DOCUMENT RESUME

ED 158 671 HE 010 380

AUTHOR Froomkin, Joseph
TITLE Full-Time Faculty in Higher Education--Numbers, Ages and Wages.
INSTITUTION Educational Policy Research Center for Higher Education and Society, Washington, D.C.
PUB DATE Apr 77
CONTRACT 300760026
NOTE 44p.
AVAILABLE FROM Joseph Froomkin, Inc, 1015 18th Street, N.W., Washington, D.C. 20036

EDRS PRICE MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS Age; *College Faculty; Doctoral Degrees; Employment Opportunities; Faculty Mobility; *Futures (of Society); *Higher Education; *Job Market; Labor Supply; *Salary Differentials; Statistical Data; *Teacher Salaries; Trend Analysis

ABSTRACT

The study deals with two topics: the damand for full-time faculty and their wages. In order to construct an index of demand for full-time faculty, the age distribution had to be estimated. The net mobility by five-year age group for the period 1970 to 1975 was determined, and the net mobility was estimated for the period ending in 1985. Two striking findings are documented: (1) the median age of faculty increased by one year between 1970 and 1975, and is projected to increase by four years during the 1975-1985 period; and (2) the net mobility of faculty is expected to decline significantly in the five years ending in 1980, and drop even further between 1980 and 1985 to roughly one-fifth the levels experienced in the first half of the 1970's. Job opportunities for young PhD's can be expected to deteriorate significantly. The extent of this decline in job opportunities portends the loss of a whole generation of potential scholars. The weakened demand has had variable effects on faculty wages, depending on academic rank. (MSE)

JOSEPH FROOMKIN INC.
1015 EIGHTEENTH STREET, N. W., WASHINGTON, D. C. 20036

FULL-TIME FACULTY IN HIGHER EDUCATION--NUMBERS, AGES AND WAGES

By

Joseph Froomkin

EPRC for Higher Education and Society

Contract No. 300760026

April 1977

ABSTRACT

This study deals with two topics: (1) The demand for full-time faculty, and (2) their wages.

Demand for faculty. In order to construct an index of demand for full-time faculty, the age distribution had to be estimated. The second step in the analysis was calculating net mobility by five year age-group for the period 1970 to 1975. Finally the net mobility was estimated for the period ending with 1985.

Two striking findings are documented by the study: (1) The median age of the faculty increased by one year between 1970 and 1975, and is projected to increase by an additional four years during the 1975-85 period, and (2) the net mobility of faculty is expected to decline significantly in the five years ending in 1980, and drop even further between 1980 and 1985 to roughly one-fifth of the levels experienced in the first half of the 1970's.

Job opportunities for young Ph.D.s, which were already out of balance with the supply of newly-minted doctorates in the early 1970's, can be expected to deteriorate significantly. The ratio between the net mobility of faculty and the production of Ph.D.s was estimated at .46 in the 1970-75 period and can be expected to decline by 1980-85 to .15. It is likely that only a very small portion of the younger generation of doctorates will find full-time academic positions.

The extent of this decline in job opportunities is a matter of great concern, since it portends the loss of a whole generation of potential scholars. Ways of salvaging this cohort are likely to be expensive, the study finds. One remedy which has often been suggested, encouraging early retirement, is not likely to work: In order to create a significant number of jobs, the vast majority of full-time faculty members over age 55 would have to be induced to retire by 1985, and the cost of incentives for mass retirements at this early age would be very high.

Such alternatives to early retirement as increasing the research funds of universities and colleges, so that they could stockpile promising scholars, are also likely to be expensive. The employment of enough young scholars to equal the hirings of the past five years would cost roughly $5 billion a year by 1985.

The study also points out that, in the short run, a concerted effort to reduce the production of Ph.D.s would accentuate the dearth of full-time faculty jobs for new entrants. Halving the production of Ph.D.s, to bring

it back to the level of the 1960's, will reduce the demand for faculty jobs by 20 thousand. If a decision is made to provide alternative employment for senior faculty members who were formerly engaged in training potential Ph.D.s, the cost may be estimated at another billion dollars a year.

Wages. A special new series for wages was developed from HEGIS records. Besides highlighting the oft-documented fact that faculty wages lagged prices in recent years, the study examines the relationship between the wages of younger and older faculty and compares it to the pattern of earnings of full-year, full-time workers in the U.S. in recent years. As could be expected, the weakened demand for faculty had its most drastic effects on assistant professors, whose wages rose much more slowly than those of all persons aged 25-34 who had high levels of education. By contrast, professors' wages did not lag as significantly behind those of persons 45 to 54 with the same level of education.

The study also documents the wage policies of different types of schools, by control, selectivity, and the rate of change in enrollment. Perhaps, one must view with alarm that the more selective private schools increased their salaries, rank by rank, slower than their public counterparts.

Other significant differences in faculty wages were found between schools which gained enrollment, lost a few students, and lost a considerable proportion of their workload, both in the public and private sectors. The losers were more parsimonious than the gainers in increasing wages, rank by rank. Nevertheless, as the faculty of schools with decreasing enrollments became disproportionately filled with persons in senior ranks, the average wage per faculty member rose faster than that of faculty in schools which did not lose students.

During the next decade, there is little doubt that the pressures to keep salaries in check will strengthen. The peculiar workings of the academic labor market must be better understood to ensure that scarce specialties are rewarded sufficiently well, and colleges and universities are staffed with a sufficient number of competent persons.

TABLE OF CONTENTS

TABLE OF CONTENTS (Cont'd)

FULL-TIME FACULTY IN HIGHER EDUCATION--NUMBERS, AGES AND WAGES

It is really surprising how little is known about the characteristics of full-time faculty in higher education. Not only is their total number in dispute, but the present study is the first to derive a tentative age distribution for them. And the only statistical series on full-time faculty earnings that existed until now was one published by the American Association of University Professors with the necessary disclaimers, since its fragmented data depended on voluntary responses by institutions.[1]

Reliable data on the numbers and age of full-time faculty, as well as their movement in and out of teaching, are an important ingredient in determining the extent to which the academic establishment will be able to renew itself in the next 10 years, a period when enrollments will cease growing. The controversy about the glut of Ph.D.s has highlighted the need for policies to curb the waste of human resources in the next decade.

While there is considerable agreement that employment in full-time research and development is likely to remain at its present level in colleges and universities (it provided jobs for some 36 thousand full-time professional researchers in 1972),[2] there is considerable uncertainty both about the total number of full-time teachers (some 350 thousand) and about the level of future job openings for them between now and 1985.

The confusion about the number of full-time teachers can be seen by comparing a much used series published in Projections of

Educational Statistics to 1984-85[3] and the results of annual surveys by Higher Education General Information Survey (HEGIS) of full-time faculty for 1974/75 or 1975/76.[4] The two sources are 57 thousand full-time faculty members apart in their estimates.

In 1972, as a byproduct of a study on tenure, the American Council on Education and the Carnegie Commission on Higher Education produced an incomplete and possibly misleading table showing the age distribution of only a limited sample of faculty.[5] Because of a delay between the time the sample was chosen and the distribution of the questionnaire, those statistics omitted the last two years of hires. Furthermore, some 15 per cent of the faculty whose ages were analyzed were "ringers," either part-time faculty or persons in administrative positions.

The study which follows attempts to remedy some of these gaps in the data. It presents estimates of the age distribution of full-time faculty for 1970 and 1975, and extends past trends to 1980 and 1985. This is followed by a new series presenting the earnings of faculty by rank, for schools in the public and private sectors and for segments of schools in each sector, classified both in conventional terms (by control) and also by selectivity and rate of growth of enrollments. These two factual, statistical parts are followed by the use of such data in the formulation of policy towards postsecondary education. The impact of incentives to early retirement on new vacancies and on institutional finances are examined. The effect of wage spreads between the public and private sectors is also discussed.

Age Distribution and Net Hires 1970 - 1985

No government agency collects information about the age distribution of full-time faculty. The closest approaches to such statistics are the numbers collected by the U. S. Bureau of the Census in its decennial enumeration and in periodic current population surveys. Unfortunately, these published figures are often misleading with regard to the number of faculty in postsecondary institutions. According to the U. S. Bureau of the Census, for instance, 486 thousand persons reported themselves as college and university teachers in 1970,[6] while NCES counted some 330 thousand full-time faculty members in the same year.[7] In 1975, the average of two monthly CPS reports produced a figure of 510 thousand for college and university faculty,[8] while the NCES survey reported fewer than 370 thousand full-time college and university teachers.[9]

The difference between the reported figures of the two organizations is explained by the inclusion in the Census reports of persons who teach part-time, as long as they have no other occupation besides teaching. Young teaching assistants of both sexes and older women who teach part-time presumably account for the lion's share of the difference. This hypothesis is substantiated by analyzing the earnings of persons aged 25 or older, age group by age group, reported in the 1970 census. If one assumed that persons who earned less than $6,000 a year in 1969 were part-time teachers--this amount was less than two-thirds of a full-time instructor's salary in that year--it is possible to derive an estimate of

the ratio of full to part-time teachers for age groups above 25. For persons under age 25, the only available clue about the ratio of full to part-time faculty is provided by the less satisfactory statistic of full-time junior faculty to total junior faculty, collected by NCES in some of their earlier surveys.

The resulting estimates of the proportion of full-time to part-time faculty are intuitively reasonable. (Table 1) One in six teachers in higher education under age 25 is employed full-time. For those aged 25 to 34, some of whom are still completing their doctorates, roughly seven out of ten males and one out of two women (who obtain their doctorates later than men) are employed full-time. Then, up to age 65, 19 out of 20 men and seven out of ten women are in full-time jobs. Beyond age 65, only half are employed full-time.

It is particularly encouraging that once these estimates are applied to the number of faculty members reported by the U. S. Bureau of the Census, the total number of faculty members agrees fairly closely with HEGIS estimates. The number of full-time faculty resulting from this adjustment is 338 thousand in 1970 and 369 thousand in 1975. Small differences between the estimate of this study and HEGIS are not important since the Census figures are subject to some sampling errors and the Office of Education collected figures are also approximate, for the number of faculty in some non-reporting schools has had to be imputed. (The estimated distribution of faculty by age appears in Table 2.)

Between 1970 and 1975, the median age of faculty was rising and women were slowly increasing their share in full-time positions. The median age of the faculty was 38.5 years in 1970 and 40.6 years in 1975, representing an increase of nearly five years for men and only 1.25 years for women, whose median age went up from 41.75 in 1970 to 43.0 years in 1975. As the proportion of women on full-time faculties increased from 21 to 24 per cent, many older women were hired and their median age increased. The number of men on faculties increased by only six per cent, as contrasted to a 22 per cent rise in the number of women. In other words, affirmative action brought some additional 10 thousand women to faculties, and cost the same net number of jobs to men. (See Table 3.)

A crude measure of the level of hiring activity in higher education can be obtained by calculating net hires by age group and sex. The figures in Table 3 were arrived at by (1) calculating the number of expected survivors by five-year age group, and (2) subtracting the number obtained by this calculation from the estimated number of full-time faculty in the appropriate age group in 1975.

Judging from these estimates, the net mobility patterns of teachers differ widely according to sex. For the period 1970-75, nearly 60 per cent of net hires among men took place between the ages of 25 and 34 and most of the rest occurred among those five years older. The entry pattern of women was more erratic. Their net entries peaked between

ages 25-29 and 35-39, while between the ages of 30 and 34 there was an outflow of women from full-time faculties, presumably to raise children. (Table 3)

The most striking difference in net mobility between the two sexes is in the older age groups. After age 45, nearly a fifth of all male faculty leaves full-time teaching. Perhaps they move into administrative posts, or perhaps they find jobs in government or industry. By contrast, the number of women over the age of 45 who are full-time faculty members rises, as nearly a quarter of net entrants are above that age.

The out mobility of 20 thousand males who left teaching between 1970 and 1975 was more important in creating new vacancies than either deaths or retirements, estimated at 14 thousand and 19 thousand, respectively, over a five-year period. Our estimate of deaths and retirements, at some 2 per cent a year, is slightly higher than the one produced by Cartter twelve years ago.[10]

In summary, to fill the 16 thousand additional full-time positions for men, 59 thousand more men below age 25 were hired than quit. In the case of women, an increase of 16 thousand positions resulted in 19 thousand net hires. There were 78 thousand net hires in all. While we have no information about the proportion of Ph.D.s hired to fill these positions (and certainly not all of them were filled with Ph.D.s) the ratio of net hires to Ph.D. production was .46.[11]

Faculty in 1980 and 1985. In order to project the total number of full-time teachers and their distribution by age between 1975 and

1985, some fundamental assumptions must be made both about enrollments and about faculty/student ratios.

Elsewhere[12] we have estimated that the full-time equivalent (FTE) enrollment in 1980 may reach 8.4 million, or be as low as 7.3 million. For 1985, the high enrollment estimate was set at the same 8.4 million FTE students, and the low at 7.2 million FTE students.

The ratio of FTE student to full-time faculty increased by five per cent over the five years from 1970 to 1975, from 20.8 in 1970 to 21.8 FTE students per full-time faculty member in 1975. It is not at all clear whether further economies in faculty will be possible in the next ten-year period. Enrollments between now and 1985 will stabilize or decline. Under these circumstances, hard-pressed colleges may not be able to cut student/faculty ratios further, since such economies would force them to narrow course offerings and make them less attractive to prospective students.

To estimate the total number of faculty, we have assumed an increase in the student/faculty ratio if the high projection of enrollment materializes. For the low enrollment projection, the student/faculty ratio was kept at current levels between 1975 and 1980, and allowed to rise between 1980 and 1985. These assumptions produced estimates of full-time faculty of between 335 and 368 thousand in 1980. For 1985, the high estimate is 347 thousand, and the low is 317 thousand. (See Table 4.)

Assuming further that the death rates and negative mobility rates remain constant by age group, one can distribute the hires in line with 1970-75 proportions and arrive at estimates of the composition of faculty by age for both 1980 and 1985. The rather lengthy table (Table 5) showing this composition is presented in four parts: First, an estimate of the total faculty and age distribution of faculty for the high enrollment assumption in 1980; next, the same estimate for 1985; and then estimates for the low enrollment projection for those two years.

If 1970-75 hiring patterns continue, the median age of faculty will rise to 42.0 - 42.5 years in 1980 and 44.0 - 45.0 years in 1985. The proportion of women in total faculty will increase by one per cent from 1975 to 1980 and by one per cent more in 1980-1985. The share of women hired is projected to be 26 per cent in the 1975-1985 period.

Most importantly, net hires will go down by 25-49 thousand in the 1975-1980 period, and are like to be 45 thousand below the level of 1970-75 in the period 1980-1985. (Table 6)

If NCES projections of the production of Ph.D.s are accepted,[13] these net hires will be 14-26 per cent of the Ph.D. production in the 1975-1980 period and will not amount to over 15-16 per cent of Ph.D. graduates in the five years 1980-85. This certainly does not bode well for the job opportunities of those with doctorates in the next few years.

The estimates of net hires derived above should not be considered as overly pessimistic. They assume the continuation of a sizeable

exodus of older full-time faculty to other endeavors. It is quite possible that this attrition was over-estimated. Some of the personnel which left full-time teaching in the period 1970-1975 probably moved into college and university administration. It will be remembered that, even in this difficult period for higher education, enrollments did go up by 16 per cent, as measured by FTE student load. In the next 10 years, we anticipate a much slower growth, and perhaps even declines. It is thus possible that opportunities for alternative employment open to older faculty will shrink.

During the past five years, equal employment opportunity reporting requirements and more complex procedures for reporting student aid have been imposed by state and local governments. While it would be unrealistic to anticipate that public authorities will reduce the burden on institutions, it is not too much to hope that their demands will not escalate in the near future. Less arbitrary and onerous bureaucratic interference in university affairs could reduce the number of administrators and cut down new job openings for faculty.

The graying of the faculty.

With the aging of the faculty, it is no surprise that full-time teachers have moved up to the top ranks of the academic hierarchy in ever-growing numbers. The ratio of full professors to full-time faculty increased by 2.6 per cent between 1970 and 1976, from 20.4 per cent of the full-time faculty in 1970 to 23.0 per cent in 1976. The proportion of associate professors rose by 3.0 per cent, reaching 23.4 per cent of all

full-time faculty by fall 1975. This growth in senior rank occurred largely at the expense of assistant professors and of faculty with no rank. The proportion of instructors, which had been going down for a number of years, picked up slightly in 1975/76 as a result of unplanned increases in enrollments. (Table 7)

It appears that as the faculty was increasingly bureaucratized and promoted to senior ranks between 1970 and 1975, the average faculty member's salary increased more than the average increase in wages in professional ranks. The average wages of faculty members increased by 30 per cent. Salaries for the higher ranks, associate professor and above, increased 27-28 per cent. Those of instructors increased most, by some 44 per cent. The salaries of other ranks grew at the lowest rate, about 22 per cent. (Table 8)

While the earnings of senior faculty increased somewhat more slowly than the average earnings of older persons with five or more years of college, those of the younger faculty more than kept up with the increase in the U.S. cost of living. This was due both to the upgrading of unranked faculty in public community colleges, and to the growth in the number of instructors employed by such schools. In four-year schools and private two-year schools, the earnings of instructors grew at the same pace as those of senior faculty, 27 per cent.[14]

Nevertheless, the average compensation of faculty lagged behind the consumer price index by ten per cent in the five years under

review. Rank by rank, it lagged in many cases even more behind the increase in consumer prices, with a 13 per cent lag in the higher ranks as well as a 13 per cent lag for instructors in four-year institutions and nonpublic junior colleges. Only in public community colleges did the average rise in compensation exceed the rise in the price level.

Since the average age of the faculty increased, the loss in income incurred by full-time college teachers compared to their peers was even greater. While it is not possible to estimate this loss precisely, it may be relevant to compare the ratio of nine-months' earnings of faculty to the average incomes of full-year, full-time male workers with five or more years of college education. The ratio of an assistant professor's wage to the 1970 wage of a male age 25-34 with this level of education was .98 in 1970/71, and declined to .81 by 1975/76. Associate professors experienced a .11 loss during that period compared to men 35-44, having started with a ratio of .77. Full professors earned .87 of the mean wages of a man 45-54 with at least a year of graduate study in 1970/71 and .82 of the corresponding earnings in 1975/76. The slower loss in professors' relative earnings was due to the relatively slower growth of earnings of older persons with graduate education.[15]

Another way of assessing the relative deterioration of full-time faculty wages is to compare them to what they would have been if teachers' wages had increased in concert with the wages of men with five or more years of college. In 1970/71, the average faculty wages were

.73 of the earnings of full-time, full-year male workers in 1970 of the same educational level. If they had kept the same relationship, by 1975/76 the average faculty wages would have amounted to $19.2 thousand. Adding the three years by which the faculty's mean age rose, to make the figures more comparable, one would expect the average faculty wages to amount to $21.2 thousand, or 28 per cent more than the figure reported in this study.

Detailed trends in faculty wages. Ascribing the fall in wages of full-time faculty to the penury of private schools, the obvious explanation, does not really explain the observed decline in both real and relative wages. True, average faculty wages and those of most faculty (by rank) in the private sector did rise more slowly than those in the public sector during the 1970/71 to 1975/76 period, but the differences in wage increases were, for the most part, minor.

The average wages in the public sector rose 30 per cent, for instance, compared to 29 per cent in the private sector. Private sector average wages increased faster than would appear warranted by gains rank by rank because the faculty in private colleges and universities became more top-heavy compared to that in faster-growing public schools. Professors in both public and private institutions saw their earnings go up by 27 per cent. A disparity was, however, apparent between the raises for associate professors and instructors: in public institutions, they received raises averaging 27 and 46 per cent during the five years under

review, while in private institutions they received 24 and 23 per cent, respectively. Private school staff of a given academic rank were paid 6 to 12 per cent less than comparable persons in public schools in 1970/71. By 1975/76, the gap had widened 6 to 24 per cent.[16]

However, the college and university sector is really segmented into schools which cater to students of different ability and, thus, recruit faculty from different pools. Before being concerned with the ability of the private sector to remain competitive in the market, therefore, it may be well to examine wage developments by grouping schools according to the level of selectivity of freshmen. Once the schools are standardized by selectivity, it appears that wage increases by rank were relatively equal in the public and private sectors. The only exceptions were the medium-selective or second-string private schools, if this description is used non-pejoratively, which lagged behind state-financed institutions that were often the flagship schools in a system. (Table 9)

As a general rule, healthy schools which did not lose enrollment and hence recruited faculty raised the average salaries of faculty, by rank, more than did schools which lost students. It is instructive that schools with stable or increasing enrollments raised their salaries for each rank at the same rate in both the public and private sectors. On the other hand, private schools that lost more than 10 per cent of their enrollment dragged their feet on salary increases more than did public schools which suffered equally severe declines in the number of students. Despite the niggardly raises rank by rank, schools with declining enrollment

failed to lose enough senior faculty and most of them saw their average wages rise as much or more as schools which lost no enrollment. (Table 10).

Some Policy Implications

In the light of the analysis above, policy analysts cannot be asked to come up with low-cost or elegant solutions. To maintain a flow of young academics into universities, public authorities may want to set a recruitment target of 70 to 75 thousand full-time faculty members in each five-year period between 1975 and 1985. In this way, perhaps 15-25 per cent of all new Ph.D.s may find academic jobs. To reach this target, incentives for the retirement of faculty above age 55 will have to be introduced.

If enrollments remain high, as under the most optimistic projection, at least 60 per cent of all full-time faculty over age 60 will have to be retired between 1975 and 1980. During the following five-year period, all faculty members over age 60 will have to retire, as well as a quarter of those between the ages of 55 and 60. Alternatively, two-thirds of all faculty above age 55 will need to be taken out of full-time teaching in the latter time period.

With the low enrollment projection, either the entire faculty over the age of 60 will have to be induced to abandon teaching between now and 1980, or two-thirds of those above the age of 55 will have to retire. Between 1980 and 1985, all teachers above the age of 55 as well as possibly a quarter of those over age 50 will have to retire. These

calculations are made under the simple-minded assumption that if incentives to retirement are offered at an earlier age, they will not affect the normal mobility of the faculty to other jobs at ages 45 to 55. If early retirement options are introduced, it is conceivable that the presently substantial net out-migration of faculty above age 45 may be greatly reduced. With 20 to 30 thousand faculty members remaining in the pipeline, very impressive increases in retirement benefits will be needed to force the retirement of every full-time teacher over 55, both under the high and under the low enrollment projections. If the low enrollment projection materializes, it will be necessary to induce retirements energetically in the 50 to 55 age group.

It is difficult to estimate the financial implications for institutions of such draconian measures to encourage retirement. (Under current tenure arrangements, schools have little leeway in discharging older, mostly tenured, personnel unless each state or the federal government passes special legislation, which would most likely be overturned by the Supreme Court as unconstitutional since it would be discriminatory against older persons.) Incentives for voluntary retirement will have to be very attractive indeed to encourage older faculty to retire, given the projected dearth of high-status jobs for the highly educated. It is also likely that such newly introduced retirement benefits would have to be offered to faculty hired from now on, or perhaps the wages of new teachers would have to be increased substantially to compensate for the prospects

of sub-standard employment after age 50.

There is a false seductiveness in the simple arithmetic that colleges and universities could offer full professors a third of their salaries to encourage them to retire, on condition that they were replaced by assistant professors. We have shown that (1) the number of professors waiting out for retirement may increase, thus forcing institutions to retire some teachers who would otherwise have left before reaching retirement age; (2) the effect of early retirement on later retirement pensions, say at age 65 or 67, has not been taken into effect. If the school continues to contribute to the retirement fund of those who retire early, three-fourths of the estimated savings may be eliminated; and (3) there is no way to estimate the level of wages needed to attract gifted young Ph.D.s, say age 28, to accept jobs with a limited, 20-years' duration.

Restoring the flow. If early retirement is not likely to restore the flow of younger faculty to academe, what other alternatives can be envisaged? The most obvious is to try to curb the production of Ph.D.s. To roll Ph.D. production back to the level of the early 1960's, i.e., cut it roughly by half, will accentuate the problems of the young scholars in the short run. Some 20 thousand man/years of the present faculty devoted to processing Ph.D.s will be available to teach persons at lower levels. The new hires will decrease by at least this much. Nevertheless, it is argued here that such steps should be taken in order to minimize the waste of resources in training for non-existing jobs. This would entail

special incentives for Ph.D. trainers to abandon their socially useless tasks. The budget for additional academic research support to induce Ph.D. trainers to find other work would probably have to be increased by another $1.0 billion or so.

We know of no way to legislate the innoculation of graduate students against unwarranted optimism. Past experience in such fields as the humanities has shown that institutions, or teachers, are not likely to adjust their training levels to the demand for graduates. Perhaps financial incentives to stop such counterproductive training may be in order. However, these incentives are certainly of much lower priority than shelters for a generation of promising scholars.

This can be achieved by channeling more money to research institutes, not limited to the social or physical sciences, to act as temporary refuges for promising or gifted scholars. To keep the intake into academic settings at the low figure of 70 thousand persons per five years, these new institutes would have to house between 60 and 80 thousand scholars by 1985. Assuming that a third of these were in expensive experimental sciences, and two-thirds in humanities and soft sciences, by 1980 the cost to some level of government would be at least $2.8 to $3.7 billion in 1975/76 prices. This estimate is made on the modest assumption that experimental scientists can be paid and supported at $70 thousand a year and soft scientists at $35 thousand. Probably a more realistic estimate would place the ceiling of this support at $5.0 billion a year, a trebling of support to academic

research.[17]

The justification for these institutes is that the best way to identify promising researchers is to allow them to do research. In the early 1970's, some one-in-seven doctoral recipients in the hard sciences moved to the shelter of special traineeships. Broadening this program to serve other disciplines may be the least costly way to save money and still identify the cream of the crop of recent graduates. The efficiency of the sorting process could, perhaps, be improved if a super doctorate, along the lines of the French Doctorat d'Etat, were to be awarded to those who complete significant research during this first internship. Young scientists and humanists would then be identified as prime prospects for the full-time teaching positions.

This additional screening process is certainly both expensive and wasteful of human resources. Unfortunately, the decentralized and uncoordinated graduate system in this country does not make it possible to put in place better sorting procedures. The costs of this new hurdle to academic employment must be balanced against the benefits of identifying and salvaging scientific talent, a high priority task for the next few years. The specter of a wasted generation of young scholars awaits us in 1980. It is not too early to think about rescue operations.

Wage developments. The argument that faculty salaries should be allowed to seek their own floor, especially in a period when there is a plethora of qualified applicants, is an attractive one. One can convincingly

argue that the frustration of young Ph.D.s in the humanities who fail to get academic appointments is likely to be diminished if the wages of academics are half of those of either cabdrivers or file clerks. Since the salaries of administrators are vaguely tied to those of the people they administer, however, administrators are likely to keep teaching wages higher than necessary to clear the market, yet lower than needed to attract outstanding applicants.

There is some evidence that the old saying to the effect that one gets what one pays for, if one is lucky, applies to academe. Teachers at more selective and prestigious institutions get paid more than persons with the same rank in run-of-the-mill institutions. It is reasonable to assume that administrators pay just enough for the quality of the people they wish to employ, and no more. If faculty wages deteriorate even more than they have in relation to wages in other sectors, the caliber of young teachers in economics and law, to name just two specialties that are still in demand, is likely to suffer.

The remedy against this further deterioration is fairly straightforward: ensuring the continued existence of only those institutions which can remain large enough to be viable. If one succumbs to sentimentality and opts for diversity at any price, there is little doubt that faculty wages will be depressed.

Unbridled competition between different institutions can be destructive and harmful to all. In the public sector, it is probably

reasonable for states to put a cap on enrollments in flagship schools and junior colleges, so as to redistribute enrollments to weaker four-year institutions. Simultaneously, energetic steps must be taken to reform these weaker institutions by making certain that curricula that are in demand by the current generation of students are offered.

Tomorrow's issues:

Pressures to take drastic action to "save" a generation of scholars will be mounted in the course of the next few years. The discussion of pro's and con's of the WPA for Ph.D.s should be based on better statistics than those available today. It is essential for the National Center for Education Statistics to shape their collection of data in anticipation of policy issues which will be discussed in the years to come. Such forward vision has not characterized the Center's policy until now.

In the course of the next few years, undoubtedly the following information will be required:

(1) the age distribution and numbers of full-time faculty,

(2) numbers of part-time faculty and the nature of their workloads,

(3) the age distribution and numbers of professional university administrators, and

(4) data on the dynamics of conferring tenure to younger faculty.

Most of the data elements are not collected today. Yet, without information on mobility of faculty, the possible substitution of full-time

teachers by part-time instructors, and the flow of faculty into administrative positions, the extent of the distress of the newly graduated Ph.D.s will not be documented convincingly. Without this convincing documentation, it may very well be ignored.

Meanwhile, the absence of this type of information may be lulling some administrations into complacency. There are indications that prestige institutions are locking themselves in by granting tenure to a higher proportion of eligibles. The effect of the lean years to come will be much more traumatic if the hands of administrations to renew the faculty will be completely tied.

FOOTNOTES

[1]American Association of University Professors, "Report on the Economic Status of the Profession," 1970-71 through 1975-76. Reprinted from AAUP Bulletin (Washington, D. C.), summer issues.

[2]Richard M. Beazley, National Center for Education Statistics, Numbers of Employees in Institutions of Higher Education, Fall 1972 (Washington: U.S.G.P.O., 1976), Table 1, p. 12.

In 1968, there were 31 thousand full-time professional research employees. See Eugene E. Hixson and Edith M. Huddleston, National Center for Educational Statistics, Teaching and Research Staff by Academic Field in Institutions of Higher Education, Fall 1968 (Washington: U.S.G.P.O., 1972), Table 3, p. 15.

[3]Kenneth A. Simon and Martin M. Frankel, National Center for Education Statistics, Projections of Education Statistics to 1984-85 (Washington: U.S.G.P.O., 1976).

[4]Richard M. Beazley, National Center for Education Statistics, Salaries and Tenure of Instructional Faculty in Institutions of Higher Education 1974-75 (Washington: U.S.G.P.O., 1976).

[5]Alan E. Bayer (Carnegie Commission on the Future of Higher Education and The American Council on Education), "College and University Faculty: A Statistical Description," ACE Research Reports, Volume 5, Number 5 (Washington: American Council on Education, 1970), Table 2, p. 12.

[6]U.S. Bureau of the Census, Census of Population: 1970, Occupation By Industry, Final Report PC(2)-7C, Table 8, p. 242.

[7]HEGIS Survey.

[8]Unpublished Current Population Survey data for February and May 1975.

[9]HEGIS Survey.

[10]Allan M. Cartter, "A New Look at the Supply of College Teachers," Educational Record, Summer 1965, pp. 276-277.

Cartter used the age and sex distribution of faculty in 1962/63 (presumably both full and part-time faculty) and then by applying "appropriate" death and retirement rates, estimated that 1.9 per cent of full-time faculty with doctorates left the profession every year.

[11]Simon and Frankel, loc. cit., Table 25, pp. 52-53.

[12]Joseph Froomkin and Clinton P. McCully, A Review of Financial Developments in Higher Education, 1970/71 - 1974/75, and a Prognosis for 1980-1985 (Washington, D. C.: Joseph Froomkin Inc., 1977), Table 27, p. 107.

[13]Simon and Frankel, loc. cit., Table 25, pp. 52-53.

[14]American Association of University Professors, loc. cit.

The AAUP's data, however, are incomplete and do not fully reflect developments in community colleges.

[15]American Association of University Professors, loc. cit.

U. S. Bureau of the Census, Current Population Reports, Series P-60, No. 80, "Income in 1970 of Families and Persons in the United States," U. S. Government Printing Office, Washington, D. C., 1971, Table 49, p. 102.

Unpublished Bureau of the Census data, 1975.

[16]The changes in wage rates based on a slightly reduced population of schools which reported consistent data from 1970/71 to 1975/76.

[17]Frank Press, "New Arrangements for Science in the Universities," Science, July 18, 1975.

APPENDIX

Note on Estimates of Wages by Rank

Nine-month equivalent average full-time resident faculty salaries were computed for each campus by rank, using data from the HEGIS Employees surveys for 1970-71, 1971-72, 1972-73, 1974-75, and 1975-76. These were computed as the weighted average of 9-10 month salaries and 11-12 month salaries, after the 11-12 month salaries had been reduced by 18 per cent to convert them to a consistent basis (9-10 month contract). These 9-10 month and 11-12 month average salaries were computed as the weighted average salary for men and women faculty members for the latter four years--there was no designation of sex in the 1970-71 survey. For the 1970-71, 1971-72 and 1972-73 surveys, the total salary outlays and total numbers of faculty by rank were used to compute these average salaries. For 1974-75 and 1975-76 average salaries were taken from the surveys directly. Where numbers of faculty were reported without accompanying salary data, they were excluded from the weights to avoid distorting the averages.

TABLE 1

PER CENT OF FULL-TIME TO TOTAL FACULTY
BY AGE AND SEX

	Male	Female
20 - 24	.163	.163
25 - 34	.690	.491
35 - 54	.940	.660
55 - 64	.940	.740
65+	.500	.500

Estimated from: 20-24: Kenneth A. Simon and Martin M. Frankel, Projections of Educational Statistics, 1984-85, NCES, U. S. DHEW, Table 32, p. 67.

25-64: U. S. Bureau of the Census, Earnings by Occupation and Education, PC(2)8B, Tables 1 and 7, pp. 35, 255.

65+: estimated on the basis of unpublished ACE data.

TABLE 2

ESTIMATED DISTRIBUTION OF FULL-TIME FACULTY
BY AGE GROUP, 1970 AND 1975
(thousands of persons)

	1970			1975		
	Male	Female	Total	Male	Female	Total
Under 25	5.5	3.6	9.1	4.1	1.8	5.9
25-29	44.5	12.1	56.6	32.1	10.8	42.9
30-34	41.3	8.3	49.6	51.5	11.3	62.8
35-39	48.6	10.2	58.8	52.2	12.8	65.0
40-44	39.3	9.8	49.1	52.2	11.5	63.7
45-49	33.0	9.2	42.2	28.7	10.2	38.9
50-54	22.0	6.6	28.6	25.8	11.8	37.6
55-59	16.5	5.3	21.8	19.7	7.2	26.9
60-64	12.2	4.6	16.8	12.2	7.5	19.7
65+	3.4	1.7	5.1	3.8	2.0	5.8
Total	266.3	71.4	337.7	282.3	86.9	369.2

Source: 1970: Adapted from U. S. Bureau of the Census, Census of Population: 1970, Subject Reports, Final Report PC(2)-8B, "Earnings by Occupation and Education," Tables 1 and 7.

1975: Unpublished CPS data for two monthly surveys.

Also, see Table 1.

TABLE 3

ESTIMATED NET MOBILITY BY AGE AND SEX, 1970-75
(thousands of persons)

	Male	Female	Total
20 - 24	4.1	1.8	5.9
25 - 29	26.7	7.2	33.9
30 - 34	11.4	-0.7	10.7
35 - 39	12.3	4.5	16.8
40 - 44	4.0	1.3	5.3
45 - 49	-9.9	0.5	-9.4
50 - 54	-6.2	1.8	-4.4
55 - 59	-1.2	0.8	-0.4
60 - 64	-3.0	2.4	-0.6
65+	-7.0	-2.3	-9.3
	31.2	16.3	47.5
Net In	58.5	19.3	77.8
Net Out	27.3	3.0	30.3

Source: Table 2 and text.

TABLE 4

FTE STUDENTS, FTES/FACULTY RATIOS, AND FULL-TIME FACULTY, 1970, 1975 (ACTUAL), AND 1980, 1985 (ESTIMATED)

	FTE Students (thousands)	FTE/Full-Time Faculty	Full-Time Faculty (thousands)
1970	6,797	20.8	327
1975	7,877	21.9	369
1980 High	8,475	23.1	368
1980 Low	7,317	21.9	335
1985 High	8,406	24.2	347
1985 Low	7,209	23.0	317

Source: 1970 and 1975: HEGIS files.
1980 and 1985: See text.

TABLE 5

DISTRIBUTION OF FULL-TIME FACULTY BY AGE, 1980 AND 1985

	High Estimate						Low Estimate					
	1980			1985			1980			1985		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Under 25	2.7	1.2	3.9	1.7	1.0	2.7	1.0	0.8	1.8	1.7	1.1	2.8
25-29	21.6	6.6	28.2	13.4	5.2	18.6	10.5	4.7	15.2	12.3	5.0	17.3
30-34	39.4	10.2	49.6	26.0	6.6	32.6	34.6	10.2	44.8	15.2	4.7	19.9
35-39	59.5	14.3	73.8	44.1	12.1	56.2	54.4	12.3	66.7	39.6	12.2	51.8
40-44	54.3	13.6	67.9	60.4	15.0	75.4	52.6	13.0	65.6	55.5	13.0	68.5
45-59	34.0	11.8	45.8	39.6	13.5	53.1	34.0	11.4	45.4	38.3	12.9	51.2
50-54	22.5	11.2	33.7	26.6	11.6	38.2	22.5	10.0	32.5	26.6	11.2	37.8
55-59	23.1	12.0	35.1	20.2	10.9	31.1	23.1	11.5	34.6	20.2	9.7	29.9
60-65	14.6	8.5	23.1	17.1	11.5	28.6	14.6	6.9	21.5	17.1	11.0	28.1
65+	3.8	3.3	7.1	6.4	4.0	10.4	3.8	3.3	7.1	6.4	3.3	9.7
	275.5	92.7	368.2	255.5	91.4	346.9	251.1	84.1	335.2	232.9	84.1	317.0

TABLE 6

NET MOBILITY OF FULL-TIME FACULTY AND SUPPLY OF PH.D.S, 1970-1985

	Mobility	New Ph.D.s (thousands of persons)	Ratio of Mobility/ To New Ph.D.s
1970-75	77.8	170.0	.46
1975-80	29.2-52.2	204.6	.14-.26
1980-85	32.0-33.4	208.6	.15-.16

Source: Mobility: See text and Table 5.

New Ph.D.s: Kenneth A. Simon and Martin M. Frankel, Projections of Educational Statistics, 1984-85, U. S. D.H.E.W./Education Division, G.P.O., Washington, D. C.: 1976, pp. 52-53.

TABLE 7

DISTRIBUTION OF FULL-TIME FACULTY BY RANK, 1970-71 AND 1975-76, BY CONTROL

	1970-71			1975-76		
	Total	Public	Private	Total	Public	Private
Professors	20.4	19.0	23.9	23.0	21.5	27.1
Associate Professors	20.4	19.7	22.0	23.4	22.7	25.3
Assistant Professors	30.4	29.5	32.5	28.2	27.0	31.4
Instructors	19.3	20.2	17.1	19.7	22.4	12.1
Lecturers	1.7	2.0	1.0	1.4	1.6	1.0
Other	7.8	9.6	3.5	4.4	4.8	3.2
	100.0	100.0	100.0	100.0	100.0	100.0

Source: HEGIS

TABLE 8

SALARIES BY RANK, ALL INSTITUTIONS, AND PUBLIC AND PRIVATE SECTORS
(current dollars)

TOTAL

	Professor	Associate	Assistant	Instructor	Other	Total
1970/71	17,716	13,551	11,505	9,254 (8,826)	11,907	12,782
1975/76	22,583	17,166	14,084	13,353 (11,234)	14,537	16,630
Ratio	1.275	1.267	1.224	1,443 (1.27)	1.221	1.30

PUBLIC

1970/71	18,064	13,905	11,938	9,517	12,304	13,028
1975/76	23,011	17,680	14,496	13,868	15,207	16,931
Ratio	1.274	1.272	1.214	1.457	1.236	1.30

PRIVATE

1970/71	17,042	12,773	10,543	8,497	9,199	12,181
1975/76	21,626	15,871	13,095	10,481	11,635	15,779
Ratio	1.269	1.243	1.242	1.234	1.265	1.29
Public/Private						
1970/71	.94	.92	.88	.89	.75	.93
1975/76	.94	.90	.90	.76	.77	.93

Source: HEGIS

TABLE 9

INCREASES IN FULL-TIME FACULTY WAGES BETWEEN 1970/71 AND 1975/76 BY SELECTIVITY AND CONTROL
(ratio of 1970/71 wage)

SELECTIVITY	Professor	Associate	Assistant	Instructor	Total
High					
Total	.27	.26	.24	.35	1.29
Public	-	-	-	-	1.33
Private	.27	.23	.22	.28	1.28
Medium					
Total	.28	.28	.27	.31	1.34
Public	.29	.30	.29	.34	1.36
Private	.24	.24	.24	.24	1.28
Average					
Total	.28	.26	.17	.27	1.29
Public	.28	.27	.13	.27	1.28
Private	.25	.25	.25	.24	1.30
Below Average					
Total	.28	.27	.26	.29	1.32
Public	.27	.27	.26	.30	1.32
Private	.29	.26	.24	.24	1.30
Non-Selective					
Total	.29	.29	.27	.48	1.32
Public	.27	.28	.27	.47	1.32
Private	.27	.26	.28	.23	1.28

TABLE 10

INCREASES IN FULL-TIME FACULTY WAGES BETWEEN 1970/71 AND 1975/76
BY ENROLLMENT CHANGE AND CONTROL
(ratio of 1970/71 wage)

Enrollment Change	Professor	Associate	Assistant	Instructor	Total
No FTE Decline					
Total	.28	.27	.26	.48	1.31
Public	.28	.27	.27	.49	1.32
Private	.28	.26	.26	.25	1.30
Less Than 10% FTE Decline					
Total	.27	.26	.26	.31	1.32
Public	.26	.27	.28	.38	1.35
Private	.27	.25	.24	.24	1.30
Greater Than 10% FTE Decline					
Total	.24	.24	.23	.24	1.31
Public	.26	.27	.26	.27	1.35
Private	.22	.19	.20	.19	1.27