Funding Higher Ed

in Tennessee

Public higher education requires support from taxpayers, private endowments, gifts, and research contracts.

by Reuben Kyle
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In each of the past two years, tuition at Tennessee's colleges and universities has increased by 15 percent, and an increase of the same magnitude is likely in the 2002-03 academic year.[1] This situation raises a number of tough questions. Why is it occurring? Given that the prices of most other goods and services are not increasing nearly as rapidly, how can higher education get away with these large price increases? How do students respond to the increases in the price of attending college?

Sources of Funding for Higher Education

To address the first question, we begin by examining the sources of funding for higher education. This analysis focuses on publicly funded institutions and, unless otherwise indicated, the results discussed are for two- and four-year institutions.[2] For the sake of comparison, the analysis includes data on Tennessee and its nine neighboring states, Alabama, Arkansas, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Virginia.

One of the unique characteristics of institutions of higher education is that students—the customers—do not pay the full cost of the services they receive. The higher education firms, or at least the public and not-for-profit private institutions, require support from taxpayers,

continued on page 10

continued from page 9

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The most complete source of data on the funding of higher education is found in the U.S. Department of Education's National Center for Education Statistics annual survey of all institutions of higher education in the country, the Integrated Post-Secondary Education Data System (IPEDS). The most recent survey of financial information currently available is for fiscal year 1997.[3] The broad totals of revenue sources for all two- and four-year public institutions in Tennessee are shown in Table 1. Note that the state-level totals include hospital revenues, and since only a few institutions have such revenues, the shares are given both with and without those revenues.

As a share of total current fund revenues, the most important categories are student tuition and fees, state appropriations, federal grants and contracts, auxiliary enterprises, and hospital revenues. Note that these state appropriations are only for operating expenditures and do *not* include capital expenditures on buildings and other structures and equipment such as heating and cooling equipment.

Comparing Tennessee with its neighbors, student tuition and fees as a share of total state-level revenues make up from eight percent to a high of about 21 percent among the nine states. At least until the late 1990s, Tennessee ranked in the middle of this group with about 16 percent of total state-level revenues derived from student tuition and fees. State appropriations constitute from about 22 percent to more than 50 percent of total state-level revenues. Here again Tennessee ranks about in the middle of the nine in this category of funding. Federal grants and contracts constitute from about nine percent to more than 16 percent of revenues. In this category, Tennessee drops relative to its neighbors. Auxiliary enterprises including dormitories, cafeterias, and bookstores provide from about seven percent to more than 18 percent of revenues. Hospital revenues account for zero to more than 25 percent of total state funding for higher education. In summary, funding of public higher education in Tennessee is very similar to that of its neighbors and most of the nation.

Table 1: Revenue Sources for All Public Two- and Four-Year Institutions of Higher Education in Tennessee

Source of Financial Revenues	Share of Total (%)	Share Omitting Hospital Revenue (%)
Tuition and fees	16.1	18.3
Federal appropriations	0.7	0.7
State appropriations	38.3	44.3
Local appropriations	0.0	0.1
Federal grants and contracts	10.2	11.7
State grants and contracts	2.0	2.5
Local grants and contracts	0.6	0.7
Private gifts, grants, and contracts	4.9	5.7
Endowment income	0.8	0.9
Sales and services of educational activities	3.0	3.4
Auxiliary enterprises	8.7	9.9
Hospital revenues	14.0	—
Other sources	0.8	1.8
Independent operations		0.0
Total current funds revenue	100.0	100.0

Source: U.S. Department of Education, IPEDS

Historical Perspective of Funding in Tennessee and Its Neighboring States

A related issue is the trend in state appropriations for higher education. State appropriations for higher education have increased in all the nine states. For example, in Tennessee state appropriations for higher education increased by an average annual rate of 5.3 percent between 1990 and 2001. Again that ranks near the middle of our group of nine states, with a low 3.8 percent average annual growth in Alabama and a high of 9.4 percent in Mississippi.

However, as a share of total funding, state appropriations declined steadily through the 1990s in Tennessee, among its neighbors, and nationally. Other sources of funding for higher education increased faster than state funding.[4] Table 2 shows the share of state appropriations in Tennessee and eight neighboring states.

The conclusion is that, in Tennessee as well as regionally and nationally, state appropriations have been trending down as a share of the total funding of public higher education. All in all, for most states—Tennessee included—budget priorities have shifted away from higher education. It is now popular to describe public institutions of higher education as "publicly assisted" rather than simply public or even state-supported universities.

The Role of Student Tuition and Fees in Funding Higher Education

If state funding is providing a smaller share of total funding for institutions of higher education, then where are the growing sources? The most important source of growth in funding is from student tuition and fees. Table 3 provides the comparative data for our nine states for selected years.

While other sources have provided increased funding as well, students have shouldered more of the cost of providing for their own education. Economists frequently argue that education pro-

duces a benefit to society as a whole beyond the benefit derived by the person receiving the education. It is this *external* benefit that is used to justify public expenditures for education. Nevertheless, there are economists and others who argue that the levels of public subsidy to higher education have been too generous and students should pay more of the costs since they receive most of the benefit of the education.

The link between the level of education and lifetime earnings potential is strong. Recent estimates of the earnings premium to education indicate that holders of bachelor's degrees earn about $1 million more over their lives than high school graduates (Hewlett, 1998). The U.S. Bureau of the Census reports that, in the year 2000, Americans with bachelor's degrees earned nearly 65 percent more than those with a high school diploma or equivalent and 157 percent more than those with some high school but no diploma.

What is the Impact of Rising Tuition on Student Enrollment?

Rising tuition and fees affect students in several ways. The first impact is the likelihood that higher tuition results in lower enrollments. For economists the question is the sensitivity of student enrollment in institutions of higher education to changes in tuition and fees.[5]

Empirical studies have consistently found that quantity demanded of higher education has a negative relationship with changes in price or tuition rates. For example, higher education participation rates decline once prices charged to students rise, or enrollments increase when tuition and fees decrease. According to a nationwide study by Leslie and Brinkman (1987), the 18- to 24-year-old participation rate drops by about three-quarters of a percent with a price increase of $100 (1982-83 dollar values).

In a follow-up to the Leslie and Brinkman study, a review of 20 different studies conducted up through the 1990s found a consensus that for every $100 increase in tuition, enrollment falls by 0.5 to 1.0 percent. Given the increases in tuition over the past two decades, that means enrollment is becoming more sensitive to tuition increases over time—more tuition or price elastic, in the language of economics. Both of these findings are consistent with the predictions of economists; price and quantity demanded are inversely related, and demand becomes more price sensitive as relative price increases (Heller, 1997). A later study by the same author found that continuing students tend to be more sensitive to tuition increases than first-time freshmen enrollees (Heller, 1998).

Introducing the influence of student aid, enrollment increases with increases in financial aid. However, students tend to be more sensitive to increases in tuition than to increases in financial aid (Heller, 1997, p. 650). Not surprisingly, there are differences in response to tuition increases among students from families of different income levels, among racial groups, and between students in community colleges and four-year institutions.

Table 2: State Appropriations as a Share (%) of Total Funding of Two- and Four-Year Public Higher Education in Nine States, Selected Years

Year	AL	AR	GA	KY	MS	NC	SC	TN	VA
1989	37.6	40.9	46.3	42.2	38.9	52.1	42.0	43.0	34.2
1990	34.1	37.7	46.1	41.5	36.5	51.5	41.5	41.5	32.9
1995	30.9	34.1	43.1	35.6	35.1	45.2	30.1	39.2	23.8
1997	28.4	34.4	42.6	32.8	34.7	44.6	31.9	38.3	22.4

Source: U.S. Department of Education, IPEDS

Tennessee Enrollments Compared with National and Regional Trends

Over the period 1990-2000, enrollment in Tennessee's public colleges and universities increased from 174,000 students to more than 190,000, about nine percent (*http://www. state. tn.us/thec/data_stat/fact_book_final.pdf*). So, in spite of the rising tuition and fees, other factors have encouraged Tennesseans to pursue higher education. Nationally, college enrollments increased about 12 percent over the same period (*http://www.census.gov/prod/2002pubs/01statab /stat-ab01.html*).

What is the Role of Student Financial Aid?

As tuition and fees have risen, students have relied on financial aid to help pay for those increases. Aid per full-time equivalent student, after adjusting for inflation, increased by 82 percent between the academic years 1990-91 and 2000-01 (The College Board, 2001, p. 5). Most of the increase in financial aid has come in

continued on page 12

Table 3: Student Tuition and Fees as a Share (%) of Total Funding of Two- and Four-Year Public Higher Education in Nine States, Selected Years

Year	AL	AR	GA	KY	MS	NC	SC	TN	VA
1989	12.6	11.7	13.2	13.3	13.7	8.3	15.5	13.6	16.2
1990	12.9	12.7	13.4	13.5	14.6	8.8	16.7	14.2	16.2
1995	13.7	13.7	14.8	16.2	14.2	11.2	17.1	15.2	21.4
1997	14.1	13.4	14.9	14.9	14.3	11.7	18.6	16.1	20.7

Source: U.S. Department of Education, IPEDS

continued from page 11

the form of loans. Pell Grants, the largest federal grant program, increased by 23 percent after adjusting for inflation over the period 1990-91 to 2000-01. State grant programs increased by 90 percent, again adjusted for inflation, over that same period (The College Board, 2001, p. 7). Over a shorter period, from 1992-93 to 2000-01, Stafford Loans, the largest federally sponsored loan program, increased by 138 percent, and unsubsidized Stafford loans increased by 3,651 percent. The latter figure is the result of both a 65 percent increase in the size of the average loan, again adjusted for inflation, and a 2,176 percent increase in the number of borrowers. By 2000-01, Stafford loans amounted to nearly $33 billion for that year alone. In that year the average student borrower's loan amounted to $5,269 (The College Board, 2001, p. 10). As a result, the average loan balance of graduate students in 1999 was $24,479, more than $10,000 for undergraduates, and $4,700 for students attending other postsecondary schools (Scherschel, 2000).

These debt levels raise a question of the impact of student borrowing on career choices, decisions to pursue graduate and professional study, and the length of time required to graduate. A number of studies have investigated these questions, but the evidence is not clear yet (GAO, 1998). For example, a study published in 2000 reports on the status as of 1997 of baccalaureate graduates in the 1992-93 academic year. Those who had been borrowers, about half of all the graduates, had only a slightly lower rate of enrollment in graduate school than nonborrowers. After controlling for a variety of factors such as gender, race/ethnicity, age, and other characteristics, there was no statistically significant relationship between undergraduate borrowing and enrollment in a graduate degree program (Choy, 2000, p. 8).

Another possibility is that increased student borrowing prompts delayed graduation. However, it is important to note that student borrowing permits school attendance and graduation. It could well be that, in spite of higher tuition's leading to more borrowing, graduation rates could increase. Nationally, students are taking longer to complete their degrees. About half the students of the freshman class of 1966 completed their bachelor's degree in four years; among the freshmen of 1982, that percentage had fallen to about one-third; and the percentage had fallen to 28 percent finishing in four years among the freshmen of 1993-94 (CSRDE, 2001).

Evidence from the Statistical Abstract of Tennessee Higher Education 2000-2001 indicates that Tennessee retention rates from fall term to fall term have decreased over the 1990s (*http://www.state.tn.us/thec/publicat.html*). For four-year institutions the rate declined from 81 percent in the fall 1990 student cohort to 79 percent in the fall 1999 cohort. At the two-year institutions the decrease was much more troubling, from 64 percent to 59 percent in 1999. Possibly part of this decline is due to the rising cost of higher education, but an alternative explanation for that decline in retention may be the very strong job market in the decade of the '90s. The opportunity cost of staying in school was high during that period.

The six-year graduation rate for all four-year public universities in Tennessee actually

increased over the 1990s. For students entering in fall 1990, the six-year graduation rate was 45 percent, and for those entering in fall 1994, the six-year graduation rate was 47 percent. Unfortunately that does not tell us whether students took longer to complete their degrees, only that more completed their degrees. As implied by the declining retention rates, two-year institutions experienced a decline in their graduation rates over the decade.

Conclusions

Clearly, over the past 10 years or more, students have borne an increasing share of the cost of their education in Tennessee's public colleges and universities. The evidence is also clear that they have willingly, if not happily, accepted that burden, almost certainly because the rewards to education are large and increasing. However, economists would point out that the sensitivity of student customers to higher and higher prices—tuition and fees—will likely increase as the relative prices rise. As a result, college and university administrators cannot expect to be able to increase tuitions as they please indefinitely. Moreover, student debt levels are troublesome. The prospect of facing substantial debt burdens at the end of a college career, along with higher tuition and fees, may act to discourage enrollments. One conclusion is that academic managers are going to have to be better and more efficient in the future. ■

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Notes

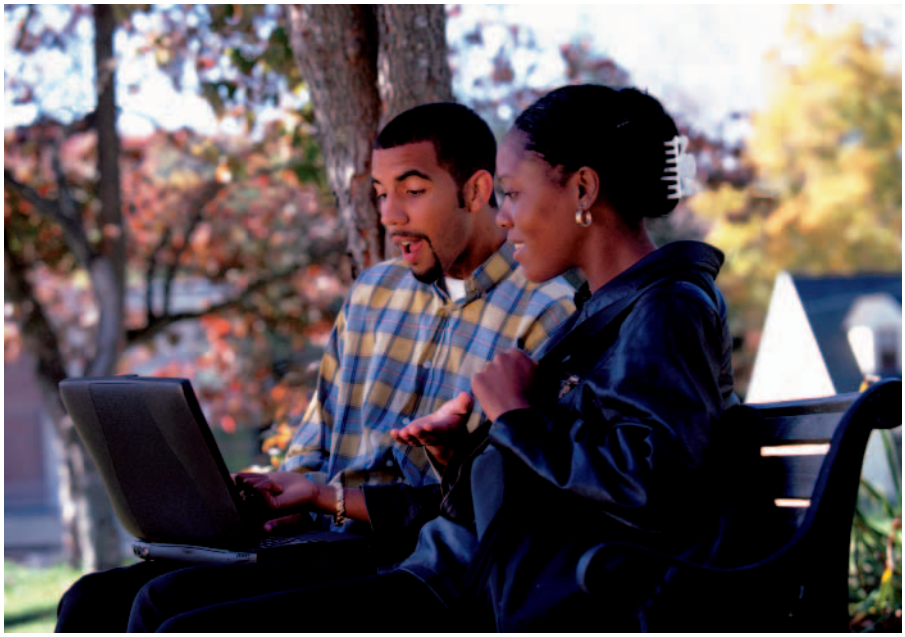
[1] Slightly different numbers are available in AASCU-NASULGC 2002.

[2] Keep in mind that there are many types of post-secondary institutions—public, private, not-for-profit, for-profit, technical schools, seminaries, art schools, and professional schools, among others. In this state, the Tennessee Board of Regents system alone includes six four-year universities, 13 two-year institutions, and 26 technology centers, formerly known as vocational-technical schools.

[3] We will utilize other sources with more recent data, but for purposes of comparison the IPEDS survey is the most complete source.

[4] Not to confuse the reader even more, but state expenditures on higher education as a share of the state budget also decreased. In other words, other categories of state appropriations, such as elementary and secondary education, health care, and prisons, increased faster than those for higher education. For Tennessee, higher education expenditures fell from 6.3 percent of total state expenditures in fiscal year 1997 to 5.8 percent in FY 2001.

[5] Economists use the term elasticity to refer to the sensitivity of buyers to changes in the price of a good, other things being constant. The price elasticity of demand is the percentage change in the quantity demanded when the price of the good or service in question changes by one percent.



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The sensitivity of student customers to higher tuition and fees will likely increase as the relative prices rise.