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# Subsidies, Hierarchy and Peers: The Awkward Economics of Higher Education

Gordon C. Winston

**H**igher education is a business: it produces and sells educational services to customers for a price and it buys inputs with which to make that product. Production is subject to technological constraints. Costs and revenues discipline decisions and determine the long-run viability of a college or university. “But higher education is not just a business.” While that statement is often meant to imply that higher education is nobler than business—more decent and humane in the purposes it serves—it can also mean that even in economic terms higher education is, in important ways, simply different from a business.

This paper asks how well our extensive experience with commercial businesses—and the microeconomic theory of firms and markets that has evolved to describe them—helps in understanding the economics of higher education. That experience and those insights will be used by trustees, politicians, administrators, lawyers, reporters and the public, as well as by economists, to understand and evaluate the behavior of colleges and universities. So it is useful to ask how safe it is to use “the economic analogy” in the context of higher education, drawing parallels between universities and firms, students and customers, faculty and labor markets, and so on. The discussion here seeks to identify the key economic features of higher education that make it different from familiar for-profit industries and to ask what difference those differences make.

This is a stick that can be picked up from either end. One approach is to start with meticulous economic theory and see how far it can be made to encompass the economic realities of higher education. An excellent recent paper by Rothschild and White (1995) does that. In their matching model, students and colleges meet

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in complex competitive markets, where students provide simultaneously both monetary payments and quality inputs in the ways they affect other students' learning, and institutions provide both individual financial aid grants and educational services that build human capital. All actors are perfectly informed and both markets clear, which means in this case that gross tuition (the sticker price) and individual financial aid grant awards are all determined by the interactions.

This paper picks up the stick from the other end. I will start with the economic realities of higher education to see how far toward useful theoretical precision they can be pushed. It is inherently the less rigorous end of the stick, but I would argue equally important when the task is to make economic sense of a complicated and unusual industry. It is the most effective route to identifying where our familiar economic formalisms and assumptions may become seriously inappropriate.

## **The Economic Circumstances of Higher Education**

In identifying what appear to be the central economic characteristics of higher education, I will begin with the fundamental fact that few institutions of higher education are for-profit firms. I will draw on the literature in this area to explore how the institutional imperatives of a nonprofit differ from profit-making businesses. I will then add three further elements to the picture: a measure of the student subsidies found in U.S. higher education as revealed in 1995 data; the fact that the production of education depends to some extent on peer effects generated by the student-customers themselves; and that higher education is a sharply hierarchical industry with a range of institutions from richer to poorer, a fact that has surprising relevance for costs, prices, subsidies, and competition.

### **Higher Education as a Nonprofit Enterprise**

In a seminal article, Henry Hansmann (1980) identified the legal and economic rationale for the nonprofit firm as a situation in which, because of asymmetries of information, the buyer is highly vulnerable to sellers' opportunism. In markets where customers are little informed about what they are buying, they can easily be taken advantage of—at the extreme, consumers may not be informed about whether they have bought anything at all. Did the CARE package get delivered in Somalia? Was the contribution to public radio actually used to support programs? More often, consumers know that they have bought something, but they also know that they are vulnerable to receiving a service of lower cost and quality than they expected and paid for. Given the asymmetries of information, though, it may be impossible to draw up a contract that guarantees that the expected quality in all its dimensions will be provided. As a result, nonprofits are frequently found in the markets for things like nursing homes, day care and education.

Markets like these are sometimes referred to as “trust markets” because of that vulnerability. The nonprofit structure of suppliers encourages the honest if profit-sacrificing behavior that justifies trust. By reducing incentives for the opportunistic

behavior, nonprofits become the preferred suppliers in certain settings: they increase the probability—and the confidence of donors or buyers—that they’re getting what they are paying for, tending to offset the contract failure inherent in such asymmetric markets.

It can be added that any investment decision, perhaps especially including investments in human capital, proceeds in the face of a considerable degree of ignorance of how it will turn out and whether the hoped-for future gains will indeed materialize. People investing in human capital through a purchase of higher education don’t know what they’re buying—and won’t and can’t know what they have bought until it is far too late to do anything about it. Education is a typically one-shot investment expenditure, a unique rather than a repetitive purchase, more like buying a cancer cure than groceries (Litten, 1980; Winston, 1988). Indeed, it is an uncertain investment often made in large part by a parent on behalf of a child, adding yet another layer of murkiness as to how well a rational choice model applies in this context.

The key legal and economic characteristic of nonprofit enterprises is a “non-distribution constraint” (Hansmann, 1980). Nonprofit firms are allowed to make profits, and usually do; the term “nonprofit” does not mean that revenues never exceed expenditures. Instead, it means that there is no outsider to whom the enterprise can legally distribute those profits as the normal firm distributes profits to its owners. Indeed, a nonprofit has no owners—it owns itself. Of course, the behavior of a nonprofit firm must respect the fact that its total costs cannot long exceed its total revenues, so the firm may appear to be profit-motivated in its attempts to raise revenue, when in fact it is only recognizing the reality that it is budget-constrained.

The non-distribution constraint can be fudged, Hansmann noted, by transfer pricing that inflates rewards to suppliers of purchased inputs—as when managers like United Way’s William Aramony or the “Praise the Lord” television ministry’s Jim and Tammy Bakker compensate themselves or their relatives too generously. Moreover, managers can and do shift profits around within a multiproduct nonprofit firm, using those from activities they don’t much like to cross-subsidize those they do (James, 1978; Weisbrod, 1988). Profits made from undergraduate education, for instance, might support administrators’ perks, the teaching of graduate students, or high-powered Rose Bowl football teams. Nonprofits may also have the problem that because they cannot be taken over in a capital market, like a publicly owned firm, no indirect disciplinary forces can operate in that guise (Rose-Ackerman, 1996). Further, it is unusual for the management of a nonprofit, operating at least partly outside such market tests, to recognize accurately the economic cost of its capital services in production (Winston, 1993). So the point here is not that the nonprofit form is without its own set of issues or problems, but rather that the non-distribution constraint serves to soften the incentive that a for-profit supplier has to take advantage of the partially informed buyer.

Because of the non-distribution constraint, and the sometimes fuzzy objectives of nonprofits, the managers of nonprofit firms are motivated by a less tidy incentive

structure than we attribute to those running for-profit firms. It is a commonplace, of course, that even applied to for-profit firms “profit maximization” is an oversimplification—but it is an oversimplification that usually works. In nonprofits, the non-distribution constraint makes the purpose of profit maximization unclear and no equally simple alternative presents itself. Part of the analytical problem is that nonprofit managers often share the overall objectives of the organization; that is, they work for nonprofit firms because they care strongly about objectives like diversity or equal opportunity through educational access (Bowen and Bok, 1998) or delivering food to children in Somalia or medical care for the homeless. Rose-Ackerman (1996) labels these incentives “ideological” and (a bit harshly, I think) the nonprofit administrator motivated by them an “ideologue.”

In higher education, managers appear motivated by what Clotfelter (1996) calls “the pursuit of excellence,” a general goal which in practice means maintaining or improving the quality of the educational services they supply and the equity with which they are provided (Bowen and Breneman, 1993). This striving for academic excellence is often defined relative to other institutions. In that sense, the goal has a positional aspect, one that can border on a striving for status and relative rankings. Along similar lines, James (1990) suggests that if colleges and universities have a single-valued objective function, it is something like “prestige maximization.”

Hansmann (1980) distinguished two sources of revenue for nonprofit firms. Some, like churches, are supported by charitable donations from people who endorse the firm’s ideological purposes. Hansmann called these “donative nonprofits.” Others, like day-care centers, are supported more conventionally by the sale of goods or services. They are “commercial nonprofits.” Colleges and universities have both of these sources of revenue. They are supported by charitable contributions and by sales revenues, and thus are “donative-commercial nonprofits.” Donative revenues result from the various charitable motives of their donors; in the case of education, such motives include a dedication to equal opportunity under the belief that education is a human capital investment, an appreciation of the externalities of an educated citizenry, an alum’s sense of obligation to repay past subsidies,<sup>1</sup> a desire to bathe in the reflected glory of an improving alma mater, and so on. Commercial revenues are supported by more conventional personal consumption and investment incentives.

In higher education, of course, sales proceeds in the form of net tuition receipts are the commercial revenues that combine with charitable donations, broadly defined as legislative appropriations, current gifts, and asset earnings from the accumulated past donations embedded in endowment and physical plant. (The prudent management of current operations also adds to asset accumulation.) Long-run

<sup>1</sup> Alumni donations are sometimes seen as the repayment of the student’s subsidy as an implicit loan from the college in recognition of an imperfect human capital market (Hansmann, 1990, 1996). However, that idea doesn’t fare well empirically (Clotfelter, 1998). For an extensive discussion of donor motivation, see Rose-Ackerman (1996).

survival for the college, like the business firm, requires that total costs not continually exceed total revenues.

But, in sharp contrast to the business firm, donative-commercial nonprofits can and do subsidize their customers, selling them a product at a price that is below the costs of its production.<sup>2</sup> This sustainable excess of production cost over price—the continuing ability of a college to subsidize all of its customers, not just cross-subsidize some at the expense of others or briefly let price fall below cost—is a defining economic characteristic of higher education, both public and private.

From Hansmann (1980), then, I want to take: the emphasis on information asymmetries and a high level of ignorance and faith embedded in the college purchase decision; the central role of the non-distribution constraint; the more complex managerial motivation that values equity and academic quality, implying that the relative position of the institution takes on special importance; and a recognition that the costs of production in colleges and universities are covered by a combination of charitable donations (past and present) and sales revenues. To this list, I want to add two more elements that I have come to believe are defining economic characteristics of the firm in higher education.

### **Peer Effects: Customer-Input Technology**

The technology of producing much of what is sold in higher education is unusual in that colleges can buy important inputs to their production only from the customers who buy their products; that is, higher education uses a customer-input technology. While this relationship may be clearest in a college's production of something like intercollegiate sports entertainment—where only its own students can play on its teams—it is of greater importance in the production process for high quality academic education where, to a significant degree, students educate both themselves and each other, and the quality of the education any student gets from college depends in good measure on the quality of that student's peers.<sup>3</sup> Inputs of faculty and facilities matter, too, of course, but the quality of both individual students and of the student body as a group counts for a great deal in the quality of educational services the institution delivers.

This point has long been recognized in a variety of casual ways, in that average SAT scores or other indicators of student quality are often used as a measure of

<sup>2</sup> This can usefully be made more precise. The all-purpose equation for the sources and uses of funds in a firm, whether profit or nonprofit, is  $p + dr = c + v + d$ , where  $p$  is commercial revenue,  $dr$  is donative revenue,  $c$  is costs,  $v$  is retained earnings or institutional savings, and  $d$  is dividends. Thus, the left-hand side of the equation is sources of revenue, and the right-hand side is uses, what happens to that revenue. In any for-profit firm, donated revenue  $dr = 0$ . In any nonprofit firm, dividends  $d = 0$ . In a donative nonprofit,  $p = 0$ . In a donative-commercial nonprofit like a college, only  $d = 0$ . So its customers are subsidized in an amount of  $s = c - p$  and its donative resources cover subsidies and saving.

<sup>3</sup> Though I believe that interaction among good students plays the central role—a belief being investigated empirically with Al Goethals and Dave Zimmerman at the Williams Project—even in a hub-and-spoke view of education, the professor at the hub can cover more ground or go deeper into subjects the more able are the individual students on the spokes, especially if the professor adjusts the pace of the course, as most of us do, to the students' apparent comprehension (Goethals et al., 1998).

institutional quality (Turner, 1996). Both admissions offices and the rating organizations like *U.S. News and World Report* put great stake in the fact that student and institutional quality go hand in hand (Klitgaard, 1985; Litten, 1980; Rosovsky, 1990).

I want to suggest a deeper point: that as an argument of the educational production function, peer quality is, technically, an input to a college's production and one that cannot be bought from anyone other than its own customers. Peer quality is an input that costs, an input that may or may not have substitutes, and an input whose use will be adjusted to reflect its costs, available substitutes, and resources. The formal model by Rothschild and White (1995) mentioned earlier built its analysis on the simultaneity of the two transactions implicit in this technical relationship: the student-as-customer pays a price for education while the same student-as-supplier-of-input is paid a wage rate by the school (a financial aid grant if general subsidy is ignored), leaving a net tuition payment as their difference. Later on, I want to suggest that an important feedback operates through this technical relationship.

A school's student-customer population defines and restricts the sources of an input important to its product. Because different customers bring different measures of those inputs—quite apart from their demand for the product, some students will supply high quality inputs while others will not—institutions have strong incentives to care about the identity of those to whom they will sell, and to try to control or influence who their customers will be. Schools are able to do this through excess demand queues that allow them to select those to whom they will sell.<sup>4</sup> In this situation, the familiar models of microeconomic theory in which buyers are anonymous and sellers don't care which buyers they serve are clearly inappropriate.

### **The Hierarchy of College and Universities**

Some schools are rich and some are poor. A hierarchy of institutions results from their donative wealth and the present and past differences among them in raising and accumulating donative resources. These differences in wealth, in turn, strongly influence their current commercial circumstances. Schools that get a lot of donated resources from endowments and legislatures and gifts and their capital stocks can and do sell their educational services, in their commercial role, at a lower price or higher production cost and quality. So Williams sells its \$65,000 a year education for an average price net of financial aid grants of about \$20,000. The "market" for higher education is very different from commercial markets. Competitive forces will still play out, but they will do so on a strikingly uneven playing field.

Table 1 is taken from a recent study of student subsidies at most of the accredited, degree-granting colleges and universities in the United States (Winston and

<sup>4</sup> Though it is often said that only 20–30 percent of all colleges and universities can choose their students (Bowen and Bok, 1998), Tables 1 and 2 below show that even at the bottom of the pecking order, the average school rejects more than 10 percent of its applicants. The rub comes when the school's chosen level of selectivity leaves it with excess capacity and it must scramble to fill the class (Breneman, 1994).



*Table 1*  
**Costs, Prices, Subsidies, and Hierarchy, 1995**

<i>Ranked by Dollar Value of Subsidy</i>	<i>Enrollments</i>	<i>Average Student Subsidy</i>	<i>Costs: Educational "E&amp;G&amp;K"</i>	<i>Price: Net Tuition &amp; Fees</i>	<i>Price/Cost Ratio</i>
	(1)	(2)	(3)	(4)	(5)
	FTE	\$	\$	\$	%
All Institutions	3,500	8,200	12,000	3,800	31.5%
Public	5,100	8,700	9,900	1,200	12.4%
Private	1,700	7,700	14,200	6,500	45.9%
Decile 1	3,300	22,800	28,500	5,700	20.1%
Decile 2	3,800	11,100	14,900	3,800	25.4%
Decile 3	4,300	9,300	12,300	3,000	24.4%
Decile 4	4,500	8,200	11,000	2,800	25.6%
Decile 5	3,700	7,300	9,900	2,600	26.6%
Decile 6	3,900	6,500	9,400	2,900	30.8%
Decile 7	3,500	5,800	8,700	2,900	33.1%
Decile 8	3,500	5,100	8,400	3,300	39.5%
Decile 9	2,900	4,100	8,700	4,600	52.5%
Decile 10	1,600	1,800	7,900	6,100	77.4%

*Source:* Winston-Yen, 1995 (updated); based on US Department of Education IPEDS data. Includes 2739 institutions, of which 1420 are public and 1319 are private. All dollar amounts are per FTE student averaged over institutions. Col. 3: Educational costs include the share of E&G spending devoted to instruction plus the rental rate for physical capital. Col. 4: Tuition and fees net of grant aid.

Yen, 1995, updated with 1994–95 data).<sup>5</sup> The data include 2739 institutions, of which 1420 are public and 1319 are private. Student subsidies (column 2) are simply the average cost of a student's education (column 3) less the tuition and fees the student pays for it net of financial aid grants (column 4). The price/cost ratio (column 5) is the proportion of the student's educational costs covered by the student's payment.

A bit more needs to be said about educational costs since these data represent an economist's inclusive description of production costs rather than what is found in either college fund accounting or familiar for-profit accounts. Most important, these costs include a calculated yearly rental rate to recognize that the costs of physical capital services must be added to reported "Educational and General (E&G)" spending, hence the label "E&G&K." Capital costs account, on average, for nearly 25 percent of educational costs (Winston and Lewis, 1997). Furthermore, an effort was made to eliminate non-educational costs from total E&G and capital

<sup>5</sup> From Department of Education IPEDS (Integrated Postsecondary Data System) data, those schools were eliminated that: a) were not in one of the 50 states and Washington DC; b) reported zero enrollment or current expenditures; c) had fewer than 20 percent undergraduates among their students; or d) were not given a Carnegie classification.



costs as far as the data allowed. A lot of questions about educational costs remain (Winston and Yen, 1995; Winston, 1998a), especially at complex multi-product universities, but it is reassuring that those more complicated institutions behave the same in our data and analysis as the simpler liberal arts and two-year colleges.

The schools are ranked by decile in Table 1 according to the subsidies per student shown in column 2. Part of the subsidy (cost less net price), it should be noted, is given as financial aid to some students (sticker price less net price) while the rest is given as a general subsidy to all students (cost less sticker price). The total subsidy reflects the donative or charitable component of the school's per student revenue; the net price is the commercial component. Together, these two sources of revenue cover the costs of a year's education; costs exceed net price in equilibrium, but only by as much as a school's available donative resources will allow. So despite the fact that all firms in the higher education industry must meet the same non-negative profit constraint, that constraint will mean very different things in costs, prices, and subsidies to different schools because of the very different levels of donative resources they command.<sup>6</sup>

It's useful to make all this more concrete. The average student subsidy in U.S. higher education is an impressive \$8,200 a year; the student pays \$3,800 for \$12,000 in education. Moreover, the subsidy is about the same in public and private schools even though average cost and price are very different. Although it is not explicit in Table 1, financial aid represents only \$2,150, or about 25 percent of the average subsidy, despite getting the lion's share of attention, while the general subsidy given to every student by a sticker price set well below costs takes the lion's share of the money with \$6,050.

But the most striking fact in Table 1 is the uneven distribution of that average subsidy; that is, the wide range of subsidies that are supported by differences in the donative resources available to different colleges and universities. Even across the crude decile groupings of the table that lump very different schools together—especially in the top and bottom deciles—wealthy institutions have far more donative resources with which to subsidize their students than do poor ones. The average school in the top decile gives each student a subsidy of nearly \$22,800 a year from donative resources—to support a \$28,500 education—while the average school at the bottom gives each student a \$1,800 subsidy to help pay for a \$7,900 education. One result is that the student at the bottom actually pays a higher net dollar price than the student at the top! Were we to separate the data from public and private sectors, these differences would be even more striking.

It is a fact of fundamental importance to the economics of higher education,

<sup>6</sup> Institutional saving will be largely ignored in what follows. It has been shown to be important for wealthy schools (Weber and Winston, 1994), playing a central role in building future wealth to support a future competitive position. Recently, that saving has been pushed to very high levels in wealthy schools by the stock market (Winston, 1997), ambitious capital campaigns and continued real tuition increases. But data are not yet available to assess its importance for the general population of institutions of higher education.

then, that any differences in managerial skill or luck or location or imagination among schools will often be overwhelmed by differences in sheer donative wealth that become differences in price, cost, and subsidy. Moreover, these differences are so very great that it seems fair to believe that they capture a good measure of institutional quality. Quality is a tricky issue, of course; assessing the quality of schools or students is never a simple matter (McPherson and Winston, 1993). But differences across schools and students are very great, so it seems useful if crude to think of student quality in terms of intellectual/academic abilities and of school quality as dependent on expenditures per student and average peers. This will capture important aspects of education, even if it neglects a great deal.

What, tangibly, does a “student subsidy” look like? What’s the difference between a school with a big one and a school with a small one? The school with bigger student subsidies has more and better maintained buildings and grounds, more computers, a more distinguished and influential faculty with lighter teaching loads that leave more time for public engagement and research, a richer menu of student services from psychological to career counseling, better food and fewer double or triple dorm rooms, smaller classes, more varied courses and programs, more outside speakers and debates, and extracurricular activities that are better funded. All that at a price that’s low relative to the cost of supplying these items. That implies, in turn, better students who have survived a more demanding selection process. While most high-subsidy schools are also high-cost schools, Cooper Union uses its ample subsidy resources to sell a \$35,000 a year education at a net tuition that the data behind Table 1 show to be slightly negative.

The schools in the top decile of Table 1 include all the usual suspects (along with the military academies and a few medical schools with enough undergraduate enrollments to have made the cut): Cal Tech, Johns Hopkins, Harvard, Princeton, Stanford, Yale, Amherst, MIT, Williams, Swarthmore, Berkeley, UCLA, Penn, Carleton, Colgate, the Universities of Washington and Minnesota, SUNY Buffalo, and Chapel Hill, and more. In the bottom decile are, predictably, all the accredited, degree-granting, for-profit colleges and universities—including prominently Phoenix and DeVry—with their negative subsidies, along with nonprofits like the Cincinnati Mortuary College, the Art Institute of Pittsburgh, and Machzikei Hadath Rabbinical College. And so on.

## **Implications for Analysis of Higher Education**

These characteristics of nonprofit organizational form, peer effects with a customer-input technology, and the hierarchy will modify the way firms and markets work. I want to suggest some of the implications of these aspects of higher education.

### **Colleges as Firms That Rely on Customer-Inputs**

It is useful to return to the framework of Rothschild and White (1995) because that paper made a very useful contribution to these issues by modeling an industry’s

behavior when firms operate with technologies that depend on customer-inputs. Their aim was to show that efficient allocation of product among customers and inputs among firms would emerge from a competitive market, and they used higher education as their case in point.

In their model, two prices are determined in the market for higher education. One is the market-clearing price for the firm's product, which could vary across firms, and the other is the market-clearing price for each customer's input, which could vary among customers to reflect the different quantities of the input each might supply. Over all of its customers (students), total sales revenues for each firm (college) had to equal total costs of production for a zero profit equilibrium. All markets are fully informed and competitive with zero profit equilibria and with no donative revenues. In this market, it turns out that students are indifferent to where they go since they know they will get the same benefit per dollar spent on educational product at Harvard or the University of Oregon or at the poorest of the nation's private two-year colleges—and they pay the same market clearing price for it.<sup>7</sup> Colleges are indifferent among students since they'll pay the going competitive wage for a unit of student quality, whoever it is attached to. Schools and students always know the student's true quality and agree on it. Individual students and schools face infinitely elastic supply and demand and indifferent choices, all at prevailing prices that they can't affect.

The Rothschild and White (1995) model serves nicely to recognize the simultaneous purchase-sale/sale-purchase relationships between firm and customer under a customer-input technology. Strong students pay a lower net tuition than weak ones because they contribute more on the margin to the educational activities of the university and hence get more financial aid. This is true, too, of the good athlete though that person's factor contribution takes a different form, supporting a different one of the university's products, and it is true as well of the effective graduate teaching or research assistant.

But setting their analysis in a fully informed, perfectly competitive, profit maximizing, market-clearing, no-donations industry did much to limit the relevance of the Rothschild and White (1995) model to higher education—and, indeed, they include a "Limitations" section acknowledging as much. The list of the key economic characteristics of higher education in the previous section paints a picture of a real world of higher education in which very different educational quality is produced in very different schools at very different cost and sold at very different prices—gross and net—to students with very different input characteristics who get very different subsidies and are often selected from very long queues of applicants, leaving a lot of unsatisfied demand. All of this exists in a world of massive ignorance

<sup>7</sup> There's a bit of a fudge in the Rothschild and White (1995) model as the product of education is called "human capital," allowing them to have the price of human capital driven to equality across schools without, given differences in productivity, requiring that tuitions are equal. I'm not quite sure what it would have meant to the interpretation of their findings to say that their institution's product was "educational services." I suspect it would have made a mess, but maybe it's mostly semantics.

about what is being bought and sold. The assumptions in the Rothschild and White (1995) framework appear to go beyond innocent abstractions.

### **Controlling to Whom They Sell**

One factor that is obscured by the assumptions of perfect information is that a firm that depends on its own customers to supply an important input to production will care very much about who those customers are and how well-equipped they are with the input that matters. If it can, the firm will try to control who its customers are.

Colleges exercise control over whom they sell to by generating excess demand and then selecting the students with the characteristics they most desire from the resulting queue (Klitgaard, 1985; Rosovsky, 1990; Litten, 1991; Duffy and Goldberg, 1998; Bowen and Bok, 1998). Indeed, selectivity, as measured by the ratio of applicants to admissions, average test scores, and high school grades is one of the most significant and sought-after descriptions of a college's educational quality—so much so that some colleges have aggressively manipulated the numbers.<sup>8</sup> High quality colleges are selective because that is the way they assure an ample input of student quality.

Excess demand only occurs when student demand is robust at the relevant price relative to supply. So selectivity requires, simultaneously, the generation of demand and the restriction of supply. This is much like an efficiency wage where a “too high” wage rate is paid so that an employer can select individual workers on the basis of their desirable characteristics. Indeed, what's going on here may be readily understood in efficiency wage terms as large subsidies can be seen as large real wages paid for student quality. From this perspective, the question of why we observe this seemingly clumsy subsidize-and-select system instead of simply paying a market-clearing wage for student quality has an efficiency wage answer—the existence of a “too high” wage rate for student quality allows the institution to control what quality is and who they think has it (Akerlof and Yellin, 1988). (Indeed, it's hard to see how a market for student quality could work otherwise—it's simply too hard for a buyer and seller to identify quality and agree on its amount.) A similar efficiency wage mechanism appears to work in hiring faculty at wealthy schools, where long queues of applicants at wages well above market-clearing support a selection process that is completed with the granting of tenure after a long probationary period and searching evaluation (McPherson and Winston, 1983).<sup>9</sup>

<sup>8</sup> See the *Change* piece (Webster, 1992) on the deceptions that *U.S. News* has encountered in trying to get accurate data from colleges and universities for its ratings, especially the gimmicks used to inflate and distort selectivity numbers. See also Stecklow's (1995) *Wall Street Journal* article on colleges' misrepresentation of their students' SATs.

<sup>9</sup> Interestingly, White and Rothschild (1993) speculated on why the elite graduate professional schools charged such low prices of their customers—why they capture so little of the rent that their students earn from their education. The answer, it would appear, has much to do with the price (wage) those high-subsidy schools are paying for the exceptional quality of their students. Schools of lower quality may capture a larger proportion of their students' rents because, this approach would suggest, they are buying lower quality students and hence paying less for them.

Identifying the determinants of student demand for higher education—and more so for an individual school—is not a simple matter but at base, demand must surely be influenced by what a student gets and what that student pays. On one hand, that requires attention not to the sticker price, tuition, but to the net price, after adjustment for any grant aid. But more important in a world of highly variable student subsidies and college quality, neither of those prices necessarily reflects what the student will actually get. That is described by a school's student subsidy (cost minus net price) or—putting the same thing in relative instead of absolute terms—its price/cost ratio, what the student pays for a dollar's worth of educational spending and quality. These are in columns (2) and (5) in Table 1; while subsidies range from \$22,800 down to \$1,800, a student pays 20 cents for each \$1 of educational spending in the wealthiest decile and 78 cents for each \$1 of educational spending in the poorest.

But since colleges work with a customer-input technology, an important part of institutional quality is due to the quality of one's peers. So student demand is sensitive, too, to the quality of a school's students. That means that not only do students teach students in the educational production process, but because that fact is known to potential students, demand is affected by a school's existing student quality. Again, this fact is clear to admissions offices and *U.S. News and World Report*. Increased demand, *ceteris paribus*, increases excess demand and the opportunity for selectivity, and therefore for future student quality. A feedback is created through which student quality tends to be concentrated in those schools with significant donative resources—which become more attractive because of the quality of their students. We think of high student quality as the result of selectivity; this feedback suggests that selectivity is a result, too, of high student quality.<sup>10</sup> A related feedback appears to amplify differences in faculty quality, too; good students appeal to good faculty and good faculty appeal to each other.

Strategic restrictions of supply imposed by schools play a larger role in this process than it might at first appear. Restrictions on supply are needed, of course, to turn demand into excess demand to allow selectivity. A college that accepted all applicants—that couldn't enforce binding supply restrictions—could not be selective and would not be able to increase student quality through demand expansion.

But enrollment restrictions work to protect excess demand and selectivity in another and potentially more important way, too. Since the donative resources available to a private college or university are effectively fixed in the short run, the level of enrollment determines how broadly those resources will be spread; what the subsidy per student will be. There are fixed resource flows as well as fixed costs. So a private college has two good reasons not to satisfy demand fully: to increase selectivity directly and to increase subsidy per student, hence demand, hence selectivity indirectly. A public college more frequently relies for donative revenues on

<sup>10</sup> Frank and Cook (1995) documented this concentration of student quality in higher education as a primary illustration of "winner-take-all" markets.

legislative appropriations that rise with increasing enrollments. Their incentive for restricting supply, then, is more focused on the maintenance of excess demand for selectivity. But though public colleges would appear to be denied the goal of admissions selectivity in the interests of access, it can often be met in the small by creating internal supply restrictions that govern entry into high-subsidy honors college programs or by selective flagship campuses within the larger university system. The University of California at Berkeley, for example, the flagship campus of that state's system, has a disproportionate (and increasing) share of the high-SAT freshmen within the University of California system (Frank and Cook, 1995).<sup>11</sup>

To summarize: a school controls the quality of its customers' input to the production process by using its donative resources to pay student subsidies that attract more students than its restricted supply can accommodate, then selecting from the resulting excess demand queue those students with the most desirable input qualities. Since the quality of existing students is attractive to potential applicants, present student quality feeds back to increase future student quality. Clearly, the greater the donative resources, the greater the school's control over student quality or, putting it the other way around, with meager donative resources, a school will have difficulty being very selective with respect to student quality. Differences in both of these directions appear to be amplified by potentially strong feedback.<sup>12</sup>

### **Producing Education Using Different Input Proportions**

Schools differ markedly in their ability to command student quality inputs through the mechanism of donative wealth leading to excess demand and selectivity. They adapt to their different circumstances by producing education in very different ways, using factor proportions that economize on scarce student quality. Those schools that command most of the student quality input tend to choose an educational production technology that amplifies the effects that those high quality students have on each other. They often feature residential colleges whose living arrangements facilitate student interaction. They are often geographically separated; they have small classes so that students interact, too, in the classroom; they

<sup>11</sup> It is significant that since 1900, most of the expansion of higher education has taken place in the public sector, as Goldin and Katz explore in their paper in this symposium, and what expansion there has been in the private sector has come largely from new entrants. The difference in the mechanisms that award donative revenues to schools would appear to be an important part of the explanation for this.

<sup>12</sup> There are other explanations for what, beside peer effects, might make schools care so about student quality. Liebowitz and Margolis (1994) discuss network effects; Basu (1989) and Becker (1991) emphasize the appeal of one's association with people and institutions of status and prestige that are surely reinforced by the exclusivity of strict selection. But these are not mutually exclusive, so arguing that one effect is present doesn't argue that another is not. A car, for a familiar example, can provide both transportation and status and the status component will be much influenced by who else owns that kind of car. But your Mercedes isn't any safer, nor will it stop shorter or hold the road better if other Mercedes owners are rich or obnoxious or Grand Prix drivers. Your children's learning, however, will be greater if it happens in the company of other good students (Goethals et al., 1998).



use a non-vocational, “impractical” curriculum; they concentrate on students of compatible “college age” whose interactions can best create peer effects.

Very wealthy schools with high quality students use that peer input as a substitute for other inputs. Thus, Harvard offers large undergraduate classes taught by teaching assistants; Clotfelter (1996) reports that the average class size in social science at Harvard in 1991–92 was 242 students and that just 48 percent of the social science students were taught by regular faculty. This technique would produce an inferior undergraduate product were it not offset by an ample number of excellent fellow-students. If peer quality is as important as I suspect, such schools—so long as they can attract and select superior students—can get by with a lot of corner-cutting in the direct inputs used in their undergraduate education. It’s doubtful that a university with weaker peers could get by with impunity in doing the same thing.

Of course, peer effects can be powerful both for better and for worse. With an anti-academic student culture, what is amplified may be hostility to learning and academic values. No one who saw the positive academic effect of the removal of fraternities from the Williams campus in the early 1960s could doubt the powerful influence on the educational process of a reinforcing negative student ethos, and its removal (more generally, see Moffat, 1989).

Schools that have less of the student quality input shift to technologies with less of student interaction—increasing commuter populations, larger classes, wider age and cultural disparities among students, more vocational curricula, and so on. At the extreme are schools producing distance learning with little or no student interaction and little contribution from one student’s qualities to another student’s education.

### **Summary: The Firm in the Higher Education Industry**

The firms in higher education appear to display the following characteristics: they have donative as well as commercial revenues so that costs can and do exceed sales revenues by a great deal, subsidizing their customers; there are very different levels of donative revenues among different institutions; those donative revenues are fixed in the short run for private schools but typically expand with enrollment in public schools, which has influenced schools’ incentives to restrict or expand enrollment; firms use a production technology in which an important input, student quality, can be purchased only from their customers; firms control who they sell to by using their donative resources to generate an excess demand that allows them to select among potential customers for student quality; higher student quality feeds back to increase demand, hence student quality; and schools will adjust the production technology they use for education in response to how they are positioned by their donative revenues.

## **The Market, Hierarchy and Competition**

The economic characteristics that describe individual firms in higher education have significant implications for how these firms will interact in a market. If,



for instance, colleges relied only on commercial resources—on sales proceeds—they would all compete in the market under the same conditions of success and survival. A similar sort of balanced competition would arise if donative revenues per student were equal at all schools; in this situation, competition might bid price-cost ratios to equality, though less than one, across the market. Or if colleges were always price-takers in the markets for education and for student quality, they would not restrict supply to generate excess demand and select their students on quality. But none of this appears to be the case.

Four particular market characteristics seem most important. All schools in the market sell below cost, subsidizing their customers. Because different schools have very different access to donative resources to support those subsidies, they fall into a sharply differentiated subsidy hierarchy. Because schools use a customer-input technology with a strong feedback through demand to reinforce student quality, the hierarchy based on donative wealth becomes highly skewed. A school's position, *vis-à-vis* its competition, both signifies its "excellence" and affects its ability to attract scarce student quality. This section discusses how these characteristics affect the disciplinary pressures of market competition.

### **Hierarchy and the Positional Nature of Success**

The higher education market is strongly hierarchical with firms differentiated initially by their access to donative resources—the subsidy rankings of Table 1—and what those resources will buy. The hierarchy that starts with differential access to donative resources is then amplified by the feedback from those resources to institutional quality to student quality to demand to selectivity to greater student quality, along the lines already laid out. At the top of the hierarchy are the schools well-endowed with donative wealth—large endowments and expensive plants in the case of private schools and, additionally, large government subsidies in the case of public schools—that offer expensive and high quality education at highly subsidized prices and that therefore disproportionately attract high quality students, and employ an educational technology to take advantage of those students. Movements down the hierarchy bring less of student quality and more use of methods of educational production that don't so much rely on peer quality. Movement down the hierarchy, too, means less of excess demand until schools encounter increasing problems of selling the product at all—from an excess demand at the top that controls quality, to near market-clearing demand in the middle where quantity and quality trade off, to excess supply and empty classroom seats and dormitory beds at the bottom. Strategies to augment demand—like increased reliance on distance learning or foreign or older students or vocational curricula—become crucial for schools with less donative wealth.

With institutions in highly differentiated circumstances, the positional nature of much academic success and the role of emulation, status, and relative prestige become especially important in motivating institutional behavior. At the top are the schools with the largest donative resources that set standards for emulation across the market. But while that wealth establishes the targets of emulation, it also

Table 2  
**Subsidies and Student Quality**

<i>Ranked by Dollar Value of Subsidy</i>	<i>Percent Applicants Accepted</i>	<i>Mean SAT Score</i>	<i>Percent in Top 10 Percent of H.S. Class</i>	<i>Percent National Merit Semifinalists</i>
	(1)	(2)	(3)	(4)
All Institutions	83.2%	970	19.7%	0.7%
Public	88.1%	940	14.7%	0.3%
Private	78.0%	990	22.7%	1.0%
Decile 1	67.1%	1090	37.5%	2.7%
Decile 2	78.6%	1000	22.5%	0.9%
Decile 3	81.6%	950	19.2%	0.6%
Decile 4	85.1%	970	18.8%	0.6%
Decile 5	84.9%	950	18.2%	0.6%
Decile 6	87.1%	940	16.5%	0.4%
Decile 7	86.9%	940	16.6%	0.4%
Decile 8	88.6%	930	14.7%	0.2%
Decile 9	87.1%	940	16.5%	0.4%
Decile 10	84.7%	920	12.3%	0.2%

Sources: Winston and Yen (1995).  
Observations: Applicants accepted, 2,525; SAT, 924; HS Class, 1,483; Merit Scholars, 943.  
All variables are significantly related to subsidy deciles.

creates an effective, classic barrier to entry and to upward movement within the hierarchy. Schools accumulate wealth both to overtake those above them in the pecking order and, perhaps more important, to fend off those who would overtake them from below. Since current donative income at private schools can be used either for subsidies to entice current students or for saving to augment their wealth to entice future students, the rich, within this hierarchy, get richer while the positional ranking itself remains remarkably stable (Kerr, 1991). Historically, the process has conferred significant first-mover advantages to those who led the pack (Noll, 1998). The feedback cycle is only compounded by the fact that higher student quality implies higher postgraduate incomes, which induce more generous alumni giving, further augmenting donative wealth and skewing the hierarchy.

Table 2 shows the distribution of some of the student quality characteristics that go with the subsidy hierarchy. The deciles in Table 2 include institutions ranked again according to subsidy per student. What's reported—selectivity, average SAT scores, National Merit Semifinalists and the proportion of the entering class from the top 10 percent of their high school class—are the familiar measures of student quality that, if subsidy indeed leads to selection on student quality, should be correlated with subsidies. And they are correlated, significantly so.

Table 3 reports some suggestive measures of the changing production technology used across the hierarchy. Institutions with larger subsidies, and thus

Table 3

**Subsidies, Demand Augmentation, and Educational Technologies**

<i>Ranked by Dollar Value of Subsidy</i>	<i>Undergraduates in Dorms</i>	<i>Undergraduates over Age 25</i>	<i>Undergraduates in Vocational Programs</i>	<i>Schools with Part-Time Degree Prog.</i>	<i>Schools with Adult Education</i>
	(1)	(2)	(3)	(4)	(5)
All Institutions	46.5%	32.1%	9.6%	88.5%	81.7%
Public	29.2%	39.9%	6.4%	95.1%	92.6%
Private	56.3%	23.6%	13.0%	81.7%	70.2%
Decile 1	60.7%	23.7%	5.4%	67.6%	66.9%
Decile 2	58.0%	26.1%	7.7%	84.5%	73.5%
Decile 3	47.1%	29.7%	9.4%	92.2%	80.5%
Decile 4	47.3%	31.2%	9.2%	93.8%	82.0%
Decile 5	43.7%	34.0%	9.7%	94.7%	86.9%
Decile 6	42.3%	33.5%	10.3%	93.0%	85.8%
Decile 7	40.2%	35.5%	10.2%	95.1%	90.8%
Decile 8	40.1%	36.4%	9.0%	92.9%	92.0%
Decile 9	38.1%	35.0%	12.2%	93.8%	87.4%
Decile 10	34.1%	35.6%	12.6%	77.5%	70.5%

Sources: Winston and Yen (1995).

Observations: Dorms, 1,637; Over 25, 2,283; Vocational, 2,567; Part-time, 2,573; Adult Education, 2531. All variables are significantly related to subsidy deciles.

greater selectivity and more of the student quality that gives them an opportunity to exploit peer effects in production, have a large share of undergraduates living together, more undergraduates in a common under-25 age bracket, and fewer programs of vocational training, part-time degrees, and adult education. The U.S. market structure, of course, is not so tidy as a focus on these highly aggregated tables might seem to imply. Cutting across that ranking by student subsidy are important regional, ideological, and curricular dimensions that differentiate among schools on criteria other than donative resources. College students resist being far from home (Litten, 1991) and programmatic and ideological differences like religious denomination are often important to them (Rose-Ackerman, 1996). Only at the top of the hierarchy is the market truly national and even that is a quite recent development (Hoxby, 1997); it is no accident that the rating agencies like *U.S. News and World Report* separate national and regional rankings. Keeping these qualifications in mind, though, it is useful still to focus on the wealth differences that will have their effects even within national, regional and ideological branches.

### Competition and Prices

How might competition function in this kind of hierarchical market and with what effect on prices? Competition among schools appears to be limited to

overlapping “bands” or segments of similarly wealthy schools within the hierarchy (with the further separation by geography and ideology). As one observer put it, “A school competes only with the ten schools above them and the ten below, even if there are more than 3,300 in the country.” Access to donative resources is the barrier to entry into competition with schools in the bands above while competitive pressures—like price discounting for certain desirable students—slowly “wick up” the hierarchy from below (Bronner, 1998). Competition at the top and bottom of the hierarchy takes place in markets for two very different things. At the bottom, it’s competition in the product market for customers who will buy the output; at the top, it’s competition in the input market for scarce student (and faculty) quality that will improve a school’s educational quality and position.

Competition at the top is heavily positional. “Excellence” and “prestige” drive colleges, but these goals can be judged only with respect to others. The bottom line for any school is its access to the donative wealth that buys quality and position. Several authors have described the conflict between individual and social rationality and the wasteful dynamics of positional markets (Frank and Cook, 1995; Hirsch, 1977). Essentially, the notion is that the players become trapped in a sort of upward spiral, an arms race, seeking relative position; in the case of education, it may, in the extreme, involve expensive “competitive amenities” that do not produce sufficient benefit to justify their cost directly, but are important to an individual school because others are offering these amenities. Schools at the very top are accorded, what is more, great respect as objects of emulation even when they have little effect on a school’s own market band—how many schools style themselves as “The Harvard of \_\_\_\_\_”?

The behavior of prices in this market will be determined by different factors in different parts of the market. Indeed, the basic question, “Why do tuitions keep rising?” has proven hard to answer mainly because there is no single answer. There appear to be three quite different answers appropriate to three quite different parts of the market.

For public institutions, tuition has gone up because, since the mid-1980s, their donative resources have gone down as a manifestation of a national tax revolt and disenchantment with higher education (Winston et al., 1998). Most public schools have faced the hard choice of either cutting educational spending—and quality—or increasing price. They’ve typically done some of both. Because the price that students pay for public education has covered so small a part of costs—just 12 percent in 1995—and their subsidies so large a part, even a small percentage reduction in public support has meant a large percentage increase in tuition and large headlines.

For the private institutions that compete to sell their services, sticker prices have risen to allow more price discrimination, in the form of financial aid, among potential buyers. In the four years between 1986–87 and 1990–91, on average, private schools used 42 percent of their sticker price increases to increase financial aid; in the next four years, the share of the increase in an-

nounced prices they committed to financial aid increased to 60 percent—with the change concentrated in the hardest-pressed part of the private sector (Winston et al., 1998; Winston, 1998b).<sup>13</sup>

Finally, for the wealthy private institutions that compete to buy scarce student quality, the positional race has created pressure on each school to obtain more donative resources, both to attract students now and to save to be ready to attract students in the future. Any school could opt out of that arms race, unilaterally, only at the risk of being overtaken by hungry schools from below, an institutional sin bordering on fiduciary irresponsibility. So we've seen perpetual and ever-larger capital campaigns and real tuition increases despite a bonanza of unprecedented endowment earnings from the stock market boom. In a positional market, there's never too much of a good thing—or even much stomach for asking that question—and in the hierarchy, wealth is quite fundamentally a good thing (Winston, 1997).

### **The Church and the Car Dealer**

This positional competition at the top is especially worrisome when it is embedded in an industry of donative-commercial nonprofits with a customer-input technology that induces competition for customer quality. The donative-commercial firm is essentially part church and part car dealer—devoted partly to charity and partly to commerce, to “ideology” and “rationality.” The result is a tension between doing good and doing well. It plagues administrators trying to decide which behaviors—those of the charity or those of the firm—are appropriate to a college or university. It also creates real if often unrecognized ambiguities for society's evaluation of such an industry.

Such conflicts are nowhere clearer than in the Justice Department's antitrust action a few years ago against a group of leading private colleges and universities that used to meet to coordinate their offers of financial aid for those students whose applications overlapped two or more of those schools (Carlton et al., 1995).<sup>14</sup> The schools saw their action as coordinating a charitable mission—that of increasing equality of opportunity by assuring access to an expensive and high quality education by high quality students who couldn't otherwise afford it. Overlap meetings were necessary to focus aid subsidies on low-income students, since without coordination parental haggling and individual school's positional bidding for student

<sup>13</sup> In the conventions of college accounting, financial aid is seen as a cost of operation; it is as if the full sticker price were collected from every student and then some was given back to selected students as a financial aid payment. Economists, in contrast (and an increasing number of commentators), see financial aid as a discount from a sticker price, so it is collected in full only from non-aided students. This doesn't matter to the calculation of subsidies (as the difference between cost and price) so long as “cost” and “price” are appropriate to each other: both are measured with or both without financial aid. Note that, *ceteris paribus*, the only thing the sticker price does is to divide the subsidy into the general subsidy that everyone gets and financial aid. So the result reported in the text simply asked how much of an increase in price went to increased aid and how much to increased costs, net of aid.

<sup>14</sup> They were: MIT, Brown, Columbia, Cornell, Dartmouth, Harvard, University of Pennsylvania, Princeton, Yale, Amherst, Barnard, Bowdoin, Bryn Mawr, Colby, Mount Holyoke, Middlebury, Smith, Trinity, Tufts, Vassar, Wesleyan, and Williams (Salop and White, 1991).

quality would divert those resources from low-income students who were willing but unable to pay the full price to high-income students who were able but unwilling to pay it. The Justice Department, in sharp disagreement with the schools, saw overlap meetings as simple commercial (net) price fixing. The conflicting views were charity versus commerce. While most of the Ivy League schools signed a consent decree that barred coordination over a wide range of activities, MIT went to court. The Justice Department won in trial court—colleges and universities are commercial entities—but MIT won on appeal—colleges and universities are, importantly, also charities.

The conflict between the roles of church and car dealer is such that both sides appear to have been right. The Department of Justice, despite its reversal on appeal, effectively stopped the coordination of tuition and financial aid among these schools. As a result, price competition has, indeed, slowly crept to the top of the hierarchy in the market for student quality where these schools jockey for position. The first high-level skirmish was that between Stanford and Harvard in 1995 working through “early decision” policies that shook up admissions practices throughout these schools. But spring of 1998 seems likely to go down as the beginning of real competition at the top end of the student quality market, as major changes in price through financial aid policies were initiated first by Princeton (to the apparent benefit of low-income students), then picked up by Yale (for middle-income students) (Gose, 1998), turned into a merit-packaging-within-need-based-aid policy by Swarthmore, and opened wide by Harvard’s invitation to renegotiate any initial aid award (Bronner, 1998) and its late September escalation that increased grant aid by \$2,000 across the board (Arenson, 1998; Pertman, 1998).

That competition does not appear to have much tempered sticker price increases, though. Indeed, it may well push them up to cover, among other things, more aid-discounting. As we’ve seen, the competition has modified aid policies as these schools sensed that they were losing position in the competition for high-quality students. Price discrimination—aid policy—is increasingly tailored to a student’s willingness to pay (McPherson and Schapiro, 1998). Ironically, a strong case can be made that without the ban on coordination, these schools would likely have acted jointly against the threat to their mutually recognized ideological values (and their vulnerability to congressional pressure as their continued price increases seem to be creating a major public relations problem). Without coordination, each school, individually, risks a great deal not to go along with the others. But more fundamentally, by not acting together they are risking abandonment of 30 years of the need-blind admission and need-based aid policy that has been one of their primary charitable contributions, increasing equality of opportunity by weakening the connection between income and high quality private education (McPherson and Shapiro, 1998; Bowen and Bok, 1998).

For the public sector, the donative-commercial nature of colleges and universities also underscores an emerging threat. In what Californians call “The Second Tidal Wave,” college enrollments are projected to increase nationally by 10–30 percent in the next decade—as many as three million more students



(Macunovich, 1997). Since the average student in a public college or university in Table 1 pays only one-eighth of the total cost of the education received, those figures suggest that three million new students will bring \$3.6 billion in new tuition revenues, but if each of them gets the same kind and quality of public education students are getting now they will cost \$29.7 billion. The pressing questions are “Who’s going to pay the rest?” or “How is public higher education to be modified to reduce that cost?” (Trow, 1997).<sup>15</sup>

## Conclusion

This paper suggests that standard economic intuition and analogies, built on an understanding of profit-making firms and the economic theory that supports it, are likely to be a poor guide to understanding higher education and to making predictions and public policy. One who thinks a college is like any other business will look in all the wrong places. Salop and White (1991), for example, presented the Justice Department’s antitrust case against the overlap schools in this journal as a strong one, drawing standard welfare conclusions keyed to competition and efficiency. But it’s not clear what it means to use those familiar welfare criteria when, in long-run equilibria, firms’ price-to-cost ratios range from decile averages of 0.067 (top public) to 0.89 (bottom private), reaching 1.0 only for the highly atypical for-profit college. It’s also not clear how those welfare criteria apply when quantity rationing is used in complex ways to cut demand (Bowen and Bok, 1998)—to reduce, for instance, Williams’s applicant pools of 4,500 down to freshman classes of 500—making a hash of concepts like the role of the preferences of the (non-existent) “marginal non-aided student.” I suspect that if Salop and White had the information in Table 1 about the awkward realities of the costs, prices, subsidies, and hierarchy that structure higher education—information that has become available only since they wrote—their careful analysis of the relevance of antitrust laws

<sup>15</sup> It’s tempting to decide that those grim questions result from a confusion of average and marginal cost. Not only is it the conventional wisdom for colleges and universities but the whole cottage industry of student enrollment management consultants takes as self-evident that the cost of a marginal student is much lower than average cost. Unfortunately, it doesn’t work out that way. A couple of years after the low-marginal-cost argument is used to justify expanding a student body, the Provost and Deans of Students and Faculty tour the campus and declare that there’s awful overcrowding of dorms, dining rooms and classes, so expansion is necessary. If it’s done, costs will have risen; if it’s not done, overcrowding remains and product quality is degraded. What seems at issue is that in thinking (and teaching) about marginal cost, economists make an implicit assumption that the quality of the product remains exactly the same with an incremental unit of output. (It always does implicitly in my micro lectures.) But in a college that is not likely—if additional students are really to be provided with the same quality of educational services, it means more classrooms and dorms and professors and the rest which, unless there’s genuine excess capacity or large economies of scale or scope, quickly adds up to something close to average cost. Any excess capacity that does exist in U.S. higher education is unlikely to be located very near the three million additional students. So marginal cost looks a whole lot like average cost in higher education.



would have turned out differently. Our economics and intuitions about for-profit business don't just obscure what's happening in colleges and universities, they can also seriously distort understanding and policy.

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