

Research University Competition and Financial Challenges

Each year as we prepare the *Top American Research Universities* report, we consider the state of and the context for competition among these institutions. The data reflect the work of about two years past, and sometimes this exercise feels a bit nostalgic when we find ourselves in a recently and significantly challenged environment for high performing institutions. Nonetheless, some of what we have learned over the years of these reports helps put the recent and anticipated events in some perspective.

Research Competition and Institutional Resources

In this continuing effort, made perhaps even more interesting in the current economic context, we have learned that while money matters in all institutions and is critical for the research enterprise, the exact structure of university budgets and the methods available to generate and spend money vary considerably. Not only do public and private universities operate within somewhat different, if overlapping, financial structures, but within each sector different institutions will have significantly different budgeting and resource allocation systems; legal, regulatory, and historical constraints; and institutional profiles. Those institutions with large resident student bodies operate within a much different framework than those with much smaller student populations. Those with larger numbers of graduate students compared to undergraduates will have different cost structures. Those funded in substantial amounts by state appropriated revenue and less by student fees will have a different context than those whose revenue comes primarily from tuition and endowment. Institutions whose facilities are funded by state bond issues paid by state appropriations as a state obligation have a different capital construction process than do those universities that finance their buildings through debt paid from institutional annual earned revenue.

Some universities have a more substantial commitment to high cost programs in health care, the STEM disciplines, and professional schools than others. Some institutions, by virtue of their funding model, spend much more on need based financial aid than others; some spend much more on merit-based aid. These are but a few of the many differences that have significant impact on institutional management and influence the budget allocations that serve to support high performance research competition. If we attempt to understand research university competitiveness by focusing on only one or a subset of these (which them-

selves are a subset of the many other variations in university operations), we are sure to over generalize and miss important distinctions that influence research university performance.

Measuring Institutional Wealth

Although this complexity makes it difficult to offer valid generalizations about the wisdom of particular university policies that affect income and expenses, it helps us understand that while research universities may have significantly different revenue sources and manage their expenditures in substantially different ways, the revenue imperative is a constant for all institutions. Some measure of institutional wealth is clearly a primary indicator of a university's ability to compete in a marketplace where the critical and scarce elements of high performing faculty, staff, and student talent, and the support structures required to ensure their effectiveness, must all be purchased.

A casual review of the financial data available on the top American research universities gives the clear impression that the best performing institutions on our measures are also among the wealthiest. Nonetheless, because these high performing institutions vary in size, funding structure, student and program composition, and ownership (public or private) the measurement of institutional wealth in a useful way has proved difficult. In the 2002 report, we approximated institutional wealth to see how closely it might predict research performance. In that exercise, we identified, by using a method that estimated the endowment equivalent of all sources of institutional income from every source, and then discounted that number to adjust for the baseline cost of instruction, what we could call disposable income, as the critical measure of institutional wealth for our purposes.

By disposable wealth, we mean the funds available for an incremental investment in institutional priorities after paying an estimate of the baseline cost of instruction. Those priorities could be high quality undergraduate programs to attract better students, grants to graduate students, support for research proposals to the federal government, science facilities, libraries, computer systems, or, in short, anything above the baseline cost of instruction that would improve the university's competitive position. Implicit in this notion is that disposable wealth represents an opportunity, not a guarantee. If a university has no disposable income after paying the cost of instruction, there is very little opportunity to compete in the marketplace for the scarce and expensive talent that drives research success. However, the availability of disposable income does not necessarily mean the university will spend it effectively in competing for those elements of institutional activity that define research performance.

The endowment equivalent exercise gave a clear indication that institutional wealth is indeed a key indicator of an opportunity for competitive research performance, but the methodology required considerable estimation. Our staff has been working on alternative methodologies using official financial statements. This effort, which takes advantage of some clarifications in the reporting standards for public and private institutions, offers the possibility of a more precise measurement of institutional wealth. For example, we can calculate an estimate of net assets and net assets per student.

This measure, like the disposable income indicator calculated earlier, has its own methodological difficulties. While it includes some adjustment for capital facilities, the data do not appear to capture all of the relevant facilities costs in the same way for all public and private institutions or uniformly within the category of public institutions. Nonetheless, when we compare net assets to federal research expenditures for the top 50 institutions in our group of over \$40M annual research expenditures (excluding medical and stand alone institutions to focus on more or less standard research universities), there appears to be a clear relationship between the ranking of the research institutions and their net assets. More careful analysis and some improvements in the data that we expect in next year's financial reports should allow the calculation of a better estimate of the relationship, but no matter how we look at these institutions and their resources, sufficient revenue to support the high cost of research performance appears a necessity.

The Impact of Revenue Declines on University Competitiveness

The recent dramatic reduction in state income and endowment wealth, now partially in recovery, highlights the importance of institutional wealth. Research universities, whether public or private, have been struggling with the consequences of these revenue declines using a variety of adjustment techniques in different proportions depending on the specific circumstances of the institution and its revenue context. Layoffs, furloughs, postponed construction projects; tuition and fee increases, program reductions, and some structural rearrangements in institutional organization have either taken place or are under discussion.

Faced with rapid and significant declines in revenue from traditional sources, the first cycle of cost reduction measures served to produce quick and often opportunistic savings with minimal damage to institutional and programmatic integrity. Many institutions, with memories of previous financial downturns, implemented various adjustments with the expectation that the financial cycle would be of sufficiently short duration to require no major institutional changes. Others, either because they anticipated a longer

down cycle or suffered a larger impact on their revenue as a result of local circumstances or the composition of their revenue, began reviewing the continued viability of their institutional mission leading to the implementation of significant institutional change.

The recalibration of university finances to accommodate lower revenue from various sources has consequences for all areas of institutional activity including undergraduate programs, diversity opportunities, athletic enterprises, and extending into the competitive success of research programs. The adjustment process and the elements of a research university's mission affected will vary widely between public and private sectors and within sectors. Unlike many previous financial crises, however, the dramatic decline of stock market values and the exposure of many private institutions to the consequences of high-yield, high-risk investment strategies have required those private and public institutions significantly dependent on endowment income to consider longer-term adjustment strategies.

The financial challenge affects most institutions, but individual colleges and universities will respond in different ways depending on the composition of their revenue. Where institutional budgets depend on legislative appropriations in states suffering dramatic revenue declines, the impact of the financial crisis can be severe, but where institutional budgets depend more on tuition and fees, the impact may be less. Institutions whose budgets depend significantly on endowment earnings may find the income available for competitive investments and even the continued maintenance of high levels of performance substantially reduced.

Readjustment Strategies

In moments of major economic crises, transitional financial readjustments often look more traumatic than they turn out to be. Even though this current economic downturn is more severe and longer than those of the recent past, and even though the impact on both state revenue for public universities and endowment wealth for private and many public universities is more significant than in previous cycles, it is not yet clear that the readjustments currently taking place at research universities will result in a major change in the competitive marketplace. In part this is because most research universities have stable faculty and student populations, multiple sources of income, not all of which is equally subject to the effects of the economic crisis, and sophisticated management structures capable of limiting the consequences of the revenue losses without catastrophic readjustments.

Nonetheless, different strategies for handling the abrupt and in many cases continuing loss of some revenue will have different consequences. In addition, as mentioned above,

universities have complex revenue and expenditure structures that reflect the widely varying circumstances, missions, and scale of their operations. Tuition and fees remain a source of revenue not yet subject to major declines for these research institutions. The range of support from state government to public institutions varies dramatically from as much as 30% or more of the institutional budget to under 5%. Some states have found ways to buffer, if in many cases only temporarily, the loss of state revenue. However positioned, competitive research institutions have many tools for budget adjustment, and if creatively employed, they can moderate the impact of the declines in revenue and preserve the capacity to continue to compete effectively. The complexity and stability of research universities makes estimates of the changes in competitiveness that could result from the resolution of the current global economic decline speculative. Whatever change in performance occurs as a result of revenue losses and differential institutional responses, any substantial reordering in the hierarchy of research university performance will likely take place slowly over a five to ten year period.

The principal goal of the many adjustments strategies in research universities will likely be the preservation of their ability to sustain the competition for talent. As a result, strategies that employ institutional reserves to maintain the status quo may, depending on the length of the economic recovery, leave institutions at a disadvantage relative to universities that readjust more significantly to guarantee the availability of money to recruit the next generation of faculty and sustain the highly productive research groups already at the institution. Some who do this well will have the resources to raid high performing research groups from institutions less effectively managed.

However individual universities respond, and how effectively they take advantage of the opportunities a crisis provides, will depend on a wide range of structural, institutional, political, and financial circumstances. Much of the public conversation that affects research universities will focus on the cost and structure of undergraduate programs, especially in public institutions. While this will be a critical conversation for those institutions, especially where the volume of undergraduates sustains portions of the research enterprise, it is not necessarily critical to the research enterprise. Some institutions, public or private, will surely reevaluate the wide scope of activities these research universities support, some of which may no longer be economically viable. Speculation on these topics is a favorite academic activity, exaggerated expectations of dramatic change add drama to the exercise, but our experience in studying these top American research universities recommends caution in anticipating big changes. High performing universities will continue to perform better than others,

even in a constrained resource environment. Less effective institutions will likely remain less effective. The consequence of this challenged economic environment may simply increase the competitive advantage of the most successful universities.

The Stability of Research University Performance

It is more difficult to predict how much of this will affect the competitive balance among research institutions. Over the years we have been impressed with the remarkable stability in the rankings of research universities based on their annual expenditures from federally funded sources. This stability is particularly notable at the top of the distribution, although as we look farther down the list, there is more change in relative position. If we look at the five years between 2002 and 2007, and focus on the most successful of America's research universities, those with over \$40M in federal research expenditures, we can get a sense of the competitive dynamics.

Among the top 20 public and private research universities in 2007, only one was not among the top 20 in 2002. This means that two universities changed places: one moved up from number 35 in 2002 to number 20 in 2007, and 1 moved down from number 20 in 2002 to number 23 in 2007. In addition to the institution that dropped out of the top twenty, 7 kept the same rank, 6 moved down in rank, and 6 moved up. Another way to look at this, and other groups in the list, is to look at the difference between institutions, which gives a sense of the amount of research expenditure required to change rank. Although the range of research expenditures in this top 20 group, excluding the outlier of Johns Hopkins, is about \$307M, the distance that separates one institution from the next highest ranked university ranges from about \$46M to \$9M. These numbers indicate why precision in ranking numbers is less important than maintaining a competitive position with the group.

The stability in this top group contrasts with the pattern we find when we look at the twenty institutions ranking last or at the bottom among those with over \$40M in federal research expenditures in 2007. Among this bottom 20, some six institutions fell from a higher ranked group into the last 20. Moreover, within the last 20, some 12 institutions declined and 7 institutions increased in rank, with only one staying the same. This greater ranking volatility reflects the much smaller amount of research expenditures that separate institutions in the last group. The university with the largest amount in this group has \$2.7M more federal research expenditures than the institution with the smallest amount. The smallest gap separating an institution from the next highest ranked is only \$6,000 in federal research expenditures while the largest gap in this group is still only \$2.7M.

Dramatic increases in competitive position that would move a university from the middle of one group of 20 institutions to the middle of the next group are relatively rare. For example in the five years from 2002 to 2007 only four institutions out of the over \$40M group moved up 20 or more positions. For those institutions in this high performing group, none failed to increase their federal research expenditures in this period. The amount of growth varied, of course. Excluding Johns Hopkins, the increases ranged from as much as \$198M to as little as \$2M. In percentage terms, the median growth rate for research expenditures between 2002 and 2007 equaled about 28%. The pool of dollars represented by these institutions grew from \$17.4B in 2002 to \$24.1B in 2007 or an increase of 55%. An institution would have needed to grow at about 11% a year to maintain its share of the group's research expenditures.

Other elements that contribute to research university pre-eminence exhibit similar stability over time. Indicators that reflect faculty performance such as National Academy memberships or faculty awards are concentrated among a relatively few institutions, most of which also rank high on federal research expenditures. Universities that award many doctoral degrees, recruit outstanding students, and capture large amounts of annual giving are likely to continue to do so. While the current economic malaise may last longer than previous economic downturns, the broad impact on most major public and private research universities will likely result in only a modest impact on relative performance.

All of this simply testifies to the remarkable stability of research university hierarchies. The investment, institutional commitment, departmental and program focus on competitive quality, and infrastructure for research and the associated processes of faculty recruitment and institutional investment are difficult to create. Once built, they pose a formidable entry barrier to institutions that anticipate breaking into this elite group or making dramatic advances within the group. Nonetheless, some universities have

significantly improved their competitive position over the years, and institutional readjustments to the current economic downturn and recovery may contribute to somewhat larger changes in the relative ranking of institutions on the indicators included in the Top American Research Universities. We anticipate that the current economic readjustments will most affect universities in the bottom half of the over \$40M group.

The Top American Research Universities report will continue to track the performance of these high-powered research enterprises. With the data recorded in the reports published here dating back to 1996, we can continue to observe changes in the research competitiveness of these universities.

Adjustments to The Top American Research Universities

In our continuing effort to improve the usefulness of these reports, we have made some changes over the years. A year ago we recalibrated our definition of the top American research universities at over \$40M in federal research expenditures. This cutoff captures some 90% of federal research expenditures recorded for American universities. In addition, we began an effort to separate out the research performance of institutions with and without the federal research funding spent through medical schools. This provided another way of increasing the utility of comparisons among institutions since often, although not always, medical schools contribute a substantial research component to recorded university totals. In next year's report, we will remove the non-university medical and other research institutions from our main list and include them in a separate table. By removing these more highly focused institutions from the main list, the comparisons will more closely track the performance of comprehensive research universities. As always, we will continue to provide all the data in downloadable form so that institutional researchers can construct the most appropriate comparisons for their own purposes.