Letters

The Overhead Question

The matter of indirect costs associated with sponsored research at universities has in recent years tended to divide university administrators from university faculty and from research sponsors. Koshland's 11 May editorial "The underside of overhead" exacerbates this problem by giving credence to two tired myths.

The first myth is that indirect costs are driven up by a bloated bureaucracy of "middle management." It is a disservice to an important and complex issue, and to thousands of hard-working individuals, for Koshland to put forward the facile suggestion that much of the problem lies with "middle management." The facts are simply not consistent with this allegation.

In a study (*1*) of 14 major institutions (half public and half private), the Association of American Universities Ad Hoc Committee on Indirect Costs has shown that the mean indirect cost rate associated with all administrative elements of costs is about 28% and the standard deviation is only 4%. This applies to both public and private institutions. The major variations occur in the space-related components of the indirect cost. Here the public and private institutions are markedly different. For the former, the space-related costs contribute 19 ± 7% to the rate; whereas for the latter the contribution is 31 ± 3%. Clearly, there is a significant difference in the procedures used for costing space at private institutions as compared with public institutions. For the latter, space costs are subsidized by the state taxpayers.

Thus, space-related costs account for more than half the rate at most private institutions, and the administrative elements of the rate are surprisingly uniform amongst institutions. Neither of these observations is consistent with Koshland's thesis that the problem lies largely with an unwarranted expansion of "middle management."

The second myth is that universities have no incentive to reduce indirect costs. In fact, the indirect cost rate is determined by a process of allocation in which various indirect cost elements are allocated between research and instruction (or other institutional functions) in accordance with regulations of the Office of Management and Budget. Except for the category of sponsored research administration, which is allocated entirely to research, I know of no university that allocates more than half of any indirect cost category to research sponsors, federal and otherwise. The balance of indirect costs are borne by scarce university resources provided by tuition payments, endowments, and gifts, and this provides a powerful incentive to manage these costs effectively and to limit their growth.

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REFERENCE

1. Ad Hoc Committee on Indirect Costs, "Indirect costs associated with federal support or research on university campuses: Some suggestions for change" (Association of American Universities, Washington, DC, 1988).

Koshland seeks a way to resolve the conflict between faculty and their universities over the proper distribution of research costs as between those that can easily and directly be assigned to individual projects and those that cannot and so are pooled, averaged, and imputed to individual projects. The solution he advances—a national average indirect cost rate—is an old idea that resurfaces periodically because it seems simple and fair. Alas, it is repeatedly discredited because it is neither of those things.

Koshland's basic notion is that the elements that make up the pooled costs "level out" across the several hundred universities that participate in federal research programs, and so a level indirect cost rate can be set that will be as fair as having each one calculate its own. They do not. There is no sense in which the differences in rates among institutions level out, save in the trivial sense that there is an arithmetic average for any set of values. There is no way to level out the difference between the financing of public and private universities, or the difference between a university that has a medical school and one that does not, or the size and composition of research portfolios, or the different ages and conditions of research facilities, or even the differences caused by different climates and energy costs. All of those are important contributors to the differences in rates so frequently noted. To pretend that they are not real or that they can be ignored without harmful consequences is just wrong.

Koshland seems to recognize the problem, because he argues that the uniform rate should be established at a "generous level," so as not to damage universities. There is no such number. The university that loses 10 to 20 points of its negotiated and audited rate will be hurt. Furthermore, indirect cost payments represent only partial reimbursement for expenses already incurred. As for the windfall that would be created at the other end of the rate scale, it is unlikely that any university will be paid any more in indirect costs than it can justify to hard-eyed government agents.

The key to Koshland's mistaken prescription lies in his mistaken diagnosis. First, indirect costs have not been rising as a percentage of total costs in recent years. At the National Institutes of Health, they were 32.4% of total direct costs in 1984 and 32.2% in 1988. They were, in fact, lower in 1979 (28.9%), when higher energy costs drove them up to the present level. Second, increases in indirect cost rates in the recent past, as well as those that are likely in the future, are not significantly attributable to increases in administrative costs. Whatever the theoretical merits of his point about the growth of bureaucracies, the fact is that the administrative components of rates have also been quite steady in recent years. Finally, and most important, it is truly a puzzle why Koshland believes that "the federal government supplies much of the money for facilities." That has not been true for 20 years, and that fact, more than any other, explains the upward pressure on rates now and in the future. The cost of new laboratories built without government money and often financed with borrowed money creates an inescapable claim on rates. In all the cases of which we are aware, buildings are built or renovated because the faculty involved believe that they are necessary in order to do modern science. In effect, Koshland's average rate would deny that those are legitimate costs of research; or to put it differently, it would tell universities to find the money someplace else. Just where that might be is quite unclear.

The broad problem is that the government has been consistently underinvesting in university research and training. More good people and more good ideas are now chasing after too few dollars. To make matters worse, the real costs of research, both direct and indirect, have risen. It is probably the case that many faculty have never liked indirect costs or believed that they are real, but in times of budgetary stress they like them even less. It is important to note, though, that they don't like them at institutions with 40% rates any more than they do at institutions with 70% rates. As faculty see it, they are a tax on research, and there are few public acts as unloved as taxation.

Until the larger problem of finding adequate funding is solved, the narrower one of using what is available to the best effect will continue to be a source of tension. The Association of American Universities (AAU) has an approach to it that seems to us both more realistic and more likely to produce good policy. First, it recognizes the

pressure on rates produced by the number of research buildings coming on line in the years ahead. It is proposed, therefore, that the indirect cost rate be divided into two parts, one that would include facilities-related costs only and a second that would include everything else. Since it is certain that the former will increase, it is important that there be some way of checking cost creep attributable to other administrative costs. The AAU proposes a set of threshold rates, rather like the standard deductions on the income tax, that institutions could claim without having to negotiate and justify them each year. Institutions below the threshold could claim only what they had previously justified, so there would be no windfall profits; but institutions that believed that they could justify a higher rate would be free to make the effort. Assuming that a fair threshold were set, few institutions would find the cost and effort of proving higher costs worthwhile.

Given control of the administrative parts of the rate, debate could then focus on what has become the real policy issue for many universities, namely, how to make the trade between better facilities and more funds for other research costs. There is no single answer to that question that is right for every university. It is not unrealistic, however, to believe that we can make changes in the existing arrangements that will illuminate policy choices and provide a better basis for making them than is now possible. That seems to us a useful and attainable goal.

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Koshland's suggestion that federal grants should carry a standard indirect cost rate would have some benefit in ensuring great administrative simplicity. A standard rate would save money by eliminating reporting and monitoring, and the reduction of hassle would be worth quite a bit. But this simplicity would be achieved at a considerable cost to the nation's research enterprise.

First, it is unlikely that a fixed rate would reflect real costs of research to the university. Currently, differences in *indirect* cost rates among universities are due to differences in institutional management and local decisions, approved in by federal auditors, about what is included in the *direct* cost category. For example, many state institutions have little incentive to recover full costs, because their university services and operations are subsidized for by the state. Koshland's suggested standard federal indirect cost rate would probably end up being a weighted average of present public and private university rates. This averaging would create an immediate multimillion dollar impact on private institutions which, if they chose to meet the added costs, would require them to divert instructional revenues—mainly derived from tuition—to research. Current contributions by universities to sponsored research are already substantial and are understated in the usual reports of research expenditures.

Second, creating a fixed indirect cost rate without establishing some norms for *direct* costs would disadvantage some universities. For example, Cornell does not require faculty members to obtain any of their academic year salary from grants. Other institutions, however, charge substantial portions of faculty salaries to grants, significantly increasing the cost to the federal government of doing research, quality considerations aside. Paradoxically, including faculty salaries as direct costs tends to drive indirect cost *rates* down, even though it may increase the *amount* of indirect cost recovery.

The example of faculty salaries highlights the poor methods used to apportion costs between indirect and direct expenditures. Federal rules require universities to carefully monitor operating costs and divide them on the basis of use-analysis between direct and indirect and also between instruction and research. This apportionment is not necessarily realistic. According to that analysis, as applied at Cornell, researchers never use toilets or walk in corridors. By definition, they are engaged in instruction while doing either.

The consequence of these federal accounting requirements is that the indirect costs for doing research are distributed against *all* expenditures for research, which is as it should be. As an institution increases its direct expenditures for research, its indirect cost *rate* becomes lower, provided the larger volume of direct expenditures does not add specifically to the indirect cost of doing research. The inclusion of faculty salaries as direct costs does not, of itself, add to the indirect costs of doing research. But the inclusion of faculty salaries in the direct costs of research tends to lower the indirect cost *rate*—although it increases the total cost to the sponsor of doing research, if the sponsor pays them. If the university pays faculty salaries, they are not usually included among the research costs. In that case, the university "pays" the instructional indirect cost rate against them, a piece of the puzzle that is never discussed.

In advocating a flat rate, Koshland assumes that there is little incentive to reduce indirect costs, but this is not the case. Every time a university accepts and expends funds for research that carry less than the approved federal rate of indirect costs, for example, from gifts or some foundation grants, it must provide the missing amount from its own funds. This provides a strong incentive to keep indirect costs down and encourages donors to pay them.

A third reason for caution in advocating a flat rate is the Rule of Unanticipated Outcomes, which states that the opposite of what is intended is what happens. Fixing indirect costs will *not* change the cost of doing research. As costs rise, universities will meet the shortfall by finding other payers, such as states or students. Or they will transfer indirect costs to the direct side of the ledger. The latter could easily result in an increase in the cost of research, even though indirect cost rates will be lower. Departmental administration, computers, veterinary services, and space rental are among the candidates for transfer to the direct categories.

Fourth, even at Cornell and Stanford, where *rates* are high and the rate-payers are angry, recoveries cover only present out-of-pocket expenses and do not provide for long-term renewal and replacement of research facilities. When Congress wisely opted to use the universities as the vehicle for carrying out research in areas of national priority, our legislators, also wisely, decided that the federal government would pay full indirect costs. At that time the federal government supported a complementary system to fund research facilities. The complementary system is gone now, and there is ample evidence that the present single system of paying full costs doesn't. We have consumed the original capitalization of the university-based research endeavor and have only ad hoc and generally inadequate means of replacing it.

In state institutions—and the University of California at Berkeley is the leading example—state sources (and some generous donors) may take the place of federal sources in providing and restoring facilities. But in most other universities, capital and operating costs for research facilities increasingly compete with funds for salaries, instruction, financial aid, and so forth. It will not serve the nation well to push its private research universities out of the research business, yet present trends make that prospect increasingly more than likely.

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Excessive overhead charges on research contracts are a growing impediment to industry collaboration with universities. Koshland's suggestion of a uniform national rate is welcome, but perhaps will require some fine-tuning. It can be argued that private universities deserve a higher rate than schools enjoying state budget support for many of their overhead expenses. Distinctions also should be drawn among types of research to provide higher rates for projects with identifiable extra costs created by large human subject components or extensive laboratory or computing needs and lower rates for individual researchers at their desks. There is also a need to calibrate overhead rates appropriately to the size of the budget. There is not a straight line increment in overhead expenses for an $80,000 project and an $8-million project, so a flat percentage rate for both is unsupportable.

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There is another, simpler, and I think much better solution to the overhead problem. Let every university—especially mine—adopt a uniform set of internal accounting and overhead-collecting procedures (though not necessarily uniform overhead rates) for handling the direct and indirect costs of every activity and expenditure on campus, independent of funding source.

In brief, let every expenditure on campus either be explicitly "direct" and therefore by definition overhead-incurring, independent of funding source or explicitly indirect and therefore supported only by overhead on all relevant direct activities. Every direct activity on campus would then have to be funded at its loaded rate, regardless of where the funds come from (tuition, endowment, gifts, federal funds). Every direct expenditure would be assessed its appropriate overhead "tax" at the time the expenditure is made. Overhead rates will depend entirely on the nature of the direct activity, not at all on the source of the funding.

The objective here is not (at first) to reallocate resources, only to rationalize accounting and budgeting. The advantages are so manifold it is difficult to see how they can be missed:

- The university can run one accounting system, not the complex, baroque system of different procedures for different interleaved sets of activities and funding sources it now must operate.
- All direct activities in the university can be—will have to be—budgeted and funded in the same real loaded dollars. We'll know what things really cost.
- The 66% of the Stanford University faculty who now pay no overhead, and hence are largely unaware of the reality of indirect costs, will suddenly become aware of, and therefore concerned about, the indirect costs associated with their activities.
- On the other hand the angry and alienated sponsored researchers will at least see every other activity on campus treated the same as their own activities. If the overhead rates on a graduate student stipend or a secretarial salary are the same in physics and in English, the physics faculty will at least have a change of thinking the system is honest. If the rates are very different, they can ask why. And all the faculty will acquire a comparable interest in policies that keep the university's indirect costs down.
- Finally, is not Congress much more likely to believe in the validity of a university's overhead system if they see that the university assesses at least comparable overhead rates on its own funds as it does on the funds they supply?

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I would refine Koshland's national overhead rate to be based on a percentage of the gross national product, so that the research and development–gross national development ratio would be some predetermined percentage. The flow of funds would be more closely related to economic conditions rather than to university complex calculations and creative financing. Universities would then receive financial support based on the basis of directly awarded research funds and the newly established national overhead rate; the result would be stable, reliable, and equitable funding.

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Recent revelations about how Stanford University diverts National Institutes of Health and National Science Foundation overhead dollars into its ambitious construction program (News & Comment, 20 Apr., p. 292) help to explain why grant costs are soaring and an ever smaller fraction of proposals can be funded. Alas, that is only part of the story. The rapidly escalating salaries of leaders in the grant money sweepstakes and the widespread assessment of exorbitant graduate student tuitions also contribute to the general decline in research bang for the grant buck. Many institutions presently authorize total salaries far beyond what they can actually support on the premise that federal agencies will pay much or all of those either directly or indirectly via the overhead largesse. Koshland's call for a uniform overhead rate is in the right direction, but needs to go farther. Specifically, uniform and reasonable (depending upon field and status) maximum salary rates and numbers of months paid by federal agencies, and uniform and reasonable (perhaps zero) graduate student tuition assessments, should be imposed. In addition, science produced per dollar spent should become a major criterion for evaluating proposals, at least within a common field. Private institutions can be expected to object most strenuously to such innovations. However, the scientific enterprise of the entire nation should not be sacrificed in order to inflate the science-engineering presence and stature of a few elite private schools and research institutions way beyond what their endowments can support. That is not the mission of NSF and NIH. If any school is actually losing money, as Stanford now claims it is, then presumably reducing the size of its faculty and scope of its research effort, but not the quality of either, would reduce its costs. At some point in such a contraction, its diminishing research "losses" could be compensated by its own endowment, or state funds, as the case may be.

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Marcia Barinaga's article "Stanford erupts over indirect costs" usefully directs attention to difficulties arising from the present indirect cost policy for NIH grants. Over the years the portion of NIH funds going to indirect costs has continued to rise. This increase in indirect costs has contributed significantly to the present nationwide funding crisis for individual investigators. The crisis is not only causing a drastic cutback in high quality research but is also discouraging the consideration of research careers by our dwindling pool of highly qualified students.

The root of the problem is the policy that the federal government will reimburse the total costs of approved research. This has created an administrative and lobbying apparatus for increases in indirect costs, has discouraged efficiency, has eroded the focus of the funding on research, and has discouraged development of other sources of institutional support. What is needed is a return to fixed indirect costs. The case for this was presented in my Policy Forum of 1986 (*1*).

Institutional administrators have developed a potent lobbying force in Washington for the continued increase in indirect costs.

There are indirect cost needs in universities and other research institutions that must be met. But the federal support for buildings, and for much of what is included in indirect costs, needs to be justified and considered separately from individual research grant support. Lobbying efforts should focus inthis direction, with recognition that there may be graded levels of indirect cost support for different types of research establishments.

The funds granted for individual research projects will get the maximum return for the federal dollar if they are grants-in-aid. With fixed indirect costs each federal dollar spent buys the same amount of quality research.

A substantial decrease in indirect costs rates now, followed by a gradual return to lower fixed indirect costs, is strongly justified. Over the years this will promote development of a more effective and equitable research establishment. Such action will help alleviate the present crisis in funding of the individual investigator.

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REFERENCES

1. P. D. Boyer, *Science* **232**, 1508 (1986).

Koshland is right. The time has come for a flat overhead rate. Indeed it probably came three decades ago. Those institutions with substantial sums from sources other than the federal government can spend more on research and consequently justify higher overhead rates. This in turn penalizes those institutions that don't. More important, it penalizes the country by depriving it of research funds that individual investigators and collaborative groups need for their research. I applaud and support his call for a national overhead rate.

If such a flat overhead rate were to be imposed, it would have to be done over a considerable period of time, say 5 years. During that time, institutions could be expected to reduce their overhead charges to a national rate.

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Response: The critics have jumped to the conclusion that I will suggest an overhead rate that will hurt the private universities. I had no such thought and deliberately left the rate out of my editorial to focus on the crucial issue of an equitable system that all can support. An overhead rate that uniformly includes facilities for both public and private donors is what I have in mind. The agreement that overhead should reimburse private donors but not reimburse taxpayers makes no sense.

Scientists at both private and public institutions complain about university bureaucracies, sometimes unfairly. However, scientists at both types of institutions may be told, for example, that overhead includes radiation services and are then billed for them. The argument that accountants have audited fair rates is met with skepticism because accountants saw nothing wrong with Drexel Burnham Lambert or savings and loan institutions.

A uniform overhead rate with appropriate and generous sums for use and depreciation of facilities would require more money. It would also require a concerted effort in which both scientists and administrators get together to increase the pie rather than quarrel about how to split it. The goal would be a system in which institutions would receive overhead in exact proportion to grants awarded after competition. Then both scientists and university administrators would have a common goal, the maximization of research effectiveness.

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