

Please share your stories about how Open Access to this article benefits you.

Understanding the Cost of Higher Education

by Peter McPherson and David
Shulenburg

2010

This is the published version of the article, made available with the permission of the publisher. The original published version can be found at the link below.

McPherson, Peter and Shulenburg, David E. "Understanding the Cost of Public Higher Education" with Peter McPherson, Planning for Higher Education, Vol. 38, No. 3, April-June 2010, pp. 15-24.

Published version: http://www1.scup.org/PHE/FMPro?-db=PubItems.fp5&-lay=ART&-format=read_full.htm&-error=error.htm&ID_public=PUB-iHwFIYmZyB4oghD3Gv&t_Pub_PgNum=15&-SortField=t_Pub_PgNum&-Find

Terms of Use: <http://www2.ku.edu/~scholar/docs/license.shtml>

Understanding the Cost of Higher Education

Peter McPherson, President
David Shulenburg, Vice President for Academic Affairs
Association of Public and Land-grant Universities

Factual matters, such as increases in the cost of higher education, ought to be easily resolved by examining the facts. But in the case of higher education, diametrically opposite views about costs persist over time and facts seem to matter little. This paper will examine the facts of education cost with special attention to public research universities.

Consider the 2003 statement of a prominent legislator as reported in *The New York Times* in an article on public university tuition increases: "Colleges and universities have not shown a willingness to contain costs," he said and committed to introduce legislation to withdraw federal money from big tuition raisers.¹ Contrast that stance with the findings of the Delta Cost Project's *The Growing Imbalance* under the leadership of noted higher education researcher Jane Wellman: Real full educational cost per student at public research universities increased at an average annual rate of .2% from 1998 to 2005.² The latter finding is that universities did contain educational costs, what they were unable to contain was tuition increases. Did cost increases lead to tuition increases, as the legislator maintained?

Tuition Increases vs. Cost of Education Increases

Clearly, university tuition and fees, which to students and parents represent the price charged for higher education, have increased dramatically during recent years. From 1996-2006, private universities experienced average compounded annual tuition increases of 5.68 percent, while their public university counterparts experienced increases that averaged 5.98 percent. These rates are more than double the compounded annual 2.44 percent CPI increase for the period. From 1980 to 1990, public university tuition

¹ "Public College Tuition Increases Prompt Concern, Anguish and Legislation," Karen Arenson, August 30, 2003.

² *The Growing Imbalance*, Delta Cost Project, Washington. D.C. 2008, p. 32

increased at a 4.3 percent rate and private university tuition went up at a substantially greater 5.6 percent rate.³

Price changes are what consumers experience while *cost changes* are directly experienced by producers.⁴ The mass media often confuse the two, especially in reporting on tuition increases. They are frequently abetted and reinforced in this confusion by elected officials who commonly appear to assume that it must be cost increases that lead to tuition increases. Similar confusion is evident among members of the current Congress as the Higher Education Reauthorization Act of 2008 includes mechanisms to compel or cajole study of and control of costs by universities whose tuition increases exceed certain thresholds.

This confusion may have its roots in the classical economics model of price and cost behavior in a competitive market. Long term, in a purely competitive market, cost increases and price increases tend to be precisely the same amount, and at equilibrium, the market clearing price and the firm's per unit marginal costs are also the same. But the market for earning the baccalaureate degree is not the competitive market envisioned by Smith and Ricardo. The student shares the price of a college education with donors, governments and others. Information flows are far from perfect. Prices are often set by government action and not by the market. Accordingly, price (i.e., tuition) and cost increases of a college education have diverged significantly over time.

What University Costs are Relevant to this Discussion?

In answering this question a brief segue into the composition of the modern American research university is helpful. Clark Kerr recognized the unique nature of the institution when he coined the descriptive term "multiversity."⁵ The multiversity has many dimensions. While they make a complex whole, when finances are concerned the parts of the university are most appropriately analyzed separately.

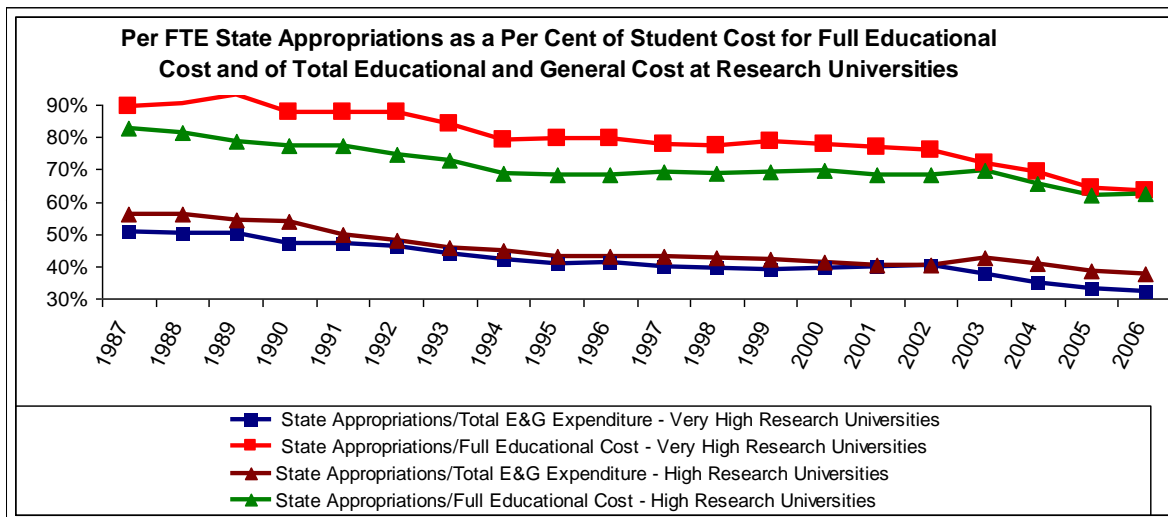
Failure to disaggregate leads to inappropriate analysis. For example, public research universities have created much confusion for both others and themselves by not explaining their complex nature and bemoaning the ever decreasing portions of their total budgets that are state- funded. Hearing these complaints others, frequently state legislators, either assume that universities are unappreciative of the state funds received or, perhaps worse, that complaining universities no longer want state funds. When the latter inference turns into a legislative proposal to privatize the university by eliminating all state funding, the affected university quickly reassesses and acknowledges the great importance to its students of whatever level of state funding that remains.

³ *The Cost of Higher Education, Findings from the Condition of Education, 1995* (NCES, US Department of Education, 1995), pp.2, 3.

⁴ For an earlier discussion of "cost" and "price" see *Straight Talk About College Costs and Prices*, Report of the National Commission on the Cost of Higher Education, an independent advisory body created by act of Congress, January 1, 1998, pp. 8-10.

⁵ Clark Kerr, *The Using of the University*, Harvard University Press, Cambridge, MA, 1963.

While it is true that the proportion of *total university expenditures* derived from state sources has declined significantly, the decline in the proportion of the *educational* expenditures coming from state sources has been much less precipitous. Between 1987 and 2006, for all public Carnegie classification very high research universities, the state appropriations' share of total Educational and General (E&G)⁶ cost per student fell by 59%, from 51% in 1987 to only 37% in 2006. During the same period, state appropriations' share of full educational cost⁷ declined from 89% to 63%, a reduction of 37%. The pattern was the same at Carnegie high research universities with only slight variation. Since state appropriations are primarily intended to be applied to educational and institutional support costs in most states, the meaningful ratio is of state appropriations to full educational costs.



Public university sources for financing core educational costs are primarily the sum of state appropriation and student tuition and fees.⁸ Thus, despite the decline in proportionate support from the state, in 2006 nearly two thirds of full educational cost, or \$9,647 per student per academic year, came from state sources. Disaggregation of revenue makes it clear that the core function, i.e. education, of the average public research university remains financially dependent on state support. It is the other functions of the university that are now largely independent of state support.

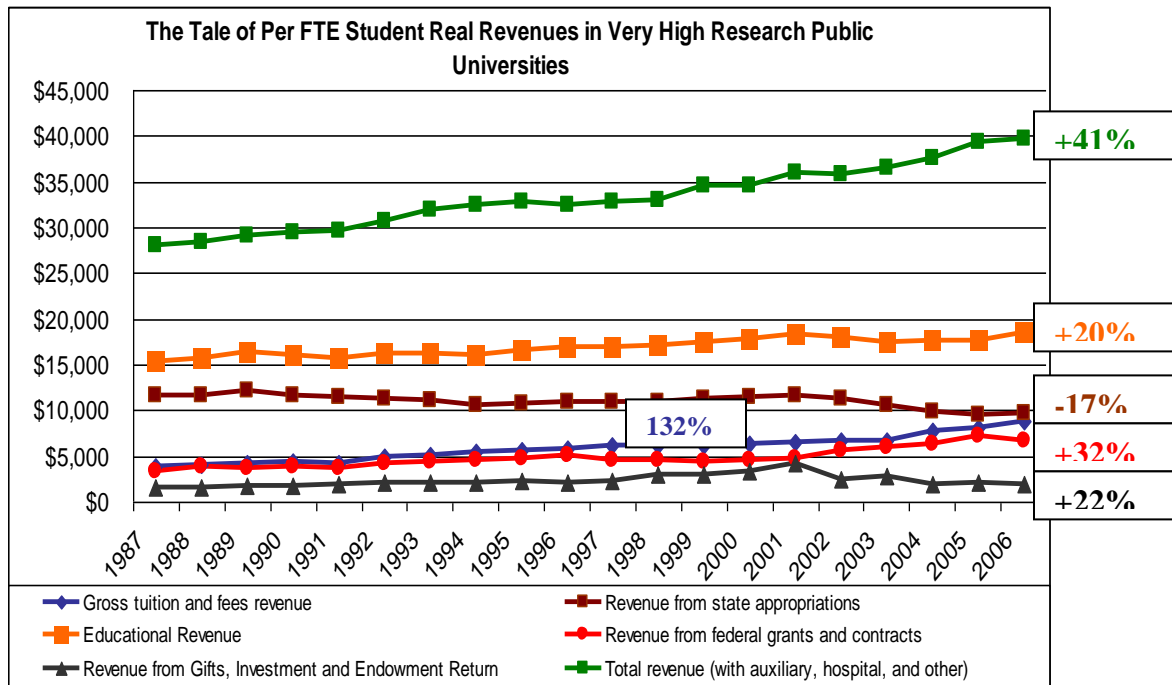
That education is only one “product” of the public research university is illustrated by the following graph. Public research universities are complex bundles of

⁶ Education and General cost includes all spending for core operating support, including sponsored research and education but excluding auxiliary enterprises.

⁷ Instructional and student services expenditures, including the expenditures to support these services.

⁸ Per student endowments tend to be too small to permit on-going support of educational cost, averaging only \$12,744 per student in 2006 for high and very high public research universities, with the 25th percentile averaging only \$3,462 and the 75th percentile, \$15,486. (At a 5% expenditure rate, assuming 100% of the endowments were available to support education, at the average public research university, only \$637 per year would be available per student to support education.) While grants support the development of an occasional course or program for a brief period, they underwrite very little on-going instructional activity.

enterprises, each with unique funding sources. The revenue sources that are largely tied to funding educational programs are tuition and state appropriations, which are summed together into a construct called “educational revenue.” Educational revenue grew 20% over the 1987 to 2006 period, a compounded annual growth rate of .97%. The entire bundle of activities that is the research university had its revenues, (labeled ”total revenue” in the graph below), grow 41% during the same period, for a compounded annual growth rate of 1.84%.



In 1987, educational revenue was 54% of total public research university revenue; in 2006, it was only 46%. Educational revenue grew very modestly during the nineteen year period, even though one of its components, tuition, grew from a very small base by 132%, just a bit more than offsetting the 17% decline in its other component, state appropriations, which declined from a much larger base. Research, clinical and auxiliary revenues grew at a far greater rate than educational revenue. Unfortunately, for those who see universities only as producers of education, revenues from these high growth lines of “business” generally cannot be used to support the core educational mission.

Research, clinical and auxiliary revenues generally must be spent on research, clinical and the specific auxiliary activity from which they were raised. Only a very small fraction of gifts to endowments are unrestricted; most endowment contributions are directed by donors to support a specific activity or purpose. While it is too much to claim that one line of a university’s business has no positive or negative financial effects on another, such effects generally are very small. Each line of business largely must be supported by the funding sources associated with it, perhaps in small part augmented by revenues contributed by others through endowment or foundation auspices specifically for its support.

Analysis of the cost of education in public research universities must disaggregate costs to match the disaggregation of revenue sources. The costs that are relevant to this analysis are educational costs. We turn now to a comparative analysis of those costs and their behavior over time.

Is Tuition Increasing Because Public Research University Costs Are Out of Control?

What is the pattern of higher education cost increases? Jane Wellman of the Delta Cost Project and author of *Costs, Prices and Affordability: the Future of Higher Education*⁹ and numerous other works on higher education economics and finance, has recently conducted a thorough examination of higher education finances, *The Growing Imbalance*. The data below are from that study (by Carnegie Classification, based on IPEDS data)¹⁰:

Spending per FTE Student, 1998-99 to 2004-05

Sector	Real Full Educational Spending/FTE	Real Total E&G Spending/FTE
Public Research	+0.2%	+7.9%
Public Master's	+3.4%	-3.0%
Public Associate's	+0.3%	-3.4%
Private Research	+4.5%	+17.8%
Private Master's	+10.9%	+5.6%
Private Bachelor's	+6.1%	+4.6%

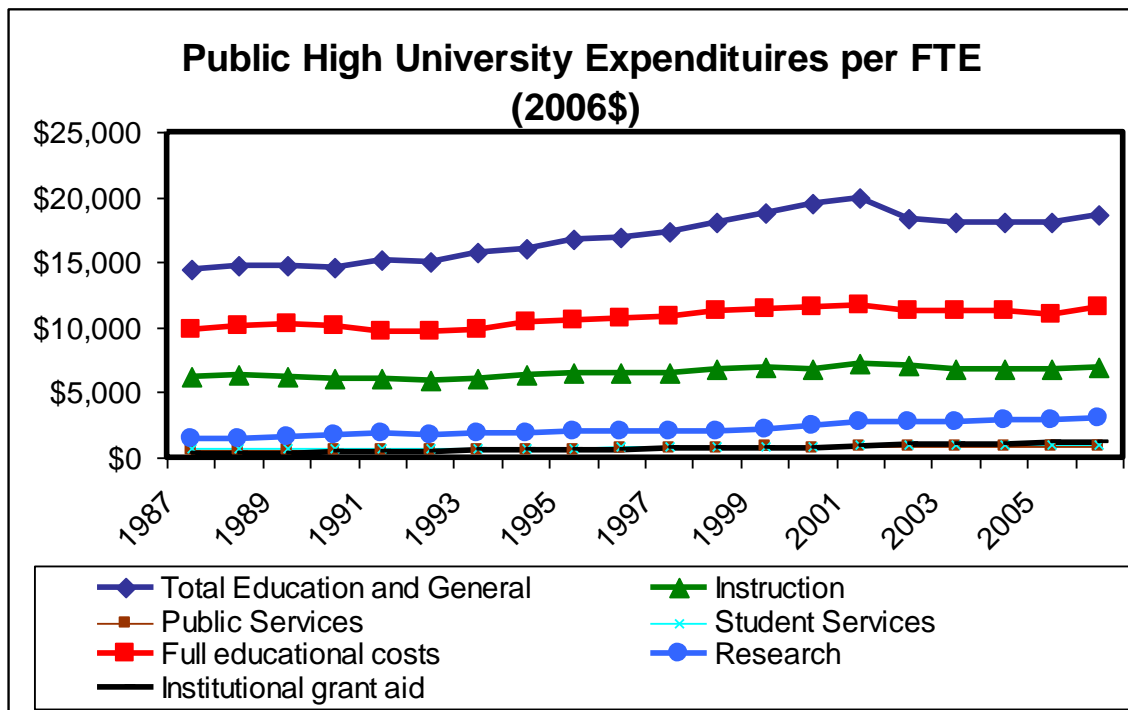
For reasons described in the previous section of this paper, the column entitled, “Full Educational Spending/FTE” is the most appropriate measure of the increase in expenditure required to provide educational services to the student, including instruction. Over the period, public universities increased per FTE student expenditures in CPI-adjusted real terms by only small proportions, ranging from 0.2 percent at research universities to 3.4 percent at master’s universities. Private universities exhibited a different pattern, a pattern of greater increases, with their research universities increasing real expenditure by 4.5 percent and master’s universities increasing real expenditure by 10.9 percent. The Educational and General (E&G) expenditure column reveals this same

⁹ Issue paper #13 for The Commission on the Future of Higher Education (2006).

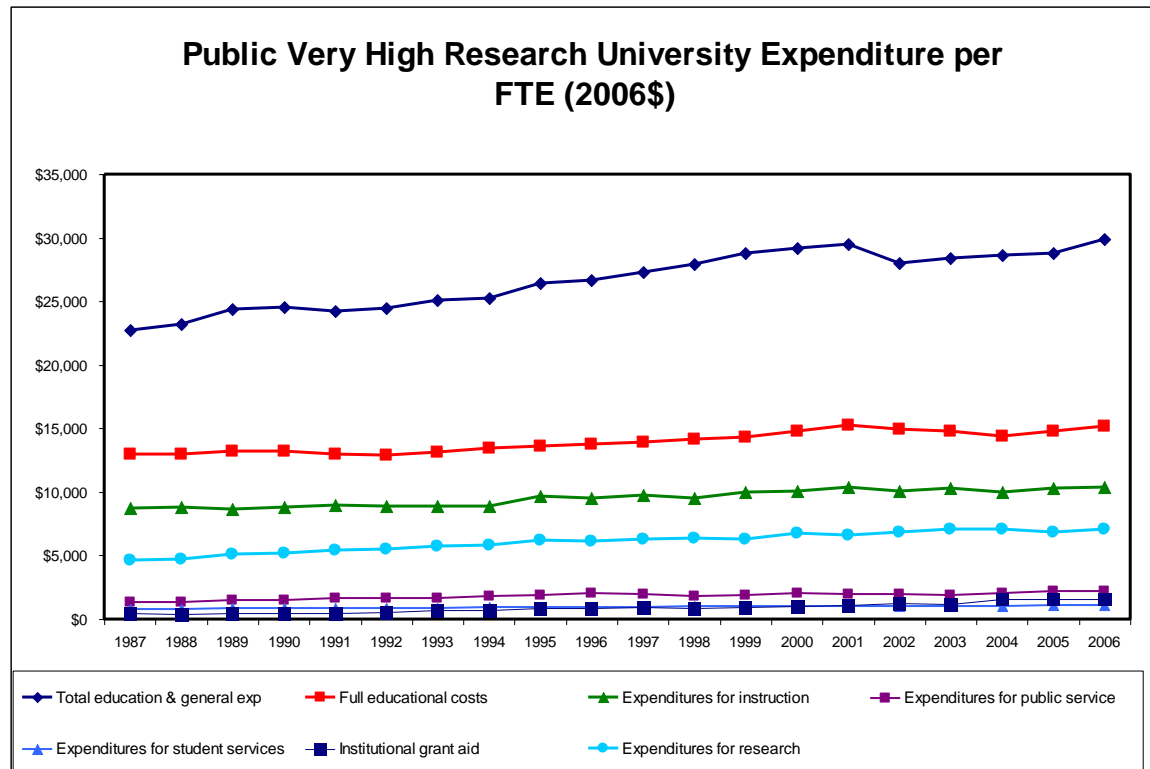
¹⁰ Op. cit. *The Growing Imbalance*, p. 33.

pattern; substantially greater increases in expenditure occurred at private than at public universities.¹¹

Below are detailed time series expenditure data for public high and very high research universities for the 1987 to 2006 period. The patterns evident in the Wellman data are apparent for both categories of universities. E & G expenditure increased at the most rapid rate. Full educational expenditure increases for both high and very high publics increased at a .84% annually compounded rate per year. Total E & G increased at a compounded annual rate of 1.44% for very high and 1.31% for high research universities.

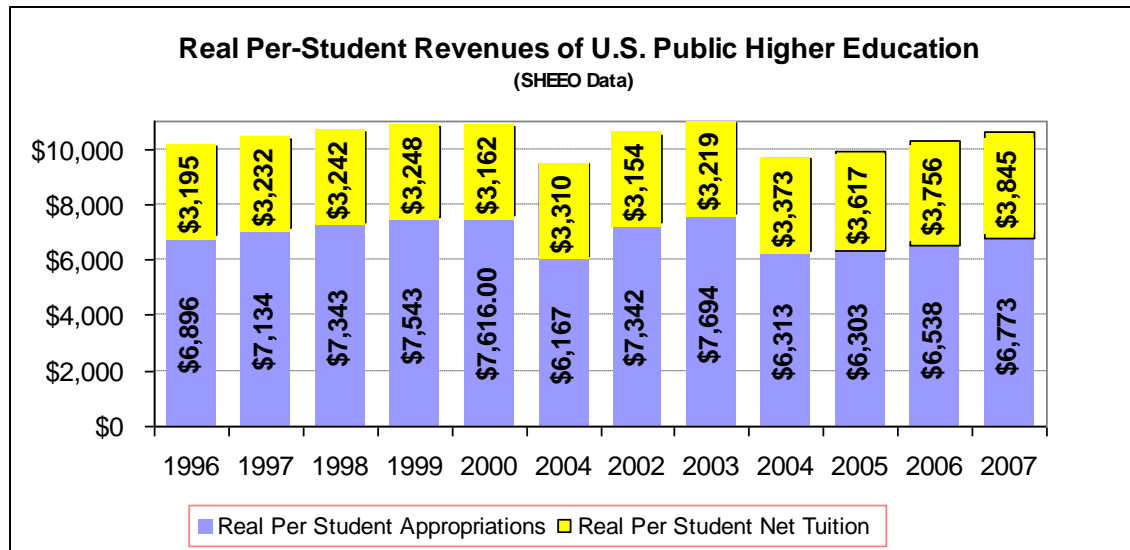


¹¹ A word of explanation is in order. E&G expenditures include more than educational expenditure and therefore behaved differently in this period than did the narrower measure of full educational spending. Private research universities increased total E & G expenditures per FTE by 17.8 percent beyond inflation during this period while their public counterparts had an increase of 7.9 percent. This is the one item in the table for public universities that appears as an anomaly. Although this is less than half the rate of increase for their private counterparts, it is still substantial. What accounts for this anomaly? Much of the increase occurred during a period of rapid increase in federal research expenditure, notably the period of “doubling” of the NIH research budget. E&G expenditure is inflated by this and other factors whose origins are not rooted in increased cost for instruction or purchase of goods and services required in generating student instruction.



What accounts for the remarkably lower rate of increase in educational expenditures at public universities than at private universities? It would not appear to be lack of tuition revenue. Net tuition revenue increased at a far faster pace at public universities than at privates during this period, although this appearance is deceptive. Because the base on which the increase is applied is much lower at public universities, the larger percentage increase in tuition revenue produces far fewer dollars for public universities than for private ones. Indeed, while public universities' real net tuition revenue rose at about double the rate at which it grew in private universities, the actual per-student increase in tuition at public research universities was \$1,609. This is only 31 percent of the actual dollar increase—\$5,169—produced by the smaller percentage tuition rise at private research universities.

Most significant for public universities, however, was the drop of 17% in real terms in direct state appropriations per FTE (full-time equivalent) student between 1987 and 2006, a revenue source largely unavailable to private universities or available to them in considerably smaller amounts.



For many years the State Higher Education Executives Organization (SHEEO) has collected data on public higher education finances. Since 1986, that data have shown cyclical variability in the real value of state appropriations per student and have trended downward over time. The years we focus on here, 1996-2007, are no exception. In 1996, real state appropriations per student were \$6,896, dropping to \$6,773 in 2007. While during this period net tuition increased as a proportion of real per student revenues, the increase barely made up for the drop in state revenues. In 1996, the sum of net tuition and state revenues per student was \$10,091 and in 2007 it was \$10,618, a scant \$527 per student increase. Over the longer period, 1986 to 2007, the increase in total real public higher education per FTE revenue was only \$954. That increase amounts to a 0.45 percent increase in real revenue per FTE student, per year,¹² a rate of increase that is hardly indicative of “out of control” costs.

The data are corrected for price change by what we think to be the best measure of inflation for universities, the Higher Education Cost Adjustment. If one uses the less appropriate Consumer Price Index as a cost measure, the annual real increase is still just 0.84 percent per year.¹³ To repeat, the substantial increase in tuition revenue over the last decade, and in fact over the last two decades, was only slightly more than the real

¹² The SHEEO data series for 1986 shows that real public higher education budgets were little different then than in 1996 or in 2006. Total real per-FTE revenue in 1986 was \$9,663 with \$2,220 from tuition and \$7,423 from state appropriations. Thus real per-FTE revenue increased only \$428 between 1986 and 1996. Note that SHEEO data include both four- and two-year schools, and the shift toward two-year schools masks a slightly greater increase.

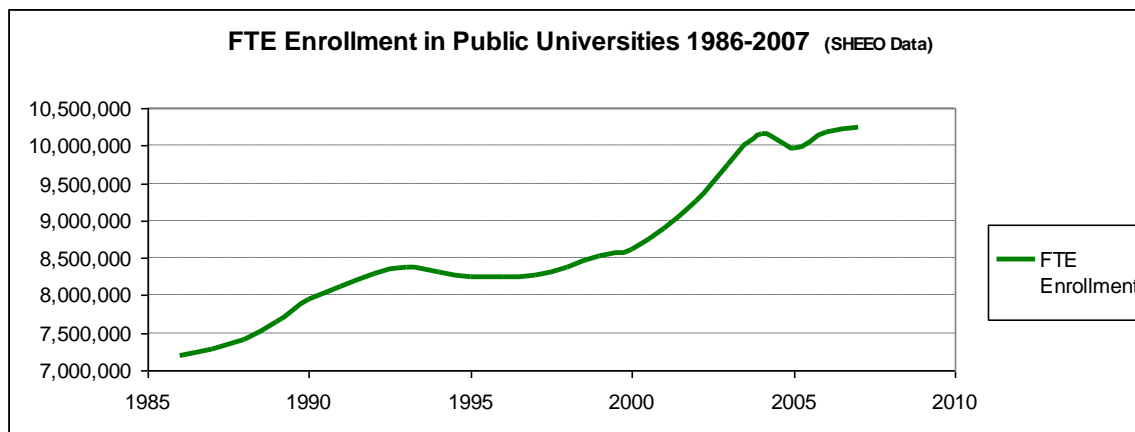
¹³ Note that SHEEO and Wellman use two different methods of deflating figures to account for inflation. Wellman used the Consumer Price Index while SHEEO utilizes its own cost index, the Higher Education Cost Adjustment (HECA) for deflation. The SHEEO index is a combination of the BLS’s Employment Cost Index (75 percent weight) and the Implicit Price Deflator (25 percent weight). SHEEO uses this combination because university expenses are about 75 percent for personnel and 25 percent to purchase a mixture of items that approximates the mixture in the gross domestic product. Between 1997 and 2007, the CPI increased at a compounded annual rate of 2.58 percent while the HECA increased at a rate of 3.38 percent. See Appendix III for a discussion of three measures of university cost increase.

revenue lost as real state appropriations were cut; total per-student real revenue and necessarily, total per-student real expenditure, barely increased.

This conclusion is not novel. Analyses like this typically produce the conclusion that in recent years, public university tuition increases merely replace portions of the loss from state appropriations. Bruce Johnston reaches this conclusion,¹⁴ as does Jane Wellman.¹⁵ And, while not focused on revenue per student, the National Commission on the Cost of Higher Education found that “in public four-year colleges and universities the percentage of total student cost covered by the general subsidy declined from 79 percent to 68 percent” during the period from 1987 to 1996. The Commission also noted periods when actual appropriations declined in a substantial number of states.¹⁶

Perhaps legislators are fixated on the absolute increases they have provided to higher education over time and do not clearly understand what has happened to real budgets on a per student basis. The chart below, derived from SHEEO data, reveals that enrollment increased rapidly during the 1986-2007 period. The growth from 7.1 million FTE to 10.2 million, a 43-percent increase, was not met by an equivalent percentage increase in real funding. Thus, real per-FTE student funding declined. The rationalization that a few more students can be added to an existing class without additional cost may be true when a small number of students are added, but it breaks down completely when the increase is of this magnitude.

Finally, it is clear that public universities have grown dependent on tuition. No matter how desirable it is for tuition to be reduced, the economics of universities depend upon it. It is simply unrealistic to think that tuition and fee charges could be reduced significantly unless those funds were replaced from other sources.



Thus public universities have increased total expenditure per student by only a very small percentage; they have had little choice in the matter because they have been constrained by total revenue availability. Total operating expenditures at public

¹⁴ Bruce Johnstone, “Those ‘Out of Control’ Costs,” p. 10.

¹⁵ *The Growing Imbalance*, pp. 19, 20.

¹⁶ National Commission on the Cost of Higher Education, p. 11.

universities may not exceed revenue because these universities generally must operate with balanced budgets. Ironically, private universities, having never had the advantage of relying on significant revenue from state appropriations, were saved the experience of real revenue decline. Put another way, private universities were able to put their tuition increases into educational expenditures while public universities had to use nearly all of their substantial tuition increases to offset real decreases in state appropriation.

Thus while both private and public universities experienced cost increases, only private universities had sufficient resources to expand expenditures significantly beyond the rate of CPI growth. This situation is reflected in the recent GAO finding that between the 2001 and 2005 academic years “...increases in average tuition were matched or exceeded by increases in average institutional spending on education at private institutions but not at public institutions.”¹⁷ Public universities had to replace lost real state revenue with tuition and were unable to increase educational expenditure substantially, while private universities could dedicate large portions of their tuition increases to increased instructional expenditure.

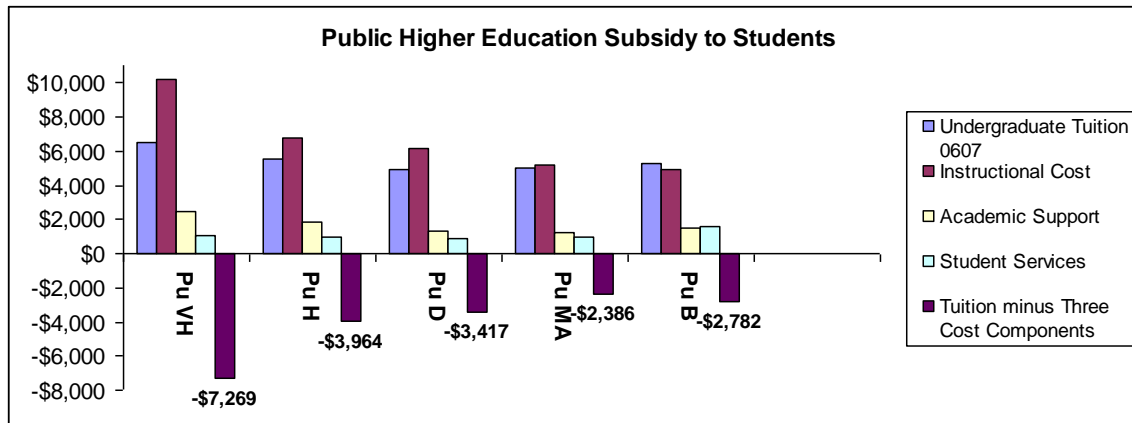
That his discussion of public university budgets has not included private funds as a significant source of revenue is not an oversight. On average, in recent years, private contributions to public universities have amounted to only a miniscule proportion of per-student expenditure. *The Growing Imbalance* concludes that “private funds have not materially contributed to the bottom line in public institutions” and provides data demonstrating that public master’s institutions have not enjoyed private contributions that averaged as much as \$300 per student during any year in the 1987-2005 period; public research universities averaged just over \$700 per student in recent years.¹⁸ While these small amounts make a difference when used in well-targeted ways, their overall impact on public institutions is small. Since per-student sums from these figures remain at about the same level as they were two decades ago, they have not provided a source for growing budgets for educational programs.

Finally, public universities subsidize students; tuition and fees do not cover even the variable cost of educating them. In the following figure, the variable cost of instructing students (i.e., the sum of instructional cost, academic support and student services) is subtracted from tuition to yield the net operating subsidy to students. These figures have to be seen for what they are, i.e., averages across all levels of students, since undergraduate instructional, academic and student support services costs are neither accurately nor objectively assignable to each student level. In every public Carnegie Classification, students are subsidized. We make this point to ensure that the reader understands that the immense cost pressures public universities have faced have not changed the basic fact that students in the public sector do not pay even the variable cost of their education. *The Growing Imbalance* examines the relationship between revenues for student tuitions for the Carnegie university-level categories, and reports that average

¹⁷ *Tuition Continues to Rise, but Patterns Vary by Institution Type, Enrollment, and Educational Expenditures*, Report to the Chairman, Committee on Education and Labor, House of Representatives (Washington, D.C.: Government Accountability Office, 2007), p. 4.

¹⁸ *The Growing Imbalance* (Delta Cost Project, 2008), p. 21.

revenue from tuition is less than instructional costs for all categories of institutions, public and private. The report also finds that undiscounted tuition exceeds average instructional costs for only one category of university, the private master's university.¹⁹ Thus, student subsidies remain the rule at both public and most private universities.



Perceptions that public universities have had runaway expenditures during the last 20 years are simply incorrect. Over the period for which we have consistent data, the real amounts spent by public universities per FTE student have increased very modestly. ***Public universities have had to make hard choices and have had to economize. They have not permitted overall levels of costs to rise in an uncontrolled, excessive fashion. With the consent of their governing boards and legislatures, they have increased tuition in the attempt to offset reductions in real state appropriations, not because cost increases forced them to do so.***

Universities operate at a given tuition and cost level based upon the subsidy available to them and their mission to provide a specific type of education. A Carnegie-classified very high research university could choose to operate similarly to a Carnegie-classified master's institution and thereby reduce its cost of operation. Thus for public institutions at least, it is the type of university they choose to be, i.e., the segment of the higher education market in which they operate, that affects their cost of providing education. It is not an out-of-control cost environment that determines university costs and hence, tuition.

Tuition level, then, is also a matter of choice. Clearly, in the long run the total revenue a university receives must cover its costs. Cost is determined by the type of education an institution offers or, most probably, by a series of choices made over decades by the institution and its governing board. Hence, the amount needed to balance the university budget after that cost choice is made essentially dictates the public institution's average tuition level. Thus a given university ultimately has control over the type of institution it will be and over the tuition level it will charge. This choice, of course, *may* have consequences for the quality of education the university offers.

¹⁹ Ibid., 32, 33.

Students also have choices when it comes to the level of tuition they are willing to pay. The range of tuition and required fees is very large, from a high in 2007 of \$34,965 per academic year at the average private, not-for-profit²⁰ university classified by Carnegie as “very high” in research, dropping to an average of \$7,063 at their public counterparts, and to a low of \$2,812 at public community colleges. These list prices do not reflect the prices most students actually pay for a year of attendance as tuition discounting is common. It ranges from 32.8 percent average reductions at private four-year schools, to 15.7 percent at public four-year schools, to 7.4 percent at public two-year schools. Discounts vary by income levels, demographic characteristics and student academic abilities.²¹ Just as choice of the type of institution a university wishes to be affects its cost of operations, so too is the educational experience for a student affected by their choice of institution and the price they pay to attend.

Summary and Conclusions

While this paper focuses on the cost of producing education, there are negative consequences for this country and for universities if the price of attendance to students increases beyond the ability of many of them to pay. Students in the United States have choices and can obtain college degrees for amounts ranging from quite modest to sums that most families cannot afford. Over the last decade increases in tuition beyond the growth rates of family income have made college less affordable. There are indications that students are beginning to gravitate toward the lowest-priced schools and those that have the lowest rates of price increase. This tendency is most pronounced for minority students.

Public universities have reason to be concerned about these trends and the implicit invitation proffered by these trends for elected officials to become involved in matters of pricing and quality. Within the Association of Public and Land-grant Universities there is a serious dialogue among and within universities about tuition levels and alternative ways of restraining them in the future. Efforts to reverse the steady decline of state support continue as well.

The time has passed when we can claim that the benefits of a college education are so obvious that the price is immaterial. It is indeed material in markets in which consumers are free to choose. Higher education has suffered from our failures to recognize the reality of price variation and choice based upon price, to take courses of action to dampen or reverse tuition increases, and to demonstrate objectively the value of various approaches to providing education. Failure to act aggressively to control prices charged to students and/or to demonstrate societal benefits invites political interference.

²⁰ “Private” when used in this paper as the sole descriptor of a university or group of universities always refers to “private, not-for-profit” universities. It never refers to the “private, for-profit” or proprietary institutions.

²¹ Sandy Baum and Lucie Lapovsky, *Tuition Discounting: Not Just a Private College Practice* (College Board, 2006), p. 2.

As public educators, we clearly share an interest in avoiding an affordability challenge. We do not want the primary instrument of social and economic mobility in this country—higher education at public universities—to become limited by tuition and family finances to the select few. We do not want our universities solely to become purveyors of a private good, affordable by only those with resources who wish to study in areas with high monetary returns. It is not acceptable to reduce public universities to mere historic artifacts from a time when the “public” in higher education recognized the public-goods nature of the education we provide.

Public research universities have risen to meet national needs in the past. With the passage of the Morrill Act in 1862, they transformed themselves to meet the agricultural/industrial needs of the country. In the immediate post-World War II era, they dramatically expanded to serve the returning GIs. In the 1960s they responded to the challenge of Sputnik. A crisis in affordability is another challenge we must squarely face and solve.