Percent		Percent
7090.....	\$3,632,000	\$644,000	18	\$2,184,000	57	\$3,724,000	94
7080.....	2,653,000	333,000	13	1,397,000	50	2,461,000	84
7070.....	967,000	70,000	7	432,000	42	795,000	74
1410.....	711,000	67,000	9	323,000	42	579,000	70
1401 ²	415,000	27,000	7	158,000	34	288,000	57
1401 ³	411,000	7,000	2	137,000	31	267,000	55
1401 ⁴	188,000	-11,000	-6	41,000	20	94,000	42

¹ Includes maintenance for one shift only.

² Card and staple system operated as off-line equipment to a larger system.

³ Card and tape system.

⁴ Card system.

On a one-shift basis, the percentage of purchase advantage steadily increases with each more costly system—from minus 6 percent for the least costly system to 18 percent for the most costly. On a two-shift basis, these rates run from 20 to 57 percent, and for three shifts, they run from 42 to 94 percent.

A second important point is that the more use made of equipment, the greater the rate of purchase advantage. This factor is also illustrated by the foregoing tabulation which shows in each case that the rate of purchase advantage increases with greater use of the system. For example, the IBM 7090 system shows an increase in the rate from 18 percent for a one-shift operation to 57 percent for two shifts and 94 percent for three shifts.

When considered together, these two points demonstrate that significant economies are available through purchase and joint or multiple use of large data-processing facilities. The Bureau of the Budget's published inventory of automatic data-processing equipment shows that a number of electronic data-processing systems are scheduled for operation on a one- or two-shift basis. For example, 22 of the 23 IBM 7070, 7072, and 7074 systems that will be leased by June 1963, are scheduled to be operated for less than two shifts. Twelve of these systems will be operated for one shift or less. The low utilization scheduled for these machines is a result of individual agency planning and, since the potential savings available from purchasing increases with additional use of the equipment, it seems evident that more effective procedures are needed to coordinate throughout the Government the use of large data-processing facilities.