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The purpose of this thesis is to evaluate social policy toward higher education in the United States. Given the present economic circumstances, the thesis also suggests alternatives to current policy.

The pursuit of educational training constitutes an investment in human resources which is of great importance to the economic and social well-being of the nation. Recognizing this fact, this paper analyzes the conditions which presently surround the decision to invest in higher education. The perspectives of both the student and society are considered. The analysis strongly suggests that the present levels of public support for higher education are excessive vis a vis the benefits which society realizes from its investment. Present labor market conditions are consistent with the view that the social investment in higher educational programs could be reduced by eliminating surplus educational output capacity and by shifting emphasis to less expensive programs with greater occupational emphasis. Implementation of such policy would bring about lower social costs to higher education with little or no loss in social benefits.

SOCIAL POLICY TOWARD HIGHER EDUCATION IN THE UNITED STATES

by

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I. INTRODUCTION

Alfred Marshall once wrote, "The most valuable of all capital is that invested in human beings."[1] Since Marshall's time, social scientists have devoted considerable effort to analyzing the nature of investments in man.

Primary among the investments in human resources is education. In the United States, the belief in the benefits of education has been such that school attendance is legally required. Over the past half century, the trend to educate has continued to be strong as the educational attainment of the population has grown along with the economy. By the 1950's and 1960's, the possession of post-secondary educational training had become a prime characteristic of the upwardly mobile in the American work force. Expansion of college programs had proceeded at a rapid pace. However, some recent forecasts indicate that the limits to the college education trend have been reached.

For example, the United States Department of Labor has estimated that in the decade of the 1970's there will be 9.6 million new college educated workers entering the labor force. Approximately 3.7 million are expected to be needed as replacements for those leaving the labor force. Another 3.3 million will be absorbed in expanded job opportunities. But 2.6 million or 27% will become employed in 'educationally upgraded' jobs; these are jobs which have been filled by lesser educated people in the past.[2] Another forecast by the United States Bureau of the

Census indicates that the number of college graduates in 1975 will be in excess of job market requirements by approximately 3.3 million persons.[3]

Now in 1975, the presence of an economic recession makes the employment situation difficult to assess. But as the Wall Street Journal and other sources have noted, a college degree is not the guarantee of job security and better opportunities that it was in the recent past. The Journal estimates that 58% of the college class of 1975 will get degrees in areas where the supply of graduates exceeds market demand.[4] To the extent that college trained people must accept jobs which do not utilize their superior skills and talents, then these human resources are wasted. The primary purpose of this paper is to examine the present situation concerning investments in college training. This will be accomplished by analyzing the benefits of higher education relative to its costs. An attempt will be made to determine whether the present United States commitment to college education is economically justified. Public policy toward higher education is reviewed in the light of the new job market conditions. Finally, alternative policies are suggested.

As a point of reference, Gary Becker describes investments in human capital as 'activities that influence future monetary and psychic income by increasing the resources in people.'[5] Becker's concept of human capital is quite broad and perhaps appropriately so. When economists consider investments in physical capital, they are primarily concerned with the market effects of the investment; that is, the costs versus returns expressed in monetary terms. In considering

human capital, however, other aspects of investments must also be taken into account. Hence, Becker acknowledges the 'psychic income' in addition to the 'monetary income' which are returns from investments in people. So we may expect that people will derive non-market types of satisfaction from education which is in addition to their increased earnings. A brief discussion of the significance of these non-market aspects of human capital investments is in order.

Individuals pay tuition and fees for college attendance and forego the earnings which they might earn were they not in school. Presumably, these costs are incurred with the expectation that the education will provide some offsetting benefits in the future. Higher income and a better job are the returns to education which are most often considered, but a host of other benefits are also available to individuals from their education. In contrast to the benefits in income, this latter group is not easily quantified in monetary terms. Status from an educational degree, relation to an institution, broadened cultural awareness, personal contacts, and the positive aspects of the college experience itself all serve to augment the income benefits which education provides. Hansen and Weisbrod call this latter group 'consumption benefits.'[6] This term suggests that these benefits are personal in nature. The non-market benefits augment the superior earnings which the educated receive. Therefore, the personal satisfaction gained from education renders this investment in human capital a better investment for individuals than it would be in the absence of such benefits.

It is important to note that students do not bear all of the costs of college education. Either a government authority or voluntary contributors subsidize higher education.

The economic rationale for subsidizing higher education is to be found in the notion that the public gains a return as an external social benefit from the education of individuals. Hansen and Weisbrod allege these external social benefits to be of four types.[7] The first public benefit is found in the contribution which higher education makes toward an informed electorate. Secondly, the provision of higher education contributes to the equality of opportunity for students from lower income families. Thirdly, the encouragement of higher education may promote employment and therefore reduce the public's transfer payment burden. Finally, society may benefit from education to the extent that this training leads to the advancement and application of knowledge.

The abstract nature of public benefits to higher education makes the public sector's task of determining an appropriate level of subsidy a difficult job. Proving the existence of these external social benefits much less quantifying them cannot be done in any manner that is not open to considerable question. Indeed, some economists have denied their existence altogether. However, the public has continued its support for higher education in the belief (correct or not) that so subsidizing education was in its own interest. The economists traditional faith in the sovereignty of the consumers' awareness of his own preferences, therefore, strongly suggests that a set of

external social benefits to higher education exists. Taxpayers have believed in these social benefits and have, therefore, supported higher education probably as vigorously as any other social good other than national defense. Economic growth, the dissemination of cultural influences, and the provision of general types of training which employers cannot rationally provide are briefly offered here as other incidences of potential social benefits. We recognize the less than concrete nature of these external social benefits and we acknowledge that their existence cannot be proven unequivocally. But based on the argument of consumer sovereignty, the position of this paper is that the burden to disprove the existence of external social benefits yet falls on the disclaimers.

In the absence of evidence to the contrary, we explicitly assume that there are significant external social benefits flowing from investment in higher education. One of the primary objectives of this paper will be to evaluate the changes in social benefits and costs to higher education which have been brought about by new conditions in the labor market.

Chapter II below is a quantitative evaluation of investment decision for higher education. Comparison of costs and benefits is made for both the individual student and society as a whole. Since the decision criteria are so different and since different motives are involved, the private and public decisions must be considered separately. Generally, the analysis of Chapter II indicates that as late as 1971, the private decision to invest in college for individuals is well justified.

Chapter III is a review and critique of the 1973 Carnegie Commission Report, College Graduates and Jobs: Adjusting to a New Labor Market Situation.[9] The Carnegie Report is an example of one of the most prestigious sources of information and opinion on higher education. This paper evaluates the Commission's recommendations for higher educational policy based on widely recognized reports and forecasts for recent job market conditions.

Chapter IV reviews the National Board of Graduate Education's Doctorate Manpower Forecasts and Policy.[10] This report is another set of educational policy recommendations similar to the Carnegie Commission Report, but is more specifically directed toward graduate degree training. The position taken by the National Board of Graduate Education is of particular interest because the Board is critical of the present levels of public support for graduate training. Chapter IV concludes with an outlook on educational trends. Chapter V summarizes the substantive conclusions of the paper.

II. INVESTMENT IN HIGHER EDUCATION: A MODEL FOR SOCIETY AND THE INDIVIDUAL

In economic literature, it is common to see a distinction made between economic growth which is usually taken to mean simply an increase in economic product and economic development which involves internal realignment of an economy accompanying economic growth. The former term is usually associated with the advancement of a more mature economy while the latter seems to better characterize the alterations in economic structure which the less developed countries must undergo if they are to emulate the progress of their richer neighbors. While the exact use of these terms is not critical, it is noteworthy that even the highly developed countries including the United States have experienced a considerable amount of development and structural change in addition to sheer growth in the relatively recent past. The evaluation of the growth and development processes of different economies may be viewed as varying only in degree and not altogether in kind.

As an example, in the 1900's the United States per capita gross national product measured in terms of constant 1958 dollars was $942. This figure is a mere fraction of the 1970 value of $3524. While these figures give some indication of the magnitude of economic growth which occurred in the United States, they indicate little about the accompanying economic development. Concealed in the raw measure of growth are the progression of technology and innovation,

the realization of economies of scale, the exploitation of abundant natural resources, the utilization of more and better labor and the changes in social and cultural attitudes. One indicator of the overall change in the structure of the economy is the changing occupational distribution of the work force. Table I shows this information for very broad occupational groups in 1900 and 1970.

The striking features of Table I are quite unmistakable. In relative terms, employment in farming has declined greatly and white collar occupations have shown a marked relative increase. These two facts alone suggest that a considerable amount of human capital in the form of education and other training has been injected into the economic process. The movement of employment from farming to more formal skill demanding jobs could not have occurred without extensive investments in human capital. Realizing that the general level of technology present in 1970 is vastly more complex than it was in 1900, one must conclude further that even the relatively stable proportions of blue collar and service workers require more formal skills than they did in the past.

Though Table I may be suggestive of the role of education in the advancement of the economy, it indicates nothing about the actual magnitude of the human capital stocks developed over this period. Table II below shows how the output of higher educational degrees has increased since 1870. The number of Bachelor's and first professional degrees granted in 1970 is seventeen times greater than the number for 1920. To put this fact in proper

TABLE I

RELATIVE DISTRIBUTION OF EMPLOYED PERSONS
BY MAJOR OCCUPATIONAL GROUP
1900 to 1970
(In Percent)

	I 1900	II 1970
White Collar	18	48
Blue Collar	35	35
Service Workers	9	13
Farm Workers	38	4

Sources: Historical Statistics of the United States, Colonial Times to 1957, p. 74; and Statistical Abstract of the United States, p. 230.

TABLE II

NUMBERS OF BACHELOR'S AND FIRST PROFESSIONAL DEGREES,
MASTERS AND SECOND PROFESSIONAL DEGREES,
AND PH.D. OR EQUIVALENT DEGREES
GRANTED BY UNITED STATES INSTITUTIONS
1870 - 1970

	Bachelor & 1st Professional	Masters & 2nd Professional	Ph.D. & Equivalent
1870	9,371		1
1880	12,896	879	54
1890	15,539	1,015	149
1900	27,410	1,583	382
1910	37,199	2,113	443
1920	48,622	4,279	615
1930	122,484	14,969	2,299
1940	186,500	26,731	2,390
1950	432,058	58,183	6,633
1960	394,889	74,497	9,829
1970	827,234	208,291	29,866
1971	877,676	230,509	32,107
1972*	921,000	237,600	33,400
1973*	991,200	251,400	34,400

Sources: Historical Statistics of the United States and Supplement, p. 327-338; and Projections of Educational Statistics to 1982, p. 46.

perspective, the United States population in 1970 was not quite double what it had been in 1920. Obviously, the period 1920-1970 shows a trend toward an increase in the educational level of the American labor force. In current dollars, the total expenditures of United States institutions of higher education was just under 30 billion dollars in 1971-72. This figure is over three times greater than the $8.5 billion spent for the same purpose just ten years before. Values of plant and physical plant funds of United States colleges and universities were over $34 billion in 1968.[12] Thus, from the standpoint of absolute size, wealth, output, or growth, the higher education industry has expanded greatly.

Having touched upon the magnitude and significance of the United States' system of higher education, it is appropriate to more thoroughly examine the economic setting in which the higher education industry operates. One possible perspective is that of the individual investor in higher education. This approach is advantageous in that the familiar assumptions and tools of microeconomic analysis may be meaningfully employed. Individuals will attempt to maximize their utility and in so doing, they will invest to a point where discounted expectations of net returns from investment fall to zero. These and other common principles of microeconomics make analysis of the individual's perspective relatively clear cut. Using this framework, Becker and others have found that the rate of return of investment in a college education is approximately equal, on the average, to the mean rate of return on investments in physical capital.[13]

As another means of evaluation, one may employ the perspective of the social system as a whole. Society has an interest in the amount and quality of training which its members receive. Since a macro-economic approach is in principle capable of dealing with the multiplicity of cost bearers and benefit gainers which characterize the educational process, this is the preferred means for policy evaluation. Simultaneously, though, a difficulty arises at the aggregate level because of the absence of a single set of policy objectives which educators, government policy makers, students, and taxpayers would recognize or agree upon.

This paper will consider the decision to invest in higher education from the points of view of the individual and from society as a whole. Equity and policy prescriptions other than those resting upon the most basic and highly defensible cost benefit foundation will be avoided.

Before proceeding into an analysis of higher education, a brief examination of the nature of education is in order. This discussion will foreshadow the view on higher education held in this paper and will also provide some clarification of terms which may be unfamiliar in the present context.

Education at any level is to be thought of as primarily an investment good rather than a consumption good. The greatest part of the benefits which arise from education come as a stream of benefits over time rather than as a lump of consumptive utility to the student (buyer) at the time of acquisition (purchase).

Another peculiarity of education involves the nature of the buyers themselves. In the United States, higher education ordinarily bears positive costs to the student. The student will rationally incur these costs of higher education according to the benefits which the education is expected to provide him. He is probably not concerned with the benefits others may realize from his education.

In the United States, students (and their families) almost never bear all the costs of college education. Typically, either some government agency, private interest, or both will contribute to the support of colleges and this subsidy translates into lower tuition charges (prices) for students. Presumably, the non-student contributors to higher education believe that there are some external benefits to a student's training. Contributors' and government's support of higher education is based upon socially perceived external social benefits. These social benefits accrue to society through time. Hence, public subsidies like private expenditures are to be viewed as an investment decision.

Investments are made with the expectation of an adequate return. The public sector subsidizes (invests in) higher education until 'enough' students are produced to satisfy society's need for the social benefits to the education. Ordinarily public subsidies of higher education serve to offset some private costs to this education. The greater the subsidy the lower the private costs and the more profitable the private investment in higher education. The law of demand assures the public that lower costs will induce more students to obtain college training. The law of diminishing returns assures

that there is some economical limit to the amount of college subsidy and the consequent college trained individuals which the public will knowingly afford. As long as the declining marginal social benefits to higher education are in excess of the publically borne marginal costs to higher education, the public will rationally subsidize this training. However, when the marginal social benefit falls below marginal social costs rational policy requires that investment be diminished (that the subsidy be reduced). Individual students, of course, are only concerned with their private benefits versus their privately borne costs and not whether society is wisely investing in education.

For many reasons, it seems that there are non-pecuniary or non-market aspects of both the benefits and costs associated with the acquisition of higher education. Unless we can account for these as well as the ordinary market costs and benefits, there is no sure way to determine the real nature of an investment decision for post secondary education. In basic microeconomic theory, excess profits of a particular type of business enterprise will induce others to enter the industry until competition and output are such that no economic profits exist. A similar type of thinking might be postulated for the decision to enter into the industry-like category of providing highly developed skills to a labor market. Thus, in its common form, a potential for a superior income level which comes as the result of gaining a higher education degree will induce investment in higher education until such time that the discounted expected stream of net

earnings falls to a level which makes the investor indifferent to more investment.

Along these same lines of thought, some economists consider it convenient if not necessary to assume that labor is paid its marginal product. One economist, Lester Thurow, goes so far as to say that the concept of human capital . . . "ceases to have any economic meaning. . ." if wages do not equal labor's marginal product.[14] But there is considerable reason to believe that labor is in fact not paid its marginal product and further, that there may be some obvious reasons why this is so. Certainly, restrictions to labor's mobility and the existence of imperfect knowledge limit the neatness of the competitive model's usual solution as well as the degree of the model's applicability to practical evaluations of human capital and wage analysis. But another deterrent to the competive model's employment solution exists in the social conditions which affect workers preferences for certain types of jobs. If Thurow is correctly describing the real labor market, then he must have been implicitly assuming that wage earners also consider non-pecuniary gains and costs to education.

As one example, it seems reasonable to assume that a secretary has more of an initial investment in her market skills than does a relatively unskilled female production line worker. Yet the latter is often the recipient of higher wages and the former foregoes the further benefit of on-the-job training for the sake of a socially preferable position. In the extreme case, one finds upper-middle class married women doing work for which they receive no monetary

compensation such as in volunteer hospital work. The non-pecuniary gains in having an occupation, maintaining social status, flexible conditions, and perhaps in exercising charitable motives serve to outweigh some or all of the pecuniary gains in wages which are most often thought of as the primary determinant of occupational decisions. So perhaps it is that the form of the competitive model's wage and human capital investment solutions require the equalizations of the sums of pecuniary and non-pecuniary gains with the sums of pecuniary and non-pecuniary costs.

Utilizing this approach, the non-market gains to a type of employment can be thought of as a kind of economic rent accruing to the employer in that they represent a money saving in his labor expenses. It should be recognized also that the motive to attend college may not be solely for a salary advantage but also for the purpose of qualifying one for a particular social status associated with an occupation. Further, the social status of an occupation is not necessarily related to the earnings of that occupation. A further implication of this is that the social forces that determine the non-market aspects of returns to workers contribute to the structure of the economy and to the composition of its output. The competitive model ordinarily ignores this impact.

It would be difficult to predict the precise effects of a sudden change in these social preferences, but it seems reasonable to expect some alteration in both wages and employment for many types of work. This does not mean that it would be impossible to

conceptually identify the optimal aggregate quantity of investment in higher education. Rather, it merely suggests that individual preferences of sellers of labor's services should be accounted for in a fashion analogous to terms which recognize the effects which consumer preferences have on demand schedules. Individual preferences are similarly as important in the determination of the supply schedule for labor as such schedules relate to specific job categories.

The discussion above of the real market versus theoretical market conditions of employment and investment is intended to establish a background against which the effectiveness of social policy as it relates to the national and individual propensity to invest in higher education can be evaluated. As noted in Chapter I, the situation facing those who are now investing in higher education can be simplified to terms which amount to saying that they will face increased competition for jobs in categories which were plagued with shortages in the recent past. As a result, significant underemployment can be expected and average returns to education will decline. But whether graduates will find jobs which are appropriate to their training is, of course, only a part of the question to be answered in determining whether such occupational superfluity of skills is economically defensible. Regardless of what one does as a vocation, it is often the case that he or she as an individual will benefit from whatever education has been received. More education without consideration of costs is probably always preferable to less education simply because of the consumption benefits which accrue to those in possession of the

training. What is of considerable importance, however, is the question of whether rates of subsidy as borne by the public are such that they are in excess of what the public could spend and obtain the same or at least an adequate return in terms of social benefits to higher education.

It is an explicitly stated assumption of this paper that social benefits to higher education do exist and that they are transmitted to society primarily through the student's participation in the labor market in a job which utilizes his training. This is to say that generally society will fail to realize the greatest part of the external social benefit of a student's education if the student becomes underemployed.

If the rate of subsidy to higher education is excessive, then the public as a whole is in effect subsidizing some of the personal consumption activities of those groups who partake of higher education and not receiving a social return as compensation. In other words, if the marginal benefits to society and to the economy are exceeded by the marginal costs of subsidizing higher education at present levels of output, then a realignment of public support for such education is in order. This amounts to nothing more than saying that the costs of an activity should be allocated in line with the benefits which come from that activity.

THE INDIVIDUAL'S PERSPECTIVE:

The remainder of this chapter concentrates on the circumstances surrounding private investment in education to the Bachelor's degree

level. Even with the levels of underemployment forecast, one can see that at the microeconomic level there are still adequate inducements to invest in education for individuals given the very recent experience of wage rates vis a vis educational attainment. Table III below shows estimates of selected average college costs for the year 1970-71. The data are broken down for different types of institutions. Because of the microeconomic perspective, the costs of board and dormitory charges to individual students are not included in this table. Room and board are merely substitutes for services which students would require in or out of school so in an opportunity cost sense the costs of these services can be ignored.

One of the most important costs of college attendance is the foregone earnings of the student. Since college students are generally high school graduates, the most intuitively appealing income opportunity cost of college attendance is the average earnings of similarly aged high school graduates. The Department of Health, Education, and Welfare estimated this mean opportunity income for 18-24 year old men with four years of high school at $4195 in 1971. The comparable figure for women was $2816.[15] Column I of Table III lists the total educational costs by level and control of the institution and by the sex of the investor. These figures in Column I include foregone income. Column II of Table III lists the sums of foregone income and the average student borne charges for the various institutions. Column III then is the residual estimate of the per student higher educational costs borne by parties other than the student and his immediate supporters such as his family. These figures in Column III include

TABLE III

ESTIMATED ANNUAL EDUCATION COST PER STUDENT
BY LEVEL AND CONTROL OF INSTITUTION,
SEX OF STUDENT AND BEARER OF COSTS
For 1970-71
(In Dollars)

	Column I Total Current Funds Expended Per Student Including Foregone Income for Education		Column II Student Borne Costs, Tuition and Fees		Column III Residual Costs Borne By 'Other' Sources
	Men	Women	Men	Women	Men and Women
Public Institutions					
University	7227	5848	4673	3294	2554
Other 4 year	5955	4577	4526	3148	1429
2 year	5156	3785	4381	3002	783
Private Institutions					
University	8847	7468	6176	4797	2671
Other 4 year	6291	4912	5799	4420	492
2 year	5758	4379	5305	3926	453

Sources: Financial Statistics of Institutions of Higher Education, 1973. U.S. Department of Health, Education, and Welafre, Table C. Charges to Students, Projections of Educational Statistics to 1928-83, U.S. Department of Health, Education, and Welfare, pp. 109-110. Consumer Income, Current Population Reports Series P. 60, No. 85, December, 1972. U.S. Department of Commerce.

public support to education from governmental agencies and gifts from private sources. This paper will generally refer to this column as public or 'other' support to higher education.

The nature of higher education is such that the information in Table III is not very significant in itself. Since expenditures for education are made with the expectation of a stream of benefits accruing to the investor over some time period, the per year costs of Table III are only half of the story since they do not indicate anything about the returns on investments which higher education provides. But the returns and the costs must be considered in evaluating decisions on higher education.

This paper utilizes a simple model to approximate the stream of benefits to college education. We will assume that the returns which students realize from education are equal in all time periods over the period that the investment produces returns. Since imperfect knowledge so strongly characterizes the decision to invest in human capital one may as well choose a simple and manageable model to represent the investment decision as to choose a more complex one and have no greater assurance of accuracy.

If all periodic returns to an investment are equal, this stream of benefits can be treated as if it were an annuity. Thus, Table IV takes the cost of higher education figures in Table III as the present value of the annuity and shows the annual return on this present value as if the annuity runs for forty years. In this way, the figures demonstrate the minimum benefits which are necessary to

TABLE IV

ANNUAL ANNUITY RETURN NECESSARY FOR HIGHER EDUCATIONAL COSTS
BY TYPE AND CONTROL OF INSTITUTION, SEX OF STUDENT
40 Year Annuity at 8% and 10%

	Column I Total of Current Funds Expended		Column II Student Borne Costs		Column III Expenses Borne By 'Others'
	Men	Women	Men	Women	Men and Women
Public Institutions					
University: 8%	606	490	392	276	214
10%	739	598	478	337	261
Other 4 year: 8%	499	384	379	264	120
10%	609	478	462	322	146
2 year: 8%	433	317	367	252	66
10%	528	387	448	307	80
Private Institutions					
University: 8%	742	626	518	402	224
10%	905	763	632	490	273
Other 4 year: 8%	528	412	486	371	41
10%	643	502	593	452	50
2 year: 8%	483	367	445	329	38
10%	589	448	542	401	46

Source: Computed from Table III.

compensate the various investors for their costs of higher education. As such, these annual annuity returns are necessary returns or an internal debt so to speak which individual investors in higher education incur. A forty-year payoff period is chosen because most college graduates are in their early twenties, and therefore, can expect about forty years of working life. This is not to say that benefits to higher education, public or private, necessarily only accrue during years of employment. Rather, the exclusion of non-working life benefits is seen as another simplifying assumption.

Table IV shows necessary annual returns computed on two alternative interest rates, 8% and 10%. These interest rates serve to show the opportunity costs to investment in education and two rates are used to show the difference in the magnitude of the necessary annual returns depending on the interest rate chosen. For instance, the annual annuity returns necessary to compensate a former student figures at 10% are a rather large one-fifth greater than the return figured on an 8% annuity. Indeed, the use of an annuity is itself open to question. But such a technique does provide at least an idea of what goes on in real market investments in higher education.

Table IV implies that for each year of attendance, a male student at a publically supported institution must realize $392 (or $478 depending on the opportunity rate of interest) in benefits every year for forty years to compensate himself for his costs of that investment. A male student at the more expensive private institutions incurs an internal debt running forty years of $518 (or $632) worth of benefits for each year of attendance.

In 1971, for example, for men 25 years old and older the differences in mean earnings for those with four years of college versus those with four years of high school was $4592. For women in the same age category, the salary difference was $1963.[16] For both men and women, then, the salary differentials are quite sufficient to justify the personally borne expenses of college education when viewed in this annuity fashion. The annual return at 10% for the most expensive institutions, the private university, when multiplied by four is in no case greater than the salary difference as shown in Table V. But as Denison, Becker, and others have noted, not all the differences in salary are attributable to education since those pursuing higher education are generally more talented individuals than those who stop at high school.[17] According to Denison, the proportion of increased earnings which may be accounted for by ability is two-fifths or 40%. Sixty percent of the salary difference is thus attributed to education.

As Table V shows, the investment in four years of college is still justifiable in terms of income alone for men as none of the annuity returns for four years of investment exceed even the income differential adjusted for differences in ability of college students. For women, though, the situation is not so clear cut. It would appear that women can only justify investing in four-year college educations on the basis of salary alone by attending public institutions and if the opportunity rate is 8%. Otherwise, women's income experience as of 1971 does not show that the difference in mean incomes of those women with four years of college is sufficient to justify the

TABLE V

ANNUAL ANNUITY RETURN NECESSARY FOR
FOUR YEARS OF COLLEGE ATTENDANCE
BY TYPE AND CONTROL OF INSTITUTION AND SEX OF INVESTOR
(In Dollars)

	Men		Women	
	8%	10%	8%	10%
Public Institutions				
University	1568	1912	1104	1348
Other 4 year	1516	1848	1056	1288
Private Institutions				
University	2072	2528	1608	1960
Other 4 year	1944	2372	1484	1080

Source: Table IV, Column II.

MEAN SALARY DIFFERENCES
BETWEEN THOSE WITH FOUR YEARS OF COLLEGE AND
THOSE WITH FOUR YEARS OF HIGH SCHOOL
FOR MEN AND WOMEN 25-34 YEARS OF AGE
1971
(In Dollars)

Men: 4592	Women: 1963
60% Adjustment for Ability Differential	
2755	1178

Source: Consumer Income, Current Population Reports Series P. 60, No. 85, pp. 112-115, U.S. Department of Commerce.

costs themselves. If legislation and social movements aimed at reducing job discrimination against women are successful, however, this investment situation may change.

It must be noted at this point that consideration has only been made of mean salary differences. Certainly, a whole host of non-pecuniary personal benefits accrue to those with superior educational experience. These benefits then serve as an added inducement to those whose incomes are already sufficiently higher to compensate their educational investment debts. For those groups whose income differential did not exceed the cumulated annual return-debts other personal benefits serve as a compensation over time.

The consideration of non-pecuniary benefits can be made in another way. For example, given the real nature of the experience of college attendance, it would seem likely that the private costs of attendance figures in Column II of Table III and the necessary return figures in Table IV are biased upward and possibly severely so when some other non-pecuniary aspects of investment in higher education are considered. Cultural experiences, broadened awareness, personal contacts, relation to educational institution, prestige, and so on, all supplement the increased earnings which a college education usually brings over one's lifetime. What is not so obvious, though, are the benefits or negative costs realized by a student while in college. In the United States where social aspects of attendance receive nearly as much attention as academics, it can be safely entertained that the total costs of attendance are to be lessened by

some significant positive benefits which arise from the consumption benefits of college attendance realized while in college. If one accepts the line of reasoning so far developed, then the financially calculable returns to education are quite sufficient to support the decision to invest in higher education for individuals. Further, in most instances in this analysis, this conclusion can be made even without considering the non-pecuniary benefits of college education which would appear to add even further impetus to the positive investment decision at the micro level.

SOCIETY'S PERSPECTIVE:

Turning to the macroeconomic viewpoint, the annuity technique so far discussed can be extended as a tool of analysis. One condition of economic efficiency involves the requirement that economic entities bear costs according to the benefits which they receive from a given activity. As discussed in Chapter I, the nature of the benefits to education is an elusive concept, particularly where social benefits are concerned. We have assumed that these social benefits do exist for the reasons stated in the first chapter. Further, we may quantify these benefits and compare them to social costs of higher education in a fashion similar to that for individuals. For the sake of simplicity, we will take a portion of economic growth as the benefit accruing to society and compare this public benefit to the publically borne costs of investments in higher education. This reasoning is consistent with the work of Denison and others.[18]

If an educational investment annuity were founded on accurate data and assumptions, and if its accounting methods were entirely consistent with those employed in some perfectly accurate set of national income accounts, one would expect that there would be a total return figure measurable in terms of economic growth which society expected as a return from its educational expenditures. In any one year, the component of national product accounted for by educational investments would be the accumulation of the annual 'debts' in returns to education for the period of time that educational investments of the past are still producing returns. In other words, in a forty year annuity scheme as has already been used here, the proportion of product in 1972 accounted for by education can be computed by the formula:

$$\text{Proportion National Income} = \frac{R_{1971} + R_{1970} + R_{1969} + \ldots + R_{1932}}{\text{National Income 1972}}$$

In words, this equation is interpreted as the proportion of national income accounted for by total investments in education for the year 1972 equals the sums of the returns for all years which are still active (1932-1971) divided by national income in 1972.

Table VI below gives these calculations for higher education. Column 1 gives the enrollment in institutions of higher education in the United States for every second year from 1930 through 1958. The figures for 1930 are assumed to be a good estimate for 1931 and so on. As with all the columns, data are given annually from 1960 on, since these years are later subject to some special calculations. Column 2

TABLE VI

NECESSARY ANNUITY RETURNS FOR TOTAL EXPENDITURES ON HIGHER EDUCATION
1930 - 1972

Year	Enrollments in Institutions of Hi. Ed. in 1000's	High School Grad's Income in Dollars	Product of Col. 1 & 2 in Billion Dollars	Current Expendi. of Hi. Ed. Insti. in Billion Dollars	Total of Costs of Hi. Ed. Cols. 3 & 4	Total of Cost w/Co. 2 adjusted for income	40 yr. 8% annuity of unadjusted costs of income	40 yr. 8% annuity on adjusted income	40 yr. 10% unadjusted	40 yr. 10% adjusted
1930	1101	718	.8	.5	1.3	1.1	.11	.09	.13	.11
1932	1154	527	.6	.5	1.1	1.0	.09	.08	.11	.10
1934	1055	567	.6	.5	1.1	1.0	.09	.08	.11	.10
1936	1208	672	.8	.5	1.3	1.1	.11	.09	.13	.11
1938	1351	689	.9	.6	1.5	1.3	.13	.11	.15	.13
1940	1494	778	1.2	.7	1.9	1.6	.16	.13	.19	.16
1942	1404	1144	1.6	.7	2.3	1.9	.19	.16	.24	.19
1944	1155	1426	1.6	1.0	2.6	2.2	.22	.18	.27	.22
1946	1677	1351	2.3	1.1	3.4	2.8	.29	.23	.35	.29
1948	2616	1657	4.3	1.9	6.2	5.1	.52	.43	.63	.52
1950	2659	1820	4.8	2.2	7.0	5.8	.59	.49	.72	.59
1952	2302	2095	4.8	2.5	7.3	6.1	.61	.51	.75	.62
1954	2200	2199	4.8	2.9	7.7	6.5	.65	.55	.79	.66
1956	2637	2686	7.1	3.5	10.6	8.8	.89	.74	1.08	.90
1958	2900	2655	7.7	4.5	12.2	10.3	1.02	.86	1.25	1.05
1960	3216	2768	8.9	5.6	14.5	12.3	1.22	1.03	1.48	1.26
1961	2861	2768	10.7	8.5	10.2	16.5	1.61	1.38	1.96	1.69
1962	4175	2768	11.6	10.2	21.8	18.9	1.83	1.58	2.23	1.93
1963	4495	3059	13.8	11.3	25.1	21.7	2.10	1.82	2.57	2.22
1964	4950	2095	15.1	12.9	28.0	24.2	2.35	2.03	2.86	2.47
1965	5526	3325	18.4	15.2	33.6	29.0	2.82	2.43	3.44	2.97
1966	5928	3325	19.7	17.5	37.2	32.3	3.12	2.71	3.80	3.30
1967	6406	3674	23.5	19.9	43.4	37.5	3.64	3.14	4.44	3.83
1968	6928	3674	25.5	22.1	47.6	41.2	3.99	3.46	4.87	4.21
1969	7484	3674	27.5	24.7	52.2	45.3	4.38	3.80	5.34	4.63
1970	7920	4172	33.0	27.4	60.4	52.2	5.07	4.38	6.18	5.34
1971	8116	4172	33.9	29.9	63.8	55.3	5.35	4.64	6.52	5.65
1972	8220	4172	34.3	32.5	66.8	58.2	5.60	4.88	6.83	5.95

Sources: Historical Statistics of the United States, p. 213 and Continuation Historical Statistics to 1962. Statistical Abstract of the U.S., p. 132; Projections of Educational Statistics, p. 72 and 92; Employment and Earnings, p. xi; Consumer Income, Table 49.

in Table VI gives the opportunity income based on estimates of male high school graduates income. Column 3 is the product of Columns 1 and 2 giving the unadjusted amount of gross opportunity earnings in billions of dollars. Column 4 is the current year's expenditures in billions of dollars for United States institutions of higher learning. Column 5 is the sum of Columns 3 and 4. Column 6 is computed as Column 5 but with total foregone earning (Column 2) multiplied by .75 to adjust for several factors. Among these are the negative influence of these figures in Column 2 accounted for by females having lower opportunity earnings than males. Females are included in Column 1 enrollment figures, but are not heretofore accounted for in the male's high school income figures given in Column 2. In 1965, as one example, females accounted for about 40% of total enrollment in institutions of higher learning. This 25% reduction of the Column 3 product also attempts to account for what income students earned while in college which would offset some of the full foregone earnings in Column 2. These factors which would reduce the actual magnitude of the entires in total opportunity high school graduate's income, but their diminishing effects are offset by the fact that college students as a class are generally expected to possess more raw earning ability than those who stop their education at four years of high school. Reducing total earnings by 25% is explicitly assumed to account for these factors within an acceptable tolerance.

Returning to the equation above, the proportion of 1972 national income which society owes itself as an internal debt for past investments

in higher education according to Table VI is two times the sum of the semi-yearly annuity return figures in Column 8 (8% annuity, Column 10 gives 10% annuity figures) for 1932 through 1958 plus the sum of the yearly annuity return figures for 1960 through 1971, all divided by national income for 1972. At the 8% return rate, about 4 1/2% of national income of 1972 is accounted for as an accumulation of returns for forty years of investment in higher education. For 10%, similarly computed on Column 10 in Table VI, the figure is about 5 1/2% of 1972 national income. Aside from comparing the relative magnitude of these returns attributable to education, one may also note that these figures are rising as the ratio of annual spending on higher education rises relative to national income.

Edward Denison in his landmark work, The Sources of Economic Growth, suggests that education of all types (not just higher education) accounted for 23% of the growth of total real national income of the period 1929-1957.[20] In this same work, he forecast a 19% figure for the contribution of education to the growth rate for the period of 1960-1980. In a later work, Why Growth Rates Differ, he amends the prediction for the later period to 17%.[21] Since Denison makes no distinction for the level of education involved, we may compare the results of the annuity technique used in this paper if we incorporate data and calculations for elementary and secondary educational investments (Table VII) and apply them in a manner similar to that of Table VI. Keeping in mind Denison's 17% prediction for education's role in growth of national income and taking the annual returns of

TABLE VII

NECESSARY ANNUAL RETURNS
FOR TOTAL EXPENDITURES ON
ELEMENTARY AND SECONDARY EDUCATION
IN UNITED STATES
1952 - 1972

1	2	3	4
Year	Elementary and Secondary School Expenditures in Billion Dollars	8% Annuity 40 years	10% Annuity 40 years
1961	20.8	1.74	2.13
1962	22.2	1.86	2.27
1963	24.3	2.04	2.48
1964	26.7	2.24	2.73
1965	29.7	2.49	3.04
1966	31.9	2.68	3.26
1967	37.0	3.10	3.78
1968	39.6	3.32	4.05
1969	45.0	3.77	4.60
1970	49.2	4.13	5.03
1971	53.6	4.49	5.48
1972	57.4	4.81	5.87

Source: "Projections of Educational Statistics to 1982-83." 1973 edition, p. 92-93.

Columns 2 (8%) and 3 (10%) in Table VII for elementary and secondary education and adding these to Columns 8 and 10 respectively in Table VI we gain the Columns 1 and 4 in Table VIII. Columns 2 and 5 in Table VIII are the averages of the annual changes in national incomes for the current year, the past year, and the next year. These are averaged to eliminate some of the fluctuations in the results which would occur due to business cycles and so on. Columns 3 and 6 in Table VIII are the ratios of the sum of the years annuity returns on elementary, secondary, and higher education to the averaged change in national income from that year to the next. At 8% these ratios expressed in terms of percents range from 11% to 18% with a mean of 14% over the period 1960-72. At the 10% annuity rate, the range is from 13% - 22% with a mean of 17% or exactly what Denison predicted with a technique using adjusted earnings differentials.

Although the technique of this analysis is quite different from that used by Denison the results of these approaches are very similar. This similarity would seem to lend some credibility to the view that education has contributed to economic growth. But the annuity analysis cannot be simplistically extrapolated into periods where data is not yet available. Succinctly stated, the dynamic nature of the market does not allow the presumption that investments in activities which were profitable in the past will necessarily be so in the future.

A more timely estimate of society's returns on current educational investments can be obtained by comparing rates of educational output

TABLE VIII

RELATIONSHIP OF TOTAL EDUCATIONAL ANNUITY RETURNS TO CHANGES IN NATIONAL INCOME

Year	Sum of Annuity Returns for Elementary, Secondary, and Higher Education In Billion Dollars	Three year Averages of Changes in National Income in Billion Dollars	Portion of National Income Accounted for by Educational Returns in Percent	Sum of Annuity Returns for Elementary, Secondary, and Higher Education In Billion Dollars	Three year Averages of Changes in National Income in Billion Dollars	Portion of National Income Accounted for by Educational Returns in Percent
	1	2	3	4	5	6
60	2.47	19.6	18			
61	3.12	17.7	18	3.02	19.6	15
62	3.44	22.5	15	3.82	17.7	22
63	3.86	30.7	13	4.20	22.5	19
64	4.27	36.9	12	4.70	30.7	15
65	4.92	44.9	11	5.20	36.9	14
66	5.39	44.9	12	6.01	41.9	13
67	6.24	48.9	13	6.56	44.9	15
68	6.78	49.8	14	7.61	48.9	17
69	7.57	48.6	16	8.26	49.8	17
70	8.51	48.2	18	9.23	48.6	19
71	9.13	36.2	16	10.37	48.2	22
72	9.69	85.1	11	11.13	56.2	20
				11.82	85.1	14

Source: Tables VI and VII.
Statistical Abstract of the United States, 1973 edition, p. 317.
Contemporary Economics, Specner, inside cover.

to occupational demands by level of education. If society's subsidy of higher education is such that there is widespread underemployment of college trained workers, then it is likely that society could reduce its subsidy and attain nearly the same social benefit. If marginally produced students are underemployed, the marginal costs of their education as borne by society could have been saved. Had these marginal educational expenditures been saved, there would have been no great loss in social benefits. This is the case because the marginally produced student is not working at a job which allows full use of his education and hence the full flow of the external social benefits.

According to the forecasts discussed in Chapter I above, underemployment of many college educated workers can be expected. The analysis in this chapter does not refute the levels of public subsidy for higher education in the past in average terms, but the more current information on job market conditions indicate that marginal social costs exceed marginal social benefits. These forecasts for job market conditions indicate that society could spend less on higher education and improve its return on investments.

As noted earlier, the circumstances for higher educational investments for individuals are not so responsive to aggregate conditions. The many non-market private benefits to education, including the status provided by such training, continue to exist to some extent regardless of the nature of the individual's job. Thus, private returns rates to higher education are not as subject to

job market conditions as public benefits are. A possibility for the public's overinvestment in college education is consequently the result. In the present case, the public is subsidizing the private benefits of individuals.

The obvious policy prescription in light of these conditions would involve reducing the public subsidy to higher education. But the momentum of the educational industry presents considerable barriers to the implementation of such a policy. Some of these problems are discussed in Chapters III and IV below. Chapter III is also a description and critique of perhaps the most important recent works on higher education, the Carnegie Commission's College Graduates and Jobs: Adjusting to a New Labor Market Situation.[22] Chapter IV will provide some further development of the annuity technique and an evaluation of another recent work which has been written on the new conditions facing colleges and their students.

III. PREVAILING SOCIAL POLICY: THE CARNEGIE COMMISSION ON HIGHER EDUCATION

The policy which the public sector has maintained toward higher education in the past and the attitudes which individuals have held toward their own prospects for post-secondary education are both subject to extensive revision whenever labor markets for educated manpower undergo marked change. Although occupational needs are hardly the only source of demand for higher education, the job market conditions is certainly a prime consideration in the decision to invest in such training.

As discussed in Chapter I, official forecasts call for over-supplies of college education manpower. To reiterate, the United States Bureau of the Census suggests that according to occupational rates of use of college graduates in 1960, there will be 3.3 million more persons with a college degree than will be required to maintain the status quo in the various occupations.[23] The 1972 Manpower Report of the President predicted that 2.6 million of the 9.8 million persons who are estimated to receive college education in the 1970's will go into jobs which have been filled by lesser qualified people in the past.[24] The United States Bureau of Labor Statistics has estimated that only 20% of the jobs of the 1970's will require an education beyond high school. This is in contrast to the fact that one-half of the 18 - 21 age group in the United States attends college at some time.[25] The implications of these reports are that higher

educational output in the United States is perhaps one-third or more in excess of what it should be in terms of occupational needs.

Apparently the growth in higher educational output capacity has been fueled by the economic expansion of the past two decades. Additionally, the conventional wisdom has strongly supported education and this has led to conditions in institutions and in personal attitudes which amount to a classic case of 'too much of a good thing.' Now that a segment of the population has recognized the potentially serious oversupply problem, some attention has been directed toward evaluating the possible consequences of reaction to these conditions by educational institutions, public administrators and the job market as a whole.

From 1967 till 1974, the Carnegie Commission on Higher Education existed as a prestigious and prolific source of information and opinion about the circumstances for higher education in the United States. Nearly one hundred publications were produced under its auspices and over six million dollars spent by the Carnegie Commission in its six year life span. Of these works, College Graduates and Jobs: Adjusting to a New Labor Market Situation, [26] published in 1973, is one of the last works done under the Commission's authority and from the point of view of this paper is the most important. This chapter is a review and critique of the substantive policy prescriptions of the Commission regarding the future of higher education vis a vis the job market forecasts.

On the surface, the Carnegie Report cites two major negative consequences which may come about if the United States does generate

a secular oversupply of college educated manpower. The first of these possibilities is unemployment of the superfluous manpower. This consideration is presumably based upon the notion that excessive training renders one as incompatible with available jobs as does too little training. The report correctly de-emphasizes this possibility in light of the favorable employment conditions which the relatively more highly trained have traditionally enjoyed in the markets.

What is of great concern, however, is the second possible negative consequence, underemployment. In the general economic sense, underemployment is the inefficient utilization of a productive resource. For present purposes, the term relates to the employment of persons in jobs which do not make full use of the person's productive capacities. As an extreme example, a person with a doctoral degree in engineering who is having to work as a cab driver is underemployed in the sense that his present occupation cannot employ him to the fullest of his capabilities. Economically speaking, the person's human capital is inefficiently used after the fact of his investment in that training. In the unlikely event that this person knew prior to his training that there would be no engineering job available and that he would have to settle for an underemployed position at the completion of his training, then his decision to invest in such education would have been economically irrational.

Obviously the engineer-cab driver would have been just as well off occupationally without his Ph.D. training except for some personal benefits of the educational experience and the gratification gained from the achievement of the degree. But in any case, these personal

aspects are unlikely sources of sufficient compensation for having undergone such a rigorous and expensive educational program. Few would not be disappointed to learn at the completion of their training they had no chance or only a meager one to exercise their abilities and skills. This says nothing of society's failure to realize a return on the costs which it incurred in the engineer's education. However, the example above is rather extreme as the degree of underemployment will not ordinarily be as great as in the case of a cab driver with a doctoral degree. What is more likely to be found is that the educational upgrading of some jobs (that is the filling of jobs with persons whose training is superior to those who have filled such jobs in the past) will in some instances make the job somewhat more productive but not so much more productive that a college degree is justified. This condition amounts to partial underemployment. On the other hand, in instances such as the cab driver example the job cannot be made more productive by more training so there is absolute underemployment. In this case, none of the post-secondary educational skills are utilized.

In most cases, however, it would appear likely that the educationally upgraded job will be made somewhat more productive when filled by a person with relatively more education than is normal but the advance in productivity will still not be in line with the full capacity of the occupationally downgraded individual. Referring to job market forecasts, the Carnegie Commission Report makes the following statement on the subject of underemployment:

> "Some of the absorption of college graduates into the labor market will be relatively easy because the jobs will have been upgraded; but some will be frustrating for the persons involved because the jobs have not been or cannot be upgraded. Perhaps somewhere in the vicinity of one million to 1 1/2 million college educater persons, as a very rough guess, will face this frustrating experience. But the same number would probably have ended up in about the same types of jobs if they had not gone to college. They are no worse off occupationally and often may be better off in other ways--for going to college than they otherwise would have been. The problem, then, may be concentrated on about one-half of the 25% of the college educated persons who will enter educationally upgraded positions. The potential problem is this one more nearly for 10% than it is for 100% of college educated persons."[27]

By way of clarification, it is obvious that the above paragraph connoted increased productivity with the phrase 'upgraded jobs' in the beginning of the passage. However, in the next to the last sentence, 'educationally upgraded positions' apparently refers to all positions which will come to be occupied by the college educated and which have not been so filled in the past. This inference is based on the Commission's reference to the approximate twenty-five percent of the college educated who are forecast by the 1972 Manpower Report of the President to go into 'educational upgrading.' In the earlier part of the paragraph cited above, the Commission Report seems to equate upgrading with increased productivity and in the latter instance the Report appears consistent with the Manpower Report usage of the term upgrading, i.e. educational upgrading of jobs consisting of greater productivity or underemployment or a combination of the two.

In this paper, upgrading will mean the same as in the Manpower Report of the President so one may say that to the extent that educational upgrading does not lead to increased productivity in a position then it contributed to underemployment.

An objection must be raised to the Carnegie Commission's statement about the numbers of the college educated persons who will be underemployed. The paragraph quoted above from the Commission's report is found in the text of that work a scant two pages following a synopsis of the government agency oversupply forecasts mentioned earlier in this chapter. It is surprising then that the Commission's words do not more accurately reflect those of the President's 1972 Manpower Report to which the Commission refers in this paragraph.

Rather than the twenty-five percent figure for educational upgrading purported in the Commission report, the 2.6 million upgraded jobs of the 9.6 million jobs demanded during the seventies is actually twenty-seven percent. Exacerbating the oversupply picture one must also note that according to the Manpower Report the 9.6 million is the projected demand for the college trained including those who go into upgrading. The forecast supply of college educated workers is actually 9.8 million or another .2 million which apparently will be completely excessive to the labor market's needs. According to the Manpower Report, half of the educational upgraders will go into professional and technical occupations and the other half will go into 'other' occupations.[28] This projected even split may be what induced the Carnegie Commission to propose that half of the group will go into upgraded jobs that will be made more productive since

professional and technical fields would seem more likely to be able to be made more productive. Whether there will be only partial increases in productivity of these underemployed in these professional and technical fields is unclear, but some would appear likely in view of the numbers involved.

As the Commission notes, the idea that half of the 2.6 million educationally upgraded persons will not go underemployed is only a rough guess and the figure could well be much higher. In any event, half of twenty-seven (or even twenty-five) is not 10% of the college educated with whom we must be concerned with being underemployed as the report states. Rather, the proportion is 13.5 percent (1/2 x 27). Since the Carnegie Commission work was done in the expectation that the overall economic situation was going to be in a state of recovery from the turn of the decade recession rather than in an even more severe recession, it seems certain that the mid-point of the seventies shows considerably more underemployment than the Commission report suggested. If the Bureau of Labor Statistics is correct in stating that 80% of this decade's jobs are 'sufficiently' filled by high school graduates, then the picture is even more severe as college training output is perhaps as much as 50% beyond requirements. In short, the Carnegie Commission's own words of appraisal of the labor market situation are very possibly unrealistic relative to the present and future supply and demand situation in labor markets for educated manpower.

Another serious problem with the Commission's position as it is presented in the above paragraph exists. Where the report refers to

an individual's underemployment as a 'frustrating experience,' it is undoubtedly correct in attaching negative personal consequences to individuals in finding job or appropriate challenge to make full use of their training. At best, however, 'frustrating experience' is a serious understatement. As noted in the last chapter, there are personal gains to be had from college attendance which exist aside from ones later occupational attainments. But occupational expectations are almost certainly a primary reason for investment in post-secondary training. Consequently, one may consider the personal costs borne by the student and the unrealized return 'due' his educational investment in superior income as something of a failure for higher education.

As an example of this failure, the figures of Table III in Chapter II indicate that men who attended publically supported four-year institutions and who are not compensated with a better paying job effectively wasted up to $4500 per year of college attendance. For women, the figure is $3100 per year of attendance. In both cases, these sums are subject to whatever offsetting effects occur from consumption and non-market benefits to such training. For those who attended private universities the figure is well over a thousand dollars higher. Multiplied by even the Carnegie Commission's conservative estimate of 1.3 million underemployed times the number of unutilized years of training, these figures become extremely large no matter what reasonable assumptions are made about the offsets to these costs. Adding to this, the uncompensated contribution to higher education which other sources provide as in Column 3 of Table III the 'waste' is

shown in even further magnitude, another 3/4 to 1 3/4 billion dollars per year.

Oversupplying ourselves with college level talent is no doubt a very expensive as well as a 'frustrating experience.' As the above quotation from the Commission report states:

> "But the same number would probably have ended up in the same types of jobs if they had not gone to college. They (the upgraded ones) are no worse off occupationally. . ."

The point is that they, the upgraded ones, while no worse off occupationally are much worse off in an opportunity investment sense. For the marginally produced students whose investments in education were motivated by aspirations toward superior job openings, their costs in time, money, and frustration are for nothing when they cannot utilize their training in their careers. The same is true for the public as a whole who acting as a supporter for higher education in the expectation of receiving some benefit would also be 'no worse off' had they diverted the subsidy to the superfluously trained toward other projects.

It would seem that a great part of society's benefits to higher education would come through the individual's productivity in his employment. If the individual students' productive capacity is stifled by an occupation which will not allow him to exploit his full capacity, then it would appear that society also foregoes a benefit to the students' underemployment. Since investors in higher education ordinarily do not bear the full costs of their training in the United States, then the 'other supporters of education have, like the student himself, made a bad investment.

Past investments in occupationally superfluous training are irretrievable and not in themselves so much the problem. What should gain primary attention though is the fact that the public sector is continuing to sink funds in unprofitable educational investments. As noted in the last chapter, investments in higher education as late as 1971 seemed to be paying their way on the average, but the projections for oversupplies of the college trained which are forecast indicate that the marginal costs of higher education borne by the public as a whole exceed the marginal benefits thus bringing down the average public benefits. This excessive investment hypothesis can only be incorrect if there are significant social benefits to an underemployed person's education which accrue from sources other than through the upgraded ones employment. While the degree to which an individual through post-secondary education is made a better neighbor and citizen is open to considerable question, it does not seem likely that these effects are really comparable to the contribution to the overall quality of life which the more highly trained are potentially capable of making in their participation in the job market.

To reiterate this important point, the marginal social costs of educating excessive numbers of persons are in excess of the marginal benefits. Additionally, the overprovision of educational opportunity by the public sector has certainly led to a lower level of college admission standards than would otherwise be the case. Surely, this condition has encouraged the marginal students to pursue training which may in fact not provide an adequate return on their investment because

of job market limitations. And yet the summation of the Carnegie Commission report is . . .

> "We should not take any panicked actions. The budgets of higher education should not be cut because of the labor market situation. Student aid should not generally be reduced. We should not reverse the trend toward open-access admissions to the system of higher education."[29]

The position from which this paper is written is that the Carnegie Commission has throughout its report assumed the conventional point of view that education is a near sacred institution and that public support for this institution should flow on the basis of faith alone. The composition of the Carnegie Commission perhaps explains the assumption of this view. Of the nineteen members of the Carnegie Commission on Higher Education, nine were or had been college presidents. Two more of the members were college professors so that a clear majority of influence on the Commission's activities was from the higher education industry. The remainder of the members included lawyers, association executives, and businessmen. The fact that the panel was dominated by persons from the educational sector is in itself not an indictment of the Commission's motives. But the composition of the Board can more than likely be safely taken as an indicator of academic conservatism. The possibilities for expression of this conservatism are considerable.

The Carnegie Commission maintains that the present conditions of oversupply of the college trained in the labor market are preferable to the alternative of implementation of a controlled economy style of manpower planning policy. This paper finds the Commission undoubtedly

correct on this point. The rigidities which a centralized manpower planning policy would impose on the market not to mention the restriction of personal freedom of students are entirely inconsistent with the goals of free market economic and social systems. As well, there can be no presumption that there is a reliable means by which such a policy could accurately target the manpower training needs of coming years. Citing the noticable shifts which have occurred in enrollment patterns in response to changes in career opportunities, the Commission correctly emphasizes the efficacy of market forces and market information in promoting social welfare.

What appears to have escaped the Commission's attention, though, is that 'free' market forces are strongly affected by the 'other' support for higher education. In view of the amounts of excess training to which the economy is subject, the inescapable conclusion to be drawn is that this support is wasteful and that it also goes some distance toward restricting the market's output and toward encouraging wasteful private investments as well. Additionally, it must be noted that rigid manpower planning is not the only alternative to the present system. General cuts in public support to higher education which would raise the private burden and discourage overinvestment through the price mechanism is another alternative. A reduction of higher education's output capacity leaving privately borne costs the same and restricting the supply of college openings is still another means of limiting wasteful investment. The fact that manpower planning is undesirable does not mean that the maintenance of the status quo is the preferable course of social action.

Another point behind the Commission's support of a conservative approach to dealing with the oversupply situation is that massive cutbacks in colleges' financial support would produce undesirable shock effects to the educational system. Among these effects is the detriment to the nation's supply of reserve human capital which might be needed for unforeseen circumstances. Some recent experiences indicate that this is something of an unwarranted concern. Recognized national goals for achieving certain quantities and types of occupational training have been met on or ahead of schedule in this country. While supplies of specially trained people cannot be brought up overnight, it has been shown that investors in higher education are quite responsive to favorable occupational trends and to subsidies applied to study. For example, the President's Science Advisory Committee in 1962 set a target for 1970 of at least 7500 doctoral degrees per year for each field of engineering, mathematics, and physics as the means of alleviating what the Committee saw as a shortage of training in these occupations. The federally supported trainee programs which were implemented to bring about these doctorates were successful in reaching their goal two years ahead of schedule. For lesser degree programs, the unprecedented expansion of educational institutions of this period led to a 100% increase in the number of Bachelor's degrees granted in 1970 over that figure of 1960.[30] Continuing present levels of public support to higher education for the sake of maintaining reserve capacity then seems overcautious given the high elasticity of supply for the highly trained.

A side aspect of this market responsiveness in the supply of college educated labor involves the amount of and the quality of information available to students which can be used in selecting a field of study appropriate to an occupation. There appears to be something of a corn-hog cycle which results from uncertainty as well as from oversubsidized education. The earnings levels of farmers in the past century may have provided a good idea of what newcomers to farming might earn throughout a career. Such reasoning is not so applicable at present. As evidenced by the attractive opportunities which were available to Ph.D.'s in college faculty and business staff positions during the 1950's and 1960's, the market of college faculties has done a near complete reversal in less than the time it would take to complete a bachelor's degree and then a doctorate. The same is also true of the situation for lower level teachers which were produced in huge numbers only to be left with insufficient demand as grammar and secondary school enrollments declined with the passage of the baby boom generation.

In either of these cases and in many more similar situations masses of students have based their career training investment decisions on information which was inadequate over time. As the economic system comes to demand more specialization of training and skills it simultaneously increased the danger for one to become underemployed simply because the technological composition of the economic order does not provide for an unlimited number of any single occupation group even though potentials for any type of position are flexible to some degree.

The questions arise, how can the information on which educational decisions are made be improved in terms of reducing uncertainty and who will provide the information? The answers are quite complex. The Carnegie Commission calls for more research and publications on future employment opportunities by individual trade associations. While these organizations would seem to be a logical choice on the surface, they would also have to be somewhat suspect because of their conflicts of interest. The possibilities are numerous but since trade associations are generally composed of established people in the field it would be to advantage in some cases to encourage the flow of labor market information which might restrict the flow of new entrants into the field. The medical profession has sometimes been accused of this type of motive in restricting the number of medical schools.

On the other hand, other circumstances may provide for an association's interest in promoting optimistic outlooks on the prospects for trained workers. Certainly the American Association of University Professors as one example would have an interest in keeping college enrollments at high levels. In short, such associations may not be particularly reliable.

As an alternative, however, federal and state governments participation in this area of providing for socially beneficial information is quite appropriate and well-established. Through exercising already well-developed machinery for conducting research, federal grants to teams of multidisciplinary researchers would likely provide more objectivity and competence to the task of determining

manpower needs than could be counted on from any other source. At the same time, this project would help to employ some elements of this national research capacity which of late has been underutilized.

Gaining a clear perspective on increasingly dynamic conditions in future occupational needs of this country is a challenging objective of considerable national importance and is therefore best left to the most capable and unbiased research facilities available. This is not to ignore the biases of university research departments, but rather to opt for a reliance on established professionalism in information gathering. In any event, a move away from the influence of vested interest college administrators on public policy is strongly indicated.

IV. PREVAILING SOCIAL POLICY
THE NATIONAL BOARD ON GRADUATE EDUCATION

The Carnegie Commission report, College Graduates and Jobs,[31] reviewed in Chapter III above can be summarized as a conservative appraisal of the probable adverse social consequences associated with overinvestment in higher education. This conservatism is not inconsistent with what one would expect from college professors and administrators and indeed the Carnegie Commission is dominated in numbers by academics.

The National Board of Graduate Education (N.B.G.E.) is an organization which is complementary to the Carnegie Commission. The Board was established in 1971 by the Conference Board of Associated Research Councils. This latter organization is composed of the American Council on Education, the Social Science Research Council, the American Council of Learned Societies, and the National Research Council. The N.B.G.E. is made up of twenty-five persons from education, business, and law backgrounds who were selected by the Conference Board primarily to provide what the Board called 'a critical review and analysis of issues pertaining to the labor market for highly educated persons.'[32] The focus of the N.B.G.E.'s attention is on the doctoral degree and the Board's first publication, Doctorate Manpower Forecasts and Policy, relates almost completely to Ph.D. level training.[33] Much of the argument in the paper, however, is easily generalized to other levels of higher education.

As with the Carnegie report, Doctorate Manpower Forecasts and Policy is concerned with public reaction to job market conditions vis a vis higher educational subsidy. The Board report portends the dangers which it perceives inherent in alternative methods of determining appropriate levels of subsidy for higher education.

The first of these alternatives is what the N.B.G.E. terms a 'human capital approach.'[34] As a general definition, a human capital approach amounts to basing educational support on some notion of the benefits gained by the particular training. In other words, if the marginal social costs of providing a doctorate level philosopher are not exceeded or at least equaled by the marginal social benefits to that training, then the subsidy funds should be spent elsewhere.

Doctorate Manpower Forecasts and Policy concisely dismisses this type of analysis as a source of educational policy on the grounds that such techniques have traditionally concentrated on the private factors of educational investments and that this analysis only relates to efficiency which " . . . is only one of the values among many that should determine public policy."[35] As Chapter II of this paper shows, even though human capital approaches to higher education have traditionally been concerned with the private aspects of training, there is no reason why social aspects cannot be brought into account and even quantified.

One noteworthy fact is that the human capital analysis here used suggests that the ratio of marginal social benefits to marginal social costs seems clearly less favorable toward present levels of

educational output than the privately realized benefits and costs relationship. The social benefits flowing from higher education seem most in evidence as the result of job market utilization of acquired skills. Impressive forecasts indicate that the job market can at present and will in the future be able to operate efficiently with fewer high level degrees than we now produce. Consequently, society could reduce its educational expenditures for occupationally redundant training and be better off for doing so. On the other hand, expectations of superior incomes augmented by the spectrum of personal non-market benefits to education reveal something about the relatively greater benefits from higher education accruing to individuals at the margin than to the public sector. Human capital analysis then may not be objectionable to the N.B.G.E. because it is limited in scope but rather because it is capable of being so thoroughly applied.

A second comment on the National Board of Graduate Education's stand on human capital analysis must be made concerning its apparent notion of the word efficiency in the above reference. The Board in stating that efficiency "is only of the values that should determine public policy. . ."[36] implies that efficiency is inherently a dollar and cents business kind of concept. The notion of efficiency should and can be more reasonably used to evaluate non-quantifiable as well as quantifiable things. Society's and individuals' successes in attaining their goals of making themselves productive and in furthering their culture are intimately related to the efficiency of the social and economic systems. The Board is simply short sighted in clinging

to the subjective terms of analysis which they have employed. Educational administrators, students, government agencies as well as the electorate should have access to the most enlightened data available so that they might choose a course for higher education on a more sound basis.

In preference to a new ordering of graduate education priorities based on human capital analysis the National Board of Graduate Education defends the 'free student choice' system, the status quo, now in effect. But the Board does not see that a human capital approach as the main threat to the free choice system. Rather the Board seems more concerned with calls for a national manpower policy. As in the case for the Board's use of the word efficiency and the Carnegie Commission's use of 'upgrading,' a clarification of terms is in order.

By manpower policy the Board rather narrowly intends the type of manpower policy found in the controlled economy, i.e., the attempt to provide training opportunities and education according to some centrally determined goals for the economy. Even if these types of systems were successful in other countries which the Board denies, manpower policy is objectionable on the grounds it interferes with the exercise of free choice and enterprise. Rather than attempt the impossible in predicting future occupational needs, the Board feels that the invisible hand is better left to determine the training-job mix.

In its attack on manpower planning, the Board cites Howard Bowen. Bowen advances an inherently persuasive argument by noting that future manpower needs are not inflexibly defined and that the free choice system is superior in terms of its capacity to translate social

welfare of tomorrow's society.[37] Bowen also cautions against the belief that graduate education should only be considered as training for a specific occupation. Rather, he believes that the ability to change the nature of their jobs which the highly trained provide for the market place is some sort of benefit to graduate education which transcends the usual one-to-one type of thinking which is ordinarily applied to training and jobs. In short, the National Board of Graduate Education in concert with Bowen soundly discourages the use of their notion of a manpower planning approach as a viable policy in reaction to the forecast oversupplies of the highly trained.

The N.B.G.E. also objects to the 'on again-off again' federal policy of support toward graduate education (the report cites 51,446 predoctoral students were supported on federal fellowships in fiscal 1968 and only 6600, an 87% decline were similarly supported in fiscal 1974).[38] In this objection, the Board appears to be well founded in its fear that federal manpower policy is strongly affected by short term trends in employment. It is likely, however, that economic fluctuations also play a part in this decline in support. In any event, building up a graduate degree machine of the magnitude of that found in the United States and suddenly underutilizing this capacity is an unignorable indication of the pains of economic transition if not economic inefficiency.

What Bowen and the Board do not explore, however, is that manpower planning need not be so narrowly defined as that system used in the controlled economies. In promulgating the case for free student

choice (the status quo) in graduate education the National Board of Graduate Education has in fact attacked two extremes, a narrowly defined human capital approach on one hand and a rigidly defined manpower policy approach on the other. In attacking the viability of these alternatives, the Board implies that the status quo is all that is left. In fact, a wide spectrum of alternatives exist.

It is worthy of note that the United States has had a manpower policy of a different sort for some time. That policy was not similar to the manpower planning of controlled economies. As discussed in Chapter III, educational policy of the 1960's was favorable to graduate education revealing the government's interest in providing targeted numbers of Ph.D. chemists, physicists, and engineers. Production of graduate degrees was spurred by research funds poured into these programs. Now the United States still has a manpower policy which also reflects the preceived needs of the times. Recognition of the needs for graduate training and the funds for its provision has substantially changed. Painful though any economic transition from the climate of one market to the next may be, one lesson is consistently demonstrated: the sooner the transition is acknowledged the less painful the conversion is likely to be. Future absolute enrollments in colleges and universities will begin to decline at the beginning of the next decade leaving diminished demand for a significant number of academic Ph.D.'s already in the market. To subsidize the training of additional Ph.D.'s in the meantime seems ill-advised at best.

The free student choice system championed by the N.B.G.E. has intuitive appeal. This appeal deserves closer scrutiny than it normally receives, however. The free aspect of an opportunity ordinarily implies that there are no unusual restrictions to the decision to pursue the opportunity. In the case of graduate education, costs in dollars and in time are assumed here to be ordinary restrictions. Bans of other types such as government imposed quotas as would be found in a strict manpower policy would have to be considered unusual restrictions. In a sense subsidies must be seen as something of an unusual negative restriction. As is commonly shown in the market experience, such forces go some distance toward structuring the composition of the market's output. If public support (subsidy) of higher education were cut or eliminated then the numbers receiving such training must fall as costs of training rise, opportunities for training fall, or both. If the proposition of this paper concerning the excesses in the supplies of the highly trained manpower is correct, then it follows that a subsidy inducing higher educational training encourages an artificial alteration in the labor market relative to what that market might produce if a 'truly free student choice' market were to exist.

Windham and others have suggested that public support for higher education contributes to income redistribution patterns which favor the rich rather than the poor.[39] This position is lent some credence by the recognition that subsidies of higher educational degrees encourage marginally produced students to seek the private

benefits to education at the public's expense. The portion of educational subsidy accounted for by taxes of low income persons then aides the typically higher socio-economic class college students according to Windham.

Nonetheless, this source of subsidy for college training is to some unidentified extent compensated in terms of the social benefit as in encouraging economic growth. This is contrary to Windham's assumption that there are no social benefits to higher education. For the superfluously produced college graduate, however, whose skill will be underemployed, it can be said that the degree of support for his education coming from the lower income groups must be recognized as an uncompensated income transfer in the form of a personal benefit to education. That is true at least if one follows this paper's assumption that social benefits to education come about almost exclusively through the job market participation of those receiving the training.

The N.B.G.E. is supporting a 'free student choice' market for higher education. But in actuality, the Board is applying the appeal of the argument for free enterprise to a market situation which is hardly a model of free enterprise due to the artificially favorable circumstances surrounding the availability of graduate degrees to potential investors.

It is difficult to delve into the N.B.G.E. report without noting that its support of 'free choice' in the graduate education market is not so contradictory a position to a human capital approach. The question becomes: Why not have better terms of analysis? The

information which the N.B.G.E. wants to see provided as listed in its recommendation #4 is as follows:

> "Only the federal government has the capability and the authority to collect consistent and comprehensive data on trends pertinent to the labor market for highly educated manpower, and we urge it to exercise this responsibility. At a minimum, these data should include enrollment trends by field and institution, trends in financial support for graduate students by field and institution; job placements and salaries of graduates, as well as analysis of unemployment and underemployment; trends in research and development expenditures, and the distribution of these expenditures by type of institution and source of funds continuously revised projections of the future market for the various types of highly trained manpower are also needed. . ."[40]

It must be kept in mind that human capital analysis can transcend the efficiency criticism discussed earlier in this chapter. The N.B.G.E. recommendation #4 above calls for sufficient information upon which a rather sophisticated cost-benefit human capital analysis could be based. Undoubtedly, education's costs and benefits for the public sector as well as for individuals could be reasonably be determined on this information. As such, human capital analysis would put this information in much more usable form for all of the various decision makers.

The N.B.G.E. assertion that 'efficiency' is not a sufficient criterion for evaluation appears somewhat contradictory in light of the following. The Board is in fact suggesting that the 'free choice'

system of the past be realigned under improved information services that render the system quite well suited for enlightened human capital analysis.

This analysis could be also constructed so as to place some premium on accomplishing concurrent economic and social goals not included in the Board's efficiency terms. These goals include the promotion of graduate education among women and minorities and in keeping the ranks of Ph.D.'s adequately staffed with the vitality of 'new blood' as the Board also suggests. As well, the fulfillment of occupational needs in specific high need areas such as medical fields could be made.

It is always difficult to clearly demonstrate self-interest or professional perspective; but given the conservatism and self-serving nature of the Board's report, it is tempting to suspect a Carnegie Commission type of aversion to the availability of information which adversely affects public sentiment toward higher educational support. Upon examination of the Board's composition, the suspicion of academic influence is borne out. Of the twenty-five Board members, twenty-one are college or university presidents or professors. Of the rest, two come from research organizations, one from business, and one from law.

This is not to say that the positions of the Carnegie Commission or the N.B.G.E. are indefensible by any means. No market enterprise is efficiently operated in the turmoil of violent ups and downs. The jolts in support of education have certainly not been conducive to

maximizing this sector's contribution to social welfare. Further, if one is at all in agreement with the Galbraith 'public sector undernourishment' type of thinking, then perhaps the maintenance of some of the sacrosanct aura which has typically shrouded education in the United States is overall beneficial to the public. If this aura has existed to some extent on the electorates ignorance of the external social benefits to higher education then this ignorance has promoted social welfare. In such a case, the market distance that exists between educational administrators and education's primary supporters, taxpayers, is not at all an unfortunate phenomenon for vested interest administrators and may in fact not be so unfortunate for the public either. But because of the oversupplies, this market distance may now be shown as conducive to economic inefficiency and a more painful labor market transition.

This paper is not only concerned with graduate education but with all levels of higher education. The discussion of the N.B.G.E.'s report should be easily generalized to apply to this broader range of concerns; but of course, the situation for each level of learning is somewhat dissimilar as are the degrees themselves. The current popular associations which are made with various degrees may have in fact been a contributing factor to the oversupply of the higher of the post-secondary educational facilities. For instance, the requirement for the Bachelor's degree which was granted by the University of North Carolina in 1840 are reproduced below:

FRESHMAN	SOPHOMORE	JUNIOR	SENIOR
Livy	Graeca Majora	Cicero	Chemistry and Mineralogy
Virgil's Georgics	Homer	Tacitus	Mental Philosophy
Graeca Majora	Horace	Latin Construction	Moral Philosophy
Algebra	Latin Writing	Mechanical Philosophy	Graeca Majora
Cicero's Orations	Trigonometry	Logic	Horace
Geometry	Logarithms	Rhetoric	Latin Construction
	Geometry	Greek Tragedy	Astronomy
	Juvenal	Calculus	French
	Demosthenes	History and Chronology	Political Economy
	Navigation and Surveying		National and Constitutional Law
	Mechanical Philosophy		Chemistry and Geology
	Modern Geography		Cicero [41]

The curriculum of that era is strikingly unfamilar to the course requirements of that institution today. What is important, though, is that the B.A. once had the tradition of being the gentleman's status symbol, and was probably something of an elitist social instrument employed to produce the manpower for the learned professions. In no way was it to be considered everyman's occupational training.

The association of the Bachelor's degree with enhanced income and social position has continued though the degree itself has changed. The familar equation of getting ahead by going to college was nearly an indoctrination for generations of American high school students and perhaps still is. Coupled with an expanding level of general income, the United States adopted the Bachelor's degree as one of its more formal characteristics distinguishing the upwardly mobile. In concentrating on college, the benefits of technical and career education were relatively undernoticed.

The growth in importance of the Associate degree of late may well be unaffected by the popular realization that not everyone

can become an executive. Further, it becomes increasingly clear that Bachelor's degrees are not in fact guarantees of success and certainly are not qualification to do a particular job even though degree requirements have been brought more in line with current occupational interests. If Bachelors degree holders experience declines in their incomes (which is the expected result of an expansion in supply, a contraction in demand or both) then returns on investment in higher education will of course also decline. If our capacity for producing highly educated manpower is indeed oversubsidized then the promotion of oversupplies of Bachelor's and other degrees in the market will add to the wastefulness of education. This wastefulness takes the form of encouraging students toward investment in excessive levels of education to meet non-existent occupational demand.

The lower costs, both publically and privately borne, of two-year and technical institutions provide more attractive alternatives to the more expensive Bachelor's degree. Of late, all levels of higher education have expanded enrollments so it would be difficult to say that the lesser institutions were much in competition for students with the four-year schools. But demographic factors will bring about absolute declines in enrollments by the beginning of the next decade and as lesser institutions improve their showing in providing career training, it is likely that the decision to invest in a four-year degree will come to take on the meaning which it once held. The four-year educational degree is largely composed of personal and non-occupational benefits, something of a luxury in personal interest which is probably less justifiably supported by the public

than the training provided by more career oriented programs in what are now the two-year institutions.

This is not to say, however, that the four-year college degree institutions are necessarily doomed. The self-preservation motive of the four-year schools will probably promote their expansion into the field of technical training and associate degrees in attempt to maintain enrollments at levels high enough to utilize their facilities. Except for the highest level schools, the prestigious Bachelor's programs will increasingly be forced to accept the heretofore unworthy neighbors of technical education and two-year degrees.

Trends in education like those in population are difficult to predict, but there are strong reasons to believe that the 300% increases in non-degree credit enrollments which occurred in the United States over the 1962-72 decade bears witness to a pattern which will be continued into the future.[42] As such, the non-polluting and intellectually stimulating nature of education encourages the belief that the increasing numbers of the population will willingly or as an alternative pursue informal education in their hours of recreation.

Another example of a force which will alter the complexion of higher education in the future is the expanding need for retraining. As workers skills from past investments in human capital become subject to the forces of accelerating technology and its parallel effect in skill obsolescence, more people will return to education to keep pace with advancing technology.

A third factor contributing to the new types of demands for less formal education involves standards which are adventitious to conventional market efficiency analysis. The nation has become committed to the goal of providing equalized occupational opportunities to deprived groups, chiefly blacks. Remedial types of occupational education to aid in this objective appear to be more reasonable alternatives to conventional four-year programs which require more active participation, higher costs, and an occupationally superfluous curriculum. Bachelor degree remedial education for the existing numbers of these groups which are already of labor force age is neither practical, realistically necessary for much occupational opportunity, nor economically feasible. For the present college age members of disadvantaged groups who aspire to careers which do demand four years of training, the motive to supply them with competitive levels of skills is seen here as one of the major justifications for continuing to support higher education at levels which would provide somewhat excessive output.

Until a method of providing education is found which will better promote minority access to higher degrees, a contracted public subsidy method as currently found may be a necessary although an admittedly imperfect best alternative. Parenthetically, the recent interest generated in the schemes which allow full financing by the student of the full cost of his education are not felt to be a possible answer to the higher education problem of providing access to minorities. Any such system of financing massive expenditures on investments in

human capital runs up against the specter of intangible collateral on the one hand and a well-established legal precedent which has not promoted any system of indentured labor on the other.

Incurring a huge debt early in life would likely be especially discouraging to the economically disadvantaged who ironically are the group which full financing schemes are intended to help. As the nation is painfully in the process of trying to slough off the traces of social oppression, it is not likely that those groups who were most affected by social bonds in the past will seek any sort of formal financial bondage in attempt to pursue an uncertain future.

To reiterate, education subsidized for social benefits and for the achievement of social goals may be the best alternative. But this is not to say that public subsidy need be continued at the levels which have prevailed in the past. Rather, the suggestion is made to realign public sector support in terms of more realistic appraisals of the newly assessed social benefits to higher education. It would be essential in such a policy shift to maintain recognition of the differences in the relative public benefits flowing from specific levels of education, adult and continuing education, technical training, associate degree education, Bachelor's, Master's and Doctoral degrees. Further attention will have to be placed on the divisions of specialty within these various levels. For instance, those types of training which could more readily be identified with present and future labor market needs would appropriately demand greater public support in line with the greater social benefits

accruing to this training. Adding to public support for medical training to the present demands for health personnel is an excellent example. A shift in the public sector's priorities in these regards would seem inevitable and desirable as the growing magnitudes of discrepancies between occupational relevance on one hand and costs for various types and levels of education on the other becomes popularly recognized.

It is important to note that both the public as well as the private costs of two years of technical or associate degree training are considerably less than half the costs of a four-year program. Obviously only half as many years of training are involved and the lower level training can be provided more cheaply per year. Based on estimates by Gary T. Barnes and the North Carolina Department of Community Colleges, the annual differential public subsidy to a student in North Carolina taking four years of college level training versus a student taking two years of community college or technical school is in the range of $5000.[43] This sum is then a public gain for every student who elects the lesser training in line with more realistic occupational demands.

A recent study by the Research Triangle Institute suggests that the North Carolina economy between 1970 and 1980 will require approximately 67,000 more enrollees in technical and vocational training programs than the state will have. In contrast, the supplies of those who obtain college degrees in the decade are in excess of projected occupational quantity demanded. For those without degrees with one to three years of college training will also exceed job market placed

for such levels.[44] In view of these projections, it seems likely that public sentiment toward support of four-year programs will change as the conditions of this forecast materialize. Relatively greater emphasis on more occupationally oriented higher educational programs is one realignment of priorities to be expected.

This discussion is in no way intended to downgrade the benefits to Bachelor's degree programs. Rather it suggests that such training be placed back into the setting for which it is more suited, that is, one of less occupation relevance and greater personal consumption benefits. A reduction in public subsidy could be expected to contribute to two important social goals. It would reduce the public sector's debt burden for such programs, thus bringing them into more consistency with the public benefits and costs relationships available from other levels of training, associate, technical, and continuing education being chief among them. As noted in Chapter II, the recent levels of public investments in higher education were apparently paying their way as late as 1971. But given the growing amounts of under-employment of Bachelor's degree training and the lower costs associated with less prestigous training, it would appear that a less occupationally effective alternative exists for the public to achieve its goals of training itself. Secondly, shifting more of college training costs to individual investors or lowering educational availability to students may encourage private investment in less expensive alternatives. This policy would appropriately discourage private overinvestment in higher education which is erroneously based on

exaggerated expectations of future market demands. New educational policy must shift the cost burden for occupationally redundant market training onto the personal and consumption benefits for which the higher degrees are presumably better suited.

Any changes in the availability of conventional four-year educational programs will not necessarily affect the cultural exposure of the population in the long run. Enrollment in college has led most students to postpone a career until the completion of their training. But there is no reason that the less occupationally relevant aspects of the Bachelor's degree cannot be pursued along with ones employment. Thus, students may obtain occupational education in one or two years, begin a career and then finish a degree afterwards. The side effects of such a system are not altogether undesirable. For instance, gross national expenditures on investments in higher education would likely be lower than at present. The lessening in foregone national income (foregone national product) which now occurs in the system of excluding educational investments from occupational pursuits in terms of time could be avoided.

By postponing degree completion, students may note an alleviation of the problem of determining what course of study to choose prior to the development of their mature interests. Whether the public or private benefits of such a new order would out-weigh the costs in terms of foregone cultural exposure is certainly not clear from this hypothetical discussion. The important thing is to maintain awareness of the cultural losses to society associated with

diminished output of the higher degrees. Should the social benefits in cultural exposure prove great, the social costs of no longer providing four-year degrees would have to be accounted for in some fashion in the decision to cut public support to such education.

V. SUMMARY AND CONCLUSIONS

The overall purpose of this paper has been to evaluate United States social policy toward higher education. Such an evaluation is especially appropriate at the present time because of the changes in job market conditions which have come about in the recent past. The paper recognizes that college training is not only of value in providing job skills. Personal non-market aspects of college training are also acknowledged. But these aspects of education are viewed in what this paper considers a proper perspective, specifically, the non-market benefits to higher education are essentially gains to individuals and do not make so important a contribution to society's benefit to education. Private benefits do not justify public subsidy.

Chapter II has dealt with an analysis of the costs and benefits to higher education both for individuals and society. The analysis in Chapter II does not indicate that rates of investment in higher education in the early part of the 1970's were excessive. But because of more recent labor market conditions discussed in this paper, it seems that the present levels of public support for the four-year and higher degrees may be in excess of what the public sectot could invest and receive approximately the same benefit.

Chapters III and IV are aimed at appraising some work from distinguished sources which have chosen to address themselves to the widespread forecasts of oversupplies of high level training. While the perspectives of these works as well as the perspective of this

paper are decidely pro-education, this paper is significantly in disagreement with the reasoning and the policy prescriptions of the Carnegie Commission and the National Board of Graduate Education. Evaluating these conventional policy sources and suggesting alternative approaches have also been part of this paper's objective.

Points on which this paper agrees with the Carnegie Commission and the National Board on Graduate Education include the specific call for more and better quality information availability in the market decisions to invest in higher education. Likewise, there is to be no quarrel with the Carnegie Commission and the National Board of Graduate Education's general attitudes toward the important role which higher education plays in the determination of the overall welfare of the nation. In noting the difficulty in proving the existence, much less the quantification of the social benefits to higher education this paper, like the Carnegie Commission report and the National Board on Graduate Education paper, recognizes the need to proceed with future educational policies in a manner mindful of these important though clouded decision variables. However, it is felt here that the Carnegie Commission and the National Board on Graduate Education overemphasize the degree to which such a recognition of social benefits to higher education should affect policy. These sources consequently forego a more analytical approach to evaluating the current situation for higher education.

The Carnegie Commission and the N.B.G.E. reports seem to be based on the premise that given the esteem which education has always enjoyed, more education is always preferable to less. This approach

effectively ignores costs and leaves analysis of higher education support to subjective terms. As shown in the second and fourth chapters, it is not as if some relatively simple analysis is incapable of providing a superior means of viewing the relationships between public benefits versus publically borne costs and private benefits versus privately borne costs. The information called for by the Carnegie Commission and the National Board on Graduate Education would in fact permit such an improved evaluation of public policy toward higher education.

The figures forecast for underemployment of the college educated strongly indicate that future financial support for such higher education should reflect greater emphasis on the cheaper alternatives in less than four-year degree programs with more of an occupational orientation. This type of future policy does not disregard nor does it underemphasize the non-market benefits to the higher levels of post-secondary education. Rather, removing some public subsidy from four-year programs would equitably shift more of the cost burden to individual students who are the recipients of the non-market benefits.

The evidence which Whindham and others have shown suggests that some higher educational subsidy arrangements, in fact, favor the offspring of higher income classes.[45] In line with this evidence of an adverse income redistribution through higher educational support, the motive to alter the public support structure for such training is further enhanced. More of the burden of four-year education should

be shifted to the private investor. The relatively greater magnitude of privately realized benefits to four-year higher education make this policy desirable.

There are two ways in which students will likely realize more of the educational burden in the future. First, monetary costs in tuitions and fees can be raised somewhat to bring private costs more in line with private benefits. Raising private costs will likely diminish the number of admissions which students demand. As a result of this diminished demand, educational output capacity can be reduced. As educational output capacity is lessened students will realize greater psychic costs to college admission as entrance standrads for the higher programs are raised. Certainly public expenditures on higher education can be reduced if excess four-year higher educational capacity is liquidated or converted to other uses. The preferable public policy is then to reduce output capacity somewhat and to raise costs somewhat.

Reduction of educational output capacity reduces public costs. This policy means in some cases allowing institutions to alter their offerings to accomodate the new trends of the market in vocational and remedial courses and to allow marginal schools to go out of existence altogether. As enrollments decline because of demographic changes and because of rising tuition costs it is likely that many institutions will fall below efficient rates of utilization. As this happens, there is no economically feasible choice but to allow some to go out of business.

Should the proponents of public support for private colleges and universities become more successful, the market transition to accomodate slackened enrollment in private schools will be extended. This prolonged agony will be the case regardless of the equity argument in favor of such subsidies; and aside from the political furor surrounding the inevitiable decisions on which schools to drop and which to downgrade to accomodate less prestigious types of training.

Concerning the conversion of the four-year education industry to the new market trends, it would be foolish to expect that this will be a smooth process. The well-established and prestigious college and university community will undoubtedly guard its vested interests by claiming the continuing need to subsidize higher education. In the aura which Americans hold for higher education, administrators of colleges will vigorously fight moves to adjust, and the Carnegie Commission and the National Board of Graduate Education have set impressive precedents for this administrative resistance. What must be recognized, however, is that the preservation of superfluous educational capacity is the equivalent of a featherbedding type of economic inefficiency and is contrary to the public interest.

As evidence of the benefits to higher education, the proponents of continued high level support for the bachelor's and higher degree levels have traditionally cited the earnings of the owners of this human capital. It must be recognized, however, that the superior incomes and suspected superior contributions to society are correlated with their superior natural talents which would likely allow

these individuals to earn greater incomes and provide greater contributions even without the extra training. As well, the superior incomes of the highly educated are private returns to investments in this training and these returns are only calculated on privately borne costs. If the subsidies to education are reduced in line with the recommendation of this paper, the return on investment from the individual's standpoint will be lower. But in any event these earnings, as private benefits, are not justifications for public subsidy.

As private costs to education rise and as admission standards are increased, otherwise marginally produced students will be discouraged from four-year college attendance. Since this group would have become underemployed anyway, they will be no worse off occupationally for having saved the costs of their four-year degree. In a non-market sense, however, these individuals will not realize the personal benefits to such education unless they continue their education in a part time or continuing education program.

The public sector on the other hand will be no worse off for having saved the subsidy which would have gone to the marginally produced student's education. Adequate job training would be provided at less cost and the individual would be free to pursue the non-market aspects on his own if he wishes. In any case, there is no reason for private investments in higher education to fall to socially undesirable levels as a result of increased costs. Private investments will, however, fall to levels which more appropriately reflect the relative costs of the various levels of higher education

and will in so doing serve to better allocate educational resources and to promote social welfare.

The amount of resources which have been channeled into the public's subsidization of our-year and higher educational programs has been excessive in the sense that recent employment trends show promise for substantial underemployment of the human capital of those with four or more years of education. The analysis of this paper would call for recognition of the fact that while four-year degrees will be produced in surplus, the levels of output by institution providing training in technical and vocational programs, adult education and retraining programs are forecast as shortages.[46] Greater public emphasis placed on providing for lower levels of post-secondary training such as provided in two-year and technical programs will likely hasten students' recognition of the career advantages which these programs offer. For the present, raising the cost of a four-year education would yield a beneficial effect by encouraging students to make more informed and more realistic choices for occupational training.

As a final recommendation, this paper calls for a continuing evaluation of the present training-occupation situation. That is, the circumstances which have contributed to present wastes of educational resources indicate the economic danger in following trends for too long a time. The job market for the highly educated of the '50's and '60's has changed and this, among other things, is an example of the effects of diminishing returns to investments in

education. College level output capacity has been erroneously expanded as if there were insatiable demands for college training. In line with this lesson, the changes which the future holds would indicate a caveat for educational policy makers to make responsible appraisals of changing market demands and to make this information more available to potential investors in education. Economic growth, changes in national programs or scientific research commitments, and technological advancements will always be capable of altering the complexion of our national training needs. In this regard, we must not over-react and allow the educational output capacity at any level to fall too low. As the catalyst for market flexibility and the soundingboard for technology, the human capital of an economic process is too important a productive input to allow it to become subject to misguided reactionary sentiments.

FOOTNOTES

[1]Gary S. Becker, Human Capital (New York: National Bureau of Economic Research, 1964), p. 5.

[2]The Carnegie Commission on Higher Education, College Graduates and Jobs: Adjusting to a New Labor Market Situation (New York: McGraw-Hill Book Company, 1973), p. 3.

[3]Ibid., p. 174.

[4]The Wall Street Journal, February 20, 1975, p. 1.

[5]Becker, op. cit., p. 1

[6]W. Lee Hansen and Burton A. Weisbrod, Benefits, Costs, and Finance of Public Higher Education (Chicago: Markham Publishing Company, 1969), pp. 17-40.

[7]Ibid., pp. 36-39.

[8]Edward F. Denison, Why Growth Rates Differ (New York: Committee for Economic Development, 1962).

[9]Carnegie Commission on Higher Education, op. cit.

[10]National Board on Graduate Education, Doctorate Manpower Forecasts and Policy, A Report (Washington, D.C.: November, 1973).

[11]Milton H. Spencer, Contemporary Economics (New York: Worth Publishers, Inc., 1971), inside front cover.

[12]Martin M. Frankel and Others, Projections of Educational Statistics to 1982-83 (U.S. Department of Health, Education, and Welfare, 1973), p. 92.

[13]Becker, op. cit., p. 90.

[14]Lester Thurow, Investment in Human Capital (Belmont, California: Wadsworth Publishing Co., 1970), p. 18.

[15]Consumer Income (Washington: U.S. Department of Commerce, December, 1972), pp. 112-115.

[16]Ibid., pp. 155-157.

[17]Becker, op. cit., p. 49.

[18]Edward F. Denison, The Sources of Economic Growth in the United States (New York: Committee for Economic Development, 1962).

[19]Statistical Abstract of Higher Education in North Carolina, 1972-73, A Report Compiled by Division of Institutional Research (The University of North Carolina, May, 1973), p. 128.

[20]Denison, The Sources of Economic Growth in the United States, op. cit.

[21]Denison, Why Growth Rates Differ, op. cit.

[22]Carnegie Commission on Higher Education, op. cit.

[23]Becker, op. cit., p. 1.

[24]Carnegie Commission on Higher Education, op. cit., p. 114.

[25]Ibid., p. 3.

[26]Carnegie Commission on Higher Education, op. cit.

[27]Carnegie Commission on Higher Education, op. cit., p. 4.

[28]Ibid., p. 115.

[29]Ibid., p. 5.

[30]Frankel, op. cit., p. 37.

[31]Carnegie Commission on Higher Education, op. cit.

[32]National Board on Graduate Education, op. cit., p. iv.

[33]Ibid.

[34]Ibid., p. 3-5.

[35]Ibid., p. 5.

[36]Ibid., p. 12.

[37]Ibid., p. 2.

[38]Ibid., p. 6.

[39]Douglas M. Windham, "Tuition, the Capital Market, and the Allocation of Subsidies to College Students," The School Review (August, 1972), pp. 603-618.

[40]National Board on Graduate Education, op. cit., p. 17.

[41]University of North Carolina Student Bulletin, 1840 (Raleigh: Office of the Raleigh Register, 1840), p. 6.

[42]Statistical Abstract of Higher Education in North Carolina, op. cit., pp. 114-119.

[43]Unpublished data, Gary T. Barnes and North Carolina Department of Community Colleges.

[44]Alvin M. Cruze, Stephen A. Johnston, and Lois A. Bressler, North Carolina Educational Policy Plans for the 1970's (Research Triangle Park, North Carolina, January 1974).

[45]Douglas M. Windham, Education Equality and Income Redistribution (Lexington, Mass: Heath Lexington Books, 1970).

[46]Cruze, op. cit., pp. 408 and 4-11.

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