

# High Returns:

## Public Investment in Higher Education

**R**emember the United Negro College Fund slogan, “A mind is a terrible thing to waste”? It’s powerful because it’s founded on a universal truth. A mind is indeed a terrible thing to waste.

When a mind fails to reach its full potential, whether for lack of access to a college education or for some other reason, society suffers, too. That is why higher education is important. Most of the benefits are well established: higher income, lower unemployment, better health, longer life, faster technology creation and adoption, reduced crime, greater tolerance, increased civic involvement, and so on. Less widely known is that college education also creates substantial government fiscal benefits.

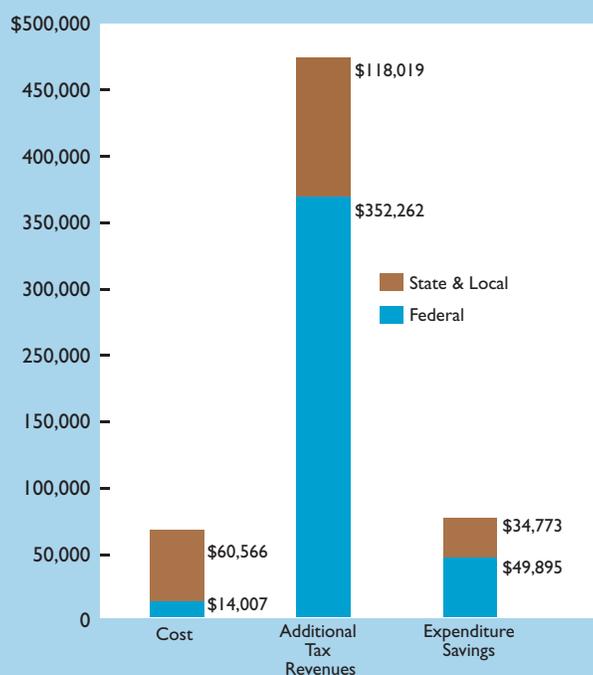
### The Fiscal Impacts of College Attainment

Because college education leads to higher earnings for individuals, it also leads to more tax revenue. The magnitude of this effect may be surprising. (See “National Fiscal Effects per Four-Year-Equivalent Degree.”) Over the course of an average lifetime, a four-year-equivalent degree (the weighted average of associate’s, bachelor’s, master’s, professional, and doctorate degrees) gives government \$471,000 more in income, payroll, property, and sales-tax revenue—more than twice what it would collect in lifetime taxes from a high school graduate lacking a college degree.<sup>1</sup>

The magnitude of the college-attainment effects on the amounts going out of government coffers may be surprising as well. Each four-year-equivalent degree leads to lower spending on welfare programs, Medicare, Supplemental Security Income, unemployment compensation, workers’ compensation,

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## National Fiscal Effects per Four-Year-Equivalent Degree



prisons, and medical care for the uninsured. The government savings over an average lifetime is conservatively estimated to be almost \$85,000.

Direct savings in post-college government expenditures per college degree exceeds what the government spends for each college degree. In other words, government spending per college degree is negative. The post-college savings for government are, conservatively, about \$10,000 more than the cost. The cost is generously estimated to be about \$74,500 per four-year-equivalent degree from public colleges. That estimate is on the high side because it includes all public funding for higher education (all appropriations for operations and capital costs at state colleges, public college endowment revenues, financial aid and loan subsidies to students in both public and private colleges, and spending on university research and service activities).

Thus the \$556,000 fiscal payoff per four-year equivalent degree is actually a conservative number, and the \$74,500 fiscal

cost per degree is a high estimate. Government gets back at least \$7.46 for every dollar it invests in a college student.

Moreover, \$7.46 in fiscal benefits per dollar spent is only the direct fiscal return from college attainment. Indirect effects on tax revenues and government expenditures through higher education's effect on economic growth are not included. The estimated fiscal return also does not include any economic benefits from publicly sponsored university research, from university public service and extension activities, or from the effect of public

colleges and college education on entrepreneurial activity and job creation.

### Recouping the Investment

Obviously, most the \$556,000 lifetime fiscal payoff occurs well after the \$74,500 cost per degree. As with any investment, the upfront costs matter relatively more in present value than the benefits in the future. The fiscal benefits of college attainment are so much greater than the costs, though, that it takes only a little over nine years after graduation to fully recoup the government investment. Putting it another way, the public investment in a student who graduates with a bachelor's at the typical age of 22 is recovered just after the individual turns 31.

The real internal rate of return on government investment in college students—direct fiscal impacts—is conservatively estimated to be 10.3 percent above the rate of inflation. For comparison, the average yield on inflation-indexed five-year U.S. Treasury bonds is 1.5 percent. So even if one ignores

the many other important social benefits of higher education, public investment in college students is a sound use of tax dollars.

And as if a 10.3 percent fiscal rate of return was not already almost too good to be true, there is a way to make it even higher. Specifically, the fiscal rate of return would be greater still if government funding for higher education were better targeted on students on the margin of college attendance—those struggling with the choice of whether to enroll or forgo higher education. In other words, the marginal fiscal rate of return from targeted public investment in college students exceeds the average fiscal rate of return from all public investment in college students.

Today much of the public funding for higher education benefits those who would be going to college without the subsidy. Although those students and their families may be grateful for less expensive college degrees, their degrees do not create additional fiscal benefits. Maximum bang per college-education buck comes from getting people into college who would not otherwise be there. Even if there were no concern for equality of opportunity, better targeting of public support for higher education toward the disadvantaged makes good economic sense.

### Conundrum

There is a conundrum implicit in the costs and benefits of public investment in college education: Most of the investment is at the state level, whereas the lion's share of the fiscal benefits accrues at the federal level. Indeed, 72.5 percent of the \$556,000 fiscal payoff goes to the federal government, whereas the federal share of funding for higher education is less than 19 percent. Thus, the average fiscal return to individual states is substantially less than 10.3 percent. Moreover, interstate migration of college graduates further reduces the fiscal return to individual states.

Nonetheless, public investment in col-

## New England's State Support for Higher Education

by Carl Nadler, Federal Reserve Bank of Boston

How does New England's public support for higher education compare with other regions? According to a recent paper by Philip Trostel and Justin Ronca, not well.\*

To measure state support for higher education fairly, the authors considered a state's ability to pay and the overall need for support. State income per resident is an established measure of ability to pay, but defining need is trickier. One definition—total students enrolled in the public higher education system—can lead to biased conclusions because a state's investment in higher education may lower tuition and raise quality and therefore affect the number of students who enroll.

In Connecticut, for instance, if support is defined as average state funding for higher education per full-time enrolled student in its public institutions, the state ranks 4<sup>th</sup> in the nation. Define support as a percentage of state income, and Connecticut drops to 44<sup>th</sup>.

Hence the researchers defined need as the total number of high school graduates in the previous four years and assumed that all high school graduates—within classes, among states, and over time—are equal in needing higher education.

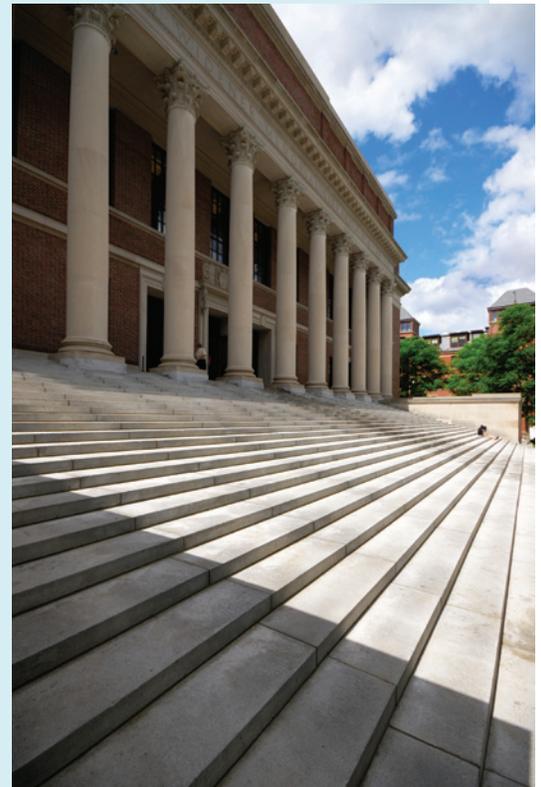
They then measured state support as total state funding for higher education (all state and local government appropriations) divided by both a state's average per-resident income and the total number of high school graduates over the previous four years. The result: the New England states ranked dismally low, and as a region the worst in the country.

Why does New England rank so poorly? Old habits are hard to break, and past research suggests that the level of state funding in 1994 is related to the 1929 level.\*\* Many states founded public colleges and universities during the mid 19<sup>th</sup> century with the large land grants of the 1862 and 1890 Morrill Acts, created to support the development of mechanical and agricultural industries. Yet, in the northeastern states, home to the nation's oldest private colleges and universities, a few of the grants were given entirely to private colleges (Cornell) or were divided among public and private colleges (University of Massachusetts in Amherst and MIT).

An analysis by Claudia Goldin and Lawrence Katz suggests that during the early 20<sup>th</sup> century, financing of public higher education increased in wealthier states with higher shares of mining, manufacturing, and agriculture. However, states with higher shares of private college enrollments, like the New England states, invested less. Higher education appears to have been publicly supported where there was greater demand for technical training and research that couldn't be supplied by preexisting higher-education infrastructure. Though the need has since broadened, the pattern persists to this day.

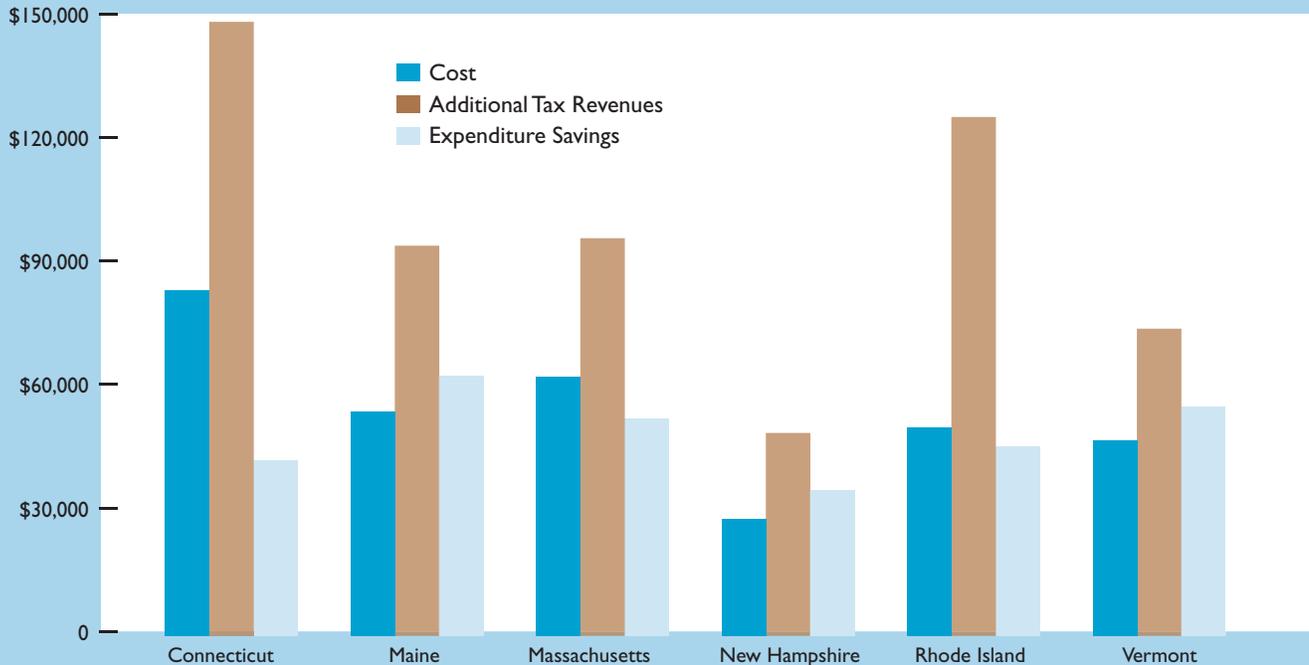
\* Philip A. Trostel and Justin M. Ronca, "A Simple Unifying Measure of State Support for Higher Education" (working paper, Wisconsin Center for the Advancement of Secondary Education, 2007) uses 2005 estimates.

\*\* Claudia Goldin and Lawrence F. Katz. "The Shaping of Higher Education: The Formative Years in the United States, 1890 to 1940," *The Journal of Economic Perspectives* 13, no.1 (1999): 37-62.



Photograph: iStockphoto

## Fiscal Effects per Four-Year-Equivalent Degree in New England



lege students does benefit states. At the individual state level, each potential college graduate creates \$142,000 in fiscal benefits (after the downward adjustment for net interstate migration of college graduates) and only \$60,500 in public costs. Nationally, the average real fiscal rate of return to individual states is 3.1 percent. The average fiscal return in New England states is generally somewhat higher than in the rest of the nation. The net fiscal payoffs per degree range from \$56,000 in New Hampshire to \$121,000 in Rhode Island, and the fiscal rates of return range from 3.0 percent in Connecticut to 4.7 percent in Rhode Island. (See “Fiscal Effects per Four-Year Equivalent Degree in New England.”)

### Mistaken Priorities

Despite these fiscal payoffs, public investment in college education is a falling priority in this country. In 1984, nationwide net state funding for higher education was 4.1

percent of total state government spending. In 1994, the proportion was 2.4 percent; and in 2004, it was 1.8 percent. Moreover, investment in public higher education is particularly low in New England. In state support for higher education from 1980 through 2005, the New England states ranked low: 50<sup>th</sup> (New Hampshire), 49<sup>th</sup> (Vermont), 48<sup>th</sup> (Massachusetts), 47<sup>th</sup> (Connecticut), 44<sup>th</sup> (Maine), and 41<sup>st</sup> (Rhode Island).<sup>2</sup>

In sum, minds are going to waste in this country, and particularly in New England, where the number of private colleges do not make up for the lack of support for public higher education. In not making college education more widely accessible, we are losing out in many dimensions and are paying more taxes. The most sensible taxpayers’ bill of rights would emphasize increasing access to college education rather than capping spending growth.

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### Endnotes

<sup>1</sup> For details on how this and other numbers in the article were estimated, see Philip A. Trostel, “The Fiscal Impacts of College Attainment,” <http://www.bos.frb.org/economic/neppc/index.htm>.

<sup>2</sup> These rankings are from Philip A. Trostel and Justin M. Ronca, “A Simple Unifying Measure of State Support for Higher Education,” Wisconsin Center for the Advancement of Secondary Education working paper no. 7, 2007.

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