

and extension work. The major part of income from the Federal government to date has been for organized research. A larger amount of Federal funds for research in 1963-64 went to private than to public institutions.

How much the tax burden for higher education will increase in the future will depend in part on what policies and goals are adopted by private and public institutions as well as by governments. How much can or should tuition rates be raised? How much growth can be expected in income from endowments and private gifts? How will costs per student change?

Some tentative assumptions about major sources of financing will help to give an impression of the order of magnitude of the likely increase in the tax burden. The resulting estimates are shown in Table 3. If we assume that average tuition and fees will increase in about the same proportion in the period 1962-1970 as in the period 1954-1962, this average would reach about \$600 per student by 1970. Multiplying this figure by projected enrollments for 1970 gives total income from tuition and fees of \$4.5 billion. If we assume that private gifts and grants and other private sources of general income will a little more than double from 1962 to 1970, as they did from 1954 to 1962, the amount would reach \$2.5 billion in 1969-1970. Subtracting these sources of income from the total projected expenditures of \$16½ billion, leaves \$9½ billion to be financed, presumably, from governmental sources.

In 1961-62 the Federal government supplied \$1.5 billion, of which \$1.3 billion was for research. In the past eight years income for research from the Federal government increased by 4½ times. It seems unlikely that an increase of this

order would occur in the next eight years. The National Science Foundation data shown below indicate a considerably reduced rate of increase in the last few years:

Table 4
Federal Obligations for Research and Development Performed by Educational Institutions
Fiscal Years 1959-1965

Fiscal Year	(Billions)
1959	\$.6
1960	.8
1961	1.0
1962	1.3
1963	1.5
1964 ^a	1.7
1965 ^a	1.8

^a. Estimated.

Source: National Science Foundation, Federal Funds for Research, Development, and Other Scientific Activities, Fiscal Years 1963, 1964, and 1965, Volume XIII, Washington, D. C., 1965, p. 186.

These figures suggest that it would be reasonable to assume that by 1970 institutions of higher education would receive about \$2.5 billion for research from the Federal government.

The Higher Education Act of 1965, discussed in detail below, authorized several hundred million dollars of additional aids for student education. However, it will be two or more years before these funds are fully utilized. Under current legislation it would seem likely that Federal funds for educational and general income, excluding organized research, might rise from the relatively small amount of \$268 million in 1961-62 to something in the neighborhood of \$1 billion in 1969-70. This does not include funds for construction, which are ex-

cluded from "current educational and general income." ("Plant-fund receipts" from all governments in 1961-62 amounted to \$622 million, of which only \$70 million came from the Federal government.)

Subtracting all of these sources of funds from the total projected expenditures leaves \$6 billion to be financed by state and local governments as compared with the \$1.9 billion supplied by these governments in 1961-62. Thus on the above assumptions, state and local governments would have to expand

their support of "current educational and general income" about three-fold from 1962 to 1970. Assuming that gross national product in current prices grows by about 50 percent from 1962 to 1970,⁶ the state-local tax burden for higher education would have to more than double over this period as a percentage of GNP, if the above assumptions about other sources of income are approximately correct. No attempt is made here to project the tax burden for capital outlay. (For further discussion of prospective capital outlays see Chapter VI.)

6. For details of projection of GNP and personal income, see the forthcoming Tax Foundation study, *The Outlook for State-Local Government Finances to 1970*.

IV.

Economic Issues in Public Financing Of Higher Education

While governmental decisions relating to higher education are not made on the basis of economic considerations alone, such considerations are important and require more detailed analysis than they have received until recent years.

A hundred years ago the establishment of land-grant colleges of agriculture and mechanic arts illustrated the belief that the growth of the country would be stimulated by subsidizing technological improvements through research and education. There is little doubt that this "investment" paid off handsomely in a high rate of growth of productivity in agriculture.¹

Education and Economic Growth

The belief that government subsidy of specific kinds of research and education will promote economic growth is reflected in the large volume of Federal funds for research. Federal "obligations" for research and development amounted to about \$15 billion in 1965 as compared with \$3 billion in 1956 (Table 7). Efforts to find ways of quantifying returns to expenditures on research and education leave much to be desired, but some progress has been made.

Among the significant "facts" about economic growth is that a large part of

the growth in this century cannot be accounted for by increased inputs of labor (man-hours) and other factors of production as ordinarily defined. Nor can increased productivity of labor be accounted for mainly by a larger stock of capital (of similar quality) per worker. Much of the growth must be attributed to new and improved types of capital equipment, economies of scale, greater managerial efficiency, increased skills and knowledge of the labor force.

Denison estimated that the rising educational level of the labor force, not including the general advance of knowledge, accounted for about 23 percent of the growth rate in national output between 1929 and 1957.² He attributed 20 percent of the growth rate from 1929-1957 to the "advance of knowledge" and 15 percent to the increase in "inputs" of capital. The relative importance of education for the period 1909-1929, according to Denison's estimates, was markedly lower than in the period 1929-1950. In the earlier period, additional education of the labor force accounted for only about 12 percent of the growth rate, while investment in physical capital accounted for more than twice that share.³

Such efforts to quantify the factors

1. Zvi Griliches, "Research Costs and Social Returns: Hybrid Corn and Related Innovations," *Journal of Political Economy* Vol. 66 (October 1958) pp. 427, 428.
2. Edward F. Denison, *The Sources of Economic Growth in the United States and the Alternatives Before Us*, Committee for Economic Development, Supplementary Paper No. 13, New York 1962, p. 266.
3. Denison's estimates rest on the assumption that inputs of capital services should be measured in terms of prices that exclude the effects of changes in productivity of capital equipment. Actually much of the "advance of knowledge" is embodied in new forms of capital equipment.

contributing to national economic growth are very rough measures involving severely simplifying assumptions.⁴ The essential difficulty is to isolate the effects of particular influences when a whole complex of causes is operating. These efforts to analyze national economic growth have been supplemented by attempts to measure the direct returns on various forms of public investment.

A part of this research has consisted of analysis of expenditures on education as a form of investment, and estimates of public and private rates of return on such investment.

Rate of Return on "Investment" In Higher Education

Expenditures on education may be regarded as an "investment" yielding future income similar to investments in stocks and bonds or to business investment in new plant and equipment. Investments are outlays of funds that are expected to result in future income which will more than cover the cost of the outlay. The rate of return on the investment is the percentage of the annual additional net income (in excess of annual depreciation or amortization in the case of physical assets) as a percentage of the original investment.⁵

Applying the concept of investment to expenditures on education raises difficulties that generally do not arise in other forms of investment. These difficulties occur at every stage of the process of calculating a rate of return. How is the original outlay or investment to be measured? Should it include the living costs of the student while he is attending school or college? Should it

include the earnings the student foregoes because he is not able to work, or to work full time, while taking courses?

Measuring the future income resulting from additional education raises still greater problems of measurement and estimation. How much of any increase in income is to be attributed to education as opposed to experience, native ability, hard work, etc.? Can a rate of return be estimated for the education of a housewife? Are there "returns" to society over and above those that accrue to the individual?

Without pursuing such questions in detail, this section examines a few of the major problems of estimation and summarizes the results of recent studies.

One serious difficulty is that higher education may be regarded in part as consumption, valuable for its own sake, rather than as an investment in future earning power. Some persons might choose the life of a college student for a while even if no economic return were expected. In addition, a college education may be regarded as similar to a durable consumer good — valued in part for the consumption services it will provide in the future as well as in the present. To the extent to which college education is consumption rather than investment, the economic return is greater than indicated by those who estimate returns on the assumption that the full costs of going to college represent an investment in future earning power. To the extent that higher education represents consumption, the grounds for public support of such education are weak. There is no point in the taxpayer subsidizing a particular form of consumption for a portion of the population,

4. For a critique, see Mary Jean Bowman, "Schultz, Denison, and the Contribution of 'Eds' to National Income Growth," *Journal of Political Economy*, October 1964, pp. 450-464; also Moses Abramovitz, "Economic Growth in the United States," *American Economic Review*, Vol. 52, No. 4, September 1962, pp. 762-782.

5. There are alternative ways of expressing the return on investment but it is unnecessary for the purpose of this study to expand on the arithmetic of investment.

unless that consumption provides some benefit for society as a whole.

The approach to measurement of returns based on income or earnings data leaves a problem of the returns on education for women in the home. The available estimates of returns are based on the differential earnings of men with college education over those with only a high school education. Is a similar differential to be attributed to the college-educated housewife over the high school graduate? The national income and product accounts do not include any amount for the value attributable to a housewife's services, yet such an estimate could be included in the totals, just as is the imputed rental value of owner-occupied homes. The value of housewives' services might logically be related to differences in the amount of "investment" in their education. Their "educational output" in the home presumably bears some relation to their own level of education. The foregone earnings of housewives who have college degrees are greater than those of high school graduates, although the differential may not be so great as in the case of men. Thus, estimates of the return on investment in higher education of women involve many more difficulties than in the case of men.⁶

Perhaps the most difficult problem in measuring return is that of separating the true causal factors in income differentials. How much of the "observed" differences in incomes of college graduates over high school graduates is attributable to increased formal schooling? Professor Becker reviewed several studies which attempted to sort out the

causal factors in income differentials.⁷ These studies all tend to show that when "ability" is held constant in comparable samples of persons with different amounts of schooling (including college), the latter still appears to account for the major part of the differences in earnings.

Perhaps the most detailed study of "other factors" including ability, is that by James Morgan and Martin David, "Education and Income," *Quarterly Journal of Economics*, August 1963 (pp. 423-437). In a sample survey of families, these authors analyzed a set of personal influences, including age, race, sex, physical condition, ability to communicate, level of grades in school, attitude toward hard work, etc., plus a number of economic factors, including population size of city of residence, geographic mobility, occupation, etc. This study concluded that, taking account of "other factors," investment in education yielded a 4 to 6 percent return. Unfortunately, the methods used undoubtedly understate the return to education since some of the "other factors" taken into account, such as ability to communicate and occupation, are themselves in part the avenues by which education influences earning power.

In his comprehensive study of returns on investment in human capital, Professor Becker concluded that the rate of return to the average college entrant is on the order of 10 to 12 percent even after considering all college costs (including foregone earnings) and taking account of the generally greater ability of persons who go to college.⁸

6. For a discussion and estimates of the value of housewives' services see Fritz Machlup, *The Production and Distribution of Knowledge in the United States*, Princeton, 1962, pp. 52-56. Machlup estimated a GNP total that includes the value of housewives' educational services in the home. He did this on the basis of estimated foregone earnings outside the home. However, his purpose in this estimation was not to estimate a rate of return on investment but to estimate the total value of educational services in the economy.

7. Gary S. Becker, *Human Capital, A Theoretical and Empirical Analysis*, National Bureau of Economic Research, Columbia University Press, New York 1964, pp. 79-88.

8. *Ibid.*, p. 154.

If one looks at the gross relation between education and income, the differences in earning power that go with differences in education are certainly large. For example, a recent Census report on consumer income (see Table 5) shows that the average money income of families whose head had a college degree exceeded the income of families whose head graduated from high school (but did not attend college) by 47 percent or \$3,461 at 1964 levels of income.

These "cross-sectional" data, which relate to incomes in a given year, do not show the influence of economic growth over a period of time. A calculation based on data for a group of persons over a span of years might give different results.

A comparison of 1950 and 1960 Census data on education and income suggests that recent economic growth has tended to magnify the effect of education. As Table 6 shows, the real income of people with more education increased substantially more from 1950 to 1960

than did the incomes of those with only elementary or high school education (except for people past age 45). Thus, the mean income of men aged 25-34 in 1949 who were high school graduates but without college education rose 63 percent in constant dollars by 1959; the mean income of men in the same age group who were college graduates rose 127 percent.

Granting all of the difficulties of quantifying the rate of return on investment in education, the evidence suggests that the rate is substantial. For college education it appears, on the basis of Becker's estimates, to be approximately equal to the average rate of return on investment in physical capital. Moreover, the rate of return does not appear to have fallen over time. The demand for skills and knowledge obtained from higher education so far has kept pace with, or increased faster than, the supply.

Unfortunately, most of the data Becker used apply to a period of more than ten years ago. The more recent

Table 5
Median Incomes of Families by Age of Head and
Years of School Completed^a
(Money income in 1964)

	Total	Elementary	High School	College
All families	\$6,732	\$5,303	\$7,398	\$10,859
Age of head:				
25 to 34 years	6,577	5,041	6,738	8,750
35 to 44	7,512	5,786	7,701	11,675
45 to 54	7,752	6,553	8,418	12,898
55 to 64	6,696	5,965	8,018	12,799
65 and over	3,376	3,306	4,541	8,513

a. The total column includes all families. The other columns show data only for those who completed eight years of elementary school, four years of high school, and four or more years of college, respectively. Unrelated individuals are excluded.

Source: Bureau of the Census, *Consumer Income*, Current Population Reports, Series P 60, No. 47, Sept. 24, 1965, p. 28.

Table 6
Change in Mean Income for Selected Age Groups of Males
By Years of School Completed
1949 and 1959
(Mean income in 1959 dollars^a)

	Men born 1915-1924			Men born 1905-1914			Men born 1895-1904		
	Age 25-34 in 1949	Age 35-44 in 1959	Percent change	Age 35-44 in 1949	Age 45-54 in 1959	Percent change	Age 45-54 in 1949	Age 55-64 in 1959	Percent change
Total	\$3,556	\$6,212	75	\$4,396	\$6,136	40	\$4,540	\$5,522	22
Elementary: 8 years	3,077	4,705	53	3,660	4,854	33	3,925	4,644	18
High School: 1-3 yrs.	3,440	5,465	59	4,154	5,681	37	4,535	5,614	24
4 yrs.	3,920	6,379	63	4,868	6,697	38	5,702	6,746	18
College: 1-3 yrs.	4,120	7,854	91	6,035	8,679	44	6,852	8,817	29
4 yrs. or more	4,891	11,088	127	8,595	11,590	35	8,853	11,039	12

a. Consumer price index used as deflator.

Source: H. P. Miller, "Lifetime Income and Economic Growth," American Economic Review, September 1965, p. 838.

Census data on incomes and education need further analysis. Much also remains to be done in making estimates of returns on investment in education of different kinds and at different levels. What is the rate of return on investment in education in elementary and high schools,⁹ in vocational and technical schools,¹⁰ junior colleges, graduate and professional work? How do returns vary with the level of student ability? Such estimates would have considerable significance for public policy issues.

Relevant Alternatives For Public Policy

If the rate of return on investment (or more strictly, *additional* investment) in higher education is on the order of 10 percent, what are the alternative uses of the funds required? Moreover, if the rate of return is high, why do not private individuals and institutions spend more on higher education when they do invest large amounts elsewhere at lower returns?

There are several reasons why private investment in higher education has not gone further. First, in the past more investors were probably not aware of the economic return on investment in higher education — it is only in recent years that such returns have been publicized; and available information, as noted above, is subject to many qualifications. Second, the cost of foregone earnings on the average is nearly as great as the direct costs of higher education, so that for some individuals even the avail-

ability of interest-free loans for direct costs might not justify the investment at the expense of current income. Third, the capital market has not been geared to making loans for higher education — in part because the risks involved for individual cases are large and suitable forms of security have not been generally available.

If funds were as readily available for investment in higher education as for investment in physical capital, and knowledge of the returns were widespread, educational investment would probably have been carried much further in the past. The fact that higher education combines elements of a durable consumer good with an investment in future earning power, suggests that, with equal availability of funds, rates of return on investment (strictly defined) in higher education would have become smaller than rates of return on investment in physical capital.

In looking at alternative uses of public funds, what rates of return or comparisons are relevant? If the alternative is the promotion of economic growth by a tax stimulus for investment in physical capital, the evidence available is consistent with the belief that the amounts which have been devoted to such purposes were not greatly out of line. In other words, if rates of return on these two possible uses of public funds are roughly the same — as was apparently true in the past — there is no case on such grounds for shifting funds from one use to the other.

9. It has been argued that the compulsion involved in elementary and secondary education makes the calculation of returns here essentially different from the calculation of returns to investment in higher education where the student has a choice of how far to carry his schooling. For example, John Vaisey argued that foregone earnings are not relevant in estimating the returns on secondary education (*The Economics of Education*, Glencoe 1962, pp. 42, 43). Becker argued that if foregone earnings are irrelevant for this reason, so are direct costs (*Human Capital, A Theoretical and Empirical Analysis*, New York 1964, note p. 74). The relevance of compulsion to cost-benefit analysis of education is further discussed by Jack Wiseman and T. W. Schultz, "Cost-Benefit Analysis in Education," and "Comment," in *The Southern Economic Journal*, July 1965, Supplement, pp. 5, 6, 14.

10. A recent analysis of returns on "retraining" can be found in David A. Page, *Retraining under the Manpower Development Act: A Cost-Benefit Analysis*, The Brookings Institution, Studies of Government Finance, Reprint 86, 1964.

However, the alternative to greater investment in higher education is to a considerable degree larger current consumption rather than greater expenditures on physical plant and equipment. Many families probably finance a substantial part of the cost of higher education by reducing their level of consumption. Similarly, government expenditures for higher education are probably met to a large extent through taxes which reduce consumption much more than saving and investment.

If greater investment in higher education is to be financed through general government revenue, the question then is what rate of return (or discount) is appropriate to the social cost of this investment (as reflected in reduced consumption and investment resulting from additional tax support of higher education). An analysis of the "social cost of Federal financing" has been made in a study of multiple purpose river development costs and benefits.¹¹ The authors examined the appropriate interest rates that might apply to reductions in consumption and investment resulting from the taxation necessary for river development. Under various assumptions about

incidence, the average rate of return applicable to reductions in private consumption and investment from general taxation turned out to be on the order of 5 or 6 percent in the mid-1950's; in other words, the government expenditures could not be justified unless the net benefit could be expected to exceed yields of 5 or 6 percent.

From the point of view of promoting economic growth, it appears that more detailed analysis of costs and returns could lead to a more effective allocation of public funds. Despite its limitations, a cost-benefit framework is a useful way of looking at public policy decisions. The use of this approach also calls attention to the limitations of presently available data and the gaps in information needed for more economic decisions.¹²

The economic issues discussed above are only some of the problem areas where economic analysis may make a contribution. More could be done in analyzing the costs of different kinds of institutional arrangements, course offerings and semester plans, in relation to probable accomplishment, as well as in analyzing the demand for education beyond the high school.¹³

11. John V. Krutilla and Otto Eckstein, *Multiple Purpose River Development*, Resources for the Future, Baltimore 1958, Chapter IV.

12. Cf. Charles L. Schultze, "Needed: New Approach to Expenditure Evaluation," *Tax Review*, August 1965.

13. For further discussion see Willard L. Thorp, "Questions for Investigation," and Alice M. Rivlin, "Research in the Economics of Higher Education: Progress and Problems," in Selma J. Mushkin (ed.) *Economics of Higher Education*, U. S. Office of Education, Washington, D. C., 1962, Chapters 20 and 21.

V.

Federal Financing of Higher Education

Economic considerations have always played a part in Federal aid for higher education. In the past the government has used such aids to promote agriculture, to support research relating particularly to agriculture, health, and national defense, and on a temporary basis to assist students. Current issues concern the Federal role in more general and permanent forms of assistance to students and institutions.

Federal Aids in the Past

Most important of the early forms of Federal aid were the land grants for colleges of "agriculture and mechanic arts." In the early 19th century such land grants for schools and colleges were a means of helping to induce settlement of the Northwest Territory.¹ The Morrill Act of 1862 was a new departure in specifying that the purpose of the grants was primarily to "promote the liberal and practical education of the industrial classes in the several pursuits and professions in life."² The original land grants were followed by subsidies for general support of such institutions and, in addition, these institutions were used for carrying out Federal programs of agricultural research and extension work.

For nearly a hundred years these ob-

jectives in Federal aid for higher education remained relatively unchanged. Federal aid for research outside of agriculture was of little significance until World War II. Even the armed services saw little immediate significance in research. In 1936, when increased expenditures began to be made for rearmament, the Army actually reduced its budget for research and development. It announced that "The amount of funds allocated to Research and Development in former years is in excess of the proper proportion for the item in consideration of the rearmament program."³ This attitude was soon reversed. From 1941 to 1945 about \$3 billion was spent on research and development by the Federal government. In 1964 total Federal expenditures for research and development, with the expanded role of science in defense and space programs, amounted to about \$15 billion. Such sums are bound to have a large immediate impact on the economy in addition to their longer range effects on economic and technological development.⁴

Federal expenditure for research and development performed by educational institutions has grown correspondingly. On the basis of National Science Foundation data, Federal "obligations" for these purposes rose from \$.3 billion

1. Alice M. Rivlin, *The Role of the Federal Government in Financing Higher Education*, The Brookings Institution, Washington, D. C. 1961, pp. 9, 11.

2. Quoted by Rivlin, *op. cit.*, p. 14.

3. Quoted by Rivlin, *op. cit.*, p. 31.

4. The political impact as well is discussed by Donald R. Fleming in "The Big Money and High Politics of Science," *The Atlantic Monthly*, August 1963, pp. 41-45.

Table 7
Federal Obligations for Basic Research and For Research and Development Performed
By Educational Institutions and All Other Agencies
Fiscal Years 1956-1965

	Research and Development					Basic Research				
	Educational Institutions					Educational Institutions				
	Total	Proper (Billions)	Research Centers	Profit organizations	Other agencies ^a	Total	Proper	Research Centers (Millions)	Profit organizations	Other agencies ^a
1956	\$ 3.0	\$.2	\$.1	\$1.5	\$1.2	n.a.	n.a.	n.a.	n.a.	n.a.
1957	3.9	.2	.2	2.2	1.3	n.a.	n.a.	n.a.	n.a.	n.a.
1958	4.6	.3	.2	2.5	1.6	\$ 325	\$123	\$ 40	\$ 18	\$144
1959	6.7	.4	.3	4.2	1.8	482	160	63	58	201
1960	7.5	.4	.3	4.7	2.1	582	223	77	62	220
1961	9.1	.6	.4	5.8	2.3	800	281	134	107	278
1962	10.3	.7	.6	6.3	2.7	1,082	370	218	151	343
1963	12.5	.9	.6	8.0	3.0	1,359	455	236	238	430
1964 ^b	14.6	1.0	.7	9.5	3.4	1,635	534	282	315	504
1965 ^b	15.0	1.1	.7	9.7	3.5	1,875	604	293	424	554

a. Largely Federal government agencies.

b. Estimates.

Source: National Science Foundation, Federal Funds for Research, Development, and other Scientific Activities, Fiscal Years 1963, 1964, and 1965, Vol. XIII, p. 186.

Table 8
Federal Budget Expenditures for Education^a
Fiscal Years 1956-1967
(Millions)

Years	Total	Higher education	Science education & basic research	Elementary & Secondary education	Other aids to education
1956	\$ 343	\$ 44	\$ 20	\$181	\$ 98
1957	437	110	46	174	108
1958	541	178	50	189	124
1959	732	225	106	259	141
1960	866	261	120	327	156
1961	943	286	143	332	181
1962	1,076	350	183	337	207
1963	1,244	428	206	392	219
1964	1,339	383	310	404	241
1965	1,544	413	309	418	405
1966 ^b	2,318	712	365	730	512
1967 ^b	2,834	140 ^c	425	1,546	723

a. Excludes various educational expenditures classified under other functions in the U. S. Budget, e.g., veterans educational benefits, expenditures for military academies, etc.

b. Budget estimates.

c. Reflects proposed transfers of loans to private agencies.

Source: U. S. Bureau of the Budget.

in 1956 to an estimated \$1.8 billion in 1965 (Table 7).

The broad purposes of research grants are generally obvious from the type of program — to aid in various kinds of disease prevention, to promote advancement of knowledge or its application in particular fields, to find ways of meeting current economic or social problems. Apart from research contracts and grants, Federal aids for higher education have generally been small.

A notable exception to the small role of the Federal government in higher education was the GI Bill of Rights, under which the government paid for tuition, books, and fees for veterans seeking higher or vocational education. More than 7.8 million World War II veterans, or nearly half of all those who served in the armed forces, took some form of training. The total cost of the

program was \$14.5 billion.⁵ While this program may be regarded as an additional form of compensation for veterans, it also represented a very large investment in education beyond the high school.

The GI Bill was renewed in modified form during the Korean War. Expenditures for veterans' education and training, which amounted to \$2.7 billion in 1949, fell to \$546 million in 1954, and to only \$84 million in 1963. A new measure to provide similar benefits to Vietnam veterans may well be passed in the near future.

Expenditures under the Federal Budget classification of "assistance to higher education" (which does not include veterans' benefits) amounted to only \$44 million in 1956, but rose to \$413 million in 1965; in addition, assistance for

5. Statement by Francis Keppel, Commissioner of Education, before the Subcommittee on Education of the Committee on Labor and Public Welfare, United States Senate, March 16, 1965, Exhibit 8.

science education and basic research amounted to \$20 million in 1956 and to \$309 million in 1965. A large expansion of Federal aid for higher education began with the National Defense Education Act of 1958 and the Higher Education Facilities Act of 1963. Expenditures

may rise further under the Higher Education Act of 1965.

Tables 8 and 9 show Federal expenditures under the Budget functional category of "aid to education." Substantial additional expenditures relating to education are made under other categories⁶

6. For a listing of such programs, see *Congressional Record—Senate*, September 2, 1965, pp. 21878-21879.

Table 9
Federal Budget Expenditures for Assistance to Higher Education^a
Fiscal Years 1961-1967
(Millions)

	1961	1962	1963	1964	1965	1966b	1967b
Total	\$286	\$350	\$428	\$383	\$413	\$712	\$140^c
Department of Health, Education, and Welfare	88	122	144	164	192	473	673
Higher education facilities construction	—	—	—	—	3.6	147.0	311.0
Assistance for higher education							
Defense activities	72.5	96.8	116.5	135.2	158.3	214.0	93.0
Other aids for students, libraries, extension work, etc.	—	—	—	—	(d)	77.6	245.7
Further endowment of colleges of agriculture and mechanic arts	2.5	8.2	12.0	12.0	12.0	12.0	—
Colleges for agriculture and mechanic arts	2.6	2.6	2.6	2.6	2.6	2.6	2.6
Land-grant college aid	2.2	3.8	—	—	—	—	—
Gallandet College	1.7	3.2	2.0	2.4	4.4	3.5	3.0
Howard University	6.3	7.8	11.1	12.1	11.6	15.1	17.6
Housing and Home Finance Agency College housing loans	198	227	284	219	221	240	289

a. Assistance for higher education as classified in the Budget. Excludes assistance to science education and basic research (see Table 8), and aids for higher education classified under other functional categories in the Budget.

b. Estimated.

c. After deduction of proposed transfers of loans to private agencies (not shown separately).

d. Less than \$50,000.

Source: U. S. Bureau of the Budget.

(e.g., veterans' benefits, expenditures for military academies, inservice training). Yet other objectives are of primary interest in such expenditures, and the programs concerned are not of central importance to the issues of Federal aid to higher education.

In addition to aids on the expenditure side, the deductibility for tax purposes of contributions to educational institutions provides an indirect aid to higher education. Such institutions have received some exemption from Federal excise taxes.

New Forms of Aid

In the past decade Federal aids to higher education consisted largely (in dollar terms) of college housing loans, and student loans and fellowships, chiefly under the National Defense Education Act of 1958. Amounts for land-grant colleges have remained small (Table 9).

The National Defense Education Act was partly a reaction to Sputnik. The act provided grants to states for laboratory equipment and aids to science teaching in elementary and secondary schools. It also provided for college student loans and a graduate fellowship program.

Under the student loan program, the Federal government contributes 90 percent of the funds needed for any institution of higher education which sets up such a program and provides 10 percent of the capital required. A ceiling was provided on the amount of funds granted to any one institution. A student may borrow up to \$1,000 in any one year and up to \$5,000 in total. The loans bear interest at three percent and are to be repaid over a ten year period beginning

one year after the borrower ceases to be a full-time student.

The act provided that special consideration be given to students with a superior academic background who express a desire to teach in elementary or secondary schools, and to students whose academic background indicates a superior capacity or preparation in science, mathematics, engineering, or a modern foreign language.

During the fiscal year 1965 there were about 319,000 loans made, amounting to about \$167 million.⁷ The number of institutions participating was 1,569.

The graduate fellowship program was designed to increase the supply of college and university teachers and to promote the development and wider geographical distribution of facilities for graduate studies. The act provided for payments to the institution as well as to the student. In the first six years of this program, 8,500 fellowships were awarded at a total cost of \$101 million.⁸

The Higher Education Facilities Act of 1963 authorized Federal grants and loans to assist in financing the construction, rehabilitation, or improvement of academic and related facilities. Assistance is principally for construction of classrooms and laboratories to enlarge enrollment capacity. For the fiscal year 1964 the total authorization for this program was \$375 million, but no funds were actually appropriated.⁹

The President's message on education in January, 1965, proposed a substantial expansion of Federal functions and objectives in higher education (as well as in elementary and secondary education). These are suggested by the title

7. Statement by Francis Keppel, *loc. cit.*, Exhibit 15 (see Table 13, below).

8. U. S. Department of Health, Education, and Welfare, *1964 Annual Report*, p. 238.

9. *Ibid.*, p. 268.

of the message, "Toward Full Educational Opportunity." The aims of the Administration's proposals in higher education were set out in the message as follows:

To extend the opportunity for higher education more broadly among lower and middle income families.

To help small and less well developed colleges improve their programs.

To enrich the library resources of colleges and universities.

To draw upon the unique and invaluable resources of our great universities to deal with national problems of poverty and community development.

Under the Higher Education Act of 1965 provision was made for 140,000 scholarships granted on the basis of need to qualified high school graduates. It expanded work-study programs and provided for guaranteed, low-interest loans to students. Part of the interest cost of such loans will be paid by the Federal government. Grants were authorized to smaller institutions to assist in programs of faculty exchange with other institutions, special programs for faculty members, a fellowship program to encourage graduate students and instructors at larger institutions to augment the teaching resources of small colleges. Additional grants were authorized for the purchase of books and other library materials, to aid in training librarians, and to support university extension programs concentrating on the problems of the community.

In the Budget for 1967, the Administration proposed a cut-back in use of Federal funds for higher education through a shifting of loan programs to private agencies.¹⁰

Scholarship, Loan, and College-Work Programs. The essential objective

of the legislation on Federal scholarships for needy students and the student loan and college work-study programs is "to insure that academically qualified students in all economic circumstances have the means to finance their higher education." Mr. Keppel, Commissioner of Education, noted that the scholarship program is "not aimed at selecting and rewarding the most academically gifted but rather at giving a helping hand to students qualified for a higher education who are members of poor families."¹¹

The size of the scholarships is related to the income and number of dependents of low-income families. A low-income family is one which can make little or no contribution to the cost of a student attending college. For the fiscal year 1966 \$70 million was authorized, which would make possible grants averaging about \$500 to 140,000 students. As noted in the following section on state financing, this program would serve to fill a gap left by existing public and private scholarship programs, which for various reasons fail seriously to meet the needs of low-income groups.

The act provided for a loan-guaranty program at low interest rates. The Commissioner of Education would insure loans administered by state or non-profit institutions to students who do not have reasonable access to other sources of loans. The Commissioner would also pay a portion of interest costs — up to two percentage points. Students would be able to borrow up to \$1,500 annually, with a maximum unpaid principal of \$9,000 for a graduate or professional student or \$6,000 for other students. These loans could be extended for terms up to 15 years with a maximum repayment period of 10

10. *The Budget of the United States Government for the Fiscal Year 1967*, p. 131.

11. Testimony before the Subcommittee on Labor and Welfare, U. S. Senate, March 16, 1965.

years. The maximum of new guarantees would be \$700 million in fiscal 1966, \$1 billion in 1967, and \$1.4 billion in the years 1968-70.

The 1965 act also extended the student loan program under the National Defense Education Act through 1975, and transferred the work-study program of the Office of Economic Opportunity to the Office of Education. By contract between the Commissioner and institutions of higher education the Federal government may pay up to 90 percent of the compensation of students employed on specified work programs. The work-study program authorization for the fiscal year 1966 was \$129 million. This authorization would make possible employment of approximately 300,000 students with average earnings of \$500 per year.

The idea behind these assorted programs is to enable institutions of higher education to offer a "package" of aids suitable to the needs of individual students.

University Extension. The 1965 act not only embodies a new objective for Federal aid programs, but also a new or enlarged objective for many institutions of higher education. The President's message on education stated:

The role of the university must extend beyond the ordinary extension-type operation. Its research findings and talents must be made available to the community. Faculty must be called upon for consulting activities. Pilot projects, seminars, conferences, TV programs, and task forces drawing on many departments of the university . . . all should be brought into play.

The act includes a five-year program to assist in meeting such community problems as housing, recreation, employment, youth opportunities, and

social work, as well as to assist in the expansion of extension courses for non-degree students.

College Library Assistance. Grant programs are established for maintaining and expanding libraries, for training librarians, and for research in library and information sciences.

Strengthening Developing Institutions. This portion of the new aids is directed particularly at assisting the 10 percent of colleges that are not accredited by the appropriate regional or professional association — largely because of lack of adequate facilities and appropriately trained staff. The act provides for a program for faculty exchanges, special programs to enable faculty members of small colleges to renew and extend their knowledge, a fellowship program to encourage graduate students and instructors in large universities to augment the teaching resources of small colleges, and the development of joint programs to make more efficient use of available facilities and faculty.

The Commissioner of Education would establish an Advisory Council on Developing Institutions which would assist in identifying "developing institutions" and in setting priorities.

Alternatives to Present Programs

It is clear that the Higher Education Act of 1965 is a collection of aid and grant programs tied to quite specific purposes with the major locus of decisions on eligibility left with the Commissioner of Education. In contrast to the "block grants" used in the United Kingdom,¹² such programs leave relatively little discretion to the institutions themselves. Moreover, the conditions of aid could lead to waste where the essen-

12. These are general purpose grants the use of which is determined by the university with few or no "strings attached."