Tuition Discounting in Liberal Arts Colleges

By John P. Caskey

In Short

- Colleges with substantial revenue from endowments and gifts tend not to offer merit scholarships, because they can attract highly-desired students by spending more per student than they charge full-pay students.
- When tuition-dependent colleges offer extensive scholarships, this forces them to spend less per student than they charge full-pay students.
- Colleges that spend substantially less per student than they charge full-pay students often have trouble attracting such students and, to fill empty seats, they may offer more scholarships, especially merit scholarships.
- Merit scholarships can crowd out need-based scholarships in some schools but enhance them in others.

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College-provided scholarships, or tuition discounts, are in the news. The National Association of College and University Business Officers recently estimated that the average discount for full-time, first-year undergraduates at private nonprofit colleges and universities hit 50 percent in the fall of 2017. In other words, these institutions provide scholarship grants that reduce a typical new student's tuition and fees by half.

In one sense, this is good news for students. Scholarships lower college costs for their recipients and make college a possibility for those who could not otherwise afford it. On the other hand, tuition discounting can reduce schools' revenues and undermine the quality of their academic and extracurricular programs. There are also concerns that colleges that offer extensive merit scholarships are likely to reduce need-based scholarships to offset the loss in revenue from merit-based tuition discounts. If so, many students from lower-income families may find college unaffordable as colleges compete to attract highly-desired, more-affluent students who would attend some college, with or without a discount.

Using data from U.S. Department of Education's Integrated Post-Secondary Educational Survey (IPEDS) and the Common Data Set (CDS), a collaborative data-gathering project of the College Board, *Peterson's*, and *U.S. News and World Report*, I examined discounting practices at 125 private liberal arts colleges (Caskey, 2018). I found two striking, and initially puzzling, patterns in the data: First, colleges that depend heavily on tuition revenue commonly provide scholarships to much *larger* percentages of their students than do the colleges with substantial budget support from large endowments. How can the tuition-dependent colleges afford to do this? Second, although all colleges offer need-based scholarships, the use of merit-based scholarships is highly variable. Some colleges offer them to *all* entering students who do not have need-based scholarships. Others offer no merit scholarships. What explains this variation?

I argue that these patterns emerge as colleges in different circumstances trade off the costs and benefits of tuition discounting. Specifically, most endowment-rich colleges would see no net benefit from merit scholarships and do not offer them or offer very limited merit scholarships. All colleges gain from need-based scholarships, and all offer them. But the scholarships provided by tuition-dependent colleges can force reductions in per-student spending and encourage further discounting.

Suppose, for example, a completely tuition-dependent college has a $50,000 comprehensive sticker price. If half its students enroll with scholarships and pay $20,000 and half pay the sticker price, the college can spend $35,000 per student. But the gap between the sticker price and what this college spends per student can make it difficult to attract full-pay students who are reluctant to spend $50,000 for $35,000 of educational services. To fill otherwise empty seats, the college may offer additional tuition discounts, especially merit scholarships. This hypothetical example is simplistic, but it illustrates the economic forces that underlie many of the patterns in the data. My analysis will also explain why merit scholarships might crowd out need-based scholarships in some colleges, but have no effect, or even enhance them, in others.

I am certainly not the first economist to analyze tuition discounting (Bowen and Breneman, 1993; McPherson and Shapiro, 1998; Archibald and Feldman, 2017; and Clotfelter, 2017). But this study is the first to analyze the practice with a focus on liberal arts colleges. Since the economic factors behind tuition discounting relate to undergraduate education, limiting the study to institutions that specialize in undergraduate education crystalizes the issues and clarifies the analysis. The insights gained, however, apply to undergraduate education more broadly.

Tuition Discounting Across the Colleges

Before discussing tuition discounting patterns, I should make three points about the data. (For the data in an Excel spreadsheet, https://docs.google.com/spreadsheets/d/1CAA-RTnDfi5nuRoqtP5czQ3kPr6s2B7VoHtu8Sx_xV4/edit#gid=2060019136.) First, in selecting the liberal arts colleges for this study, I excluded those with fewer than 500

Table 1. Donor Support and Need-Based and Merit Scholarships

Nine Groups with Colleges Ranked by Per-student Donor Support	Average Per-Student Annual Donor Support	Average Percentage Entering Students with Need-Based Scholarships	Average Percentage Entering Students with Merit Scholarships	Average Need-Based Scholarship Grant	Average Merit Scholarship Grant
1: Colleges ranked 1 to 10	$50,951	53.9%	5.4%	$41,929	$13,468
2: Colleges ranked 11 to 25	$25,346	53.2%	7.9%	$37,906	$12,599
3: Colleges ranked 26 to 40	$17,330	55.0%	15.2%	$34,141	$19,570
4: Colleges ranked 41 to 55	$11,615	60.3%	20.4%	$29,710	$13,244
5: Colleges ranked 56 to 70	$9,212	63.6%	22.4%	$29,033	$14,475
6: Colleges ranked 71to 85	$7,666	65.0%	19.7%	$28,488	$16,865
7: Colleges ranked 86 to 100	$6,203	73.5%	22.7%	$24,882	$17,243
8: Colleges ranked 101 to 115	$4,510	73.0%	16.8%	$24,896	$15,671
9: Colleges ranked 116 to 125	$2,683	73.0%	21.1%	$23,941	$16,735

students, those where graduate students made up more than 25 percent of the student population, those with missing data, and those where part-time students were more than ten percent of the undergraduate student body. Second, I did not include athletic scholarships in my analysis—only about ten percent of the colleges in my data set provide such scholarships, and their purpose is distinct from that of need-based and merit scholarships.

Third, I will argue that differences in colleges' earnings from endowments and gifts explain key patterns in the data. To compare sustainable, or steady-state, levels of budget support from these sources, I created a standardized measure for each college, which I call its per-student "donor support." Per-student donor support is the average of the previous three years of unrestricted gifts to a college plus five percent of the value of the endowment at the beginning of the academic year, divided by the number of students enrolled in the school. This allows a school's donor support to be compared to others in a standard way.

I then ranked the colleges by per-student donor support and placed them in one of nine groups (Table 1). The first group contains the ten colleges with the highest levels of per-student donor support. The second group contains the 15 colleges with the next highest levels of donor support. This is followed by six more groups of 15 colleges. The final group contains the 10 colleges with the lowest levels of per-student donor support.

Table 1 presents the unweighted averages of per-student donor support for each group as well as unweighted averages for the percentage of entering students who had college-provided need-based or merit scholarships in the fall of 2014. As shown in the Table, the tuition-dependent colleges, i.e. those with relatively little donor support, typically provide both need-based and merit scholarships to significantly larger percentages of their students than do the relatively rich schools. In fact, the typical college in the final three groups provides a tuition discount to 90 percent or more of its entering students. Although it is not shown in the Table, 39 of the 125 colleges provide tuition discounts to 98 percent or more of their entering students—37 of these are in groups 3 through 9. In addition, although all 125 colleges provide need-based scholarships, 13 provide no merit scholarships—8 of these are in the first two groups.

The Table also presents the unweighted average values of the need-based and merit scholarships for the groups. Two patterns stand out. First, the relatively rich colleges offer larger average need-based scholarships than do the schools with relatively little donor support. Second, within each group the average need-based scholarship is larger than the average merit scholarship.

Why Offer Scholarships?

I argue that the patterns in Table 1 arise from the tradeoffs a college makes in setting its scholarship policies. In particular, I emphasize three potential benefits from tuition discounting. One addresses broad-based notions of social justice. Colleges, and the general public, believe that nonprofit educational institutions should serve a reasonable share of students who cannot afford their sticker prices. Moreover, the tax system provides colleges with a number of benefits, and the public, in return, can expect them to devote some resources to broad social goals (Ehrenberg, 2017). Colleges that do not meet expectations in terms of need-based scholarships run the risk of being "named and shamed." Since 2014, for example, the *New York Times* has published a "College Access Index" that ranks colleges according to their "commitment to economic diversity."

There is a second benefit from need-based and merit scholarships that is *not* related to social responsibility. Colleges want to enroll the best students they can, where "best" is measured across a broad range of academic, non-academic, and personal characteristics. Colleges seek such students because their prestige is closely linked to the perceived quality of their students. In addition, colleges believe that their students benefit from having high-quality, diverse students as colleagues. A college can better meet this goal if it expands the groups it selects from to include students who cannot afford the posted tuition as well as notably high-quality students who can afford it but who would go elsewhere unless offered a price discount in the form of a merit scholarship.

Do merit scholarships, in fact, work to lure students to a college? The only reliable way to answer this question is with experimental methods. Amazingly, one college conducted such an experiment. As James Monks (2009) explains, in the fall of 2005, an unnamed "highly selective" liberal arts college with about 3,000 students that had previously not had merit scholarships began to offer a $7,000 merit scholarship. At the time, its comprehensive sticker price (tuition, fees, room, and board) for entering first-years students was $40,510. In the experiment, the college offered the merit scholarship to 224 randomly chosen students from among 538 of the highest-rated applicants who applied "regular decision." The other 314 top-rated applicants were admitted without scholarships.

The yield for the merit scholarship group was 7.1% and the yield for the non-scholarship group was 3.2%. The difference (3.9%) was statistically significant at a 5% level. In short, the merit scholarship attracted about nine targeted students who would not have enrolled without it. Of course, the degree to which merit scholarships affect enrollments will depend on the size of the discount, the type of students to whom they are offered, and other factors (Avery and Hoxby, 2004).

A third benefit from tuition discounts applies to colleges that struggle to attract enough qualified students to fill their entering classes. Enrollment shortfalls can create severe financial pressures and undermine the quality of their academic programs. If a college is under-enrolled, the additional ("marginal") cost associated with filling a seat can be far below the college's average cost because this average cost includes the cost of under-utilized facilities and academic programs that won't change with the addition of another student. The school can gain financially from selling an otherwise empty seat at a discount, if the discounted tuition exceeds the marginal cost of adding the student.

Explaining Patterns in the Use of Scholarships

The patterns in Table 1 result from trade-offs that colleges make. Imagine a college that fills all its seats with full-pay students and spends all its tuition revenue on the students' education and extracurricular programs. If this college were to replace some of these students with scholarship students, this would reduce its tuition revenue and force it to reduce spending. In doing so, the college makes a trade-off. The spending cut, by itself, adversely affects the college's educational and extra-curricular programs. But providing access to lower-income students contributes to broader social goals, and if need-based and merit scholarships enable the school to enroll better students or students whose presence contributes positively to the educational experience of other students, the net effect can benefit the college despite the spending cuts.

How do differences in the colleges' donor support affect the tradeoffs they face and shape their scholarship policies? In answering this question, I draw on the data in Table 2. It shows the unweighted average comprehensive sticker price and adjusted per-student operating expense for each of the nine groups of colleges. A college's operating expenses include all wages, purchases of basic supplies, interest and depreciation. Since comprehensive tuition includes room and board, I adjust the colleges' per-student expenditures to estimate what they would be were all students to live and eat on campus.

The fourth column in the Table presents the average gap between the colleges' sticker-prices and their adjusted per-student operating expenses. The gap is negative for colleges with the highest levels of donor support, i.e. the "rich" colleges. Drawing on donor gifts and earnings from their

Table 2. The Sticker-Price/Spending Gap and Admissions Selectivity

Nine Groups with Colleges Ranked by Per-student Donor Support	Average Comprehensive Sticker Price, 2014–15	Average Per-Student Operating Expense, Adjusted	Average Sticker-Price/ Spending Gap (Column 2–column 3)	Average Percentage Applicants Admitted
1: Colleges ranked 1 to 10	$57,567	$86,224	–$28,657	19.9
2: Colleges ranked 11 to 25	$55,784	$67,730	–$11,946	33.9
3: Colleges ranked 26 to 40	$53,612	$58,271	–$4,659	41.5
4: Colleges ranked 41 to 55	$50,812	$48,384	$2,428	53.6
5: Colleges ranked 56 to 70	$49,966	$45,052	$4,914	51.7
6: Colleges ranked 71to 85	$50,354	$44,519	$5,835	58.5
7: Colleges ranked 86 to 100	$44,586	$34,937	$9,648	70.9
8: Colleges ranked 101 to 115	$46,554	$37,021	$9,533	71.2
9: Colleges ranked 116 to 125	$46,837	$31,023	$15,813	72.4

endowments, they can spend substantially more per student than they charge even their full-pay students, while offering significant tuition discounts to half or more of their entering students. In the case of the tuition-dependent colleges, per-student operating expenses are below sticker prices.

The colleges with the highest per-student spending commonly have higher sticker prices, but the variation in sticker prices across the schools is far more limited than the variation in spending. The demand to attend a college depends on numerous factors but, as shown in the final column in Table 2, it is strongly correlated with per-student donor support and the sticker-price/spending gap. Students may not be aware of what colleges spend per student, but they are aware of significant variations across colleges in the academic and extracurricular programs created by large differences in per-student spending. Colleges that spend significantly more per student than they charge even their full-pay students commonly turn away qualified applicants who are willing and able to pay the sticker price.

Competition to enroll in the rich colleges explains much of the variation in the use of merit scholarships. Most of the rich colleges do not offer merit scholarships or offer very few. These colleges tend to be among the most selective as measured by the percentage of applicants admitted. They enroll very strong students, and they have little to gain from wooing high-merit students with price discounts. But they do have something to lose. Offering merit scholarships would reduce tuition revenues and could also create resentment costs. If full-pay students are themselves high merit, as they tend to be at the most selective colleges, these students may view a system that provides merit discounts to other students, who are not of distinctly higher merit, as capricious. Facing such costs and modest benefits from merit scholarships, many highly selective colleges decide not to employ them.

When tuition-dependent colleges enroll a significant percentage of scholarship students, they must reduce per-student spending below their sticker prices. In a college with no donor support, for example, where half the students pay the $50,000 sticker price and the other half are scholarship students who pay $30,000, the college can spend $40,000 per student. Effectively, the tuition payments of the full-pay students subsidize the scholarship students. If the subsidy is small, full-pay students may not object. Colleges' per-student spending levels are not well-publicized, so full-pay students may be unaware that they are paying more than the college spends per student. And, to the extent that full-pay students benefit from attending a college with a socioeconomically diverse student body and with high-quality students, they may be willing to provide the subsidies to other students necessary to achieve that outcome.

A college's ability to use full-pay students to subsidize its scholarship students is, however, limited. If the above hypothetical college planned to enroll 30 percent students paying the full $50,000 and 70 percent scholarship students paying an average price of $10,000, it could spend only $22,000 per student. Would it be able to find qualified students willing to pay $50,000 for $22,000 of educational services? This seems unlikely. A competing college, by offering fewer or less generous scholarships, could provide more educational services and amenities for the $50,000 price tag and would likely attract the college's full-pay applicants. A college's students may benefit from diverse, high-merit classmates, but this benefit is unlikely to be sufficient to induce full-pay students to support major gaps between what they must pay and what the college spends educating them. When full-pay students perceive that a college is too costly for what it delivers, it won't be able to attract them.

This explains why many tuition-dependent colleges use scholarships, particularly merit scholarships, to fill empty seats. As such colleges begin to offer need-based and perhaps merit scholarships, per-student spending falls below their sticker prices. When this sticker-price/spending gap becomes large, full-pay students perceive that the schools are not good values relative to what they must pay, and the colleges struggle to attract such students. Recognizing that it is better to fill a seat at a discount than leave it empty, colleges offer more scholarships.

Colleges that use scholarships to fill empty seats commonly use both merit and need-based scholarships. If a school has empty seats and tries to fill them only with students with need-based scholarships, it is ignoring a large potential source of demand—students who don't have financial need but who might enroll if offered a merit discount. Moreover, filling a seat with a student on a merit scholarship generally brings in more revenue than filling it with a student on a need-based scholarship. As shown in Table 1, merit scholarships tend to be smaller than need-based scholarships. Modest tuition discounts can often attract students who can afford a college but might go elsewhere. Students who simply can't afford a college generally need larger discounts.

When colleges use merit scholarships to fill empty seats, the students receiving the scholarships do not have to be particularly meritorious for the scholarships to serve their purpose. In fact, truly high-merit students are likely to have the best outside options and be the least likely to be attracted by a modest price discount. This is why many colleges using merit scholarships to fill seats offer standard merit discounts to all students who do not have need-based scholarships. This saves the colleges from defending a system with apparently random merit price discounts for some students, who are not notably meritorious, but not others.

Why don't colleges where no, or almost no, students pay the sticker price simply lower their prices and eliminate many scholarships? Undoubtedly, there are two main rationales. First, students who are admitted to a college and notified that they qualify for a scholarship may feel wanted or honored. They also may think that they are "getting a good deal" since they are paying less than the sticker price. This should increase the chances that they choose that school. Second, people may take a school's sticker price as a signal of quality—what is often called the "Chivas Regal" effect. Finding data on what students actually pay to attend a college and what a school spends per student takes some searching and sophistication, but colleges' sticker prices are readily available. Were a school to cut its sticker price well below the posted prices of the schools it competes with, or aspires to compete with, people might assume that its educational services are inferior.

The downside to maintaining a sticker price that no one pays is that potential students may think that the sticker price is the true cost of attending and be discouraged from applying. In fact, a December 2011 survey of 1,461 college-bound students found that slightly more than half the students ruled out some college options based on sticker prices (Hesel and Meade, 2012). Clearly schools must trade off the potential for artificially high sticker prices to discourage applications against the potential benefits from a policy of extensive tuition discounting. In recent years, a small number of colleges, with large sticker price/spending gaps and abundant tuition discounting, have switched strategies, slashing their sticker prices and greatly curtailing scholarships.

How Can Tuition-Dependent Colleges Afford to Provide So Many Scholarships?

One might initially find it puzzling that tuition-dependent colleges can offer scholarships to much higher percentages of their students than do their well-endowed competitors, but the above analysis provides two explanations. First, as shown in Table 1, need-base scholarships at the tuition-dependent colleges are generally smaller than those with relatively abundant donor support. The second, and more important, answer to the puzzle lies in the gap between what the typical tuition-dependent college spends per student and its comprehensive sticker price. Suppose a school posts a $50,000 sticker price but only spends $35,000 per student. Theoretically, such a school could offer $15,000 scholarships to 100% of its students.

Of course, schools don't offer all students equivalent scholarships, but the hypothetical example makes the point. Tuition discounting forces tuition-dependent colleges to reduce per-student spending below their sticker prices. The resulting sticker-price/spending gap in turn encourages tuition discounting. Why? When the gap is large, it makes it difficult for a college to attract qualified full-pay students. In addition, when the gap is large, it is effectively costless for a college to provide modest tuition discounts. Students with such scholarships can still pay more than the college spends per student and can help subsidize the education of students with larger scholarships. Moreover, if a seat will go empty if it is not filled with a scholarship student, it is costly not to fill it.

Do Merit Scholarships Crowd Out Need-based Scholarships?

Stephen Burd (2014) and others have been critical of colleges that provide merit scholarships, arguing that the colleges are giving price discounts to students with no financial need who are almost certain to attend some college. The critics charge that colleges offset the revenue lost to merit scholarships by offering fewer, or less generous, need-based scholarships. This can prevent some students from lower-income families from attending college at all or leave them saddled with heavy student-loan burdens.

This criticism is valid, subject to three important qualifications. First, colleges that lose tuition revenue because they offer merit scholarships could respond by cutting their operating costs rather than reducing the number or size of need-based scholarships. How they respond is an empirical question. Existing studies (Griffith, 2011, and Ehrenberg et al, 2006) suggest that colleges that make greater use of merit scholarships tend to reduce need-based assistance, but the studies are far from definitive due to data limitations and methodological issues (Caskey, 2018).

Second, when a college uses merit scholarships to fill empty seats, it hopes to *increase* its revenue and strengthen or maintain its educational programs or need-based scholarships. Third, as noted above, many schools that offer extensive merit scholarships do so because their sticker prices substantially exceed what they spend per student. Were these schools to reduce their sticker prices and eliminate merit scholarships, this would make almost no substantive change. Suppose, for example, a school posts a $50,000 sticker price but spends $35,000 per student. Half its students have need-based scholarships and pay $30,000 and half have merit scholarships and pay $40,000. The college could cut its sticker price to $40,000, eliminate all merit scholarships, and reduce its need-based scholarship discount to $10,000. Assuming it attracts the same cohort of students as it did previously, nothing would have changed. Under the new policy, students with financial need would pay $30,000 for $35,000 of education and students without financial need would pay $40,000.

The bottom line is clear. The effect of merit scholarships on college spending and need-based scholarships almost certainly differs across schools. In some schools, they might crowd out need-based scholarships or lead to more restrained operating expenditures. In other schools, they may enhance operating expenditures and need-based scholarships. And, in a third set of schools, they may have no effect on school spending or need-based scholarships. Empirically assessing the effect of merit scholarships on need-based scholarships and college spending for a diverse set of schools would be challenging.

Don't Ignore Per-Student Spending

My focus on liberal arts colleges highlights the forces behind tuition discounting. Colleges with abundant donor support can provide extensive need-based scholarships while maintaining per-student spending levels that match or exceed their sticker prices. Many of these colleges attract a sufficiently meritorious set of students that they see no advantage to offering merit scholarships. For colleges with more modest levels of donor support, substantial need-based discounting forces notable reductions in per-student expenditures. This makes it difficult for these colleges to compete with richer schools for highly-desired students. Many use merit scholarships to attract these students.

This can launch a dynamic process for schools with modest donor support. As discounting becomes more extensive, the gap between the schools' sticker prices and their per-student expenditures increases, and they find it ever more difficult to attract qualified full-pay students. This encourages further discounting to relieve financial pressures created by empty seats. In addition, when the sticker-price/spending gap is large, filling seats with students paying modestly discounted tuitions is effectively costless. The outcome, in many cases, is a college where all or almost all students received tuition discounts.

Critics of merit scholarships have called for their elimination since they can crowd out funding for need-based scholarships. They can have this effect, but the overall impact is difficult to gauge. In some cases, merit scholarships can even provide revenue to enhance need-based discounts. Yet other colleges could eliminate merit scholarships and reduce their posted tuitions with little substantive change in the prices any of their students actually pay. In any case, it is probably unrealistic to expect most colleges to drop merit scholarships. They are a natural result of increasing national and regional competition among colleges for highly-desired students (Hoxby, 2009).

There is a final implicit lesson in this analysis. Any scrutiny of the scholarship policies of colleges and universities should include data not only on the percentage of students with need-based and merit scholarships and size of discounts relative to the schools' sticker prices, but also data on what the schools spend per undergraduate. Too often this information is omitted from the discussion, yet it is critical to understanding schools' scholarship policies. C

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