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Indirect costs of research

In his letter (January, page 103) concerning the indirect costs of research, D. H. Douglass dismisses a previous letter from Harold Zirin as containing "almost all of the popularly believed, *but incorrect*, suppositions concerning indirect costs." In the course of my own administrative duties at Yale over the last few years, I have made (with exemplary cooperation of our own business offices) a detailed study of indirect cost charges. My conclusions support Zirin's statements completely including his criticism of the PHYSICS TODAY news story (February 1979, page 85).

I agree, excepting only some minor matters, with Douglass's technical description of the overhead process (and there is nothing in those remarks contrary to Zirlin's concerns), but I object strongly to Douglass's inferences that the overhead charges made according to those procedures are generally equitable. I cannot, of course, argue from any direct knowledge that the astonishingly high rates at the University of Rochester are excessive, and I should not wish to void Douglass's complete satisfaction with the charges made by his university, but I object to his attempt to export his economics. My own studies demonstrate that charges at some universities are *far* in excess of costs and I suspect that this is true of most private research universities.

In the last paragraph of his letter, Douglass urges "every scientist and every science budget director to make some attempt to understand this [overhead charge] problem. The financial health of our profession and our universities depend upon it." I would agree with one important amendment drawn from my own experience: Your investigation must be made critically and in detail; take nothing for granted, believe no general statements, and, above all, avoid brainwashing by university administrators and business managers.

ROBERT K. ADAIR
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Somewhere between Douglass's unnecessarily lengthy (and patronizing) lesson on the nature of university overhead charges, and his note of alarm that universities may not recover the total costs of "federal" research, the historical interest of the university in fostering basic research as an integral part of its educational mission seems to have been lost. The idea is relegated to the status of an "argument . . . frequently made by program directors.."!

Surely if a university administration is not thoroughly convinced that research is an essential component of its graduate and undergraduate teaching function, and is not prepared to support it as such to a significant extent (more than a token 15%), it has no business being involved in it at all. If it is so convinced, then Harold Zirin's suggestion of the waiver of all or part of overhead charges would seem to be an effective mechanism for such support.

As one who has worked both sides of the street (program manager and university researcher), I can't escape the feeling that a far more serious danger will become apparent on scrutinizing the other side of the coin: that federal and state agencies come to regard research as a product, packaged and delivered at cost by the university as vendor. Once this perception becomes universal, who can blame the agencies (as purchasers) for searching out the lowest bidder (national or industrial laboratory)? Will they not ask the reciprocal question, should they be involved in supporting the universities' proper function? And what of our many colleagues in the arts and letters end of the university spectrum, whom we have been trying to convince for years that research is in indispensible part of teaching and learning? *Caveat vendor!*

STANLEY J. PICKART
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I fear that present formulas for allocating "indirect costs" of research are not as fair as Douglass would have us believe. The income-tax system, which in principle is fair and progressive, in practice becomes unfair and regressive because the wealthy are able to hire accountants to take maximum advantage of the loopholes, while the poor can not. For similar reasons the pre-

sent research funding system favors the major research universities. University accountants stretch the imagination to the limit in attributing university costs to government-sponsored research projects, and I suspect that it is the continuation of this process rather than inflation (which should affect direct and indirect costs roughly equally) that is responsible for the significant rise in the indirect-cost rate at Rochester and other universities. Douglass, in fact, lets the cat out of the bag when he mentions that "our accountants are continually consulted by other research universities for advice on the recovery of indirect costs."

Since total federal-expenditure on research, in constant dollars, is declining, increased indirect-cost rates can be met by withdrawing funds from each principal investigator or by increasing the total amount of some grants, by cutting off some investigators entirely and by making fewer new grants. I fear that in the latter process, modest projects at colleges that lack the political and bureaucratic clout of the major research universities will suffer disproportionately, as will younger investigators with new and innovative ideas.

The present system which rewards inefficiency by reimbursing all costs as they are incurred, can not be allowed to continue. I do not agree that "there is no completely fair method of recovering indirect costs that is not excessively cumbersome." The fairest and least cumbersome method is for each federal agency to reimburse indirect costs at a fixed fraction of direct costs that is constant in time and the same for all projects and all institutions. Here in Canada, the National Research Council will not reimburse universities for either indirect costs or "summer salaries."

ROBERT JOEL YAES
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THE AUTHOR COMMENTS: In my letter I attempted to explain that indirect costs are real costs incurred by a university in connection with the research efforts of its faculty and staff and outlined how these costs are recovered. I made a number of observations and comments, the most important of which was that the universities are not being fully reimbursed for these expenses and that the shortfall might be around 15%. The long-range consequences of this situation, I believe, would be quite disastrous to our profession, and so I called this to the attention of our community.

The above letters by Robert Adair, Stanley Pickart and Robert Yaes raise important points, and I am glad to respond to them.

Pickart suggests that if a university is not prepared to support research on even a fractional level, such as 15%, it should not be involved at all. I attempted to point out that 15% of a large amount of money may still be a large amount of money and may be larger than that institution is capable of paying. I believe, unfortunately for our profession, that universities are, in fact, solving this problem by being less involved. Another solution would be to federalize the large research universities as has been suggested by the president of Johns Hopkins University. To my mind this would be worse because of the inevitable federal control that always follows.

In addition, Pickart expresses the concern that, under full cost reimbursement, universities will become merely vendors delivering a product to federal or state agencies at the lowest price. This already is a problem, and I share Pickart's concern that it could get worse.

Adair objects "strongly to Douglass's inferences that the overhead charges made according to those procedures are generally equitable." I actually meant to say, and believe that I did say, that the present system based upon the averaging principle is *not* equitable. Then I attempted to point out that any more equitable system such as complete metering of everything would be prohibitively expensive. The fixed fraction plan of Yaes, although simple, would be more inequitable than the present system. (Surely a university that encumbers extra heating costs because it happens to be located where it snows should be reimbursed for that extra expense over that of a university located, say, in San Francisco).

Adair's assertion that I have complete satisfaction with the charges made by my university is very far from the truth. I am convinced that the research programs I direct receive much less in services and other indirect aid than the university receives in indirect costs right off the top of these grants and contracts. However, this is an example of inequities of the present system. (To prove that my actual indirect costs are less than what I am being charged would require all this metering that I mentioned before and the huge expense that goes with it.)

I don't understand his statement: "My own studies demonstrate that charges at some universities are *far* in excess of costs." It is illegal for a university to charge more than government regulations permit. Considering the fact that most research universities have full-time government auditors in residence, the chances of getting caught are quite high. Perhaps he is referring to cases of inequity that result from the averaging principle.

I certainly agree with Adair's

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"amendment," which says, "Your investigation must be made critically and in detail; take nothing for granted, believe no general statements, and above all, avoid brainwashing by university administrators and business managers." I would add though: Don't believe the conventional wisdom on this subject. Resist the temptation to blame the people who are closest to you for things you don't understand. Consider the possibility that the reimbursement system is faulty and no person or groups of persons (university administrators) are to blame. Entertain the notion, just as a hypothesis, that the universities are reducing their science faculties because they can not afford to subsidize their research programs.

D. H. DOUGLASS
University of Rochester

5/23/80

Failure of ex-physicist

A major goal of physics education is the training of generalists. Beyond the technical details we try to teach our students to look at problems from a common-sense point of view. The impressive computer output must be tested against the order-of-magnitude estimate.

I am reminded of all this by the recent spectacular failure of an ex-physicist (see June 1966, page 45) now in a position of great power. Following his computer output, he directed a disastrous adventure in Iran, which anyone with common sense should have known was absurd. I do not know whether this failure was due to the deficiency of his education or to a subsequent deterioration. In any case, it serves to remind us that we do our profession and our nation a disservice if we train pure technicians who lack a balanced perspective and a good leavening of common sense.

LINCOLN WOLFENSTEIN
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5/1/80

THE DEPARTMENT OF DEFENSE COMMENTS: The planning that went into the rescue attempt was thorough, the intelligence supporting it detailed, extensive and accurate. Training was exhaustive and painstaking, involving trials under conditions almost identical to those that would be actually encountered, and including tested provisions for a myriad of contingencies. It is certainly regrettable that a set of unfortunate and unforeseeable events combined to prevent a successful outcome, but it is grossly inaccurate to ascribe the failure of the mission to a lack of "common sense."

Far from being an "absurd" attempt, it was a carefully planned and operationally feasible effort to free a group of Americans who have been wrongly deprived of their freedom since November 1979. All concerned in the planning of the mission, or in the training for it—from the President and the Secretary of Defense to the commanders, pilots and crews—felt that it had a good chance of success.

THOMAS B. ROSS
Assistant Secretary of Defense
Washington, D.C.

High-risk proposals

I am the chairman of a task group established by the Advisory Council of the National Science Foundation to look into the adequacy of the process for funding research proposals that are highly innovative but also have a relatively high risk of failure. There seems to be a perception in some parts of the scientific community that highly imaginative proposals for research which are "off the beaten track" sometimes have difficulty in obtaining funding because scientific reviewers and agency officials are unduly conservative and tend to "play it safe."

We would very much appreciate having comments and views of the scientific community, including any knowledge of significant creative proposals for research that experienced difficulty in receiving funding from federal agencies, as well as suggestions for improving the mechanism for handling such proposals. We are also concerned about the possibility that some worthy proposals may experience difficulty because they fall between different disciplines or divisions of a discipline.

The task group is in no sense an appeal mechanism, nor does it have any possibility of determining the merits of individual proposals, but is involved in suggesting ways in which the procedures and policies of the National Science Foundation can be most effective in fostering highly creative science in our laboratories and universities.

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5/27/80

Views of science

The report (April, page 42) of Lewis Branscomb's review of "Physics and the APS in 1979" may have conveyed the impression that we were not in full agreement in our view of science. There was no such suggestion in the text itself, but by some mischance the figures on page 47 acquired captions that implied a contrast between "Ziman's view" and "Branscomb's view." To

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