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What's Been Happening to Higher Education?

A Reference Manual

1986-87 to 1994-95

Gordon C. Winston, Jared C. Carbone, and Ethan G. Lewis

The Williams Project
on the Economics of Higher Education

There's a new "global" way of organizing the economic information about an individual college or university that leads to a new way of tracking and understanding the changes that have been overtaking higher education, nationally. It is used here to identify the major trends that appear in the eight eventful years from 1986-7 to 1994-5 (which includes the most recent data available).

The main virtue of a global accounting of the economics of a college or university is that it starts with the whole thing – an entire institution – and looks at the economic pieces that, together, describe it. Traditional practice has usually seen those numbers separately – sticker prices, enrollment, financial aid, subsidies, production costs, ... It's a bottom up approach. Global accounting looks from the top down, seeing the numbers as fitted parts of a whole so the connections among them – the relationships – can be revealed. If sticker prices rise, what is the money used for? If financial aid increases,

where does it come from, where does it go – what else will change in consequence?

Extended to all of higher education, how much do students in different kinds of schools pay for their education and what do they get for their money? In schools with different levels of wealth? And how is all that changing?

So the first part of this paper (page 3) shows how the most important pieces fit together – prices, costs, and subsidies. It's not a pattern we're familiar with from our extensive experience with business firms and the intuition it supports. The next part (page 9) reports and analyzes the national economic data from 1986-87 to 1994-95 for most of the colleges and universities in the U.S., public (page 13) and private (page 22). It looks both at how things have changed over the whole of the period and at the often different way they've changed between the first (1986-91) and second (1991-95) halves of it. Some of what appears in these numbers is old hat – like the fact that sticker prices have been rising – but some is not and may even be quite surprising – like the uses to which rising sticker prices have been put in different kinds of colleges. Finally, all the data tables are reported in an Appendix (page 32) that also includes information on economic performance by size distribution of wealth among schools.

The reader who wants to cut to the numbers can turn straight to Part II with some risk of confusion about the categories and relationships. Details of the data have been well spelled out in the earlier papers¹, all of which can be downloaded from

¹ Lewis, Ethan G., and Gordon C. Winston. 1997. "Changing Subsidies and the Economy of US Higher Education, 1986-87 to 1993-94." Williams Project on the Economics of Higher Education Discussion Paper No. 41r, April. Winston, Gordon C., and Ivan C. Yen. 1995. "Costs, Prices, Subsidies, and Aid in

<http://www.williams.edu/Mellon/>. The text and graphs of Part II should serve to convey the broad changes but the more detailed appendix tables will repay closer attention.

I. How Things Fit: The Economics and the Intuition of Colleges and Businesses

Paradoxically, under “how things fit together,” the single most serious problem facing the understanding of higher education – and hence public attitudes and public policies – may well be common sense. Very common sense. We have, collectively, a well-trained intuition that’s based on a whole lot of experience with business firms. We’ve lived with ordinary business firms all our lives and from them we’ve absorbed a strong feeling for what makes economic sense and what doesn’t. And anyone who’s taken Econ 101 will have had that common sense reinforced by graphs and lectures and quizzes and a final grade. But unfortunately, what’s happening in colleges and universities – their economics – is often strongly *counter*-intuitive in these terms; what’s accurate is unfamiliar and what’s obvious is often just plain wrong.

Two pictures describe three key facts – arithmetic facts – about businesses and colleges and universities. The pictures and the facts are highly stylized, but aside from neglected details, correct. We’ve been accused of working on an Economics Coloring Book. But it’s at about the coloring book level that things start going wrong.

U.S. Higher Education." Williams Project on the Economics of Higher Education, Discussion Paper No. 32, July. Winston, Gordon C., and Ethan G. Lewis. 1997. "Physical Capital and Capital Service Costs in U.S. Colleges and Universities: 1993." *Eastern Economic Journal*, vol. 23, No. 2, 165-89. The National Commission on the Cost of Higher Education. 1998. "Straight Talk About College Costs and Prices." Report. January. Blasdell, Scott W., Michael S. McPherson, and Morton Owen Schapiro. 1992. "Trends in

The bar on the left in Figure 1 is a business firm. Its height shows a year's income. To the left are the "sources" of those funds and to the right, what the firm does with that money – its "uses of funds." Income comes from the sale of the things the firm produces. It goes to pay the costs of production and – if costs are less than sales income – what's left over is profits. So a car dealer earns money from the cars she sells and pays that money out as costs – the wholesale cost of the car, salaries, commissions, building,

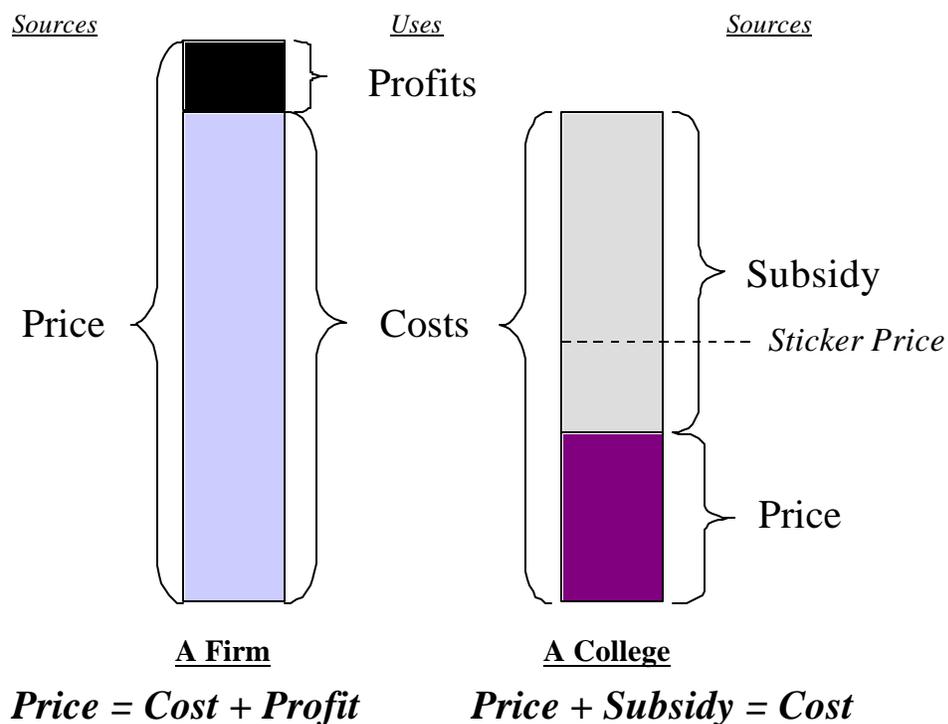


Figure 1

Revenues and Expenditures in U.S. Higher Education: Where Does the Money Come From? Where Does it Go?" Williams Project on the Economics of Higher Education, Discussion Paper No. 17, June.

heating oil... -- and keeps what's left as profits.

The second bar in Figure 1 shows the same basic facts for a college or university. Height, again, is income, use(s) of that income are on the left, sources on the right. The big and important difference from the business firm is immediately apparent: only a fraction of the college's income comes from the sale of its product, from the tuition its student-customers pay for the educational services the university sells them. The scale in the figure is about right – on average in the US, students' tuition payments cover about 1/3 of their total educational costs. The other two thirds is covered by income from “donative resources,” an awkward but useful phrase that includes donations from alumni and state appropriations from taxpayers and earnings from endowments and the services of expensive buildings and equipment. (Of course, the reason society makes donations to colleges and universities – and doesn't make them to Ford dealers – is that higher education is considered to be A Good Thing for us all so we encourage people to buy more of it by offering generous subsidies on its purchase.) For the average US college in 1995, a year's education cost \$12,209 to produce and was sold to the student-customer for \$3,885. So she got a \$8,324 a year subsidy. This graph and variants will prove useful in describing the US data.

The dashed line cutting across the subsidy section of the bar indicates, surprisingly, the sticker price – the announced price that the full-pay student pays. What that line makes clear is that the *sticker price serves only to divide up the college's total student subsidy* between a “general subsidy” that every student gets – above the dashed line – and

an individual subsidy that only some students get as financial aid or price discount – below the dashed line. That’s the only thing the sticker price does: the sticker price can move up and down with no effect on the actual net price the average student pays or on the cost of his education – only who gets how much subsidy in what form. With a high sticker price that covered all costs, all student subsidies would be given as “financial aid;” with a low sticker price equal to net tuition, everybody would get the same “general” subsidy and there’d be nothing left over for financial aid.

So, despite their prominent place in the press and public imagination, sticker prices don’t tell us anything about what the average student pays or what he gets for his money. They only split up a school’s subsidy one way or the other.

That’s all the conceptual paraphernalia that’s needed to describe the way the pieces fit. The three crucial facts that come from this are:

Fact Number 1:

For a business firm, price is always greater than production costs and any difference is profits. So

$$\text{Price} = \text{Costs} + \text{Profits.}$$

For a college, price is always less than production costs and any difference is student subsidy. So

$$\text{Price} + \text{Subsidy} = \text{Cost.}$$

Why is this difference so important? Put yourself in the place of a member of the Federal Commission on the Cost of Higher Education, trying to figure out why a family's educational costs (read "price") have risen so much.

To anyone locked into the business intuition embedded in $\text{Price} = \text{Cost} + \text{Profit}$, the answer would look pretty simple. Since the price has gone up, it has to be because costs went up or because profits went up. Colleges are non-profit firms, so the place to look is at costs; they must have gone up. And that leads relentlessly to questions about increased waste, abuse, and corruption – about rising administrative bloat, more indulged and less productive faculty, excessively elaborate buildings and equipment, or a too-exuberant embrace of expensive technologies. This list is the agenda described in the original House Resolution 1511 that set up the Commission in 1997. It's an agenda right out of a world of $\text{Price} = \text{Cost} + \text{Profit}$ and the solid business intuition it describes. Sensible from that naïve perspective, but dead wrong.

As we will see, what's actually been happening in public higher education (where 80% of the students go) shows up only when we look at $\text{Price} + \text{Subsidy} = \text{Costs}$, where we can see a college as it really is.

Then it's clear that since the price has gone up, it might be because costs went up, but it might also be because subsidies went down. And that's what actually happened. The taxpayers' revolt that's restricted state appropriations (donative resources) has met an

increase in enrollments and these, together, have reduced student subsidies in public higher education. That's a very different picture from the one that comes from business intuition. If subsidies go down at a college, two things can happen. Prices *have to* go up or educational costs and quality *have to* go down, or both. We've seen both. Students in public colleges are paying a higher price to get a cheaper, lower quality education. But more on that below.

The most important point is that our business intuition doesn't just obscure what's been going on – making it harder to see. It actually misleads, distorting our understanding of what's been happening by making us look at the wrong thing. The statement “Price = Cost + Profits” is supposed to be complete – it's “an accounting identity.” So we search for rising educational costs even though they're falling. And we don't look for evidence of falling subsidies because business firms don't have subsidies. And the better you understand your Econ 101, the more you'll fall prey to these misconceptions.

Fact Number Two:

Student subsidies are very different at different colleges. At Williams and Swarthmore and Yale, the average student gets about \$45,000 a year in subsidy; at the average private two-year college, he gets \$6,800. He pays a whole lot more at Williams or Swarthmore or Yale with their average net prices around \$20,000, but those schools

give a very expensive education. So the student pays more, he gets a bigger gift from society, and he gets a more costly education.

All that can be sorted out quite nicely by looking at what fraction of his educational cost a student actually pays. That's the price he pays for a dollar's worth of education, P/C. And its value goes all over the map, from around 10 cents on the dollar in a public Two-year College to more than 57 cents in a private Doctoral University.

Fact Number Three:

It's sticker prices that get the lion's share of national attention. Yet, other things equal, sticker prices serve *only* to divide a given subsidy, S, between financial aid, S_a, and the general subsidy, S_g, that every student gets. An increase in sticker price, like the ones we've been witnessing with such concern, can be used either to increase a college's tuition income – the net price students pay – *or* simply to redistribute the subsidy, increasing financial aid at the expense of the general subsidy, dollar for dollar. If net price and total spending aren't changed, that sticker price line in Figure 1 can move up and down with no effect except to change how the give subsidy is divided. So

$$\Delta P_s = \Delta P_n + \Delta S_a.$$

Big increases in sticker price (ΔP_s), then, might go with big increases in actual costs to the average family (ΔP_n) or with no increase at all. It all depends on how those sticker

price increases are used.

II. What **Has** Been Happening to Higher Education?

The eight years between 1986-7 and 1994-5 were years of important change in higher education. We used IPEDS data (from the US Department of Education) to form a panel of the 2213 schools² for which we could get consistent data in 1986-87, 1990-91, and 1994-95. Our final numbers encompass 85% of all FTE students in the US. Subsidy is defined as the difference between the cost of a student's education and the net price he or she actually pays. Educational costs were calculated inclusive of capital services – about a quarter of total cost – and exclusive of non-educational activities, in so far as IPEDS allows us to sort that out. All numbers are in 1995 dollars, all are based on tables reported in the Appendix, and data details are fully reported in previous discussion papers.

What do the numbers tell us has been happening to higher education in these eight eventful years? First and not surprisingly, there is a story of *all* of higher education that's interesting if a bit over-aggregated.

A. The Overview:

The big picture of what's happened at the Average American College between 1987 and 1995 looks like this:

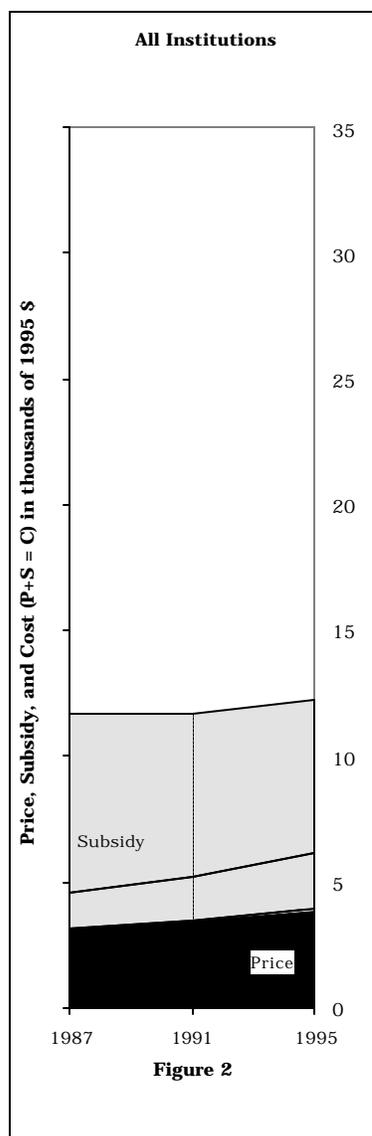


Figure 2

Between the academic year 1986-87 and 1994-95, there was a significant increase in the number of (fte) students going to college -- 14.0% -- but not much increase in society's support for them. So the amount of yearly subsidy the average student got fell, by \$174 or 2%. That reduction didn't, however, translate into a decline in what the colleges spent on the average student's education. Spending actually rose by \$574 (4.9%) because students paid more in net tuition -- \$748 a year more (23.8%). So it's pretty clear that a major pressure behind increased tuitions over these eight years was the cut in society's support for higher education -- lower subsidies meant higher prices with only a bit more spending on educational quality. Figure 2 shows these patterns of change for All Institutions from 1986-7 to 1994-5. (Like Figure 1, the height of the bar shows total

cost per student, the gray segment is subsidy -- divided by the sticker price line into the general subsidy on top and individual financial aid on the bottom -- the student's net price as the dark area at the bottom.)

Those tuition increases weren't in the sticker prices that induced all the public anguish, though -- the published tuition for "full-pay" students. Instead, they were in the

² Out of roughly 3300 schools in total, but that's a total that includes colleges on Guam, some with no

net tuitions that the average student actually paid; the price after adjusting for financial aid grants. It's that *net* price that went up by \$748 over the eight years. Sticker prices went up more than twice as much – up by \$1,543 or nearly 34% -- the line separating the two gray areas in Figure 2. What happened to the rest of the sticker price increase? It's gone to raise student aid – to shift subsidy, dollar for dollar, from full-pay students to those on financial aid. Indeed, overall, more than half the increase in sticker prices (51%) has gone that way; only 49% raised actual tuition income for colleges and paid for educational spending. Put a bit differently, colleges and universities kept only 49 cents on the dollar of their sticker price increases – the rest went to increase price discounts for financial aid students.

So, students in 1995 were paying more than they had in 1986-7 and they were getting (a bit) more. But since what they paid outran what they got, they weren't getting as good a deal at the end of the period as at the beginning: the dollar's worth of education that cost the average American student 27 cents in 1987 had increased in price to more than 31 cents by 1995. That's 17%.

Figure 2 suggests that these changes weren't spread evenly over those eight years and that's true (showing up even more clearly in Carnegie Type Table 5). Enrollment that rose by 10.2% in the first four years increased only 3.3% in the next four, contributing to the recovery of per student subsidies from a decline of 3.5% in the first half to an increase of 1.5% in the second. A quite consistent increase in net tuition

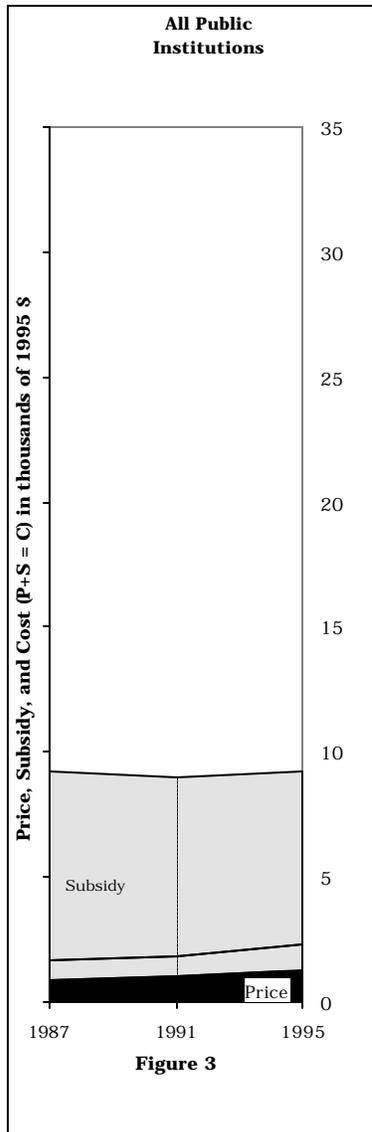
students, with only graduate students, with no expenditures, fewer than 100 students, etc....

(11.1% and 11.5%), then, allowed educational spending to rise from a meager 0.4% increase in the first four years to nearly 4.5% in the last four. Sticker prices, in contrast, increased much faster in the latter half (from 13.5% to 17.7%) but while that increase shifted subsidies from general to financial aid in both sub-periods, the shift accelerated markedly – 44% of the sticker price increases went to financial aid in the first four years and 57% in the second. That acceleration is evident in the sticker price line of Figure 2.

The two-sentence summary of The Big Picture, then, would be: educational spending went up a bit but since society withdrew some of its support for higher education, students had to pay more and pick up a larger share of the cost -- the price of a dollar's worth of education went up. At the same time, though, there was a general shift to a "high-tuition/high-aid" policy that took some of the subsidy away from full-pay students and gave it to financial aid students as price discounts.

B. The Public Sector

"Privatization" drove public higher education over this period and produced the effects that are yielding such national anxiety – higher tuitions and lower educational spending and quality. Privatization can take many forms: selling public institutions, like hospitals, to private owners, or buying more public services from private firms, like for-profit jails, or simply withdrawing taxpayers' support, leaving institutions and their customers more and more on their own, like public higher education.



In these eight years, public sector schools absorbed, as they have since World War II, a disproportionate share of the new students: full time equivalent enrollments went up by 15%, adding almost 700 students to the average public institution. Those increased enrollments combined with stingy increases in state appropriations to cut each student's subsidy by \$288 – 3.8%. Increases in tuition that were small in dollars but big in percentages – and hence big in headlines – struggled to protect quality so educational spending stagnated in the public sector, increasing only \$41 per student from beginning to end, or by 0.4% over these eight years. Dramatic *percentage* increases in sticker price -- by nearly 41% over these eight years – yielded few dollars -- \$659 -- and only half of those made it into the coffers of the colleges to offset reduced public support; the rest of the sticker price

increases simply redistributed some of the subsidies from full-pay to financial aid students. Figure 3 puts those big percentage increases in perspective by showing the very small base from which they were generated.

Figure 3 also shows that for public higher education the first four years were different from the last four. After 1986-87, with big enrollment increases (11%) and slipping subsidies (–4%), modest net tuition increases (9%) couldn't prevent a \$250 (–2.7%)

decline in spending per student. This, importantly, is the period that led to the increases in tuition that have caused such furor – with more students and less tax money as the driving forces. If you looked only at the endpoints of the eight year period, as the Federal Cost Commission did, you would not be able to see this dramatic change. In the later four years, everything turned around. Public enrollment increased only 3%, subsidies went up (by 0.6%) instead of down, and a net tuition increase of 25% allowed spending per student to increase by more than 3%. Sticker price increases went from 12% to 26% with more going into college coffers – from 43% in the first four years to 53% in the final four. Comparing the two periods seems to reveal a classic lagged response – it took a while for things to happen and a bit longer to recognize that they had happened and a bit longer, still, to do something about it.

Public Sector Schools by Type

But this broad picture of tax revolt and public retrenchment hides important – and generally encouraging – differences among schools by type and wealth. And very different strategies and circumstances. While all the detail is, again, presented in the tables of the appendix, the five graphs, Figures 5-a to 5-e, can summarize similarities and differences within the public sector between Research, Doctoral, and Comprehensive Universities, Liberal Arts and Two year Colleges. (We've left out the catchall category of Specialized Institutions, both here and in the discussion of the private sector, because they're an unlikely set of dogs and cats about which it's hard to say anything useful.)

Figure 5...

At the top end, the public Research Universities saw only a modest decline in subsidies per student during this period, got by a modest decline in subsidy resources along with the smallest increase in enrollments among public institutional types (3.5%) and the largest increase in sticker price (50%) that was used mainly (68%) to produce one of the largest increases (50%) in net price and hence schools' tuition income. So Research Universities were able to *increase* educational expenditures. Their educational quality was effectively protected by the small increase in enrollments and large increases in both sticker and net prices. Students at public Research Universities got more (\$878 or 6.8%), but they paid even more to get it (\$1,030 or 49.8%).

Public Two-year Colleges, in contrast, got clobbered by nearly the largest percentage increase in students. Already dealing with the largest total number of students in higher education, they were hit with almost 25% more in this period. But public policy provided enough additional subsidy resources to minimize the consequent reduction in subsidy per student – at \$36, the decline in the average student subsidy at Two-year Colleges was less than that in any other sector and well under the \$152 decline in subsidy suffered by the Research Universities. So students in Two-year Colleges were protected by appropriations. They both had the smallest increase in their net price (16% or \$96 over the eight years) and joined the Research Universities as the only public school type to show an increase in educational spending (up \$60 or 0.8%).

Students at the Research Universities, then, appear to have been exposed by public policy -- they got more educational spending but they paid for it, and more. Students at

the Two-year Colleges were protected by public policy -- despite massive enrollment increases, subsidy resources were increased nearly as much so they got by with modest net price increases and minimal reductions in quality.

These differences in policies and circumstances show up, too, in what they did with their sticker price increases. Research Universities used those price increases to get more money – more net tuition income – to cover educational spending. They used some of the sticker price increase to redistribute the (falling) subsidies to financial aid students, but only a third of it.

The typical Two-year College, in contrast, used its far more modest (37%) sticker price increase almost entirely (78%) to shift subsidies from full-pay to financial aid students, leaving only 22% of it to increase the net price that students actually paid, and their tuition income.

The public Comprehensive Universities and Liberal Arts Colleges were caught in the worst of both worlds. They appear to have had neither the power of the Research Universities nor the patronage of the Two-year Colleges. Enrollments at Comprehensive Universities and Liberal Arts Colleges were up a whole lot – between 15% and 26%; subsidies per student were down a whole lot – by 8% to 11%. So despite very large increases in the net prices their students paid – 48% to 70% -- these schools couldn't avoid a decline in spending on educational quality of 1% to 4%. Public Comprehensive Universities and Liberal Arts Colleges used their sticker price increases largely (70%-

73%) to increased tuition income leaving a modest amount for redistribution of subsidies to financial aid.

The public Doctoral Universities' performance falls somewhere in between. They didn't have to absorb quite as large an enrollment increase as the Comprehensive and Liberal Arts institutions and subsidies didn't fall quite as much. So somewhat lower increases in net price could make the decline in educational spending fairly modest. And like all the others, the Doctoral Universities used 67% of their sticker price increases to raise their tuition income.

The enrollment shift of students from public Research Universities to the lower priced Two-year Colleges has been the subject of recent attention focusing primarily on the idea that low income students have been increasingly forced to attend cheaper schools like Two-year Colleges because of rising prices at public Research Universities. That argument emphasizes an income effect in the universities' higher net tuition.³

There is, however, something else at work. Over the period, Two-year Colleges became relatively a better deal in terms of what a student has to pay for a dollar's worth of education. Research Universities raised price a lot and quality a little; Two-year Colleges managed to keep both price and quality more nearly the same. So in 1986 it cost 7 cents to buy a dollar's worth of education at a Two-year College and in 1995 it cost 8 cents. That price went up by a penny or 15%. But in 1986, a dollar's worth of

education at a public Research University cost 16 cents and by 1995 it had risen to 22 cents. That price went up by 40%. So there's a substitution effect at work on enrollments in response to lower *relative* prices.

Without more information we cannot tell how much of this enrollment shift came because Research Universities simply shut the door on more enrollments in order to protect their per-student subsidies in face of declining public support with that rationing falling disproportionately on less well-prepared, poorer, students. So any one – or all three – of these things may have been going on: an enrollment restriction, an income effect and a price or substitution effect of changing relative prices of a dollar's worth of education.

When the public sector is seen hierarchically – recognizing the sharp differences among schools in their *ability* to subsidize their students – the picture of protection and vulnerability comes through even more clearly. The wealthiest, high-subsidy schools in the public sector most severely restricted admissions and most energetically raised net tuition income, but they were unable to resist the erosion of educational spending that resulted from reduced subsidies. So the top ten percent of the schools (in Subsidy Size Table 3) kept enrollment increase down to 8% while they raised net tuition by nearly 60% but even those measures weren't enough to keep the 7% reduction in subsidy support from bringing a 2.3% reduction in educational spending – more than \$380 per student. They allocated 60% of sticker price increases to increased tuition income.

³ McPherson, Michael S., and Morton Owen Schapiro. 1998. *The Student Aid Game: Meeting Need and*

Those in the bottom twenty percent of public schools were so well protected from subsidy reductions that with modest increases in net tuition – they were able to increase educational spending, despite enrollment increases that averaged more than 25%.

In the useful shorthand of the student's cost of a dollar's worth of education, the top decile public schools started as a super-bargain in 1987, charging less than 7 cents on the dollar, and ended up in 1995 at nearly 11 cents – a 58% increase. Those at the bottom started out charging 17 cents on the dollar and ended at 20 cents – a 19% increase. Or, looking at the relative price comparison more relevant to a substitution effect, the average top decile school charged only 41% as much as the one at the bottom in 1987 but by 1995, that price difference had increased to 58%.

Public Sector -- Summary

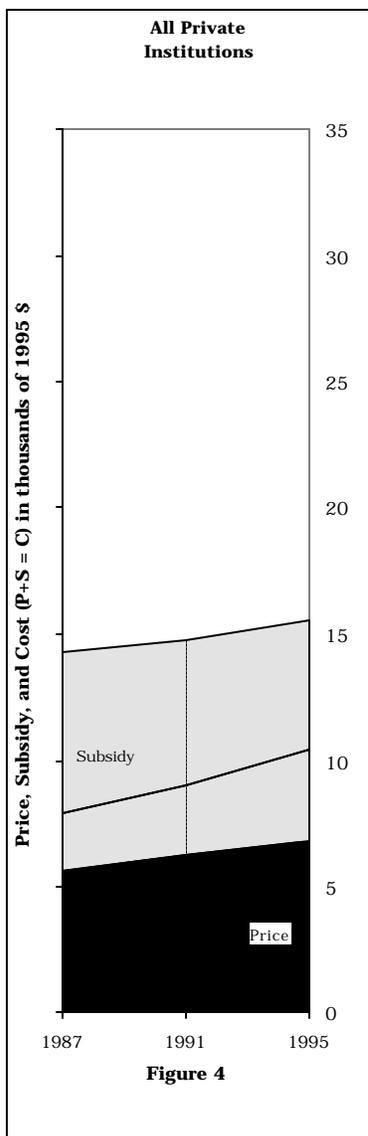
A quick summary, then, might be: privatization swept the public sector as taxpayers withdrew support at the same time that enrollments grew sharply. The strongest schools were apparently able both to discourage enrollments, husbanding their subsidy resources, and to raise net tuitions, increasing the share of costs borne by their students' tuition income. The poorest schools were protected, in contrast, by a public policy that maintained their subsidies, allowing them to get by with modest sticker price increases that they used largely to increase financial aid. Relative prices changed to make the poorer schools – the Two-year Colleges prominent among them – a lot better bargain. The middling schools – the public Comprehensive Universities and Liberal Arts Colleges

– were caught, absorbing large increases in enrollments with large reductions in subsidy resources so that their efforts to shift costs to their students weren't enough to prevent large reductions in educational quality.

Again, in comparing the sub-periods, there's evidence of a delayed response across the board as both enrollment increases and subsidy decreases were smaller in the last four years, allowing large increases in both sticker and net prices to support increased spending. And the public Research Universities that protected themselves fairly well between 1986-87 and 1990-91 saw enrollments decline and net tuitions increase, allowing a larger spending increase between 1990-91 and 1994-95. After falling modestly in the first period, subsidies at the Two-year Colleges rose modestly in the second so costs, price, and subsidies are all pretty level.

C. The Private Sector

If the public sector was characterized by increasing privatization during this period, the private sector was characterized by increasing competition. Taken as a whole, schools in the private sector fared a good deal better than those in the public sector: enrollments increased more modestly (11.2% versus 15%), subsidies were reduced less (0.5% versus 3.5%), smaller percentage increases in sticker price (32% versus 41%) produced more modest percentage increases in net tuition (22% versus 36%) but still yielded, from their bigger base, enough dollars in new tuition income (\$1,213) to support a substantial increase in educational spending (\$1,166).



And over the whole of the period, sticker price increases were used in much the same way as in the public sector with 48% generating more tuition income and 52% redistributing subsidy to financial aid. Finally, while the price of a dollar's worth of education went up a bit in the private sector (13%), it went up a whole lot less than in the public sector (36%), leaving private schools considerably more competitive. And, as Figure 4 suggests, the period from 1986-87 to 1994-95 was fairly consistent for the private sector as a whole with a mild reduction in enrollments from first to second half (from 7% to 4%) that contributed to a rise in subsidy growth (from -2.9% to 2.5%) allowing an acceleration in spending (from 2.7% to 5.3%) along with a moderation in net tuition increases (from 11.4% to 9.2%) and an increased use of sticker price increases for financial aid (from 41.7% to 60%).

Private Sector Schools by Type

But, as usual, a whole lot is hidden by even this much aggregation. New enrollments, subsidies, and – especially – changes in educational spending were very unevenly distributed over schools in the private sector.

Figure 6...

As in the public sector over this period, the Research Universities made out best, by far, but in the private sector, they were joined by the Doctoral Universities. And their successes were much greater than those of public Research Universities. Small increases in enrollment did little to dilute very large increases in subsidy resources (of 19% and 11%, in Research and Doctoral Universities respectively) and those larger subsidies joined with increased tuition income to support very large increases in real educational spending per student -- \$5,226 in the Research Universities and \$2,263 in Doctoral Universities. For comparison, educational spending per student increased by \$878 in the public Research Universities and *fell* elsewhere in the public sector. The student's price of a dollar's worth of education rose by only 0.3% in the private Research Universities and it didn't change at all in private Doctoral Universities. That price went up by 40% at the comparable public sector schools.

At the other end of things are the private Comprehensive Universities where a large influx of students (17%) contributed to a decline in per-student subsidies (of \$858) so that a quite substantial increase in net tuition (\$1,366) was needed to support the \$508 increase in educational spending. The price of a dollar's worth of education at a private Comprehensive University rose from 47 to 56 cents or by 18%. These schools appear to be caught between the proverbial rock and hard place with the need to use any sticker price increases to increase competitive price discounts but, simultaneously, use them to augment tuition income: the compromise was about 50/50.

It's useful to keep in mind that private Liberal Arts Colleges represent a large and heterogeneous lump of some 500 schools for which intuitions based on Williams and Swarthmore aren't much good. But as a whole, they're in a middle ground, along with the private Two-year Colleges. Liberal Arts schools absorbed significant enrollment increases (16%) while the private Two-year Colleges actually shrank (by 2%). This is reflected in the change in their subsidies (at \$56 and \$312). Private Liberal Arts and Two-year Colleges did, however, turn similar percentage increases in sticker price (32% and 33%) into similar increases in tuition income (\$1,025 and \$1,044) with rather similar effects on educational spending per student (up \$1,081 and \$1,356). The Liberal Arts Colleges devoted considerably more of their sticker price increases to financial aid – to price discounting (60% versus 44%) -- but they wound up with roughly the same increase in the price of their education between 1987 and 1995 with 11% and 13%, respectively.

A final take on competition in the private sector (and public): the figures and Appendix Tables 4 shows the allocation of sticker price increases in the first and second half of the period, separately. The bland near-uniformity of the results reported above for the whole of the period is replaced by a sense of how these schools changed as they encountered their hard – or easy – times.

But first, a digression on interpretation of this allocation of sticker price increases to redistribute student subsidies from a general subsidy to individual financial aid. That shift can describe movement to a “high-tuition-high-aid policy” – one that moves to a high sticker price to be paid by those who can afford it and, at the same time, makes more

generous financial aid awards to those who can't. It is an egalitarian policy designed to increase access and spend the donors' money on students who need help instead of those who don't. But the numbers will look exactly the same if schools are moving, instead, toward an aggressive marketing strategy that price-discriminates among students, discounting the sticker price in order to charge each student just what he's willing to pay. The students' economic need – ability to pay – doesn't enter in, but only their willingness to pay; when student quality is stressed, it's "merit aid;" or, more neutrally, "non-need aid." The technique, under the pressures of competition, has become very sophisticated very fast and is sold to college administration as SEM, or Student Enrollment Management.

The reason for making much of that is that we want to describe the very large use of sticker price increases for financial aid in the *public* Two-year Colleges as a move toward a high-tuition-high-aid policy yet identify the same use of sticker price increases among *private* colleges as evidence of aggressive, competitive marketing. It's important to be clear that there's nothing in these data that justifies our doing that, but we think it's correct.

That said, among all schools, the second part of the period saw a much smaller part of sticker price increases used to increase tuition income (from 56% to 44%) and therefore a much larger part (the remainder in each case) used for price discounting. Yet, even that obscures the very different circumstances of the public and private schools. Privatization and the withdrawal of taxpayer support encouraged public institutions to increase the

share of sticker price increases going to increase tuition income (from 43% to 53%) while competition encouraged the private sector schools to increase the share going to financial aid and price discounting (from 42% to 60%). Indeed, it appears that aside from the protected Two-year schools, the public sector had a large and growing determination to use sticker prices to increase tuition income (just as the public suspects) – it is only the very large size and small allocation to tuition income of those public Two-year schools that keeps that fact from showing up in the totals. Among private schools, it appears that the most hard-pressed – Comprehensive Universities, Liberal Arts, and Two-year Colleges – shifted abruptly, raising sticker prices in order to increase price discounting in the later part of the period: from 42% to 54%; from 50% to 68%; from -10% to 69%.

III. Conclusion

Recognizing that colleges support their educational spending through a combination of tuition income and (the larger part) subsidies gives a useful “global” perspective on the circumstances and strategies of public and private schools and how they differed in the eight years between 1986-87 and 1994-95. It’s clear that different schools lived in different worlds. Those in the public sector were, by and large, starved by a tax revolt and inundated by increased enrollments that forced their increasing privatization – the shift of financial responsibility from society to student. The public Research Universities appear to have been strong enough to restrict admissions and raise net prices; the public Two-year Colleges were apparently politically powerful enough to be spared much of the need to privatize; the rest – the public Comprehensive and Doctoral Universities and Liberal Arts Colleges – were forced to raise prices and cut spending or reduce quality

making them relatively less attractive in 1995 than in 1987. Schools in the private sector suffered less from withdrawal of donor support and were better able to increase educational expenditures using proportionately smaller tuition increases. That allowed private colleges to increase price competition, using sticker price increases to increase financial aid discounting and increasingly to price discriminate among their students.

*Increases in
The Student's Price of a Dollar's Worth of Higher Education
1986-7 to 1994-95*

0.3%	Private Research Universities
1.8%	Private Doctoral Universities
11.1%	Private Liberal Arts Colleges
12.6%	Private Two-year Colleges
15.5%	Public Two-year Colleges
18.0%	Private Comprehensive Universities
40.0%	Public Doctoral Universities
40.3%	Public Research Universities
50.1%	Public Comprehensive Universities
76.9%	Public Liberal Arts Colleges

Only true die-hards would put a table in the concluding section of a paper, but this one nicely, we think, summarizes much of what's been happening to higher education by showing the *changes* since 1986-7 in the price of a dollar's worth of education.

All this in eight years. And, to return to Part I above, none of it – because it is a function of changing student subsidies – is apparent to business intuition or the

relationships it embeds. The public sector is being privatized; the private sector is increasingly competing on price; educational quality is improving at some schools and worsening at others; student subsidies are going up and they're going down and the relative prices and relative bargains among schools are changing markedly and appear to be affecting enrollments.

Appendix: Data Tables

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By Control & Carnegie Type:

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Table 4: Differences in Costs, Prices, Subsidies, Aid, and Enrollment; From 1987 to 1991 & 1991 to 1995

Table 5: Percentage Changes in Costs, Prices, Subsidies, Aid and Enrollment; From 1987 to 1991 & 1991 to 1995

Data Notes:

The data are taken from the 1994-95 IPEDS survey, conducted by the U.S. Department of Education's National Center for Educational Statistics. These 2,213 schools (1,165 public and 1,048 private) are a large subset of the roughly 3,300 contained in IPEDS: 67% of schools and 80% of FTE students. We filtered out schools that were unrepresentative of U.S. undergraduate higher education such as schools in Guam, schools with very low levels or percentages of undergraduate enrollments, and a few institutions with dominant medical schools. This methodology is laid out in further detail in WPEHE discussion papers 32, 35, 40, and 41r.

The tables disaggregate the data in three ways: by public or private control, Carnegie type categories (research, doctoral, and comprehensive universities, liberal arts and two-year colleges, and the catch-all "specialized institutions" category), and by the size of a school's student subsidy. All of the tables report information for all institutions taken together and separately for those under public or private control. The first five tables look at differences by Carnegie type, and the second five divide the schools up by the size of the total subsidy that they offer their average student. Within each set of five tables, the first three look at the broad period from 1987 to 1995, tracing out levels, differences across the period, and percentage changes. The remaining two replicate the difference and percentage change tables for the sub-periods from 1987 to 91 and 1991 to 95.

Enrollment – This represents average "Full Time Equivalent" undergraduate enrollment for the Fall of 1994. FTE enrollment takes the existence of part-time students, counting them as 1/3 of a full time student. [DP-32]

Subsidy – Educational cost per student minus net price per student, or Column (5) less Column (4). [DP-32]

Educational Costs – The cost per student of providing a year of education – all direct educational costs including, importantly, the cost of using land, buildings, and equipment, and an appropriate share of joint costs. For a complete accounting of college costs, see DPs-32 and 46. Data limitations preclude separating graduate from undergraduate students so the reported figures will be sensitive to the proportion of graduate enrollments. [DP-32]

Net Tuition – The amount the average student actually paid for a year of education. Relative to other table variables it is Sticker Price minus Individual Student Aid, or Column (5) less Column (7). [DP-32]

Sticker Price – The school's posted, or nominal, tuition. The amount paid by those who do not receive financial aid grants. [DP-32]

General Subsidy – The portion of Subsidy which is given to all students at a school, by setting sticker price less than cost. More formally, it is Column (3) less Column (5), or Column (2) less Column (7). [DP-32]

Individual Student Aid – The portion of Subsidy which is granted based on individual student characteristics (merit, need, etc.). It is Subsidy minus General Subsidy, or Column (2) less Column (6). [DP-32]

Net Price/Cost Ratio – This is simply Column (4) divided by Column (3), and represents what fraction of total costs the average student actually pays for. [DP-42, 41r]

Fraction of Increase in Sticker Price that Raises Net Tuition – The part of a sticker price increase used to increase the school's net tuition income. It is one minus the part used to re-distribute subsidy from general subsidy to financial aid. Also, Column (4) divided by Column (5) in Tables 2 and 4. [DP-41r]

NOTE: All Discussion Papers of the Williams Project on the Economics of Higher Education are downloadable from the Project website at

<http://www.williams.edu/wpehe>.

Carnegie Type Table 1

Costs, Prices, Subsidies, Aid, and Enrollment

*By Control and Carnegie Type
1987 and 1995 Academic Years*

	Number of Institutions	<u>Enrollment</u>		<u>Subsidy</u>		<u>Educational Costs</u>		<u>Net Tuition</u>		<u>Sticker Price</u>		<u>General Subsidy</u>		<u>Individual Student Aid</u>		<u>Net Price/ Cost Ratio</u>	
		<i>in 1995 \$</i>		1987	1995	1987	1995	1987	1995	1987	1995	1987	1995	1987	1995	1987	1995
		<i>N</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)							
All Institutions	2,269	3,287	3,747	8,498	8,324	11,635	12,209	3,137	3,885	4,592	6,135	7,043	6,074	1,455	2,251	27.0%	31.8%
All Public	1,197	4,656	5,352	8,317	8,029	9,224	9,264	906	1,235	1,616	2,275	7,608	6,989	710	1,040	9.8%	13.3%
All Private	1,072	1,765	1,962	8,699	8,653	14,316	15,482	5,616	6,829	7,901	10,426	6,415	5,056	2,284	3,597	39.2%	44.1%
<u>Public Institutions</u>																	
Research	72	20,343	21,053	10,913	10,761	12,979	13,857	2,066	3,096	3,005	4,511	9,974	9,346	939	1,415	15.9%	22.3%
Doctoral	54	10,087	11,331	9,555	8,776	11,411	11,361	1,855	2,585	2,626	3,722	8,785	7,640	771	1,137	16.3%	22.8%
Comprehensive	254	5,736	6,576	8,949	8,227	10,180	10,052	1,232	1,825	2,065	2,916	8,115	7,137	834	1,091	12.1%	18.2%
Liberal Arts	75	2,023	2,554	9,201	8,203	10,082	9,704	881	1,501	1,939	2,786	8,143	6,918	1,057	1,285	8.7%	15.5%
Two-Year	722	2,567	3,198	7,407	7,371	7,995	8,055	588	684	1,186	1,625	6,809	6,430	598	941	7.4%	8.5%
Specialized	20	1,946	2,142	16,607	16,373	17,839	18,086	1,232	1,714	2,040	3,056	15,799	15,030	808	1,343	6.9%	9.5%
<u>Private Institutions</u>																	
Research	38	11,068	11,823	17,733	21,077	27,432	32,658	9,699	11,581	13,303	16,911	14,129	15,747	3,604	5,330	35.4%	35.5%
Doctoral	40	5,390	5,699	7,264	8,073	16,544	18,807	9,280	10,734	11,415	14,034	5,129	4,772	2,135	3,300	56.1%	57.1%
Comprehensive	235	2,103	2,458	6,720	5,862	12,723	13,232	6,003	7,370	7,821	10,488	4,902	2,743	1,818	3,119	47.2%	55.7%
Liberal Arts	505	1,069	1,238	9,566	9,622	14,910	15,991	5,344	6,369	7,983	10,534	6,926	5,458	2,640	4,165	35.8%	39.8%
Two-Year	131	652	639	6,475	6,787	10,276	11,632	3,801	4,845	5,642	7,520	4,635	4,112	1,840	2,675	37.0%	41.7%
Specialized	123	963	972	8,809	8,171	14,135	15,079	5,326	6,908	7,113	9,545	7,022	5,534	1,787	2,637	37.7%	45.8%

Carnegie Type Table 2
**Differences in Costs, Prices, Subsidies, Aid
and Enrollment**
1987 to 1995

<i>in 1995 \$</i>	<u>Enrollment</u>	<u>Subsidy</u>	<u>Educational Costs</u>	<u>Net Tuition</u>	<u>Sticker Price</u>	<u>General Subsidy</u>	<u>Individual Student Aid</u>	<u>Fraction of Increase in Sticker Price that Raises Net Tuition</u>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
All Institutions	460	-174	574	748	1,543	-969	795	48.5%
All Public	696	-288	41	329	659	-618	330	50.0%
All Private	197	-47	1,166	1,213	2,526	-1,359	1,312	48.0%
<u>Public Institutions</u>								
Research	711	-152	878	1,030	1,506	-628	476	68.4%
Doctoral	1,244	-779	-49	730	1,096	-1,145	366	66.6%
Comprehensive	840	-721	-128	593	850	-978	257	69.8%
Liberal Arts	531	-998	-379	619	847	-1,226	228	73.1%
Two-Year	631	-36	60	96	439	-379	343	21.9%
Specialized	195	-234	247	481	1,016	-769	535	47.4%
<u>Private Institutions</u>								
Research	755	3,344	5,226	1,882	3,608	1,618	1,726	52.2%
Doctoral	309	809	2,263	1,454	2,619	-356	1,166	55.5%
Comprehensive	355	-858	508	1,366	2,667	-2,159	1,301	51.2%
Liberal Arts	168	56	1,081	1,025	2,550	-1,469	1,525	40.2%
Two-Year	-14	312	1,356	1,044	1,878	-523	834	55.6%
Specialized	8	-638	944	1,582	2,432	-1,488	849	65.1%

Carnegie Type Table 3
**Percentage Changes in Costs, Prices, Subsidies, Aid
and Enrollment**
1987 to 1995

	<u>Enrollment</u>	<u>Subsidy</u>	<u>Educational Costs</u>	<u>Net Tuition</u>	<u>Sticker Price</u>	<u>General Subsidy</u>	<u>Individual Student Aid</u>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
All Institutions	14.0%	-2.0%	4.9%	23.8%	33.6%	-13.8%	54.6%
All Public	15.0%	-3.5%	0.4%	36.4%	40.8%	-8.1%	46.5%
All Private	11.2%	-0.5%	8.1%	21.6%	32.0%	-21.2%	57.5%
<u>Public Institutions</u>							
Research	3.5%	-1.4%	6.8%	49.8%	50.1%	-6.3%	50.7%
Doctoral	12.3%	-8.2%	-0.4%	39.4%	41.8%	-13.0%	47.5%
Comprehensive	14.7%	-8.1%	-1.3%	48.2%	41.2%	-12.1%	30.8%
Liberal Arts	26.2%	-10.8%	-3.8%	70.3%	43.7%	-15.0%	21.5%
Two-Year	24.6%	-0.5%	0.8%	16.3%	37.0%	-5.6%	57.4%
Specialized	10.0%	-1.4%	1.4%	39.1%	49.8%	-4.9%	66.2%
<u>Private Institutions</u>							
Research	6.8%	18.9%	19.0%	19.4%	27.1%	11.4%	47.9%
Doctoral	5.7%	11.1%	13.7%	15.7%	22.9%	-6.9%	54.6%
Comprehensive	16.9%	-12.8%	4.0%	22.8%	34.1%	-44.0%	71.6%
Liberal Arts	15.8%	0.6%	7.3%	19.2%	31.9%	-21.2%	57.8%
Two-Year	-2.1%	4.8%	13.2%	27.5%	33.3%	-11.3%	45.3%
Specialized	0.9%	-7.2%	6.7%	29.7%	34.2%	-21.2%	47.5%

Carnegie Type Table 4
Differences in Costs, Prices, Subsidies, Aid, and Enrollment
1987 to 1991 and 1991 to 1995

<i>in 1995 \$</i>	Enrollment		Subsidy		Educational Costs		Net Tuition And Fees		Sticker Price		General Subsidy		Individual Student Aid		Fraction of Increase in Sticker Price that Raises Net Tuition	
	87 - '91	91 - '95	87 - '91	91 - '95	87 - '91	91 - '95	87 - '91	91 - '95	87 - '91	91 - '95	87 - '91	91 - '95	87 - '91	91 - '95	87 - '91	91 - '95
	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)	
All Institutions	336	124	-297	123	50	524	347	401	622	921	-572	-398	274	521	55.8%	43.5%
All Public	526	170	-335	46	-251	292	84	245	195	465	-445	-173	111	219	43.2%	52.8%
All Private	124	74	-255	209	384	782	640	574	1,096	1,429	-712	-647	457	856	58.3%	40.1%
<u>Public Institutions</u>																
Research	1,073	-362	-178	26	139	739	317	713	478	1,028	-339	-288	161	315	66.3%	69.4%
Doctoral	1,225	19	-702	-78	-528	479	173	557	294	802	-823	-323	121	245	58.9%	69.4%
Comprehensive	680	161	-646	-75	-475	347	171	423	239	611	-714	-264	68	189	71.5%	69.1%
Liberal Arts	366	165	-620	-378	-471	92	149	470	259	588	-730	-496	110	117	57.5%	80.0%
Two-Year	388	243	-234	198	-221	282	13	83	133	306	-354	-25	120	223	9.5%	27.2%
Specialized	87	108	1,627	-1,861	1,796	-1,549	169	312	267	749	1,529	-2,298	98	437	63.4%	41.6%
<u>Private Institutions</u>																
Research	348	408	2,057	1,287	3,129	2,096	1,072	810	1,785	1,823	1,344	273	712	1,014	60.1%	44.4%
Doctoral	199	110	556	253	911	1,352	355	1,098	775	1,844	136	-492	420	746	45.8%	59.6%
Comprehensive	220	135	-653	-205	17	491	670	696	1,160	1,507	-1,143	-1,016	490	811	57.8%	46.2%
Liberal Arts	98	71	-263	319	309	773	572	453	1,139	1,412	-830	-639	567	958	50.2%	32.1%
Two-Year	20	-34	-815	1,126	-177	1,533	637	407	577	1,302	-754	232	-60	895	110.5%	31.3%
Specialized	52	-44	119	-758	943	0	824	758	1,215	1,216	-272	-1,216	391	458	67.8%	62.3%

Carnegie Type Table 5
Percentage Changes in Costs, Prices, Subsidies, Aid, and Enrollment
1987 to 1991 and 1991 to 1995

	Enrollment		Enrollment		Subsidy		Educational Costs		Net Tuition And Fees		Sticker Price		General Subsidy		Individual Student Aid	
	87 - '91	91 - '95	87 - '91	91 - '95	87 - '91	91 - '95	87 - '91	91 - '95	87 - '91	91 - '95	87 - '91	91 - '95	87 - '91	91 - '95	87 - '91	91 - '95
	(1)		(1)		(2)		(3)		(4)		(5)		(6)		(7)	
All Institutions	10.2%	3.4%	10.2%	3.3%	-3.5%	1.5%	0.4%	4.5%	11.1%	11.5%	13.5%	17.7%	-8.1%	-6.1%	18.9%	30.1%
All Public	11.3%	3.3%	11.3%	3.2%	-4.0%	0.6%	-2.7%	3.3%	9.3%	24.8%	12.0%	25.7%	-5.9%	-2.4%	15.6%	26.7%
All Private	7.0%	3.9%	7.0%	3.7%	-2.9%	2.5%	2.7%	5.3%	11.4%	9.2%	13.9%	15.9%	-11.1%	-11.4%	20.0%	31.2%
<u>Public Institutions</u>																
Research	5.3%	-1.7%	5.3%	-1.7%	-1.6%	0.2%	1.1%	5.6%	15.3%	29.9%	15.9%	29.5%	-3.4%	-3.0%	17.2%	28.6%
Doctoral	12.1%	0.2%	12.1%	0.2%	-7.3%	-0.9%	-4.6%	4.4%	9.3%	27.4%	11.2%	27.5%	-9.4%	-4.1%	15.7%	27.5%
Comprehensive	11.9%	2.5%	11.9%	2.4%	-7.2%	-0.9%	-4.7%	3.6%	13.9%	30.1%	11.6%	26.5%	-8.8%	-3.6%	8.2%	20.9%
Liberal Arts	18.1%	6.9%	18.1%	6.4%	-6.7%	-4.4%	-4.7%	1.0%	16.9%	45.6%	13.4%	26.7%	-9.0%	-6.7%	10.4%	10.1%
Two-Year	15.1%	8.2%	15.1%	7.6%	-3.2%	2.8%	-2.8%	3.6%	2.2%	13.9%	11.2%	23.2%	-5.2%	-0.4%	20.1%	31.1%
Specialized	4.5%	5.3%	4.5%	5.1%	9.8%	-10.2%	10.1%	-7.9%	13.7%	22.3%	13.1%	32.5%	9.7%	-13.3%	12.1%	48.2%
<u>Private Institutions</u>																
Research	3.1%	3.6%	3.1%	3.4%	11.6%	6.5%	11.4%	6.9%	11.1%	7.5%	13.4%	12.1%	9.5%	1.8%	19.8%	23.5%
Doctoral	3.7%	2.0%	3.7%	1.9%	7.6%	3.2%	5.5%	7.7%	3.8%	11.4%	6.8%	15.1%	2.6%	-9.3%	19.7%	29.2%
Comprehensive	10.4%	5.8%	10.4%	5.5%	-9.7%	-3.4%	0.1%	3.9%	11.2%	10.4%	14.8%	16.8%	-23.3%	-27.0%	26.9%	35.2%
Liberal Arts	9.2%	6.0%	9.2%	5.7%	-2.8%	3.4%	2.1%	5.1%	10.7%	7.7%	14.3%	15.5%	-12.0%	-10.5%	21.5%	29.9%
Two-Year	3.1%	-5.0%	3.1%	-5.3%	-12.6%	19.9%	-1.7%	15.2%	16.8%	9.2%	10.2%	20.9%	-16.3%	6.0%	-3.3%	50.3%
Specialized	5.4%	-4.3%	5.4%	-4.5%	1.4%	-8.5%	6.7%	0.0%	15.5%	12.3%	17.1%	14.6%	-3.9%	-18.0%	21.9%	21.0%

Subsidy Size Table 1
Costs, Prices, Subsidies, Aid, and Enrollment
1987 and 1995 Academic Years

	<u>Enrollment</u>		<u>Subsidy</u>		<u>Educational Costs</u>		<u>Net Tuition</u>		<u>Sticker Price</u>		<u>General Subsidy</u>		<u>Individual Student Aid</u>		<u>Net Price/ Cost Ratio</u>	
	1987	1995	1987	1995	1987	1995	1987	1995	1987	1995	1987	1995	1987	1995	1987	1995
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)								
<i>in 1995 \$</i>																
All Institutions	3,287	3,747	8,498	8,324	11,635	12,209	3,137	3,885	4,592	6,135	7,043	6,074	1,455	2,251	27.0%	31.8%
All Public	4,656	5,352	8,317	8,029	9,224	9,264	906	1,235	1,616	2,275	7,608	6,989	710	1,040	9.8%	13.3%
All Private	1,765	1,962	8,699	8,653	14,316	15,482	5,616	6,829	7,901	10,426	6,415	5,056	2,284	3,597	39.2%	44.1%
Public Institutions																
Decile 1	6,822	7,388	15,224	14,319	16,344	16,058	1,120	1,739	2,186	3,273	14,158	12,786	1,066	1,533	6.9%	10.8%
Decile 2	4,881	5,495	11,007	10,452	11,853	11,645	846	1,192	1,768	2,434	10,085	9,211	922	1,241	7.1%	10.2%
Decile 3	5,628	6,132	9,818	9,160	10,739	10,554	920	1,394	1,762	2,480	8,977	8,074	842	1,086	8.6%	13.2%
Decile 4	5,124	5,580	8,627	8,417	9,520	9,558	892	1,141	1,590	2,213	7,930	7,345	698	1,072	9.4%	11.9%
Decile 5	4,443	4,999	8,110	7,753	8,964	8,955	854	1,203	1,604	2,250	7,361	6,705	749	1,048	9.5%	13.4%
Decile 6	3,891	4,558	7,258	7,203	8,009	8,226	751	1,023	1,412	2,002	6,597	6,224	661	979	9.4%	12.4%
Decile 7	4,068	4,893	6,874	6,561	7,749	7,750	874	1,189	1,503	2,112	6,245	5,637	629	924	11.3%	15.3%
Decile 8	4,173	5,099	6,056	6,178	6,979	7,316	923	1,138	1,512	2,088	5,468	5,228	588	950	13.2%	15.6%
Decile 9	3,693	4,466	5,637	5,591	6,600	6,785	963	1,194	1,505	2,035	5,095	4,750	542	841	14.6%	17.6%
Decile 10	3,824	4,903	4,527	4,628	5,441	5,765	915	1,137	1,312	1,856	4,129	3,909	398	718	16.8%	19.7%
Private Institutions																
Decile 1	2,845	3,055	21,549	23,259	29,194	32,079	7,645	8,820	11,273	14,082	17,921	17,997	3,628	5,262	26.2%	27.5%
Decile 2	1,098	1,213	12,736	12,766	17,976	19,083	5,240	6,317	8,338	10,988	9,639	8,095	3,098	4,671	29.2%	33.1%
Decile 3	1,158	1,210	10,800	10,461	16,069	16,938	5,269	6,477	8,060	10,938	8,009	6,000	2,791	4,461	32.8%	38.2%
Decile 4	1,347	1,489	9,370	8,788	14,426	14,975	5,056	6,187	7,537	9,868	6,889	5,107	2,481	3,681	35.0%	41.3%
Decile 5	2,055	2,238	8,230	7,685	14,069	14,884	5,839	7,198	8,236	10,967	5,833	3,917	2,397	3,768	41.5%	48.4%
Decile 6	1,301	1,487	7,167	6,659	12,407	13,237	5,240	6,578	7,393	10,048	5,014	3,188	2,153	3,471	42.2%	49.7%
Decile 7	1,766	2,073	5,996	5,951	11,575	12,845	5,579	6,894	7,492	10,259	4,083	2,586	1,913	3,365	48.2%	53.7%
Decile 8	2,132	2,462	4,907	4,959	10,429	11,543	5,522	6,585	7,256	9,499	3,174	2,045	1,733	2,914	53.0%	57.0%
Decile 9	1,892	2,100	3,977	3,794	9,362	10,342	5,385	6,548	6,936	9,125	2,426	1,217	1,551	2,577	57.5%	63.3%
Decile 10	2,062	2,300	2,194	2,132	7,582	8,823	5,388	6,691	6,476	8,474	1,106	349	1,088	1,783	71.1%	75.8%

Subsidy Size Table 2
**Differences in Costs, Prices, Subsidies, Aid
and Enrollment**
1987 to 1995

<u>in 1995 \$</u>	Enrollment	Subsidy	Educational Costs	Net Tuition	Sticker Price	General Subsidy	Individual Student Aid	Fraction of Increase in Sticker Price that Raises Net Tuition
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
All Institutions	460	-174	574	748	1,543	-969	795	48.5%
All Public	696	-288	41	329	659	-618	330	50.0%
All Private	197	-47	1,166	1,213	2,526	-1,359	1,312	48.0%
<u>Public Institutions</u>								
Decile 1	566	-905	-286	619	1,087	-1,372	467	57.0%
Decile 2	614	-555	-208	346	665	-874	319	52.0%
Decile 3	504	-658	-184	474	719	-903	245	66.0%
Decile 4	456	-210	38	249	623	-585	374	39.9%
Decile 5	556	-357	-9	348	647	-656	299	53.8%
Decile 6	667	-56	216	272	590	-373	318	46.1%
Decile 7	825	-313	1	314	609	-608	295	51.6%
Decile 8	926	122	337	215	577	-240	362	37.2%
Decile 9	773	-46	185	231	530	-345	299	43.6%
Decile 10	1,078	101	323	223	543	-220	321	41.0%
<u>Private Institutions</u>								
Decile 1	210	1,710	2,885	1,175	2,809	76	1,634	41.8%
Decile 2	115	30	1,107	1,077	2,650	-1,544	1,573	40.6%
Decile 3	52	-339	869	1,208	2,878	-2,008	1,670	42.0%
Decile 4	143	-582	549	1,132	2,331	-1,782	1,200	48.5%
Decile 5	183	-545	815	1,360	2,731	-1,917	1,372	49.8%
Decile 6	186	-508	829	1,338	2,655	-1,825	1,317	50.4%
Decile 7	307	-45	1,270	1,315	2,767	-1,497	1,452	47.5%
Decile 8	330	52	1,114	1,062	2,243	-1,129	1,181	47.4%
Decile 9	208	-183	980	1,163	2,189	-1,209	1,026	53.1%
Decile 10	237	-62	1,241	1,303	1,998	-757	695	65.2%

Subsidy Size Table 3
Percentage Changes in Costs, Prices, Subsidies, Aid
and Enrollment
1987 to 1995

<i>in 1995 \$</i>	Enrollment	Subsidy	Educational Costs	Net Tuition	Sticker Price	General Subsidy	Individual Student Aid
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
All Institutions	14.0%	-2.0%	4.9%	23.8%	33.6%	-13.8%	54.6%
All Public	15.0%	-3.5%	0.4%	36.4%	40.8%	-8.1%	46.5%
All Private	11.2%	-0.5%	8.1%	21.6%	32.0%	-21.2%	57.5%
<u>Public Institutions</u>							
Decile 1	8.3%	-5.9%	-1.7%	55.3%	49.7%	-9.7%	43.8%
Decile 2	12.6%	-5.0%	-1.8%	40.9%	37.6%	-8.7%	34.6%
Decile 3	9.0%	-6.7%	-1.7%	51.5%	40.8%	-10.1%	29.1%
Decile 4	8.9%	-2.4%	0.4%	27.9%	39.2%	-7.4%	53.6%
Decile 5	12.5%	-4.4%	-0.1%	40.7%	40.3%	-8.9%	39.9%
Decile 6	17.1%	-0.8%	2.7%	36.2%	41.8%	-5.7%	48.1%
Decile 7	20.3%	-4.6%	0.0%	35.9%	40.5%	-9.7%	46.9%
Decile 8	22.2%	2.0%	4.8%	23.3%	38.2%	-4.4%	61.5%
Decile 9	20.9%	-0.8%	2.8%	24.0%	35.2%	-6.8%	55.1%
Decile 10	28.2%	2.2%	5.9%	24.3%	41.4%	-5.3%	80.6%
<u>Private Institutions</u>							
Decile 1	7.4%	7.9%	9.9%	15.4%	24.9%	0.4%	45.0%
Decile 2	10.4%	0.2%	6.2%	20.6%	31.8%	-16.0%	50.8%
Decile 3	4.5%	-3.1%	5.4%	22.9%	35.7%	-25.1%	59.8%
Decile 4	10.6%	-6.2%	3.8%	22.4%	30.9%	-25.9%	48.4%
Decile 5	8.9%	-6.6%	5.8%	23.3%	33.2%	-32.9%	57.2%
Decile 6	14.3%	-7.1%	6.7%	25.5%	35.9%	-36.4%	61.2%
Decile 7	17.4%	-0.7%	11.0%	23.6%	36.9%	-36.7%	75.9%
Decile 8	15.5%	1.1%	10.7%	19.2%	30.9%	-35.6%	68.1%
Decile 9	11.0%	-4.6%	10.5%	21.6%	31.6%	-49.8%	66.1%
Decile 10	11.5%	-2.8%	16.4%	24.2%	30.8%	-68.4%	63.9%

Subsidy Size Table 4

Differences in Costs, Prices, Subsidies, Aid, and Enrollment

1987 to 1991 and 1991 to 1995

<i>in 1995 \$</i>	<u>Enrollment</u>		<u>Subsidy</u>		<u>Educational</u>		<u>Net Tuition</u>		<u>Sticker Price</u>		<u>General Subsidy</u>		<u>Individual</u>		<u>Fraction of Increase in Sticker</u>	
					<u>Costs</u>		<u>And Fees</u>						<u>Student Aid</u>		<u>Price that Raises Net Tuition</u>	
	87 - '91	91 - '95	87 - '91	91 - '95	87 - '91	91 - '95	87 - '91	91 - '95	87 - '91	91 - '95	87 - '91	91 - '95	87 - '91	91 - '95	87 - '91	91 - '95
	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)	
All Institutions	336	124	-297	123	50	524	347	401	622	921	-572	-398	274	521	55.8%	43.5%
All Public	526	170	-335	46	-251	292	84	245	195	465	-445	-173	111	219	43.2%	52.8%
All Private	124	74	-255	209	384	782	640	574	1,096	1,429	-712	-647	457	856	58.3%	40.1%
<u>Public Institutions</u>																
Decile 1	381	186	-15	-890	217	-503	232	387	336	750	-119	-1,253	105	363	68.9%	51.6%
Decile 2	402	212	-455	-100	-390	182	64	282	125	541	-515	-359	61	259	51.5%	52.1%
Decile 3	405	99	-638	-20	-458	274	180	294	258	461	-716	-187	78	167	69.9%	63.7%
Decile 4	476	-20	-266	55	-264	303	1	247	133	490	-398	-187	132	242	0.9%	50.5%
Decile 5	400	156	-455	97	-394	385	60	288	157	490	-551	-105	97	202	38.4%	58.8%
Decile 6	496	171	-193	137	-156	372	38	235	173	417	-329	-45	136	182	21.7%	56.3%
Decile 7	646	179	-497	184	-412	413	85	229	189	420	-601	-7	104	191	44.9%	54.6%
Decile 8	670	255	-186	308	-133	469	53	161	183	393	-316	76	130	232	29.1%	41.1%
Decile 9	598	175	-364	318	-321	506	43	188	174	356	-495	150	131	168	24.8%	52.9%
Decile 10	790	288	-278	379	-196	519	83	140	215	328	-411	191	133	188	38.3%	42.7%
<u>Private Institutions</u>																
Decile 1	96	114	1,137	573	1,848	1,038	710	465	1,384	1,425	463	-387	674	960	51.3%	32.6%
Decile 2	72	42	-356	386	362	745	718	359	1,080	1,570	-718	-826	362	1,211	66.5%	22.9%
Decile 3	33	19	-388	49	395	474	783	425	1,296	1,582	-901	-1,108	513	1,157	60.4%	26.9%
Decile 4	64	78	-627	45	-86	636	541	590	1,048	1,284	-1,134	-648	506	693	51.7%	46.0%
Decile 5	161	22	-453	-92	136	679	589	771	1,025	1,706	-889	-1,027	436	935	57.4%	45.2%
Decile 6	118	68	-441	-67	230	599	672	666	1,232	1,423	-1,002	-824	560	757	54.5%	46.8%
Decile 7	171	136	-421	376	204	1,066	625	690	1,199	1,568	-995	-502	574	878	52.1%	44.0%
Decile 8	247	83	-268	320	247	867	515	547	947	1,296	-700	-429	432	749	54.4%	42.2%
Decile 9	174	34	-417	234	247	733	663	500	904	1,285	-658	-551	241	785	73.3%	38.9%
Decile 10	99	138	-321	259	257	984	578	725	843	1,155	-586	-171	265	430	68.6%	62.8%

Subsidy Size Table 5
Percentage Changes in Costs, Prices, Subsidies, Aid, and Enrollment
1987 to 1991 and 1991 to 1995

<i>in 1995 \$</i>	Enrollment		Subsidy		Educational Costs		Net Tuition And Fees		Sticker Price		General Subsidy		Individual Student Aid	
	87 - '91	91 - '95	87 - '91	91 - '95	87 - '91	91 - '95	87 - '91	91 - '95	87 - '91	91 - '95	87 - '91	91 - '95	87 - '91	91 - '95
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
All Institutions	10.2%	3.4%	-3.5%	1.5%	0.4%	4.5%	11.1%	11.5%	13.5%	17.7%	-8.1%	-6.1%	18.9%	30.1%
All Public	11.3%	3.3%	-4.0%	0.6%	-2.7%	3.3%	9.3%	24.8%	12.0%	25.7%	-5.9%	-2.4%	15.6%	26.7%
All Private	7.0%	3.9%	-2.9%	2.5%	2.7%	5.3%	11.4%	9.2%	13.9%	15.9%	-11.1%	-11.4%	20.0%	31.2%
Public Institutions														
Decile 1	5.6%	2.6%	-0.1%	-5.9%	1.3%	-3.0%	20.7%	28.7%	15.4%	29.7%	-0.8%	-8.9%	9.8%	31.0%
Decile 2	8.2%	4.0%	-4.1%	-0.9%	-3.3%	1.6%	7.6%	30.9%	7.1%	28.6%	-5.1%	-3.7%	6.6%	26.3%
Decile 3	7.2%	1.6%	-6.5%	-0.2%	-4.3%	2.7%	19.6%	26.7%	14.6%	22.8%	-8.0%	-2.3%	9.2%	18.2%
Decile 4	9.3%	-0.3%	-3.1%	0.7%	-2.8%	3.3%	0.1%	27.7%	8.4%	28.4%	-5.0%	-2.5%	18.9%	29.2%
Decile 5	9.0%	3.2%	-5.6%	1.3%	-4.4%	4.5%	7.1%	31.5%	9.8%	27.8%	-7.5%	-1.5%	12.9%	23.9%
Decile 6	12.7%	3.9%	-2.7%	1.9%	-1.9%	4.7%	5.0%	29.8%	12.3%	26.3%	-5.0%	-0.7%	20.5%	22.8%
Decile 7	15.9%	3.8%	-7.2%	2.9%	-5.3%	5.6%	9.7%	23.9%	12.6%	24.8%	-9.6%	-0.1%	16.6%	26.0%
Decile 8	16.1%	5.3%	-3.1%	5.2%	-1.9%	6.9%	5.8%	16.5%	12.1%	23.2%	-5.8%	1.5%	22.1%	32.3%
Decile 9	16.2%	4.1%	-6.5%	6.0%	-4.9%	8.1%	4.5%	18.7%	11.6%	21.2%	-9.7%	3.3%	24.2%	24.9%
Decile 10	20.7%	6.2%	-6.1%	8.9%	-3.6%	9.9%	9.0%	14.0%	16.4%	21.5%	-10.0%	5.1%	33.4%	35.4%
Private Institutions														
Decile 1	3.4%	3.9%	5.3%	2.5%	6.3%	3.3%	9.3%	5.6%	12.3%	11.3%	2.6%	-2.1%	18.6%	22.3%
Decile 2	6.6%	3.6%	-2.8%	3.1%	2.0%	4.1%	13.7%	6.0%	13.0%	16.7%	-7.4%	-9.3%	11.7%	35.0%
Decile 3	2.9%	1.6%	-3.6%	0.5%	2.5%	2.9%	14.9%	7.0%	16.1%	16.9%	-11.2%	-15.6%	18.4%	35.0%
Decile 4	4.8%	5.6%	-6.7%	0.5%	-0.6%	4.4%	10.7%	10.5%	13.9%	15.0%	-16.5%	-11.3%	20.4%	23.2%
Decile 5	7.8%	1.0%	-5.5%	-1.2%	1.0%	4.8%	10.1%	12.0%	12.4%	18.4%	-15.2%	-20.8%	18.2%	33.0%
Decile 6	9.0%	4.8%	-6.2%	-1.0%	1.9%	4.7%	12.8%	11.3%	16.7%	16.5%	-20.0%	-20.5%	26.0%	27.9%
Decile 7	9.7%	7.0%	-7.0%	6.7%	1.8%	9.1%	11.2%	11.1%	16.0%	18.0%	-24.4%	-16.3%	30.0%	35.3%
Decile 8	11.6%	3.5%	-5.5%	6.9%	2.4%	8.1%	9.3%	9.1%	13.1%	15.8%	-22.1%	-17.3%	24.9%	34.6%
Decile 9	9.2%	1.7%	-10.5%	6.6%	2.6%	7.6%	12.3%	8.3%	13.0%	16.4%	-27.1%	-31.2%	15.6%	43.8%
Decile 10	4.8%	6.4%	-14.6%	13.8%	3.4%	12.6%	10.7%	12.2%	13.0%	15.8%	-53.0%	-32.9%	24.3%	31.8%