College Costs: Subsidies, Intuition, and Policy

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I. Introduction

Until recently, we've had an oddly fragmented picture of the economic workings of colleges and universities, mainly because of a long tradition of college "fund accounting." It had its virtues, but clarity about economic structure wasn't one of them. That's changing.

One of the first fruits of better economic information has been a clear picture of a college's "sources and uses of funds" – where the money comes from and where it goes. And one of the first fruits of that information is a better picture of their economic structure and with it the key role played by student subsidies. Most important is the deep

difference now revealed between colleges and the ordinary business firms we're familiar with.

So this paper will do three things, broadly. It will describe the economic structure of the typical college or university, it will show, as matter of some pretty straightforward arithmetic, how that differs from the structure of a business firm, and it will suggest why that fact matters so much in a world where business intuition – reinforced by economics courses – is the foundation for common sense. Business intuition doesn't just make it hard to see what's going on in higher education, where price doesn't cover production costs, it distorts our understanding by making us see the wrong thing: we search for rising educational costs when they're falling and we don't look for evidence of falling subsidies because business firms don't pay subsidies.

II. Prices, Costs, Subsidies and Strategies: The Economic Structure of a College

The most fundamental anomaly in the economics of higher education is the fact that virtually all US colleges and universities sell their primary product – education – at a price that is far less than the average cost of its production. The subsidy that that gives to nearly every college student in the country is neither temporary nor small nor granted only by government institutions: student subsidies are a permanent feature of the economics of higher education; they represent a large part of total costs; and they are only slightly smaller in private than in public institutions. In total, student subsidies exceeded $82 billion in 1995.

Subsidies involve a unique set of strategic decisions for colleges and universities and unique circumstances for public policy that are familiar neither to for-profit firms nor to the economic theories designed to understand them. In 1995, the average American college produced an $11,967 education that it sold to its students for $3,770, giving them a subsidy of $8,197 a year: it's as if cars that cost the dealer $20,000 to put on the showroom floor were routinely sold for $6,300. We expect normal, for-profit firms to grant *negative* subsidies -- to earn a profit -- by selling at a price greater than the costs of production. Non-profit firms don't do that.[1]

It's not that student subsidies have been ignored in the analysis of higher education; they have, indeed, attracted a great deal of attention ever since the 1969 Hansen-Weisbrod study showed that the university system in California subsidized higher income students at the expense of lower income taxpayers. But that study also established what has become the conventional framing of the issue of subsidies as a matter of *student* characteristics -- Which students with what characteristics get how much subsidy? In the recent work reported on here, the focus is shifted to *institutions* -- Which colleges grant how much subsidy to their students and how do they choose to do it? Subsidies are a central part of the admissions-quality-pricing policies of colleges and universities.[2]

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[1] The fundamental legal and economic characteristic of nonprofit firms is that any profits they earn cannot be distributed. See the seminal paper by Henry Hansmann, "The Role of Nonprofit Enterprise," 89 *Yale Law Journal* 835 (1980).

[2] The core studies are reported in a series of Discussion Papers from the Williams Project on the Economics of Higher Education: DP-23, "A Note on the Logic and Structure of Global Accounting," on colleges' economic information; DP-32, "Costs, Prices, Subsidies, and Aid in U.S. Higher Education," on the structural economic facts summarized here; DP-35, "Physical Capital and Capital Service Costs in U.S.

The Economic Structure of a College

Since the structure of costs, prices, subsidies, and aid in colleges and universities is not part of the familiar logic and vocabulary of for-profit economics or accounting – or the intuition it supports – it is worth a few paragraphs to spell it out.

Figure 1 provides a useful if stylized description of that economic structure in a typical college or university. In the first two columns, the stuff of a school's yearly accounts is pictured as (a) the *sources* of its income and (b) the *uses* of that income. By definition, they are equal. The height of the bars and segments represents dollars per student per year and the scale is roughly appropriate to the average student at the average college in 1995. Income is inclusive, global, income -- the value of *all* the resources that accrue to the institution in the course of the year -- rather than a sub-component of that income like the operating budget or current fund revenues that has dominated attention until recently.[3] For present purposes, not a lot of detail about the sources of income is needed -- how much of it comes separately from government appropriations, gifts and grants, asset income, auxiliary and other income, etc. -- so only tuition and auxiliary[4] income components are identified in column (a). The rest, non-tuition income, comes from what Hansmann called "donative resources" – from gifts, grants, appropriations,

Colleges and Universities, 1993," on the large role of capital services in college costs; DP-40, "The Economic Structure of Higher Education: Subsidies, Customer-Inputs, and Hierarchy," on the model of higher education implied by these facts; and DP-41, "Subsidies, Costs, Tuition and Aid in U.S. Higher Education, 1986-87 to 1993-94," on changes in these circumstances, strategy, and performance over time. All are available from wpehe@williams.edu.
[3]See, for more details on global accounting, Winston, "Global Accounting," in Massy, William F., *Resource Allocation in Higher Education*, Ann Arbor: The University of Michigan Press; 1996. The new FASB 117 accounting standards required last year go a good distance toward an economically coherent description of a college or university [DP-23].

and asset earnings. And in column (b), the uses of income can similarly be simplified,

described as auxiliary expenditures, educational and general spending (including capital

costs),[5] and saving. Finally, since auxiliary activities are usually expected to break even,

we can simplify things at the outset by setting auxiliary revenues equal to auxiliary

expenditures and ignoring them in what follows.
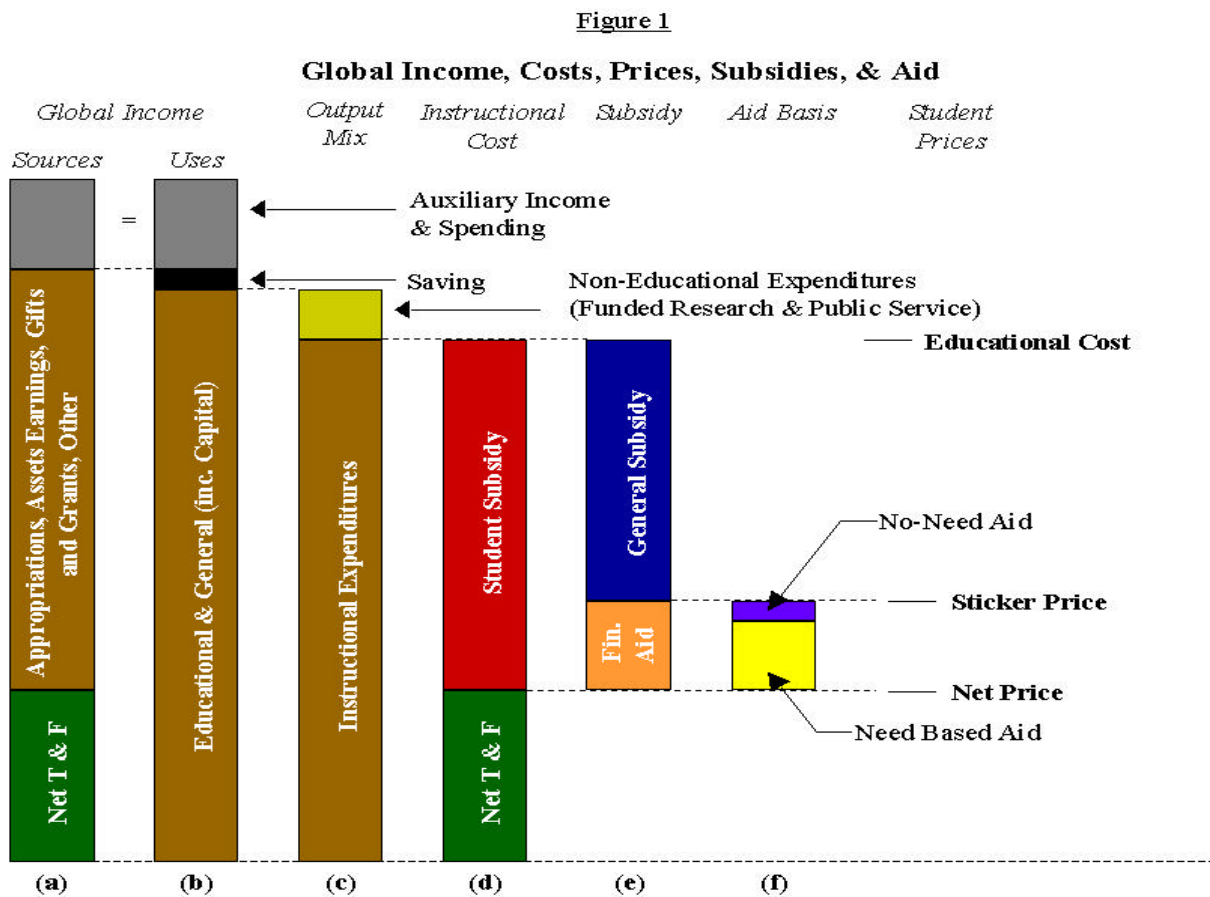
Figure 1

Global Income, Costs, Prices, Subsidies, & Aid

The sources, then, are tuition and non-tuition income. That income is used to cover the costs of production. What's left over is saving. Sources equal uses in any period.

These two broad categories, sources and uses, fully encompass yearly flows in the accounts of a for-profit firm. More details would, of course, be needed to answer important questions, but they would simply come from disaggregating columns (a) and (b) to tell where, more specifically, the money came from and where it went. In the typical for-profit firm, income would come largely from the sale of its product. When that income was larger than production costs, the firm would show a profit (positive saving); when income was smaller than costs, it would show a loss.

So a whole additional set of questions, embedded in columns (c) through (f), is introduced by the fact that for a college, only a fraction of its total income is generated by sales proceeds -- by the tuition and fees paid by its student-customers. In Figure 1, the *sources* column, (a), appropriately shows income from sources other than the sale of educational services -- non-tuition income -- to be a lot greater than tuition income. The uses column, (b), is more conventional in showing that total income can be used for production costs or, if it's big enough, that some can be left over as saving.

Together, columns (a) and (b) illustrate the fact that all those who buy the product in higher education are getting something that costs a lot more to produce than they're

paying for it -- net tuition and fee income is a good deal less than the average cost of producing the services that the student gets.

The next four columns, then, frame the key question of how that subsidy is divided up among students: the institution's decisions on the sticker price that determines the general subsidy, and on individually targeted financial aid, need-based or merit.

Column (c) recognizes that higher education is "a multi-product industry" that makes a lot of things beside instruction. The college's sale of (largely) hotel and restaurant services in the form of its auxiliary income was just noted. Other major products of the university that don't have a lot to do directly with its instructional functions are recognized by subtracting off its funded research, public service, and a share of joint costs to leave instructional costs. These are identifiable in the data.[6]

Column (d) shows how that instructional cost per student is divided between the part the average student pays in net tuition and fees -- his price -- and the part that represents a subsidy. Column (e) describes how that subsidy portion is divided, in turn, between general subsidy and individual student aid. A "general subsidy" is given equally to each student at a college whenever its sticker price is set below production cost while

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[6]It would be useful, too, to pull out all the other primary non-instructional products of the university and their costs -- like television programming through athletics -- but these can't always be disentangled from strictly instructional costs for many schools, so they aren't segregated. Fortunately, some of the largest, like Hospitals and Independent Operations, can be identified and are removed from the subsidy calculation. More subtle judgments about the "necessity" or "appropriateness" of particular components of spending are beyond the scope of this paper: while there is undoubtedly some gilding of the lily, not only are data unavailable, but it would be hard to get agreement on which spending is "too much," an issue made even more complicated by the role of subsidies in increasing student demand and selectivity [DP-40].

financial aid[7] is a further price reduction based on individual student characteristics.

Finally, column (f) divides that financial aid between the part that is awarded on the basis

of an individual student's economic *need* and the part that's based on *"merit"* -- his other

characteristics like athletic or academic abilities or race. Since the height of these

columns represents dollars per student, we can indicate, at the far right of Figure 1, the

sticker price and net price levels consistent with the breakdowns shown in the columns

(d) through (f).[8]

Strategic Decisions

The schema of Figure 1 highlights the most important strategic economic

decisions facing a college or university.[9] Given its total non-tuition income, the school

must make (implicitly, explicitly, historically...) the following choices:

A decision on size -- total enrollment -- that will influence[10] non-tuition income

per student. So, for instance, by restricting its student body to 1,300, Swarthmore has

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[7]Lee calls these "institutional subsidies" and "student subsidies." [Lee and Sango-Jordan]

[8]
    1) Income Sources = Net Tuition and Fees + Non-tuition Income + Auxiliary Income
    2) Income Uses = Auxiliary Expenditures + Saving + Educational and General Spending
           (E&G&K)
    3) E&G&K = Instructional E&G&K + Research + Service
    4) Instructional E&G&K = Net Tuition & Fees + Subsidy
    5) Subsidy = General Aid + Individual Aid
    6) Individual Aid = Need-based Aid + No-need Aid

So
    7) Income = Net Tuition and Fees + Auxiliary Expenditures + Saving + Need-based Aid + No-need Aid + General Aid + Research + Service.

[9] Were data available, we would have to include a decision on how much of total income to save each year.

[10]For a private institution with subsidy resources that are fixed without regard to enrollment -- like endowment -- size *determines* per student resources.

protected its per-student endowment income; if it had twice as many students, other things being equal, it would have half as much endowment income per student.[11]

A decision on cost per student, and hence on net tuition and fees, given its non-tuition income. A school's per student non-tuition income fixes the <u>difference</u> between costs and price -- its maximum subsidy -- but it supports <u>any</u> combination of costs and price that maintains that difference. So the school must determine, simultaneously, the nature of its educational product[12] and how much students will have to pay for it. With, say, $10,000 of non-tuition income per student to support the subsidy, one school could produce a $15,000 a year education to be sold at a $5,000 average net tuition while another produced a $35,000 a year education to sell at a $25,000 net tuition. Subsidy resources (S), costs (C), and price (P) are locked together, arithmetically and relentlessly, by $S \equiv C - P$.

A decision on mission -- output mix – determines how much of the school's total spending will go to education. At the highly stylized level of Figure 1, that's about all that can be said, but at the finer grained level on which colleges actually function, this decision involves urgent questions of identifying an institution's core activities, setting priorities, and increasing the efficiency with which those activities are done. The higher

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[11] Size enters importantly, too, as a determinant of student selectivity, but that is a subject of other papers, namely, DP-40 and "Why Can't a College Be More Like a Firm?" *Change*, September/October, 1997.
[12] It is quite inaccurate to suggest that resources translate simply into educational quality since that ignores institutional differences in mission, care, attention to students, ideology, location, and all the rest that distinguishes individual schools and it neglects the opportunities that surely exist to produce education more efficiently. Yet, the magnitude of the differences in resources per student in US data appear to justify a rough association of quality and costs, other things being equal, and the temptation to see costless elimination of waste-abuse-and-corruption as a silver bullet that avoids hard choices should certainly be resisted. Fewer dollars – given a college's mission – usually mean a lower quality education.

the share of instructional costs, the more the student is subsidized, other things being equal.

A decision on sticker price divides the subsidy into the *general* subsidy that goes to all students, undifferentiated (74% on 1995 average), and financial aid that goes to those who have specific, desirable characteristics (the remaining 26%). The same $10,000 average yearly subsidy can be given in equal amounts to all enrolled students through a sticker price set just $10,000 below instructional costs or -- at the other extreme -- it can be given through a sticker price set equal to costs, then offset selectively by individually targeted financial aid that averaged $10,000 per student. Finally,

A decision on merit-based and need-based aid -- the division of any individually differentiated subsidies – student aid – according to student characteristics, whether it is to be based on the student's economic circumstances or on other characteristics, academic or athletic or artistic merit or race or whatever.

These are strategic choices that all colleges and universities have to make about output, quality, and pricing. And they simply have no parallel in for-profit firms. In any school, history will matter a whole lot -- resources can be highly "illiquid" and traditions, cultures, alumni, and faculties resistant to change. And some public institutions will have been given limited discretion by legislatures. But Figure 1 pictures the underlying economic relationships, in their barest structural form, that define possibilities and set constraints on a college's costs, prices, subsidies, and aid. The magnitude of a school's

subsidies is determined by its access to non-tuition resources and its size and any student

subsidy is exhaustively divided between general subsidies and financial aid based on

need or on merit.

III. The Facts: Subsidies and Structure in U.S. Higher Education

The purpose of this paper is not to analyze what we've discovered about the role

of subsidies, costs, prices, and aid in the structure of U.S. higher education – that's been

done at some length elsewhere (see note 2). But it will be useful, nonetheless, to look

briefly at the facts of Table 1 with its summary data for 2,739 degree granting schools in

1995.[13]

Subsidies (Col. 3) are simply educational costs per student (Col. 4) *less* what he or

she paid the school in net tuition (Col. 5).   So, as noted in the introduction, averaged over

all schools, an $11,967 education was sold in 1995 for a price of $3,770, giving the

student an $8,197 subsidy. That, of course, is given in part as a *general* subsidy to all

students (Col.8), got by setting the sticker price (Col. 6) less than educational costs, and

in part as additional *financial aid* to some students (Col. 9), got by charging them less

than the sticker price. The "Net Price of Education" of Col. 7 is especially useful – it

describes what the average student pays for a dollar's worth of higher education. Finally,

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[13] Based on 1995 IPEDS (Integrated Postsecondary Educational Data System, published yearly by the Department of Education's National Center for Educational Statistics) data for the colleges and universities in the fifty states that reported positive expenditures, FTE enrollments of more than 100 students, of whom 20% or more were undergraduates.

the last two columns show how any given subsidy is distributed between general subsidy and financial aid.

While resisting the temptation to say much about the rich information in Table 1, the most important facts, I think, are (a) the sheer size of student subsidies (b) the fact that they are both (c) ubiquitous and (d) about the same in public and private sectors (e) distributed to students largely in the general form of sticker prices set well under costs so that little of the subsidy is left over to be given as financial aid (f) that there's a high degree of variety among schools and (g) the difference between those giving large subsidies and those giving small ones is very great. These characteristics and differences describe, I think, the core economic structure of US higher education.

IV. So What? Implications

There are three kinds of answers to the ever-important question, "So What?"

Our Mental Model of Higher Education

Most basically, understanding the structure of costs, prices, subsidies, and aid in and among colleges and universities is essential to understanding the "industry" and what it's like. If our shared conception of higher education isn't reasonably accurate, we'll look for the wrong things and fail to see the importance of the right things. A model built on the facts of Table 1 can illuminate the roles of competition, collegiate wealth, student quality and selectivity, faculty tenure, and institutional saving. And the facts of Table 1

Table 1

Subsidies, Costs, Prices, and Aid
by Control, Subsidy Size & Carnegie Classification
in Dollars Per Student [FTE]
1994 - 1995

	Number of Institutions	Enrollments Average	Subsidy	Educational Spending	Net Tuition and Fees	Sticker Price	Net Price of Education	General Subsidy	Financial Aid	General as Percent Subsidy	Aid as Percent Subsidy
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
All Institutions	**2,739**	**3,493**	**8,197**	**11,967**	**3,770**	**5,919**	**31.5%**	**6,048**	**2,149**	**73.8%**	**26.2%**
Public	**1,420**	**5,140**	**8,686**	**9,919**	**1,233**	**2,272**	**12.4%**	**7,648**	**1,038**	**88.0%**	**12.0%**
Private	**1,319**	**1,721**	**7,670**	**14,172**	**6,502**	**9,846**	**45.9%**	**4,326**	**3,344**	**56.4%**	**43.6%**
Public Institutions by Subsidy Size											
Decile 1	142	5,316	22,915	24,551	1,636	3,257	6.7%	21,295	1,621	92.9%	7.1%
Decile 2	142	5,695	10,516	11,680	1,163	2,471	10.0%	9,208	1,308	87.6%	12.4%
Decile 3	142	6,060	9,082	10,311	1,229	2,405	11.9%	7,906	1,176	87.0%	13.0%
Decile 4	142	5,310	8,260	9,567	1,307	2,394	13.7%	7,173	1,087	86.8%	13.2%
Decile 5	142	5,294	7,592	8,738	1,145	2,165	13.1%	6,573	1,020	86.6%	13.4%
Decile 6	142	4,816	6,931	8,031	1,101	2,057	13.7%	5,974	956	86.2%	13.8%
Decile 7	142	4,867	6,364	7,448	1,084	1,976	14.6%	5,472	892	86.0%	14.0%
Decile 8	142	4,224	5,810	6,981	1,171	2,032	16.8%	4,950	861	85.2%	14.8%
Decile 9	142	5,304	5,215	6,330	1,115	1,907	17.6%	4,424	792	84.8%	15.2%
Decile 10	142	4,511	4,174	5,555	1,381	2,053	24.9%	3,502	672	83.9%	16.1%
Public Institutions by Carnegie Type											
Research	83	21,399	10,298	13,448	3,150	4,571	23.4%	8,877	1,421	86.2%	13.8%
Doctoral	63	11,363	8,499	11,155	2,656	3,776	23.8%	7,378	1,121	86.8%	13.2%
Comprehensive	271	6,428	8,117	9,933	1,816	2,907	18.3%	7,026	1,091	86.6%	13.4%
Liberal Arts	80	2,477	7,809	9,389	1,580	2,857	16.8%	6,532	1,277	83.7%	16.3%
Two-Year	874	3,186	7,309	8,022	714	1,623	8.9%	6,399	910	87.6%	12.4%
Specialized	49	1,672	35,338	36,978	1,640	3,537	4.4%	33,442	1,896	94.6%	5.4%
Private Institutions by Subsidy Size											
Decile 1	132	2,780	22,235	30,325	8,089	13,353	26.7%	16,971	5,264	76.3%	23.7%
Decile 2	132	1,228	12,050	19,095	7,045	11,782	36.9%	7,313	4,737	60.7%	39.3%
Decile 3	132	1,506	9,594	15,961	6,368	10,357	39.9%	5,605	3,989	58.4%	41.6%
Decile 4	132	1,716	7,953	13,824	5,871	9,523	42.5%	4,301	3,652	54.1%	45.9%
Decile 5	132	1,757	6,726	13,094	6,368	9,944	48.6%	3,150	3,576	46.8%	53.2%
Decile 6	132	1,710	5,725	11,758	6,033	9,339	51.3%	2,419	3,307	42.2%	57.8%
Decile 7	132	1,594	4,900	10,946	6,046	9,067	55.2%	1,879	3,021	38.3%	61.7%
Decile 8	132	1,906	3,941	10,466	6,525	9,078	62.3%	1,388	2,553	35.2%	64.8%
Decile 9	132	1,403	2,723	8,835	6,112	8,097	69.2%	737	1,986	27.1%	72.9%
Decile 10	132	1,606	801	7,363	6,562	7,907	89.1%	-544	1,345	-67.9%	167.9%
Private Institutions by Carnegie Type											
Research	39	11,821	20,369	32,014	11,646	16,975	36.4%	15,039	5,329	73.8%	26.2%
Doctoral	43	5,800	7,720	18,736	11,016	14,417	58.8%	4,320	3,400	56.0%	44.0%
Comprehensive	245	2,460	5,504	12,903	7,399	10,484	57.3%	2,420	3,084	44.0%	56.0%
Liberal Arts	526	1,228	9,064	15,425	6,361	10,505	41.2%	4,920	4,144	54.3%	45.7%
Two-Year	243	572	5,164	10,227	5,063	7,565	49.5%	2,662	2,502	51.5%	48.5%
Specialized	223	771	7,261	12,906	5,646	7,949	43.7%	4,958	2,303	68.3%	31.7%

are crucial to assessing the likely impact of new technology and the inroads that privatization can make into college and university activities. So, broadly, improved understanding – a better "mental model" – has to be the primary implication of the facts. But not here – other papers have developed that. (Again, see note 2. above.)

Understanding Trends and Changes

The facts of Table 1 provide a structure with which to monitor changes in higher education – changing circumstances and strategies like those associated with the tax revolt and increased private competition.[14] Those facts, over time, describe patterns of change in colleges and universities in response to circumstances, opportunities, and pressures. And they make it clear that, among colleges and universities, circumstances and strategies are so very different that adaptation to change will be very different, too – we think of "higher education" as a single, monolithic entity, only at risk of considerable error. Recognizing the fundamental differences among colleges and universities is central to understanding what's happening and why.

Public Policy and Common Sense

The third implication is the one I want to concentrate on for the rest of this paper – large and ubiquitous student subsidies in higher education mean a very great deal for public understanding and public policy. It is there that the most serious – and most dangerous – implications lie, because it is there that the disjunction between the facts and what people "know" to be the facts is the greatest and likely to be most influential.

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[14] See DP-41, "Subsidies, Costs, Tuition, and Aid in US Higher Education: 1986-87 to 1993-94" with Ethan Lewis.

V. Public Policy, Economics, and Business Intuition

Paradoxically, the single most serious problem facing the understanding of higher education – and hence public attitudes and public policies – may well be common sense. Very persuasive and appealing common sense. We have, collectively, a well-schooled 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 counter-intuitive in these terms; what's accurate is unfamiliar and what's obvious is often just plain wrong. So it's worth the risk of belaboring what's basically different about a college and a business firm.

I want to use two simple pictures to describe two key facts – arithmetic facts – about businesses and colleges and universities. The pictures and the facts are highly stylized, but aside from neglected details, correct. Colleagues who have looked at these graphs have accused me of working on an Economics Coloring Book and it's at about the coloring book level that things start going wrong.

Figure 2 shows a business firm on the left and a college or university on the right. Like Figure 1, it describes sources and uses of funds for those organizations. The left

hand bar describes the firm's yearly income and what it does with that money – where it comes from and where it goes.   Income derives from the sale of the things the firm produces – their price. That income goes to pay the costs of production and – if costs are less than sales income – what's left over is profit. So a car dealer earns money from the cars he sells and pays that money out as costs – the wholesale cost of the car, salaries, commissions, building, heating oil… -- and keeps what's left as profit.   A car sold for $25,000 that costs $23,000 to deliver to the customer means $2,000 as the dealer's profit. Pretty routine stuff that my granddaughter has started to learn with a lemon-aid stand at the age of seven.

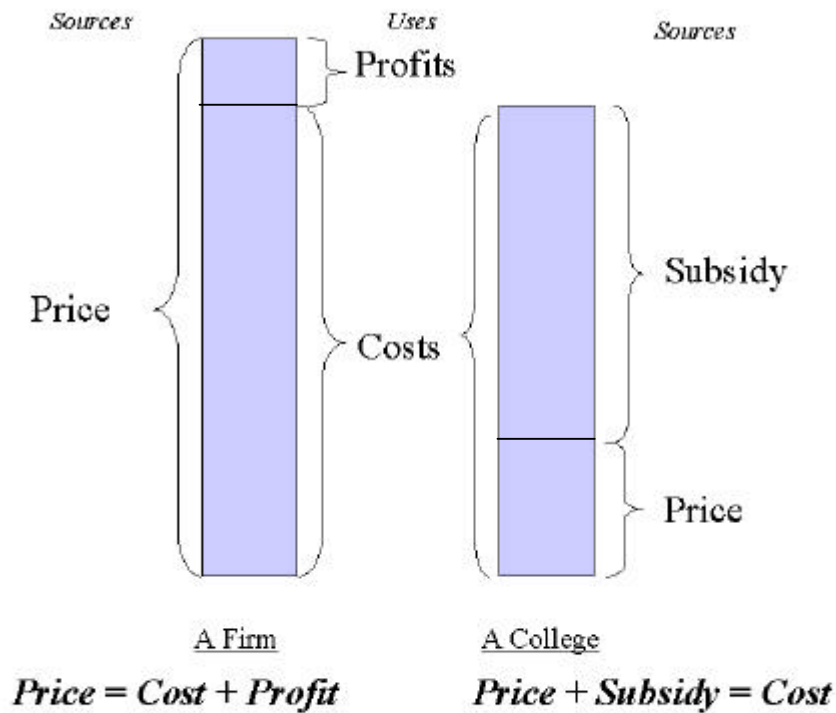$$Price = Cost + Profit \qquad Price + Subsidy = Cost$$

Figure 2

The right hand bar shows the same basic facts for a college or university. But, of course, only a fraction of its income comes from the sale of its product, from the price or

net tuition its student-customers pay for the educational services it sells them. Most, has to come from somewhere else, from those donative resources from alumni and taxpayers and earnings from endowments and the services of expensive buildings and equipment that support that student subsidy. Of course, the reason society makes donations to colleges and universities – and doesn't make them to the local Ford dealer – is that higher education is considered to be socially A Good Thing so we encourage people to buy more of it by offering generous subsidies on its purchase.[15]

From this, two crucial facts emerge:

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

$$Price = Cost + Profits, \qquad or \; P = C + \mathbf{P}.$$

Sell the product for $5 and if it costs $4 to make, $1 is left as profit.

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

$$Price + Subsidy = Cost, \qquad or \; P + S = C.$$

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[15] The past decade (sadly) has seen this emphasis on the economic and civic virtues of an educated citizenry largely replaced by attention to "human capital investment" and individuals' gains from higher education.

Sell the product for $1 and if it costs $4 to make, a $3 subsidy will have to come from donative resources.

This simple, essentially arithmetic, difference has profound consequences. And more so the less clearly it is recognized.

VI. Through the Looking Glass

Let me illustrate the dangerous role of business intuition and its accompanying common sense with four examples: the confusion of "costs" and "prices" and "net prices" that enters most discussions of college costs; the difficult task of the Cost Commission if they're armed only with the business model and its intuition; the popular tuition-relief policies modeled on Georgia's Hope Scholarship program; and the strange threat posed by increased "sales" in higher education. I'll end with a comment on "cross-subsidies" in colleges and universities.

Costs and Prices and Net Prices

A major semantic problem with our national talk about "college costs" should be clear from what's been said so far, but the role of business intuition may not be so apparent. We use "college costs" to mean three very different things: (1) *production costs,* the cost of delivering a year of education to a student, (2) *sticker price,* the posted, nominal (and maximum) price any student pays, and (3) *net price,* what the average student actually pays, after financial aid grants.   But we give them all the same name and

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But even that narrow view still supports the ideals of distributional equity and access.

don't often notice. It's not just carelessness. Economics 101 goes to great pains in describing competitive for-profit businesses to argue that in the long run, any business' economic profits will disappear so price will just cover costs and price and cost can be treated as the same thing. And intuition and common sense confirms the idea that production costs and prices are, if not exactly the same thing, pretty close. In business, they usually are. In higher education, they usually aren't. And in the long run, persistent price discounting will become well known and routine. So even basic economics tells us there should only be a single price and it will come to be the same thing as costs.

The Cost Commission's Task

The Commission is to figure out why a typical family's costs of higher education (read "net tuition" or "price," of course) have risen so much in the recent past.

From the perspective of the business intuition embedded in $P \equiv C + \Pi$, that most of us share, the answer looks pretty simple. Since the price (P) has gone up, it has to be because costs (C) went up or because profits (Π) went up. Colleges are non-profit firms, so the place to look is at costs; they must have gone up. And that leads directly to questions about increased waste, about rising administrative costs, a less productive faculty, elaborate buildings and equipment, a too-exuberant embrace of expensive technologies or the costs of increased regulation. This is an agenda right out of Price $\equiv$ Cost + Profit and the solid business intuition it describes. Sensible, from that perspective, but guaranteed to obscure the facts.

What has been happening in public higher education (where 80% of the students go) shows up only when we look at Price + Subsidy ≡ Cost, that describes a college or university.

There it's clear that tuition (P) *might* have gone up because costs (C) went up, but it might also have gone up because subsidies (S) went *down*. And that's what appears to have happened. The taxpayers' revolt that restricted state appropriations (donative resources) has met an increase in enrollments and together these have reduced student subsidies in public higher education. That, of course, is a very different picture from the one that comes from business intuition. And if subsidies go down at a college, it means either of two things. Prices *have to* go up or educational spending and quality *have to* go down, or both. We've seen both. Students in public colleges are paying a higher price in 1995 than in 1987 to get a less costly, lower quality education with fewer and larger classes and more TAs and TVs.

So, sensible business intuition doesn't just obscure what's been going on in higher education – making it harder to see – it misleads, distorting our understanding of what's been happening by making us focus on the wrong thing. We search for rising educational costs though they're falling. And we don't look for evidence of falling subsidies because business firms don't have subsidies. And, I say with the regret of a long-time Economics teacher, the more we rely on Econ 101, the more we'll miss what's going on.

The Promise of Government Tuition Support

A rash of appealing proposals have offered direct government support of family tuition costs in the hope of easing the burden and increasing college enrollments – from President Clinton's national tax relief to the Zero Tuition plan proposed for Massachusetts' two-year colleges and, of course, the original Hope Scholarship Plan in Georgia.   Business intuition and its Price $\equiv$ Cost + Profit logic says those measures make good sense – like food stamps, the government will pick up part of the price, allowing people who can't afford higher education to buy it anyway.

But the reality of higher education, where Price + Subsidy $\equiv$ Cost leads to a very different picture – one of declining quality and rising tuition.

The table above showed that over all institutions, students' tuition payments cover only 32 cents of each dollar of their costs. In the public colleges where most students go, tuition pays 12 cents on the dollar. So if a new student is induced by these policies to go to the average public college, for every dollar he brings with him in new tuition revenues, he'll give rise to <u>nine</u> dollars in additional costs. The question, then, is, "Who's going to pay the rest?"[16]

The most realistic answer sees two unhappy outcomes. One is that spending per student – and hence educational quality – falls. The other is that, trying to protect

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[16] The GI Bill, too, channeled funds to the student, rather than the college, but that was in a climate where expansion of public sector schools was supported with increased appropriations (donative resources) and private schools, with their limited non-tuition resources, resisted expansion.   So the answer to "who's going to pay the rest?" was "society," willingly.

educational quality,[17] colleges and universities will raise tuition so it covers more of the cost. That, of course, revives the old familiar charge that government efforts to help students always induce colleges to jack up their prices.

Since these plans are based on Georgia's Hope Scholarship program, it's instructive to look at what happened there. Between 1986 and 1994, a panel of 2,300 colleges and universities from our data shows that those in Georgia increased enrollments by 33% while the average increase for the US was 14% and for the Southeast states, 23%. So the Hope program does appear to have encouraged more people to go to college. And Georgia disproportionately increased appropriations to their public colleges – by 17%, against a more modest increase in the Southeast (5%) and a decrease (-2.3%) in the US. But because their appropriations increased less than enrollment, even Georgia's appropriations *per student* went down by 12% and so did its spending per student. So as a result of the Hope plan, more students got less education. Georgia's two-year colleges, seen alone, tell the same story even more dramatically: enrollment went up by 51% while appropriations rose 40% so expenditures per student fell by 17%.

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[17]It is devoutly to be wished that cost savings could make it unnecessary to choose between higher prices and lower quality with expanded enrollments – that colleges and universities could simply produce the same education at lower costs through new technology and belt-tightening. But (a) it's not clear that there's that much room for belt-tightening – there's no firm evidence that even for-profit firms operate with a great deal more efficiency than nonprofit firms in producing "products" with complicated characteristics (see Pauly, Mark, "Nonprofit Firms in Medical Markets," *American Economic Review* 77:257-62 (1987) and Oster, Sharon, "An Analytical Framework for Thinking About the Use of For-Profit Structures for University Services and Activities," Paper presented at the Forum for the Future of Higher Education, The Aspen Institute, September 22, 1997) – (b) new learning technologies appear able to reduce the cost of some of what colleges and universities do, but their impact on quality is still unknown, and (c) the magnitudes involved make it unrealistic to hope that efficiencies in production could offset the increases in costs that come with increased enrollments. Finally, for Economics majors, the well-learned idea that marginal cost is less than average cost and marginal cost is what really counts, runs into a difficult problem of quality – those neat diagrams on the blackboard always assumed that output of the product could be expanded, moving out the Q axis, without affecting its quality. But that's simply wrong for higher

The Hope Scholarships, then, created more students who brought more tuition revenues to the colleges but because they cover only part of the cost and weren't fully matched by more money in appropriations, the quality of education fell.

(Are any colleges and universities winners under these tuition-support policies? Yes, ironically. The very wealthy and selective schools that restrict enrollments in face of long queues of would-be students – Harvard and Stanford and Swarthmore – won't be induced to expand so they won't need extra resources. For them and their students, tuition-relief policies will only help pay their often-considerable tuitions.)

The Worrisome Prospect of Increased Sales

We're facing an increase in enrollments over the next decade estimated at 10% to 30%. That kind of demand increase would be cause for dancing in the streets in any for-profit industry. But for higher education, it is cause, instead, for genuine panic. If it comes to pass that 3 million more students enter US colleges and universities, they will bring with them an additional $11.3 billion in net tuition revenues, but they will also bring an additional $35.9 billion in costs -- if quality is to be maintained at 1995 levels -- and that will require $24.6 billion of additional non-tuition resources. From somewhere. Our for-profit intuition doesn't prepare us for a dilemma like that.

Cross-Subsidies

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education where adding more students with the same faculty and facilities inevitably degrades quality unless schools are operating initially with excess capacity.

In business firms, a product is cross-subsidized if profits from another product or activity are used to offset losses on that one. So new car sales are cross-subsidized if profits from the service department are needed to offset losses on new cars. But in a college or university, things are more complicated. That's frustrating because we'd like very much to understand cross-subsidies in higher education – to find out if the rich students subsidize the poor ones or undergraduate education subsidizes faculty research or PhD programs or if football subsidizes Classics courses.

But cross-subsidies are much harder to measure in a university than in a business firm. Because *all* activities taken together are heavily subsidized, it's difficult to tell the difference between a genuine cross-subsidy – where one activity supports another (football supports women's ice hockey) – and simple differences in the amount of subsidy given to two well-subsidized activities. "Robinhooding" is a popular case in point where it is sometimes asserted (most recently in a *Time* article last March) that colleges make a profit by charging high prices of their rich students in order to subsidize their poor students. But we've seen in Table 1 that except at the very bottom of the pecking order (in the bottom decile of private colleges) the fact is that the rich kids get a smaller subsidy than the poor kids, but they all are subsidized, even those who pay the full sticker price.

More basic is the fact that nobody knows how much a college's activities actually cost since there's only the vaguest recognition of the costs of the capital services they use – the services of the buildings and computers and libraries and stadiums used in those

activities. Yet we do know that facilities account for 20% to 30% of the total cost of educational production.[18] Those large and important cost elements can be estimated for a single school with a great deal of work and a great deal of cooperation from their accountants and facilities managers. But they haven't been and until they are, any guess at the magnitudes of cross-subsidies can only be a guess.

VII. Conclusion

Colleges and universities are very different, in fundamental *economic* ways, from the for-profit businesses on which our intuitions and economic theories are based. Sometimes those differences don't much matter. But too often they matter very fundamentally and policies based on common sense can produce results that are puzzling, unintended, and damaging. No task is more difficult than convincing people that what makes good common sense is likely to be wrong and what's right is flatly counter-intuitive. But that's the challenge facing those who would make effective policy for higher education. "Mosquitoes," it was said with confidence in 1904, "couldn't possibly cause malaria and yellow fever." The idea that they could was implausible, counterintuitive, and, of course, entirely correct.

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[18] Winston and Lewis, "Physical Capital and Capital Service Costs in U.S. Colleges and Universities: 1993," *Eastern Economic Journal*, v.23, No. 2, Spring, 1997