# Challenges Facing HIGHER EDUCATION IN AMERICA: Lessons and Opportunities

**Steven J. Rosenstone**
Professor of Political Science
Dean of the College of Liberal Arts
McKnight Presidential Leadership Chair
University of Minnesota

215 Johnston Hall
101 Pleasant Street, S.E.
Minneapolis, MN 55455
sjr@umn.edu

Paper presented to:
**the University of Toronto Conference on Taking Public Universities Seriously**

December 3, 2004

# Challenges Facing Higher Education in America: Lessons and Opportunities

**STEVEN J. ROSENSTONE**

Higher education in America is in trouble. Deep trouble.

Over the course of the twentieth century, America created one of the world's truly great systems of higher education—a system that has generated tremendous scientific discoveries, fueled the economy, solved pressing social problems, and ensured the cultural vitality of our communities. It has educated millions of students, creating a well-trained workforce and spawning creative ideas and innovations that have improved the quality and longevity of life. Access to higher education has provided tremendous opportunities for social and economic mobility, enabling all kinds of people, including new generations of immigrants, to realize their hopes and dreams while enabling America to benefit from the creative energies of all of its people.

A well-educated citizenry is crucial to America's vitality. Well-educated citizens are more productive. They fuel economic growth.[1] They do work that leads to breakthroughs in science and industry. They create new knowledge, new products, new technologies, and new enterprises. They are more likely to have stable jobs and remain in the labor force because they have the skills needed to compete in an information economy. They are better able to manage change and complexity. They are adept at acquiring new skills and new knowledge and managing the flow of new information. They drive innovation and invention.

All told, economists estimate that increases in education account for 10 to 25 percent of the growth that occurs annually in the United States.[2] How well Americans are educated will determine how well America competes over the course of this new century, as human capital—creativity, knowledge, and ideas—secures its dominance as the coin of the realm.

An educated citizenry is also crucial to the social, political, and cultural vitality of our communities. Education promotes engagement and understanding of public issues as well as participation in community and political affairs.[3] Moreover, higher education helps societies chip away at socioeconomic, racial, ethnic, and gender inequalities that fray the social fabric.[4] And it leads to broader social benefits, including healthier lifestyles and longer life expectancies, lower crime rates, and reduced reliance on welfare and public assistance programs.[5] Last but not least, a strong educational system nurtures the arts, whose vitality helps sustain our quality of life and the cultural and economic health of our communities.

All of the enormous contributions that education in America makes to the cultural, social, and economic vitality of our nation are at risk. This essay focuses on five challenges that threaten to undermine the system of higher education in America, with profound consequences for all Americans.

I begin by focusing on the culture shift that has occurred in America over the past two decades and has led to dramatic cuts in state support for higher education. These cuts, combined with rising costs, are jeopardizing the quality of education and have led to huge tuition increases for students. I next turn to the social impact of these mounting tuition bills: skyrocketing costs have reduced access to our universities and have increased the class, race, and ethnic disparities in college admission and attendance.

Next, I show how dramatic cuts in state support for higher education have also widened the gap between public and private universities. This widening gap is leading to a two-tiered system of higher education in which public institutions (which serve more than three-quarters of America's college students and constitute more than half of the nation's research-intensive universities) are at a distinct disadvantage.

I then turn to an analysis of risks to America's international competitiveness. Cuts in public investment in higher education, declining access, the increased barriers to international exchange, all heightened in the wake of 9/11, are weakening America's competitive position in the world.

My final point focuses on the enormous challenges American universities face to sustaining innovative research. The rising costs of research coupled with funding cuts, the looming U.S. federal budget deficit, the lure of the marketplace, and the challenges posed by interdisciplinarity are all issues that American universities must address if they are to remain the source of important scientific breakthroughs. I conclude by offering some suggestions about strategies for the future.

## From *Public* to *Private* Good: Declining State Support of Higher Education

A dramatic culture shift has occurred in America over the past two decades. It use to be more or less taken for granted that higher education was a *public good*. That consensus has vanished. A well-educated citizenry is no longer regarded universally as offering collective benefits to our community, our state, or our nation. Instead, higher education is increasingly considered a *private good* that benefits primarily the individual who receives the degree. And because the individual, not society as a whole benefits from the education—so the argument goes—the individual, not society, should cover its cost.

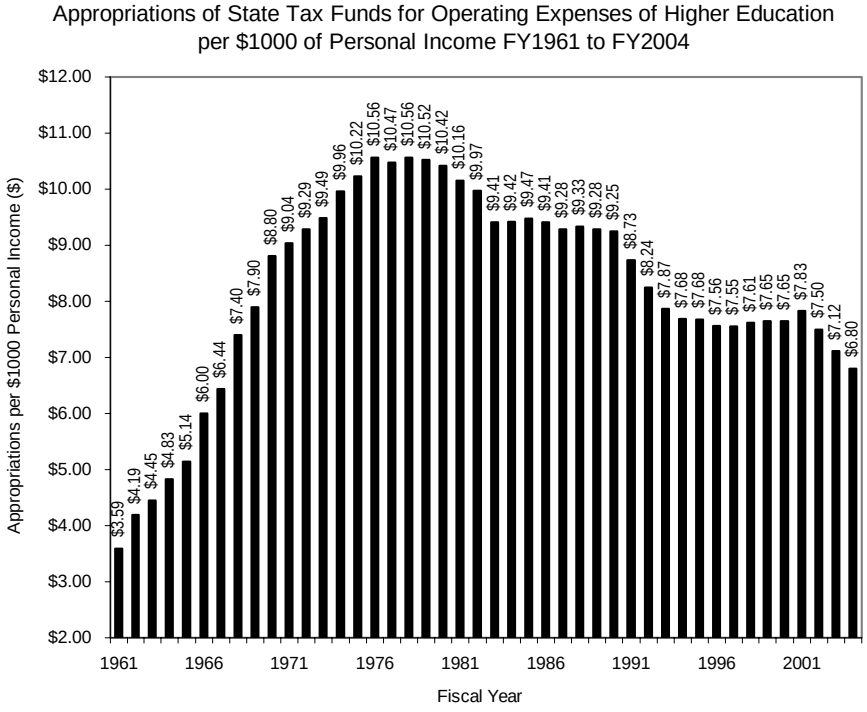
This philosophical change has led to dramatic cuts in state support for public education. These cuts have had a profound impact on students, on the quality of higher education in America, and on America's capacity to compete in the global economy, not to mention on students' access to and experience of higher education. These cuts jeopardize America's entire system of higher education.

Following a period of growing commitment through the mid-1970s, state investment in higher education has been steadily declining, and the cuts over the past three years have been particularly sharp. Four decades ago, growing concerns about Soviet dominance in science and technology sent state investment in higher education soaring, from $3.59 per $1,000 of personal income (in 1961) to $10.56 in 1976. During the recessions of the early 1980s, state higher education appropriations dropped 11 percent to about $9.37. States took another bite out of higher education budgets during the recession of the early 1990s, when higher education

appropriations dropped by another 17 percent, bringing levels of support down to about $7.50 per $1,000 in personal income.[6]

The most recent economic downturn brought yet another, even deeper round of cuts in state support of higher education. Nationwide, appropriations to higher education fell (in nominal dollars) a whopping $9.2 billion (13 percent) over the past three years, dropping the level of state support to only $6.80 per $1,000 in personal income—a third below 1976 levels.

State support for higher education is back to levels last seen in the mid-1960s. State appropriations (in constant dollars) have dropped 36 percent over the past 25 years, and the share of state budgets going to higher education has shrunk by more than one-third over the past three decades. What makes these numbers even more alarming is that the decline in support has occurred as enrollment in public higher education has soared by about 30 percent. These cuts translate into real appropriation losses of about $2,800 per student in a typical state. Over the same period, the real increase in public four-year in-state tuition rates averages $1,700, for a net loss to public institutions of $1,100 per student.[7]




*Source*: Post Secondary Education OPPORTUNITY, No. 139 (January 2004), p. 1.

These cuts have occurred all over America. The state of Minnesota, for example, cut appropriations for the University of Minnesota by 18 percent ($118 million) in 2003 and 2004, leaving its flagship public research university with a lower (inflation-adjusted) level of state support than in 1978. The state of California cut the University of California system 19 percent ($637 million) between 2001 and 2004, also bringing inflation-adjusted support for higher education in California back to levels last seen in the 1970s.

There are few signs that state support for higher education will turn around any time soon. State budget priorities have shifted. Some of this shift has been driven by a devolution of federal programs to the states, some by expansion of existing programs (e.g., the criminal justice system). Over a decade ago, Medicaid displaced higher education as the second largest state spending category (eclipsed only by elementary and secondary education). Medicaid expenditures and prescription drug costs continue to escalate, and baby-boomer retirements will soon place additional demands on state resources. Over the past two years, as states cut their higher education expenditures, they *increased* spending for elementary and secondary education by 3.9 percent; for public assistance, 6.2 percent; for Medicaid, 7.6 percent; and for corrections, 5.2 percent.[8]

Many states cut taxes between 1995 and 2000, only compounding the problem. These states and others are now running structural deficits and they have depleted their rainy day funds. The upshot: State revenue is growing more slowly than in the past, and demand for those dwindling resources continues to grow. Few governors and legislators seem willing to raise taxes to provide the additional revenue needed for higher education, and there is little indication that the public is demanding that they do so.

At the same time that states have cut their support of higher education, public colleges and universities have had to face sharply rising costs due to enrollment increases, more onerous federal regulations, and increases in the cost of technology, employee health benefits, computer security, property insurance, utilities, and library acquisitions.

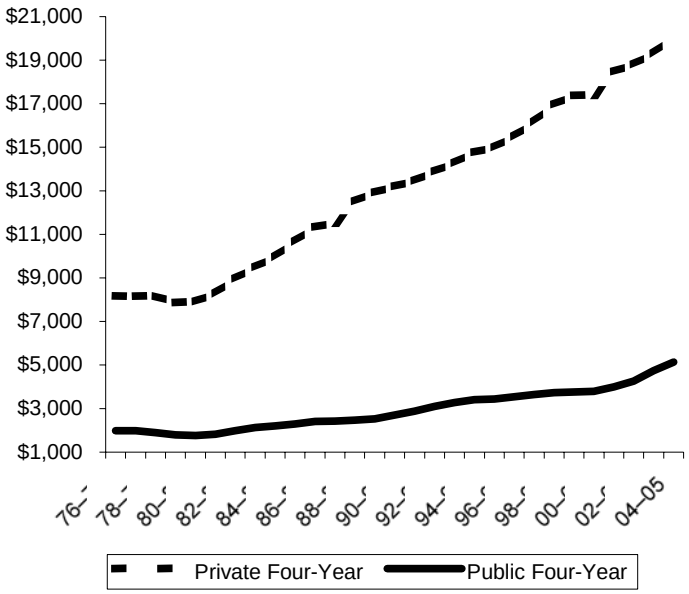
The combination of rising costs and reductions in state support has forced public universities to cut their investment in research, reduce faculty strength, increase class size, trim academic programs, defer maintenance and renewal of research and teaching facilities, reduce library and serial collections, freeze salaries and reduce employee benefits. In an effort to shore up their revenue base, public universities have looked for alternatives to state funding. The result: huge tuition increases for students.

## The Social Consequences of the Rising Price of Tuition

It’s no secret that the price of a college education in America has skyrocketed. The cost to students has outpaced the rate of inflation, outpaced increases in family income, and outpaced increases in grants, scholarships, and other forms of student aid.

This past fall, the average price of tuition and fees at public four-year colleges and universities in America rose to $5,132—an increase of 158 percent (in *constant* dollars) since fall 1976. At private four-year institutions, tuition and fees averaged $20,082—a 146 percent increase (in *constant* dollars) since 1976.[9] These increases have substantially outpaced cost-of-living increases and outpaced fourfold the growth in real income for families likely to have college-aged children. The rising cost of tuition hasn’t just stressed families. It has priced college out of reach for most Americans.[10]

Average Published Tuition and Fee Charges, in *Constant* (2004) Dollars, 1976-77 to 2004-05 (Enrollment-Weighted)




*Source:* College Board, "Trends in College Pricing, " 2004, www.collegeboard.com, figure 5a.

Grants-in-aid and education tax benefits (available only to some families) have helped offset some of the cost increases, but student financial aid has not kept pace with those increases.[11]

- The College Board reports that Pell Grants now cover less than 40 percent of the cost of tuition, fees, and room and board at an average public four-year university, compared to 69 percent in 1980-81.[12] The latest action by the U.S. Congress in November 2004 froze the amount of Pell Grants (effectively reducing the share of college costs that they will cover) and made procedural changes that will cut grant eligibility for as many as one million students.[13]
- Federal Supplemental Educational Opportunity stipends—targeted to students with significant financial need—were cut 20 percent over the past decade. Federal Work-Study stipends that support students who demonstrate financial need were cut 19 percent.[14]
- Over time, federal financial aid has shifted from grants-in-aid to loans.[15]
- A larger and larger share of student support is being targeted for merit- rather than need-based aid. Merit-based state grants-in-aid rose from 9 percent of the total undergraduate state grants in 1981 to 24 percent in 2001.[16]
- Rising costs have forced some private colleges, such as Macalester, Smith, Oberlin, and Mount Holyoke, to drop their "need-blind" admissions policies, whereby students were admitted without regard to their ability to pay.
- Fewer than 20 private colleges and universities limit their student support to need-based (as opposed to merit-based) financial aid.[17]

*The Admissions Game*

In an effort to attract more students who have a "strong academic profile," many colleges and universities have changed their recruitment strategies, shifting their emphasis from need- to merit-based scholarships. As a result, the average amount of a scholarship awarded by public and private colleges and universities to students in the highest income quartile *exceeds* the average amount of a an award provided to students in the lowest income quartile and this gap in scholarship awards has grown over time.[18] Greater selectivity in admissions and a "higher quality" freshman class (as measured by grades, high school class rank, and performance on standardized admissions tests) not only makes the college or university look better in *U.S. News and World Report*-type rankings, but also helps the school financially: students with "high academic profiles" are more likely to come from more affluent families who can pay the full cost of tuition.[19]

The payoffs in income and prestige of recruiting affluent students come with a social cost. As the political winds surrounding affirmative action have changed and colleges and universities, especially the publics, are increasingly concerned about revenue and rankings, admissions directors are less compelled than in the past to make special efforts to recruit students of color or students who are economically disadvantaged. A quarter of all admissions offices abandoned their explicit minority recruitment efforts over the course of the 1990s. Only one in three institutions in 2000 reported being engaged in special recruitment activities targeting economically disadvantaged students.[20] In the end, this recruitment gap translates into a widening enrollment and achievement gap between affluent, mostly white students on the one hand and economically disadvantaged and minority students on the other.

Because income, race, and ethnicity are so tied to the quality of a student's elementary and secondary education in America, they also affect how well a student is prepared for college, and how effectively she or he can play the admissions game.[21]

- Students of color are much less likely to graduate from high school in four years and are far more likely to drop out without a high school diploma.
- Students of color are less likely to take the ACT exam; less likely to take part in Advanced Placement courses; and less likely to pursue Post-Secondary Enrollment Options while they are in high school.
- The racial and ethnic disparities among those high school graduates who do take the ACT are huge. African American and Hispanic American graduates are substantially less likely than non-Hispanic whites to meet college readiness benchmarks in biology, math, and English.[22]
- This gap in college preparedness grows, in part, out of the huge disparities in funding across K-12 school districts. The funding gap for minority students nationwide is $1,099 per pupil.[23] Little improvement has been made over the past two decades in closing this gap.

And just in case the advantages of race and economic class in our K-12 systems aren't large enough, an entire industry of private admissions consultants has sprung up to coach affluent students through the college admissions process. For about $1,000, students can attend courses offered by companies such as Kaplan and Princeton Review to learn how to take the ACT and SAT exams. Parents can supplement these courses with tutors at $50 to $200 an hour to drill their children in test-taking strategies.[24] And for $5,000 to $30,000, parents can secure private

consultants to help students prepare their resumes, plan and package their extra-curricular activities, perform well in college interviews, and craft savvy application essays.[25]

*Reduced Access to Higher Education*

Skyrocketing tuition, reductions in need-based financial aid, recruitment strategies that favor students from affluent families, class and racial disparities in college preparedness and performance on standardized tests, and the ability of affluent students to game the system—taken together, these trends have led to dramatic reductions in access to higher education for students of color and students from low-income families.

- For students from low-income families, the total charges for attending a four-year public institution accounted for about 60 percent of family income in 1999-2000, compared to just 5 percent of the family income for students from the wealthiest families.[26]
- Because low-income students are more sensitive than other students to increases in the list price, when the list price goes up, many low-income students don't even bother to apply, even though the price might be discounted by financial aid.[27] Most colleges and universities make matters worse by admitting students before aid is calculated or offered, a practice that encourages sticker shock and discourages applications from low-income students.[28]
- In 43 states, undocumented students must pay out-of-state tuition—effectively denying them access to higher education.
- According to the National Center for Education Statistics, since 1980, the college participation rate of African American high school graduates went from 4.5 percent behind non-Hispanic whites to 6.1 percent behind; the participation rate for Hispanics went from 2.2 percent behind non-Hispanic whites to 13.7 percent behind.[29]
- College participation rates for students from low income families declined by 3.5 percent between fall 1998 and fall 2001.[30]
- Access to higher education at the nation's 250 most selective four-year colleges and universities became increasingly skewed in favor of students from upper-income families. Students from the highest income quartile made up 54.9 percent of the freshman classes entering fall 2000, compared to 46.1 percent in 1985. Students from families in the lowest income quartile made up only 11.8 percent of the freshman classes, compared to 13.0 percent in 1985.[31] Given the most recent trends in prices, admissions strategies, and student aid, it is likely that these class disparities have grown still larger over the past four years, just as enrollment of racial minorities in the freshman class has declined significantly this year at many top U.S. universities.[32]

In sum, as four-year colleges and universities have grown increasingly selective, they have disproportionately turned away African Americans, Hispanics, Native Americans, and students from low-income families. This erosion of access is occurring at a time when the U.S. population is becoming increasingly diverse and it only exacerbates the growing income and class disparities in our nation.

*Growing Inequalities from Reduced Access*

Growing inequalities in access to higher education have obvious consequences: growing inequalities between those who complete a baccalaureate degree and those who do not. In 1970, students from families in the top quartile of the income distribution were 6.4 times more likely than those from the bottom income quartile to have completed a baccalaureate degree. By 2002, students from the wealthiest families were 8.6 times more likely than those in the bottom income quartile to have completed a baccalaureate degree. Over the same period, the trend among high school graduates was just the reverse: the gap in graduation rates between students in the upper and lower quartiles actually narrowed significantly. Put differently, if relatively more low-income students are graduating from high school but relatively fewer are getting into and graduating from college, it is likely that erosion of access to higher education is to blame.[33]

Racial, ethnic, and class biases in admissions to America's most selective colleges have clear and lasting consequences. Students at selective colleges and universities have higher graduation rates, receive more student support, garner greater prestige, are better prepared, have better chances of being admitted to graduate and professional programs, and go on to enjoy higher lifetime earnings than students enrolled in less selective colleges and universities.[34]

Declining access to higher education has a profound and lasting impact on all of us. As the racial, ethnic, and class diversity of our universities declines, so does the quality of the education that all students receive. A diverse educational environment exposes all students to a broader range of ideas and leads to a broader and deeper understanding of issues and perspectives. A diverse student body and a diverse faculty better prepare all students to live in a diverse society and work effectively in the global marketplace. As the U.S. Supreme Court affirmed in *Gruttner* v. *Bollinger*, diverse student bodies "better prepares students for an increasingly diverse workforce and society. . . These benefits are not theoretical but real, as major American businesses have made clear that the skills needed in today's increasingly global marketplace can only be developed through exposure to widely diverse people, cultures, ideas and viewpoints."[35] A diverse workforce, in the words of one of the corporate *amicus* briefs filed in *Gruttner*, is "crucial to our nation's prospects."[36] America's leadership in science, the arts, and technolgy is at risk if it continues to leave so many of its young people behind.

As James Fallows and V.V. Ganeshanathan concluded in their annual review of college admissions, "What was once America's most powerful vehicle for social mobility is being priced out of the reach of ordinary Americans."[37] Limited and disparate access to higher education, the great equalizer, is helping to ensure that class, race, and ethnic inequalities persist from one generation to the next.[38]

## The Gap Between Public and Private Universities is Widening

If public higher education is one of the nation's primary portals to a better life for Americans, their communities, and the nation, then the precipitous decline in state support for and access to those universities should be cause for alarm. The widening gap between the resources available to private colleges and universities and those available to the public institutions has led to a growing disparity in the respective abilities of these institutions to recruit and support outstanding students and faculty, sustain cutting-edge research, and provide high-quality education.

Access is the first casualty of this emerging two-tiered system. Growing resource disparities have increasingly hampered the ability of public institutions to offer competitive financial aid packages. By and large, private institutions have deeper wells of financial resources from which to draw. As a result, they are able to support more of their students and at higher levels than can public institutions. In 1999, private four-year institutions provided financial aid to more than half of their students, including students from families in the top income quartile. The average amount of the aid grew (in constant dollars) between 1992 and 1999 even for students from the wealthiest families. In contrast, public four-year institutions could provide financial aid to barely one-fifth of their students, with the typical grant averaging less than half the amount provided by the privates.[39] Financial aid packages at many private institutions reduce the net cost to students to a level that undercuts the lower price charged by the publics.

On a whole variety of other measures as well, the gap between public and private institutions is growing. Real expenditures per student by public institutions grew by 56.4 percent between 1977 and 2000; real expenditures at private institutions grew by 79.7 percent. Public institutions have reduced the size of their faculties to cut costs and have raised student headcounts to increase revenue. Private colleges and universities, on the other hand, have added faculty. As a result, between 1977 and 1999, the number of faculty at public institutions per 1,000 students *fell* from 49.0 to 39.4, while the number of faculty at private colleges and universities *rose* from 37.9 to 41.5 per 1,000 students. The gap in faculty salaries has also grown dramatically. In 1978, faculty salaries in public and private institutions were nearly identical; by 2002, faculty salaries at private institutions had zoomed ahead of those of public institutions.

Changes in Public and Private Educational Resources over Time

| | Year | Public | Private | Private Premium |
|---|---|---|---|---|
| Real Expenditures | 1977 | $ 8,100 | $11,200 | $3,100 |
| Per FTE Student | 2000 | $12,600 | $20,000 | $7,400 |
| | *growth* | *56.4%* | *79.7%* | *140.6%* |
| Faculty / Student Ratio | 1977 | 49.0 | 37.9 | -11.1 |
| per 1,000 FTE Students | 1999 | 39.4 | 41.5 | 2.1 |
| | *growth* | *-19.6%* | *9.5%* | *-118.9%* |
| Associate | 1978 | $54,300 | $55,900 | $ 1,600 |
| Professor Salaries | 2002 | $61,500 | $74,100 | $12,600 |
| | *growth* | *13.3%* | *32.6%* | *687.5%* |

*Source*: Michael John Rizzo, "A (Less Than) Zero Sum Game? State Funding for Public Education: How Public Higher Education Institutions Have Lost," A Dissertation Presented to the Faculty of the Graduate School of Cornell University, August 2004, table 1.1.

The public-private gap in resources for faculty has grown even larger over the past two years as public universities have had to absorb deep cuts in state support. Between fall 2002 and fall 2003, salaries of continuing faculty at public doctoral institutions rose 2.7 percent, compared to 3.9 percent at private doctoral institutions. Average salary increases exceeded 4 percent at only *one in four* public institutions; increases exceeded 4 percent at *more than half* of the private

colleges and universities. Salaries of full professors at public doctoral institutions now stand, on average, $27,552 behind those of their counterparts at private institutions.[40] Twenty-five years ago, the salary gap was negligible.

Average Faculty Salary at Doctoral Universities, 2003-04

| Academic Rank | Public | Private | Private Premium | % Public – Private Gap |
|---|---|---|---|---|
| Professor | $94,606 | $122,158 | $27,552 | 29.1% |
| Associate | $66,275 | $ 78,863 | $12,588 | 19.0% |
| Assistant | $56,277 | $ 68,218 | $11,941 | 21.2% |
| Instructor | $37,972 | $ 45,200 | $ 7,228 | 19.0% |

*Source*: American Association of University Professors, "Don't Blame Faculty for High Tuition: The Annual Report on the Economic Status of the Profession 2003-04," www.aaup.org/surveys/04z/04z.pdf, table 4.

In their effort to recruit outstanding faculty, private institutions can offer much more than higher salaries. The array of other benefits includes prestigious endowed chairs, lighter teaching loads, smaller classes, research support, better equipment and facilities, fellowships to recruit and support top graduate students, mortgage assistance, tuition benefits for one's children, and more. Publics are often outflanked and outspent in competing against this vast array of resources to recruit and retain outstanding faculty.

As state support for public higher education has tumbled, public universities have beefed up their efforts to secure private support. It's been an uphill climb: The tradition of private giving to public institutions is less well established than it is at private colleges and universities; and despite their large numbers, public school graduates' institutional ties are weaker and their average earnings and net worth are lower. Aggressive fundraising drives at public institutions over the past decade have made up some of the lost ground, typically raising $1 billion to $2 billion over five or more years. And yet, despite these aggressive and very successful fundraising efforts, the endowments of private institutions continue to grow faster than those of the publics. Moreover, the yield from those growing public endowments usually does not keep pace with the loss of state support.

The 33 U.S. public universities that are members of the American Association of Universities[41] (AAU) increased their endowments by an average of 4.7 percent, or $29.7 million between June 30, 2002 and June 30, 2003. The private AAU universities increased their endowments by 1.5 percent, on average, but this translated to a boost in the average endowment value of $123.8 million because they had substantially larger endowments to begin with. An average AAU public university earned $1.3 million off its incremental endowment; an average AAU private university earned an incremental 5.6 million.[42] But enter the state cuts into the calculations and it quickly becomes apparent that public university endowments are not growing fast enough to keep up with the cuts in state support. The AAU publics lost an average of $24.6 million in state support, not only eating up all of the new endowment revenue, but leaving the publics even farther behind the privates. Also keep in mind that any gain in endowment income at a private university is likely to stretch further than a comparable gain in a public university because private universities serve substantially fewer students.

Growing Endowments of United States AAU Member Institutions

| AAU Institution | Average Market Value of Endowment* 6/30/02 | 6/30/03 | Average Growth in Endowment Amount* | Percent | Average New Revenue From Endowments* | Average Change in State Support* 02-03 to 03-04 | Average Net Position* |
|---|---|---|---|---|---|---|---|
| Publics | $1,186 | $1,216 | $ 29.7 | 4.7% | $1.3 | -$24.6 | -$23.3 |
| Privates | $3,618 | $3,742 | $123.8 | 1.5% | $5.6 | 0 | +$ 5.6 |

*In $ millions

*Source*: *The Chronicle of Higher Education Almanac Issue*, 2003-04 and 2004-05; Center for the Study of Education Policy at Illinois State University, www.coe.ilstu.edu/grapevine/.

To illustrate the challenge facing the publics, consider Harvard University's endowment, which rose 17.5 percent between 2003 to 2004, reaching an astronomical $22.1 billion, or about $1.1 million of endowment per student. At the same time, the University of Texas System endowment, the largest endowment of any public university in the country, rose 18.7 percent to $10.3 billion—about $58,000 per student.[43] The incremental revenue available to Harvard from its growth in endowment is about $148 million, or about $7,500 per student. The incremental revenue available to the University of Texas System is $73 million, or about $621 per student. If you deduct from the University of Texas System's $73 million in new endowment income the $40.2 million it lost in state support, the net gain in revenue drops to $32.8 million, or about $280 per student.

Even fundraising on a grand scale by public institutions is going to have a difficult time closing the gap between the publics and the privates. A public university would need to raise $2.2 billion in (unrestricted) gifts to create an endowment sufficient to replace a $100 million cut in state support (assuming an annual endowment payout of 4.5 percent). To secure an incremental $2.2 billion in endowment funds, all but five public universities in the nation would have to more than double the size of their current endowments, and this would merely leave them even with where they were prior to the state cut. Very few public universities are in a position to make this happen.

Making matters worse, at the same time that public universities have embarked on capital fundraising drives to mitigate the consequences of cuts in state funding, private universities are also off securing new resources. Several private universities have embarked on massive fundraising drives to dramatically grow the size of their faculty. In September 2002, the University of Southern California's College of Letters, Arts and Sciences, for example, announced a three-year initiative designed to add 100 professors—increasing the size of their faculty by 25 percent. Two years later, New York University announced a $2.5 billion campaign to raise money for 125 new faculty hires and build by 20 percent its arts and sciences programs.

These well-financed hiring sprees by the privates come at a time when public universities are cutting faculty positions, closing programs, and trimming support for research, students, and compensation. Competition will further intensify as baby-boomers begin to retire over the next decade, increasing the number of open faculty positions beyond the number of outstanding scholars and teachers in the hiring pool. Unless the gap in resources between public and private institutions is significantly narrowed, only a very few of the nation's public universities will be competitively positioned to recruit and retain distinguished faculty and talented graduate, professional, and undergraduate students.

As public universities struggle with these new financial realities, they do so under an additional set of constraints. The best private research universities—even the large ones—are more agile organizations than are the best public research universities in America. This is in part because private research universities have a more focused academic mission. They support fewer degree programs, and are partitioned into fewer administrative units. This more streamlined structure facilitates decision making and lowers transaction costs.

Private universities also are subject to fewer external pressures. Privates and publics alike must negotiate with and respond to external forces such as boards of overseers, donors, corporate sponsors and partners, the communities in which they live, and the vagaries of the economy. But the privates are substantially more insulated from the ebbs and flows of state budgets and from the political pressures that legislatures and taxpayers can and do apply. When public money is involved, even if it's pennies per capita, public scrutiny is high. And taxpayers are not shy about leveraging their financial stake in their state's university. They weigh in on, and their elected representatives make decisions about, everything from what lines of research to support, to how much professors will be paid, how much tuition will be charged, and which special programs or campuses will be protected.

All of these factors combined—their breadth, size, and complexity, and the broader and more intractable set of external demands and constraints that they must negotiate—make public universities far less nimble than the privates. The public universities are less able to make timely, effective decisions, are less able to respond deftly to change, and are less able to reconfigure themselves to pursue new initiatives. That they are answerable to so many and such diverse external constituencies and are situated directly in the path of political and cultural winds puts public institutions at a disadvantage.

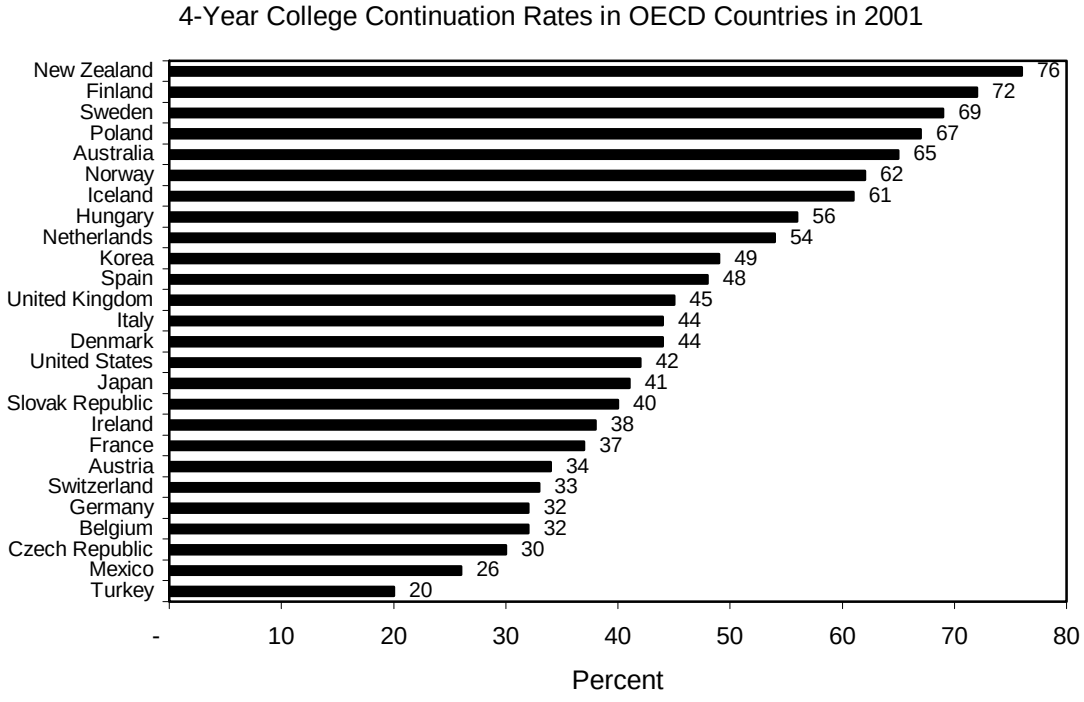
In conclusion, over the past several years, a perfect storm has been brewing, and public universities are losing their mooring at the center of that storm. If states do not boost their support for public colleges and universities, American higher education will drift toward a two-tiered system, with the *haves* (the privates) riding the waves, able to recruit the best students and faculty and sustain the most innovative programs of teaching and research, and the *have-nots* (the publics) left in the wake. With more than three-quarters of the nation's college students enrolled in public institutions, the widening gap in resources threatens to swamp the entire system of higher education in America.

## America's Declining International Competitiveness

As the U.S. economy struggles, the United States is trying to maintain its competitive edge in global markets. The strength of a nation's system of higher education is a powerful measure of a nation's ability to sustain its position in a global knowledge economy. By this measure, the United States is not faring well.

The United States is in a weaker position to compete for the world's best and brightest students, faculty, and researchers than it was a decade ago. Cuts in public investment in higher education; declining access to college; the growing political isolation of the United States; increased barriers to international exchange and to the ability to recruit faculty and students from other countries—all of these factors, heightened in the wake of 9/11—have weakened America's competitive position.

The proportion of the population that goes on to a four-year college or university is a leading indicator of how well a nation is prepared to compete in a global knowledge economy. Declining access to higher education in the United States bucks the international trend of growing state commitments to ensuring an educated workforce. Americans are less likely than citizens in other OECD countries to go on to four-year colleges or universities. Fourteen nations—including the Scandinavian countries, New Zealand, Australia, Hungary, Poland, Korea, Spain, the United Kingdom, and Italy—have college continuation rates that are higher than America's. America stands 5 points below the OECD mean.

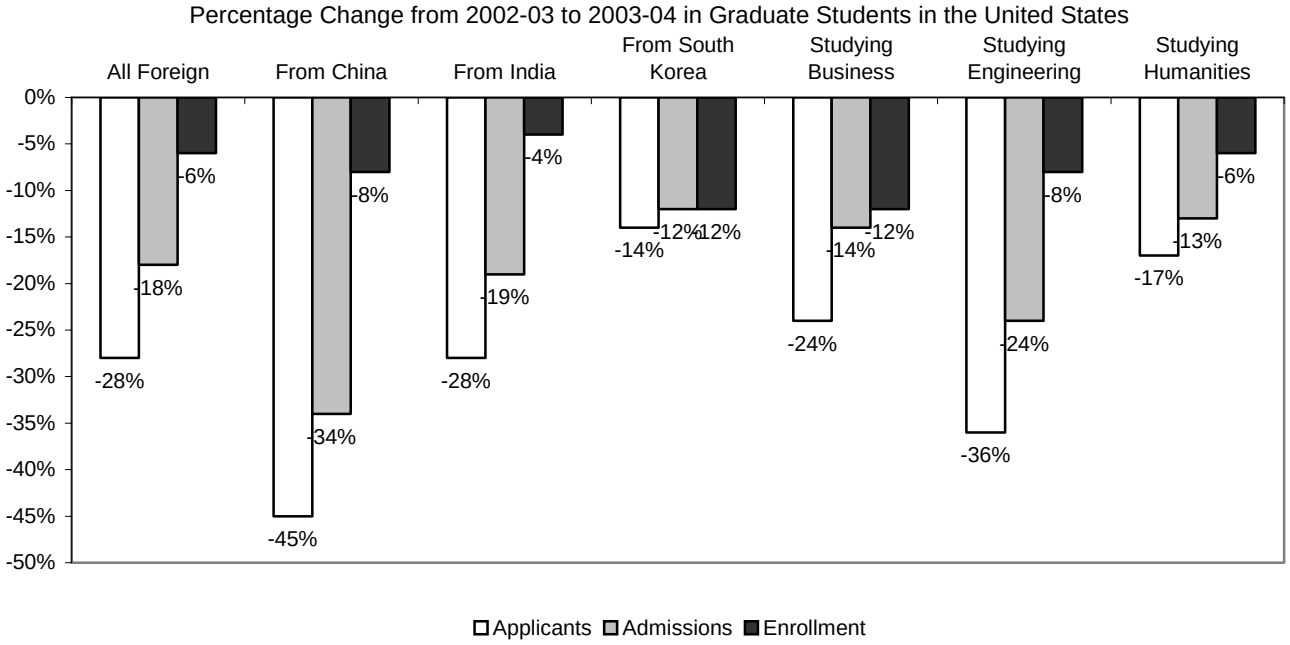



*Source*: Organization for Economic Cooperation and Development (OECD) published by the National Center for Education Statistics in The Condition of Education, www.nces.ed.gov/programs/coe/2004/section3/table.asp?tableID=58.

Even more alarming is that between 1998 and 2001, the typical OECD country *increased* its college continuation rate by an average of 7 points, while the rates declined in only two nations (the United States and the United Kingdom ). In short, the pattern in the United States stands in stark contrast to what has been happening in many other industrialized nations of the world.[44]

America's competitive edge also depends upon its universities serving as magnets for the world's most talented students and researchers. For most of the past 60 years, American universities have been the envy of the world, affording educational and research opportunities unparalleled at any but a few other institutions. Over 30 years, the share of Ph.D.s granted by American universities to temporary residents of the United States rose from 10 to 26 percent. In 2002, nearly 40 percent of all Ph.D.s American universities awarded in the physical sciences and 55 percent of those in engineering were to temporary residents.[45]

In the wake of 9/11, however, enrollment of foreign students in U.S. colleges and universities has declined dramatically. The number of foreign students on American campuses dropped in the 2003-04 academic year by 2.4 percent—the first drop in enrollments of students from abroad in more than 30 years. The decline came after a year of almost no growth. A recent study of major graduate institutions conducted by the Council of Graduate Schools found a 28 percent decline in applications and a 6 percent decline in new foreign enrollments in fall 2004, the third year in a row with a substantial drop.[46] Declines were particularly steep in the number of applications to science and engineering programs.[47]




*Source*: Council of Graduate Study.

The steep decline in applications suggests than many students have become discouraged by the new visa restrictions and the increasingly onerous and sometimes offensive security checks associated with visa applications. Stories abound: Foreign graduate students travel home for the holidays and are unable to return to resume their studies. Foreign students and faculty at U.S. institutions travel abroad to attend scholarly conferences, but are unable to get back in the country. Prominent scholars and scientists are unable to secure visas to attend scholarly meetings or lecture in the United States. Students and scholars endure long waits at consular offices for visas to be processed and interviews to be scheduled. Scientific meetings are moved outside the United States because foreign scientists cannot gain entry.

There is no way to quantify these occurrences, but the prevailing anecdotal evidence, coupled with the tremendous drop in foreign students applying to American graduate programs, suggests that America's image as the center of the universe for graduate education, scientific exchange, and discovery has been tarnished. As James Langer, vice president of the National Academy of Sciences, told the United States Senate Science and Technology Caucus in May 2004, "American science is being isolated from the rest of the world."[48]

And the rest of the world is moving into the breach. While the United States has erected new barriers to foreign students and scientists, other countries—most notably Australia, Britain, and Canada, but also New Zealand, South Korea, Malaysia, and Singapore—have seen a boon in the number of international students.[49] These nations are growing hubs for international students and scholars.

The long-term implications of the continued drop in the number of graduate students and scientists coming to the U.S. are dire. Amid fierce international competition for human capital, America is closing its doors to people of enormous talent and creativity. And because of their declining interest in pursuing advanced training in the sciences and engineering, American students are unlikely to fill the gap. In the end, there will be too few U.S. scientists and engineers to sustain research and teaching in these key disciplines. As Albert H. Teich, director of science and public policy at the American Association for the Advancement of Science, concludes, failure to improve the visa situation "will do irreparable harm to scientific progress as well as U.S. competitiveness."[50]

These trends are part of a broader set of concerns that have led Richard Florida, Heinz Professor of Economic Development at Carnegie Mellon and a visiting scholar at the Brookings Institution, to warn that the United States is on the verge of losing its ability to attract creative talent from around the world. Paralleling the drop in graduate school applications, he notes, is an alarming 55 percent drop since 2002 in the number of U.S. government-issued visas for immigrants to work in science and technology, with parallel, though smaller, declines in other fields.[51]

Florida reminds us that during the 1980s and 1990s, "talented, educated immigrants and smart, ambitious young Americans congregated in and around a dozen U.S. urban regions …. Now the rest of the world has taken notice of our success and is working hard to reproduce it."[52] He notes that in countries such as Belgium, Canada, Finland, India, Ireland, the Netherlands, and Sweden, government-subsidized laboratories, partnerships between universities and industry, and investments in higher education have begun to lure creative talent—scientists, students, researchers, entrepreneurs, artists, and the like—from around the globe (including from the United States), building creative industries that used to be America's province.[53] Florida concludes ominously, "For the first time in modern memory, top scientists and intellectuals from elsewhere are choosing not to come here."[54]

Florida suggests several remedies for rebuilding America's creative infrastructure, but singles out higher education as the generator and wellspring of talent and creativity. We must, he concludes, "spend radically more on research and development and higher education, opening up universities and colleges to more Americans and to more of the world's best and brightest."[55]

## Sustaining Innovative Basic Research

The quest for knowledge about the underlying principles and laws that govern our social, cultural, political, physical, and natural worlds is a primary mission of a university. Pathbreaking discoveries—discoveries that reshape the way people think about and understand the world; that advance theoretical understanding; that reframe the fundamental questions we ask; and that have broad impact and enduring value—distinguish great universities from all other kinds of institutions.

The scientific advances from basic research create and feed the wellspring of scientific capital from which practical applications and new products are developed. Basic research does not necessarily yield immediate practical benefits. It is a painstaking, long-term project whose application might be many years down the road. But the results are worth the investment and worth the wait. Theodore Maiman built the first laser in 1960, but his discovery depended upon four decades of basic research by mathematicians and physicists, including Albert Einstein, who first recognized in 1917 the theory of "stimulated emissions," and Columbia University Professor Charles Townes, who discovered how to create a focused microwave beam. Computerized Axial Tomography (or CAT Scans), which revolutionized medical imaging and diagnosis in the early 1970s, owes a debt to the basic mathematical research that physicist A. M. Cormack conducted a decade earlier.

Some of the long-term applications of basic research are neither intended nor forseen. However consequential his findings, Einstein could not, for example, have anticipated Maiman's breakthrough. Indeed, more than half of the discoveries in biomedical science in the late 20th century resulted from basic research never intended for the specific application that emerged.[56] Nonetheless, although decades may pass before new scientific knowledge helps solve a practical problem, with the knowledge gained from basic research, the practical application would not be possible.

Basic research is crucial to the advancement of human knowledge, understanding, and problem solving. However, because its practical benefits are neither immediate nor transparent, its value is not always appreciated. Universities across America are struggling to meet the rising costs of basic research, balance scientific priorities with the financial enticements of the market, and sustain creative environments on their campuses—all essential battles that must be won if cutting-edge basic research is to advance.

*Financial Challenges to Sustaining Research*

The changing nature of research has sent the costs of scientific research soaring. Supercomputers have replaced slide rules; buildings that house multimillion-dollar instrumentation facilities have replaced labs with bunsen burners; electronic air filtration systems have replaced fume hoods; teams of researchers have replaced individual scholars; grant administrators conversant with complex federal regulations have replaced accountants. And multimillion dollar start-up packages, not a train ticket and a typewriter, are needed to recruit the world's top researchers.

Big science requires big financial investments, and for the most part, the federal government has been the chief funder of basic research in America—to the tune of about $50 billion a year. But at the same time states were cutting their support of public universities, the federal government was also cutting the funds it provides universities to sustain their research infrastructure (e.g., libraries, buildings, computer networks, and grants administration). As the federal government reduced its indirect cost recovery rate, U.S. universities needed to dramatically increase their own contribution to research and development to meet the rising costs. Between 1972 and 2000, the proportion of their total research and development expenditures that universities have paid out of their own pockets nearly doubled, from 11 to 21 percent.[57] Public and private universities alike have drawn resources from their teaching and the educational mission to subsidize the rising costs of the research side of the house.[58]

An even larger financial threat to university-based research is looming on the horizon. Over the next few years, and beyond, the U.S. federal budget deficit and the mounting national debt will profoundly diminish the capacity of the federal government to fund research and development. With a budget deficit of $422 billion in 2004 (about 18 percent of the total budget) and a national debt that now tops $4 trillion, the federal government is unlikely to increase its investments in research. It may even need to reduce spending from current levels. Demographics will continue to drive the need for more spending on Medicare, Medicaid, and Social Security. The costs of homeland security and national defense will likely continue to rise as well. These demands on federal resources, in conjunction with the revenue losses from the 2001 and 2003 tax cuts, suggest that the federal deficit is not likely to go away anytime soon. In fact, the Congressional Budget Office estimates that the national debt will climb to $6.3 trillion by the end of the decade, necessitating annual interest payments of close to $600 billion a year. As Brookings fellows William G. Gale and Peter R. Orszag conclude, "The United States has never before experienced such large long-term fiscal imbalances."[59]

The federal budget deficit and growing national debt are already slowing the pace of federal research support. Between FY01 and FY04, non-defense federal research and development (R&D) grew an average of 7.8 percent a year (in constant dollars). Non-defense R&D is projected to grow a mere 0.2 percent in FY05. The National Science Foundation's budget will be cut by 2.0 percent. With little or no new incremental federal investment in research, universities will need to find new ways to sustain their current research infrastructure and fund major new initiatives.

Perhaps in anticipation of the reduction in federal research dollars, some states have decided to invest heavily in high-profile, high-priority projects. To help ensure California's leadership in biotechnology, for example, Californians recently voted to provide $3 billion in state funds ($300 million a year for ten years) to support research involving embryonic stem cells. Other states have been advancing similar mega-initiatives. Wisconsin Governor Jim Doyle recently announced a plan to spend $750 million on biotechnology and stem-cell research at the University of Wisconsin and several hospitals in the state.

*Threats to Basic Research*

As the cost of research has soared and the demands placed on universities' own resources have grown, corporate America has stepped in to help by providing funds for buildings and equipment, support for distinguished researchers and stellar students, contracts to support research, and partnerships to take university-based discoveries out to the marketplace. Universities, in their search for new revenue, have also intensified their focus on the marketability of their discoveries through licensing agreements, technology transfer, and spinoff companies.[60]

As lucrative as these arrangements can be, they can have a subtle (and sometimes not so subtle) impact on academic priorities, steering research to revenue-producing projects that might be attractive to corporate partners.[61] Some observers have voiced concern that universities are slipping as places where independent, basic research is nurtured and protected,[62] warning that if the reward structure—including the granting of tenure, the awarding of endowed professorships, the allocation of laboratory space, salary increases, and the granting of new faculty lines—is tied

to profitability rather than intellectual merit, then a core mission of the university will be undermined.[63]

Universities must remain places where faculties can set research agendas based on the theoretical importance of the inquiry, not on its commercial profitability. Universities must remain places that value and nurture the free exchange of ideas, not proprietary arrangements that embargo results from publication.[64] In short, for universities to serve society effectively through the advancement of knowledge, basic research and the free flow of information must be sustained. By advancing basic research, universities provide an important public good for which there are inadequate private incentives for industry to provide support. If basic research is neglected, applied and translational research will founder.

*Sustaining a Creative Environment for Innovation*

Universities also need to cultivate a culture of excellence that continually sparks and nurtures innovation by encouraging faculty and students to work on important, pathbreaking projects, take intellectual risks, challenge theoretical assumptions, undertake bold experiments, and integrate different forms of knowledge in novel and creative ways. Universities need to provide the opportunities and incentives, the time and the resources, the facilities and the space to enable the breakthrough discoveries that will reshape our understanding of the human condition.

Although universities need to protect the strength of their academic programs, they must also overcome the hurdles that disciplinary boundaries often create to faculty from across the university working together, in new combinations, to provide the multiple perspectives needed to solve some of the most challenging scientific questions. We need to find ways for faculty to overcome their clan mentality and interact more with colleagues who bring different epistemological and disciplinary perspectives to a question. We need to find ways to overcome the sheer size of our campuses which has spread faculty over scores of buildings, making such encounters unlikely.

If universities are to remain creative centers for research, innovation, and knowledge creation, then they must create incentives and opportunities for these kinds of creative enterprises to thrive—opportunities and support to bring researchers from diverse disciplines together for creative discussion. Universities need to be incubators for breakthrough research and creative work that will solve the world's most vexing problems.

## Conclusions

Higher education in America is in trouble.

- State funding cuts have put at risk the ability of public colleges and universities to serve the people of their state.
- Declining access to higher education has diminished the ability of our nation to harness the creative energies of all of its people and ensure opportunities for social and economic mobility.
- The growing gap in resources between public and private institutions has put at risk the ability of public colleges and universities to recruit outstanding students and faculty and

provide the three-quarters of America's college students that they serve with an education equal to that provided by private institutions.
- Declining access to higher education as well as new barriers to international exchange have put at risk America's international competitiveness.
- Rising costs coupled with declining federal investment in R&D have put at risk the ability of universities to generate the scientific breakthroughs needed to advance knowledge and address our nation's most profound needs.

While the political debate over whether higher education is a public good rages on in America, all of the enormous contributions that our colleges and universities have made to educating the people and advancing the knowledge needed to ensure the economic, social, cultural, and political vitality of our communities, states, and nation are at risk.

How do we get ourselves out of this predicament?

Part of the solution lies in politicians moving beyond the short-term time horizon that drives many of their decisions. Elected officials need to provide long-term solutions rather than politically expedient fixes that leave our system of higher education at risk. Governors, legislators, civic leaders, colleges, and universities must lead public discussion of what it is going to take to save public higher education in America. And elected officials must make the tough political decisions necessary to save it.

Colleges and universities also must avoid expedient choices that fix this year's budget, but do not ensure the long-term vitality of their institutions.

Colleges and universities must find a better way to balance the incentives of the marketplace with their core values. We compete in global markets for the best students and faculty, for research dollars, for donor support, and for corporate partners. Markets influence how much students will pay, the institutions at which faculty will work, their level of compensation, and the research projects they will get to pursue. Markets create incentives for universities to build centers of excellence and they create incentives for universities to offer great academic programs and research capacities that attract outstanding student and faculty. But markets can also lead institutions to make choices that maximize the financial bottom line at the cost of core objectives—like high-quality education, service to the community, and path breaking research that advances the frontiers of knowledge even if the research is not financially rewarding. While market forces will inevitably influence the decisions that colleges and universities make, financial rewards need to be balanced against the core values that are at the heart of any great institution of higher learning.[65]

America's decentralized system of higher education is both a strength and a weakness. Decisions about everything—which courses and degree programs to offer; how many and which students to admit and how much they will be charged; who will be on the faculty and how much they will be paid; what lines of research should be pursued; and what facilities to build—can be made by individual institutions, and in some cases by individual members of their faculty. Over the years, those many decisions has created a truly great system of higher education. But, as we well know, even if the micro-level choices are perfectly rational, they don't always aggregate into rational macro-outcomes.[66] We need to do a better job of connecting the dots, both within our own institutions and across the colleges and universities that comprise America's system of higher education.

In the aggregate, we need to ensure a system of higher education that:

- Provides excellent academic programs for our students.
- Supports path-breaking research and scientific achievement that advances the frontiers of knowledge and provides the empirical and theoretical breakthroughs needed to fuel basic and applied research.
- Provides access to all qualified students regardless of their race, national citizen, or personal financial circumstances.
- Meets the state's workforce needs by producing graduates able to contribute to every sector of society.
- Works in an efficient and cost-effective manner.
- Links colleges and universities to business, government, and cultural institutions to effectively leverage university resources and research.
- Allocates resources based on a competition of ideas, not history, politics, or privilege.
- Evolves, changes, and adjusts in response to new opportunities, conditions and needs.

The future of higher education in America will ultimately boil down to priorities. America is the richest country in the world, and the leaders of our nation, states, colleges, and universities can decide to reverse the trend and shift college education costs away from those least able to afford it. States can decide to boost their investment in public education to develop the human capital needed for all of its people to contribute to the community or they can continue to build prisons to incarcerate those who turn to crime rather than education as a road to a better life.

Colleges and universities need to stop chasing rankings that measure only the selectivity of their freshman class, not the quality of the education they are providing their students. We need to start focusing attention on the more difficult tasks of building a diverse pipeline of talented students, uncovering and recruiting the most creative, inventive, and promising students, and providing scholarship support to those most in need. We must focus our attention on the quality of the education we are actually providing those we serve.

Over the past two centuries, an extraordinary system of higher education has evolved in America. The system has led to tremendous scientific discoveries, the education of millions of students, the creation of a well-trained workforce, and ideas and innovations that have improved the quality and longevity of life. It has fueled the economy, solved pressing social issues, and ensured the cultural vitality of our communities. The American higher education system has also provided opportunities for tremendous social and economic mobility, enabling new generations of immigrants to realize their hopes and dreams.

As we grapple with the challenges facing higher education in America, we have an opportunity to make choices that will not only ensure the excellence of that system, but ensure that our colleges and universities will continue to serve our communities and our nation.

## Notes

I first presented the key points in this essay at a roundtable discussion on "Higher Education in America: A Model for Europe," sponsored by the University of Minnesota's Center for German and European Studies on August 23, 2004. I am grateful to University of Toronto Interim President Frank Iacobucci and University of Toronto Vice-President Carolyn Touhy for their generous invitation to codify those ideas into the current essay. I also want to express my gratitude to my University of Minnesota colleagues who assisted in this project. Peter Radcliffe skillfully helped with the some of the data analysis. Eugenia Smith skillfully helped sharpen the prose over the course of several drafts. Jennifer Cieslak, Mary Hicks, and Susan Banovetz provided thoughtful feedback at various junctures of the project. Sarah Knoblauch and Peggy Berkowitz helped whip the manuscript into final form. I am also indebted to the McKnight Foundation and the University of Minnesota for the resources provided by the McKnight Presidential Leadership Chair. Without the generosity, support, and understanding of my family—Maria Antonia, Sara, Anna and Samuel—I would not have had the time that I devoted to this essay.

1 Emily Hannun and Claudia Buchmann, "The Consequences of Global Educational Expansion: Social Science Perspectives," American Academy of Arts and Sciences, 2003; Edward L. Glaeser and Albert Saiz, "The Rise of the Skilled City." *NBER Working Paper #10191* (December 2003).

2 Joint Economic Committee, United States Congress, *Investment in Education: Private and Public Returns*, January 2000. www.house.gov/jec/.

3 Steven J. Rosenstone and John Mark Hansen, *Mobilization, Participation, and Democracy in America* (New York: Longman, 2003).

4 Emily Hannun and Claudia Buchmann, "The Consequences of Global Educational Expansion: Social Science Perspectives," American Academy of Arts and Sciences, 2003.

5 College Board, "Education Pays: The Benefits of Higher Education for Individuals and Society," 2004. www.collegeboard.com; Emily Hannun and Claudia Buchmann, "The Consequences of Global Educational Expansion: Social Science Perspectives," American Academy of Arts and Sciences, 2003.

6 "State Tax Fund Appropriations for Higher Education FY1961 to FY2004," *Postsecondary Education OPPORTUNITY*, no. 139 (January 2004).

7 Michael John Rizzo, "A (Less Than) Zero Sum Game? State Funding for Public Education: How Public Higher Education Institutions Have Lost," A Dissertation Presented to the Faculty of the Graduate School of Cornell University, August 2004.

8 National Association of State Budget Officers, State Expenditure Report 2003, www.sasbo.org, p. 5.

9 College Board, "Trends in College Pricing", 2004, www.collegeboard.com. The full cost of attending college, including room and board, books and supplies, transportation, and other expenses is $14,640 at public four-year institutions and $30,295 at private four-year colleges and universities.

10 The College Board, "Trends in Student Aid," 2003, www.collegeboard.com, figure 4.

11 Over the past decade, the *net* price (after the impact of student aid has been taken into account) of public four-year colleges and universities (in constant dollars) rose 16 percent; the *net* price of private four-year colleges and universities (in constant dollars) rose 14 percent. College Board, "Trends in College Pricing," 2004, www.collegeboard.com, table 8.

12 Edward P. St. John, "The Access Challenge: Rethinking the Causes of the New Inequality," Policy Issue Report #2002–01, Indiana Education Policy Center, Indiana University, p. 3.

13 Associated Press, "Pell Grant Change May Affect Students," *The New York Times*, 23 November 2004.

14 The College Board, "Trends in Student Aid," 2003, www.collegeboard.com, table 3.

15 In 1982–83, 50 percent of the total aid was in the form of grants and 46 percent in the form of loans (the rest was work study or tax credits). Two decades later, grants had fallen to 40 percent of the total and loans had risen to 54 percent of all aid. The College Board, "Trends in Student Aid," 2003, www.collegeboard.com, figure 6.

16 The College Board, "Trends in Student Aid," 2003, www.collegeboard.com, figure 10.

17 Ronald G. Ehrenberg, "Key Issues Facing American Higher Education," p. 3; paper presented at the NACUBO annual meeting, Milwaukee, Wis., July 2004.

18 The College Board, "Trends in Student Aid," 2003, www.collegeboard.com, figure 12.

19 College-bound high school seniors whose parents have incomes greater than $100,000 are 62 percent more likely to have high school grade point averages of A- or better than are students from families with incomes below $10,000. The average ACT composite score for college-bound high school seniors with family incomes greater than $100,000 is 23.4 compared to 17.9 for students from families with incomes below $18,000. ACT scores for African Americans lag 4.7 points behind non-Hispanic whites; the scores of Hispanics are 3.3 points behind and the scores of Native Americans are 3.0 points behind. College-bound high school seniors with family incomes greater than $100,000 score an average of 135 points higher (555 versus 420) on the SAT I Verbal test and 124 points higher (568 versus 444) on the SAT Math test than students from families with incomes below $10,000. The College Board, 2003.

20 Anthony P. Carnevale and Stephen J. Rose, "Socioeconomic Status, Race/Ethnicity, and Selective College Admissions," (New York: The Century Foundation), March 2003 p. 25.

21 Jonathan Kozol, *Savage Inequalities: Children in America's Schools*, (New York: Crown, 1991).

22 ACT, "Crisis at the Core: Preparing all Students for College and Work, www.act.org, figure 1 and 5.

23 Kevin Carey, "The Funding Gap 2004," The Education Trust, www.edtrust.org.

24 See for example, Coeli Carr, "The Multiple Choices of Prepping for the SAT," *The New York Times*, pp. B1-8.

25 See, for example, Nicholas Confessore, "Independent Counsel," *The Atlantic Monthly*, October 2004, pp. 135-40.

26 The College Board, "Trends in College Pricing," 2003, www.collegeboard.com.

27 Donald E. Heller, "Student Price Response in Higher Education: An Update to Leslie and Brickman," *The Journal of Higher Education*, 68, no. 6 (November/December): 624-659.

28 Anthony P. Carneval and Stephen J. Rose, "Socioeconomic Status, Race/Ethnicity and Selective College Admissions," The Century Foundation, March 2003, www.tcf.org, p. 26.

29 Edward P. St. John, "The Access Challenge: Rethinking the Causes of the New Inequality," Policy Issue Report #2002-01, Indiana Education Policy Center, Indiana University, p. 4.

30 *Postsecondary Education OPPORTUNITY*, no. 133 (July 2003): 7.
31 Alexander W. Astin and Leticia Oseguera, "The Declining 'Equity' of American Higher Education, *The Review of Higher Education*, 27 no. 3 (Spring 2004):321-341.
32 Significant drops in the number of African American freshmen occurred, for example, at the University of Michigan, Penn State University, the University of Minnesota, the University of Georgia, The Ohio State University, the University of Illinois at Urbana-Champaign, the University of Pennsylvania, the University of North Carolina, at Chapel Hill, and at many campuses of the University of California system. Michael Dobbs, "Universities Record Drop in Black Admissions," *Washington Post*, 22 November 2004, p. A1.
33 *Postsecondary Education OPPORTUNITY*, No. 143 (May 2004): 1.
34 Ibid., pp. 11-20.
35 *Gruttner* v. *Bollinger*, 539 U.S. (2003), p. 18.
36 "Brief of General Motors Corporation as *Amicus Curiae* in Support of Appellants in *Grutter* v. *Bollinger*," May 30, 2001, p. 29.
37 James Fallows and V.V. Ganeshanathan, "The Big Picture," *The Atlantic Monthly*, October 2004, p. 122.
38 See William G. Bowen and Derek Bok, *The Shape of the River: Long-Term Consequences of Considering Race in College and University Admissions* (Princeton, N.J.: Princeton University Press, 1998).
39 College Board, "Trends in Student Aid," 2003, www.college.board.com, figures 11 and 12.
40 Many private universities provide additional benefits not available at public institutions, such as free tuition for children of faculty, which increases the gap public-private gap in total compensation to $34,493 for full professors at doctoral institutions. American Association of University Professors, "Don't Blame Faculty for High Tuition: The Annual Report on the Economic Status of the Profession 2003-04," www.aaup.org/surveys/04z/04z.pdf, tables 1 - 4.
41 The AAU is the organization comprised of America's research-intensive universities.
42 This assumes that everyone has the same draw of spendable income off their endowment of 4.5 percent.
43 "Total Endowment Assets" from the National Association of College and Business Officers. The incremental revenue assumes an annual endowment payout of 4.5 percent.
44 "International Comparisons of 4-year College Continuation Rates, 1998 and 2001, *Postsecondary Education OPPORTUNITY* no. 144 (June 2004): 11-16.
45 Thomas B. Hoffer, et. al., Doctorate Recipients from United States Universities: Summary Report 2002 (Chicago, Ill.: NORC at the University of Chicago), 2003, table 11. http://www.norc.uchicago.edu/issues/sed-2002.pdf.
46 Burton Bollag, "Enrollment of Foreign Students Drops in U.S.," *The Chronicle of Higher Education*, 19 November 2004, A1.
47 Heath A. Brown and Peter D. Syverson, "Findings from U.S. Graduate Schools on International Graduate Student Admissions Trends," Council of Graduate Schools, Summer 2004.
48 Richard Florida, "America's Looming Creativity Crisis," *Harvard Business Review* (October 2004): 130.

49 Paul Mooney and Shailaja Neelakantan, "No Longer Dreaming of America," *The Chronicle of Higher Education*, 8 October 2004, A41. Foreign student enrollment is up 75 percent in Australia between 2000 and 2004; up 18 percent in Great Britain between 2000 and 2002; and up 60 percent in Canada between 2000 and 2003.

50 Burton Bollag, "Wanted: Foreign Students," *The Chronicle of Higher Education,* 8 October 2004, A40.

51 Richard Florida, "America's Best and Brightest are Leaving … and Taking the Creative Economy With Them," *Across the Board* 41, no. 5 (September/October 2004): 34-40.

52 Richard Florida, "America's Best and Brightest are Leaving … and Taking the Creative Economy With Them," *Across the Board* 41, no. 5 (September/October 2004): 34-40.

53 Ibid. and Richard Florida, "America's Looming Creativity Crisis," *Harvard Business Review* (October 2004): 122-136.

54 Richard Florida, "America's Best and Brightest are Leaving … and Taking the Creative Economy With Them," *Across the Board* 41, no. 5 (September/October 2004): 34-40.

55 Richard Florida, "America's Looming Creativity Crisis," 134.

57 Martin Kenney, *Biotechnology: The University-Industrial Complex*. New Haven, Yale University Press, 1987. Quoted in James S. Fairweather, "The University's Role in Economic Development: Lessons for Academic Leaders." *SRA Journal/Features*, (Winter 1990): 7.

57 Ronald G. Ehrneberg, Michael J. Rizzo and George H. Jakubson, "Who Bears the Growing Cost of Science at Universities," Cornell Higher Education Research Institute Working Paper WP35 (April 2003). www.ilr.cornell.edu/cheri.

58 Ronald G. Ehrenberg, "Key Issues Currently Facing American Higher Education," Paper presented at the NACUBO annual meetings, Milwaukee, Wisconsin, July 2004.

59 William G. Gale and Peter R. Orszag, "The Budget Outlook: Projections and Implications," *The Economists' Voice* 1, no 2 (2004): 1:6. www.brook.edu/views/papers/20040910orszaggale.htm.

60 See for example, Scott Shane, *Academic Engrepreneurship; University Spinoffs and Wealth Creation*. Northampton, MA: Edward Elgar, 2004).

61 For an example of the clash between the scientific and ethical concerns and economic incentives to create commercializable products see "Defending Medicine: Clinical Faculty and Academic Freedom," November 2004. http://www.caut.ca/en/issues/academicfreedom/DefendingMedicine.pdf

63 See Sheila Slaughter and Larry L. Leslie, *Academic Capitalism: Politics, Policies, and the Entrepreneurial University* (Baltimore: Johns Hopkins University Press, 1997); Eyal Press and Jennifer Washburn, "The Kept University," *The Atlantic Monthly*, 2000, p. 50; Derek Bok, *Universities in the Marketplace: The Commercialization of Higher Education* (Princeton, N.J: Princeton University Press, 2003), chapter 11.

64 See Peter D. Blumberg, "From 'Publish or Perish' to 'Profit or Perish': Revenue From University Technology Transfer and the 501(c)(3) Tax Exemption"; Rebecca S. Lowen, *Creating the Cold War University: The Transformation of Stanford*, (Berkeley: University of California Press,1997).

64 See Derek Bok, *Universities in the Marketplace: The Commercialization of Higher Education* (Princeton, N.J: Princeton University Press, 2003), chapters 4 and 8; David L. Kirp, *Shakespeare, Einstein, and the Bottom Line: The Marketing of Higher Education* (Cambridge, MA: Harvard University Press, 2003), chapter 11.

65 See Derek Bok, *Universities in the Marketplace: The Commercialization of Higher Education* (Princeton, N.J: Princeton University Press, 2003), chapter 11.

66 See Thomas C. Schelling, *Micromotives and Macrobehavior* (New York: W.W. Norton, 1978).