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ABSTRACT

Salaries, wages, and fringe benefits of faculty, administrators, and general service workers who are employed in higher education are examined from a public interest point of view. The report is divided into three major parts. Chapter II presents an overview of the whole report including a summary of findings, conclusions, and recommendations. The history of faculty salaries and compensation over the period from 1903-4 to 1976-77 is reviewed in Chapter III. Chapter IV compares the salaries or compensation paid by colleges and universities with those paid in a wide range of occupations and industries. The appendices contain: notes on estimates of faculty salaries and compensation, 1903-4 to 1976-77; trends in salaries and compensation of workers in various occupations and industries, 1904 to 1975; and comparative salaries and compensation of workers in various occupations and industries, 1976-77. (SPG)

ACADEMIC COMPENSATION

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by
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FOREWORD

How does the compensation of faculty, of different levels of administrators, and of other college and university personnel compare with that of their counterparts in business and industry and in government? How well have salaries of people in higher education kept up with changes in the economy over time? And in the more recent period? These are some of the questions that Dr. Howard R. Bowen addresses in this new study.

Although the compensation of faculty, for example, has nearly kept up with inflation since 1970, Dr. Bowen concludes that the rate of growth in faculty remuneration has clearly fallen short of compensation increases for all civilian employees and for faculty counterparts in business and industry. After reviewing historical developments, Dr. Bowen asks "What should be done in the years ahead about faculty compensation? Or to phrase it differently, what trend of compensation will be in the broad public interest?" The question is posed at a time when the market for faculty is declining and when the temptation for institutions to hold back on salary growth is great. Dr. Bowen discusses potential effects on higher education of alternative policy decisions.

Examining compensation of educational administrators and business executives, Dr. Bowen finds that the educators are paid considerably less than their counterparts in business and industry and asks "Would colleges and universities be more successful over a period of time if they paid higher salaries to their administrators?"

Dr. Bowen, currently R. Stanton Avery Professor of Economics and Education at Claremont Graduate School, brings to this study the perspective and training of an economist. But Dr. Bowen is more than a distinguished economist. Former government administrator, business executive, and dean, he has more recently been head of Grinnell College, the University of Iowa, and the Claremont University Center. He has also had long service on several college and university boards of trustees, both public and private.

As an administrator in higher education since 1947, Dr. Bowen has seen compensation policies evolve and has experienced first hand the problems of attracting and retaining personnel and of finding the funds with which to pay them. One might say "He has been there, and he knows the problems."

TIAA-CREF is pleased to make this special report available to the higher education community. We take this opportunity to express our great appreciation to the Exxon Education Foundation for supporting its publication and distribution.

Dr. Peggy Heim
Senior Research Officer
TIAA-CREF

PREFACE

This is a report on salaries, wages, and fringe benefits of faculty, administrators, and other workers in American higher education. It is part of a larger investigation of higher education costs. The larger study is focused on the normative questions: What level of costs can be justified for operating collectively the 3,000 American institutions of higher education? Could our colleges and universities -- as many think -- be successfully operated with less money? Or -- as others believe -- is American higher education impoverished in relation to its legitimate needs? Questions such as these can never be answered definitively, but relevant data and their analysis can be useful in judging the adequacy of available resources.

Most of the money spent by higher education pays for the services of people. The cost of employing these people is determined by three factors: (1) the number of people employed; (2) their distribution by rank or category; and (3) the rates at which they are paid. This report is concerned only with the third of these factors, namely, annual rates of pay for the many categories of workers ranging from presidents to unskilled blue-collar workers. It addresses the question of whether the rates of pay are adequate to attract and hold the faculty, administrators, and other general service workers needed to operate the nation's colleges and universities at an acceptable level of quality. It leads to recommendations about future salary and wage policy in the broad public interest.

Personnel costs of institutions are incomes to the people employed in them. Thus, a study of academic pay is pertinent to the welfare and prospects of the people who work for colleges and universities as well as to the decisions of those responsible for financing and administering higher education.

The larger study of costs, of which this report is a part, is being carried out under grants from the Exxon Education Foundation, Inc., and The Ford Foundation. The report is published by courtesy of Teachers Insurance and Annuity Association and College Retirement Equities Fund. I express thanks to these organizations for generous and helpful assistance. I am also grateful for the helpful comments and suggestions of my friend and Claremont colleague, Jack Schuster.

Howard R. Bowen
Claremont, California
May, 1978

GLOSSARY

Salary or wage is defined as cash received for services rendered not including fringe supplements such as contributions of employers to retirement funds, life insurance premiums, health programs, and social security.

Compensation refers to salary or wage plus fringe supplements.

Pay, Remuneration, and other such general words refer to salary or compensation without specification as to whether fringe supplements are or are not included.

Non-monetary benefits are defined to include remuneration in kind, e.g., tuition remission, use of athletic facilities, the subsidy element in mortgage loans or house rentals, intangible benefits from membership in an academic community, freedom in use of time, etc.

Outside earnings refers to income earned but not included in base compensation. Such earnings may be obtained through work within the institution of principal employment, for example, through summer teaching, extra load, overtime work, etc. They may be obtained through self-employment, for example, through sale of works of art, royalties on publications, fees for speaking or consulting. Or they may be earned through employment by other entities, for example, summer or part-time teaching in other institutions or part-time employment by government or business.

Constant dollars means dollars of unchanging purchasing power at the value of the dollar in 1967. The adjustment for variation of prices is achieved using the Consumer Price Index of the U. S. Bureau of Labor Statistics unless otherwise specified.

General Service Workers refers to all employees of colleges and universities other than faculty, administrators, and other professional workers.

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CHAPTER I

INTRODUCTION

American higher education employs more than 1,500,000 persons in 1,300,000 full-time equivalent positions (table 1). The total payroll costs of colleges and universities, including fringe benefits, make up at least two-thirds of all current expenditures (Halstead, 1977, pp. 5-6). How well paid are the faculty members, administrators, and general service workers who are employed in higher education? What levels of compensation should be paid to these people to get the work of higher education done acceptably? These are the questions addressed in this report. They are important questions for those concerned with the costs and financing of higher education; they are also important for those who depend upon academic salaries and wages for their livelihood.

The question of academic remuneration may be viewed from various standpoints. For those who must put up the money--taxpayers, donors, students, and parents of students--faculty and staff pay is the major cost of operating colleges and universities. Their interest seemingly lies in the direction of holding down salary and wage rates. For faculty and staff, their pay is a major source of income and also of personal reward and recognition. Their interest usually lies in the direction of higher levels of compensation. For governing boards, administrators, and others who are responsible for particular institutions, salaries and wages are viewed as the chief means of attracting and holding qualified faculty and staff. They tend to favor high compensation levels as a means of raising the quality and distinction of their institutions--though they must balance personnel costs against other needs. For legislative bodies, state coordinating commissions, federal bureaus concerned with education, other broadly representative groups, and also disinterested observers, salary and wage rates are presumably considered in relation to the broad public interest. Needs and demands of higher education are weighed against those of other parts of the economy and a balance sought between compensation in higher education and in other industries and occupations. In this report, the intended point of view is that of the public interest.

In the past, most studies of academic compensation have dealt mainly or exclusively with faculty. This special concern has grown out of the conviction that faculty, through their engagement in teaching and research, are the front-line personnel of the academic enterprise, and that the success of higher education depends primarily on them. As a result, considerable data have been collected on trends and levels of faculty compensation and many analyses have been made. However, as shown in table 1, instructional faculty members make up only 38 percent of the higher educational labor force. On the average, to place one faculty member on the front-line of teaching and research, about 1.6 other employees are needed to provide logistical support and com-

Table 1.--Numbers of Persons Employed in American Higher Education, 1972-73 (000 omitted)

	Full-time	Part-time	Total Number of Persons	Full-time Equivalents	
				Number	Percentages
Instructional faculty	417	240	657	505	38%
Executive, administrative and managerial staff	82	6	88	85	6
Other professional persons	115	28	143	128	10
Non-professional persons	546	155	701	611	46
Total	1,160	429	1,589	1,329	100%

SOURCE: National Center for Education Statistics, U.S. Department of Health, Education, and Welfare, Number of Employees in Institutions of Higher Education, Fall 1972. Washington: U.S. Government Printing Office, 1976, pp. 7, 12-13.

plementary services. The amount of money spent in the aggregate to meet the non-faculty payroll is probably as large as that paid the faculty. Moreover, though non-faculty people serve in back-up positions, their work is clearly indispensable. Their level of compensation is an important factor in the success of higher education and also a major ingredient of higher educational costs. Thus, a serious study of academic compensation must include not only faculty but also other workers. Unfortunately, available data on non-faculty workers are scarce. Though information is beginning to accumulate on the compensation of administrators, little is known systematically about the compensation of secretarial, clerical, and blue-collar workers who make up a substantial part of the payroll of every college or university. This report assembles a great deal of data about academic remuneration. It is divided into three parts. Chapter II presents an overview of the whole report including a summary of findings, conclusions, and recommendations. Chapters III, IV, and V are the body of the report. Appendices A, B, and C provide detailed data and serve as backup for Chapters III and IV.

The report as a whole leads toward a consideration of present and future compensation policy in a period when academic faculty and other staff are experiencing a weak market position owing to the large number of qualified people in the market, a possible decline in enrollments, and the precarious finances of many institutions.

CHAPTER II

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATION

This chapter contains the essence of the entire report. Subsequent chapters and the appendices provide supporting data. The value of the report, however, lies as much in the data presented as in the analysis and many readers will find the later chapters and the appendices rewarding.

Long-term Trends in the Pay of Academic People

The first task in this study was to assemble information about historic trends in the remuneration of academic people.[1] The purpose was to learn about the effects of changing economic and social conditions upon the pay of faculty and staff—with special emphasis on the effects of inflation which is a dominant factor today. Annual data were gathered on average faculty salaries and fringe benefits for the period from 1903-04 to the present. Since trends in faculty compensation were found to be quite similar for the several faculty ranks and for administrators as well, no special study of each sub-group was necessary. Unfortunately, however, there were no usable historical data on general service workers such as secretaries, clerks, and physical plant employees.

The period since 1903-04 may be divided into twelve distinct episodes, each defined by prevailing economic conditions at the time. Table 2 describes these episodes and shows what happened to faculty compensation during each one. Table 2 and the related discussion refer exclusively to average faculty compensation expressed in dollars of constant (1967) purchasing power.

Table 2 shows that World War II was a major watershed in the evolution of faculty compensation. Consider first the eight episodes in the period prior to World War II (1903-04 to 1942-43):

1. In the three periods of orderly economic growth and stable prices (1903-04 to 1913-14, 1922-23 to 1929-30, and 1934-35 to 1939-40), faculty compensation increased steadily but slowly at 1.0 to 1.5 percent a year.

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[1] The basic data used in this section are presented and discussed in Chapter III. See also Appendix A.

Table 2.--Twelve Episodes in the History of Faculty Compensation, 1903-04 to 1976-77

Periods	Conditions in National Economy: Description and Average Annual Percentage Change in Consumer Price Index[1]		Trend of Constant Dollar Faculty Compensation: average annual percentage change[1]	
1903-04 to 1913-14	Steady economic growth; stable prices	+ 1.03%	Steady slow advance	+ 1.09%
1913-14 to 1919-20	War; rapid economic growth; rapid inflation	+11.0	Sharp decline	- 5.29
1919-20 to 1922-23	Depression and deflation	- 3.2	Rapid advance	+10.75
1922-23 to 1929-30	Steady economic growth; stable prices	0	Steady slow advance	+ 1.42
1929-30 to 1931-32	Crisis; early stages of Great Depression; deflation	- 7.59	Rapid advance	+ 8.92
1931-32 to 1934-35	Deep depression; continued deflation	- 2.12	Moderate decline	- 2.87
1934-35 to 1939-40	Slow recovery; stable prices	+ 0.58	Steady slow advance	+ 1.45
1939-40 to 1942-43	Rapid recovery; rapid inflation	+ 6.36	Sharp decline	- 4.93
1942-43 to 1945-46	World War II; rapid economic growth; substantial inflation	+ 3.77	Substantial advance	+ 2.95
1945-46 to 1951-52	Korean War; erratic economic growth; rapid inflation	+ 5.77	Slow decline	- 0.91
1951-52 to 1969-70	Steady economic growth; slow but accelerating inflation	+ 2.04	Steady rapid advance	+ 3.61
1969-70 to 1976-77	Slow and erratic economic growth; rapid inflation	+ 6.51	Stable with slight downward trend	- 0.33

SOURCE: Appendix A, table A.

[1] Compound growth rates.

2. In the two periods of rapid inflation (1913-14 to 1919-20 and 1939-40 to 1942-43), faculty compensation declined sharply at the rate of about 5 percent a year. Pay raises failed to keep pace with inflation.

3. In the three deflationary periods (1919-20 to 1922-23, 1929-30 to 1931-32, and 1931-32 to 1934-35), the response of faculty compensation was mixed. In the first two, it increased sharply at the rate of 9 to 11 percent a year because current-dollar compensation held fairly steady while the price level plummeted. But when the Great Depression took hold in 1931-32 to 1934-35, compensation fell even faster than the price level and the net decline was at the rate of nearly 3 percent a year.

This pattern seemed to change around the beginning of World War II.

1. In the one period of orderly economic growth and reasonably stable prices (1951-52 to 1969-70), compensation increased by about 3.6 percent a year--as compared with 1.0 to 1.5 percent in comparable pre-war periods.

2. In the three periods of rapid inflation (1942-43 to 1945-46, 1945-46 to 1951-52, and 1969-70 to 1976-77), faculty compensation did not decline drastically in the pre-war manner. During World War II (1942-43 to 1945-46), when inflation was substantial even though held in check by price controls, compensation increased by nearly 3 percent a year. And during the two later periods of acute inflation (1945-46 to 1951-52 and 1969-70 to 1976-77), compensation declined only slightly--in the most recent episode at the rate of one-third of one percent a year.

3. There were no episodes of deflation in the period after 1942-43.

Clearly, something changed around the beginning of World War II. Since then, during periods of economic stability and growth, the rate of increase in compensation has been greater than formerly; and since then, inflation has not triggered serious setbacks in faculty compensation. Indeed, during the entire period 1942-43 to 1976-77, the average rate of increase in faculty compensation was about 2 percent a year; whereas in the period 1903-04 to 1942-43 it had been a mere 0.5 percent ayear. How does one explain the difference?

The explanation undoubtedly lies in a marked change in public attitudes toward higher education (Bowen, 1968). Around the time of World War II, college attendance began to be seen not merely as a privilege for a small minority but as opportunity for the masses of youth. Moreover, from the events of the Great Depression and World War II, the nation was gaining a new appreciation of higher education as a source of economic productivity and national power. These attitudes led to the adoption of the G. I. Bill and in turn they were greatly reinforced by the striking success of that law. Later, the launching of Sputnik and the reports that began to filter in about educational achievements in the USSR also strengthened public concern for higher education. Corporations and government gained increasing appreciation of the returns from research and development and of the need for educated people in managerial and

technical work. Moreover, in the early 1950s, it became generally clear that the college-age population would expand greatly in the 1960s and 1970s and that higher education would have to operate at dramatically higher levels. In this atmosphere, it was widely recognized that faculty had suffered from neglect and that compensation needed to be raised if the academic profession were to attract and hold adequate talent. In the climate of the time, the financing necessary to improving faculty compensation became available. Parents were becoming more interested in higher education and more willing to pay tuitions. Private donors and foundations were becoming increasingly generous in support of higher education; state legislators were expanding appropriations; and the federal government entered the field with increasing determination and more money as manifested by the Higher Education Facilities Act of 1963 and the Higher Education Act of 1965. Meanwhile the leadership of the colleges and universities themselves had become increasingly sensitive to the need for higher compensation to retain capable faculty members and to recruit new people into academic positions.

Though support of higher education had been gathering steam since 1942, the effect of new attitudes and initiatives became apparent around 1951-52. Beginning in that year, faculty compensation (in constant dollars) increased at an average rate of 3.61 percent a year and continued at that rate until around 1969-70 when rapid inflation set in (table 2). But even after 1969-70, the efforts of the colleges and universities backed up by public concern for the academic enterprise were sufficient to maintain constant-dollar compensation at nearly the 1969-70 level and to prevent inflation from seriously eroding the gains of previous years. Indeed, much of the financial stress among institutions of higher education since 1969-70 has been due to the determined effort of colleges and universities to keep faculty compensation at least in pace with inflation and to avoid the kind of slippage that had occurred in pre-war inflationary periods. Maintaining faculty compensation slowed institutional progress in other respects.

The basic trend in faculty salaries has been more closely linked to public attitudes about the value of higher education than to market demand as indicated by enrollments or to market supply as indicated by numbers of new Ph.D.s and other indicators. The turning point in the rate of growth of faculty compensation occurred around 1942-43 precisely when enrollments were declining at the onset of World War II. The acceleration of this growth around 1951-52 coincided exactly with an enrollment trough following the departure of the GIs and preceding the arrival of the post-war baby generation. Moreover, there has been no drastic decline in faculty compensation since 1969-70 despite a slowing of the growth in enrollment and a rapidly increasing supply of persons qualified for college teaching.

Comparative Trends in Compensation

The next step in the analysis was to compare progress in the compensation of faculty and staff in higher education with that of other elements of the national labor force. For this purpose, a mass of data on earnings of various groups was assembled and analyzed. (See the final section of Chapter III and Appendix B.) These data were all expressed in current dollars. There was no

need to adjust them for price level changes since all groups were faced with similar costs of living. Among the groups with which faculty were compared were:

All civilian full-time employees
Full-time employees in manufacturing
Domestic airline employees
Telephone and telegraph employees
Unionized workers in building trades, printing trades, and trucking
Workers paid the legal minimum wage
Executive and supervisory employees of large companies
Employees of the Federal Government
State and local government employees
Non-salaried professional practitioners

The findings are briefly summarized in the following paragraphs. (For detailed data, see tables 7 to 11, Chapter III.)

1904-1930. The rate of growth of academic pay was substantially lower than that for almost all other occupational groups for which data were available. One exception was federal civilian employees who fared even less well. Whereas, faculty pay increased during this period at the rate of 3.19 percent a year, the pay of most other groups increased by annual percentages averaging from 3.50 to 6.21 percent. The percentage for all civilian full-time employees in all occupations was 4.17.

1930-1952. The relative progress of academic pay was even less in this period than in the years 1904-1930. Academic pay was increasing at a rate of slightly over 2 percent a year. Most other groups were enjoying average annual increases of 2.5 to 4.5 percent--though federal professional and administrative employees were gaining less rapidly than academic workers. The rate of increase in compensation for all civilian employees was 4.42 percent. In view of these disparities, it is little wonder that academic people were discouraged in the early 1950s and that the inadequacy of academic salaries was widely acknowledged at that time.

1952-1961. The situation changed abruptly in this period. It was the time of Sputnik, a new appreciation of science and learning as major ingredients of national economic growth and power, and the dramatic Ford Foundation faculty salary grants. It was also the time when it was widely recognized that higher education should be extended to a larger percentage of the relevant age groups, and expected that the post-war baby boom would soon materialize in a horde of 18-year-olds ready for college. Improvement of academic salaries became a major national objective. Under these conditions, faculty salaries rose by 5.21 percent a year and faculty compensation by 5.41 percent a year (indicating the growing importance of fringe supplements). The rates of increase for other groups ranged mostly from 2.75 percent to 5.25 percent, the figure for all civilian employees being 4.46 percent. Only a few groups received raises larger than those in higher education, among them state and

local government employees, lawyers, physicians, engineers, and members of Congress. Clearly, academic people were near the head of the pack in the annual rate of pay raises.

1961-1970. The situation was mixed but the gains in higher education were ahead of those for workers in most other occupations and industries. In this period, the compensation of academic faculty and staff increased by 6.03 percent as compared with 5.23 percent for compensation of all civilian full-time employees. The comparative growth of compensation in higher education was somewhat slower than in the preceding period but it could not be said that higher education was falling behind.[1]

1970-1975. The situation changed drastically. The rate of increase in academic compensation was substantially below that of most other groups. The average annual increase in compensation was 6.01 percent as compared with 8.07 percent for all civilian full-time employees--leaving a gap of more than 2 percentage points. (See table 7). However, the gap was somewhat less for faculty compensation compared with particular occupational groups that are weighted toward white-collar work. For example, the average annual increase in compensation for executives in large corporations was 7.10 to 7.67 percent (table 8), for civilian employees of the Federal Government 6.51 percent, for city employees 7.38 percent, and for public school teachers 6.35 percent (table 9). On the basis of these and similar figures, one might conclude that between 1970 and 1975 the average annual increase in faculty compensation of 6.01 percent compared with average annual increases of roughly 7 to 8 percent for other groups, leaving a gap of from 1 to 2 percentage points.

Since 1975. As is well known, no improvement in the relative position of higher education has occurred in the past several years. Such data as are available suggest that while faculty compensation has been increasing at the rate of around 6.4 percent a year the compensation of other groups has continued to grow at the rate of 7 to 8 percent a year. A significant gap remains.

Conclusions. When all the periods are combined, and comparisons made for the entire period 1904 to 1975, it becomes clear that the periods of relative academic prosperity during 1952-61 and 1961-70 were not sufficient to offset the loss of ground in the less prosperous periods of 1904-30,

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[1] The reader's attention is called to table 11, however, which presents census data for 1959-1969. Comparability is not perfect between the data for the two years and the span of years does not coincide exactly with the period under consideration, namely 1961-1970. Nevertheless, these data must be considered and they indicate that faculty compensation did not quite keep pace with the general wage level.

1930-52, and 1970-75. Over the nearly three-quarters of a century from 1904, faculty compensation increased on the average at the rate of 3.71 percent a year, whereas compensation of all civilian full-time employees increased at the average rate of 4.69 percent, a difference of about 1 percentage point a year. The comparability of the data over such a long period may be in question and conclusions about relative progress in rates of pay must be accepted with caution. However, in the most recent period since 1970, which is of the greatest interest, compensation in higher education, though it has nearly kept up with the cost of living, has clearly failed to keep pace with compensation in the rest of the economy. These conclusions are generally applicable to the compensation of academic administrators as well as of faculty. As indicated earlier, the trend of administrative compensation tends to run parallel to that of faculty compensation.

Comparative Compensation in 1976-77

In comparing the compensation of academic people with that of other groups of workers, the actual contemporary situation is perhaps more significant than past trends. How are faculty, administrators, and general service workers paid today relative to persons in other industries and occupations? There is a wealth of data pertinent to this question. Among the sources are statistics gathered by the Bureau of the Census, the Bureau of Labor Statistics, the National Science Foundation, and the American Management Association. In some cases, these statistics must be adjusted to make them comparable or to bring them up to date, but there is no dearth of reliable information. However, their interpretation does raise problems because of the difficulty of comparing jobs in higher education with those in other industries. Nevertheless, when considred in their entirety, the data lead to firm conclusions.

As compared with the rank and file of American workers, faculty and administrators in higher education are relatively highly paid. Their average annual compensation is in the range of $20,000 to $30,000, depending on the nature of their work and the length of their annual contracts. In contrast, the average compensation of all civilian workers is $13,300; of public elementary and secondary teachers $12,800; and of all federal civilian workers on the Civil Service General Schedule $16,700 (table 12). However, 1969 census data on salaries of male workers, presents a somewhat less favorable comparison. When women are excluded from the salary data, academic administrators are still near the top among professional occupations, faculty on calendar year contracts are in a relatively good position, but faculty on academic year contracts are considerably below the average for all "professional, technical, and kindred workers." (See table 13.)

Data compiled by the National Science Foundation on salaries of engineers and scientists (tables 14 and 15) show that the federal government and private business pay on the average a quarter more than four-year institutions and a third more than two-year colleges--even when academic year salaries are adjusted to a claendar year basis. The NSF data indicate that the salaries of scientists and engineers in higher education are roughly

comparable to those in state government and in hospitals. Comparisons of administrative salaries tend to confirm that hospital pay scales are roughly similar to those in higher education (table 16).

Salary comparisons of professional people employed in business and of academic faculty on 11-12 months appointments show that on the whole business pays more, the difference being especially marked in the lower ranks (tables 17 and 18). Similar comparisons for professional people employed in the federal government and for academic faculty on 11-12 months appointments show that the overall differences are not great, but that the federal government pays somewhat more in the lower and upper ranks and a bit less in the middle ranks (table 17). It is noteworthy that academic salaries in the upper professional ranks for persons on 11-12 months appointments begin to overlap with those of important business executives in substantial companies (table 18d).

Faculty members on 9-10 months appointments earn 20 to 30 percent less than their counterparts in business who are employed the year around, and 10 to 20 percent less than their opposite numbers in the federal government (tables 17 and 18).

Administrators' salaries in higher education are from half to two-thirds of the salaries of those occupying comparable jobs in businesses of similar scale (table 19).

Physical plant workers in higher education are paid wages that are at least 10 percent lower than the wages paid to comparable workers in business (table 20).

The conclusion from these findings is that faculty salaries for 11-12 months appointees, though on the whole considerably lower than those in business and perhaps a bit lower than those in the federal government, are relatively good. The disparities are not shockingly great. The position of the majority of faculty who are on 9-10 months appointments, however, is not so favorable. If they are regarded as year-round workers who happen to be paid on an archaic 9-10 months basis, they are clearly underpaid as compared to persons doing comparable work in the federal government and in business. On the other hand, if they are regarded as part-time employees, then their rate of pay may be construed to be about as good as that of colleagues who are on 11-12 months appointments. The salaries of administrators in higher education are drastically lower than those in business even for comparable jobs in organizations of similar size, and the wages of physical plant workers in higher education are about 10 percent lower than those for comparable employees in business.

Non-monetary Benefits and Outside Earnings

Before reaching conclusions about relative earnings in higher education and those in other industries, non-monetary benefits and outside

earnings must be taken into account. These are modest for most academic administrators and general service employees, significant for faculty on 11-12 months contract, and substantial for faculty on 9-10 months contracts.

Among the non-monetary benefits are the following (those marked with an asterisk are often available to administrators and general service workers as well as to faculty):

*Tuition remission for faculty members and their families

*Access to sports facilities such as golf courses, tennis courts, gymnasiums

*Subsidized housing

Tenure

Substantial freedom and flexibility in the use of time

Long vacations

Subsidized sabbatical leaves

Membership in a collegial academic community and in the "company of scholars"

Many other minor benefits could be mentioned. These benefits are widely but by no means universally available. Moreover, they are valued differently by different people. But almost certainly they are of sufficient value to most academic people to offset some part of any gap between their pay and the pay of persons in other occupations. In addition to these non-monetary benefits, faculty members usually have the opportunity for outside earnings, not only after hours or during vacations, but even in regular working time (though for administrators and general service workers this opportunity is much more restricted). The main sources of these outside earnings are summer or part-time teaching, consulting, research, private practice fees, royalties from inventions, royalties from writing, sale of works of art, lecture fees, and miscellaneous "moonlighting." According to one study, (Dunham and others, 1963, pp. 145-49) outside income is earned by 74 percent of faculty members on academic-year appointments and by 51 percent of those on calendar year appointments.[1] In the aggregate, outside earnings amount to 19 percent of base salaries for those on 9-10 months appointments and 11 percent for those on 11-12 months appointments. A recent study (Ladd, 1978, p. 17), in which no distinction was made between academic year and calendar year appointees, reported that 83 percent of faculty receive some outside earnings, and that the amount averaged 15 percent of base salary. Outside earnings are not

[1] Refers to four-year institutions only.

distributed equitably among all the ranks or among all the disciplines, but in total they are substantial and go a long way to offset disparities between academic people and their counterparts in other vineyards.

The augmentation of compensation by substantial non-monetary benefits and outside income places faculty in a strong position relative to comparable workers in other industries. Faculty on 11-12 months appointments may be better off than their counterparts in business and government when non-monetary benefits and outside earnings averaging 11 percent of base salary are taken into account. Similarly, the overall position of faculty on 9-10 months appointments may be comparatively good when the non-monetary advantages and outside earnings averaging 19 percent of base salary are considered. Another indication that faculty remuneration may be not too far out of line is the notable absence of any rush to leave the profession or any shortage of young people who are willing to enter when jobs can be found. But, it must be remembered, the position of administrators and general service workers is not significantly improved by the inclusion of non-monetary benefits and outside income.

Future Policy: Faculty Compensation

History has shown that the level of faculty compensation has not been determined solely by the spontaneous forces of the market, but has been heavily influenced by conscious public attitudes and conscious policy toward higher education. This was demonstrated by the deliberate effort to raise faculty compensation in the early 1950s. At that time, there was a wave of public recognition that higher education is a critical ingredient of societal welfare and progress, and widespread realization that compensation was too low to attract to the profession people of appropriate talents. The result was a determined effort by those supplying the funds to higher education and by the leaders of the institutions to make faculty compensation competitive with that of talented people in other industries and occupations. This effort succeeded and by the late 1960s the position of faculty (including salaries, fringe benefits, non-monetary benefits, and outside income) was almost certainly equal or superior to that of persons in comparable jobs elsewhere; not surprisingly, an abundant supply of capable people came seeking entry to the academic profession. At about that time, however, public attitudes toward higher education changed. Student unrest, rising costs, congestion in the job market for graduates, the shift of public attention toward competing priorities, and need to control inflation all contributed to this disenchantment. Under these conditions, the institutions faced a gradual but persistent financial squeeze, and faculty compensation began slowly to lose ground as compared with the pay of workers in other industries and occupations. Nevertheless, colleges and universities almost uniformly continued to place high priority on faculty compensation, often at the sacrifice of plant maintenance, student services, new programs, financial reserves, and general institutional advancement. As a result, faculty compensation on the whole nearly kept pace with inflation even if it did not stay abreast of the wages and salaries of other groups who received productivity increases in addition to cost of living increases. This record is in sharp contrast to that before World War II when episodes of inflation were

uniformly accompanied by sharp declines in the "real" earnings of faculty after allowance for increases in the price level. In spite of great efforts, however, faculty have been slowly losing ground in recent years relative to other groups--though the relative economic position of faculty today is still relatively good.

The critical policy question is: What should be done in the years ahead about faculty compensation? Or, to phrase it differently, what trend of compensation will be in the broad public interest? This question is posed at a time when the market for faculty is decidedly weak. On the supply side, the number of persons qualified for the academic profession is large relative to the market and great numbers of newly-minted Ph.D.s are being turned out each year. On the demand side, the enrollment outlook at least through the 1980s is uncertain and public attitudes toward higher education, though not antagonistic are less than enthusiastic.

There are three plausible policy options:

1. To continue the present trend. Faculty compensation would nearly keep pace with the cost of living but would increase at a slower rate than average compensation in the rest of the economy.

2. To increase the rate of growth of faculty compensation to keep pace with earnings in the rest of the economy. This would call for average annual increases of perhaps 7 to 8 percent a year as compared with recent increases averaging just above 6 percent a year.

3. To lower the priority now attached to faculty compensation in favor of other priorities (either inside or outside higher education). The rate of growth of faculty compensation could then be slowed up to take advantage of the undoubted market weakness of the academic profession. In this scenario, faculty compensation (in constant dollars) would almost certainly fall absolutely as well as relatively.

Clearly, the temptation for institutions to adopt the third option is very great and could become greater if the financial squeeze should worsen. From the point of view of those who supply the finances, the temptation is also great to force salaries down by withholding the money to pay the salaries. Indeed, it would be possible, in the short run at least, to "solve" the financial problems of higher education simply by slowing up the rate of growth of faculty compensation, for example, by placing a freeze on faculty salaries or even by imposing cuts. Under the circumstances, it is remarkable that this temptation has been resisted. One must ask the question, not why has faculty compensation failed to keep pace with pay in other industries and occupations, but why has faculty compensation fared so well in view of its past history and in view of the present weak market situation?

There are many reasons for the surprisingly strong performance of faculty compensation. One is that the public disenchantment with higher education has been less profound than often alleged. Many studies show that both students and alumni overwhelmingly indicate satisfaction with their college experience and that a vast majority of parents want their sons and daughters to attend college (Bowen, 1977, pp. 226-35). Other reasons for the strength of faculty compensation are: a general wish to be fair with a profession that has happened to run into a weak bargaining position, the desire to avoid undermining faculty morale, and the hope of forestalling collective bargaining. The pressure to raise the pay of minorities and women also has had a part in keeping average compensation up.

But more important than these factors has been the belief both on and off the campus, that the improvement in relative compensation during the 1950s and 1960s had resulted overall in the attraction and retention of thousands of capable and well-trained people, that these hard-won gains had been in the broad public interest, and that these gains should not be sacrificed to short-run financial expediency. It has been strongly suspected that with the recent deterioration in the relative economic position of faculty, many of the most able people would eventually slip away to other callings, that the academic profession would attract substantially fewer capable young people, and that the quality of the profession and of the institutions they serve would gradually decline.

It is often argued that higher education does not need to be concerned about keeping compensation up to levels of comparable positions in other industries because higher education is entering the "steady state" when it will not need to hire many faculty members--especially since the present faculty lack easy mobility. This argument is far from conclusive. In the first place, it is not necessarily true that higher education is entering the steady state. As I often point out, enrollments could rise in the next couple of decades. The size of future enrollments will depend, as they have in the past, on the kinds of higher education offered and on the terms on which it is made available, not merely on demographic trends. Also it is not true that faculty members lack mobility. Virtually all of them in professional fields can readily move to other industries, and many in the natural sciences, economics, psychology, and other social sciences are capable of changing careers and often do. Moreover, even those in the humanities can shift careers, and it would be a good thing for the country if more of them found their way into business, journalism, and government, where they could represent a new and much-needed outlook.

But even if one assumes that the steady state is likely and that faculty are not very mobile, the academic community will still need to recruit many new people in the next several decades. Nearly 30 percent of all faculty are over 50 years of age (Bayer, 1973, p. 27; Dunham and others, 1966, p. 59). Allowing for mortality, some early retirement, and some shifting to other occupations, at least a third of all faculty will have to be replaced within the next 15 to 20 years--even assuming that the

normal retirement age is raised. Nearly 60 percent of the present faculty are over 40 years of age. Again allowing for mortality, early retirement, and mobility, at least two-thirds of the faculty will have to be replaced in the next 25 to 30 years. Should faculty compensation fall significantly, then the number of faculty retiring early and shifting to other occupations would be greater and the problem of securing competent people would be compounded. If there is enrollment growth, as is possible in the 1980s, and likely in the 1990s, the recruitment problem will be still further complicated. No one doubts that all available faculty positions could be filled at lower relative compensation than now obtains, but they probably could not be filled with people at the level of competence of those recently recruited. In my judgment, the third option, that of drastically lowering the compensation of faculty relative to that in other industries and occupations, is almost surely not in the public interest.

The first option, namely, to allow the present trend to continue, is one of slow deterioration rather than sharp cuts. Faculty compensation has been increasing at the rate of about 6.0 percent a year, whereas the compensation of various other occupational groups has been growing at the rate of about 7 to 8 percent a year. The difference, which represents the rate of deterioration for faculty, is about 1 to 2 percentage points a year. Over a decade the effect would be substantial; and over two decades it would be catastrophic. It would eventually put faculty back in the weak position they experienced just before World War II. Slow deterioration would of course be preferable to drastic cutting, but it is not a recommended solution for the long run.

This leaves only the second option which is to raise the annual rate of faculty compensation so that it approaches or matches the average rate for workers in other industries and occupations. To achieve this objective higher education would either need more money or it would have to achieve cost-cutting improvements in efficiency.

There are undoubtedly opportunities for improvements in efficiency, that is, for cost-cutting without unduly impairing outcomes, but these opportunities are not as great as is often alleged by critics of higher education. The higher educational community has already achieved considerable budgetary tightening under the pressure of the financial squeeze of the past eight or nine years. Among the results of this tightening have been undermaintenance of plant and some reduction in quality of services. But economies such as these can be instituted only once. For example, if the standard of building maintenance, the quality of the food service, the rate of library acquisitions, or the ratio of faculty to students, are cut in 1978, these savings may be continued from year to year, but additional savings will require new cuts in 1979, again in 1980, etc. As the cutting goes on, to find new objects of economy becomes harder and harder. Meanwhile, the need to economize would reduce the ability to undertake innovation and institutional development in response to changing conditions. Thus, while one may freely concede that substantial economies are possible, it is doubtful that they could be sufficient to add increases to faculty compensation of the order of 1 to 2 percent a year, year after year.

If the rate of increase in faculty compensation continues to lag behind pay raises in other occupations, the position of higher education will deteriorate. As has been shown, the current relative position of faculty even after several years of failing to keep pace with other occupations is not bad. But if the disparity of 1 to 2 percentage points in annual rate of increase continues (6 percent for faculty vs 7 to 8 percent for other occupations), in ten years faculty compensation would be 9 to 18 percent below that of other occupations and in twenty years 18 to 33 percent below. At some point fairly soon the present disparity should be corrected. To do so would require an increased flow of funds into higher education. Potential improvements in efficiency are unlikely to bridge the gap without socially unacceptable impairment of quality. The correct policy for the nation, in my judgment, is to deal with the compensation problem over a period of years. For example, the gap in average annual increases might be halved in 3 years and eliminated in 5 years. This time-table would eventually bring about parity in rates of growth but relative levels of compensation would be considerably less favorable for faculty than at present.

Perhaps a word is in order about non-monetary income and outside earnings of faculty. If growth in faculty compensation could be kept closer to parity with the rest of the labor force, many of the privileges and perquisites might be curtailed. Many of them were instituted at a time when faculty were grossly underpaid. But as we are now again moving away from parity, the justification for these various items of non-monetary income increases apace. The same holds for outside earnings. But the case for outside earnings on a fairly generous basis is even stronger. The opportunity to earn outside income encourages faculty members to take part in the affairs of the world, to gain practical experience in their professional fields, and to become proficient in their disciplines. This opportunity also offers a special incentive to ambitious persons because it provides the chance within the academic profession to earn substantial amounts and even in some cases to get rich. In other words, it removes the ceiling on earnings that are possible within the academic world, and thus strengthens incentives for the adventurous and imaginative people to enter the profession. Moreover, outside work is an antidote to the boredom that afflicts many faculty people in mid-career. There are of course disadvantages in the opportunity for outside earnings. Some faculty neglect their academic duties, some lose their loyalty to their institution, some misuse their status as academic people when operating in the public arena. But on the whole, the opportunity for outside earnings is socially advantageous. It tends to narrow the gap between academic compensation and earnings in other occupations in a way that is mainly constructive.

Compensation of Administrators and General Service Workers

The earnings of academic administrators are reasonably comparable with those of administrators in hospitals and government (table 16) but far below those of business executives in comparable jobs within organizations of

similar size (table 19). For instance, the earnings of presidents or chancellors of colleges and universities are less than half those of chief executive officers in private business; the salaries of admissions and development officers--the "sales" executives of higher education--are far below those of sales managers in industry, and so on down the whole roster of administrative officers. I see no reason to believe that the administration of a college or university is any less difficult or entails any less responsibility than the management of a company of similar size. Under these circumstances, the questions must be posed: Would colleges and universities be more successful over a period of time if they paid higher salaries to their adminstrators? Would they attract and hold more capable and better prepared people? Would these people perform with greater energy and dedication? Would the higher costs be returned in greater efficiency and in greater income? One may of course argue that higher education attracts many very capable and dedicated administrators at existing salary levels. One may suspect also that higher salaries for administrators might merely attract people who are interested in money and lacking in dedication. However, my opinion is that on balance a gradual up-grading of administrative salaries, on a highly selective basis, would be sound policy for higher education.

On the basis of limited data, I found that the wages and salaries of general service workers probably average around 10 percent below those for comparable jobs in private business (table 20). Some or all of this differential may be justified by relatively pleasant working conditions and steady employment in colleges and universities.[1]

Conclusion

The dominant item of cost in institutions of higher education is the compensation of faculty and staff. Faculty compensation (including non-monetary income and outside earnings), relative to earnings in other occupations and industries, is reasonably good as of 1976-77. Administrative compensation is probably comparable to that in government or hospitals but far less than that in business. The compensation of general service workers is probably on the whole lower in higher education than in other parts of the economy. Faculty and administrative compensation is slipping relative to trends in other industries and occupations. The slow relative attrition of compensation in higher education threatens to impair its future soundness. Policies are needed to bring about reasonable parity between the rates of growth in compensation in higher education and in other occupations and industries.

[1] In some cases, however, colleges and universities are forced to pay union scales despite their offering more steady employment than is available elsewhere.

Currently the salary goals of most institutions are (1) to keep up with other academic institutions, and (2) to keep pace with the cost of living. These goals are not adequate for the future soundness of American higher education. Instead, the goal should be to keep pace with the growth of compensation in the economy generally. Institutions and those who control their financial support should endeavor to relate their salary increases to those prevailing in the economy-at-large, not merely to those of other colleges or universities or to the cost of living.

CHAPTER III

ACADEMIC PAY: THE HISTORICAL RECORD

This section reviews the history of faculty salaries and compensation over the period from 1903-4 to 1976-77. Such a review is of intrinsic interest as a record of the way faculty members have been compensated; it also permits a consideration of the effects of inflation upon faculty compensation, a topic of special relevance to salary policy now and in the near future.

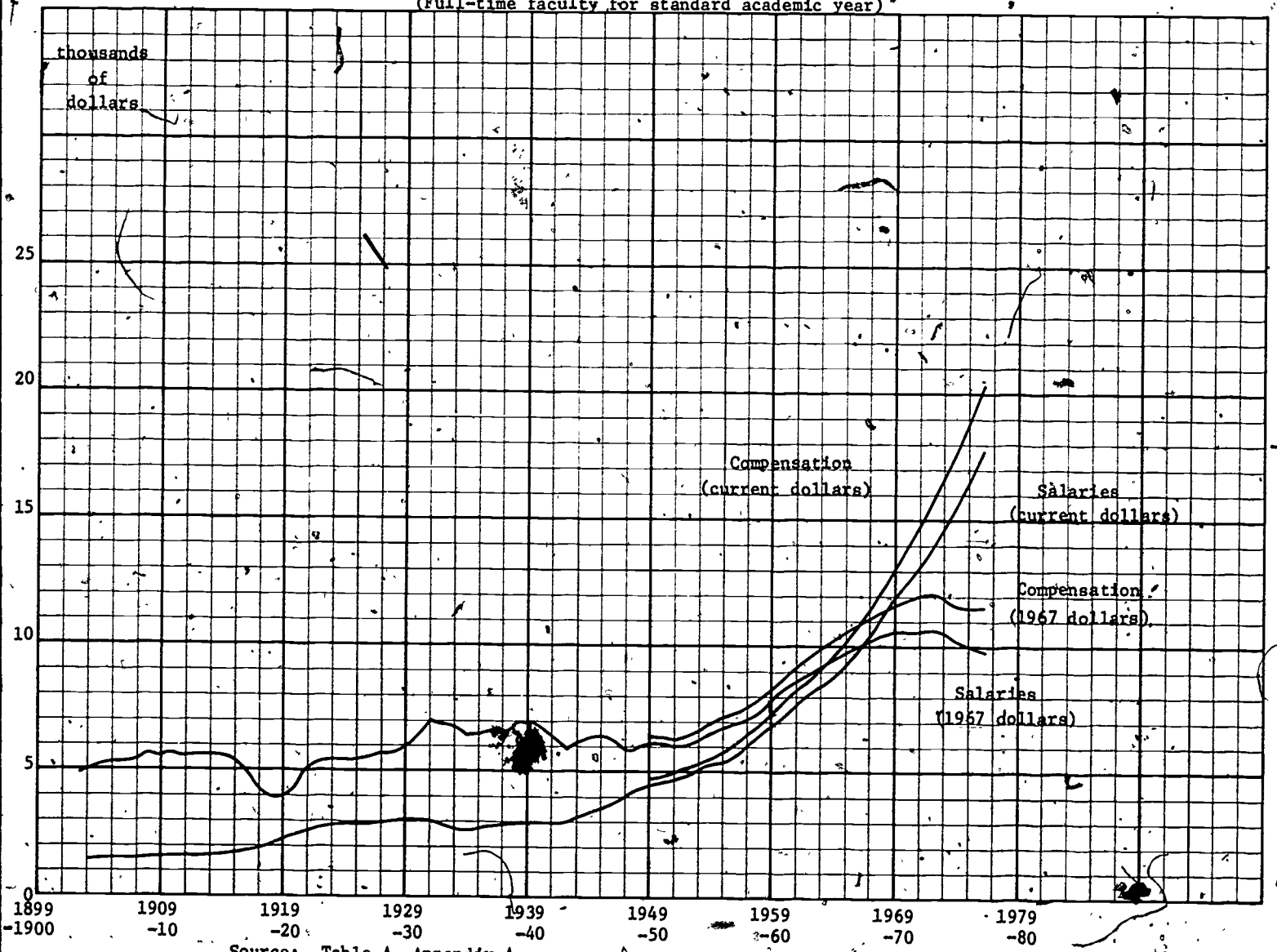
Before launching into this review, it will be necessary to observe a standard ritual in the study of higher education, namely to warn readers of the shortcomings of available data. In the case of data on long-term trends in faculty compensation, reliability is in question because there are no continuous and consistent series extending over long periods of time. The series for earlier years cover only land-grant institutions, and the series for later years--though covering many types of colleges and universities--are based upon fluctuating numbers of reporting institutions. In addition to these technical problems, there are formidable definitional ambiguities inherent in the nature of faculty employment. These ambiguities derive from academic-year vs. calendar-year contracts, supplemental pay for overloads and for summer teaching, contributed service, part-time work, a multitude of fringe benefits and perquisites, outside earnings, variations in the range of qualifications and duties associated with the term "faculty," and standards for admission to the several faculty ranks differing over time and among institutions.

The shortcomings of the data are in no sense due to professional inadequacies of the people who have assembled them. Outstandingly capable people have been involved--notably in the U. S. Office of Education, the National Education Association, and the American Association of University Professors. The shortcomings are due primarily to the intractability of the subject.

Faculty

Having uttered these disclaimers, I can present figure 1 which displays estimates of average annual faculty salaries and compensation over the period 1903-04 to 1976-77. The data refer to full-time faculty employed for the standard academic year of nine months. They are presented in both current and constant (1967) dollars. The conversion to constant dollars was accomplished using the Consumer Price Index of the U. S. Bureau of Labor Statistics. The sources, definitions, and procedures involved in

Figure 1. - Average Faculty Salaries and Compensation, All Ranks and All Institutions of Higher Education, 1903-04 through 1976-77
(Full-time faculty for standard academic year)



Source: Table A, Appendix A.

compiling the estimates, and the numerical data as well, are presented in Appendix A, table A.

The data shown in figure 1 are of course highly aggregated. They include faculty in all types of institutions, from all parts of the country, and of all ranks. It is possible that widely divergent trends might be concealed beneath these all-embracing statistics. Close examination, however, reveals a remarkable similarity of trends. As illustrated in tables B and C of Appendix A, trends in faculty salaries or compensation are monotonously alike regardless of type of institution, geographic area, faculty rank, or source of data. One can infer from these tables that the relative compensation levels among different types of institutions, different geographic areas, and different faculty ranks are remarkably stable over long periods of time. There are minor divergences to be sure, but the overall structure of faculty compensation tends to be fairly constant. However, it should be observed that changes occur from time to time in the criteria for appointment or promotion to the several ranks. For example, in the past several decades, there have been variations in the educational and experiential requirements for appointment to the ranks of instructor and assistant professor and variations in the length of time and experience required for appointment or promotion to associate professor or professor. But the relative compensation in the several ranks has remained remarkable steady.[1]

As shown in figure 1, during the twentieth century average faculty compensation in current dollars has grown at a fantastic rate. In 1976-77 it was fifteen times what it was in 1903-04. In some recent years, the annual increments in current-dollar compensation were almost as large as total annual compensation around the turn of the century. But the data as expressed in constant dollars show a much less spectacular rate of growth. Average compensation in 1976-77 was only about two-and-a-third times that in 1903-04. Moreover, the long period from 1903-04 to 1976-77 was not an era of steady annual growth. There were major fluctuations in the rate of growth including some periods of absolute decline in current-dollar or constant-dollar compensation or both. These fluctuations were associated with wars, depression, inflation, volatile enrollments, and changes in public attitudes toward higher education.

Administrators

The remuneration of administrative officials in colleges and universities moves roughly, but not exactly, parallel to that for faculty. Faculty members often believe that administrative compensation tends to outrun faculty compensation. That may have been true at particular times or places but has

[1] On the general stability of the wage structure, see Thurow (1975) pp. 98-113.

not been generally so over extended periods.[1]

Table 3 compares the median salaries of presidents and deans with those of faculty members over the years 1903-04 to 1961-62. The table refers to 52 land-grant institutions. The lower half of the table shows the average annual percentage increases over specified periods. In some periods, there were sizeable differences in rates of increase for the several groups. Some forged ahead in some periods and lost ground in others. Over the entire 57 years, however, all groups gained at about the same average annual rate except for deans whose salaries rose somewhat more rapidly than the salaries of either presidents or faculty members.

Some of the detail in table 3 is interesting. For example, the Great Depression (1929-30 to 1939-40) apparently affected presidents later than deans and faculty. In some periods, the rate of salary increase was greater for presidents and deans and for high-ranking faculty than for low-ranking faculty; for example, 1921-22 to 1929-30 or 1934-35 to 1939-40. In another period, 1939-40 to 1951-52, low-ranking faculty gained more rapidly than high-ranking faculty and administrators.

Table 4 makes a similar comparison for a large sample of institutions based on data of the National Education Association covering the years 1959-60 to 1973-74. Despite differences from year to year, the overall rates of increase were identical for administrators and faculty. In general, it appears that long-term trends in compensation for administrators tend to run parallel to those for faculty but with temporary deviations.

General Service Workers

Data on the compensation of general service workers are scarce. Yet these people--technicians, secretaries, clerks, bookkeepers, mechanics,

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[1] The data on administrative compensation are not as complete as those for faculty pay, but they are adequate to support general conclusions. There are four major sources: data on salaries of presidents and deans in 52 land-grant institutions covering the period 1903-04 to 1961-62 (Bokelman and others, 1962; Ruml and Tickton, 1955; Tickton, 1961); surveys of the National Education Association covering the period 1959-73; surveys of the College and University Personnel Association (CUPA) over the period 1967 to 1976; and surveys of the Department of HEW in the Federal Government covering the period from 1957-58 to the present. In recent years, federal data have become much more complete in coverage, in detail, and in reliability. In 1976-77, CUPA began using data from the Federal Government rather than collecting its own.

Table 3.--Median Salaries of Presidents, Deans, and Faculty Members in 52 Land-Grant Institutions, Selected Years, 1903-04 to 1961-62

	Presidents	Deans	Professors	Associate professors	Assistant professors	Instructors
Dollar amounts (thousands)						
1903-04[1]	$ 3.7	---	$ 1.8	$ 1.4	$ 1.3	$ 0.9
1912-13	5.0	$ 2.6	2.2	1.7	1.5	1.1
1921-22	7.5	4.3	3.3	2.8	2.3	1.8[1]
1929-30	11.0	5.2	4.5	3.3	2.8	2.1
1934-35	11.0	4.7	3.8	2.9	2.4	1.8
1939-40	10.1	5.4	4.2	3.3	2.6	1.9
1951-52	16.4	8.7	6.9	5.5	4.6	3.7
1960-61	21.0	14.3	10.6	8.1	6.7	5.3
Average annual percentage changes:						
1903-04 to 1912-13	3.4%	---	2.4%	1.8%	1.7%	2.7%
1912-13 to 1921-22	4.6	5.8%	4.7	5.8	5.2	5.0
1921-22 to 1929-30	4.9	2.5	3.8	2.5	2.5	2.1
1929-30 to 1934-35	0.0	-2.4	-3.3	-2.8	-2.8	-3.0
1934-35 to 1939-40	-1.6	3.0	2.4	2.4	1.2	1.8
1939-40 to 1951-52	4.1	4.1	4.2	4.5	4.8	5.4
1951-52 to 1960-61	2.8	5.7	4.9	4.3	4.3	4.3
1903-04 to 1960-61	3.1	3.6[2]	3.2	3.1	3.0	3.2

SOURCE: Bokelman and others, 1962, pp. 4-9.

[1] Estimated on the basis of data in Tickton, 1961, pp. 16-20. [2] 1912-13 to 1960-61.

Table 4.--Salaries of Administrative Officers and Faculty Members, Four-year Colleges and Universities, Biennially 1959-60 to 1973-74

	Administrative positions: unweighted average of median salaries[1]	Faculty members all ranks: median salaries
Dollar amounts (thousands)		
1959-60	$ 8.9	$ 6.7
1961-62	10.0	7.5
1963-64	11.0	8.2
1965-66	12.3	9.1
1967-68	13.9	10.2
1969-70	15.9	11.7
1971-72	17.7	12.9
1973-74	19.0	14.4
Average annual percentage changes:		
1959-60 to 1963-64	5.5%	5.0%
1963-64 to 1967-68	6.2	5.8
1967-68 to 1973-74	5.4	5.8
1959-60 to 1973-74	5.6	5.6

SOURCE: National Education Association. See U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, Digest of Education Statistics, 1976, p. 103.

[1] Includes the following positions: president, vice-president, dean of the college, dean of students, dean of men, dean of women, dean of admissions, registrar, business manager, chief librarian, director of public relations, and director of athletics.

security guards, groundsmen, food service workers, and many others--together account for perhaps 40 percent of the entire work force and as much as 20 percent of the total budget in institutions of higher education. It is sometimes asserted--without much data--that in the past these groups have received low wages and salaries relative to comparable workers in industries outside higher education. Colleges and universities, so it is said, have been able to trade on pleasant surroundings, steady work, vacations, and the like. Moreover, so it is argued, institutions of higher education have had a captive labor force in the form of spouses of faculty members and students. In recent years, however, with the increasing mobility of workers and with the spread of collective bargaining, it is probable that wages and salaries for these workers have been rising relative to the compensation of faculty members and administrators.

The Association of Physical Plant Administrators of Universities and Colleges has for several years been collecting data on annual wages and salaries paid to physical plant employees. Because of substantial increases in the number of institutions reporting over the years, these data are not ideal for comparisons over time. Nevertheless, because of the paucity of information on the subject, they are summarized in table 5. They show that on the average the salaries of administrative and professional workers increased between 1969-70 to 1974-75 at the annual rate of 5.0 percent and general service workers at a rate of 5.3 percent. These percentages compare with increases in average faculty salaries of 5.4 percent a year over the same period (Appendix A, table A). Moreover, the increases were considerably less for the lower-paid general service employees than for the higher-paid ones. These data do not bear out the hypothesis that the compensation of non-academic employees have been gaining substantially on that of administrators and faculty.

Another source of data is the annual surveys of 100 private universities and colleges sponsored by the Association of American Colleges. As shown in table 6, these surveys reveal that the wages and salaries of general service workers have increased in the past three years more rapidly than faculty salaries in the same institutions. The rate of increase for clerical workers has been falling but the rate of increase for other non-academic workers has been rising. I have also made inquiries of a number of varied institutions and have found that the wages and salaries of general service employees have in recent years risen more rapidly than those of faculty and administrators.

On the basis of available information, I am hesitant to suggest any firm conclusions about the trend of salaries or compensation among general service workers in academe. I suspect that in recent years, their percentage raises have generally been greater than those of faculty and administrators. But little is known about the compensation of general service workers and this subject cries out for study.

Table 5.--Median Annual Wages or Salaries for Persons Employed in Physical Plants of Universities and Colleges, 1969-70 to 1974-75

	Dollar amounts in thousands			Average annual increases:
	1969-70	1972-73	1974-75	1969-70 to 1974-75
Administrative and Professional:				
Chief Physical Plant Administrator	$ 18.2	$ 20.3	$ 23.7	5.4%
Associate Administrator	15.6	16.6	20.6	5.7
Assistant Administrator	13.0	14.3	17.0	5.8
Principal Planner	15.1	17.2	18.9	4.5
Principal Construction Engineer	15.0	15.7	17.9	3.6
Chief Engineers (mech., elec., civil)	13.3	15.2	17.3	5.4
General service:				
Utility or Power Plant Superintendent	11.4	12.5	15.2	5.9
Shop Superintendent (maintenance)	11.4	12.5	14.9	5.6
Custodial Superintendent	9.7	11.3	13.2	6.3
Grounds Superintendent	9.6	11.0	13.1	6.3
Skilled Trades Supervisor	9.8	10.5	12.5	5.0
Custodial Supervisor	7.5	8.4	9.7	5.4
Power Plant Equipment Operators	8.2	8.7	10.2	4.6
Skilled Trades	8.4	9.0	10.4	4.2
Skilled Gardeners	6.4	7.2	8.1	4.7
Custodians	5.6	6.2	7.0	4.7
Skilled Labor	6.2	7.0	7.7	4.4
Unweighted averages:				
Administrative and Professional	15.0	16.5	19.2	5.0
General Services	8.6	9.5	11.1	5.3

SOURCE: The Association of Physical Plant Administrators of Universities and Colleges, Comparative Unit Cost and Wage Report on Maintenance and Operation of Physical Plants of Universities and Colleges, 1971, p. 44; 1973, p. 31; 1976, p. 42. Medians were estimated from frequency distributions.

Table 6.--Percentage Changes from Preceding Year in Wages and Salaries of General Service Staff and Faculty, as Reported by a Representative Sample of 100 Private Colleges and Universities, 1973-74 to 1976-77

	Clerical workers	Other general service workers	Clerical and other general service workers combined	Faculty
1973-74	--	--	6%	4%
1974-75	8%	7%	7	6
1975-76	7	7	7	6
1976-77	5	8	--	5

SOURCE: Howard R. Bowen and W. John Minter, 1975, pp. 21, 26; 1976, pp. 21, 29; 1977, pp. 19, 24.

Comparative Trends

In judging the adequacy of remuneration in colleges and universities, one approach is to compare historic rates of growth in the pay of faculty and staff in higher education with the rates of growth for other occupational groups. In tables 7, 8, 9, 10, and 11, a substantial amount of data has been assembled for such comparisons. These data present average annual growth rates (compounded annually) in salaries or compensation for selected periods over nearly three-quarters of a century. The basic data from which the average annual growth rates have been calculated are available in Appendix B. The periods have been chosen to cover intervals between major turning points in underlying conditions in the economy and in higher education. The periods are as follows:

1904-1930	National economic growth interrupted by events surrounding World War I and its aftermath.
1930-1952	An unsettled period including the Great Depression, World War II and its aftermath, the G.I. period in higher education, and the Korean War.
1952-1961	Steady economic growth; slow inflation; slow increase in college and university enrollments.
1961-1970	Steady economic growth; accelerating inflation; enrollment explosion.
1970-1975	Erratic economic growth; rapid inflation; deceleration of enrollment growth.

The data presented here in tables 7 to 11 were analyzed in sufficient detail in Chapter II to obviate further discussion here. (See section of Chapter II on "Comparative Trends in Compensation," pp. 7-10.

Table 7.--Average Annual Percentage Increases in Compensation or Salary, College and University Faculties Compared with Broad Occupational Groups, Selected Periods, 1904 to 1975

	1904-30	1930-52	1952-61	1961-70	1970-75	1904-75
Colleges and universities[1]						
Faculty (compensation)[2]	3.19%	2.19%	5.41%	6.03%	6.01%	3.71%
Faculty (salaries)[2]	3.14	2.08	5.21	5.58	5.35	3.39
Other specified parts of the labor force						
All civilian full-time employees (compensation)[3]	4.17	4.42	4.46	5.23	8.07	4.69
Full-time employees in manufacturing (compensation)[3]	4.02	4.57	4.53	4.84	7.27	4.61
Domestic airline employees (salaries)[3]	---	---	---	6.58	7.52	---
Telephone and telegraph employees (salaries)[3]	4.51	4.14	5.13	4.66	10.21	4.88
Workers paid union hourly wage rates[3]						
Building trades	6.21[5]	3.36	4.40	5.67	7.89	4.96
Printing trades	5.64[5]	3.96	3.19	4.27	8.21	4.67
Truck drivers and helpers	---	---	5.12	5.11	9.19	---
Workers paid the legal minimum wage[3]	---	7.93[4]	4.85	3.74	5.59	---

[1]Data for colleges and universities refer to academic years ending in the designated calendar years.
[2]Appendix A, table A. [3]Appendix B, table D. [4]1940 to 1952. [5]1914 to 1930.

Table 8--Average Annual Percentage Increases in Compensation or Salary, College and University Faculties Compared with Executives of Medium to Large Private Corporations, Selected Periods, 1952 to 1975

	1952-61	1961-70	1970-75
Colleges and universities[1]			
Faculty compensation[2]	5.41%	6.03%	6.01%
Faculty salaries[2]	5.21	5.58	5.35
Private corporations			
Chief executive officers, all industries, compensation[3]	---	4.50	7.10
Other top executives, all industries, compensation[4]	---	4.56	7.67
Chief executive officers, salaries[5]			
Manufacturing	---	---	6.26
Commercial banks	---	---	6.26
Insurance companies	---	---	6.28
Gas and electric utilities	---	---	4.96
Middle management executives, salaries[6]	5.05	4.41	6.08
Supervisory personnel, salaries[7]	---	---	6.48

[1]Data for colleges and universities refer to academic years ending in the designated calendar years.

[2]Appendix A, table A.

[3]Includes salary, fringe supplements, bonuses, and deferred compensation, McKinsey and Company, Inc., The McKinsey Quarterly, annual autumn issues, for example, Autumn 1976, pp. 45-52.

[4]American Management Association, Executive Compensation Service, Top Management Report, 28th edition. New York: AMA, 1977-78, p. 10. Data for the years 1961-66 include retirement contributions but data for later years do not. Up to twenty-five major positions are covered including such positions as top marketing executive, top industrial relations executive, top engineering executive, controller, etc.

[5]The Conference Board, Top Executive Compensation, New York, 1976, p. 7. The data cover 869 companies in 1973-75 and 785 in 1971-73. The figure for 1970 was estimated on the basis of data of McKinsey and Company and American Management Association.

[6]American Management Association, Executive Compensation Service, Middle Management Report, 26th edition. New York: AMA, 1977-78, p. 8. Many positions are included. Examples are regional sales executive, advertising executive, customer service manager, plant manager.

[7]American Management Association, Executive Compensation Service, Supervisory Management Report, 22nd edition. New York: AMA, 1977-78, p. 17. Examples of the included positions are credit investigator, payroll timekeeper, heavy bench assembler, quality control inspector and tester, truck dispatcher, foreman.

Table 9.--Average Annual Percentage Increases in Compensation or Salary, College and University Faculties Compared with Governmental Employees, Selected Periods, 1904 to 1975

	1904-30	1930-52	1952-61	1961-70	1970-75	1904-75
Colleges and universities[1]						
Faculty compensation[2]	3.19%	2.19%	5.41%	6.03%	6.01%	3.71%
Faculty salaries[2]	3.14	2.08	5.21	5.58	5.35	3.39
Federal government[3]						
All full-time civilian employees (compensation)	2.44	3.87	5.21	6.33	6.51	4.02
Professional and administrative employees (salaries)						
Grade P4 or GS 11	---	1.97	2.72	5.16	6.43	---
Grade P6 or GS 13	---	1.79	2.72	5.28	6.45	---
Grade P8 or GS 15	---	1.20	2.71	5.95	6.47	---
Military officers (pay and allowances)	---	---	4.01	4.27	7.75	---
Cabinet officers (salaries)	---	1.86	1.18	10.22	0.00	---
Members of Congress (salaries)	---	0.00	9.43	7.32	0.00	---
State and local government[4]						
All state and local employees (compensation)	3.50	3.28	5.45	5.75	7.22	4.22
City employees not including education (salaries)	---	---	---	5.89	7.38	---
Teachers in public elementary and secondary schools (salaries)	5.27	4.12	5.18	5.55	6.35	5.03

[1]Data for colleges and universities refer to academic years ending in the designated calendar year.

[2]Appendix A, table A. [3]Appendix B, table E. [4]Appendix B, table F.

Table 10.--Average Annual Percentage Increases in Salaries, College and University Faculties Compared with Various Professional Groups, Selected Periods, 1930 to 1975

	1930-52	1952-61	1961-70	1970-75
College and university faculties[1,2]	2.08%	5.21%	5.58%	5.35%
Non-salaried private practitioners[3]				
Lawyers	2.54	7.14	5.51	6.19
Physicians	5.13	7.35	6.73	---
Dentists	4.63	4.40	7.52	7.20
Employed in private business, government, or education				
Engineers[3]	2.55	8.29	4.11	6.03
Scientists and Engineers with doctorates[4]	---	---	5.15	12.21
Employed in private business				
Scientists, all fields[4]	---	---	4.25	6.19
Professional and scientific personnel, all fields[5]	---	---	---	6.09
Airplane pilots and co-pilots[6]	---	---	8.16	4.35
Accountants[7]				
Accountant grade IV	---	---	4.31	6.67
Auditor grade III	---	---	4.49	5.97
Chief accountant grade IV	---	---	4.92	6.77
Attorneys[7]				
Grade IV	---	---	6.41	6.76
Grade VI	---	---	8.90	4.44
Chemists[7]				
Grade V	---	---	4.56	5.87
Grade VII	---	---	4.48	5.46
Engineers[7]				
Grade VI	---	---	4.27	6.04
Grade VIII	---	---	3.24	6.08
Others[7]				
Buyer grade IV	---	---	---	6.44
Job analyst grade IV	---	---	3.44	7.21
Director of personnel grade III	---	---	4.46	6.33

[1]Data for colleges and universities refer to academic years ending in the designated years.

[2]Appendix A, table A. [3]Appendix B, table G. [4]Appendix B, table H.

[5]American Management Association, Executive Compensaion Service, Professional and Scientific Report, 3rd edition. New York: AMA, 1976-77, p. 19. Examples of the included positions are civil engineer, quality control engineer, chemist, cost accountant, internal auditor.

[6]Appendix B, table G. [7]Appendix B, table I.

Table 11.--Trends in Median Annual Earnings, Experienced Full-time Civilian Male Workers, 25 to 64 Years of Age, by Selected Occupations, 1959-69.

	Dollar earnings (in thousands)		Average annual percentage increase
	1959[1]	1969[2]	1959 to 1969
Workers in all occupations	$ 5.3	$ 9.0	5.40%
All professional, technical, and kindred workers	7.3	12.2	5.31
Workers in specific professional occupations:			
Teachers, college and university	8.3	13.4	4.90
Teachers, elementary school	5.6	9.3	5.28
Teachers, secondary school	6.1	9.9	4.88
Clergymen	4.3	6.7	4.60
Lawyers and judges	11.2	20.1	6.05
Dentists	12.4	22.7	6.24
Physicians	---	25.0+[3]	---
Engineers	8.6	13.7	4.71
Accountants and auditors	7.0	12.0	5.49
Life and physical scientists	8.0	13.0	5.03
Economists	9.1	14.6	4.83
Psychologists	8.5	14.5	5.44
Editors and reporters	7.6	12.2	4.91
Business managers and administrators, except farm	7.0	12.1	5.58
Public officials and administrators	6.8	12.2	6.08
Skilled craftsmen and mechanics	6.0	9.5[2]	4.78
Farmers and farm managers	2.5	5.6	8.22

[1]U.S.Bureau of the Census, 1960 Census of Population, Occupational Characteristics, Subject Report PC(2)-7A, Washington, D. C., U.S. Government Printing Office, 1963.

[2]U.S.Bureau of the Census, 1970 Census of Population, Earnings by Occupation and Education, Subject Report PC(2)-8B, Washington, D.C., U.S. Government Printing Office, 1973.

[3]Over 25.0.

CHAPTER IV

COMPARATIVE AMOUNTS OF PAY IN RECENT YEARS

In judging the adequacy of the salaries and compensation paid by colleges and universities, one must consider not merely long-term trends over time but also dollar amounts actually paid in a recent year. Though the trends may have been somewhat adverse to academic workers, the dollar amounts may still be competitive. This chapter draws upon a wide variety of data to compare the salaries or compensation paid by colleges and universities with those paid in a wide range of occupations and industries.

The data to make these comparisons refer primarily to the calendar year 1977, to the fiscal year 1976-77, or to other recent years—the dates being specified in each case. The data were drawn from many sources including various reports of the Bureau of Labor Statistics, Census Bureau, National Science Foundation, Civil Service Commission, and other agencies of the Federal Government. A major source also was the Executive Compensation Service of the American Management Association which provides a wealth of current data on compensation for hundreds of positions at all levels in private industry. Indeed, the up-to-date reliable data are so abundant and so detailed that it taxes ingenuity to present the facts with intelligibility and brevity.

What Do People Earn?

The first step in comparing the pay of academic and other workers is to assemble data on the dollar amounts that people are actually paid. These data are presented in Appendix C. One set of tables (J,K, and L) shows the salaries and compensation of faculty, administrative staff, and physical plant workers in colleges and universities. Another set (tables M through S) provides information on compensation or salaries for a wide range of positions in private business and in hospitals. The reader is advised to peruse these data for a general overview of what people in various occupations and industries actually earn. In doing so, he or she will discover, for example, that:

> A full professor on an 11-12 months contract with a salary at the lower quartile earns only slightly more than an entering attorney in private business with less than one year of experience (tables J and M).
>
> A top professor on an 11-12 months appointment in a doctoral-granting university earns nearly as much as the top marketing

executive in a manufacturing company having sales of eight to ten millions a year (tables J and N).

An average associate professor on a nine-months appointment earns about as much as a minor office management executive with a small range of responsibilities (tables J and O).

A lower quartile assistant professor earns about as much as a beginning internal auditor in a private company (tables J and P).

A university president in the third salary quartile earns less than the average administrator or medical director of a hospital with more than 500 beds (tables K and Q).

The average instructor on an 11-12 months appointment earns about the same amount as an apprentice craftsman and skilled tradesman (tables J and R).

A full professor with a median salary on a 9-10 months contract earns about as much as a senior general foreman in a private company (tables J and S).

Can one generalize from specific and detailed data about the relative position of people who work for colleges and universities? To do so involves many pitfalls, but an attempt will be made in the following pages beginning with some very broad comparisons and proceeding with more specific and more detailed ones.

Some Broad General Comparisons

Table 12 compares earnings of faculty and administrators in higher education with those of other elements of the labor force. It is clear from this table that those who serve as teachers and administrators in higher education are highly paid compared to the general run of workers in government and business--a reality that is not always fully recognized by academic people. For example, faculty are paid nearly twice as much as the average of all civilian employees, 62 percent more than elementary and secondary teachers, or 50 percent more than federal workers on the general service schedule. Of those represented in this table, only military officers have earnings that even approach those of academic faculty and administrators.

Table 13 draws on census data and compares earnings in 1969 for male academic faculty and administrators with those for male workers in various professional and business jobs. The table refers to 1969 and is of course out of date. Nevertheless, it is not without interest. It shows that academic administrators were near the top in average earnings--immediately following several notoriously high-paying occupations. College teachers on twelve-months contracts compared quite favorably with managers and administrators in private business, bank officials, engineers, actuaries, and

Table 12.--Estimated Annual Earnings: Faculty and Administrative Staff of Universities and Colleges Compared with Various Other Employment Groups, 1976-77 (in Thousands of Dollars)

	Salary	Compensation
Faculty, all ranks, 1976-77		
9-10 months' employment[1]	$ 17.9	$ 20.7
11-12 months' employment[2]	21.6	25.0
Administrative staffs of colleges and universities, 1976-77[3]		
Chief executive officer	36.7	45.1
Deans and directors, schools and colleges	32.1	36.5
Top 11 central administrative positions	25.3	28.9
18 other administrative positions	18.1	21.0
Other elements of the labor force, 1976[4]		
All civilian full-time employees[5]	11.2	13.3
Manufacturing: all full-time employees[6]	12.6	14.1
State and local government: all full-time employees[7]	11.7	12.9
Teachers in public elementary and secondary schools, 9-10 months[8]	11.7	12.8
Federal civilian full-time employees in the general schedule (GS) grades[9]	15.2	16.7
Military officers: basic pay and allowances[10]	---	20.0
Legal minimum wage[11]	4.6	---

[1] Means. AAUP Bulletin, August 1977, p. 152.

[2] Means. Estimates based on data in U.S. Department of HEW, National Center for Education Statistics, Salaries and Tenure of Instructional Faculty in Institutions of Higher Education, 1974-75, pp. 20, 24.

[3] Averages of medians. See Appendix C, table K. [4] Means.

[5] Based on data in U.S. Department of Commerce, Bureau of the Census, Historical Statistics of the United States, 1975, Vol. 1, pp. 164, 174-175. The figure for 1976 was projected on the basis of average weekly earnings in private non-agricultural employment as regularly reported by U.S. Department of Labor, Bureau of Labor Statistics. Fringe supplements were estimated for 1976 on the basis of past trends in the ratio of fringes to earnings. See Statistical Abstract of the United States, 1976, p. 381.

[6] Based on data in Historical Statistics of the United States, Vol. I, op. cit., pp. 166, 174. Figure for 1976 projected on the basis of average weekly earnings in manufacturing as reported by the U.S. Department of Labor, Bureau of Labor Statistics, and by projection of trends in fringe supplements.

[7]Based on data in Historical Statistics of the United States, Vol. I, op. cit., pp. 167, 174. Projection to 1976 was based on data in Statistical Abstract of the United States, 1976, pp. 166, 287.

[8]Based on data in Historical Statistics of the United States, Vol. I, op. cit., pp. 375-6. Projection to 1976 based on data of National Education Association. See Statistical Abstract of the United States, 1976, p. 134.

[9]Based on data in Statistical Abstract of the United States, 1976, p. 251. Projection to 1976 based on base salaries of federal employees on the General Schedule (GS).

[10]Statistical Abstract of the United States, 1976, p. 341.

[11]U.S. Department of Labor, Employment Standards Administration, Minimum Wage and Maximum Hours Standards Under the Fair Labor Standards Act, 1976, pp. 14-15. Hourly rate of $2.10 multiplied by 2,080 hours.

Table 13.--Comparative Mean Earnings in Selected Occupations, Men 25 to 64 Years of Age in the Experienced Labor Force Who Worked 50 to 52 Weeks, 1969 (Ranked from Highest to Lowest Salary)

Occupation	Mean Salary 1969	Occupation	Mean Salary 1969
Physicians	$ 30,521	Buyers, wholesale & retail trade	$ 12,660
Dentists	24,781	Writers, artists, entertainers	12,552
Lawyers	23,512	Operations & systems research analysts	12,491
Airplane pilots & co-pilots	19,733	Sociologists	12,368
Sales managers, except retail	16,694	Computer specialists	12,226
Physicists & astronomers	16,064	Sales managers & departmental heads, retail trade	12,081
Economists	16,060	Biological scientists	12,068
COLLEGE ADMINISTRATORS		Radio & television announcers	11,466
12 months[1]	15,961	Agricultural scientists	11,231
9 months[2]	15,477	Locomotive engineers	11,151
Psychologists	15,922	Musicians & composers	11,023
Mathematicians	15,721	Tool & die makers	10,687
Geologists	15,530	Foremen	10,609
Managers & administrators (except farm) NEC[3]	14,899	Secondary school teachers	
Bank officials & financial managers	14,667	12 months[1]	10,201
Real estate agents & brokers	14,368	9 months[2]	9,789
COLLEGE TEACHERS		ALL WORKERS	10,150
12 months[1]	14,304	Electricians	10,133
9 months[2]	12,715	Engineering technicians	10,024
Engineers	14,248	Plumbers & pipefitters	9,894
Actuaries	14,209	Social & recreational workers	9,797
All managers & administrators (except farm)[3]	14,095	Health technologists & technicians	9,657
ALL PROFESSIONAL, TECHNICAL, & KINDRED WORKERS	13,788	Elementary school teachers	
Air traffic controllers	13,727	12 months[1]	9,607
School administrators, elementary & secondary		9 months[2]	9,095
12 months[1]	13,625	Aircraft mechanics & repairmen	9,514
9 months[2]	13,390	Brickmasons & stonemasons	9,164
Editors & reporters	13,477	Compositors & typesetters	9,119
Accountants	12,974	Machinists	8,908
Public officials & administrators	12,939	ALL CLERICAL & KINDRED WORKERS	8,855
Designers	12,919	Clergymen	7,096
Chemists	12,917	Farmers & farm managers	7,022
Insurance agents, brokers, & underwriters	12,862		

SOURCE: Bureau of the Census, U.S. Department of Commerce, 1970 Census of Population, Earnings by Occupation and Education, 1973, pp. 1-126.

Footnotes for table 13

[1]Those who reported working 50-52 weeks in 1969.

[2]Those who reported working in 1969 but did not specify the number of weeks. Of those employed in education, presumably most (but not all) worked the full academic year of 9-10 months.

[3]Managers and administrators not otherwise classified includes mostly managers in private business, whereas All managers and administrators, includes those in the public and the private non-profit sectors.

and school administrators, and also were well above the average for all professional, technical, and kindred workers. College teachers on academic year contracts did not fare so well. They ranked along with insurance agents, wholesale and retail buyers, operations and systems research analysts, etc. They ranked substantially below the average for all professional, technical, and kindred workers.

The Academic-Year Contract. These data raise the question of how to interpret the position of faculty on academic-year contracts when comparing their earnings with those of workers who are engaged for eleven months or more. The status of faculty on academic-year contracts varies widely: (1) some engage in professional work throughout the year even though they are technically paid only for the academic year; (2) some of them take long vacations and enjoy the psychic income that free time affords; (3) some of them use their vacations, as well as time during the academic year, to earn extra income (which is usually not counted in statistics on earnings). Ideally, each of these three cases would require special treatment. Nevertheless, for the time being, "earnings of faculty on academic-year contracts" will refer to earnings paid technically for nine or ten months of work and will disregard other earnings whether in cash or psychic income, and will disregard the use to which the two or three months of "vacation" is put.

Scientists, Engineers, and Hospital Employees. Tables 14 and 15 offer salary comparisons for scientists and engineers employed in higher education, business, government, hospitals, and non-profit organizations in 1975. In both of these tables, which were derived from studies of the National Science Foundation, the figures for higher education were converted to an eleven-months' basis by multiplying academic year salaries by 11/9. Table 14 indicates that scientists and engineers employed in higher education, state government, and hospitals are paid around $21,000 a year, whereas those employed in private business or in the Federal Government receive about $26,000, or about a quarter more. Similarly, table 15 reveals that teaching is on the average the lowest paid activity in which scientists and engineers engage.

Table 16 compares salaries for several administrative positions in higher education with those in hospitals by size of institutions. Because of differences in the duties or scope of comparable positions, these comparisons are no more than suggestive. They indicate, however, that the general levels of salaries in the two fields are about the same; the number of cases in which academic salaries exceeded hospital salaries was about the same as the number in which hospital salaries were higher than academic salaries.

Comparisons with Employees in the Federal Government or in Business. Table 17 compares 1976 salaries in higher education with those in the Federal Government and in private business. This table is an important one. It contains three comparable sets of salary data: for faculty and administration in colleges and universities, for general schedule (GS) employees of the Federal Government, and for employees of private business. In each case, the

Table 14.--Doctoral Scientists and Engineers, Median Annual Salaries, by Type of Employer, 1975. (in Thousands of Dollars)

Occupations	Total, All Types of Employers	11-12 Months[1]						
		Four Year Colleges	Two Year Colleges	Business and Industry	Federal Government	State Government	Hospital or Clinic	Non-profit organization
Chemists	$ 24.0	$ 20.7	$ 18.8	$ 25.9	$ 26.3	$ 17.8	$ 21.3	$ 23.6
Physicists/Astronomers	23.6	22.2	18.0	25.9	25.7	---	---	24.3
Mathematicians	20.9	20.4	18.2	26.1	26.0	---	---	26.8
Statisticians	23.1	22.2	---	24.4	30.2	---	---	---
Computer specialists	23.4	22.7	---	23.9	24.8	---	---	---
Earth scientists	23.5	20.9	---	26.4	27.6	20.2	---	24.0
Oceanographers	22.1	20.0	---	---	28.5	---	---	---
Atmospheric scientists	24.1	23.1	---	22.6	27.1	---	---	24.3
Engineers	25.2	23.6	21.0	26.0	26.6	19.5	---	25.8
Biological scientists	21.3	20.4	17.8	24.9	25.2	20.4	21.9	20.9
Agricultural scientists	22.0	20.8	---	23.2	24.9	19.1	---	---
Medical scientists	25.7	24.1	---	29.9	28.9	26.3	26.3	25.6
Psychologists	22.1	20.8	23.0	30.5	26.7	21.8	21.3	24.2
Economists	24.6	22.8	---	30.8	27.7	---	---	33.0
Sociologists/Anthropologists	20.7	20.6	---	---	---	---	---	18.7
Other social scientists	21.2	20.5	22.1	22.9	30.8	21.5	---	22.5
All fields	23.1	21.4	19.2	26.0	26.2	20.9	21.8	24.4

SOURCE: National Science Foundation, Characteristics of Doctoral Scientists and Engineers in the United States, 1975. Washington: U.S. Government Printing Office, 1977, p. 63.

[1] Academic year salaries have been multiplied by 11/9 to convert them to a calendar year basis. See NSF, Characteristics, op. cit., p. 10.

Table 15.--Doctoral Scientists and Engineers, Median Annual Salaries, by Type of Work, 1975 (in Thousands of Dollars)

Occupation	Median Annual Salary
Teaching (11-12 months' basis)	$ 20.6[1]
Basic research	22.2
Applied research	23.3
Development	23.6
Management of Research and Development	30.1
Management other than Research and Development	27.8
Management of both Research and Development and other	30.2
Consulting	25.4
Sales (professional services)	21.9
Other	22.1
All types of work	23.1

SOURCE: National Science Foundation, Characteristics of Doctoral Scientists and Engineers in the United States, 1975. Washington: U.S. Government Printing Office, 1977, p. 62.

[1]Academic year salaries have been multiplied by 11/9 to convert them to a calendar year basis. See, NSF, op. cit., p. 10.

Table 16.--Comparative Annual Salaries, Hospitals and Higher Educational Institutions, 1977 (in Thousands of Dollars)

Four-year Universities and Colleges, 1976-77				Hospitals, 1977			
	Median Salaries[2]				Median Salaries[2]		
Position	Private: 1,500-2,500 enrollment	Public: 5,000-10,000 enrollment	Public: 20,000-30,000 enrollment	Position	0-200 beds	200-500 beds	over 500 beds
President	$ 39.0	$ 40.0	$ 50.0	Administrator	$ 30.0	$ 40.0	$ 48.0
Student health director	11.6[1]	30.7	39.2	Medical director	33.6	39.2	47.6
Controller	18.9	20.8	28.1	Controller	19.5	25.3	31.3
Director, personnel	14.5	18.4	26.9	Director, personnel	14.7	19.6	22.9
Purchasing agent	13.0	15.9	24.2	Director, purchasing	14.3	17.6	21.4
Chief public relations officer	16.2	20.5	33.8	Director, public relations	12.6	18.5	22.0
Director, physical plant	16.9	21.0	28.6	Director, engineering	16.8	20.8	23.6
Dean or director, school of nursing	19.3	24.6	33.0	Director, school of nursing	---	19.5	22.8
Director, food services	15.0	18.2	21.9	Food service director	14.3	18.0	21.7

SOURCE: American Management Association, Executive Compensation Service, Hospital Report. New York: AMA, 1977, pp. 158-63. College and University Personnel Association, 1976-77 Administrative Compensation Survey. Washington: CUPA, 1977, pp. 12, 19, 24.

[1]Position probably occupied in many cases by nurses or part-time physicians.

[2]In thousands of dollars.

Table 17.--Comparative Annual Salaries, by Type of Employer, 1976
(In Thousands of Dollars)

Higher education, 1976-77			Federal Govt., 1976		Private business, 1976[5]	
Position	Average salary 9-10 mos.[1]	Average salary 11-12 mos.[2]	Position: General Schedule[3]	Average salary[4]	Position	Average salary
Instructor, lower quartile	$ 10.3	$ 10.9	GS7	$ 12.4	Accountants II	$ 13.4
					Auditors II	13.4
					Chemists II	14.1
Instructors (all)	11.9	12.6			Engineers II	15.2
Instructors, upper quartile	12.7	13.5	GS9	15.0	Accountants III	15.4
					Attorneys I	15.4
					Auditors III	16.1
					Chemists III	16.6
					Engineers III	17.5
Assistant professors	14.8	18.4	GS11	18.3	Accountants IV	18.7
					Attorneys II	18.7
					Auditors IV	20.0
					Chemists IV	20.4
					Chief Accountants I	20.5
					Engineers IV	20.7
Associate professors	18.1	22.6	GS12	21.8	Accountants V	23.4
					Attorneys III	24.2
					Chemists V	24.1
Central administrative officials (18 lower-level positions)	---	21.7[6]			Chief Accountants II	22.8
					Engineers V	24.1
Professors (all)	23.9	28.0	GS13	26.0	Attorneys IV	29.8
					Chemists VI	28.9
					Chief Accountants III	28.1
					Engineers VI	27.7

Table 17 (Continued)

Higher education, 1976-77			Federal Govt., 1976		Private business, 1976[5]	
Position	Average salary 9-10 mos.[1]	Average salary 11-12 mos.[1,2]	Position: General Schedule[3]	Average salary[4]	Position	Average salary
Professors in doctoral-granting universities	$ 28.4	$ 33.0	GS14	$ 30.5	Attorneys V	$ 36.3
					Chemists VII	33.6
					Chief accountants IV	33.9
					Engineers VII	30.9
Professors in doctoral-granting universities at 99th percentile	31.7	37.1	GS15	35.6	Attorneys VI	43.7
					Chemists VIII	40.7
					Engineers VIII	36.2
Deans and directors of schools and colleges	---	38.5[6]	GS16	41.2		---
			GS17	44.9		
Top four central administrative officers	---	30.8[6]	GS18	48.7		---
President or chancellor	---	44.0[6]	Cabinet officer	63.0		---

[1]Appendix C, table J. [2]Appendix C, table K.

[3]For definitions of the various grades in the General Schedule, see the text.

[4]U.S. Department of Labor, National Survey of Professional, Administrative, and Clerical Pay. Washington: U.S. Government Printing Office, 1976, pp. 64-65. Data for GS16 through GS18 are the basic annual rates for the middle grades: GS16, grade 5; GS17, grade 3; GS18, grade 1.

[5]U.S. Department of Labor, op. cit., pp. 64-65.

[6]Means, estimated by the author from data in Appendix C, table K.

included employees are graded in such a way that workers of comparable training, competencies, and experience are shown in the same horizontal rows. The comparability between federal employees and private business employees is based on studies of the U. S. Bureau of Labor Statistics. The comparability between various faculty and administrative ranks in higher education and those in the other two categories is based on judgments of the author.

The various ranks of federal employees in the General Schedule and of employees in private business are difficult to define except in terms of adjectives describing degrees of knowledge, skill, experience, supervision, responsibility, etc. The various levels are meant to denote steadily increasing competence and scope.

Positions at the level of GS7 in federal employment and corresponding levels in business employment are regarded as developmental for persons who have had a year or more at the entry level. The tasks are fairly routine, they are usually carried out under supervision, and they involve little or no supervision of others. Incumbents usually have the equivalent of a superior undergraduate education or one year of graduate study and one year of experience.

At the level of GS9, additional experience or graduate study is in order, the tasks become more demanding, and they may involve supervision of a few non-professional persons. This is the entry level for attorneys with the degree of Juris Doctor and admission to the bar.

At level GS11, the work is more complex and supervision of a small staff of professionals may be involved. For persons in relevant fields, two years of graduate study may be appropriate.

At GS12, the work again becomes more complex and responsible, the doctorate is definitely in order in relevant fields and extensive experience is required.

At GS13, the position may include that of assistant heads of a major organization with a bureau or high level professional or administrative work. At GS14, 15, and 16, the individuals' professional and administrative responsibility continues to grow. At these levels, he or she may be head of a major organization within a bureau.

Finally, at the position of GS17 and 18, the incumbent may be a head of a bureau or may have other correspondingly demanding professional or administrative work.[1]

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[1] For descriptions of positions at the various levels, see U. S. Code, Title 5 "Government Organization and Employees" and Bureau of Labor Statistics, U. S. Department of Labor, National Survey of Professional, Administrative, Technical, and Clerical Pay. Washington: U. S. Government Printing Office, 1976, pp. 36-55.

Assuming that the correct equivalencies have been established among the various levels of positions in higher education, federal government, and private business, salary comparisons are possible as shown in table 17. From this table one may make the following observations:

1. Salaries are considerably higher in private business than in the federal government or higher education. Overall, private business pays roughly 10 percent more than the federal government or higher education (for calendar-year appointees). The difference is especially pronounced in the lower ranks.

2. Overall, salaries are about the same for calendar-year appointees in higher education and in the federal government. However, the federal government pays more in the two lower ranks and also in the higher administrative ranks. In between, from GS12 to GS15, higher education pays more than the federal government.

3. Salaries in business and in the federal government are higher at all levels than salaries in higher education for those on academic year appointments. Overall, salaries in business are about 25 to 30 percent higher, and salaries in the federal government are about 15 percent higher than 9-10 months' salaries in colleges and universities.

Comparisons Based on Data for Specific Positions

Another set of comparisons can be made between faculty and staff at various levels in higher education and specific employees of private business. The American Management Association produces annually a series of detailed reports on the pay of various categories of workers in private business and industry. This information makes possible meaningful comparisons with salary data for faculty, administrative staff, and physical plant workers.

Faculty. Table 18 (in four parts) presents data comparing salaries of faculty at each rank with selected positions in private business. The data refer to base salary and do not include fringe benefits though for employees in business they include bonuses when applicable. In the selection of business postions to be compared with academic positions, personal judgment enters in a big way. I do not claim to have produced perfect comparability. In choosing business positions, I consciously tended to err on the side of minimizing rather than maximizing salary differences. I also provided additional information by identifying business positions for which the salaries were comparable to those paid in higher education. Unfortunately, the comparisons do not take into account possible differences in the average competence (aside from formal education and experience) of persons in higher education as compared with those in business and industry.

Table 18a compares the salaries of instructors with those for comparable positions in business. It suggests that salaries in business for persons with a college education and limited experience are perhaps 30 to 40 percent higher

Table 18a.--Detailed Salary Comparisons, Faculty in Higher Education and Employees of Private Business, 1977 (In Thousands of Dollars)

Position	Typical degree	Typical years of experience[2]	Average salary
Instructors, higher education:[1]			
Salary at lower quartile, 9-10 months contract	Masters	5	$ 10.3
Mean salary, 9-10 months contract	Masters	5	11.9
Mean salary, 11-12 months contract	Masters	5	12.6
Comparable positions in private business:[3]			
Civil engineer	B.S.	1-3	18.0
Mathematician	B.A.	1-3	16.3
Accountant	B.B.A.	2-4	14.7
Attorney	J.D.	0-1	18.7
Labor relations representative	B.A.	1-2	17.1
Economic analyst	B.A.	2-4	17.7
Positions in business paying comparable salaries:[3]			
Junior draftsman	none	limited	10.3
EDP programmer	A.A.	0	10.5
Junior chemical technician	none	limited	10.4
Biologist	B.S.	0-1	12.1
Accountant	B.B.A.	0-1	12.6
Junior methods and procedure analyst	B.S.	0-1	12.7
Applications programmer trainee	B.S.	0-1	11.9

For footnotes, see table 18d.

Table 18b.--Detailed Salary Comparisons,
Faculty in Higher Education and Employees in Private Business, 1977
(In Thousands of Dollars)

Position	Typical degree	Typical years of experience[2]	Average salary
Assistant professors, higher education:[1]			
9-10 months contract	Masters or doctorate	10	$ 14.8
11-12 months contract	Masters or doctorate	10	18.4
Comparable positions in private business:[3]			
Mechanical engineer	B.S.	3-5	20.8
Mineral geologist	B.S.	3-5	19.2
Budget analyst	B.B.A.	2-4	17.0
Labor relations representative	B.A.	2-5	20.4
Attorney	J.D.	2-4	21.6
Equal Employment Opportunity representative	B.A.	3-5	17.3
Positions in business paying comparable salaries:[3]			
Purchasing agent (Purchases under $3 millions)	---	substantial	15.4[4]
Master electrician	---	substantial	14.6
Foreman, manufacturing assembly	---	substantial	15.0
Public relations representative	B.A.	0-1	14.5
Technical librarian	M.L.S.	3-5	15.0
Senior office manager	none	substantial	18.5
Electrical engineer	B.S.	1-3	17.6
District sales executive (Sales under $1 million)	---	---	19.4[4]
Quality control executive (Production volume under $10 millions)	---	---	17.7[4]
Credit and collections executive (Company sales under $35 millions)	---	---	17.9
Budget analyst	B.B.A.	2-4	17.0
Petroleum geologist	B.S.	[illegible]	18.8

For footnotes, see table 18d.

Table 18c.--Detailed Salary Comparisons, Faculty in Higher Education and Employees in Private Business, 1977 (In Thousands of Dollars)

Position	Typical degree	Typical years of experience[2]	Average salary
Associate professor, higher education:[1]			
9-10 months contract	Ph.D.	15	$ 18.1
11-12 months contract	Ph.D.	15	22.6
Comparable positions in private business:[3]			
Chemical engineer	B.S.	5-8	21.7
Microbiologist	B.S.	5-8	17.5
Publications editor	B.A.	over 4	18.9
Tax accountant	B.B.A.	5-8	19.5
Employment training specialist	B.A. or B.S.	over 5	20.8
Lead systems analyst	B.S.	--	23.4
Patent attorney	J.D.	5-8	29.9
Positions in business paying comparable salaries:[3]			
District sales executive (Sales under $1 million)	---	---	19.4[4]
Contract administrator	B.B.A.	1-3	18.3
Production planning and control executive (production affected, $5 to $10 millions)	---	---	17.6[4]
Quality control executive (production affected under $10 millions)	---	---	17.7[4]
Safety director (employees affected under 2,000)	---	---	19.9[4]
Regional sales executive (Sales under $5 millions)	---	---	23.1[4]
Marketing research executive (Sales under $50 millions)	---	---	23.5[4]
Plant or factory superintendent (production $5 to $10 millions)	---	---	21.5[4]
Corporate insurance administrator (property $75 to $150 millions)	---	---	22.2[4]
Budgetary control executive (Sales $100 to $300 millions)	---	---	23.3[4]
Internal Auditor	B.A.	over 8	23.2

For footnotes, see table 18d.

Table 18d.--Detailed Salary Comparisons, Faculty in Higher Education and Employees in Private Business, 1977 (In Thousands of Dollars)

Position	Typical degree	Typical years of experience[2]	Average salary
Professor, higher education:[1]			
All professors, 9-10 months contracts	Ph.D.	25	$ 23.9
All professors, 11-12 months contracts	Ph.D.	25	28.0
Professors in doctoral-granting universities, 11-12 months contracts	Ph.D.	25	33.0
Professors in doctoral-granting universities at the 99th salary percentile, 11-12 months contracts	Ph.D.	25	37.1
Comparable positions in private business:[3]			
Nuclear engineer	Ph.D.	over 10	32.3
Physicist	Ph.D.	over 10	35.4
Systems and programming manager	B.S.	substantial	26.0
Attorney	J.D.	over 8	31.9
Lead operations research analyst	B.S.	substantial	25.0
Tax research manager	--	substantial	28.9[4]
Corporate economist (utilities and transportation)	--	substantial	29.5[4]
Security investments director (banks, finance, and insurance)	--	substantial	30.0[4]
Process research executive, manufacturing (research budger over $250 thousands)	--	substantial	30.6[4]
Positions in business paying comparable salaries:[3]			
Reliability and quality assurance executive (production $20 to $50 millions)	--	substantial	25.2[4]
Corporate insurance administrator (property $150 to $300 millions)	--	substantial	24.5[4]
Long-range planning executive, second level (sales under $500 millions)	--	substantial	29.0[4]
Cost accounting executive (costed products over $200 millions)	--	substantial	27.9[4]
Plant or factory manager (production $20 to $50 millions)	--	substantial	32.6[4]
Management development executive (employment over 10,000)	--	substantial	34.9[4]
General accounting executive (assets over $900 millions)	--	substantial	36.9[4]
Personnel manager (employment over 16,000)	--	substantial	40.8[4]
Research and development executive (research budget over $950 thousands)	--	substantial	39.3[4]
Top research executive (sales $5 to $10 millions)	--	substantial	32.2[5]
Top industrial relations executive (sales $50 to $100 millions)	--	substantial	40.3[5]

Table 18d (Continued)

Position	Typical degree	Typical years of experience[2]	Average salary
Top educational data processing executive (sales $200 to $500 millions)	--	substantial	$ 37.4[5]
Top public relations executive (sales $200 to $500 millions)	--	substantial	39.9[5]
Top advertising executive (sales $200 to $500 millions)	--	substantial	37.5[5]
Top financial executive (sales $10 to $25 millions)	--	substantial	39.6[5]
Top controller (sales $25 to $50 millions)	--	substantial	31.2[5]
Top engineering executive (sales $25 to $50 millions)	--	substantial	36.8[5]

[1] Appendix C, table J.

[2] The average professional experience of faculty members at the several ranks was estimated on the basis of data in Dunham and others (1966), p. 97.

[3] American Management Association, Executive Compensation Service, 1977 reports: Top Management, Middle Management, Professional and Scientific, Supervisory, and Technician.

[4] Median: these salary data include bonuses which are in most cases small.

[5] Includes substantial bonuses.

than those for instructors. The lower section of the table also suggests that the kinds of business jobs with pay comparable to instructors' salaries require lower skills, education, and experience than the kind of work done by full-time instructors in colleges and universities.

Table 18b shows similar comparisons for assistant professors. At this level, business pays substantially more than higher education for persons on 9-10 months appointments. But when the comparison is made of assistant professors on 11-12 months appointments, the gap is considerably narrower though some difference remains. In the case of associate professors. (table 18c), the gap becomes still narrower for those on adacemic-year appointments and disappears for those on calendar-year appointments. Jobs in business paying salaries at the associate professor level tend to be responsible middle management positions in companies of moderate size.

Finally, at the level of full professor, comparable positions in business pay far more than the average professorship for a 9-10 months appointment. But as one moves up the ladder to professorships on 11-12 months appointments, the differences become small--of the order of 5 percent. If comparisons are then made for professors in doctoral-granting universities, including those at the very top of the salary scale, it becomes evident that professorial salaries are higher than those in comparable business positions and that these salaries begin to overlap those paid to important executives in substantial companies.

The conclusion from table 18 is that business salaries tend to be significantly higher than faculty salaries in the lower ranks, that the gap narrows as one moves to the higher ranks. Throughout these comparisons, the marked difference in relative position of persons on 9-10 months appointments and those on 11-12 months appointments is only too apparent.

Administrators. Table 19 makes similar salary comparisons for administrative staff. In this table, the comparisons are quite reliable because almost all persons included are on calendar year appointments and because the nature of the work in each case can be easily identified. The comparisons are made for organizations of similar size based on sales in case of business and expenditures (or revenues) in the case of higher education. A digression on the measurement of size may be in order.

In higher education there are two kinds of personnel engaged: (1) paid faculty and staff and (2) unpaid students. The managerial scope of a college or university is measured by counting not only the paid employees but also the students--who present administrative problems requiring managerial attention comparable to that of paid employees in, say, a bank or manufacturing establishment. Because of the importance of students in determining the administrative load of a college or university, institutional revenues or expenditures greatly understate the scale of administrative responsibility involved. To correct for this understatement, I adjusted the expenditures of colleges and universities as though the full-time students were employed at a wage equal to their estimated foregone income. Thus, in table 19, the

Table 19.--Detailed Salary Comparisons, Top Executives in Higher Education and Private Business, by Size of Organizations, 1977 (In Thousand of Dollars)

Positions[1]	Average Salaries by Size of Organization[1] Small	Medium	Large
Chief executive officer, higher education	$ 34.6	$ 40.8	$ 50.0
Chief executive officer, business	75.3	104.9	164.4
Chief academic officer (HE)[2]	25.1	33.9	43.6
Chief operating officer (B)[2]	68.0	93.0	140.9
Chief manufacturing executive (B)	40.3	58.7	71.4
Chief planning officer (HE)	20.1	26.1	30.4
Long-range planning executive (B)	---	39.6	43.8
Staff legal counsel (HE)	14.1	17.7	28.6
Top legal executive (B)	---	55.8	64.1
Chief business officer (HE)	23.7	29.6	40.1
Top financial executive (B)	39.6	61.1	82.2
Treasurer (B)	37.6	45.7	54.0
Chief student life officer (HE)	18.8	28.3	36.3
Top industrial relations executive (B)	26.3	40.3	53.1
Chief development officer (HE)	22.7	26.7	33.1
Chief public relations officer (HE)	14.7	20.2	31.9
Top public relations executive (B)	---	---	39.9
Top advertising executive (B)	28.6	31.2	37.5
Admissions director (HE)	16.6	21.0	26.2
Top marketing executive (B)	43.4	60.3	71.9
General sales executive (B)	36.3	42.0	55.1
Director, computer center (HE)	16.0	22.7	33.4
Top electronic data processing executive (B)	25.8	30.1	37.4
Controller (HE)	17.6	20.9	28.1
Controller (B)	27.3	39.4	49.2
Purchasing agent (HE)	13.5	16.1	24.4
Top purchasing executive (B)	22.3	35.5	39.5
Dean, Arts and sciences (HE)	19.2	30.3	40.1
Deans and directors, schools and colleges, average (HE)	18.4	26.8	35.8
Top engineering executive (B)	29.5	41.2	53.3
Top research executive (B)	32.2	41.4	54.9
Top product development executive (B)	39.2	44.6	52.1

SOURCE: American Management Association, Executive Compensation Service, Top Management Report. New York: AMA, 1977, pp. 183-91. College and University Personnel Association, 1976-77 Administrative Compensation

Survey. Washington: CUPA, 1977, pp. 12, 19, 23. Data for business apply to calendar year 1977 and for higher education to fiscal year 1976-77.

[1]The size designations are defined as follows:

	Business (sales)	Higher Education (enrollment)
Small	$ 10 to $ 25 millions	1,000 to 1,499 enrollment, private
Medium	50 to 100 millions	5,000 to 9,999 enrollment, public
Large	200 to 500 millions	20,000 to 29,999 enrollment, public

These size categories were deemed to be comparable for private business and higher education considering revenues in higher education plus foregone income of students as equivalent to sales in business. See text regarding the comparative size of business firms and higher educational institutions.

[2]HE refers to "higher education."
B refers to "business."

hypothetical small organization is a private college with 1,000 to 1,499 enrollment or a manufacturing enterprise with annual sales of $10 to $25 millions. Similarly, a medium organization is a public university with 5,000 to 9,999 students or a manufacturing company with sales of $50 to $100 millions; and a large organization is a public university with 20,000 to 29,999 students or a company with sales of $200 to $500 millions. Thus, the comparisons in this table are for similar work in organizations of roughly similar size.

The conclusion that emerges unmistakably from this table is that academic administrators are paid markedly less than their counterparts in business. There was not a single case in which the academic person was paid as much as the opposite number in business and only one instance of a disparity as low as 12 percent. The pay in business jobs in most cases ranged from 40 percent higher to more than double the pay in similar academic jobs. These comparisons raise serious questions about the adequacy of administrative compensation in higher education.

Physical Plant Workers. Table 20 compares wage rates of physical plant workers in higher education with those of maintenance workers employed in private business. In most cases, wages in business were 10 percent or more above those in higher education, despite the fact that the higher educational data were based on data from only 212 institutions--mostly larger and stronger than average colleges or universities.

Table 20.--Detailed Salary Comparisons, Physical Plant Workers in Higher Education and Maintenance Workers in Private Business, 1977 (In Thousands of Dollars)

Occupation	Annual Salary
Utility or power plant superintendent (HE)[1]	$ 17.1
Foreman of steam plant or chief power house engineer (B)[1]	18.9
Power plant foreman (B)	16.1
Shop superintendent (HE)	16.8
General foreman, plant maintenance (B)	16.6
Skilled trades supervisor (HE)	14.0
Foreman, maintenance (B)	16.0
Foreman, maintenance carpentry, masonry, painting (B)	15.7
Foreman, electrical maintenance (B)	16.1
Foreman, maintenance machine shop(B)	20.4
Power plant equipment operator (HE)	11.5
Stationary engineer (B)	13.7
Skilled trades (HE)	11.7
Carpenters, maintenance (B)	11.9-13.7
Electricians, maintenance (B)	13.5-14.6
Mechanics, maintenance (B)	13.0-13.8
Painters, maintenance (B)	10.8-13.8
Plumbers, maintenance (B)	12.8-14.8
Welders, maintenance (B)	12.3
Skilled gardeners (HE)	9.0
Gardener, grounds keeper (B)	9.6
Custodians (HE)	7.9
Janitors (B)	8.8

SOURCE: American Management Association, Executive Compensation Service, Technician Report and Supervisory Management Report. New York: AMA, 1977. The Association of Physical Plant Administrators of Universities and Colleges. Comparative Unit Cost and Wage Report on Maintenance and Operations of Physical Plants of Colleges and Universities. Washington: APPA, 1976, p. 42.

[1]HE refers to "higher education" and B to "business."

CHAPTER V

NON-MONETARY BENEFITS AND OUTSIDE EARNINGS

In comparing the remuneration of people who work in higher education with those in business and government, it is essential to take into account both non-monetary benefits and opportunities for earning outside income. These are relatively generous for those in higher education and offset at least in part disparities in cash salaries.

For administrative and general service workers in higher education, the conditions under which they labor are not unlike those in private industry and government. They are expected to be on the job at prescribed times 35 to 40 hours a week, their vacations are usually limited to a period of two weeks to a month depending on length of service, and the nature of their work resembles that of persons in business, hospitals, or government. Their chances of earning outside income are not much different from those of their counterparts in other settings. Provisions for retirement, health benefits, etc., are sometimes superior in higher education to those in other industries--but not always. Administrative and general service people often receive certain non-monetary benefits, for example, tuition remission for themselves and their families, access to institutional sports facilities such as golf courses and tennis courts, and access to subsidized public events such as athletic contests and musical events. A select few top officials receive houses, cars, and substantial expense allowances. In some cases, administrators and general service workers may take satisfaction in being part of an academic community though the value of such association is sometimes impaired by the tendency of faculty to regard administrators and general service workers as second-class members of the academic community. General service workers may consider employment in colleges and universities to be more steady and more secure than that in other settings. These benefits are surely worth something. But, on the whole, it is hard to make a case that administrative and general service workers receive unique fringe benefits and non-monetary income sufficient to offset appreciably their position relative to comparable workers in government and business.

Faculty, on the other hand, are comparatively privileged. Some of their advantages are intangible but nevertheless important. Many have a sense of being part of a noble tradition, of being members of the "company of scholars," and of performing a service of great social value. They also have opportunity for creative work and also the possibility of achieving prestige and fame--at least within their own disciplines and conceivably in the world at large. They are members of an academic community where rewarding

personal relationships with their colleagues and students are possible. They have a substantial and growing role in the formation of academic policy and decisions. They have opportunity, declining in the present generation, for tenure which provides an exceptional degree of personal security and thus enhances their freedom of thought and speech and also expands their power in academic decision making. Perhaps most important of all among these intangibles, faculty members have control over their time to a degree that is equalled only among some self-employed persons, free-lance workers such as writers and artists, and very few other groups. Typically, a faculty member is scheduled for only 6 to 12 or 15 hours a week. For the rest of his time he is largely free to do as he wishes. All studies of faculty time-use show that faculty members work long hours, but they do much of their work when and where they please and are relatively free to take time off as they please. In addition, they have long vacations scattered throughout the year during which they are free to travel or undertake projects of their own choosing. These vacation periods are augmented in some cases by subsidized sabbatical leaves or by released time financed by outside grants. As part of the exceptional flexibility in time-use, faculty members have substantial freedom in the particular professional uses to which they put their working time. In large measure, they choose their subjects for investigation, the content of their courses, and their methods of study and teaching. In short, they enjoy a degree of freedom present in few other occupations.

These are all intangible benefits. Not all of them are universally available but all are widely available. Different faculty members place different values on these benefits, but most cherish them and they become a significant part of the psychic remuneration of faculty members.

Turning to more tangible benefits, faculty members typically have access to libraries, campus sports facilities, and public events. They often enjoy tuition remission for their spouses and children, they sometimes occupy subsidized housing, and in some instances they even purchase commodities at discounted prices. They usually are members of relatively generous retirement and health plans. Even after retirement, they usually retain a connection with the academic community, and in a few cases, the institutions provide burial grounds.[1]

Finally, faculty members typically are permitted to earn money from outside sources. Some of this income may be earned during time that could be regarded as "overtime," but much of it is earned during time that might be considered as "belonging" to the institutions. There is no secret about this. Indeed, many institutions openly encourage their faculty members to take part in outside remunerative activities on the grounds that these activities enhance the skills and knowledge which faculty members bring to their teaching

[1] For a discussion of these benefits, see Mark H. Ingraham, 1965, 1968.

and that these activities serve society and enhance the prestige of the institutions.

The main sources of these outside earnings are royalties from writing, royalties from inventions, private practice fees for professional services, sale of works of art, lecture fees, consulting, research, summer teaching in the home institution, summer or part-time teaching in other institutions, miscellaneous "moonlighting."

In understanding the phenomenon of outside earnings, it should be recognized that two-thirds or more of all full-time faculty members are employed on an academic year basis (Bayer, 1973, p. 32; Dunham and others, 1963, pp. 133, 139, 145-49; National Center of Education Statistics, 1976a). This type of contract requires them to be physically present only about eight months of the year and leaves them technically free to pursue other activities four months of the year. Many earn outside income in the vacation periods, but many--both those on 9-10 months and 11-12 months appointments pursue outside activities during the months they are technically on duty full-time at their institutions.

One study of faculty found that outside income was earned by 74 percent of faculty members on academic-year appointments and by 51 percent of those on calendar-year appointments (Dunham and others, 1963, pp. 145-149; Bayer, 1973, p. 18). The amounts and sources of these earnings are shown in table 21. It appears that earnings from sources other than contract salary amounted to about 19 percent of contract salary for those on 9-10 months contract and 11 percent of salary for those on 11-12 months contracts (table 22).

As would be expected, these extra-salary earnings are not distributed equitably among all ranks and disciplines. They are relatively higher for those in the upper ranks than for the lower ranks. They are undoubtedly greater for the more distinguished faculty than for the less distinguished. Indeed, there are some exceptional faculty members who have become millionaires through their inventions, writings, or consulting. Moreover, the outside earnings are distributed unequally among the disciplines. Those in natural sciences, economics, psychology, medicine, law, business, etc., do better than those in the humanities, anthropology, sociology, etc. But the phenomenon of outside earnings is widespread in all ranks and all disciplines.

Table 21.--Faculty Members with Earnings from Sources Other than Contract Salary, 1961-62.

Positions	Those on 9-10 months contracts		Those on 11-12 months contracts	
	Percentage who received outside earnings	Mean amount of such earnings	Percentage who received outside earnings	Mean amount of such earnings
By ranks:				
Professors	80%	$ 3,026	58%	$ 2,336
Associate professors	78	2,269	52	2,090
Assistant professors	74	1,700	49	1,768
Instructors	59	1,325	44	1,757
Other ranks	56	1,689	33	3,073
All ranks	74	2,165	51	2,248
By sources:				
Summer teaching	44	1,269	10	1,389
Other summer employment	11	1,774	4	1,533
Other teaching	13	935	7	949
Royalties	8	1,173	9	1,574
Speeches	9	243	9	258
Consulting fees	13	1,429	16	1,604
Retirement annuities	1	3,386	1	3,120
Research	7	1,836	4	2,540
Other professional earnings	10	1,287	10	2,280
Non-professional earnings	8	1,698	6	1,569

SOURCE: Dunham and others, 1963, pp. 145-49.

Table 22.--Mean Earnings from Sources Other than Contract Salary as Percentage of Mean Contract Salaries, by Type of Contract and Academic Rank

	Those on 9-10 months contracts	Those on 11-12 months contracts
Professors	22%	13%
Associate professors	20	11
Assistant professors	17	10
Instructors	13	11
Other ranks	13	11
All ranks	19	11

SOURCE: Estimated from data on salaries and extra-salary earnings in Dunham and others, 1963, pp. 133, 139 and 145-49. The averages include those with and without extra-salary earnings.

APPENDIX A

NOTES ON ESTIMATES OF FACULTY SALARIES AND COMPENSATION, 1903-04 to 1976-77

The accompanying table A contains estimates of average annual faculty salaries and compensation over the period from 1903-04 to 1976-77. The purpose of this appendix is to describe the data from which table A was constructed.

Various records of faculty salaries in American colleges and universities are available for the period since the turn of the century. For many of the years 1903-04 through 1959-60, salary records are available for 52 land-grant institutions. These records were gathered and summarized by Ruml and Tickton (1955), Tickton (1961), and Bokelman and others (1962). For some of the years 1939-40 through 1961-62, the American Association of University Professors conducted special salary surveys of a sample of leading colleges and universities, the sample varying from 36 to 41 institutions. The results of these surveys were published in the AAUP Bulletin year by year, the last such reports appearing in 1962 (Imlah and others).

In 1959-60, the AAUP launched a general "self-graded salary survey" intended to include many colleges and universities. This survey has been conducted by highly competent staff working under the direction of distinguished economists and has produced extraordinarily useful information including data on fringe benefits as well as salaries. The general surveys have been reported each year in the summer issue of the AAUP Bulletin, for example, in the 1977 summer issue on pages 146-228. As a by-product of these surveys, data on the earlier sample of 36 to 41 institutions have been tabulated and published annually.

Meanwhile, the U. S. Office of Education (later the National Center on Education Statistics) and the National Education Association had also been gathering useful information on faculty salaries. The OE and NCES reports were published in a series entitled, Higher Education Planning and Management Data (1957-58 through 1960-61), and in a series entitled Higher Education Salaries (1957-58 through 1970-71). Thereafter the reports appeared in three volumes prepared by the National Center on Education Statistics: Higher Education: Salaries and Fringe Benefits, 1971-72 and 1972-73 (1975); Higher Education: Salaries and Tenure of Instructional Faculty in Institutions of Higher Education (1976); Salaries, Tenure, and Fringe Benefits of Full-time Instructional Faculty in Institutions of Higher Education, 1975-76

Table A.--Estimated Average Faculty Salaries and Faculty Compensation, All Ranks and All Institutions of Higher Education, 1903-04 through 1976-77, Current and Constant (1967) Dollars (Full-time faculty for academic year of nine months)

	Current dollars		Constant dollars	
Year	Salary	Compen-sation	Salary	Compen-sation
1903-04	$1,330	$1,343	$4,926	$4,974
1904-05	1,370	1,384	5,074	5,126
1905-06	1,410	1,424	5,222	5,274
1906-07	1,450	1,465	5,179	5,232
1907-08	1,489	1,504	5,318	5,371
1908-09	1,513	1,528	5,604	5,660
1909-10	1,536	1,551	5,486	5,539
1910-11	1,560	1,576	5,571	5,629
1911-12	1,583	1,600	5,459	5,517
1912-13	1,607	1,626	5,541	5,607
1913-14	1,637	1,658	5,475	5,545
1914-15	1,666	1,689	5,498	5,574
1915-16	1,696	1,813	5,367	5,737
1916-17	1,750	1,778	4,916	4,994
1917-18	1,785	1,815	4,270	4,342
1918-19	1,898	1,932	3,913	3,984
1919-20	2,195	2,237	3,927	4,002
1920-21	2,458	2,507	4,327	4,414
1921-22	2,641	2,693	5,089	5,189
1922-23	2,702	2,756	5,329	5,436
1923-24	2,738	2,795	5,348	5,459
1924-25	2,774	2,832	5,345	5,457
1925-26	2,809	2,868	5,320	5,432
1926-27	2,852	2,915	5,432	5,552
1927-28	2,925	2,989	5,658	5,781
1928-29	2,945	3,013	5,741	5,873
1929-30	2,974	3,042	5,866	6,000
1930-31	3,036	3,106	6,351	6,498
1931-32	3,013	3,082	6,958	7,118
1932-33	1,755	2,818	6,905	7,063

Table A (continued)

Year	Current dollars		Constant dollars	
	Salary	Compensation	Salary	Compensation
1933-34	$2,672	$2,733	$6,765	$6,919
1934-35	2,588	2,648	6,374	6,522
1935-36	2,661	2,722	6,443	6,591
1936-37	2,781	2,845	6,590	6,742
1937-38	2,811	2,876	6,599	6,751
1938-39	2,838	2,903	6,773	6,928
1939-40	2,864	2,930	6,852	7,010
1940-41	2,872	2,944	6,664	6,831
1941-42	2,881	2,959	6,196	6,363
1942-43	2,945	3,030	5,855	6,024
1943-44	3,153	3,251	6,029	6,216
1944-45	3,361	3,472	6,306	6,514
1945-46	3,569	3,694	6,351	6,573
1946-47	3,776	3,916	6,022	6,246
1947-48	4,061	4,219	5,843	6,071
1948-49	4,277	4,452	5,957	6,201
1949-50	4,378	4,566	6,097	6,359
1950-51	4,527	4,731	6,036	6,308
1951-52	4,676	4,896	5,942	6,221
1952-53	4,877	5,116	6,112	6,411
1953-54	5,077	5,336	6,323	6,645
1954-55	5,244	5,522	6,522	6,868
1955-56	5,410	5,708	6,696	7,064
1956-57	5,759	6,087	6,947	7,343
1957-58	6,107	6,467	7,143	7,564
1958-59	6,507	6,904	7,479	7,936
1959-60	6,905	7,340	7,847	8,341
1960-61	7,387	7,867	8,281	8,820
1961-62	7,715	8,232	8,563	9,137
1962-63	8,115	8,675	8,898	9,512

Table A (continued)

Year	Current dollars		Constant dollars	
	Salary	Compensation	Salary	Compensation
1963-64	$8,489	$9,109	$9,197	$9,869
1964-65	8,904	9,581	9,503	10,225
1965-66	9,357	10,134	9,757	10,567
1966-67	9,901	10,762	10,042	10,915
1967-68	10,517	11,485	10,301	11,249
1968-69	11,210	12,342	10,477	11,535
1969-70	12,046	13,323	10,651	11,780
1970-71	12,662	14,093	10,658	11,863
1971-72	13,176	14,783	10,689	11,990
1972-73	13,871	15,646	10,736	12,110
1973-74	14,736	16,740	10,496	11,923
1974-75	15,635	17,840	10,120	11,547
1975-76	16,634	19,079	10,027	11,500
1976-77	17,549	20,234	9,982	11,510

(1977). The more recent reports contain a wealth of detail. The National Education Association began biennial surveys of faculty salaries in 1952-53, presenting the results in the form of distributions and medians. The 1952-53 report was entitled Salary-Schedule Provisions or Salaries Paid in Degree-Granting Institutions, 1952-53 (1953); the reports for 1955-56 through 1963-64 were called Salaries Paid and Salary Practices in Universities, Colleges, and Junior Colleges; the reports in 1965-66 through 1971-72 were entitled Salaries in Higher Education or Salaries Paid and Salary-Related Practices in Higher Education. Publication ceased in 1971-72 but the NEA continues to produce summary research reports on faculty salaries. Another useful source is George J. Stigler, Trends in Employment in the Service Industries, Princeton: Princeton University Press, 1956, p. 134. Stigler's data cover the years 1929-52. See U. S. Bureau of the Census, Historical Statistics of the United States, 1975, Volume I, pp. 175-76.

In preparing the estimates of average faculty salaries and compensation for the present study, data from all these sources were reviewed and compared. There was close agreement among all of them as to general trends. The few slight differences could be explained by the fact that some data were expressed in medians and some in means, some provided weighted averages and others provided only averages of data for the several faculty ranks, institutional samples differed, and rates of response to questionnaires varied over time. Yet the trends revealed by these several sources were so similar that one could present final estimates based upon these data with considerable assurance that they represented the broad general movement of faculty salaries over three-quarters of a century.

The estimates of average faculty salaries were tied to the 1975-76 figure provided by the National Center of Education Statistics (Digest of Education Statistics, 1976, p. 102). This figure was $16,634. Then the estimates for other years were estimated on the basis of AAUP surveys for the years 1957-58 to 1974-75, AAUP surveys of 36 to 41 institutions for the years 1949-50 to 1956-57, and the land-grant data of Tickton and Bokelman for the years before 1949-50. Other data were used to check these results and to fill in the interstices. Finally, missing years were filled in by simple straight-line estimation.

The estimates of fringe benefits were also based primarily on the AAUP general surveys for the years 1959-60 through 1976-77. There is little information on fringe benefits for the period prior to 1959-60 except for data on numbers of institutions offering various kinds of benefits (e.g., Office of Education, 1957-57, pp. 58-59). The reason for this paucity of data on fringe benefits is that they assumed importance as an element of total compensation only in the 1950s and the gatherers of statistics caught up with the phenomenon of rapidly increasing fringe benefits only in the last two decades. The estimates of total compensation prior to 1959-60 were based on the AAUP finding that fringe benefits added about 6 percent to salaries in the late fifties, and on the assumption that they added about 3.5 percent at the end of World War II, 2 percent at the end of World War I, and 1 percent

prior to World War I. These percentages are guesses based on the timing of the introduction of the various forms of compensation we now call fringe benefits. See U. S. Bureau of the Census, Historical Statistics of the United States, Vol. I, pp. 174-75 for data on supplements to wages and salaries for the period 1929-70.

The data on trends in faculty salaries and compensation, as shown in table A could be concealing great differences in trends for different types of institutions, for different faculty ranks, or for different parts of the country. Appendix tables B and C provide information indicating that the parts seem to move with the whole. Differences among the parts do exist, but they tend to be minor. The overall structure of academic compensation remains fairly constant over time.

Table B.--Index Numbers of Average Faculty Salaries or Compensation, by Classes of Institutions and Sources of Data, Selected Years 1939-40 through 1976-77 (1961-62 = 100)

	1939-1940	1949-1950	1959-1960	1961-1962	1967-1968	1971-1972	1975-1976
Salaries							
52 land-grant institutions[1]	36	55	87	100	---	---	---
6 large state universities[2]	38	59	91	100	---	---	---
4 medium and large private universities, southern[2]	40	54	88	100	---	---	---
4 medium and large private universities, central and western[2]	39	57	89	100	---	---	---
5 liberal arts colleges, central and western[2]	36	53	91	100	---	---	---
5 medium private universities, eastern[2]	42	55	90	100	---	---	---
3 private women's colleges, eastern[2]	40	51	87	100	---	---	---
5 large private universities, eastern[2]	50	60	90	100	---	---	---
6 liberal arts colleges, eastern[2]	45	55	90	100	---	---	---
All institutions, NEA data[3]	--	--	--	100	139	171	210
All institutions, AAUP data[4]	--	--	--	100	136	169	207
Compensation[5]							
All institutions, AAUP data	--	--	92	100	141	180	225
All universities	--	--	--	100	143	180	211
All comprehensive universities and colleges	--	--	--	100	136	178	226
All four-year colleges	--	--	--	100	141	167	209
All two-year colleges	--	--	--	100	144	198	248

[1]Bokelman and others, 1962.

[2]AAUP Bulletin, Spring 1962, pp. 38-40.

[3]Medians. National Education Association data summarized in American Council on Education, A Fact Book on Education, 3rd issue, 1976, p. 148, and National Center for Education Statistics, HEW, Digest of Education Statistics, 1976 Edition, 1977, p. 103.

[4]AAUP Bulletin, Summer, 1977, p. 172 and annual summer issues.

[5]AAUP Bulletin, annual summer issues.

Table C.--Index Numbers of Average Faculty Salaries or Compensation, by Academic Ranks, Selected Years 1929-30 through 1976-77 (1961-62 = 100)

	1929-1930	1939-1940	1949-1950	1959-1960	1961-1962	1967-1968	1971-1972	1975-1976
52 land-grant institutions[1]								
Professor	39	37	54	85	100	---	---	---
Associate Professor	38	37	56	87	100	---	---	---
Assistant Professor	39	36	57	89	100	---	---	---
Instructor	36	34	57	91	100	---	---	---
6 large state universities[2]								
Professor	--	39	58	92	100	---	---	---
Associate Professor	--	38	60	92	100	---	---	---
Assistant Professor	--	39	61	92	100	---	---	---
Instructor	--	36	59	88	100	---	---	---
5 large private universities[2]								
Professor	--	50	61	90	100	---	---	---
Associate Professor	--	57	62	90	100	---	---	---
Assistant Professor	--	49	60	90	100	---	---	---
Instructor	--	39	53	89	100	---	---	---
5 liberal arts colleges[2]	--	36	50	91	100	---	---	---
Professor	--	36	50	91	100	---	---	---
Associate Professor	--	36	53	91	100	---	---	---
Assistant Professor	--	39	56	92	100	---	---	---
Instructor	--	34	54	92	100	---	---	---
All institutions (compensation)[3]								
Professor	--	--	--	93	100	144	182	228
Associate Professor	--	--	--	92	100	142	180	226
Assistant Professor	--	--	--	92	100	140	178	223
Instructor	--	--	--	93	100	137	178	223

[1] Bokelman and others, 1962. [2] AAUP Bulletin, Spring 1962, pp. 38-40.

[3] AAUP Bulletin, Annual summer issues.

APRENDIX B

TRENDS IN SALARIES AND COMPENSATION OF WORKERS IN VARIOUS OCCUPATIONS AND INDUSTRIES, 1904 to 1975

This appendix provides basic information on salaries and compensation of workers in a wide variety of occupations and industries over the period from 1904 to 1975 or 1976. These data are used in the text for comparing growth rates of salaries and compensation in colleges and universities with those of workers in other fields. See tables 7, 8, 9, 10, and 11 in Chapter III. The data presented here are not all strictly comparable. Some relate only to salaries, and some to compensation with fringe supplements counted with varying degrees of completeness. Some are available only for part of the period from 1904. In some years, estimates have been necessary. Definitions of occupations and industries are not always consistent. Nevertheless, a substantial amount of information is provided and collectively this information leaves little doubt about comparative trends in salaries and compensation of workers in higher education as compared with other groups in the labor force.

Data do not cover every year from 1904 because the purpose is to compare basic trends rather than complete information on every minor variation. The dates selected are turning points in underlying economic conditions. See the text in Chapters II and III for descriptions of economic conditions in each period.

Table D.--Trends in Remuneration of Employees, Selected Industries or Industry Groups, 1904-1975

Calendar Year	Average Annual Compensation: All civilian full-time employees in all occupations and industries[1]	Average Annual Compensation: Full-time employees in manufacturing[2]	Legal minimum hourly wage rates for non-farm workers[3]	Indexes of Union Hourly Wage Rates[4]: building trades	Indexes of Union Hourly Wage Rates[4]: printing trades	Indexes of Union Hourly Wage Rates[4]: motor truck drivers and helpers	Average Annual Salaries: all employees of domestic air carriers[5]	Average Annual Earnings: full-time employees domestic telephone and telegraph industry[6]
1904	$ 480	$ 540	---	---	---	---	---	$ 448
1914	637	702	---	9.8	11.1	---	---	597
1920	1,338	1,541	---	18.5	19.9	---	---	1,115
1923	1,276	1,414	---	19.6	22.7	---	---	1,199
1930	1,387	1,503	---	25.7	26.7	---	---	1,410
1932	1,141	1,166	---	22.0	26.7	---	---	1,335
1935	1,157	1,231	---	21.8	26.5	---	---	1,378
1940	1,359	1,507	$ .30	26.9	29.6	---	---	1,610
1943	2,020	2,451	.30	29.8	32.2	---	---	1,878
1946	2,482	2,634	.40	34.2	39.2	---	---	2,413
1952	3,590	4,103	.75	53.2	62.7	49.9	---	3,443
1961	5,315	6,114	1.15	78.4	83.2	78.2	$ 7,175[7]	5,402
1970	8,409	9,352	1.60	128.8	121.2	122.5	12,737	8,141
1975	12,393	13,281	2.10	188.3	179.8	190.1	18,300	13,236

[1]Average annual earnings plus average fringe supplements. Average annual earnings for 1929-1970 were estimates of the U.S. Department of Commerce and for 1904-1923 estimates of Professor Stanley Lebergott. See Bureau of the Census, Historical Statistics of the United States, 1975, p. 164. Average annual earnings for 1975 were estimated on the basis of average weekly earnings in private non-agricultural employment as reported by the Bureau of Labor Statistics of the U.S. Department of Labor. (See Economic Report of the President, 1976, p. 205.) Data on fringe supplements for 1929-1970 were from Historical Statistics of the United States, op. cit., p. 174. Fringes for the years 1904-1928 and 1970-1975 were estimated by the author. See Statistical Abstract of the United States, 1976, p. 381.

[2]Average annual earnings plus fringe supplements. Data for 1904-1970 from Historical Statistics of the United States, op. cit., pp. 166, 174. Fringe supplements for 1904-1928 and 1970-1975 were estimated by the author. Figure for 1975 estimated on the basis of average weekly earnings in manufacturing as reported by Bureau of Labor Statistics.

[3]U.S. Department of Labor, Employment Standards Administration, Minimum Wage and Maximum Hours Standards Under the Fair Labor Standards Act, 1976, pp. 14-15.

[4]Historical Statistics of the United States, op. cit., Vol. I, p. 171; Statistical Abstracts of the United States, various years; for example, 1976, p. 383. Year-to-year comparisons are not precise because of fluctuations in the numbers of workers within the classifications studied. The base year is 1967.

[5]Statistical Abstract of the United States, 1976, p. 616 and 1972, p. 568. Figure for 1961 estimated by the author on the basis of the figure for 1962 and later years.

[6]Historical Statistics of the United States, Vol. 1, p. 166. Figure for 1975 was projected by the author on the basis of the figure for 1974. Statistical Abstract of the United States, 1976, p. 532.

[7]Estimate of the author based on published figures for 1962 and thereafter.

Table E.--Trends in Compensation of Federal Employees, 1904-1976

Calendar Year	Average Annual Compensation[1] Full-time Civilian Federal Employees	Basic Annual Pay Rates[2] Professional and Administrative Employees of the Federal Government			Salaries[4]		
		Grade P4 or GS 11	Grade P6 or GS 13	Grade P8 or GS 15	Military Officers	Cabinet Officers	Members of Congress
1904	$ 973	---	---	---	---	---	---
1914	1,221	---	---	---	---	$ 12,000	$ 7,500
1920	1,743	---	---	---	---	12,000	7,500
1923	1,743	$ 4,000	$ 6,500	---	---	12,000	7,500
1930	1,821	4,000	5,800	$ 8,500	---	15,000	10,000
1932	1,886	4,000	5,800	8,500	---	15,000	10,000
1935	1,810	4,000	4,000	8,500	---	15,000	10,000
1940	1,955	4,000	4,000	8,500	---	15,000	10,000
1943	2,662	4,000	4,000	8,250	---	15,000	10,000
1946	3,061	5,153	7,342	10,000	$ 4,128	15,000	10,000
1952	4,201	6,140	8,560	11,050	6,234	22,500	10,000
1961	6,638	7,820	10,896	14,055	8,884	25,000	22,500
1970	11,530	12,302	17,319	23,648	12,947	60,000	42,500
1975	15,804	16,797	23,670	32,353	18,800	60,000	42,500
1976	16,657	17,625	25,118	34,915	20,000	63,000	44,500
1977	---	---	---	---	---	---	57,500

[1]Average annual earnings plus fringe supplements. U.S. Bureau of the Census, Historical Statistics of the United States, Vol. I, pp. 167, 174. Data on fringe supplements are available only for federal and for state and local employees combined. Supplements for the two groups were pro-rated on the basis of average earnings of the two groups. Estimates of compensation for 1975 were based on data in Statistical Abstract of the United States, 1976, p. 251, and on data in U.S. Department of Labor, Bureau of Labor Statistics, National Survey of Professional, Administrative, Technical, and Clerical Pay, Bulletin 1931, 1976, pp. 64-65. See also Historical Statistics of the United States, Vol. II, p. 1103.

[2]Data supplied by U.S. Civil Service Commission. Refers to Schedule B which is the second of seven in-service steps.

[3]Basic data from Historical Statistics of the United States, Vol. I, pp. 175-76. Figures for 1904, 1914, 1946, and 1961 interpolated. Figure for 1975 estimated on basis of data in Statistical Abstract of the United States, 1973, p. 271; 1975, p. 238; and 1976, p. 341.

[4]Statistical Abstract of the United States, 1976, p. 253.

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Table F.--Trends in Compensation of State and Local Government Employees, 1904-1975

Calendar Year	Average Annual Compensation[1] All State and Local Government Employees	Average Annual Earnings[2] City Employees (other than those in education)	Teachers: Average Annual Salaries in Public Elementary & Secondary Schools[3]	in Public Elementary Schools[5]	in Public Secondary Schools[5]
1904	$ 641	---	$ 374[4]	---	---
1914	804	---	525	---	---
1920	1,188	---	871	---	---
1923	1,367	---	1,197[4]	---	---
1930	1,567	---	1,420	---	---
1932	1,480	---	1,417	---	---
1935	1,327	---	1,255[4]	---	---
1940	1,550	---	1,441	---	---
1943	1,735	---	1,618[4]	---	---
1946	2,314	---	1,995	---	---
1952	3,190	---	3,450	$ 3,024	$ 3,580
1961	5,141	$ 4,884	5,437	5,075	5,543
1970	8,505	8,172	8,840	8,412	8,891
1975	12,050	11,664	12,027	11,300	12,000
1976	12,894	---	12,849	12,100	12,800

[1]Average annual earnings plus average fringe supplements. Data from 1904 to 1970 from U.S. Bureau of the Census, Historical Statistics of the United States, Vol. 1, pp. 167, 174. Data on fringe supplements are available only for federal and for state and local employees combined. Supplements for the two groups were pro-rated on the basis of average earnings for the two groups. Estimates for 1975 were based on data in Statistical Abstract of the United States, 1976, pp. 166, 287. Estimates of fringe supplements before 1929 were made by the author.

[2]Statistical Abstract of the United States, 1967, p. 443; 1969, p. 434; 1975, p. 275; 1976, p. 287. Data for the month of October of each year multiplied by 12. Does not include fringe supplements.

[3]Historical Statistics of the United States, op. cit., Vol. I, pp. 375-76. Figures for 1975 and 1976 estimated on the basis of data in Statistical Abstract of the United States, 1976, p. 134.

[4]Interpolated.

[5]Data of National Education Association. Statistical Abstract of the United States, 1964, p. 127; 1969, p. 119; 1973, p. 125; 1976, p. 134. Figure for 1952 estimated by the author.

Table G.--Trends in Annual Net Income, Selected Professional Workers, 1930-1975[1]

Calendar Year	Lawyers (averages)	Physicians (averages)	Dentists (averages)	Salaried engineers (medians)	Pilots and Co-pilots: Domestic Air Carriers (averages)[2]
1930	$ 5,194	$ 4,870	$ 4,020	$ 3,468[3]	---
1932	4,156	3,178	2,479	2,820	---
1935	4,272	3,695	2,485	2,676[3]	---
1940	4,507	4,441	3,314	3,492[3]	---
1943	5,945	8,370	5,715	4,008	---
1946	6,951	10,202	6,381	4,908	---
1952	9,021	14,640	10,873	6,036[3]	---
1961	16,780	27,718	16,020	12,360[3]	$ 16,950
1970	27,184	49,800	30,770	17,760	34,348
1975	36,700	55,925	43,570	23,798	42,500

[1]Data for 1930-1952 from U.S. Bureau of the Census, Historical Statistics of the United States, Vol. I, pp. 175-76. Data for 1961 to 1975 were estimated by the author using: median net income as presented in the above source; indexes of medical and dental fees as presented in Statistical Abstract of the United States, 1976, p. 72; median net earnings from practice of incorporated physicans, ibid., p. 80; U.S. Census of Occupations for 1949, 1959, and 1969; and the Bureau of Labor Statistics data for salaried lawyers. These estimates should be regarded as no more than roughly approximate.

[2]Statistical Abstract of the United States, 1976, p. 616 and 1972, p. 568. Figure for 1961 estimated by the author on the basis of the figure for 1962 and later years.

[3]Estimated by interpolation. The estimate for 1975 was based on data in table H.

Table H.--Trends in Median Salaries of Scientists and Engineers with Doctorates, 1961-1975[1]

	1961[2]	1970	1974
Scientists with Doctorates			
Chemists	$ 11,500	$ 17,400	$ 21,500
Physicists and Astronomers	12,000[3]	17,300	22,100
Mathematicians	10,500	14,700	21,200
Computer specialists	---	19,700	22,200
Earth scientists	10,000	15,600[4]	21,700
Atmospheric scientists	11,500[5]	17,600	26,900
Engineers	11,000[6]	---	23,200
Biologists	9,500	16,000	19,900
Agricultural scientists	9,500	16,300	20,600
Psychologists	9,500	16,000	21,100
Economists	---	17,400	24,200
Sociologists	---	15,000	20,900
All fields, including those not listed)	10,500	16,500	21,900
Scientists Employed in Private Business			
Chemists	10,500	16,200	19,000
Physicists and Astronomers	12,500[3]	18,000	22,300
Mathematicians	11,500	19,000	20,700
Computer specialists	---	16,800	18,200
Earth scientists	10,000	15,700[5]	20,200
Atmospheric scientists	9,500[5]	15,000	---
Engineers	10,700[6]	---	19,000
Biologists	11,000	17,000	18,900
Agricultural scientists	8,000	12,200	17,900
Psychologists	13,000	19,600	19,600
Economists	---	20,000	24,500
Sociologists	---	---	---
All fields (including those not listed)	11,000	16,000	19,000

[1]Scientific Manpower Commission, Salaries of Scientists, Engineers, and Technicians, Washington, 1964, pp. 7, 9; 1971, pp. 23-24; 1977, pp. 28-29.

[2]Interpolated using 1960 and 1962 data.

[3]Physicists only.

[4]Includes marine scientists.

[5]Meteorologists.

[6]Sanitary engineers only.

Table I.--Trends in Average Salaries for Selected Professional and Administrative Positions in Private Industry, 1961-1976[1].

	1961	1970	1975	1976
Accountant IV (5)[2]	$ 8,724	$ 12,755	$ 17,618	$ 18,738
Auditor III (4)	7,728	11,475	15,334	16,059
Chief Accountant IV (4)	15,012	23,133	32,094	33,916
Attorney IV (6)	11,604	20,304	28,159	29,828
Attorney VI (6)	15,336	28,032	41,046	43,747
Buyer IV (4)	---	13,895	18,983	20,075
Job Analyst IV (3)	9,612	13,035	18,459	19,142
Director of Personnel III (4)	12,442	18,419	25,033	26,845
Chemist V (8)	11,424	17,066	22,700	24,099
Chemist VII (8)	15,456	22,937	31,362	33,559
Engineer VI (8)	13,368	19,471	26,109	27,737
Engineer VIII (8)	19,056	25,393	34,114	36,236

[1]U.S. Department of Labor, Bureau of Labor Statistics, National Survey of Professional, Administrative, Technical, and Clerical Pay, Washington: U.S. Government Printing Office, annual 1961 and thereafter.

[2]The various grades for each occupation are designated by Roman numerals. In most cases there are four to eight grades for a given occupation. Numbers in parentheses indicate the number of grades for each occupation. In general, grade I refers to an entry level position involving a relevant baccalaureate degree or equivalent experience, minimal responsibility, and considerable supervision. Grade IV represents a senior position involving considerable experience and responsibility and supervision of others. Attorneys require a law degree for entry.

APPENDIX C

COMPARATIVE SALARIES AND COMPENSATION OF WORKERS IN VARIOUS OCCUPATIONS AND INDUSTRIES, 1976-77

This appendix provides data on remuneration of workers in a wide variety of occupations as of 1977. These data are the raw material for comparisons between the pay of workers in higher education and the pay of workers in other occupations and industries. The comparisons are discussed in Chapter IV of the text. However, the reader may wish to examine the data in this appendix as a way of becoming familiar with detail on the way people in various walks of life are paid.

Tables J, K, and L relate to the pay of workers in higher education; tables M through S relate to the remuneration of various categories of workers ranging from top management to skilled technicians and foremen in private business and hospitals. The data for colleges and universities refer to the fiscal year 1976-77 and the data for other employing organizations refer to the calendar year 1977.

Table J.--University and College Faculties, Annual Salaries and Compensation, 1976-77
(in Thousands of Dollars)

	Lower[1] Quartile	Median	Mean	Upper[2] Quartile	99th Percentile
Annual Salaries					
Nine to ten months employment					
Professors in doctoral-granting universities[3]	$ 22.4	$ 24.5	$ 28.4	$ 27.1	$ 31.7
All professors	16.7	19.7	23.9	23.1	27.6
Associate professors	14.2	16.2	18.1	18.4	21.5
Assistant professors	12.1	13.8	14.8	15.3	17.5
Instructors	10.3	11.4	11.9	12.7	14.8
Eleven to twelve months employment					
Professors in doctoral-granting universities[3]	26.2	28.7	33.0	31.7	37.1
All professors	19.5	23.0	28.0	27.0	32.3
Associate professors	17.8	20.2	22.6	23.0	26.9
Assistant professors	15.0	17.1	18.4	19.0	21.7
Instructors	10.9	12.1	12.6	13.5	15.7
Annual Compensation[4]					
Nine to ten months employment					
Professors in doctoral-granting universities[3]	25.4	27.7	33.2	30.6	35.9
All professors	18.9	22.3	27.5	26.1	31.2
Associate professors	16.1	18.4	20.9	20.9	24.4
Assistant professors	13.7	15.6	17.1	17.3	19.8
Instructors	11.6	12.9	13.7	14.3	16.7
Eleven to twelve months employment					
Professors in doctoral-granting universities[3]	29.7	32.4	38.6	35.8	42.0
All professors	22.1	26.1	32.2	30.5	36.5
Associate professors	20.1	23.0	26.1	26.1	30.5
Assistant professors	17.0	19.3	21.2	21.4	24.6
Instructors	12.3	13.7	14.5	15.2	17.7

SOURCE: Basic data relate to annual compensation for 9 to 10 months employment. AAUP Bulletin, August 1977, pp. 152, 162. Data on salaries were estimated by adjusting figures on compensation for fringe benefits. Fringe benefits as percentage of total compensation were as follows: professors 13.1%; associate professors 13.4%; assistant professors 13.4%; instructors 12.9%. Ibid., p. 152. Data for persons on 11 to 12 months employment were estimated by adjusting data for 9 to 10 months employment. The adjustment factors were based on information in Department of HEW, National Center for Education Statistics, Salaries and Tenure of Instructional Faculty in Institutions of Higher Education, 1974-75, pp. 20-24 and 28-31. The adjustment factors were: professors 1.17; associate professors 1.25; assistant professors 1.24; and instructors 1.06. The mean for professors in doctoral-granting universities was estimated on the basis of medians and quartiles.

[1] Midpoint between 20th and 30th percentile.

[2] Midpoint between 70th and 80th percentile.

[3] Institutions that offer the doctorate and that conferred in the three most recent years an annual average of 15 or more earned doctorates covering a minimum of three non-related disciplines.

[4] Salaries plus fringe benefits.

Table K.--University and College Administrative Staffs, Estimated Annual Salaries and Compensation, 1976-77 (in Thousands of Dollars)

	Salaries			Compensation		
	First Quartile	Median	Third Quartile	First Quartile	Median	Third Quartile
Top Administrative Positions						
Chief executive officer	$ 30.6	$ 36.7	$ 43.5	$ 36.5	$ 45.1	$ 56.4
Chief health affairs officer	28.8	33.8	42.2	32.9	38.1	47.8
Chief academic officer	23.7	29.0	35.3	26.6	33.0	40.2
Chief planning officer	21.5	27.4	33.8	25.1	31.3	39.1
Staff legal counsel	20.3	27.0	32.7	--	30.8[1]	--
Chief business officer	20.3	25.7	32.7	23.3	29.4	37.9
Chief student life officer	18.5	24.0	29.0	21.5	27.5	34.0
Chief development officer	19.0	23.9	29.0	22.4	27.8	34.2
Chief budget officer	18.7	22.8	27.9	--	26.0[1]	--
Director, community services	18.2	22.0	26.1	--	25.1[1]	--
Director of institutional research	17.5	21.5	26.1	19.9	24.6	30.3
Director of athletics	17.3	21.1	26.1	--	24.1[1]	--
Deans and directors, schools and colleges, average of medians (19 positions)	--	32.1	--	--	36.5	--
Other administrative positions, average of medians (18 positions)	--	18.1	--	--	21.0[1]	--

SOURCE: Estimates based on a report of College and University Personnel Association (CUPA), 1975-76 Administration Compensation Survey Research Report, Washington, 1976, pp. 16, 88. The adjustment to 1976-77 was based on the increase in faculty salaries of 5.5 percent as reported in AAUP Bulletin, August 1977, p. 155.

[1]Estimated by increasing corresponding salary figures 14 percent, this percentage being the prevailing amount of fringe benefits for administrative staff.

Table L.--University and College Physical Plant Staffs, Estimated Annual Salaries, 1976-77 (in Thousands of Dollars)

	Estimated Annual Salary (Medians)
Administrative and Professional	
Chief physical plant administrator	$ 26.6
Associate administrator	23.1
Assistant administrator	19.1
Principal planner	21.2
Principal construction engineer	20.1
Chief engineer	19.4
General Service	
Utility or power plant superintendent	17.1
Shop superintendent	16.8
Custodial superintendent	14.8
Grounds superintendent	14.7
Skilled trades supervisor	14.0
Custodial supervisor	10.9
Power plant equipment operator	11
Skilled tradesman	11.7
Skilled gardeners	9.0
Custodians	7.9
Skilled laborer	8.7

SOURCE: The Association of Physical Plant Administrators of Universities and Colleges, Comparative Unit Cost and Wage Report on Maintenance and Operations of Physical Plants of Universities and Colleges. Washington: APPA, 1976, p. 42. Data for 1974-75 were adjusted to 1976-77 on the basis of average increases in faculty salaries of 6.4 percent in 1975-76 and 5.5 percent in 1976-77. AAUP Bulletin, August 1977, p. 155.

Table M.--Annual Salaries, Attorneys Employed in Private Companies, 1977 (in Thousands of Dollars)

	Annual Salaries
Top Legal Executives (averages)[1]	
Manufacturing, non-durable goods, sales over $2 billions	$ 130.3
Manufacturing, durable goods, sales $1 to $2 billions	99.8
Gas and electric utilities, sales $0.5 to $1.0 billions	68.8
Life insurance companies, $2.5 to $7.0 billions insurance in force	45.6
General Attorney, Second Level (medians)[2]	
Companies with sales over $1 billions	38.8
Companies with sales under $200 millions	27.0
Patent Counsel (medians)[2]	
Companies with sales over $600 millions	38.0
Companies with sales under $200 millions	30.0
Patent Attorney (averages)	
I Junior patent attorney, experience 0-1 year	24.4
II Patent attorney, experience 2-4 years	26.6
III Patent attorney, experience 5-8 years	29.9
IV Senior patent attorney, experience over 8 years	35.5
Attorney (averages)	
I Junior attorney, experience 0-1 year	18.7
II Attorney, experience 2-4 years	21.6
III Attorney, experience 5-8 years	28.0
IV Senior attorney, experience over 8 years	31.9

[1] American Management Association, Executive Compensation Service, Top Management Report, 1977, pp. 81, 268, 279; Middle Management Report, 1977, pp. 217-24; Professional and Scientific Report, 1977, pp. 152-57.

Table N.--Average Compensation (Salary and Bonus) of Top Executives in Private Companies, by Selected Types and Sizes of Companies, 1977 (in Thousands of Dollars)

	Manufacturers of Non-durable Goods			Gas and Electric Public Utilities:	Retail or Wholesale Trade:
	Sales of $500 millions to $1 billion[1]	Sales of $8 to $10 million[2]	Divisions of Large Companies with Divisional Sales of $10 to $25 millions[3]	Sales of $200 to $500 millions[4]	Sales of over $1 billion[5]
Chief executive officer	$ 239	$ 66	$ 58[6]	$ 115	$ 267
Chief operating officer	176	63	--	82	242
Executive vice president	147	47	--	79	171
Top financial executive	111	34	--	58	144
Administrative vice president	105	--	--	53[8]	--
Top marketing executive	101	44	42	43	86
Top legal executive	83	--	--	54	110
Top manufacturing executive	81	33	35	50	--
Top research executive	77	--	36	41[8]	--
General sales executive	--	34	35	--	--
Top industrial relations executive	76	--	25	40	85
Long-range planning executive	72	--	--	49[8]	90
Controller	71	--	31[7]	39	74
Secretary	67	--	--	39	73
Treasurer	65	--	--	44	--
Top engineering executive	59	--	29	49	79
Product development executive	--	--	--	--	--
Top purchasing executive	50	21	23	35	--
Top advertising executive	50	--	--	--	54
Top electronic data processing executive	50	19	--	35	71
Top tax executive	47	--	--	32	54
Top public relations executive	45	--	--	39	76
Top transportation executive	43	--	--	--	--
Auditor	37	--	--	31	50

[1]American Management Association, Executive Compensation Service, Top Management Report, 28th edition, 1977.

[2]Ibid., pp. 67-68.

[3]Ibid., pp. 101-05.

[4]Ibid., pp. 278-79.

[5]Ibid., pp. 85-86.

[6]General manager.

[7]Chief accounting officer.

[8]Includes companies with sales above $500 millions.

Table O.--Median Compensation (Salary and Bonus) of Middle Management Executives in Private Companies, by Relative Scope of Positions, 1977 (in Thousands of Dollars)

	Relative Scope or Responsibility of Position Involved[1]				
	Very Small	Small	Medium	Large	Very Large
Regional sales executive	$ 23.1	$ 25.3	$ 29.2	$ 33.5	$ 37.3
Advertising manager, second level	--	18.3	21.2	26.9	--
Marketing research executive	--	23.5	25.6	31.9	--
Plant or factory manager	22.2	27.8	29.1	32.6	38.7
Production planning and control executive	17.4	17.6	20.0	22.3	27.9
Purchasing agent	15.4	19.2	21.2	22.3	24.4
Corporate insurance administrator	21.9	22.2	24.6	26.5	30.3
General accounting executive	20.0	22.6	24.1	29.7	37.0
Budgetary control executive	21.4	23.3	27.2	30.8	--
Electronic data processing executive	21.2	27.8	30.8	34.2	39.3
Office management executive	18.3	19.8	22.0	28.4	--
Tax compliance manager (finance)	--	--	26.3	--	--
Chief internal auditor (finance)	--	--	22.8	--	--
Systems and procedures executive (finance)	--	--	25.3	--	--
Personnel manager or director	22.3	25.4	28.6	29.5	40.8
Employee benefits executive (finance)	--	--	21.0	--	--
Management development executive	--	27.0	--	34.9	--
Safety director	19.9	22.8	--	25.5	29.0
Plant maintenance engineer	18.9	20.3	22.4	23.9	27.8
Research and development executive	--	25.0	30.0	39.3	--

SOURCE: American Management Association, Executive Compensation Service, Middle Management Report, New York: AMA, 1977. The positions included in the table were selected at random from more than 100 positions covered by the report. The relative scope or responsibility of each position is measured by the size of the company or by the volume of activity within the purview of the position.

Table P.--Weighted Average Annual Salaries, Selected Professional Positions in Private Companies, by Levels, 1977 (in Thousands of Dollars)

	Level I	Level II	Level III	Level IV	Level V	Level VI
Engineers						
Chemical	$ 15.5	$ 17.7	$ 21.6	$ 24.7	$ 29.7	$ 32.2
Civil	16.4	18.0	21.8	23.9	27.8	29.3
Electrical-Electronic	16.1	17.6	21.3	24.3	27.1	31.4
Mechanical	15.8	17.8	20.8	23.6	27.5	31.0
All branches (unweighted average)[1]	15.6	17.4	20.8	23.4	26.4	30.2
Scientists						
Biologist	12.1	14.1	14.8	18.3	24.3	31.2
Chemist	13.8	16.6	20.1	23.7	27.0	31.0
Geologist (Minerals)	15.2	19.2	19.2	23.8	25.9	29.4
Mathematician	13.8	16.3	22.8	22.1	27.4	35.5
Physicist	15.2	18.9	25.5	27.3	30.6	35.4
All branches (unweighted average)[2]	13.3	16.2	21.8	22.3	26.4	31.1
Accountants and Financial Analysts						
Accountant	12.6	14.7	17.6	20.0	--	--
Budget analyst	14.0	17.0	19.8	23.4	--	--
Internal auditor	13.2	16.2	19.6	23.2	--	--
All branches (unweighted average)[3]	13.7	16.0	18.9	22.5	--	--
Systems and Programming						
Software systems programmer	14.0	15.1	18.6	21.7	25.3	30.1
Systems analyst	15.2	18.0	20.8	23.4	25.9	26.0
All branches (unweighted average)[4]	13.6	15.8	18.7	21.6	24.2	26.6
Other						
Operations research analyst	13.2	16.9	20.0	25.0	--	--
Public relations representative	14.5	16.7	22.1	--	--	--
Publications editor	12.3	15.7	18.9	--	--	--
Technical librarian	13.0	15.0	17.6	--	--	--
Home economist	12.2	15.3	20.5	--	--	--
Airplane pilots and co-pilots[5]	20.4	19.7	22.1	26.6	27.1	33.9

SOURCE: American Management Association, Executive Compensation Service, Scientific Report. New York: AMA, 1977. The positions shown are a sample drawn from a total of 76 different positions. Though the definitions of the several levels vary among the occupations, in general

level I refers to an entering position held by a person with a bachelor's degree in the special field and little or no experience, and level VI refers to a position held by a person with more than 10 years of experience and in most cases a Ph.D. In level I the tasks are routine and do not involve great skill or heavy responsibility. They are carried out under close supervision. In level VI, the tasks are of major significance, and are complex and difficult, and involve heavy responsibility. They often entail supervision of others. The typical educational and experiential requirements for the several levels are as follows:

Level	Education	Experience in Years
I	B.A. or B.S.	0 - 1
II	B.A. or B.S.	1 - 3
III	B.A. or B.S.	3 - 5
IV	B.A. or B.S.	5 - 8
V	B.A. or B.S.	8 - 10
VI	Ph.D.	over 10

In the case of positions with only four levels, level IV typically requires only a baccalaureate degree and more than 8 years of experience.

[1]Includes, in addition to the specific positions mentioned: aeronautical, ceramic, industrial, metallurgical, nuclear, packaging, petroleum, quality control, reliability, safety, inside sales, and service engineering.

[2]Includes, in addition to the specific positions mentioned: geologist (petroleum), microbiologist, and pharmacologist.

[3]Includes, in addition to the specific positions mentioned: cost accountant, credit representative, economic or financial analyst, and tax accountant.

[4]Includes, in addition to the specific positions mentioned: methods and procedures analyst, applications programmer, and programmer analyst.

[5]

Level	
I	Co-pilot, heavy jet
II	Captain/pilot, light and medium non-jet
III	Pilot, helicopter
IV	Chief pilot, non-jet
V	Captain/pilot, heavy jet
VI	Chief pilot, jet

Table Q.--Weighted Average Annual Salaries, Selected Health-Service Occupations, 1977 (in Thousands of Dollars)

	Weighted Average Annual Salaries
Physicians	
Research medical director, private company[1]	$ 50.3
Medical director, private company[2]	
Employment under 10,000 (median)	43.7
Employment 10,000 and over (median)	47.0
Industrial physician[3]	34.5
Hospital medical director[4]	
0 - 200 beds	31.0
200 - 500 beds	34.3
over 500 beds	48.8
Hospital director of radiology[4]	
Straight salary	79.3
Percent of gross	115.0
Fee for service	72.0
Percent of net	81.5
Self-employed physicians (median net earnings)[5]	50.0
Dentists, self-employed (median net earnings)[5]	42.0
Hospital administrators[4]	
0 - 200 beds	29.7
200 - 500 beds	41.4
over 500 beds	45.8
Hospital chief pharmacist	19.3 - 23.8[6]
Hospital pharmacist[4]	17.1 - 17.3[6]
Nurses	
Head industrial nurse[3]	15.3
Industrial nurse (RN)[3]	12.8
Hospital, director of school of nursing[4]	17.6 - 22.1[6]
Hospital, director of nursing service[4]	18.4 - 26.3[6]
Hospital, chief nurse anesthetist[4]	19.9 - 20.7[6]
Hospital, staff nurse[4]	11.4 - 11.9[6]

[1]American Management Association, Executive Compensation Service, Middle Management Report. New York: AMA, 1977, p. 335. Average of 9 positions in companies of various sizes.

[2]Ibid., pp. 275-76.

[3]American Management Association, Executive Compensation Service, Professional and Scientific Report. New York: AMA, 1977, pp. 150-51.

[4]American Management Association, Executive Compensation Service, Hospital Report. New York: AMA, 1977.

[5]Statistical Abstract of the United States, 1976, p. 79. Rough estimates projected to 1977.

[6]Range for hospitals of 0-200 beds to over 500 beds.

Table R.--Weighted Average Salary, Selected Positions as Skilled Technicians in Private Companies, by Levels, 1977 (in Thousands of Dollars)

	Level I	Level II	Level III	Level IV
Scientific and Engineering Technicians				
Ceramic/Metallurgical--research	$ 11.0	$ 11.9	$ 13.6	$ 15.6
Chemical--production and quality control	10.4	11.9	13.2	14.9
Electrical Engineering--production and quality control	10.0	11.7	14.2	15.2
Electronic--research	10.2	11.2	13.7	15.0
Environmental engineering	11.7	11.8	13.6	15.7
Optical	11.8	12.2	15.8	--
Semiconductor--research	11.1	11.5	13.2	15.5
Designers and Draftsmen				
Architectural draftsmen	11.1	11.3	11.4	14.6
Mechanical draftsmen	10.6	10.8	12.5	13.6
Electrical/electronic draftsmen	8.5	10.3	12.2	14.4
Computer operator	9.0	10.8	12.5	13.4
Craftsmen and Skilled Tradesmen				
Automotive mechanic	12.4	14.5	14.5	--
Machinist	11.1	13.9	13.9	--
Maintenance electrician	13.5	14.2	14.6	--
Maintenance plumber	12.8	14.6	14.8	--
Glassblower	7.6	13.8	15.6	--
Tool and die-maker	12.9	14.6	15.3	--
Other				
Cook	9.1	10.8	--	--
Material handler[1]	9.8	10.3	10.9	--
Janitor	8.8	9.1	--	--
Security guard	10.9	11.5	12.3	--
Shipping/receiving clerk[1]	9.4	--	10.5	--

SOURCE: American Management Association, Executive Compensation Report, Technician Report. New York: AMA, 1977. Weekly rates multiplied by 52. The positions included involve no educational requirement. The four levels range from simple routine, apprentices, helpers, etc. at level I to complex work using sophisticated equipment and involving report preparation at level IV. Level III under "craftsmen and skilled technicians" refers to such work as "master craftsman" or "chief mechanic."

[1]Medians

Table S.--Weighted Average Annual Salaries, Selected Supervisory Positions in Private Companies, by Levels, 1977 (in Thousands of Dollars)

	Level I	Level II	Level III
Office Supervisors			
Accounting and bookkeeping, general	$ 11.0	$ 14.7	$ 18.3
Auditing	13.5	15.9	19.3
Accounts receivable	9.8	13.0	18.4
Computer applications programming	13.4	16.4	19.6
Systems analysis	15.2	17.2	20.7
Office administration	10.8	13.4	18.5
Production planning and control	12.4	15.2	19.1
Foremen			
Assembly, precision	9.9	14.9	17.7
Painting, finishing	10.6	13.8	17.6
Equipment installation and repair	11.3	18.0	20.2
Electrical maintenance	15.2	16.1	19.5
Tool, die, and gauge making	15.3	15.9	18.9
Garage	12.0	15.0	18.2
General foremen, production	13.4	16.7	19.5
Supervisors in Banking and Insurance			
Banking transactions	11.3	13.4	20.3
Loan reviewing	--	14.4	19.2
Claims adjusting	11.4	16.1	17.8
Underwriting	11.8	16.0	17.7

SOURCE: American Management Association, Executive Compensation Service, Supervisory Management Report. New York: AMA, 1977. The three levels (I, II, III) refer to different degrees of responsibility. At level I, "supervision exercised is largely restricted to assigning and directing hourly workers with no responsibility for initiating action on hiring, firing, lay-off, promotion, or rate increase. Incumbents working time may be spent performing work of the type supervised." Level III is "the highest level below that of general foreman or department head. It may involve supervision of people with complex skills and responsibility for day-to-day planning, developing methods, authorizing overtime work, cost control, etc." Level II is between I and III in degree of responsibility.

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