

Some Ordinary Evidence

One of the key arguments put forward by the supporters of a Rice-Baylor merger is that a high-performing medical school offers a significant advantage in the competition for federal research dollars. In the words of President Leebron, for example, the merger *“...would position Rice more securely for the future as one of the leading research universities in the world. Based on figures from 2007, for example, a merger with BCM would raise our ranking in federal research funding from 130th to about 23rd, just a bit behind Yale University...”* [1]

Nobody disputes the fact that the merger will improve Rice’s standing in rankings based on total federal research expenditures. But will the acquisition of a medical school raise the research competitiveness of the other parts of the university?

A 2001 report from the Center for Measuring University Performance addressed this issue and reached the following conclusion: *“...When a medical school generates a surplus and invests that in support of research, its presence as part of the university will make a major contribution to its research competitiveness... [The existence of a] medical school alone does not guarantee competitiveness...”* [2]

Another more recent report considered the change in national rankings that would result from ordering 149 private and public institutions by their research expenditures with and without the medical school contributions [3]. This analysis again did not reveal any consistent trends in the change in national rankings from the presence of a medical school in a university.

For example, eight universities that were in the top 20 in total expenditures fell out of the top 20 group when the medical school research expenditures were not considered. Four of these universities, Penn, Washington University - St Louis, Duke and Yale, fell by 42, 55, 44 and 57 positions respectively in the national rankings when their medical school expenditures were not counted. USC, another private university, fell by 7 positions. On the other hand, twelve institutions (including Stanford, Columbia, Harvard and Johns Hopkins) remained in the top 20 regardless of whether the medical school expenditures were considered in the rankings or not [3]. Clearly, the presence of a top-tier medical school does not guarantee that the rest of the university will have an equally large market share of federal dollars and, as a result, non-medical disciplines may not share the high national rankings of the entire university.

Similar trends were observed when we analyzed the data for the 41 private universities included in the first group. Some universities with medical schools fell in the rankings when the medical school research expenditures were subtracted, while others improved.

These analyses establish that it is not possible to draw any general conclusions about the effect of a medical school on the overall research competitiveness of a university.

As noted earlier [3], medical schools “... *do not necessarily provide the financial and institutional support required for successful research competition. When they do, they can be a major research asset. But not all of them provide significant contributions to the research productivity of individual campuses...*”

The same report also observes the following: “... *Institutions with a broad and comprehensive focus on research competitiveness, a clear sense of pursuing those parts of the research marketplace with the fastest growth rates, and a financial model that supports investment in research projects, facilities, support systems, and the like, will succeed with or without a medical school...*” [3]

We do not have to go far to recognize the truth of this statement. Well-timed strategic investments by Rice over the past 20 years transformed computer science and bioengineering from “isolated clusters of excellence” to thriving departments with top 20 and top 10 national status. Another series of strategic investments in the area of nanotechnology benefited and stimulated the growth of several interdisciplinary research groups that span many Rice departments: chemistry, chemical and biomolecular engineering, electrical and computer engineering, physics, bioengineering, mechanical engineering and materials science, civil and environmental engineering. As a result, Rice is consistently ranked in the top 5 worldwide in nanotechnology and is the top university worldwide in carbon nanotube research.

But, let’s return to the Rice-BCM merger. All available evidence suggests that a medical school can enhance the competitiveness of an institution only if it can generate substantial surpluses for investment in research. This is why it is not enough to ensure that BCM comes up with a plan to eliminate its budget deficit before a merger can take place. In addition, BCM must be able to (a) sustainably generate surpluses from its clinical operations and/or hospital partnerships, and (b) invest these discretionary revenues to support and grow the research enterprise of the entire university. If all these conditions are not consistently met, a merger with BCM will not only fail to strengthen Rice’s research foundation but may even weaken it.

REFERENCES

1. “Rice & BCM: Point/Counterpoint,” Rice Thresher, November 20, 2009.
2. “Quality Engines: The Competitive Context for Research Universities,” The Center for Measuring University Performance (2001) - <http://mup.asu.edu/QualityEngines.pdf>
3. “Deconstructing University Rankings: Medicine and Engineering, and Single Campus Research Competitiveness,” The Center for Measuring University Performance (2005) - <http://mup.asu.edu/DeconstructingUniversityRankings.pdf>

Frequently Asked Questions

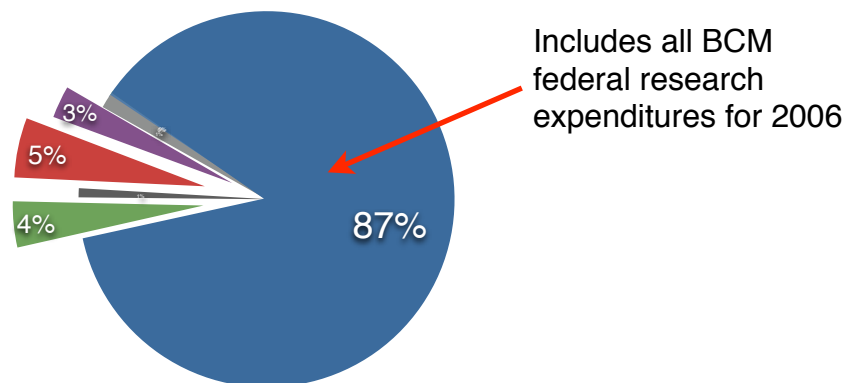
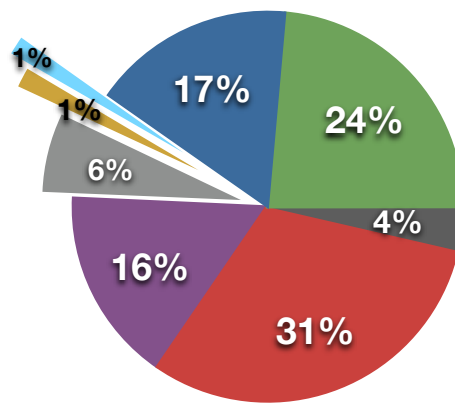
about the Rice/BCM Merger

Frequently Asked Questions about the Rice/BCM Merger

Q: What is the current distribution of Rice's research expenditures among its major disciplines and how will this distribution change if Rice merges with BCM?

A: The following is a snapshot for 2006. Life sciences would have accounted for 87% of research expenditures of a combined Rice-BCM institution in 2006.

Rice 2006 Research Expenditures by Major Discipline

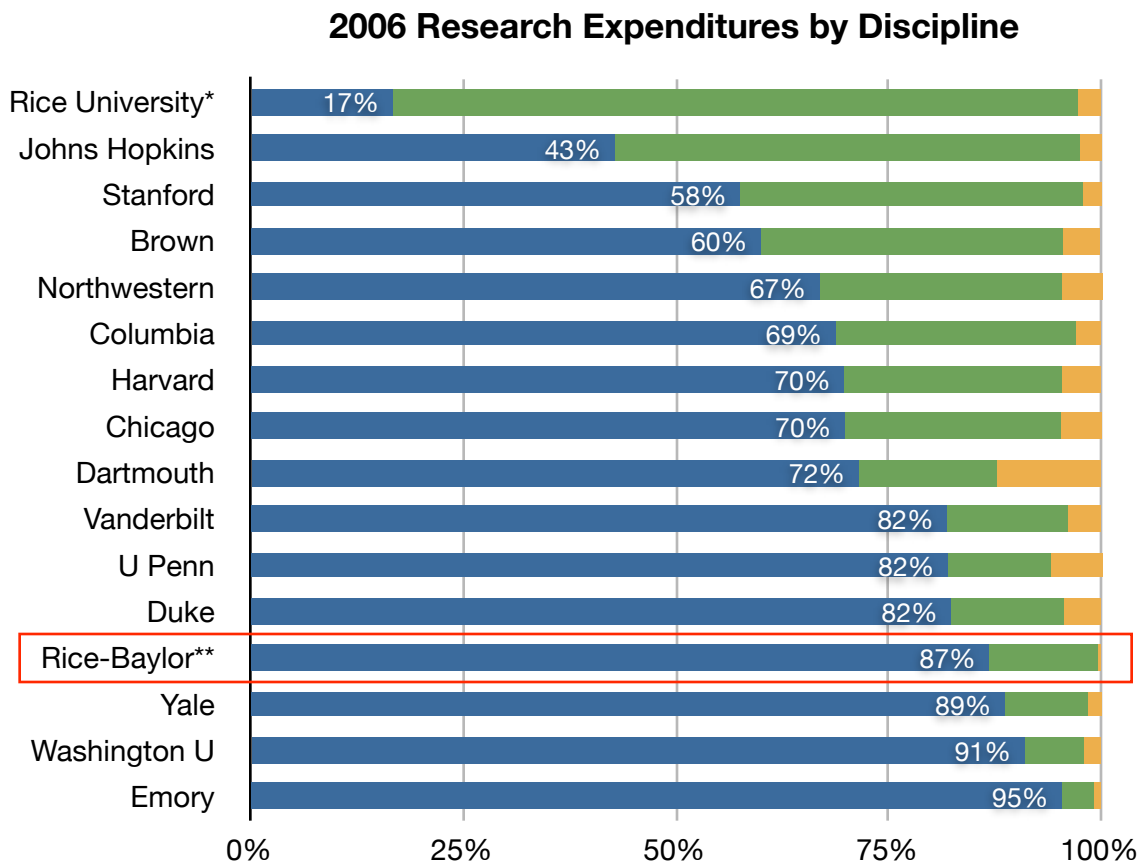
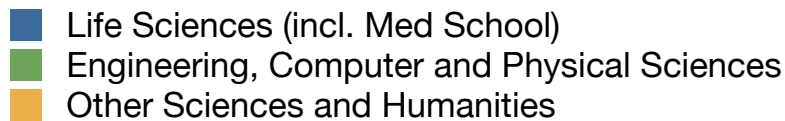


Combined Rice-Baylor 2006 Research Expenditures by Major Discipline

Frequently Asked Questions about the Rice/BCM Merger

Q: What is the distribution of research expenditures among the major disciplines of other private universities that have medical schools? How will a combined Rice-BCM institution compare?

A: The following plot gives a snapshot for 2006. The plot also gives the current distribution for Rice without BCM.



Frequently Asked Questions about the Rice/BCM Merger

Q: Does the presence of a medical school make the other disciplines of a university more competitive in attracting federal research dollars?

A: To answer this question, we followed the approach of a 2005 TARU report [1] to “disaggregate” the research expenditures of medical schools from the total research expenditures of their universities. We looked at two sets of research expenditure data for the 2002-2006 period.

1. The first set comes from the National Science Foundation (NSF) and captures the total federal research expenditures of 149 private and public institutions with or without medical schools.
2. The second set of data comes from the American Association of Medical Colleges (AAMC) and identifies medical school research expenditures defined in the same fashion as the NSF data.

After computing the 5-year averages for the period 2002-2006 from both sets of data, we subtracted the averages of the second set from the first to generate the averages that do not include the medical school expenditures (non-AAMC expenditure averages). To make our comparisons more meaningful to Rice, we limited further analysis to the 41 private schools from the original group.

We then created two different rankings according to:

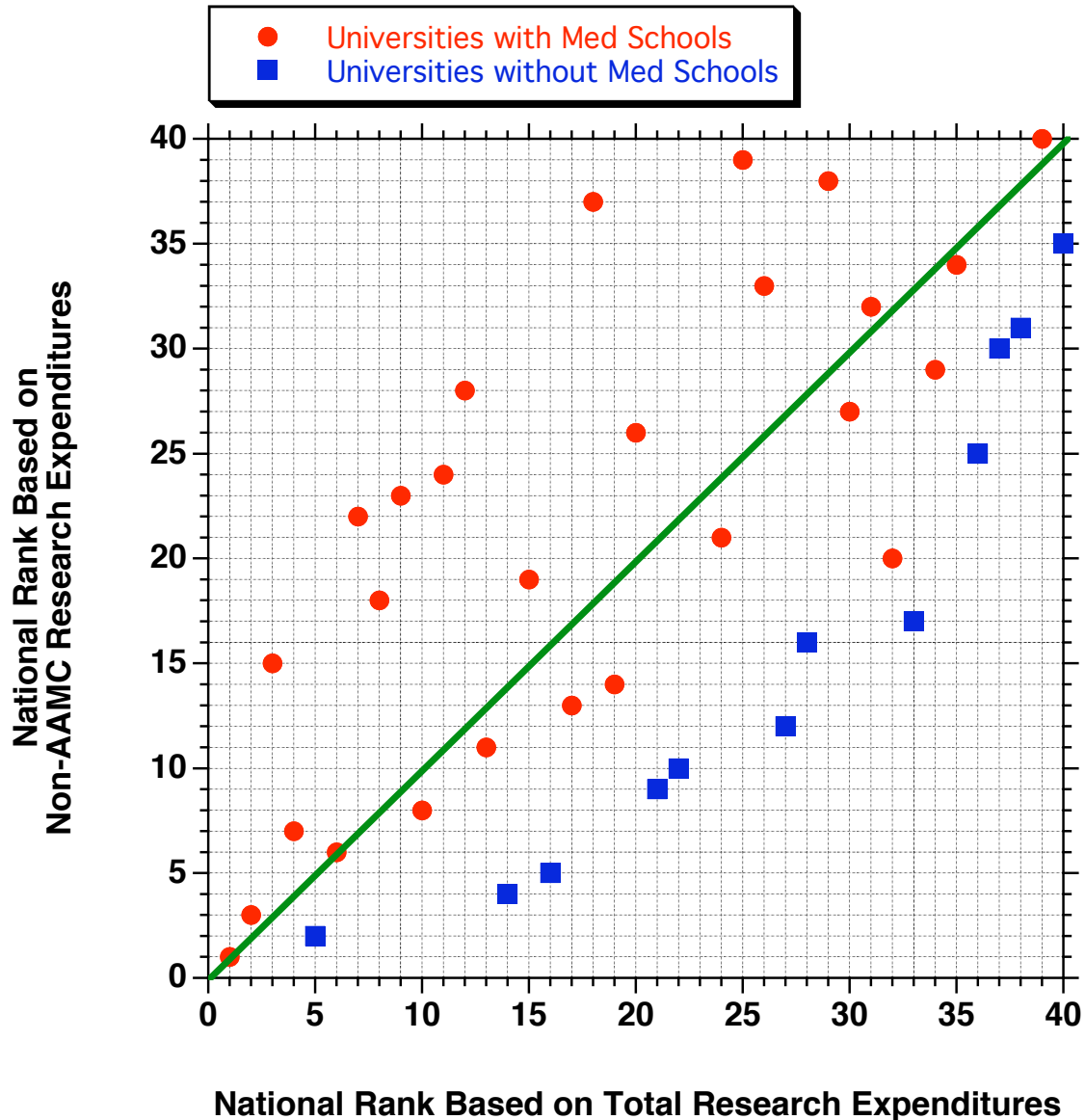
- A. the total research expenditures, and
- B. the non-AAMC research expenditures (that is the NSF total less the medical school amount)

Finally, we plotted the institution rank based on the non-AAMC expenditures (B) vs. the institution rank computed according to the total expenditures (A).

- If the rank of all the institutions does not change (or changes very little) when we subtract the medical school expenditures from the total, then all the points representing the 41 private institutions would be clustered around a straight line with slope 1 (the green diagonal line on the next plot).
- If the national rank of a university **falls** when we remove the expenditures of its medical school (that is the university ranked #3 for total research expenditures falls to #15 for non-AAMC expenditures), then the point representing this university will lie **above** the straight line with slope 1.
- If the national rank of a university **improves** when we remove the expenditures of its medical school, then the point representing this institution will lie **below** the straight line with slope 1.

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The following plot shows a wide scatter for the universities with medical schools. Some universities with medical schools improved their position in the non-AAMC rankings (USC from #10/41 to #8/41, Northwestern from #17/41 to #13/41) and the rank of two schools (Johns Hopkins and Harvard) did not change. However, several universities with medical schools dropped significantly in the non-AAMC rankings: Penn from #3 to #15 out of 41 universities, Washington University from #7 to #22, Duke from #8 to #18, Yale from #9 to #23.



Interestingly enough, all the universities that did not have medical schools (blue squares in the previous plot) improved their position in the non-AAMC rankings, irrespectively of

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whether they were near the top of the total expenditure rankings rankings (like MIT and Caltech) or near the bottom (Rice, Notre Dame or RPI).

Concluding Remarks:

1. As stated elsewhere [1,2], this analysis shows that the presence of a top-performing medical school does not guarantee that the rest of the university will have an equally large market share of federal dollars.
2. The research competitiveness of a university depends on many other factors like timely investments in research areas with fast growth rates, a financial model that includes discretionary revenues from hospital operations (or other sources) and investment of these revenues in research projects, adequate facilities, etc.
3. Institutions that do not have medical schools will by necessity concentrate their research efforts in engineering and science departments, and in many cases in engineering programs related to life sciences. Such institutions may rank lower in total research expenditures when compared to campuses that include research-oriented medical schools. But with the medical school component removed from their competitors' totals, these institutions rise in the rankings as shown in the previous plot and do not appear to be at a disadvantage to their competitors with medical schools in national rankings of individual disciplines.

Note: These data sets do not provide research expenditures for the Cornell Medical School. For this reason, we grouped Cornell with the schools that do not have a medical school. Note that that main campus of Cornell's medical school is located in New York City and not in Ithaca, NY.

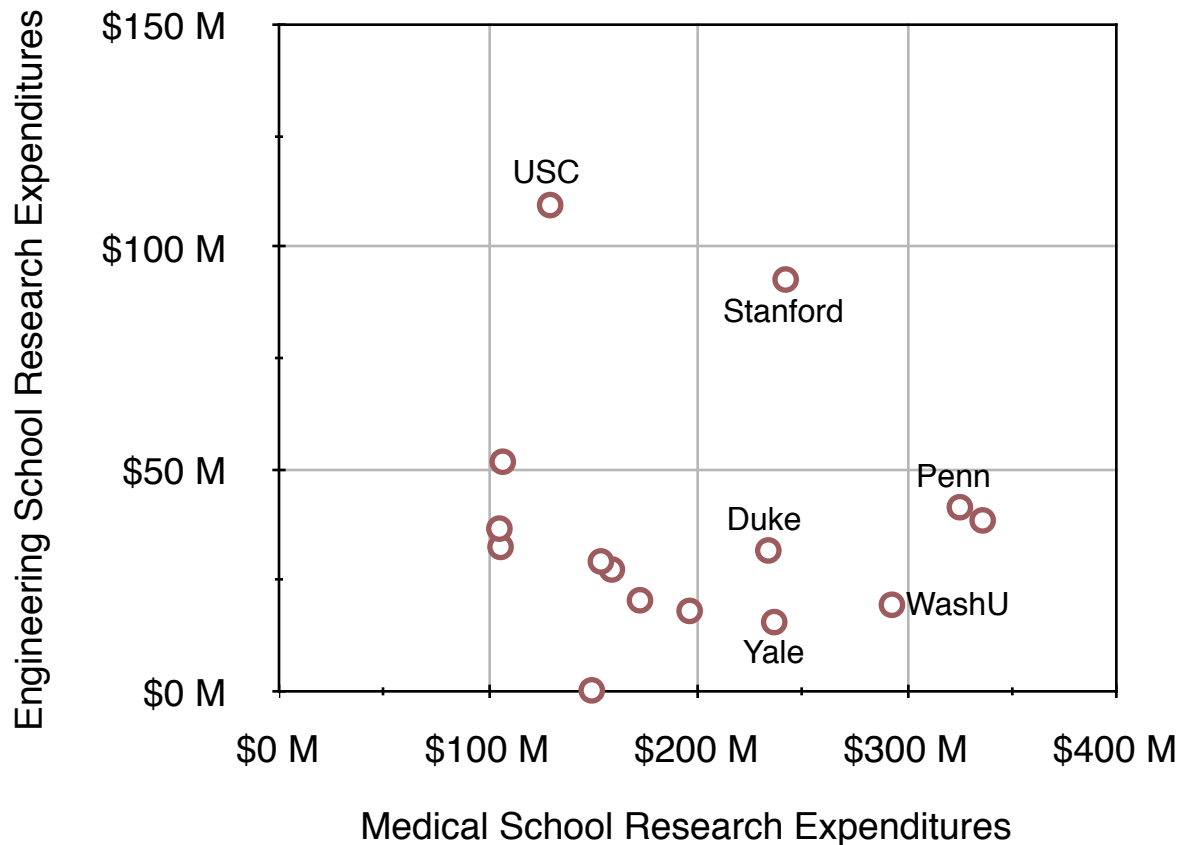
References

1. "Deconstructing University Rankings: Medicine and Engineering, and Single Campus Research Competitiveness," The Center for Measuring University Performance (2005) - <http://mup.asu.edu/DeconstructingUniversityRankings.pdf>
2. "Quality Engines: The Competitive Context for Research Universities," The Center for Measuring University Performance (2001) <http://mup.asu.edu/QualityEngines.pdf>

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Q: For private universities with top medical schools, is there any correlation between medical school research expenditures and engineering school research expenditures?

A: The following snapshot for 2003 research expenditures shows there is no correlation between the federal research expenditures reported by the top medical schools (that is those reporting more than \$100 million in 2003) and the expenditures reported by the engineering schools of the same universities.



Data sources:

1. Engineering federal research expenditures for 2003: American Society of Engineering Education (ASEE)
2. Medical federal school research expenditures for 2003: American Association of Medical Colleges (AAMC)