

# 1999-2000 Report of the Senate Committee on the Economic Status of the Faculty

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## I. Introduction

The Senate Committee on the Economic Status of the Faculty (SCESF) is charged by the "Rules of the Faculty Senate" to:

- Gather and organize data on faculty salaries and benefits,
- Issue an annual report on the economic status of the faculty, and
- Represent the faculty in the determination of University policy on salary issues.

The focus of this report is on the current economic status of the faculty based on salary data. In accordance with the procedures adopted by the Senate Executive Committee in Spring 1999, we do not offer recommendations here for development of faculty salary policy. Instead, we report in **Section VII** the present status of committee recommendations, as adopted by the Senate Executive Committee and submitted to the Provost in 1998-99.

In designing this report on the economic status of the faculty, SCESF has addressed three broad concerns:

- The salary setting process at Penn: how funds become available for faculty salaries and the how annual salary increase decisions are made.
- External comparisons: the competitiveness of faculty salaries at Penn in comparison with faculty salaries at other universities.
- Internal comparisons: variability of faculty salaries within Penn, and sources of possible salary inequity that might occur within observed variability.

Major sections of this Report are devoted to each of these three topics, while **Section VI** is devoted to SCESF's overall conclusions about the economic status of the faculty.

In performing its responsibilities, SCESF has been cognizant of Penn's current salary policy as stated by the President, Provost, and Executive Vice President (*Almanac* April 20, 1999, p. 3). Penn's guiding principle in salary planning is to pay faculty and staff (a) competitively, (b) in relationship to the markets for their services and prevailing economic conditions, (c) to acknowledge their contributions to the University, and (d) to help Penn remain a strong and financially viable institution.

In studying faculty salaries for this report, SCESF continues to benefit from detailed salary information (excluding, of course, individual faculty salaries) that has been provided by Penn's administration. Our understanding both of Penn's competitiveness with peer institutions in faculty salary levels and of faculty salary variability within Penn has been enhanced by access to this information and by the assistance of those who produced it. The SCESF acknowledges this cooperation with appreciation.

## II. Resources for Faculty Salaries

Faculty salaries are the product of a two-step process. First, most of each school's resources are raised in accordance with the principles of Penn's Responsibility Center Budgeting System. In addition, subvention is distributed to schools by Penn's central administration. Of these resources, each School makes a certain amount available for faculty salaries in three respects: (a) sustaining existing faculty appointments, (b) providing annual salary increments for continuing faculty members, and (c) creating salary funding for new faculty positions. In addition, schools must provide funds for employee benefits that approximate 30% of all such faculty salary expenditures. Second, deans of schools make annual salary increment recommendations to the Provost for continuing faculty members by a different process. These two steps are described separately in the following sections.

### A. Responsibility Center Budgeting System

In accordance with principles of the Responsibility Center Budgeting System (RCBS), each of Penn's 12 schools is allocated most of the income that it generates annually. In turn, each School is obligated to establish a level of annual expenses that does not exceed the total of available income.

A school's revenues are divided into two major fund groups: "General Operating Funds" (which were termed "unrestricted" funds prior to 1997), the expenditure of which is not restricted by specific terms and conditions established by external donors; and "Designated Funds" (which were termed "restricted" funds prior to 1997), the expenditure of which is restricted by specific terms and conditions established by external donors of such funds. Because payment of the base academic year salaries of most standing faculty members is assured from General Operating Funds (even though significant portions of such salaries are actually paid from Designated Funds), only principles of the RCBS as applied to General Operating Funds are described here.<sup>1</sup>

In general, the General Operating Funds income available to each School is of three types: earned income, gift income, and centrally-awarded subvention. These sources are shown in greater detail in **Table 1** for all of Penn's 12 Schools combined. Tuition is, by far, the greatest source of school income, with indirect cost recoveries from externally funded projects a distant second.

With respect to faculty salaries, it is possible (at least in principle) that the amount of money available to a school could be increased by augmenting a school's income from one or more of the nine specific sources listed in **Table 1**. To the extent that it is possible to increase a school's income from sources that are based on the work of faculty (e.g., tuition, indirect cost recoveries, and net income from clinical practices), faculty members have influence over the growth of income that is available for supporting faculty salaries.

General Operating Fund expenses for each school are also of three general types: academic compensation<sup>2</sup> (i.e., salary plus benefits), other school-related operating expenses (including staff compensation, materials, equipment, debt service, and student aid), and central University costs that are allocated among the schools according to RCBS formulas (e.g., facilities services, central computing services, central research support services, the University Library System, public safety, etc.).

These expenses are shown in greater detail in **Table 1** for all of Penn's 12 schools combined. Academic compensation and total allocated costs were the greatest (and roughly equal) sources of school expenses in the FY 1998 budget. With respect to academic salaries, it is possible (at least in principle) that the amount of money available within a school could be increased by reducing that school's "standard of living" (i.e., by reducing the level of staff and other support, facilities used, and/or student aid), or by increasing the efficiency of that school's administrative operations (or those of the central University) so that key services are delivered at current or expanded levels, but a lower cost. In essence, the RCBS sends the

<sup>1</sup> In addition, designated funds also provide the basis for salaries of standing faculty members appointed to endowed positions. Furthermore, the financial base for faculty salaries in the School of Medicine is so different that they are routinely excluded from SCESF's annual reports.

<sup>2</sup> Included here are the wide array of faculty members appointed to various ranks in the standing faculty, associated faculty, and academic support staff, all as described in Penn's *Handbook for Faculty and Academic Administrators*.

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message to schools that each can spend as much as it can earn, and that each School has a great deal of latitude in how to spend its income. More, or less, might be spent on faculty salaries at a school's discretion. A major exception to this message is that a significant component of income is subvention—an annual award of funds to each school by the University centrally. The amount of subvention awarded to each school is based on a number of considerations such as an adjustment for certain inequalities among schools in the costs of providing instruction and supporting research. One of many such considerations can be the variation of average faculty salaries by rank among schools. For this and other reasons, the percentage of school expenses provided by subvention income varied widely among Penn's schools from a low of 4% to a high of 28% during FY 1998.<sup>3</sup> These percentages suggest that considerable central judgment is used in allocating subvention to schools.

## B. How Annual Salary Increase Decisions Are Made

Annual salary increase recommendations for continuing faculty members are made by Department Chairs (in schools with departments) and by Deans, with review and oversight by the Provost (see the Appendix for a statement of the "Salary Guidelines For 1998-99" published in *Almanac*, April 20, 1999, p. 3, online at [www.upenn.edu/almanac/v45/n29/ORSalary.html](http://www.upenn.edu/almanac/v45/n29/ORSalary.html)). Penn's President, Provost, and Executive Vice President set an upper limit on a "pool percentage" for salary increases. For FY 2000, schools were authorized to award, as salary increases, a pool of up to 3.5% of the FY 1999 salaries of continuing faculty members. The recommended salary increase range was 1% to 6%, with Deans being obligated to consult with the Provost about any increases outside this range. Deans could supplement the pool by 0.5% without the Provost's approval, and by more than this with the Provost's approval. To address possible inequity in faculty salaries, Deans were asked to "pay particular attention to any faculty who meet standards of merit but whose salaries for various reasons may have lagged over the years."

Within this framework of available funds, Department Chairs and Deans had the responsibility to recommend salary increases to the Provost for each continuing faculty member based on general merit, including recognition of outstanding teaching, scholarship, research, and service. In addition, the Provost reviews the Deans' faculty salary recommendations "to insure that raises on average reflect market conditions in each discipline."

## III. Penn Faculty Salaries: External Comparisons

Average Penn Faculty Salaries (i.e., academic year base salaries) are compared with three types of external indicators in the following sections: growth in the Consumer Price Index (CPI), average faculty salaries

<sup>3</sup> In defining this range, the three schools receiving grants from the Commonwealth of Pennsylvania (Medicine, Veterinary Medicine, Dental Medicine) have been excluded.

**Table 1**  
General Operating Funds Budget for All Schools Combined at the University of Pennsylvania for Fiscal Year 1998  
Reported in Millions of Dollars (Excludes the Designated Funds Budget)

Item	\$1,000,000s	Percentage
<b>Income</b>		
1. Tuition <sup>a</sup>	\$294	48%
2. Indirect Cost Recovery	79	13%
3. Subvention <sup>a</sup>	66	11%
4. Commonwealth <sup>b</sup>	36	6%
5. Sales and Services	28	5%
6. Special Fees	18	3%
7. Gifts	9	1%
8. Other	23	4%
9. Health Services Transfer for School of Medicine	53	9%
<b>Total Income</b>	<b>\$606</b>	<b>100%</b>
<b>Expenses</b>		
1. Faculty Compensation <sup>c</sup>	\$163	27%
2. Staff Compensation	102	17%
3. Current Operating Expenses	98	16%
4. Student Aid	83	13%
5. Allocated Costs		
a. Library	30	5%
b. School Facilities etc.	81	13%
c. Central Administration	54	9%
<b>Total Expenses</b>	<b>\$611</b>	<b>100%</b>

<sup>a</sup> Tuition earned by schools is subdivided into two components: School Tuition (80%) and University Tuition (20%). School Tuition is listed here as "Tuition," while approximately 85% of subvention is composed of University Tuition.

<sup>b</sup> The grant from the Commonwealth of Pennsylvania is designated for three schools as follows: Veterinary Medicine: \$31M; Medicine: \$4M; Dental Medicine: \$1M.

<sup>c</sup> Excludes a large amount of faculty compensation budgeted in designated funds such as from endowments (including endowed chairs), external research grants, and clinical income.

by rank at other universities as reported by annual survey conducted at the school level, and average salaries of full professors for a sample of 17 public and private research universities selected as comparable to Penn from among those included in the "Annual Report on the Economic Status of the Profession" issued by the American Association of University Professors (AAUP). As a methodological note and unless otherwise specifically stated, all faculty salary information discussed in this report refers to the aggregated "academic year base salary" of individual faculty members whether salaries are paid from General Operating Funds and/or from Designated Funds. In addition, all salary data reported exclude members of the Faculty of Medicine and all standing faculty members who are appointed as Clinician Educators from four other schools that have such positions (Dental Medicine, Veterinary Medicine, Nursing, and Social Work).

## A. Comparisons with Growth in the Consumer Price Index (CPI)

Faculty salary increases by rank, averaged for all schools except Medicine, for FY 1998, FY 1999, FY 2000, and compound cumulative for FY 1990-99, are shown in **Table 2** in comparison with comparable data for the CPI (USCityaverage) and Penn budget guidelines. Even though the nation is in a period of low inflation, it is reassuring to observe that median faculty salary increments for all three ranks for FY 1998 exceeded the percentage growth in the CPI and Penn's budget guidelines for the years reported.

The most impressive salary increase percentages were the cumulative compound salary increments over the 10-year period from FY 1990 through FY 1999 as seen in **Table 2**. On the whole (all ranks combined), cumulative mean Penn faculty salary increments during this 10-year period were almost twice the growth in the CPI (USCityaverage).<sup>4</sup>

Furthermore, the mean compound cumulative growth in faculty salaries over the 10-year period exceeded Penn's budget guidelines by a considerable margin. These guidelines refer to the centrally-recommended salary pool percentage. What has happened is that many (perhaps all) of the Deans of Penn's schools have added considerable additional school resources to the recommended cumulative base pool for salary increments. If we estimate the compound cumulative increase over the 10-year period for all ranks combined to be 68% (the exact number is not available), the cumulative compound additional contribution of schools to the salary pool must have approximated 20% (68% minus the recommended budget guideline of 46.6%). Thus, it is apparent that both Penn's central and school administrations have made substantial joint efforts to raise the average level of faculty salaries well in excess of the rate of inflation in the CPI during the past 10 years.<sup>5</sup>

The overall increases in faculty salary by rank in comparison with growth in the CPI, as seen in **Table 2**, are reported by school (including three disciplinary areas of SAS) in **Table 3** for FY 1998, FY 1999 and FY

<sup>4</sup> For detailed information about long term trends in academic salaries generally, see the introductory sections of "The Annual Report on the Economic Status of the Profession, 1997-98", *Academe: Bulletin of the American Association of University Professors*, 1998, 84, 2 (March-April), pp. 11-106.

<sup>5</sup> In making this observation, we realize that the centrally-recommended guideline of 3.5% for FY 2000 salary increases was stated as a maximum. Depending upon a school's financial condition, a lower pool percentage could be awarded. In any event, all funds for annual salary increases must come from each school's operating budget. There is no central fund earmarked specifically for this purpose.

**Table 2**  
Average academic base salary percentage increases of Penn standing faculty members by rank in comparison with the Consumer Price Index (CPI) and Penn Budget Guidelines

Group/Condition	Average	Fiscal Year			Cumulative Compound 1990-1999
		1998	1999	2000	
Full Professors	Median	4.3%	3.5%	3.5%	66.7%
	Mean	5.0%	4.6%	5.0%	
Associate Professors	Median	4.0%	3.5%	3.9%	67.1%
	Mean	5.4%	5.2%	5.7%	
Assistant Professors	Median	4.3%	4.4%	5.0%	72.4%
	Mean	6.0%	6.0%	5.9%	
All Three Ranks	Median	5.2%	5.0%	5.3%	35.6%
UScityaverage CPI	—	1.7%	1.9%	NA	
Budget Guidelines	Mean	3.5%	3.5%	3.5%	46.6%

NOTE: Academic base salary percentage increases pertain to all Penn standing faculty members who continued in the same rank during the periods of time reported. Excluded were all members of the Faculty of Medicine, all Clinician Educators from four other schools (Dental Medicine, Veterinary Medicine, Nursing, and Social Work) that have such positions, and faculty members who were promoted or entered Penn employment during the periods of time reported.

2000. A high percentage of faculty members in all of these schools/areas was awarded salary increments for FY 2000 that exceeded growth in the CPI (Phil.) for the twelve-month period ending June 1999. More particularly, all faculty members in 3 of 13 schools/areas were awarded salary increases greater than the most recent CPI growth percentage.

Given the fairly low percentage level of inflation in Philadelphia (2.38%) and the fact that aggregate salary increases for the continuing professorate ranged from a low of 3.9% (Dental Medicine, which provided salary increases in excess of the most recent CPI growth percentage to 95% its faculty members) to a high of 10.9% (Annenberg, which provided salary increases in excess of the CPI percentage to all its faculty members) for FY 2000, it is puzzling to see that 8 of the other 11 schools/areas awarded a salary increase below the CPI growth percentage to more than five percent of all continuing standing faculty members. In particular, over 10% of faculty members in the School of Arts and Sciences (the three areas of humanities, natural sciences, and social sciences combined) were awarded salary increases less than the CPI growth percentage. Likewise, well over 10% of faculty members in the Graduate School of Fine Arts and the School of Social Work received increases less than the CPI percentage. Under such conditions, there is always concern that the salary increases for some individual faculty members might have been inequitably low. It is also disappointing because an increase of less than the CPI growth percentage for an individual faculty member represents an effective reduction in the purchasing power of a salary.

In addition, trends during the three year period shown in Table 3 represent declines in the percentage of faculty members receiving salary increases greater than growth in the CPI (Phil.). Overall for FY 2000, 9% of faculty members received salary increases less than CPI growth, whereas this percentage was only 7% for FY 1999. While some schools improved their percentages during the three years shown in Table 3 (e.g., Annenberg), there was a systematic decline in these percentages for each of the three disciplinary areas of SAS.

By contrast (as shown in Table 4), the vast majority of full professors of all schools/areas received cumulative salary increments that exceeded growth in the CPI (Phil.) over the six fiscal years from 1994 through 2000. On this indicator, 5 of 13 schools/areas awarded cumulative salary increases exceeding growth in the CPI to 100% of its continuing full professors, while no school/area was below 90%. Moreover, there has been considerable improvement in these cumulative percentages during the three blocks of time reported for Grad Education, the social science area of SAS, and Veterinary Medicine. The high percentages for most schools/areas indicate that only a small minority of full professors have fallen behind growth in the CPI over the most recent six year period. The two exceptions to this generalization are the natural sciences area of SAS (90%) and Grad Fine Arts (91%).

SCESF recognizes that there are legitimate reasons for individual faculty members to be awarded increments less than the growth in the CPI. For example, in a particular year, the salary increment pool may only approximate, or even be less than, the rate of growth in the CPI. Further-

more in a small department or school, a few promotions or market adjustments needed to retain a valued faculty member could obligate a disproportionate share of an existing increment pool, thereby leaving little to award to other faculty members in the unit. Finally, some faculty members may be sufficiently lacking in merit to justify an increment exceeding the CPI growth.

Nonetheless, if the salary increment pool available in each school/area is well in excess of CPI growth (as it has been in recent years), it is the judgment of SCESF that no individual faculty member should receive less than a cumulative salary increase equal to, or exceeding, growth in the CPI unless his or her performance has been unsatisfactory. It therefore seems possible that the cumulative salary increments received by some continuing full professors have been inequitably low, at least in part.

## B. Comparisons with Peer Universities Using MIT Survey Data

The best currently available salary data from other institutions of higher education are provided by the MIT annual survey of a group of approximately 23 private and public research universities (the sample size varies somewhat from year to year). Mean faculty salaries by rank (professor, associate professor, assistant professor) and discipline have been made available to the SCESF for analysis as of the Fall Semesters for the years 1996 through 1999. These salary data are reported for the following academic fields:

- Natural Sciences (at Penn, represented by SAS departments)
- Humanities and Social Sciences (at Penn, represented by SAS departments)
- Engineering (at Penn, represented by SEAS)
- Architecture (at Penn, represented by GSFA<sup>6</sup>)
- Management (at Penn, represented by Wharton)

Even though the MIT sample varies somewhat from year to year, comparisons reported here have been made *only* with universities that submitted salary data consistently during the four year period examined. The MIT sample includes major private universities, as well as a number of highly regarded public research universities and one college. However, the specific sample of universities varies with the academic fields listed above. Each of these samples is described in turn below.

### 1. The MIT Sample of Universities

*Comparison Sample for Natural Sciences, Social Sciences, and Humanities:* The MIT sample for academic disciplines in these areas includes 23 institutions: the California Institute of Technology, Carnegie-Mellon, Columbia, Cornell, Georgia Institute of Technology, Harvard, Massachusetts Institute of Technology, Princeton, Purdue, Rice, Stanford, California (Berkeley), California (Los Angeles), California (San Diego),

<sup>6</sup> GSFA also includes Departments of City and Regional Planning, Landscape Architecture and Regional Planning, and Fine Arts.

**Table 3**  
Percentage of continuing Penn standing faculty members awarded percentage salary increases exceeding the percentage growth in the consumer price index (CPI) for Philadelphia for the twelve-month period ending before the beginning of each of three fiscal years

Schools and Disciplinary Areas	Percentage of all Standing Faculty Members with Salary Increases Exceeding Growth in the CPI (Phil.)		
	FY 1998	FY 1999	FY 2000
Annenberg	78%	93%	100%
Dental Medicine	100%	96%	95%
Engineering & Applied Science	93%	95%	94%
Grad Education	100%	97%	100%
Grad Fine Arts	85%	100%	84%
Humanities (A&S)	99%	96%	92%
Law	97%	97%	94%
Natural Science (A&S)	92%	88%	82%
Nursing	89%	88%	100%
Social Science (A&S)	95%	95%	85%
Social Work	94%	76%	87%
Veterinary Med	95%	89%	97%
Wharton	99%	94%	93%
Phil. CPI Growth (prior year)	2.38%	1.14%	2.34%

NOTE: Academic base salary increases pertain to all Penn standing faculty members who continued in the same rank during the periods of time reported. Excluded were all members of the Faculty of Medicine, all Clinician Educators from four schools (Dental Medicine, Veterinary Medicine, Nursing, and Social Work) that have such positions, and faculty members who were promoted or entered Penn employment during the periods of time reported.

**Table 4**  
Percentage of continuing Penn Full Professors awarded cumulative compounded percentage salary increases exceeding the cumulative compounded percentage growth in the consumer price index (CPI) for Philadelphia for three six-year periods

Schools and Disciplinary Areas	Percentage of all Full Professors with Cumulative Salary Increases Exceeding Growth in the CPI (Phil.)		
	FYs 92-98	FYs 93-99	FYs 94-00
Annenberg	100%	100%	100%
Dental Medicine	100%	100%	100%
Engineering & Applied Science	93%	93%	93%
Grad Education	89%	100%	100%
Grad Fine Arts	100%	100%	91%
Humanities (A&S)	98%	99%	97%
Law	94%	94%	96%
Natural Science (A&S)	90%	96%	90%
Nursing	100%	100%	100%
Social Science (A&S)	80%	88%	93%
Social Work	100%	100%	100%
Veterinary Med	80%	86%	97%
Wharton	95%	94%	95%
Cumulative Phil. CPI Growth*	17.1%	13.9%	16.3%

NOTE: Cumulative compounded academic base salary increases pertain to all Penn full professors who continued as full professors during the periods of time reported. Excluded were all members of the Faculty of Medicine, and all Clinician Educators from four schools (Dental Medicine, Veterinary Medicine, Nursing, and Social Work) that have such positions.

\*Due to data unavailability, there is a lag of one year in computing cumulative compounded growth in the CPI (Phil.). For example, the salary increases for FYs 94-00 are compared with CPI growth during FYs 93-99.



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California (Santa Barbara), Illinois, Michigan, North Carolina, Pennsylvania, Rochester, Texas, Williams College, and Yale. These universities are, to a large extent, comparable to Penn. Although one small college (Williams) is included in the sample, other institutions are large research universities. The sample would be improved by the participation of the University of Chicago. There is one dimension on which the sample may not be completely comparable to Penn: just under one half of the schools are state universities (ten of the twenty-three). Moreover, four of the state universities are in the University of California system. However, as long as one is aware of the relatively large weight public universities have in this survey, the sample of universities is appropriate for comparison purposes.

**Comparison Sample for Engineering:** The MIT sample for engineering includes 20 institutions: the California Institute of Technology, Carnegie-Mellon, Columbia, Cornell, Georgia Institute of Technology, Massachusetts Institute of Technology, Princeton, Purdue, Rice, Stanford, California (Berkeley), California (Los Angeles), California (San Diego), California (Santa Barbara), Illinois, Michigan, Pennsylvania, Rochester, Texas, and Yale. In the judgement of SCESF, meaningful salary comparisons can be made with this sample of universities because it is sufficiently representative of engineering schools elsewhere that are considered to be peers of Penn's School of Engineering and Applied Science (SEAS).

**Comparison Sample for Architecture:** The MIT sample for architecture includes 15 institutions: Carnegie-Mellon, Columbia, Cornell, Georgia Institute of Technology, Harvard, Massachusetts Institute of Technology, Princeton, Rice, California (Berkeley), California (Los Angeles), Illinois, Michigan, Pennsylvania, Texas, and Yale. In the judgement of SCESF, meaningful salary comparisons can be made with this sample of universities because it is sufficiently representative of architecture schools elsewhere that are considered to be peers of Penn's Graduate School of Fine Arts (GSFA).

**Comparison Sample for Management:** The MIT sample for management includes 18 institutions: Carnegie-Mellon, Columbia, Cornell, Georgia Institute of Technology, Harvard, Massachusetts Institute of Technology, Purdue, Rice, Stanford, California (Berkeley), California (Los Angeles), Illinois, Michigan, North Carolina, Pennsylvania, Rochester, Texas, and Yale. In the judgement of SCESF, meaningful salary comparisons can be made with this sample of universities because it is sufficiently representative of management schools elsewhere that are considered to be peers of Penn's Wharton School.

## 2. Salary Comparisons: Penn's Competitive Standing

The most meaningful comparisons of mean faculty salaries at Penn with those at other universities in the MIT sample are broken out by academic field and rank. However, as a broad overall generalization for the four schools at Penn included in the MIT survey as weighted by faculty size, it is fair to conclude that Penn's mean faculty salaries (at the full professor and associate professor ranks) were above average in the MIT sample as of the Fall 1999. These two senior ranks represent a substantial

majority of the faculty. By contrast, assistant professor salaries overall were only about average. Thus, Penn faculty salaries (overall for the four schools included) are at a competitive level as defined by being well above average in the substantial MIT sample of comparison research universities (about half of which are private and half public).

However, Penn's general competitive level in the MIT sample has declined somewhat during the past four years, especially at the full and associate professor ranks. Thus, there is clearly room for improvement in Penn's competitive position in the MIT sample, both in terms of its relative standing and in recovering lost ground.

In our 1999 report, SCESF provided information about mean salary levels for each academic field included in the MIT survey for the most recent year for which data were available (Fall 1997). This information is now updated for Fall 1998 and 1999 in Table 5 in terms of Penn's rank order of mean salary levels within the MIT sample. In addition, comparable data are shown in Table 5 for each of four years beginning with the Fall 1996. The multi-year data of Table 5 are comparable in that the same set of comparison universities is used for each of the four years reported. Thus, none of the trends in rank orders observed over time can be attributed to instability in the sample size or composition.

SCESF has analyzed both the rank order salary data of Table 5 and the more detailed salary data (e.g., frequency distributions) from which the rank orders were computed. Based on our comprehensive study of data from the MIT Salary Survey, we describe below, in separate paragraphs for each academic field and rank, the two most salient points: (a) the competitive position of a Penn mean salary level as of Fall 1999 (the most recent salary data) and (b) the change (if any) in this competitive position during the past four years.

**Full Professors in the Natural Sciences:** As of 1999-2000, the mean salary of full professors in the natural sciences at Penn ranked 13th of 23 universities in the relevant MIT sample, although one of the 12 universities above Penn was less than 2% higher<sup>7</sup>. Accordingly, Penn's current competitive position within the MIT sample is best described as average. This position of Penn's mean salary in the natural sciences represents a noticeable<sup>8</sup> decline in its competitive position since 1996-97.

**Full Professors in the Social Sciences and Humanities:** As of 1999-2000, the mean salary of full professors in the social sciences and humanities at Penn ranked 10th of 23 universities in the relevant MIT sample, although 2 of the 9 universities above Penn were less than 2% higher. Accordingly, Penn's current competitive position in the widely distributed MIT sample in this academic field is best described as somewhat above average. Nonetheless, this position of Penn's mean salary in the social sciences and humanities represents a noticeable decline in its competitive position since 1996-97.

**Full Professors in Engineering:** As of 1999-2000, the mean salary of Penn's engineering professors ranked 12th of 20 universities in the relevant MIT sample. Although all of the 11 universities with higher salaries exceeded Penn's level by more than 2%, engineering salaries in the MIT sample are not dispersed widely—the import of which is that the Penn mean salary, though somewhat below average, is still close to the majority of those above. Nonetheless, the current competitive position of Penn's mean salary in engineering represents a noticeable decline in its competitive position since 1996-97.

**Full Professors of Architecture:** As of 1999-2000, the mean salary of Penn's GSFA professors was quite competitive in that it ranked 3rd of 15 universities in the relevant MIT sample. However, the two universities with higher salaries exceeded Penn's level by a considerable amount. In comparison with the entire sample of 15 universities reporting data for architecture, the mean GSFA salary leads a narrowly disbursed middle group. In general, the current competitiveness of the GSFA mean salary is comparable to that in 1996-97.

**Full Professors of Management:** As of 1999-2000, the mean salary of Penn's Wharton professors ranked 5th of 18 universities in the relevant MIT sample. Although all of the 4 universities with higher salaries exceeded Penn's level by more than 2%, the Wharton mean salary in the MIT sample is nonetheless close to the majority of those above—the import of which is that the mean Wharton salary is reasonably competitive with most of the highest offered elsewhere. The current Wharton mean salary represents a noticeable improvement in its competitive position

<sup>7</sup> For the purpose of describing Penn's competitive salary position, mean salaries at other universities are considered to be roughly equivalent to a Penn mean salary if they are within 2% (plus or minus) of the Penn salary.

<sup>8</sup> The word "noticeable" is used here in its literal meaning, i.e., that a change can be seen in the salary data over time. Noticeable does not mean "large" in this context.

Table 5

Rank Order of mean salary levels of Penn faculty members by five academic fields in comparison with selected public and private research universities as of the Fall Terms of 1996, 1997, 1998, and 1999

Academic Fields	Rank Order by Year			
	1996-97	1997-98	1998-99	1999-00
<b>Full Professor</b>				
Sciences	10/23	10/23	14/23	13/23
Social Sciences/Humanities	8/23	8/23	11/23	10/23
Engineering	10/20	8/20	13/20	12/20
Architecture	5/15	5/15	5/15	3/15
Management	5/18	5/18	5/18	5/18
<b>Associate Professors</b>				
Sciences	9/23	12/23	16/23	19/23
Social Sciences/Humanities	6/23	5/23	7/23	7/23
Engineering	8/20	6/20	12/20	12/20
Architecture	-	-	-	-
Management	7/18	7/18	7/18	5/18
<b>Assistant Professors</b>				
Sciences	10/23	8/23	11/23	8/23
Social Sciences/Humanities	10/23	14/23	16/23	16/23
Engineering	16/20	13/20	16/20	18/20
Architecture	11/13	11/13	11/13	12/13
Management	9/18	7/18	3/18	5/18

NOTE: Salary rank orders pertain to the mean academic base salary levels of Penn standing faculty members from the Sciences (of SAS) and Social Sciences and Humanities (of SAS), and the Schools of Engineering and Applied Science (for engineering), Graduate Fine Arts (for architecture), and Wharton (for management). Rank orders are reported only if the number of faculty members is four or more. Data source: MIT Salary Survey.

since 1996-97.

*Associate Professors in the Natural Sciences:* As of 1999-2000, the mean salary of associate professors in the natural sciences at Penn ranked 19th of 23 universities in the relevant MIT sample, although 3 of the 18 universities above Penn were less than 2% higher. Even so, Penn's current competitive position within the MIT sample is somewhat below average. The competitive position of the Penn mean salary in the natural sciences represents a considerable decline since 1996-97.

*Associate Professors in the Social Sciences and Humanities:* As of 1999-2000, the mean salary of associate professors in the social sciences and humanities at Penn ranked 7th of 23 universities in the relevant MIT sample, although 1 of the 6 universities above Penn was less than 2% higher. Accordingly, Penn's current competitive position in the MIT sample in this academic field is somewhat above average. The competitive position of the Penn mean salary in the social sciences and humanities has been stable since 1996-97.

*Associate Professors in Engineering:* As of 1999-2000, the mean salary of associate professors in engineering at Penn ranked 12th of 20 universities in the relevant MIT sample, although 3 of the 11 universities above Penn were less than 2% higher. Accordingly, Penn's current competitive position in the MIT sample in this academic field is best described as average. The competitive position of this Penn mean salary in engineering has declined noticeably since 1996-97.

*Associate Professors of Management:* As of 1999-2000, the mean salary of associate professors at Penn's Wharton School ranked 5th of 18 universities in the relevant MIT sample, although one of the 4 universities above Penn was less than 2% higher. Accordingly, Penn's current competitive position in the MIT sample in this academic field is somewhat above average. The current Wharton mean salary represents a noticeable improvement in its competitive position since 1996-97.

*Assistant Professors in the Natural Sciences:* As of 1999-2000, the mean salary of assistant professors in the natural sciences at Penn ranked 8th of 23 universities in the relevant MIT sample, although 1 of the 7 universities above Penn was less than 2% higher. Even so, Penn's current competitive position within the MIT sample is best described as average because the Penn salary was very close to the median of the sample. In spite of improvement in the rank order of the Penn mean salary in the natural sciences since 1996-97 (as seen in Table 5), closer inspection of the data indicates that Penn's competitive position is comparable to that in 1996-97.

*Assistant Professors in the Social Sciences and Humanities:* As of 1999-2000, the mean salary of assistant professors in the social sciences and humanities at Penn ranked 16th of 23 universities in the relevant MIT sample, although one of the 15 universities above Penn was less than 2% higher. Accordingly, Penn's current competitive position in the MIT sample in this academic field is considerably below average. The competitive position of the Penn mean salary in the social sciences and humanities has declined considerably since 1996-97.

*Assistant Professors in Engineering:* As of 1999-2000, the mean salary of assistant professors in engineering at Penn ranked 18th of 20 universities in the relevant MIT sample, although one of the 17 universities above Penn was less than 2% higher. Accordingly, Penn's mean salary in this academic field is not competitive in the MIT sample. In addition, the competitive position of the Penn mean salary in engineering has declined considerably since 1996-97.

*Assistant Professors of Architecture:* As of 1999-2000, the mean salary of assistant professors in Penn's GSFA ranked 12th of 13 universities in the relevant MIT sample. All of the 11 universities with higher salaries exceeded Penn's level by more than 2%. Thus, Penn's mean salary in this academic field is not competitive in the MIT sample. In addition, the competitive position of the GSFA mean salary has declined noticeably since 1996-97.

*Assistant Professors of Management:* As of 1999-2000, the mean salary of assistant professors in Penn's Wharton School professors ranked 5th of 18 universities in the relevant MIT sample, although 2 of the 4 universities above Penn were less than 2% higher. Accordingly, Penn's current competitive position in the MIT sample in this academic field is somewhat above average. The competitive position of this Wharton mean salary has been stable since 1996-97.

### 3. General Conclusions about Penn's Competitive Standing by Academic Field

As of academic year 1999-2000, the competitiveness of Penn's mean salary levels varies greatly across academic fields, and by professorial rank within fields. Only Wharton's mean salaries are considerably above average across all three ranks. The mean salaries at Penn of full and asso-

ciate professors in the social sciences and humanities (combined) are also above average, though the mean salary of assistant professors is below average. Similarly, the mean salary of full professors in GSFA is above average, while that of assistant professors ranks only 12th out of 13 in the MIT sample. Likewise, the mean salary of Penn's assistant professors in engineering lags well behind the competition.

Except for Wharton, there certainly is much room for general improvement in the competitiveness of Penn mean salary levels. How much improvement should be expected is indeterminate because there are no established target levels. However, it might be assumed that recent levels of competitiveness mark at least the lower boundary.<sup>9</sup> By that measure, Penn has experienced a general decline in competitiveness in all academic fields covered by the MIT survey except Wharton (which has achieved noticeable improvement). The competitiveness of the mean salaries of Penn full professors have noticeably declined in the natural sciences, social sciences/humanities, and engineering. The mean associate professor salary in natural science has declined considerably, as have the mean salaries of assistant professors in the social sciences/humanities and in engineering.

Overall, this is a much less promising overview of Penn's competitiveness by academic field and rank than presented in SCESF's 1999 Annual Report. This raises the question about what explains the general decline in Penn's salary competitiveness in the MIT sample of research universities during the four most recent years. One possibility is that Penn has been investing a *decreasing* amount of funds in faculty salary increases in its four schools (SAS, SEAS, GSFA, Wharton) that are included in the MIT survey during the period 1996-97 to 1999-00. A review of salary increase percentages, year-by-year, for each school and each rank within school reveals that this is quite dramatically *not* so. For each rank for each of the four schools, the mean salary increase percentage was greater in 1999-00 than it was in 1996-97. Likewise, salary increase percentages for 1997-98 and 1998-99 (with one or two exceptions) were higher across the board than in 1996-97. Thus, Penn has been aggressively increasing faculty salaries during the past three years as judged by its own standards.

Therefore, the explanation for the general decline Penn's salary competitiveness (other than Wharton) for three of the four schools included in the MIT survey must be that our competition is increasing faculty salaries at a considerably higher rate than Penn. That is, in spite of Penn's efforts to improve faculty salary levels, our competitive position is declining because other universities are even more aggressively increasing faculty salaries.

### C. Comparisons with Other Universities for Veterinary and Dental Medicine

For the first time this year, SCESF has been able to review cross-university comparative salary data for the Schools of Veterinary Medicine and Dental Medicine. The Committee appreciates the cooperation of the Office of the Provost and the Deans of the Faculties of Veterinary Medicine and Dental Medicine in making this possible.

The mean salaries by rank of faculty members in Penn's School of Veterinary Medicine are included in a salary survey for 1998-99 conducted by the Association of American Veterinary Medical Colleges (AAVMC). Accordingly, they can be compared with those from veterinary medicine schools from 32 other universities, including a set of 11 other veterinary schools considered to be Penn's peers. The salary data recorded by this survey differs from the standard definition of salary used in this report (i.e., the academic base salary of standing faculty members excluding clinician educators) in the following ways: (a) clinician educators are included in the veterinary medicine salary data, (b) salaries reported may be on either a 9 or 12 month basis, and (c) institutional supplements (undefined) are included in salaries reported. In essence, the survey is designed to record the salary actually paid to faculty members during a fiscal year.

Under the conditions of the AAVMC salary survey, SCESF is pleased to report that the mean academic base salaries at Penn in the School of Veterinary Medicine ranked first in the peer group of 12 veterinary medicine schools for Professors, Associate Professors and Assistant Professors (including Clinician Educators). So far as known, this represents the strongest competitive position held by any school at Penn.

<sup>9</sup> In fact, it is clear from Committee discussion with the Interim Provost in 1998 and the Provost in 1999 that the faculty salary policy is to maintain, at the very least, Penn's competitive position with peer universities. The recent declines in competitiveness reviewed here represent a major "challenge" in light of this policy.



# SENATE Economic Status of the Faculty

With respect to the mean salary levels of faculty members at Penn's School of Dental Medicine, comparative data are available from a salary survey for 1997-98 conducted by the American Association of Dental Schools (AADS). Accordingly, Penn salaries can be compared with those from dental medicine schools from 48 other universities whose identities are not reported. SCESF has been informed that five of Penn's main competitors are included in the 48 other universities participating in the survey. The data recorded by the dental salary survey differs from the standard definition of salary used in this report (i.e., the academic base salary of standing faculty members excluding clinician educators) in the following ways: (a) clinician educators are included, (b) professorial level faculty members who work less than full time at a dental school are included, (c) guaranteed annual salaries are used as the base, and can be divided by 10 to convert to a guaranteed annual salary per half day, and (d) mean salary data for Penn included the Dean, Associate Dean, and Department Heads, while the comparative data available excluded salaries earned by incumbents in these academic administrative positions.

The AADS salary data report was not broken out by university. Instead, salary data for dental schools from all participating universities were aggregated, and the mean, first quartile, second quartile, and third quartile points of this aggregated salary distribution were reported. In terms of guaranteed half day salary, faculty salaries at Penn's School of Dental Medicine compared favorably in the large sample of 49 schools so far as can be determined. The mean full professor salary at Penn appears to be above the 75th percentile, the mean associate professor salary appears to be above the 75th percentile, and the mean assistant professor salary appears to be close to the 75th percentile.

There is no way to determine how well average Penn salaries in dental medicine compare with salary levels at its peer group of dental schools. However, a spokesman for Penn's School of Dental Medicine has informed SCESF that Penn salaries at all three professorial ranks are strongly competitive within its peer group, but not ranked first.

## D. Comparisons with Peer Universities Using AAUP Survey Data

In the absence of salary data for five of Penn's schools, a comparison of the mean salaries of all full professors at Penn was made with those at a small select group of research universities based on data published annually by the American Association of University Professors (AAUP) in the April/May issues of *Academe*. To make meaningful and fair comparisons of Penn salaries with those at other Universities, five criteria for selection of comparison universities were first defined: (a) be included in the Research I category of the Carnegie Classification System, (b) offer a broad array Ph.D. programs in arts and sciences disciplines, (c) include at least two of three major professional schools (law, business, engineering), (d) not include a school of agriculture, and (e) have a composite academic reputation rating greater than 4.0 (on a five point scale)<sup>10</sup> in a rating system reported by *U.S. News & Report*. The 17 research universities meeting all five of these criteria are identified in the first column of **Table 6**.

The relative standings of mean salaries of Penn full professors are presented in **Table 6** for six years. The order of listing of universities in **Table 6** was determined by the magnitude of mean salaries of full professors (from high to low) for the most recent academic year (1999-00). Next, the difference between a comparison university's mean salary and Penn's mean salary was computed as a percentage of Penn's mean salary. For example as seen in **Table 6**, the mean salary of Harvard full professors in 1986-87 was 16.9% higher than Penn's mean salary that year (\$59,600), while the mean salary at Northwestern was 4.9% below Penn's mean salary.

The data of **Table 6** show that the mean salaries for full professors at Penn gradually became more competitive during the past 14-year period. For example, seven universities provided mean salaries more than 2% higher than Penn in 1986-87, while the mean salaries at four universities (Harvard, Stanford, Yale, and Chicago) exceed Penn by more than 2% in 1999-00. In addition, the percentage advantage of salaries at Harvard, Stanford, and Yale over Penn decreased substantially during this period of time, while only Chicago gained in percentage advantage.

Based on the data of **Table 6**, it is clear that mean salaries of full professors at Penn, on the average, become much more competitive with the very highest salaries elsewhere during the period 1986-87 through 1996-97, and during the past three years have mostly maintained their respectable competitive position among the top few universities in the nation (and probably in the world, for that matter).<sup>11</sup> Though Penn's competitive position in this respect is strong in general, aggregated salary data such as these do not reveal which schools, and departments within schools, may provide mean salaries that are particularly competitive or that may

lag behind their competition. Therefore, SCESF continues to seek comparative salary data that is specific to each of Penn's schools.

Even though SCESF was careful to select universities for overall mean salary comparisons that were similar to Penn on several important criteria and made comparisons at the full professor rank (i.e., we did not aggregate across the three professorial ranks), AAUP salary data did not permit the SCESF to control for the specific schools sponsored by each university and the number of full professors appointed to each school. Such controls are desirable because mean salary levels vary by school, as do the number of professors appointed to the faculty of each school on which the means are based. Nonetheless, the 1999-00 salary data for full professors from the AAUP survey (of **Table 6**) appear to be reasonably consistent with the salary data for full professors from the MIT survey (published as **Table 5** in SCESF's 1999 Annual Report), and are therefore sufficiently valid to include in this report. In addition, tables similar to that of **Table 6** (for full professors) were constructed for associate and assistant professors. They show that salary data from the AAUP survey are not reasonably consistent with data from the MIT survey. Therefore, no comparative salary data from AAUP surveys are presented for associate and assistant professors.

## IV. Penn Faculty Benefits

Although our 1998-99 Annual Report included a section on comparative faculty benefits data, further study of data available on cross-university comparisons of faculty benefits has revealed that comparative benefits data are of insufficient precision to make detailed quantitative comparisons meaningful. Accordingly, no such comparisons are made in this report.

Based on available comparative benefits data, however, it appears to SCESF that employee benefits package provided for Penn faculty members is of equal, or greater, value to that provided to faculty members at Penn's peer private universities. In particular, it appears that the tuition benefit for Penn faculty dependents is substantially greater than that provided by peer universities, while other major types of benefits are generally comparable.

## V. Penn Faculty Salaries: Internal Comparisons

As previous reports of the SCESF have highlighted, there is a great deal of variability (e.g., inequality) in faculty salaries at Penn attributable to several recognized factors: differences in individual merit, rank, time in rank, external labor market forces, the relative wealth of Schools, and

<sup>10</sup> A composite rating was constructed by computing the mean of three separate academic reputation ratings: a general rating, a mean rating of key Ph.D. programs, and a mean rating of key professional schools.

<sup>11</sup> Of universities not included in our comparison group, only Rockefeller University, Princeton University, the California Institute of Technology, and New York University provided mean salaries for full professors in 1999-00 that were higher than Penn's.

**Table 6**

**Full professor salary comparisons: Percentage differences in mean academic base salary levels of Penn full professors in comparison with salary levels of full professors at a sample of comparable research universities for Academic Years 1986-87, 1991-92, 1996-97, 1997-98, 1998-99, and 1999-00**

Full Professor Salaries: Percentage Differences by Year						
University <sup>a</sup>	1986-87	1991-92	1996-97	1997-98	1998-99	1999-00
Harvard	+16.9%	+14.7%	+12.2%	+11.7%	+11.3%	+12.3%
Stanford	+12.8%	+7.6%	+6.4%	+6.1%	+7.4%	+5.5%
Yale	+6.7%	+7.1%	+4.7%	+3.6%	+4.2%	+3.6%
Chicago	-0.3%	+3.6%	+1.6%	+1.3%	+3.3%	+3.2%
<b>Pennsylvania</b>	<b>\$59.6K</b>	<b>\$80.4K</b>	<b>\$100.0K</b>	<b>\$104.6K</b>	<b>\$108.4K</b>	<b>\$114.8K</b>
Columbia	+3.2%	+2.0%	+1.2%	-1.0%	+0.8%	-1.2%
MIT	+4.7%	+4.4%	+0.1%	-0.4%	-1.3%	-2.7%
Northwestern	-4.9%	-1.6%	-3.9%	-3.1%	-1.7%	-3.1%
U.C. (Berkeley)	+7.4%	-2.9%	-13.0%	-11.4%	-4.5%	-5.3%
Duke	-3.7%	-1.0%	-4.2%	-3.5%	NA	-5.9%
UCLA	+4.5%	-5.0%	-13.9%	-11.5%	-6.5%	-7.6%
Virginia	-1.0%	-12.1%	-15.8%	-13.1%	-11.0%	-11.8%
Michigan	-6.2%	-8.8%	-12.0%	-12.1%	-10.8%	-12.1%
Carnegie-Mellon	+0.8%	-1.9%	-8.9%	-10.2%	-10.6%	-13.6%
N.C. (Chapel Hill)	-10.7%	-18.8%	-17.8%	-17.8%	-18.2%	-18.3%
MN (Twin Cities)	-15.8%	-21.6%	-25.2%	-22.6%	-21.2%	-22.0%
Texas (Austin)	-16.6%	-15.0%	-20.4%	-21.2%	-22.2%	-22.1%

NOTE: Penn academic base mean salaries are based on standing faculty members at the rank of professor. Excluded are all members of the Faculty of Medicine and all standing faculty members who are appointed as Clinician Educators from four other schools that have such positions (Dental Medicine, Veterinary Medicine, Nursing, and Social Work). Data source: AAUP Salary Surveys.

<sup>a</sup>Universities are ordered from highest to lowest mean salaries for full professors as of 1999-00. For each year reported, the difference between the Penn mean salary and the mean salary for a comparison university was computed as a percentage of the Penn salary.

perhaps differences among Schools in principles and practices for allocating salary increments.

One of SCESF's concerns has been that, among all the existing variability in faculty salaries, there might be some significant element of inequity (i.e., salary setting based on incomplete or inaccurate information about merit, or bias that could be involved in the process of deciding salary increments). However, it is not possible for the SCESF to pinpoint any instance of individual, or group, inequity without individual faculty salaries and associated information about individual merit, labor market forces, etc. What we can do is review many facets of salary variability and raise questions about the possibility that inequity might be responsible for some degree of the observed variability. These questions might lead to further review and action by senior academic administrators (Department Chairs, Deans, and the Provost) with a view to correcting any inequities that might be identified.

We turn next to a description and analysis of several dimensions of faculty salary variability within Penn. As with the external salary comparisons reviewed above, all salary data reviewed in this section exclude the School of Medicine and all standing faculty members who are appointed as Clinician Educators from four other schools that have such positions (Dental Medicine, Veterinary Medicine, Nursing, and Social Work).

#### A. Variability in Average Salary Increases by Rank and School/Area

As reported in [Table 2](#), median faculty salary increases by rank for all of Penn's schools combined substantially exceeded the growth in the CPI for most recent full year (FY 1999) for which both sets of data are available and exceeded Penn's budget guidelines for the past three years (FY 1998, 1999, and 2000). These salary increases are broken out by school and rank in [Tables 7 through 9](#) where it can be seen that there has been considerably variability in median salary increases across schools and years, as well as among the first and third quartile increases ( $Q_1$  and  $Q_3$ , respectively). As might be expected with such variability, a number of the median increases were actually below the general guideline of 3.5%.

Before reviewing these salary increases, it should be recognized that the salary increase guideline of 3.5% is just that, a guideline, and pertains to an aggregate of all increases for all ranks combined for each of Penn's schools (i.e., merit increases for continuing faculty members, special increases for faculty members who have been promoted in rank, and market adjustments for faculty members with generous salary offers from other institutions). Schools may allocate more, or less, resources to fac-

ulty salary increments than the guideline, depending upon each school's financial circumstances (see [Section II.B.](#) above). Therefore, a comparison of the median increase awarded to faculty members of a particular rank and school with the salary guideline only gives an indication of the extent to which the guideline was implemented in that particular instance. Accordingly, a particular median increment of less than 3.5% should not be regarded as a specific failure of salary policy, since there is no policy for each rank and each school to be awarded at least that much on the average. Furthermore, the 3.5% guideline pertains to the mean increase, a measure of central tendency that is usually higher than the median salary increases as shown in [Table 2](#).

Nonetheless, the overall mean salary increase for all faculty members continuing in the same rank for FY 2000 was 5.3% (see [Table 2](#)), a number well above the guideline of 3.5%. Even so, this substantial salary increase resource in the aggregate was not distributed sufficiently widely to lift the median salaries of all ranks in all schools/areas by at least the guideline amount—a phenomenon that can be attributed to differing wealth and budget priorities among the various schools as permitted under RCBS.

A seemingly modest, but significant, change in faculty salary policy was incorporated into the Salary Guidelines for 1998-99 which specified that "increases in merit should range from 1.0 to 6.0 percent." The award of increases outside this range required consultation with the Provost. Prior to this, the range specified was from 2.0 to 6.0 percent. It is reasonable to surmise that two noteworthy changes in the allocation of salary increases, as seen in [Tables 7, 8, and 9](#) for the two years under the new policy (i.e., 1998-99 and 1999-00), can be attributed, at least in part, to the policy shift:

1. Whereas in 1997-98, the median salary increase for all three ranks of the professorate was comparable when aggregated across all school, the median percentage increases for assistant professors was considerably higher in 1998-99 and 1999-00 than it was for full professors and associate professors. Whether this was an effort to make assistant professor salaries more competitive due to market factors or due to greater merit than perceived in the higher two ranks is not clear from the data tabulated. Whatever the reason, assistant professors have been advantaged during the past two years.

2. With 1% salary increases coming within the specified range for 1998-99 (instead of the prior 2%), the first quartile ( $Q_1$ ) raises for full and associate professors declined across all schools for 1998-99 and 1999-00 in comparison with 1997-98. This decline in first quartile increases did not

**Table 7**

**Full Professors: Median academic base salary percentage increases of continuing Penn Full Professors for FY 1998, 1999, and 2000, along with the first and third quartile salary increases**

School/Area	First Quartile ( $Q_1$ ), Median (Md.) <sup>a</sup> , and Third Quartile ( $Q_3$ ) Percentage Salary Increases by Year								
	1997-98			1998-99			1999-00		
	$Q_1$	Md.	$Q_3$	$Q_1$	Md.	$Q_3$	$Q_1$	Md.	$Q_3$
All Schools	4.3			3.5			3.5		
Annenberg	-	5.1	-	3.1	10.1	15.4	5.0	8.8	11.5
Dental Medicine	3.9	4.4	5.4	3.5	4.5	5.0	3.5	3.5	4.0
Engr. & Applied Science	4.0	4.6	5.3	2.5	3.5	4.5	3.0	3.7	4.6
Grad Education	4.0	4.6	5.2	3.8	4.0	5.0	4.0	5.0	6.7
Grad Fine Arts	3.8	4.3	5.2	3.0	3.0	5.0	2.5	3.5	5.0
Humanities (A&S)	3.5	3.8	4.7	2.7	2.9	3.5	3.0	3.0	4.0
Law	4.0	4.3	4.9	3.5	5.7	9.0	3.5	5.2	6.6
Natural Sciences (A&S)	3.3	3.8	4.7	2.1	2.9	3.8	2.5	3.0	4.2
Nursing	-	4.2	-	-	3.4	-	-	3.5	-
Social Sciences (A&S)	3.4	4.1	4.7	2.5	3.0	3.9	2.9	3.1	4.2
Social Work	-	4.9	-	-	5.5	-	-	5.0	-
Veterinary Medicine	4.0	4.3	4.8	2.5	3.5	4.0	3.5	3.5	5.0
Wharton	4.2	5.0	7.2	3.5	4.1	8.0	3.8	4.7	5.9
Budget Guideline	3.5			3.5			3.5		

NOTE 1: The Budget Guideline shown under each rank is for comparison purposes. As per Penn policy, it is a guideline for a salary increment pool for all standing faculty members in each school, but not specifically for each rank.

NOTE 2: Academic base salary percentage increases pertain to all Penn standing faculty members who continued as full professors during the periods of time reported. Excluded were all members of the Faculty of Medicine, all Clinician Educators from four other schools (Dental Medicine, Veterinary Medicine, Nursing, and Social Work) that have such positions, and faculty members who were promoted or entered Penn employment during the years reported.

<sup>a</sup>A median (Md.) percentage salary increase is the mid-point of the increase within each school/area and rank (i.e., half of all increases were below the median and half were above). Variability of salary increase percentages is indicated by the first quartile ( $Q_1$ ) and third quartile ( $Q_3$ ) percentage increases. At the lower end of the salary increase percentages, 25% of all increases were below the  $Q_1$ , while 75% were above. At the upper end, 75% of all increases were below the  $Q_3$ , while 25% were above. Median increases are reported only if the number of faculty members is four or more. The quartile increases are reported only if the number of faculty members is ten or more.

**Table 8**

**Associate Professors: Median academic base salary percentage increases of continuing Penn Associate Professors for FY 1998, 1999, and 2000, along with the first and third quartile salary increases**

School/Area	First Quartile ( $Q_1$ ), Median (Md.) <sup>a</sup> , and Third Quartile ( $Q_3$ ) Percentage Salary Increases by Year								
	1997-98			1998-99			1999-00		
	$Q_1$	Md.	$Q_3$	$Q_1$	Md.	$Q_3$	$Q_1$	Md.	$Q_3$
All Schools	4.0			3.5			3.9		
Annenberg	-	-	-	-	-	-	-	-	-
Dental Medicine	3.9	4.0	4.8	3.5	3.5	4.0	-	3.5	-
Engr. & Applied Science	3.4	4.4	5.9	3.7	4.0	5.6	3.3	3.5	4.8
Grad Education	-	5.1	-	-	5.0	-	-	4.0	-
Grad Fine Arts	-	-	-	-	-	-	-	-	-
Humanities (A&S)	3.3	3.5	4.1	2.8	2.9	4.0	3.0	3.9	7.7
Law	-	-	-	-	-	-	-	-	-
Natural Sciences (A&S)	3.4	4.5	6.4	2.6	3.4	5.3	2.8	3.1	4.7
Nursing	4.1	4.6	5.0	2.5	3.2	4.2	3.0	4.1	4.1
Social Sciences (A&S)	3.3	3.7	4.6	2.5	3.0	4.7	2.3	3.0	3.9
Social Work	-	4.0	-	-	5.0	-	-	4.5	-
Veterinary Med	3.9	4.0	4.3	3.5	3.5	4.0	3.5	4.5	10.4
Wharton	3.9	4.9	5.7	2.5	4.1	10.2	3.5	5.4	8.7
Budget Guideline	3.5			3.5			3.5		

NOTE 1: The Budget Guideline shown under each rank is for comparison purposes. As per Penn policy, it is a guideline for a salary increment pool for all standing faculty members in each school, but not specifically for each rank.

NOTE 2: Academic base salary percentage increases pertain to all Penn standing faculty members who continued as associate professors during the periods of time reported. Excluded were all members of the Faculty of Medicine, all Clinician Educators from four other schools (Dental Medicine, Veterinary Medicine, Nursing, and Social Work) that have such positions, and faculty members who were promoted or entered Penn employment during the years reported.

<sup>a</sup>A median (Md.) percentage salary increase is the mid-point of the increase within each school/area and rank (i.e., half of all increases were below the median and half were above). Variability of salary increase percentages is indicated by the first quartile ( $Q_1$ ) and third quartile ( $Q_3$ ) percentage increases. At the lower end of the salary increase percentages, 25% of all increases were below the  $Q_1$ , while 75% were above. At the upper end, 75% of all increases were below the  $Q_3$ , while 25% were above. Median increases are reported only if the number of faculty members is four or more. The quartile increases are reported only if the number of faculty members is ten or more.

# SENATE Economic Status of the Faculty

occur on a school by school basis for assistant professors, another indicator of the trend noted above to higher increases of salaries of assistant professors than of full and associate professors.

The SCESF has been advised that the change in policy for 1998-99 (i.e., specifying 1% instead of 2% as the base of the standard range of salary increases) was taken because Deans wished to have greater flexibility in awarding such increases. Although SCESF has not raised an issue specifically about this policy<sup>12</sup>, we have regularly raised the more general issue about principles by which salary increases are awarded in relation to increases in the CPI. In this respect, it should be noted that all percentage increases at the first quartile for all three professorial ranks for all schools/areas were greater than increases in the CPI for 1997-98 and 1998-99.

In contrast with 1997-98, we note from **Tables 7 and 8** that for 1998-99 and 1999-00 the median salary increases for full professors in each of the three areas of SAS were clearly below the budget guideline of 3.5% in each year. The same is generally true of associate professors in SAS, but not assistant professors. This trend is of concern to SCESF, and we expect to the faculty and administration of SAS as well.

The distribution of salary increase resources is shown clearly in a comparison of the first and third quartile data of **Tables 7, 8, and 9**. It can be seen that *none* of the relatively low median increases (below 3.5%) were due to extremely high third quartile percentage increases (i.e., because unusually large increases were allocated to only 25% of faculty members in a rank/school group), even though some positive skewness of the distributions can be observed. Instead, it seems that the increases provided to faculty members in these particular schools/areas were generally low relative to the university-wide average. Therefore, the relatively low median increases are more a problem of inadequate resources, or school policy for allocating available resources, than wide variation in the distribution of available salary increases.

Overall as seen in **Tables 7, 8, and 9**, there is great variability for all three years in salary increment percentages both among Schools within ranks, and among ranks within Schools. SCESF is not aware of specific information about merit and market factors that is available to department heads and deans, and how they weigh this information in deciding salary increments for individual faculty members. Without such information, it is not possible to determine whether any inequity is involved in

<sup>12</sup> Heretofore, the work of SCESF has not benefitted from information about the variability of salary increases by school over a three year period as shown here, for the first time, in **Tables 7, 8, and 9**.

**Table 9**

**Assistant Professors: Median academic base salary percentage increases of continuing Penn Assistant Professors for FY 1998, 1999, and 2000, along with the first and third quartile salary increases**

**First Quartile (Q<sub>1</sub>), Median (Md.), and Third Quartile (Q<sub>3</sub>) Percentage Salary Increases by Year**

School/Area	1997-98			1998-99			1999-00		
	Q <sub>1</sub>	Md.	Q <sub>3</sub>	Q <sub>1</sub>	Md.	Q <sub>3</sub>	Q <sub>1</sub>	Md.	Q <sub>3</sub>
All Schools		4.3			4.4			5.0	
Annenberg									
Dental Medicine	-	5.3	-	-	3.5	-	-	3.5	-
Engr. & Applied Science	4.2	5.1	7.2	4.0	4.5	5.0	4.3	4.6	5.1
Grad Education	-	-	-	-	5.0	-	-	5.0	-
Grad Fine Arts	-	3.9	-	-	5.0	-	-	3.5	-
Humanities (A&S)	3.2	3.3	4.6	2.5	3.1	4.4	3.0	4.2	6.0
Law	-	6.9	-	-	8.6	-	-	-	-
Natural Sciences (A&S)	3.5	4.3	5.7	3.8	4.5	5.3	4.1	5.0	8.4
Nursing	-	3.4	-	-	2.6	-	-	3.5	-
Social Sciences (A&S)	2.9	3.4	4.3	2.9	3.1	4.14	3.0	3.1	5.5
Social Work	-	4.3	-	-	-	-	-	-	-
Veterinary Med	-	6.9	-	3.5	3.5	6.0	3.5	3.5	6.0
Wharton	4.4	6.8	7.4	4.3	9.1	10.9	5.4	6.4	9.3
Budget Guideline		3.5			3.5			3.5	

NOTE 1: The Budget Guideline shown under each rank is for comparison purposes. As per Penn policy, it is a guideline for a salary increment pool for all standing faculty members in each school, but not specifically for each rank.

NOTE 2: Academic base salary percentage increases pertain to all Penn standing faculty members who continued as assistant professors during the periods of time reported. Excluded were all members of the Faculty of Medicine, all Clinician Educators from four other schools (Dental Medicine, Veterinary Medicine, Nursing, and Social Work) that have such positions, and faculty members who were promoted or entered Penn employment during the years reported.

<sup>a</sup>A median (Md.) percentage salary increase is the mid-point of the increase within each school/area and rank (i.e., half of all increases were below the median and half were above). Variability of salary increase percentages is indicated by the first quartile (Q<sub>1</sub>) and third quartile (Q<sub>3</sub>) percentage increases. At the lower end of the salary increase percentages, 25% of all increases were below the Q<sub>1</sub>, while 75% were above. At the upper end, 75% of all increases were below the Q<sub>3</sub>, while 25% were above. Median increases are reported only if the number of faculty members is four or more. The quartile increases are reported only if the number of faculty members is ten or more.

the salary increase percentages reported in these tables.

## B. Variability in Average Salary Levels by Rank

Three-year trends in mean faculty salaries by rank are shown in **Table 10** for all schools combined (except Medicine, of course).<sup>13</sup> Such data give the crudest perspective on rank differences in salary, however, because of aggregation biases across schools. For example, one might expect a considerably larger difference between mean assistant and associate professor salaries. The modest difference might be accounted for by the facts that the Law School has no associate professors (a fact that might decrease the observed associate professor mean) and the Wharton School has a considerably higher percentage of assistant professors than is typical of other schools (a fact that could increase the observed assistant professor mean).

A more meaningful comparison of variation in faculty salaries by rank is made by computing the ratios for continuing faculty members for each school and then computing a mean weighted ratio (weighted for the number of continuing faculty members at each rank in each school).<sup>14</sup> The weighted ratios thus computed are also seen in **Table 10**. Viewed in this way, there is much greater spread in mean salary levels by rank.

As discussed in the prior section, percentage salary increases for assistant professor, in the aggregate, have been considerably greater than for full professors during the past two years (1998-99 and 1999-00). This trend can also be seen in **Table 10** where the weighted ratio of professor to assistant professor salaries has declined year-by-year since 1997-98.

## C. Variability in Professorial Salaries by Years of Service

There has been some concern that full professors who have recently been recruited to Penn (perhaps including those who have recently been promoted to the rank of full professor) have had their salary levels set considerably higher than professors of equivalent merit who have served at Penn for many years (and without commensurate increases to the levels set for recent appointees). If so, this phenomenon would constitute an inequity in salary policy. However, salary data available to SCESF at this time, though imperfect, do not support this concern. The Committee hopes to secure more definitive data in the future.

<sup>13</sup> The mean salary figures for full professors recorded in **Table 10** for 1998-99 and 1999-00 are higher than those recorded in **Table 6** which are drawn from AAUP reports. This discrepancy is a product of two AAUP policies: first, to exclude faculty members with decanal titles (which will reduce the AAUP mean); second, to include all faculty members in a rank (including those newly appointed to a rank) whereas **Table 10** data are limited to faculty members who continued in the same rank from the prior year (a difference that will also reduce the AAUP mean).

<sup>14</sup> Weighted ratios were based on all Schools except Annenberg which has only one assistant professor. Law was not included in the associate professor ratio since none of its faculty members are appointed at this rank.

**Table 10**

**Mean academic base salary levels of continuing Penn standing faculty members by rank**

Rank	Academic Year	Salary		Ratio to Assist. Prof. Salary Level	
		Average	Amount	Not Weighted	
				Weighted	Weighted <sup>a</sup>
Full Professor	1997-98	Mean	\$105,616	1.69	1.89
		Median	NA		
	1998-99	Mean	112,098	1.69	1.85
		Median	102,600		
	1999-00	Mean	117,092	1.69	1.84
		Median	106,338		
Associate Prof.	1997-98	Mean	69,585	1.11	1.26
		Median	NA		
	1998-99	Mean	74,129	1.12	1.26
		Median	69,850		
	1999-00	Mean	79,519	1.14	1.24
		Median	74,000		
Assistant Prof.	1997-98	Mean	62,527	1.00	1.00
		Median	NA		
	1998-99	Mean	66,438	1.00	1.00
		Median	57,350		
	1999-00	Mean	69,417	1.00	1.00
		Median	60,450		

NOTE: Mean academic base salary levels are based on all Penn standing faculty members who continued in the same rank from FY 1998 to FY 1999. Excluded were all members of the Faculty of Medicine, all Clinician Educators from four other schools (Dental Medicine, Veterinary Medicine, Nursing, and Social Work) that have such positions, and faculty members who were promoted effective for each year reported.

<sup>a</sup>The weighted ratios were computed by the following procedure: first, the ratios for continuing faculty members for each school were computed (except for Annenberg, which had no assistant professors); next a mean weighted ratio was computed (weighted for the number of continuing faculty members at each rank in each school).



#### D. Variability of Average Salary Levels by School/Area

As described in previous SCESF reports, there is considerable variability in average faculty salary levels across Penn's 13 schools/areas (as listed in Table 3). Information about the extent of this cross-school variability is presented by rank in Table 11 for the two most recent academic years in terms of the first quartile ( $Q_1$ ), second quartile ( $Q_2$ , the same as the median), and the third quartile ( $Q_3$ ) of median faculty salary levels. For full professors, the interquartile range of median salaries in 1999-00 based on the 13 schools/areas was \$29,000 (i.e., the third quartile salary of \$124,000 minus the first quartile salary of \$95,000). The comparable interquartile range of salary levels across schools/areas was less understandably less for associate professors (\$21,500) and assistant professors (\$16,600) in absolute dollars, but not as a percentage of the medians (about 28%). Thus, for all three ranks, the interquartile range of median salaries across schools/areas was remarkably large. Moreover, the interquartile ranges in 1999-00 had increased considerably from the prior year (1998-99) when they were "only" \$22,100 for full professors and \$14,800 for associate professors. This is evidence of rapidly increasing disparity of faculty salaries across Penn's 13 schools/areas.

Given this increasing variability in median faculty salaries across schools/areas shown in Table 11, SCESF examined other available data to determine whether the degree of variability has been stable or changing over a longer period of time than the two years shown in Table 11. For the most recent five year period, SCESF compared the mean salary of faculty members continuing in the same rank at the highest paid school with the mean salary of those at the lowest paid school.<sup>15</sup> The results of this analysis, as shown in Table 12, reveal that the mean salaries of full professors in the highest paying school has been stable at about 160% of the mean salaries in the lowest paying school for the past four years, while the relationship of the highest to the lowest mean salaries of associate professors has stabilized at a higher level (about 174%) during the past two years. By contrast, the mean salaries of assistant professors in the highest paying school has continued to grow in relation to the lowest paying school from FY 1996 through FY 2000 when it reached 221%. Overall, for all three ranks, the difference between the highest and lowest median salaries of associate and assistant professors across schools/areas increased substantially during the five year period from FY 1996 to FY 1999.

The trend toward greater disparity across schools in mean salary levels of continuing full, associate, and assistant professors, as seen in Table 11, has occurred because, as a general trend, schools/areas offering higher average salaries also offer higher annual percentage increases. This phenomenon is demonstrated by a substantial correlation between the median percentage salary increase for full professors in one year with the median salary level in the same year across Penn's 13 schools/areas. In FY 1999, this correlation coefficient ( $r$ ) across the 13 schools/areas was .51; in FY 2000, it was .46. Moreover, this correlation of the amount of

<sup>15</sup> In this section, average faculty salaries are sometimes presented as medians and at other times as means. This is due to the differential availability of the two different indices of average salaries for the various periods of time examined.

**Table 11**

**Variability of academic base salary levels among schools/areas:  
First, second, and third quartile median salary levels by rank and year.**

Rank	Academic Year	Quartiles: Median Salaries <sup>b</sup>			Number of Areas
		$Q_1$	$Q_2$	$Q_3$	
Full Professor	1998-99	\$ 92.5K	\$ 99.9K	\$114.6K	13
	1999-00	95.0K	103.7K	124.0K	13
Associate Professor	1998-99	\$63.1K	\$73.0K	\$77.9K	12
	1999-00	65.3K	76.7K	86.8K	12
Assistant Professor	1998-99	\$49.4K	\$52.1K	\$66.9K	12
	1999-00	52.0K	54.3K	68.6K	12

NOTE: Median academic base salary levels for Penn's schools/areas are based on standing faculty members who continued in the same rank from FY 1998 to FY 1999 (the 1998-99 data), and from FY 1999 to FY 2000 (the 1999-00 data). Excluded were all members of the Faculty of Medicine, all Clinician Educators from four other schools (Dental Medicine, Veterinary Medicine, Nursing, and Social Work) that have such positions, and faculty members who were promoted effective for each year reported.

<sup>a</sup>The thirteen schools/areas used for this analysis at the full professor level are the same as those listed in Table 3. The number of schools used at the associate and assistant professor levels was slightly less because the numbers of faculty members within these ranks was very low for a few schools.

<sup>b</sup>Variability of median salary levels among schools/areas is reported by quartile. At the lower end of the median salary level distribution, 25% of the median salary levels of all schools/areas were below the first quartile ( $Q_1$ ), while the other 75% were above. In the middle, 50% of the median salary levels of all schools/areas were below the second quartile ( $Q_2$ , also called the median), while the other 50% were above. At the upper end, 75% of median salary levels of all schools were below the third quartile ( $Q_3$ ), while the other 25% were above.

salary increase with median salary levels is a more general trend. The median percentage salary increase of full professors from FY 1993 through FY 1999 was correlated highly (i.e.,  $r = .62$ ) with the median salary in FY 1999 across the 13 schools/areas. Thus, the escalation of average salary differences across schools/areas is a multi-year trend that has continued into the current year.

In short, these statistical facts indicate that, in general, differences in average faculty salaries between lower paying schools/areas and higher paying schools/areas have been, and continue to be, increasing both in dollar amount and in percentage difference. As noted in prior SCESF reports, variability among schools/areas is no doubt a product, to a considerable extent, of market forces in the hiring of faculty members and in the relative wealth of schools (i.e., financial ability to support faculty salaries). The relative wealth of schools available for supporting faculty salaries is, in major part, a function of how much income a school is able to earn and the level of non-faculty expenditures it regards as essential—all as discussed above in the section on the RCBS.

Whether variability in faculty salary levels among schools/areas represents some degree of inequity is controversial. Some argue that it is, while others argue that it is a natural outcome of the wealth inherent in various disciplines and professional fields that schools represent. Any effort to reduce such variability substantially by central university policy would no doubt require fundamental changes in the RCBS—a system that has become well entrenched during the past three decades.

If the wide difference among schools/areas in average salaries of full professors seen at Penn is a general phenomenon at other universities as well, there will be evidence that Penn is experiencing a general market phenomenon instead of a local idiosyncrasy. To test this possibility, we have analyzed 1999-00 data from the MIT Salary Survey for 12 universities<sup>16</sup> which reported salary means for full professors for all five academic areas (architecture, engineering, natural sciences, social sciences/humanities, and management). For each of these 12 universities, we computed the ratio of the average salary of the highest paying area to the average salary of the lowest paying area. The result was that these 12 ratios ranged from a low of 1.32 to a high of 2.05, with a mean of 1.59—indicating that wide variation in average faculty salaries across academic areas is common and substantial. Penn's ratio in the MIT data was virtually the same (1.64) as the mean of the 12 universities. This suggests that the variability in mean faculty salaries across schools/areas at Penn is currently in line with experience elsewhere, and is a function of general economic forces affecting all of academia.

To determine whether there has been a general trend over time in other universities toward greater variability of mean faculty salaries across five academic areas, we computed for 1996-97 the same ratios of the highest to the lowest mean salaries by the same method described above for 1999-00 mean salaries. The mean ratio in 1996-97 (1.52) was clearly lower than in 1999-00 (1.59), thereby suggesting there is a general trend over time toward increasing differences across schools in mean faculty salaries. Penn is perfectly in line with this apparent general trend.

<sup>16</sup> The sample of 12 universities analyzed was selected from the following group of 13: Carnegie Mellon University, Columbia University, Cornell University, Georgia Institute of Technology, Massachusetts Institute of Technology, Rice University, University of California (Berkeley), University of California (Los Angeles), University of Illinois, University of Michigan, University of Pennsylvania, University of Texas, and Yale University. One of these universities was eliminated from the analysis because of apparently erroneous data, though its identity is not known because of the blind coding of the data.

**Table 12**

**Mean academic base salary of standing faculty members at Penn's highest paying school as a percentage of the mean salary at the lowest paying school by rank and fiscal year**

Rank	Fiscal Year				
	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000
Full Professor	154%	160%	158%	159%	160%
Associate Professor	147%	155%	165%	173%	174%
Assistant Professor	204%	208%	213%	212%	221%

NOTE: The percentages of this table were based on the mean academic base salary levels of all standing faculty members who continued in the same rank from one fiscal year to the next. These mean salary levels were available by rank for each of 11 schools at Penn. Excluded were all members of the Faculty of Medicine, all Clinician Educators from four other schools (Dental Medicine, Veterinary Medicine, Nursing, and Social Work) that have such positions, and faculty members who were promoted in any one fiscal year.

## VI. Conclusions

### A. Economic Status of the Faculty

**1. External Competitiveness.** In general, faculty salaries, benefits, and compensation (the sum of the two) at Penn are competitive with a small select group of universities that provide the highest levels of faculty compensation in the nation. Evidence for this conclusion comes from the following sources:

- The results of the annual MIT salary survey of 23 major research universities (about half private, half public) place the weighted mean salaries of Penn full professors and associate professors (from SAS, SEAS, GSFA, and Wharton, combined) above average at about the 60th percentile of their respective academic fields as of Fall 1999.
- The results of annual surveys of faculty salaries in dental medicine and veterinary medicine suggest that the mean salary levels in Penn's School of Veterinary Medicine and School of Dental Medicine are among the highest in their respective fields.
- The results of the annual AAUP salary survey for a group of 17 peer research universities place the mean salary of Penn full professors in rank order five as of academic year 1999-00. The highest mean salary in this group (at Harvard University) is 12% higher than the Penn mean (Table 6).

**2. Internal Variability.** There is great variability in the distribution of faculty salary resources among the three professorial ranks (see Table 10), among the eleven schools included in this report (see Table 11), and among individual faculty members by rank within schools (see Tables 7, 8, and 9). Furthermore, a considerable portion of the variability in average faculty salaries across Penn's schools/areas is the product of market forces as suggested by the results of a comparison of school mean differences at Penn with differences at other peer universities. That is, considerable variability in average faculty salaries among these schools/areas is required to maintain competitive standings within different academic fields. Nonetheless, recent evidence indicates that there is increasing divergence among Penn's schools in the degree to which their mean salary levels are competitive within their own academic fields.

### B. Conditions of Concern

**1. External Competitiveness.** Although Penn faculty salaries are generally competitive with those provided by a select group of universities (as noted above), the following particular conditions are of concern about the external competitiveness of faculty salaries at Penn:

- As indicated in SCESF's 1999 Annual Report (see Section VI, Recommendation A.2), Penn is committed to bringing faculty salaries back to a competitive level "if faculty salaries in certain fields begin to fall behind." SCESF is concerned about two aspects of this commitment that are not clear, viz. the definitions of "a competitive level" and "certain fields." For academic fields for which specific competitive data are available from the MIT salary survey, it appears that Penn, at least in practice, has established in recent years a competitive level in the 65-70th percentile range. If so, average faculty salaries at the full and associate professor ranks in the natural sciences area of the School of Arts and Sciences and the School of Engineering and Applied Sciences have clearly fallen behind, as have assistant professor salaries in three academic areas (architecture, engineering, and the social science/humanities areas of the School of Arts and Sciences). Accordingly, there is concern about the average salaries in these areas that have fallen behind Penn's presumed competitive level.

- Not only have the salary levels in certain academic areas lagged behind Penn's usual competitive level (as reviewed above), but Penn has experienced a general decline in competitiveness in all academic fields covered by the MIT survey except Wharton (which has achieved noticeable improvement). The competitiveness of the mean salaries of Penn full professors have noticeably declined in the natural sciences, social sciences/humanities, and engineering. The mean associate professor salary in natural science has declined considerably in competitiveness, as have the mean salaries of assistant professors in the social sciences/humanities and in engineering. Through analyses of trends in salary increase percentaged during the past four years, it is clear that Penn has generally improved the average salary increase percentages awarded to faculty members since 1996-97. Therefore, the explanation for these declines in Penn's competitiveness is that our peer universities have increased faculty salaries at an even higher rate than Penn.

- SCESF is also concerned about the absence of data to make a judgment about the competitive level of average faculty salaries in each of the Penn's five schools that are not included in the MIT salary survey or in surveys for veterinary medicine and dental medicine. As noted below (see Section VII, Recommendation 5), the Provost is attempting to secure comparative salary data for the five schools in question.

**2. Internal Equity.** In the absence of data on individual faculty merit to compare with data on individual faculty salaries, SCESF is not able to

identify any specific instance of inequity among all the dimensions of salary variability included in this report. However, there is concern that some of the wide variability in individual faculty salaries may entail more than a trivial element of inequity. Though we are not able to report specific instances of salary inequity among individual faculty members, ranks, departments, or schools, SCESF has identified the following conditions that give rise to equity concerns:

- In spite of moderate inflation in FY 1999 (CPI growth in Philadelphia of 2.38%) and substantial resources available for faculty salary increases for FY 2000 (4.0% for the school providing the lowest mean salary increase), 9% of Penn's standing faculty members received salary increases for FY 2000 that were less than the CPI growth percentage—an effective reduction in salary. The 9% figure represents and increase of 2% in comparison with 7% the prior year. Over 10% of faculty members in four schools/areas received increases less than the CPI growth percentage (see Table 3). In fact, the entire increase from FY 1999 to FY 2000 in percentage below the Philadelphia CPI is attributable to the three disciplinary areas of SAS. Two main alternative explanations for these percentages are: that over 10% of the faculty in these schools/areas performed at an unsatisfactory level, or that some of these effective salary reductions may have been inequitable.

- In spite of modest inflation since FY 1994 and substantial resources for faculty salary increases, only 90% of full professors in the natural sciences area of the School of Arts and Sciences and 91% of full professors in the Graduate School of Fine Arts received cumulative salary increases during the period 1994-2000 that exceeded the growth in the Philadelphia CPI (see Table 4). Fortunately, considerably higher percentages of full professors in other schools/areas received cumulative salary increases that exceeding CPI growth during this seven year period. Therefore, it seems possible that some of the effective salary reductions experienced by full professors in the natural sciences and fine arts were inequitable.

- Aggregate salary increases of 5.3% were awarded for FY 2000 to continuing Penn standing faculty members. Nonetheless, the median increases for full professors in all three areas of SAS were below the 3.5% guideline. There is concern about salaries of most faculty members in these areas lagging behind a competitive level with implications for collective inequity.

## VII. Status of Committee Recommendations Submitted in 1998-99

In accordance with current Senate policy, a report is presented below of progress made, and current status of, recommendations made in 1999 for development of faculty compensation policy and procedures. Short versions of these recommendations are presented below along with the responses of Provost Barchi (to whom the recommendations were made on June 23, 1999), SCESF's comments, and subsequent developments.

### Faculty salary policy issues: general principles

#### 1. Salary Competitiveness Issue.

##### SCESF Recommendations

- a. It is recommended that priority be placed on increasing average salaries to Penn's competitive level of the four groups (Full and Assoc. Profs. in the natural sciences area of SAS, and Assist. Profs. in architecture, engineering, and social sciences/humanities areas of SAS) that have fallen behind.

**Provost's Response:** The Provost indicated that this issue will be examined seriously.

**SCESF Comment:** We hope that the Provost's review can be completed by March 2000 so that, if justified and fiscally possible, appropriate increases in the salary levels of these four faculty groups can be implemented effective July 1, 2000.

**Subsequent Developments:** SCESF was advised by the Associate Provost that the relevant three Deans were very concerned, and that the Committee should communicate directly with these Deans to learn about their concerns and plans—all in keeping with RCBS principles concerning decentralization of earning and spending authority to responsibility centers (such as schools). Accordingly, the SCESF initiated such communication with these Deans in December 1999 and has received the following information:

(1) The Dean of SEAS indicated that salary increase resources for the 1999-00 year were concentrated especially on improving the salaries of assistant professors, and that SEAS is interested in "staying competitive and preserving the morale of the faculty." SEAS also enhances its competitiveness for assistant professors by providing generous startup packages.

(2) The Dean of SAS reported that salaries in several categories have continued to lag, but that substantially higher salary increases were awarded for FY 2001, and improvement in SAS's competitive position



should be seen when MIT data for the current year become available.

(3) The Dean of GSFA informed the Committee that the salaries of recently appointed assistant professors have been a step above the levels offered a few years ago.

b. It is recommended that efforts be made over a period of a few years to reduce the difference between Penn average salaries and the university ranked second in the MIT survey in order to improve Penn's capacity for attracting and retaining distinguished faculty members.

**Provost's Response:** Although the Provost does not support any across-the-board increases in faculty salary levels, he does support the aggressive use of salary funds to recruit and retain distinguished faculty members, the consequence of which might well be to raise average faculty salaries. The Provost noted that special attention should be placed on identifying and rewarding (with salary increases) Penn's most promising assistant and associate professors.

**SCESF Comment:** We endorse the Provost's strategy in using salary resources to improve the quality of Penn's faculty, and advocate that this be implemented aggressively so that the actual competitiveness of average faculty salaries (within ranks by academic field) is increased substantially over a period of several years. As stated by the Provost, we note that this strategy has two purposes with respect to distinguished faculty members: to recruit and to retain. As to *retention*, we understand that both the Provost and the Committee recognize this to be multifaceted:

- One facet of retention is to be competitive with salary increases for faculty members who assert entrepreneurial initiative and secure attractive offers of appointment elsewhere.
- A second facet of retention is to recognize in advance and reward with salary increases distinguished performance of faculty members who choose not to seek, or use, attractive offers of external appointment to negotiate salary increases.
- A third facet of retention is to maintain an overall competitive faculty salary structure in order to promote a collegial faculty spirit and sense of general equity while still recognizing that there will be wide variation in individual faculty salaries due to differential merit. A major dimension of general equity is the realization by individual faculty members who perform at a sustained satisfactory level that, at the very least, they have *not* suffered a decline in the purchasing power of their salaries by being awarded cumulative salary increases over a period years that has been less than growth in the Philadelphia CPI.

The views expressed above do not represent advocacy for a fixed floor for salary increases since a few faculty members obviously perform at a less than a satisfactory level, nor do they represent advocacy for a general leveling of faculty salaries. As has been Penn's tradition, variability in individual faculty salaries should continue to be associated strongly with variability in individual merit.

**Subsequent Developments:** Discussions with the Associate Provost suggest that the Provost and the SCESF are in general agreement on the strategy to be used in allocating salary funds to recruit and retain distinguished faculty members. However, the Provost did not accept specifically the recommendation to improve Penn's competitive position with respect to salaries, though that might be a byproduct of his strategy for the aggressive use of salary funds.

## 2. Salary Equity Issue.

### SCESF Recommendations.

a. It is recommended that a set of principles and procedures be established whereby all individual faculty salary levels (and related information about academic merit) are reviewed periodically by senior academic administrators (Department Chairs, Deans, and the Provost) for the purposes of identifying salaries that are inequitably low or high, and of taking corrective action.

**Provost's Response:** The Provost responded that his office currently has in place a mechanism that can identify faculty salaries that are very high or very low. Once identified, the names of those faculty are sent to the deans for justification and adjustment as necessary. The deans then provide the Provost with information on justification and adjustment.

**SCESF Comment:** As indicated in the recommendation, special salary reviews for possible instances of inequity can occur at all salary levels, and individual salary levels can be either inequitably high or low. We hope that the next review can be structured accordingly, even though it is a demanding task, and that considerable progress can be accomplished by March 2000 so that, if justified and financially feasible, appropriate salary adjustments can be awarded effective July 1, 2000. We realize that in the instance of an inequitably high salary level that no absolute downward adjustment can be made. However, it is possible to moderate annual increments to such salaries over a period of years so that the appropriate

level can be attained.

**Subsequent Developments:** It is the practice of the Office of the Provost to make such a review every five years, the next time for which will be no later than the Fall Term of FY 2001.

b. It is recommended that the issue of establishing a general principle for minimum annual faculty salary increments become a topic of discussion with the Provost for the purpose of attempting to formulate such a mutually-agreeable principle, or of coming to a mutual realization that the effort is either unwise or impractical.

**Provost's Response:** The Provost would not like to establish a general principle for minimum annual faculty salary increments, but would like academic administrators to inform faculty members of the judgments of merit that were made in setting each annual salary increase. It should be noted that increases below a set minimum must be justified and approved by the Provost. The set minimum can vary, reflecting changes in the CPI. However, there must be room for no or minimal increases below expectation performance.

**SCESF Comment:** We certainly agree that faculty members should be informed about the judgments of merit that were made in setting each annual salary increase (see also recommendation eight below). However, we hope that the subtleties of this issue be considered further. Two possibilities are suggested, as follows:

- Further discussion about the points raised by the SCESF Chair in a document of June 22, 1999, entitled "Propositions relevant to considering a general principle for minimum annual faculty salary increments" might be helpful.
- Consideration might be given to the following statement appearing in the Salary Guidelines for 1999-2000 as published in *Almanac* on April 20, 1999: "Recommendations to provide an increase lower than 1 percent for non-meritorious performance . . . should be made in consultation with the Provost." It might be possible to set the designated percent at, or close to, the most recent percentage increase in the Philadelphia CPI. Alternatively, the minimum percent increase requiring consultation with the Provost, as specified in the Salary Guidelines, might be changed back to 2%—the percentage stated in the Salary Guidelines for 1997-98 (*Almanac* April 22, 1997, p. 2) and prior years. The concern continues to be that a salary increase of less than the growth in the CPI represents an effective salary reduction—a circumstance SCESF would prefer not happen for faculty members performing at least at a satisfactory level.

**Subsequent Developments:** The Provost wishes to keep the 1% salary increase rule to maximize the authority of the Dean's for deciding salary increases. This rule states that Dean's may award an annual increase of as little as 1% without providing the provost with a justification for such action. As recently as FY 1998, the rule was 2%, which SCESF prefers.

## 3. Issue Concerning Disparities Among Schools in Average Faculty Salaries.

### SCESF Recommendations

a. It is recommended that the disparities among schools in average faculty salaries be studied further by Penn's administration and the SCESF to ascertain its causes, and to identify means by which at least some of the largest disparities in average faculty salaries among schools can be moderated.

**Provost's Response:** The Provost indicated that he would continue to review the causes of disparities in average faculty salaries among schools. However, it is not possible to use the subvention pool to address such disparities because the subvention pool is relatively small and also because subvention dollars must cover items in schools' budgets in addition to faculty salaries. He also observed that disparities among schools are in large part due to market forces and schools' budgets.

**SCESF Comment:** We are encouraged that the Provost will continue to review the causes of disparities in average faculty salaries as recommended, and hope that income-expenditure relationships for schools offering lower average salary levels can be changed over time in order to provide for larger faculty salary increases that will improve, even marginally, their relative standing with schools offering higher average salary levels. If possible, this will reduce somewhat the wide and increasing salary level differences among schools as recommended.

**Subsequent Developments:** The Provost has continued to review disparities in average faculty salaries among schools, and has found that such disparities can be accounted for by market forces, differences in the wealth of schools, and in priorities for the allocation of school funds to faculty salaries versus other types of expenditures (e.g., facility and scholarship expenses). For its part, as reported above (see *Section V. D.*), the SCESF compared the difference between the highest and lowest mean salaries across the five academic areas of the MIT Salary Survey (as identified in *Table 5*), and found that the difference at Penn is equivalent to



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the mean discrepancy for the sample of 12 universities that supplied sufficient data for this type of analysis. Thus, Penn clearly is in line with a general trend elsewhere.

b. It is also recommended that SEC consider further its principles and priorities for the allocation of subvention.

#### 4. *Comprehensive Policy for Faculty Compensation Issue.*

**SCESF Recommendation:** As advised by the Interim Provost in 1998, it is recommended that consideration should be given to developing a comprehensive policy for faculty compensation on the next occasion of salary or benefits redesign.

**Provost's Response:** This recommendation was not considered at the meeting on June 23, 1999.

**SCESF Comment:** Since this recommendation was accepted in 1998, its implementation awaits the occasion of the next round of salary or benefits redesign.

#### Faculty salary policy issues: Procedures

#### 5. *Issue Concerning Data on the Competitiveness of Faculty Salaries not Included in the MIT Survey.*

**SCESF Recommendation:** In accordance with the agreement with the Interim Provost in 1998, it is recommended that the Provost continue his efforts to secure data on the competitiveness of faculty salaries in Penn's schools not included in the MIT Salary Survey.

**Provost's Response:** The Provost is in the process of securing comparative salary data from the CUPA Salary Survey for five of the seven Penn schools (excluding Medicine) not included in the MIT Salary Survey, and will select the most appropriate set, or sets, of universities surveyed by CUPA for comparison purposes with salary levels these five schools at Penn. Dental Medicine and Veterinary Medicine are not included in the CUPA survey. However, the Provost will try by other means to secure comparative salary data for Penn's schools in these areas as well.

**SCESF Comment:** We welcome this action, and hope that at least the CUPA data will become available before the end of calendar year 1999 so the SCESF can use these new data in drafting its Annual Report for 2000.

**Subsequent Developments:** Comparative salary data for dental medicine and veterinary medicine have been provided to SCESF, and a report of Penn's competitive position in these two sets of survey data are reported in Section II.C. of this Annual Report. With respect to other schools of major interest (Annenberg, Grad Education, Law, Nursing, and Social Work), the Provost discussed SCESF's request for comparative salary data with the Council of Deans. The Deans were interested in the possibility of performing meaningful comparative salary analyses using CUPA data, and the Deans of five schools (i.e., those not included in the MIT Salary Survey or the Dental Medicine or Veterinary Medicine surveys) agreed to provide lists of peer universities included in the CUPA survey, a minimum of 10 of which are required for securing school-by-school analyses. This has not been possible because CUPA does not collect salary data from a sufficient number peer universities for some, if not all, of Penn's five schools of major interest here to make meaningful comparisons. Accordingly, efforts may be made to secure broader participation by major research universities in the CUPA survey, efforts that might be effective within several years. Alternatively, the possibility of securing comparative salary data from the American Association for University Data Exchange (AAUDE) is being explored. In short, it has been difficult to obtain salary data for a set of universities that can be considered the peers of five of Penn's schools. Nonetheless, to the extent that meaningful comparative data can be obtained for one or more of Penn's five schools not included in other salary surveys available to SCESF, the Provost continues to be committed to obtaining such data.

#### 6. *Salary Setting Standards and Procedures Issue.*

**SCESF Recommendation.** It is recommended that (a) a study of faculty salary setting principles and procedures used by each school be conducted, and, if the results support the anecdotal evidence alluded to above, (b) best practices in salary setting be identified, and (c) a model set of standards and procedures be developed for possible adoption or adaptation by individual schools.

**Provost's Response:** The Provost accepted this recommendation. He indicated that a group of university administrators and members of the SCESF will be asked to conduct the study of salary setting standards and

procedures used by Penn's departments and schools.

**SCESF Comment:** We welcome this action, and hope that the task can be completed by March 2000 so that information about "best practices" can be available to academic administrators prior to the setting of faculty salary increases for FY 2001.

**Subsequent Developments:** In consultation with the SCESF Chair, the Associate Provost developed and sent questionnaire to Deans for relevant information. The results have been turned over to a subcommittee of SCESF for review and analysis. To date, this analysis has not been completed by SCESF because of attention to higher priority issues.

#### 7. *Issue Concerning Information about Prior Faculty Salary Increases for Department Heads.*

**SCESF Recommendation:** It is recommended that a routine method be established whereby departments heads are provided with information each year, before faculty salary increases are decided, listing the current salary, the prior year percentage increase, and five-year cumulative increase percentages for each faculty member, as classified by rank, in the department; and, for each professorial rank within the department, the 10th, 25th, 50th, 75th, and 90th percentile increases during the prior year and the five-year cumulative periods.

**Provost's Response:** The Provost accepted this recommendation.

**SCESF Comment:** We welcome this acceptance, and hope that necessary programming and computer runs can be completed by March 2000 so that this quantitative information can be provided to Penn's department heads and deans by the time they review faculty performance in deciding faculty salary increases for FY 2001. In addition, we hope it will become clear that this information is useful in reviewing the faculty salary structure and the history of past increases with a view to reducing any incidence of inequitable components of faculty salaries.

**Subsequent Developments:** Though the Provost agrees that department chairs should have salary data when making recommendations about raises, he has reservations about providing department chairs with the level of detailed salary information recommended here. After consultation with the Council of Deans, the Provost accepts the first part of the recommendation pertaining to information about salary history, subject to revising the provision concerning the reporting to department chairs of five-year cumulative increases to three years. However, the Provost does not accept the second part of the recommendations pertaining to information about departmental norms for salary increases due to computational burden.

#### 8. *Issue Concerning Information for Individual Faculty Members About Annual Salary Increases.*

**SCESF Recommendation:** As advocated by the Interim Provost in 1998, it is recommended that a procedure be established whereby each faculty member is provided with specific information annually about the assessment of her/his performance made by the relevant department head or dean in deciding his/her salary increase for the following year.

**Provost's Response:** The Provost accepted this recommendation.

**SCESF Comment:** We welcome this action, and hope that the practice of providing individual faculty members with specific information annually about her/his performance in deciding his/her salary increase will be implemented in Spring 2000 for FY 2001 salary increases. In addition, some procedure should be considered to assess, in general terms, the adequacy of the information provided such as reports of faculty members about their understanding of the basis for their salary increase. We expect to find that their understanding has been substantially improved.

**Subsequent Developments:** The Provost presented this issue to the Council of Deans, and the Deans also accepted this recommendation.

#### *Members of the 1999-2000*

#### *Senate Committee on the Economic Status of the Faculty*

Jane Barnsteiner, Professor of Nursing

Erling E. Boe, Professor of Education, Committee Chair

Larry Gross, Professor of Communications,

*Ex Officio, Chair, Faculty Senate*

David B. Hackney, Professor of Radiology, Chair-elect, Faculty Senate

John C. Keene Professor of City and Regional Planning,

*Ex Officio, Past Chair, Faculty Senate*

Richard E. Kihlstrom, Miller-Freedman Professor of Finance

Andrew Postlewaite, Professor of Economics