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Editorial

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Taking the Bite Out of Overhead Rates

Several years ago I was trying to obtain funding from a global chemical industry for some environmental research. They had narrowed down providing funding to only one of two laboratories: my laboratory and or one in The Netherlands. With my institution overhead rate approaching 50%, for every $1 they invested in my lab they got $0.67 going directly toward the project. With the group in The Netherlands, for every 1€ received from industry by that laboratory, the research group got 1€ of matching funds from the local government, and 2€ of matching funds from the federal government (at a time when the difference in the Euro and the U.S. Dollar was not so large). So in the end, the company figured out that paying about $1 and getting $4 of effort in The Netherlands was better than getting $0.67 worth of work done in my lab.

While the difference in the amount of funds that go directly to researchers in other countries is different from that in the United States, even among U.S. universities overhead costs are quite variable: at Harvard the overhead rate is 69%, compared to 67% at Stanford, 56% at MIT (just down the street from Harvard), and 46% at Texas A&M. These overhead rates are negotiated by the universities with the federal government on the basis of their expenses for conducting research, so let us assume they are real and defensible expenses. But overhead rates are increasing over time, and likely there is no limit. For example, in 1997 when I arrived at Penn State the overhead rate was 37.06% and now it is 50.2% (an increase of 35% over 18 years). At what point do we become alarmed about the impact of these overhead rates? And how does this impact our ability to fund students and our laboratories?

All research costs continue to increase, but unfortunately, the funding per project for a research grant at many federal agencies is not keeping pace. For example, at the U.S. National Science Foundation (NSF), the funding seems to have been around or slightly more than $100000 per year per principal investigator for approximately the past 20−30 years (at least in the engineering directorate; it varies among the directorates). Consider the impact of flat funding relative to what can be funded. In 1997 at Penn State with a grant of $100000 per year, I could fund two students and their tuition, one month of my summer salary, $11500 for supplies and travel, $8000 for equipment, with $22000 required for overhead. To provide the same support in 2015 at Penn State, the grant would need to increase by 140% to $240000 based on current salaries (we all make more), our current overhead, and assuming 3% per year of inflation for other costs. So what can I fund now with a $100000 grant? There is only money for one student, no summer salary for me, and no money for equipment. Thus, the number of graduate students funded by $100000 is now half of what it used to be, and there is only minimal money available for summer support for the principal investigator. This reduction in the number of students per grant and the lack of adequate summer support could help to explain why it seems to be necessary to obtain twice as many grants now compared to 20 years ago. The amount spent on overhead has increased, as my university now gets $26000 from a $100000 grant in this case (some items do not have overhead, such as tuition), but it actually could be worse! If overhead increased at 3% per year, the rate would now be ∼61% and that means $36000 would be used from each $100000 of funding. So how high can we let overhead get? Is 50% acceptable, or do we cap it at 100% or let it rise to 200%? At some point, I believe we need to put a maximum on the overhead rate; otherwise, we will reach the point where we cannot fund a single student for a year on $100000.

Most universities are against a flat overhead rate, and why not? Equipment gets old, costs go up, and attracting the best faculty often requires having an impressive infrastructure. What researcher can resist a truly state-of-the-art lab in Cambridge, MA, with a view of the Charles River, compared to say a lab in the basement lab of some old building that was never originally designed for research, in the middle of nowhere? But what if the government steps in and says enough is enough and sets an upper overhead amount? That would place everyone on a level playing field, right? Not quite. Real estate in Cambridge, MA, is a lot more expensive than say in a rural location like University Park, PA, the age of the buildings differ even on the same campus, the cost of electricity can vary around the country, and administration of a grant can cost more just because salaries of employees and their cost of living are so different. So fixing the overhead might mean that not all universities can "afford" to do research at a flat rate, for example, of 50% overhead. But if they did accept federal research dollars at this fixed rate, they would therefore need to find other sources of revenue to support their activities.

Can universities find other ways to finance their research infrastructure other than overhead rates? Likely, because there is evidence that they are already finding ways to internally finance research based on actual overhead rates that are actually smaller, on average, than the federal rate. For example, the paid indirect rate at Harvard is 40.9% on average, compared to 30.9% at Texas A&M, which are both much smaller than the federal rates indicated above. These lower rates suggest that universities are already substantially "subsidizing" the costs of research at their own institution. The Association of American Universities (AAU) reported that on site research supported by the university itself increased from 7.1% in 1965 to 21.0% in 2012. A major source of funds was likely gifts and revenue from the university endowment. Harvard has the largest endowment for a university, which was estimated at $32 billion. Stanford is also doing well at $19 billion, with Texas A&M at $8.7 billion. These endowments will be crucial to supporting research at institutions that have these high overhead rates.

Extramural research funding at universities so far has mostly kept pace with inflation, but can that continue? At Penn State, research funding increased by 134% between 1997 and 2014 to $813 million. This increase is quite similar to the 140% increase that I estimated to be needed to fund the same amount of work

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in a $100000 project between roughly these two dates. During this nearly 20-year period, there were relatively consistent increases in funding for the NSF and the National Institutes of Health (NIH) and some other federal agencies that supported this increase in research funding. Going forward, however, it does not appear that funding will continue to grow at past rates, and at both the NSF and NIH, the percentage of grants funded continues to decrease. So something will have to change. Capping overhead could be the next logical first step. I believe that if the federal government capped the overhead percentage, universities with large endowments would do fine. Those with small endowments that provide less internal funds would suffer, but maybe this would help them to decide to get out of the research playing field and focus more on teaching, relieving some of the competition for research funding. So my final message to all universities is increase your endowments if you want to secure your future as a top research institution. The only other way to increase income for your research infrastructure is increasing overhead, and that is just not, in my opinion, a sustainable course of action.

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Notes

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