

Financial Aid in Theory and Practice

Why It Is Ineffective and What Can Be Done About It

Andrew Gillen

Center for College Affordability and Productivity



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About the Author

Andrew Gillen is the Research Director of the Center for College Affordability and Productivity. He received his BBA from Ohio University, and his Ph.D. from Florida State University.

About the Center for College Affordability and Productivity

The Center for College Affordability and Productivity is a nonprofit research center based in Washington, DC, that is dedicated to research on the issues of rising costs and stagnant efficiency in higher education.

1150 17th ST. NW #910 202-375-7831 (Phone)
Washington, DC 20036 202-375-7821 (Fax)

www.centerforcollegeaffordability.org
www.collegeaffordability.blogspot.com

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Executive Summary

Financial aid programs are supposed to improve access and affordability in higher education. The effectiveness of these programs is increasingly being questioned as college attainment figures stagnate and the financial burden on students and families continues to climb year after year. This report identifies the main culprit for this unsatisfactory state of affairs as a misunderstanding of the effect of financial aid on schools.

Currently, financial aid programs take costs per student as a given, and attempt to offset some of those costs. However, costs are not given. In fact, it is widely acknowledged that colleges and universities are engaged in an academic arms race. Thus, when financial aid programs make more money available to schools, this money is spent and results in higher costs per student. The end result is more costly higher education, generally accompanied by higher tuition, which has negative implications for access and affordability.

Financial aid that is restricted to low-income students (allowing them to pay current costs at their school) will not materially contribute to the arms race. The effect of such aid will be to improve access, affordability and equality of opportunity. However, when aid is made available to students who can already pay the current costs, the schools are likely to capture the aid money and spend it – which contributes to the arms race.

Thus, to avoid providing fuel for the arms race, financial aid needs to be well targeted. Current financial aid programs generally do not meet this requirement. State appropriations and other lump sum payments are particularly bad in this regard, as are the federal tax credits. When income limits on federally backed loans exist, they are generally too high. The only large program that does not contribute to the arms race is the means-tested Pell grant program.

This report therefore argues for the elimination of most current financial aid programs (including state appropriations) and for the creation of Super Pell grants. A revised student loan program would likely be needed to fill any funding gap.

Introduction

The current financial aid system is broken in many respects. The most widely recognized flaw is that a convoluted application and distribution system prevents those who need aid the most from getting it. As a recent study from the Center for American Progress noted, the “primary difficulty with current federal financial aid policy is that it is poorly understood by nearly all of its constituents.”¹ This is indeed true, and reforms to address this issue are needed. But I believe that there are problems that are much more fundamental in nature, and that these problems lend considerable support to the view that “financial aid has morphed into a ‘debt for diploma’ system that fosters ever-rising tuitions, fees, and room-and-board charges.”²

Currently, financial aid programs look at what it costs to educate a student (the per student costs), and then devise methods of reducing the out of pocket expenditure for students and their families. This largely consists of giving money directly to schools (state appropriations) or giving money to students to give to schools (grants and student loans). These programs should, in theory, be effective,

but mounting evidence suggests that they are not.

The key to understanding why they are ineffective is to realize that “colleges and universities will react to the incentives those policies create and not passively accept their consequences... There is every reason to expect that both prices and financial aid practices would respond to such incentives in ways that would lead to the colleges themselves capturing a significant fraction of the revenues.”³ The failure to recognize this is the main flaw of the existing theory of financial aid. Once this mistake is acknowledged, it becomes apparent that current financial aid practices are not likely to be as effective as first thought.

Perhaps the most important reason why current financial aid programs are ineffective is that they often indirectly lead to higher costs per student. The notion that financial aid programs can contribute to higher costs flows quite logically from the following three observations. First, any additional resources obtained by a school will be spent. The lack of measures of output means that schools are forced to compete largely on inputs, and since inputs are costly, schools have an insatiable thirst for more resources (this has been described as the Bowen Rule or the Cookie Monster Principle). Second, much of financial aid is structured in such a way that schools can obtain additional resources. Third, the spending of additional resources results in higher costs per student.

From these observations, it follows that current financial aid practices contribute to the arms race in spending, which leads to higher costs. These higher costs are often accompanied by higher tuition, which reduces access and affordability – the exact opposite of what the programs intend.

Moreover, much of the money is spent in ways that have questionable impact on education. As Ronald Ehrenberg notes, “competitive pressures have caused their focus... to widen,” as each school, “strives to maintain or improve its position.”⁴ This loss of focus has unfortunate consequences. To paraphrase William Easterly, *if you try to do everything and focus on nothing, and if you obsess about money raised rather than results achieved, haven't you already told us that the money will not be “well spent”?*⁵

Thus, the current theory of financial aid, which takes costs per student as given and attempts to offset them, is incomplete because costs per student are determined in part by financial aid. In other words, because current financial aid practices contribute to the cost explosion we've witnessed in higher education, we cannot assume that costs are fixed. The assumption that costs are not affected by aid is the fundamental flaw with financial aid as it is currently practiced.

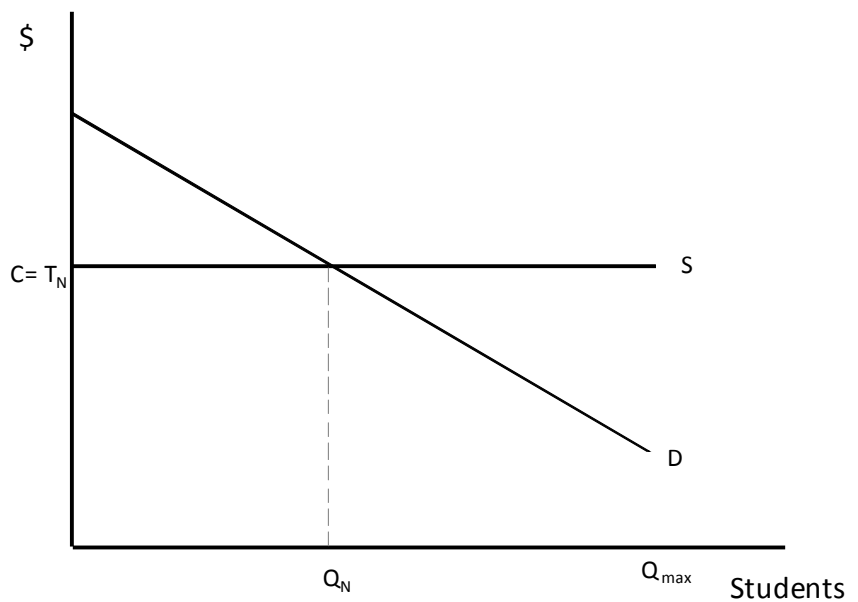
Below, I will explain in more detail how financial aid is supposed to work in theory and why it doesn't work that way in practice. I conclude by offering a recommendation for reform that will achieve the goals of the financial aid system more effectively than is currently the case.

How Financial Aid Is Supposed to Work

Financial aid has three main objectives: to increase access (enroll more students), to increase affordability (make higher education cheaper for students and their families), and to promote equality of opportunity (make sure disadvantaged students can go to school). We will take these goals as a given, and examine the effectiveness of actual financial aid policies in achieving them. Current financial aid

policies are designed to subsidize, or lower the cost to the student of attending college. As Ronald Ehrenburg notes, “the total subsidy the students receive consists of two parts: grant aid that goes only to grant recipients and a general subsidy that every student receives.”⁶ The general subsidy typically takes the form of state appropriations for public schools and endowment financed spending at private schools (for those private schools with large endowments). The grant subsidy typically takes the form of scholarships and grants to students, often restricted to students from low-income families, but increasingly based upon some sort of merit criteria. There is an additional type of aid, student loans, that has taken on increasing importance. While students are not required to repay grants or scholarships, they are required to pay back student loans, so this is more properly thought of as affecting the timing of payment (interest notwithstanding) rather than the amount paid.⁷

Figure 1: Higher Education with No Financial Aid



In reality, student financial aid is a complex web of individual programs that would be near impossible to disentangle and analyze in their entirety. To see the logic behind financial aid, it will help to make some simplifying assumptions. First, we'll simplify the types of aid into state appropriations (subsidies to schools), federal loans, and federal grants (like the Pell). Since these are the biggest programs anyway, this assumption will greatly simplify the analysis without losing too much essential detail. We'll further simplify matters by focusing on one representative school. The school charges everyone attending the same price (tuition). That price is equal to the cost to the school (which is assumed to be constant) of providing educational services. The number of people qualified to go to college is related to family income, such that as the price of college decreases, more families will be able to afford to send their children to college. For the purposes of this analysis, it doesn't matter how "qualified" is defined (i.e., it could be a subset of the population or everyone who turns 18).

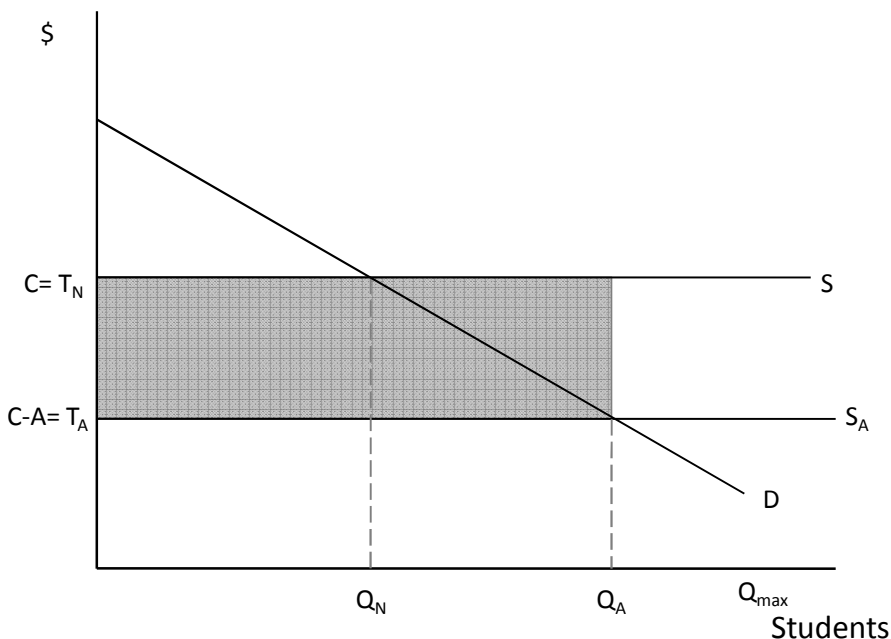
The implications of these assumptions are depicted in figure 1.

There is a normal downward sloping demand curve (D) (as the price of college decreases, more people will be able to afford to go, resulting in an increase in quantity demanded), and a perfectly elastic supply curve (S) determined by the cost (C) to the school of providing education per student. In the absence of government intervention, Q_N students will go to college, and will pay tuition T_N , which is equal to the cost (C).

State governments decide that more students should be attending college (i.e., that Q_N is too small).

For the most part, “states have chosen to promote college enrollment by keeping tuition low through across-the-board subsidies rather than using more targeted, means-tested aid.”⁸ In the 1990s, over 90% of state funding for higher education took this form, though today this figure is likely lower as more states adopt programs that give scholarships directly to students (such as the Georgia HOPE scholarship).

Figure 2: Higher Education with State Appropriations



We will call this across the board subsidy an “appropriation.” For simplicity,

we will assume that all state subsidies are of this lump sum nature, and go directly to the school to offset costs. This subsidy is often paired with a form of price control that limits the tuition that the school can charge. The idea is that given the cost per student, a subsidy to the school will shift the supply curve down (from S to S_A) since the loss in tuition per student is exactly covered by the subsidy. Graphically, this has the effect of shifting the supply curve down by the amount of the per student subsidy (A) as shown in figure 2. The shaded area represents the total state appropriation.

The new intersection of the demand and supply curves implies the number of students able to attend college increased by an amount equal to difference between Q_A and Q_N , and that students now pay tuition of T_A . Note that the school is still receiving its cost of educating a student (C), but that students are paying less than the school is receiving ($T_A < C = T_A + A$).

Note that there still is a segment of college capable individuals who cannot afford to attend college even at the new subsidized price (those from $Q_A < Q < Q_{max}$). The federal government notices this and decides to implement two programs. First they give low-income students loans so that they too can attend college. Thus for the subset of the population that cannot afford to attend, the federal government offers loans which augment their ability to pay for college. The result of this action is depicted in figure 3.

For simplicity, we assume the loans are made available to those who could not afford to attend in the absence of either state or federal intervention (everyone past Q_N). The loans have the effect of pivoting the demand curve at Q_N implying that D becomes D_L . Note however, that because the loans allow more students to attend college, the lump sum state subsidy is spread over more students, reducing the subsidy per student (the supply curve shifts up from S_A to S_L). The intersection of D_L and S_L implies that Q_L students now attend college, each paying tuition T_L . The loan program has the effect of enabling $Q_L - Q_A$ more students to attend college, and also reduces the financial strain for some stu-

dents (those where $Q_N < Q < Q_A$). While the total amount of loans is equal to the triangle XYZ, the direct cost to the federal government is smaller, since only a portion of the loans come directly from the government (this is one of the attractive features of loans compared to grants).⁹

However, there are still qualified individuals who are unable to afford college ($Q_L < Q_{max}$). Thus another federal program is initiated, which gives grants to students from very low-income households. The grant for each student is the amount needed to enable them to afford to attend. The effects of this program are illustrated in figure 4.

Again, because more students are attending college, the state subsidy per student has declined, shifting the supply curve up (from S_L to S_E). The demand curve is the same until it intersects S_E at which point the grants kick in, which render the curve horizontal thereafter. Thus the final demand curve D_E has two kinks resulting in three different slopes. The first section (from 0 to Q_N) is the same as the original demand curve D . The second section (from Q_N to Q_F) is the same as the second demand curve D_L . And the last section (from Q_F to Q_{max}) is horizontal along the supply curve S_E .

Figure 3: Higher Education with State Appropriations and Loans

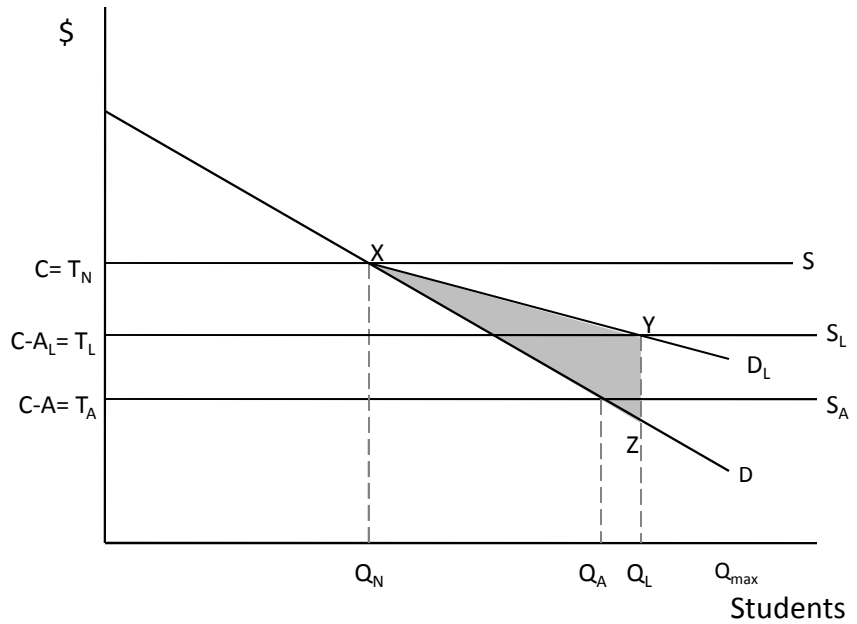
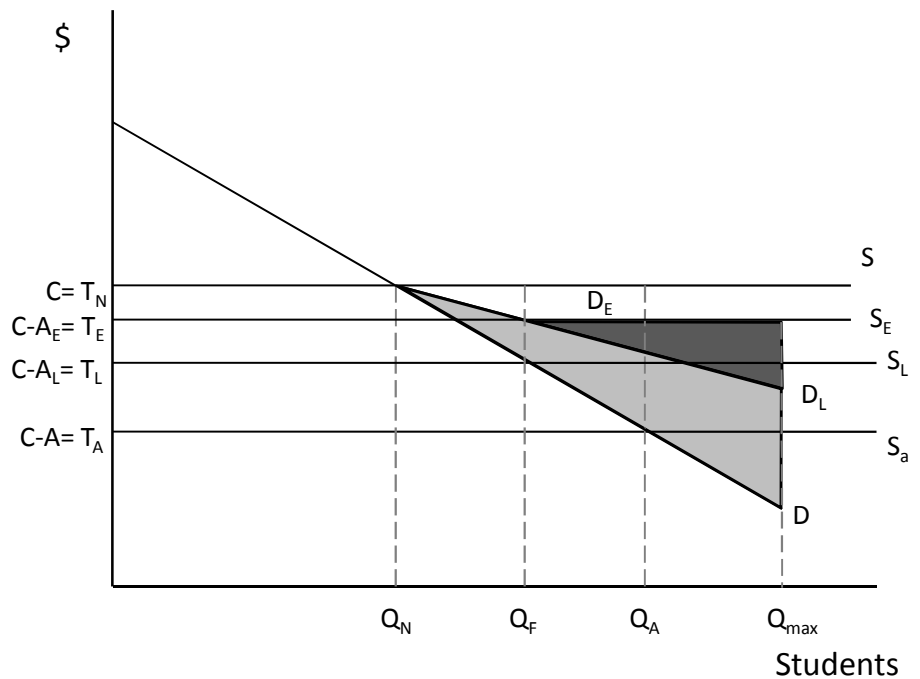


Figure 4: Higher Education with State Appropriations, Loans, and Means-tested Grants

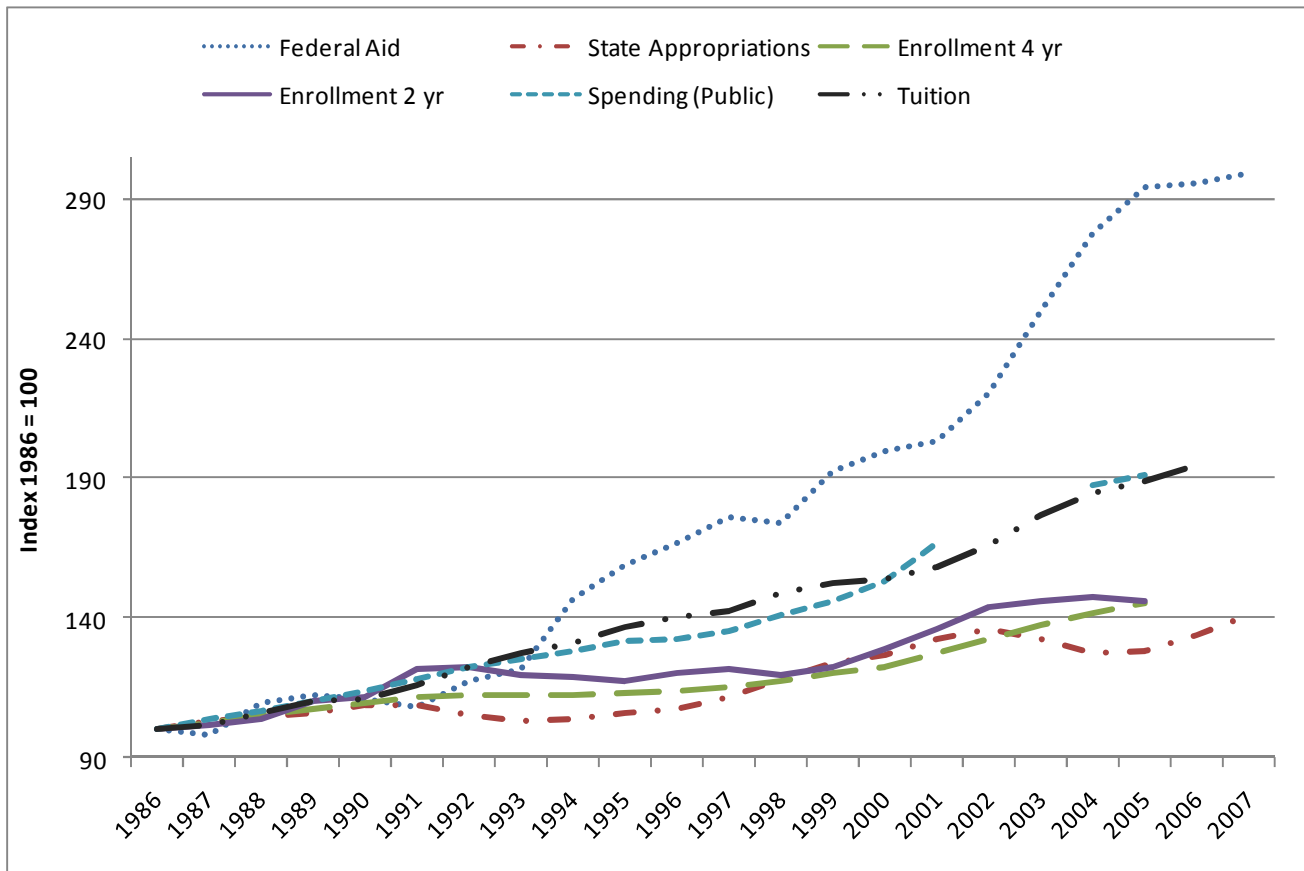


Thus, after the lump sum state subsidy, federal loans, and federal grants are taken into account, the intersection of D_E and S_E implies that Q_{max} students are going to college, each paying tuition T_E (with all students after Q_N receiving loans and/or grant aid). The school receives not only T_E from each student, but also A_E which, when combined, equal C , the cost of educating a student (which is equal to the initial tuition T_N).

This, in vastly simplified form, is the logic behind the current financial aid programs, and in theory, it is wonderful. Given sufficient funding, it ensures that all who are qualified can attend college, while at the same time ensuring resources per student are not reduced (implying that the quality of education does not suffer). In reality however, there are some problems. As David Altig, senior vice president and research director at the Federal Reserve Bank of Atlanta says, “what works in theory sometimes works in practice.”¹⁰ This is not one of those times.

Theory Meets Reality

Figure 5: Financial Aid, Enrollment, Spending and Tuition, 1986-2007



Sources: *Digest of Education Statistics, College Board, SHEEO*, NOTE: The chart starts in 1986 because that is the first year for which data is available for all of the variables. Note that the enrollment and spending lines stop in 2005, and the tuition line in 2006. There is also a gap in the spending line. Federal Aid and State Appropriations are total figures, while Tuition and Spending (Public) are per student.

The original theory of financial aid would predict that the increases in federal aid and state appropriations over the last twenty years should primarily affect enrollments and affordability. Figure 5 shows the trends over time for a number of variables (inflation adjusted where appropriate), each of which is indexed using 1986 as the base year. Since 1986, federal aid has nearly tripled, while state appropriations (total, not per student) have increased by slightly more than 40 percent. But enrollments at both two and four year schools have only increased by about 40 percent. If one looks at graduates, rather than enrollments, the figures are even worse. Moreover, the financial burden on students, as measured by the level of tuition and required fees, has almost doubled, as has spending per student.

Thus, there appears to be a disconnect between theory and reality. The clue as to what is wrong with the original theory lies in the spending line, which has been increasing. Essentially, what the remainder of this analysis will argue is that viewing costs (spending) as fixed, and designing financial aid programs to address those costs is inappropriate, because we should expect one of the consequences of the financial aid programs to be changes in the level of costs.

Flaws in the Theory

It is easy to appreciate the simplicity of the model laid out above. But that simplicity comes at the cost of ignoring two important concepts, competition and price discrimination, that significantly alter the results. To be clear, this is not an attack on simplifying assumptions. In fact, I'm in agreement with the views of recent economics Nobel laureate Paul Krugman who says:

I am a strong believer in the importance of models, which... greatly extend the power and range of our insight. In particular, I have no sympathy for those people who criticize the unrealistic simplifications of model-builders ... The point is to realize that economic models are metaphors, not truth ... But always remember that you may have gotten the metaphor wrong, and that someone else with a different metaphor may be seeing something that you are missing.¹¹

Thus, my objection to ignoring these concepts is not that it is unrealistic to do so, but that their exclusion significantly alters the conclusions one draws about the effectiveness of the financial aid system.

Competition among Schools

The first concept that is not adequately appreciated in the model above is that there is intense competition among schools. Higher education is different from most other industries, because most universities and colleges are either public or non-profit, implying that they are not competing for profit per se. But they do compete with each other along other dimensions, including, notably, prestige.

Price Discrimination

The second thing that is not properly accounted for in the logic of financial aid outlined above is the concept of price discrimination or tuition discounting. By charging students different amounts based on their ability to pay, schools are able to collect more money from their students. Thus, a "class of

students may resemble the passengers of an airliner in the variability of payments they have made for the same service.”¹²

Moreover, price discrimination has become more common. A new report from the Delta Cost Project noted a “prominent trend in the past two decades has been growing use of ‘tuition discounting’ as a recruitment tool and as a mechanism for generating funds for student aid.”¹³ In *The Student Aid Game*, Michael S. McPherson and Morton Owen Schapiro argue that many schools “now regard student aid as a vital revenue management and enrollment management tool.... The school sets out deliberately to shape a financial aid strategy that maximally advances the combined (and conflicting) goals of admitting the best students and gaining as much revenue from them as possible.”¹⁴ They term this strategic maximization, and note that while certainly not all schools are doing it, “it is fair to say ... that most institutions have moved their financial aid operations ... significantly toward the strategic maximization camp.”¹⁵

This led one former university president to conclude that “[s]tudent aid has become little more than a clever marketing mechanism that permits colleges to maximize tuition dollars through rampant price discrimination.”¹⁶

Together, these concepts of competition and price discrimination significantly alter our conclusions about the effectiveness of the financial aid system in achieving its goals.

Unintended Consequences: Ravenous Cookie Monsters Engaged in an Arms Race

Fundamentally, there are unintended consequences of the current financial aid system because from the perspective of competing schools, it does not make sense to take their costs, subtract the state subsidy per student, and charge the remainder in tuition (some of the money for which comes from grants and loans to students). Schools have an incentive to spend as much as possible, because spending is useful in building a better school (or at least what appears to be a better school). In other settings, this impulse would be controlled by the need to justify the costs on some sort of cost-benefit grounds. But in higher education, there are very few good measures of outcomes (student learning and its impact in a value added sense), and those that do exist are not widely used. This renders cost-benefit analysis exceedingly difficult, if not impossible. As a result, anything that has a plausible claim to being beneficial will be attempted if money is available. Thus, schools have an insatiable need for more money.

The ravenous need of schools for money was originally described as “Bowen’s Rule - All universities, and in particular major institutions with or seeking elite status, will use any and all funds they receive for the pursuit of perceived excellence and improvement.”¹⁷ Bowen’s Rule has been confirmed by others such as Charles Clotfelter, who, as Rupert Wilkinson noted, showed that colleges “increased their prices and general spending *because they could get away with it* – not to make money in itself but to buy the best of nearly everything.” (Emphasis original)¹⁸

Ronald Ehrenberg put this same concept much more amusingly in *Tuition Rising: Why College Costs So Much*:

Administrators of selective private colleges and universities also want to maximize the value of their institutions. However, for them value is not measured by economic profits... Rather, maximizing value to these administrators means making their institutions the very best that they can be in almost every area of their activities. These administrators are like cookie monsters... They seek out all the resources that they can get their hands on and then devour them.¹⁹

While spending money in the pursuit of excellence by universities sounds great—who doesn't like excellence—there is the downside that whatever they spend has to come from somewhere. Indeed, the expenditure of additional resources is the same thing as raising the cost per student. Thus, if the financial aid system allows for schools to acquire additional resources, it will have the effect of raising costs per student. In other words, viewing the problem as how to distribute financial aid, *given* the costs of providing an education is inappropriate when *costs are partly determined* by the financial aid system.

Is there reason to suspect that the current financial aid system will lead to higher costs? Yes.

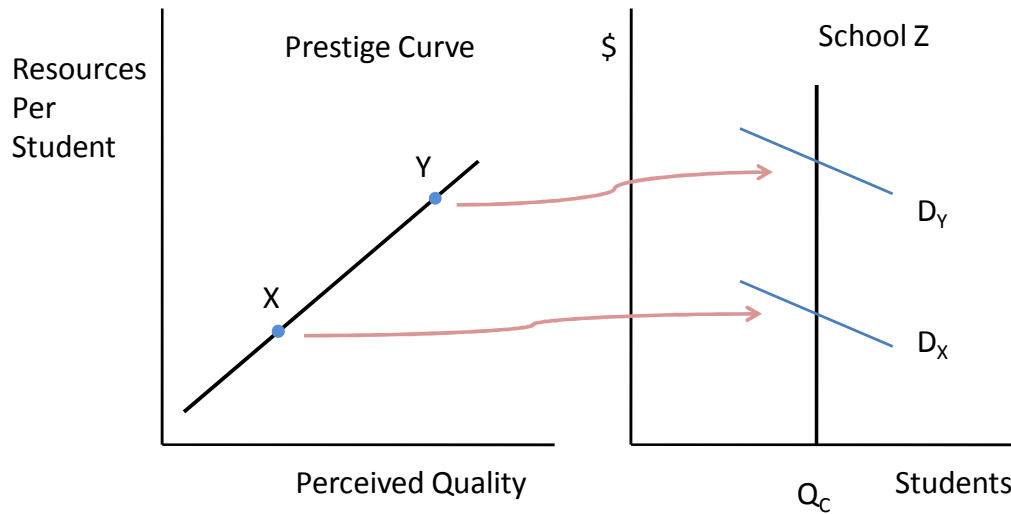
The first step in coming to this conclusion involves the realization that one of the main ways in which schools compete with each other is on quality. But since outputs are not measured, competition focuses on inputs, on the assumption that high quality inputs will lead to better outputs. High quality inputs are attracted by prestige. A more prestigious school will attract better students who yearn to attend the best schools, attract a better staff (including more distinguished faculty) increase donations from proud alumni, and confirm that the school is doing a great job in the eyes of society:

It has been shown that when an institution's ranking in *U.S. News & World Report* improves, the number of applicants increases and the percentage of applicants accepted decreases, while yield and freshmen test scores increase, and the amount of financial aid that must be offered to enroll the class decreases. As a result, institutions have every incentive to improve their ranking. To the extent that the rankings are partially based on how much an institution spends educating each student, pressure to increase such spending mounts, and unilateral reduction of costs in a number of areas is untenable.²⁰

One of the surest ways to increase prestige is to spend more money. In fact, one of the components in the *U.S. News & World Report* (USNWR) rankings is simply educational spending per student, with a higher ranking for schools that spend more. Spending is very helpful in improving other aspects that comprise most rankings as well.

If a school is able to acquire additional resources, it will spend more money to improve itself. This is beneficial for the school because a more prestigious school will attract more students, some of whom will be from wealthy families who can afford to pay high tuitions. This relationship between price and prestige helps explain why "pricing among major research universities is increasingly influenced by levels of market tolerance, and a convergence in pricing driven in part by the perception that price confers quality and a corresponding level of prestige to consumers."²¹

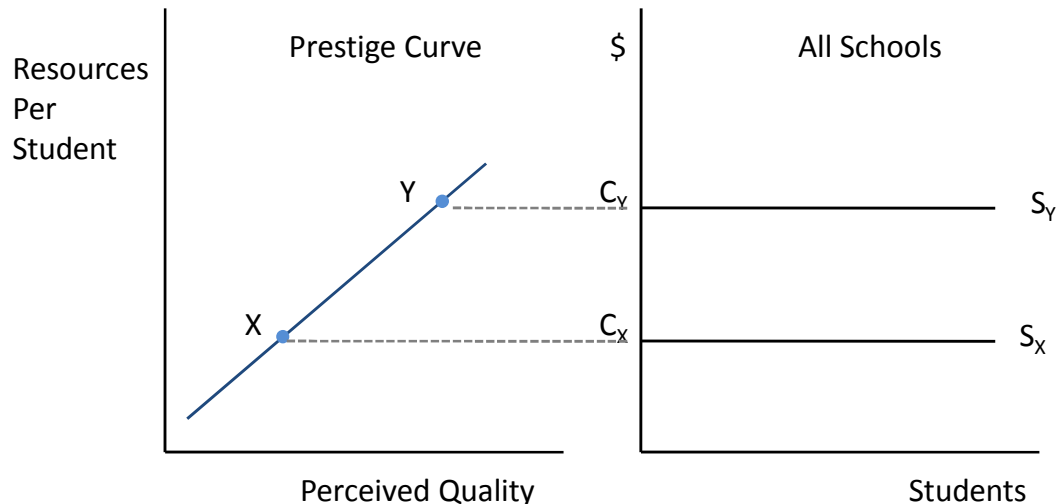
This beneficial consequence of increasing prestige is illustrated in figure 6.

Figure 6: The Prestige Curve and Demand

The left side panel introduces what we'll call the "Prestige Curve." The prestige curve maps the relationship between the amount of resources, or spending, per student and the perceived quality of the school. As resources (spending) per student increases, the school is able to do any number of things that make the school appear to be of higher quality, such as hire world-renowned faculty, improve the sports program, beautify the campus, or build country-club style amenities and dorms.

By enabling a school to spend more money per student, the school moves up the prestige curve (from point X to Y on the left panel). By moving up the prestige curve, the school becomes more attractive to students. Because each school is competing over the same body of students, this has the effect of raising the demand curve for that particular school, as shown in the right side panel. Essentially, a more prestigious school will be able to attract a greater number of prospective students, some of whom will be able to pay higher tuition. Since the capacity of a school is largely fixed in the short run, say at Q_c , the effect of this higher demand is to increase the number of students who are capable of paying higher tuition. This can start a virtuous cycle. If the school with a good reputation chooses to, students paying full tuition can replace those who received institutional discounts thanks to the higher demand for the school. This will provide even more money for the school to use on improvements, which will move it higher up the prestige curve, which will attract more students... It should be noted that this cycle can turn vicious. Imagine, for example, a scandal that only temporarily damages a school's prestige (such as the recent Duke lacrosse team incident). The lower prestige makes the school less attractive to applicants. If this results in fewer students paying full tuition, this could spark a vicious cycle. Because more students would require tuition discounts, there is less money to spend per student on other things, which lowers prestige even further, which lowers demand again...

While spending more resources per student sounds like a fine idea, we need to remember that nearly all expenditures by schools will ultimately come from either students in the form of tuition, or taxpayers in the form of government support.

Figure 7: The Prestige Curve and Costs

Once we introduce the notion of competition among schools, we realize that all schools are trying to engage in the same behavior. This insatiable thirst for ever more money by schools can be thought of as an academic arms race:

The objective of selective academic institutions is to be the best they can in every aspect of their activities. They aggressively seek out all possible resources and put them to use funding things they think will make them better. To look better than their competitors, the institutions wind up in an arms race of spending to improve facilities, faculty, students, research, and instructional technology.²²

It should be noted that the “*U.S. News* rankings exacerbate this problem. With 30 percent of the rankings based directly or indirectly on expenditures, colleges are rewarded for prying more money out of students and parents and then spending it, regardless of whether they spend it well.”²³

Moreover, this behavior is not limited to selective schools. Because the accomplishments of the best schools often “force other universities, state and private, to seek to emulate the high standards that they set”²⁴ this arms race mentality is present at almost every school. Ask yourself, how many schools are there, that, if they found a bag of money, would not find some way to spend it in hopes of maintaining or improving their position?

One of the effects of this arms race is to increase the baseline cost of providing an education. In the framework used here, increasing prestige has the side effect of driving up the cost of educating each student. As shown in figure 7, when schools increase their prestige, costs also increase.

Graphically, moving from X to Y in the left panel implies an increase from C_X to C_Y on the right panel. Aggregating over schools, this implies that the supply curve is shifting from S_X to S_Y . Without a change in demand for college in general (as opposed to a change in demand for a specific college), this will drive up tuition for everyone and increase the number of students needing federal loans and grants, as well as the amount of aid they require.

So while moving up the prestige curve results in higher perceived quality, it also results in higher costs per student, which in turn lead to higher tuition. Thus, *to the extent that our financial aid system contributes to the academic arms race, it makes college less affordable by increasing costs and therefore tuition, which is the exact opposite of its intended purpose.*

From where do schools get additional money? A number of sources are possible. Some programs produce surpluses that can be used elsewhere: “In areas such as business, academic leaders have clearly set out to generate income above real costs, which is then invested to further academic quality and prestige.”²⁵

Another source of additional revenue that has become fairly common is price discrimination against students from middle- and high-income families. By practicing price discrimina-

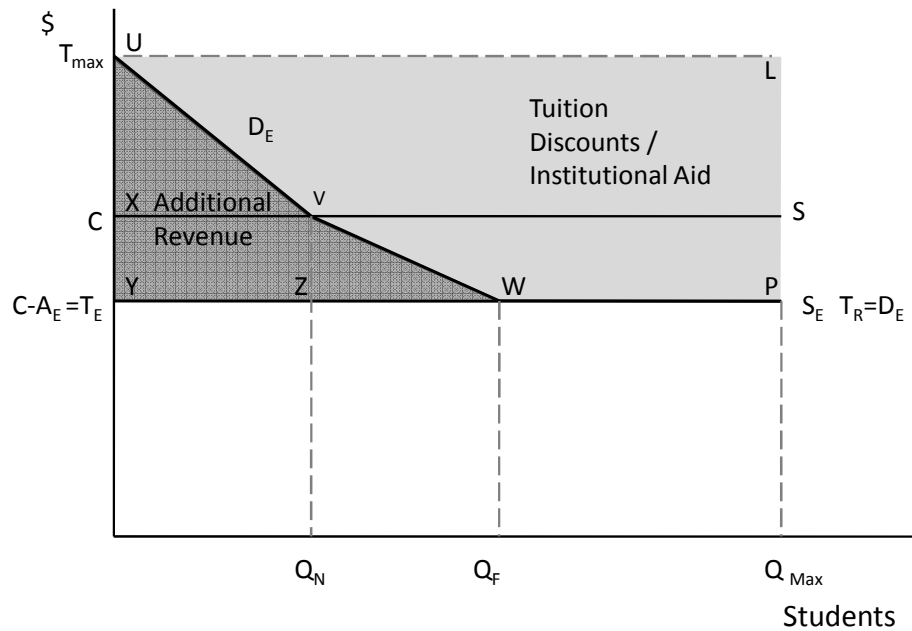
tion —charging different students different sums for the same educational service — schools can increase their revenue. If the students that are capable of paying more are made to do so, a school can increase its revenue, allowing it to spend more, moving it up the prestige curve. Remarkably, the federal government actually encourages price discrimination by sharing students’ personal financial information contained in the Free Application for Federal Student Aid (FAFSA) with the schools. This detailed knowledge on the finances of students makes it much easier for schools to price discriminate.

Moreover, it is not just the elite schools that are price discriminating. The University of Phoenix recently admitted “that it sets its tuition with the loan limits in mind.”²⁶ And a report from the Delta Cost Project noted that: “Among public institutions, sticker prices routinely increased less than gross tuition revenues. This happens because more public institutions are using differential pricing to capture greater increases in tuition from students other than in-state undergraduates.”²⁷

In other words, all types of schools are ravenous for money to spend on things that will make the school better and more prestigious. Increasing tuition and then practicing price discrimination is one way for them to get more revenue.

Figure 8 shows the mechanics of price discrimination, which are fairly simple, especially once the FAFSA information is given to schools by the government. All a school needs to do is establish a very

Figure 8: Price Discrimination



high tuition, T_{\max} and give everyone who can't pay that much a discount on tuition (institutional aid). Assuming perfect price discrimination, the tuition charged varies by ability to pay and follows the demand curve. Thus, schools continue to charge a net tuition of T_E to those students unable to pay more (those from Q_F to Q_{\max}), but they charge everyone else exactly what they are able to pay. As a result, the schools receive additional revenue equal to the area UVWY. This area represents money that used to be kept by students, but that is now funneled to the schools in the form of higher revenues instead, benefiting the schools at the expense of their students. The area ULPWV represents the amount of discounts on tuition, or institutional aid given to students. However, the total amount given in tuition discounts should not be viewed as indicative of the schools generosity, since they can increase this area by just raising their published tuition and offsetting it with higher "aid."

Price discrimination also allows the schools to capture part of the state subsidy. The lump sum state subsidy was designed to lower the tuition for all students, but when schools price discriminate, lump sum subsidies do not result in lower tuition for many students. While the subset of students from Q_F to Q_{\max} benefit from the subsidy, students from 0 to Q_N receive no benefit from the subsidy, and students from Q_N to Q_F only benefit from part of the subsidy. Thus, of the entire subsidy, only a fraction is effective in the sense that it makes college more affordable for students. Meanwhile, the portion represented by XVWY is ineffective in lowering the tuition for students, and is "captured" by the schools. In fact, when schools price discriminate, they actually receive that area twice, once in the form of a subsidy from the state, and again in the form of tuition from the students.

It should be emphasized that the main flaw in the existing model is its inability to capture the implications for costs of competition among schools. The lesser issue of price discrimination is emphasized in this study mainly because of its impact on a stated goal of financial aid (to reduce the financial burden of college), and for the fact that it can also serve as a catalyst for the academic arms race, though it is by no means alone in serving that function.

Thus, the original theory is in need of revision. Instead of taking costs per student as given, the revised theory notes that financial aid can be expected, under certain circumstances, to lead to an increase in costs per student. Specifically, whenever aid is made available to students who are already paying existing costs, it will increase their ability to pay, which is noted by colleges who in turn increase the price they charge these students. The revenue is spent to improve the school, with the consequence that costs per student increase. This increase in costs is typically accompanied by an increase in tuition, which has negative consequences for affordability and access.

Before moving on, I should point out that I am not the first to put forward a critique of the financial aid system. In fact, quite a few people precede me:

- "If anything, increases in financial aid in recent years have enabled colleges and universities blithely to raise their tuitions, confident that Federal loan subsidies would help cushion the increase."²⁸
- "One result of the federal government's student financial aid programs is higher tuition costs at our nation's colleges and universities."²⁹

- “Ironically, federal programs in totality give incentive for institutions to increase tuition and to set high sticker prices.”³⁰
- “Each institution faces the choice of maintaining tuition at the lowest possible level or of raising tuitions to ‘harvest’ the federal student aid as an indirect institutional subsidy.”³¹

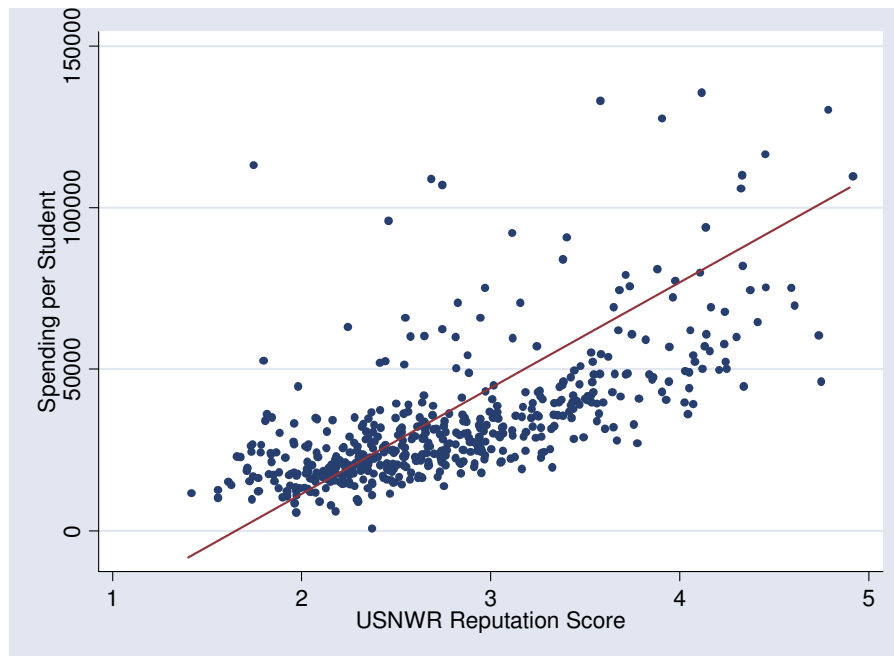
The first statement is all the more remarkable because it was coming from the Secretary of Education at the time, and later came to be known as the Bennett Hypothesis. It is perhaps the most widely known critique of the financial aid system. The argument is that financial aid would increase the ability of students to pay, but that schools would see this and either (1) raise tuition; or (2) cut back on their own aid. “Previous studies with evidence pertinent to the Bennett hypothesis are suggestive. McPherson and Shapiro (1991), Turner (1997), Li (1999), Netz (1999), Acosta (2001), and Long (2002) all find evidence that tuition rises for at least some segments of the higher education market”³² Other studies also offer mixed evidence.^{33,34} Overall, “[e]stimates of the size of this “Bennett Hypothesis” at public institutions range from negligible to a \$50 increase in tuition for every \$100 increase in aid.”³⁵

The claim in this report (that financial aid often leads to higher spending per student), while similar to the Bennett Hypothesis, is different from it in two important respects. First, the focus here is on the interaction between aid and spending, rather than aid and tuition. The next step, higher spending leading to higher tuition, is a perfectly logical result, but there could be other complicating factors, such as a cap on tuition rates (or their growth) imposed by state legislatures, which prevent this from occurring.

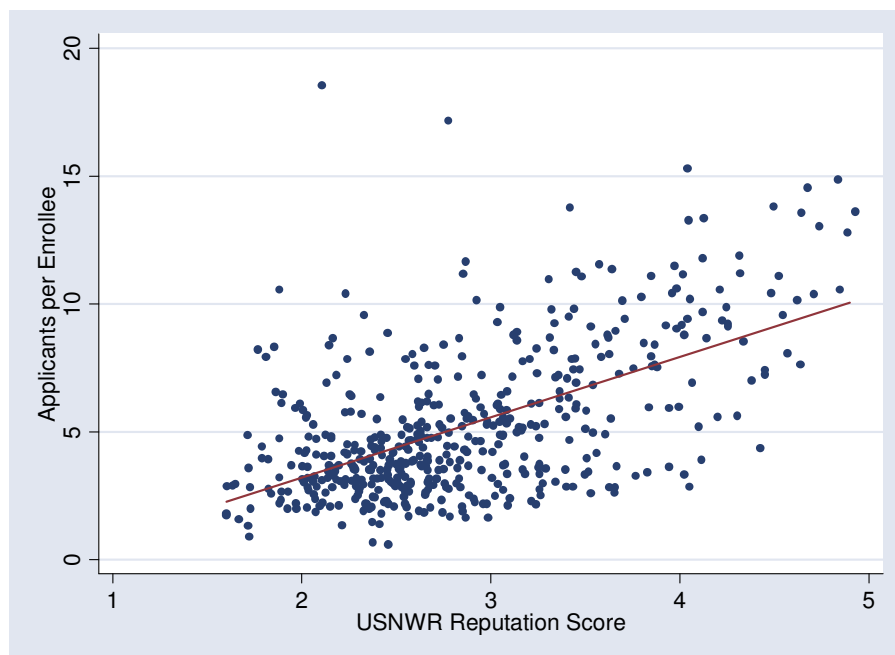
The second way in which this report differs from the Bennett Hypothesis is that it is explicit about when the effect occurs (and the types of aid likely to suffer from it). Specifically, aid will fuel increases in spending when it is given to students whose ability and willingness to pay is in excess of current costs at the school. Because costs and ability to pay vary by school, this implies that a much more nuanced view is warranted. The same aid program can have different effects based on the characteristics of the school and the students attending. For instance, an extreme view of the Bennett Hypothesis holds that the supply curve is perfectly inelastic and predicts that all student loan money will be harvested by the school, whereas the model here predicts that only part of that money will be harvested. Thus, lumping all federal aid together when analyzing its impact, or even all aid of a given type, is unlikely to yield accurate results. Unfortunately, public data on aid is generally only available in aggregate form (not student specific), which limits the extent to which we can analyze these issues.

Evidence that the New Theory of Financial Aid is Correct

The main argument in this analysis is that current financial aid practices contribute to ever increasing costs in higher education in ways that the original model does not anticipate. This conclusion is theoretically sound in that it flows directly from the model above, but does it accurately reflect reality? To answer that question, we’ll examine the data to see if some of the stepping-stones and predictions of the new theory are valid.

Figure 9: The Real Prestige Curve

Source: IPEDS, USNWR, Note that observations were perturbed to reduce overlap.

Figure 10: Reputation and Applications per Enrollee

Source: IPEDS, USNWR, Note that observations were perturbed to prevent overlap and schools spending more than \$150,000 per student were excluded.

Is the Prestige Curve Real and Does More Prestige Lead to An Increase in Demand?

If my new model is to replace the current one, the first thing to be verified is the existence of the prestige curve, which maps the relationship between resources (spending) per student and perceived quality. There is not a perfect measure of a subjective notion like perceived quality, but a good proxy is the Peer Assessment of schools in the *USNWR* college rankings.³⁶ This is basically the esteem in which university leaders hold each school. We'll call it the "Reputation Score" for clarity and simplicity. Figure 9 maps out the actual prestige curve, with spending per student on the y-axis and perceived quality, as measured by the *USNWR* reputation score on the x-axis. As you can see, the more a school spends, the higher the perceived quality of the school, on average. The trend line can be thought of as the 'prestige curve' from figure 7, and indicates that if one school spends around \$30,000 more per student than another, its reputation score is likely to be one point higher, though it should be pointed out that there is considerable variation, with some low spending schools ranked highly and some high spending schools ranked low. Nevertheless, this relationship lends considerable weight to the idea of a prestige curve.

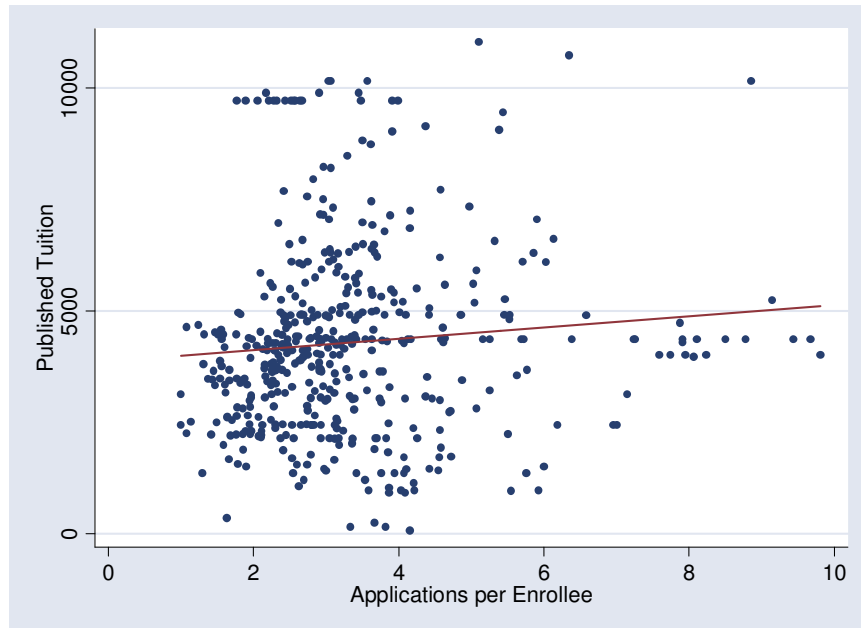
The next issue in need of verification is that more prestigious schools will see an increase in demand. The number of applications that a school receives per spot is a reasonable measure of the demand for that school. Figure 10 shows the relationship between our measure of prestige, the *USNWR* reputation score, and the applications per enrollee. If a school has a reputation score that is one point higher than another, it is likely to get around 2.4 more applications per enrollee. Again it should be pointed out that there is considerable variation, but that in general, more prestigious schools tend to have higher demand.

Does Price Discrimination Allow Schools to Capitalize on the Increase in Demand and Increase Tuition?

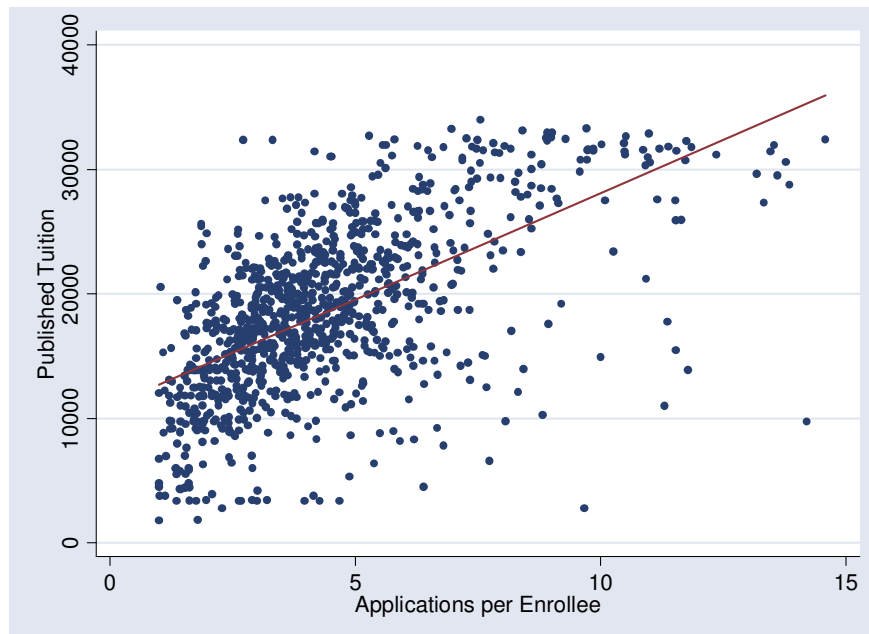
With both the prestige curve and the increase in demand associated with gaining prestige verified, the next issue to examine is price discrimination. The first step in price discrimination is to set a high price. Figures 11 and 12 show that schools with higher demand, as indicated by the applications per enrollee, tend to charge higher tuition rates. In general, an increase of one application per enrollee is associated with \$126 in higher tuition at public schools, and \$1,712 at private schools. It is not surprising that the increase is less at public schools, which typically receive significant revenue from their state governments with the goal of keeping tuition low. Note, however, that there are schools, generally those in the lower right hand corners, that could price discriminate but choose not to.

The second step in price discrimination requires charging lower prices to those that cannot afford the "sticker" price. Since fewer and fewer students can afford to pay the published tuition as the tuition level is increased, schools that are price discriminating will give more students "institutional grants," which are essentially tuition discounts. Thus, if schools were price discriminating, we would expect to see those schools with higher published tuition offering higher average institutional aid.

Figures 13 and 14 show the relationship between the tuition rate and the average amount of institutional aid, and confirm that as tuition is raised, schools tend to give more institutional aid. On average, when tuition is increased by \$1, the typical public school increases the average institutional grant by 13 cents, and the typical private school increases the average institutional grant by 47

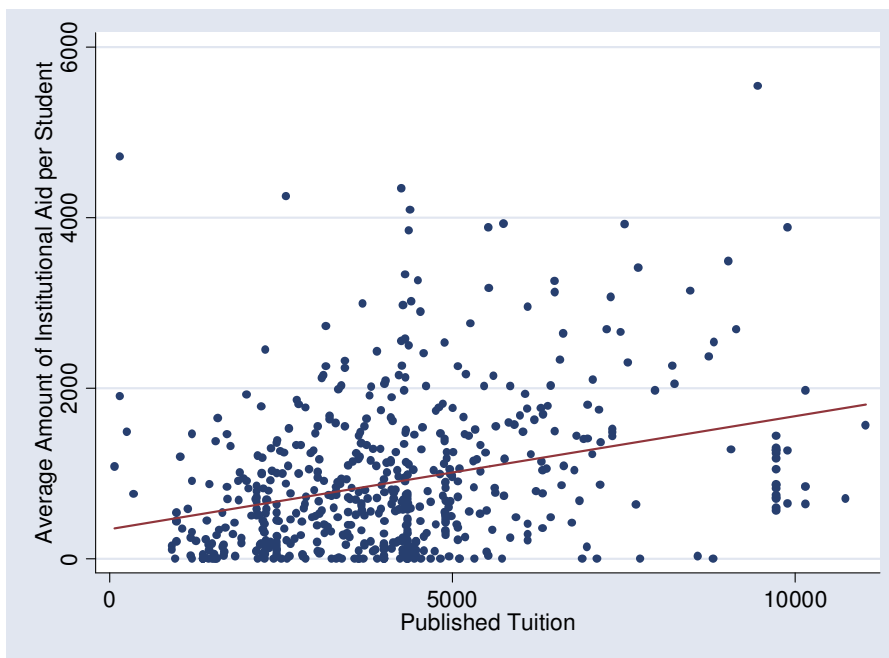
Figure 11: Tuition and Applications at Public Schools

Source: IPEDS, Note that only four-year public schools with FTE enrollment greater than 500, tuition between 1 and 12,000, and applications per enrollee less than 10 were included.

Figure 12: Tuition and Applications at Private Schools

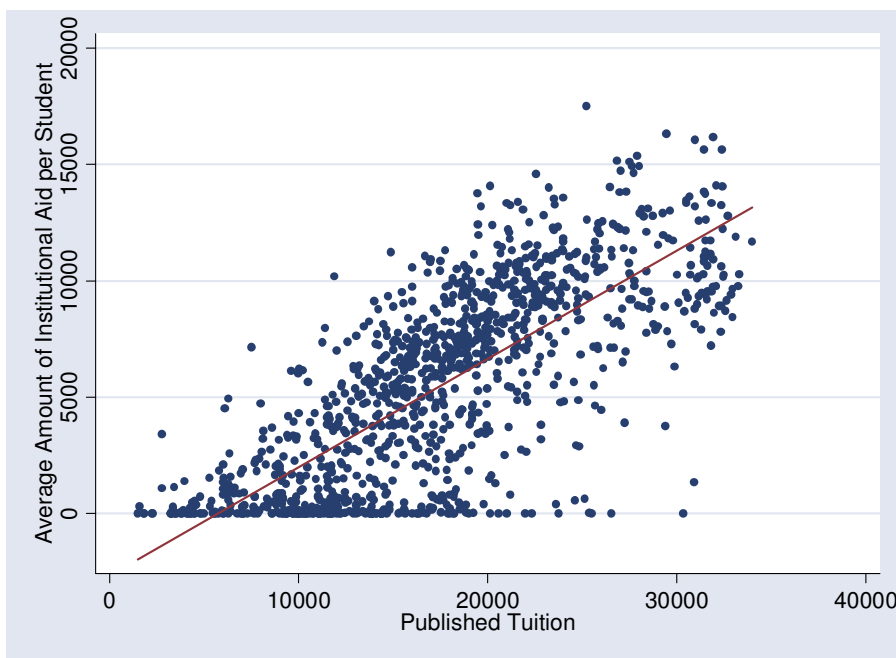
Source: IPEDS, Note that only four-year private schools with FTE enrollment greater than 500, tuition between 1 and 40,000, and applications per enrollee less than 15 were included.

Figure 13: Tuition Discounting at Public Schools



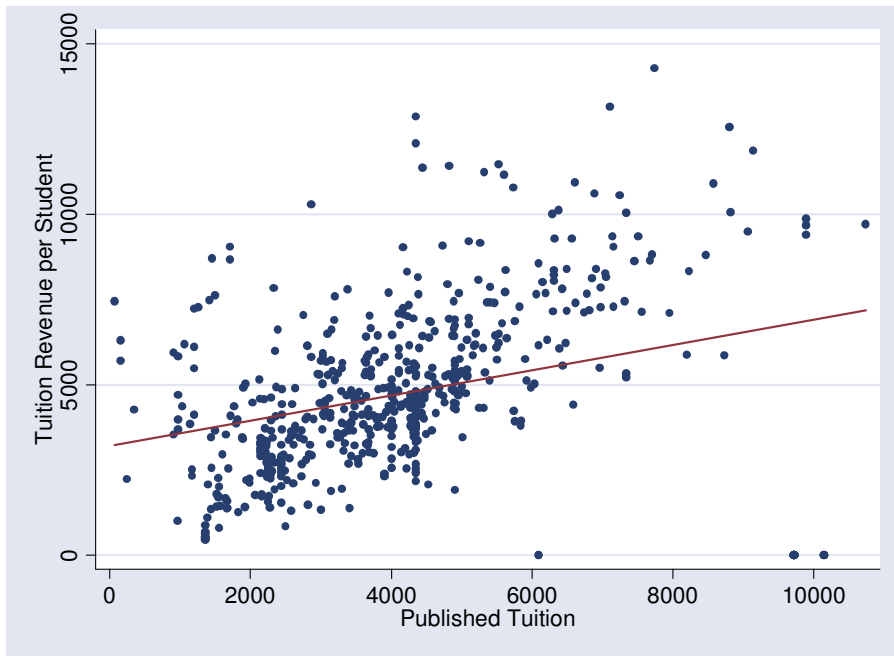
Source: IPEDS, Note that only four-year public schools with FTE enrollment greater than 500, tuition between 1 and 12,000, and average institutional aid of less than 6000 were included.

Figure 14: Tuition Discounting at Private Schools



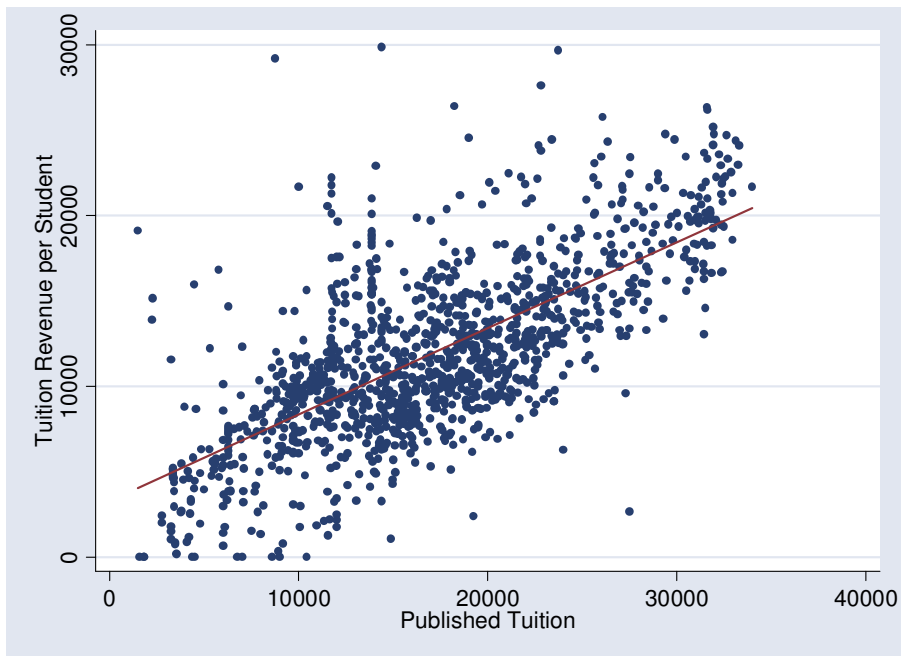
Source: IPEDS, Note that only four-year private schools with FTE enrollment greater than 500, tuition between 1 and 40,000, and average institutional aid of less than 20,000 were included.

Figure 15: Tuition and Tuition Revenue at Public Schools



Source: IPEDS, Note that only four-year public schools with FTE enrollment greater than 500, tuition between 1 and 15,000, and tuition revenue of less than 15,000 were included.

Figure 16: Tuition and Tuition Revenue at Private Schools



Source: IPEDS, Note that only four year private schools with FTE enrollment greater than 500, tuition between 1 and 40,000, and tuition revenue of less than 30,000 were included.

cents. These figures are consistent with price discrimination.

One issue that complicates figures 13 and 14 is that a school's choices concerning institutional aid are fairly complex. Most schools provide need-based aid, but many also provide merit-based aid.³⁷ Thus, it is difficult to tell whether high priced institutions offer more institutional aid in order to offset higher tuition, or whether they are trying to attract high quality students through merit awards.

Does Price Discrimination Result in Higher Revenue for Schools?

As figure 8, indicates, when schools are price discriminating, we would expect for tuition revenue per student to increase with the tuition rate, but at less than a one for one rate, since the school will need to provide more institutional aid. Figures 15 and 16 show the relationship between published tuition and tuition revenue per student. We see that, in general, a higher published tuition rate does lead to higher tuition revenue per student, but that increasing published tuition by \$1 will only result in an average of \$0.37 more in tuition revenue at public schools, and \$0.51 more at private schools.

To summarize, we can basically work backwards from figures 15 and 16. Schools are “cookie monsters” when it comes to resources, always desperate for money so that they can better themselves. Obviously, one of the ways to get more money is to charge a higher tuition (figures 15 and 16). But in order to charge a higher tuition, you need to increase demand (figures 11 and 12) and to increase demand you need to bolster your reputation (figures 9 and 10).

The Impact of Current Financial Aid Programs on College Affordability

The previous section demonstrated that there is considerable evidence that the prestige curve is real and that price discrimination is practiced and results in higher revenue for schools. Incorporating these concepts into the theory of financial aid results in very different predications about the effectiveness of current financial aid practices than what we would expect if they were not an issue. Since financial aid programs are typically justified based on increasing college affordability, access, and equality of opportunity, we will examine the effectiveness of existing programs on each of these.

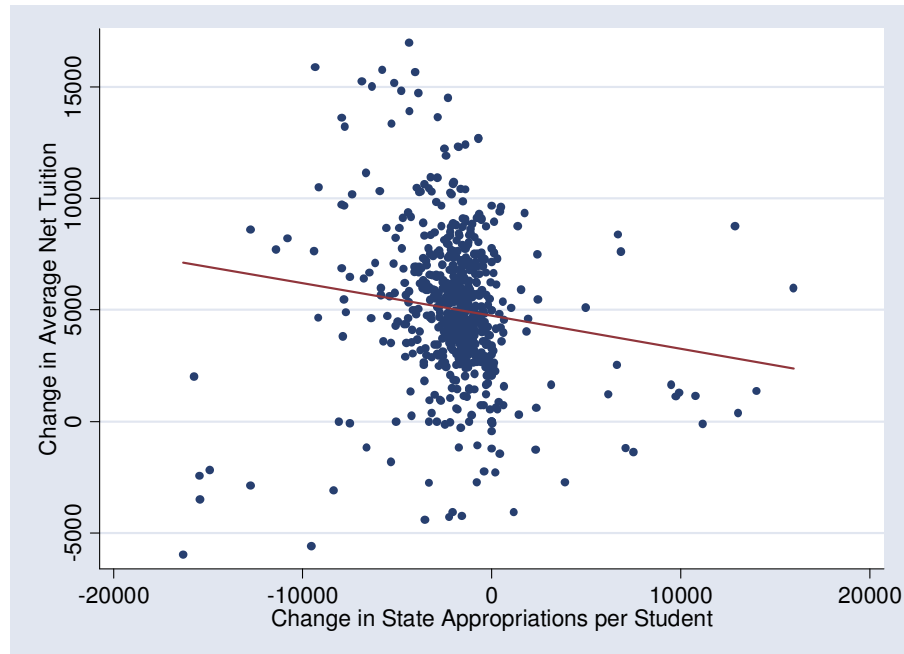
State Appropriations

The original theory takes costs as given, and argues that state appropriations will partially offset tuition. This implies that net tuition (the actual price that students pay) will decrease by one dollar for every dollar increase in state appropriations. The revised theory claims that state appropriations will affect costs, meaning that costs cannot be taken as given. It claims that because state appropriations often result in increased costs, net tuition will not decrease by a full dollar for every dollar increase in state appropriations.

One interesting factoid is that net tuition (the price students pay – sticker price minus grant aid)³⁸ is actually *higher* when state appropriations per student are higher. In fact, every dollar of state appropriations is associated with a net tuition 77 cents higher. While this is certainly not supportive of the original theory of financial aid, it is not by itself a smoking gun since there are plausible explanations for why some schools might have higher costs than others (e.g., the

location of the school, professor to student ratio, etc.). These differences could also affect the amount

Figure 17: Change in Appropriations and Net Tuition, 2000 to 2005



Source: IPEDS, Note that only four-year public schools with FTE enrollment greater than 500, change in state appropriations per student between -\$20,000 and \$20,000 and change in net tuition less than \$20,000 were included.

of state appropriations and the net tuition at the schools. Thus, it would be inappropriate to interpret this to mean that state appropriations increase the financial burden on families. To get a better feel for the impact of state appropriations on affordability, we will look at the change in variables over time at a given school. By comparing each school only to itself we can correct for a multitude of other explanatory factors.³⁹

Figure 17 shows the change in state appropriations per student and the change in average net tuition at each school from 2000 to 2005. If financial aid worked according to the original model, we would expect for every dollar in state appropriations to reduce net tuition by one dollar. Yet in reality, another dollar of state appropriations is associated with a reduction in net tuition of only 15 cents. This is noteworthy in two respects. First, in spite of suffering from omitted variable bias, this estimate is remarkably similar to the findings of both Singell and Stone (2003) and Rizzo and Ehrenberg (2003), who control for a whole slew of factors. Singell and Stone found that a “thousand dollar increase in state appropriations (total endowment) per student is associated with a decrease in net tuition of about \$100.”⁴⁰ Rizzo and Ehrenberg found that “it would take an increase of \$1,000 in state appropriations per student to generate an in-state tuition reduction of \$104.”⁴¹ Secondly, it is astonishing because it implies that states spend \$1,000 to save students \$150 (or \$100 or \$104).

Student Loans

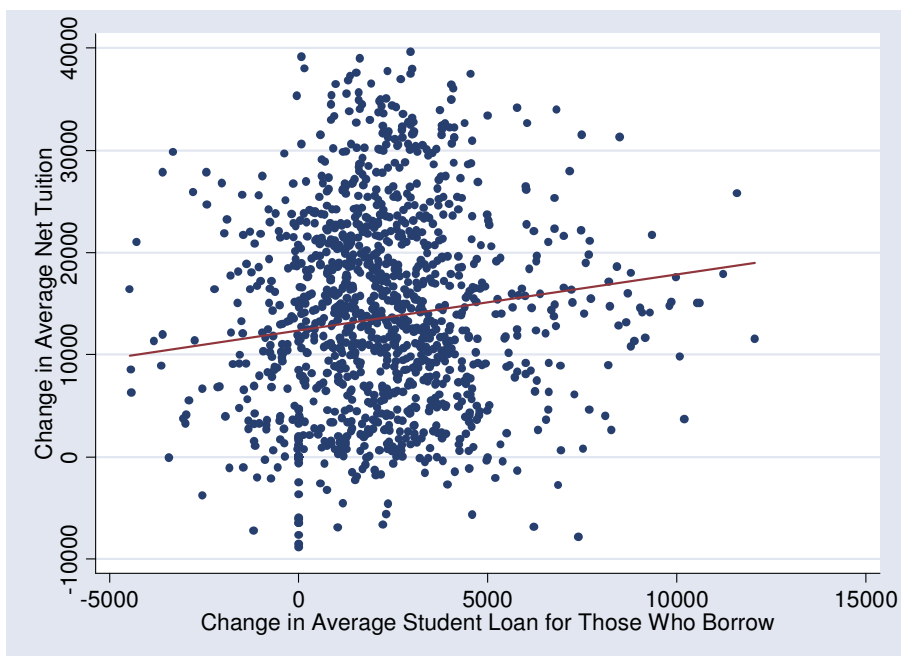
Student loans have grown in importance as a form of financial aid, with the College Board estimating

Figure 18: Change in Net Tuition and Loans at Public Schools, 2000-2005



Source: IPEDS, Note that only four-year public schools with FTE enrollment greater than 500, change in net tuition of less than \$20,000 and change in average loan greater than -\$2,000 were included.

Figure 19: Change in Net Tuition and Loans at Private Schools, 2000-2005



Source: IPEDS, Note that only four-year private schools with FTE enrollment greater than 500, change in net tuition between -\$10,000 and \$40,000 and change in student loans between -\$5,000 and \$15,000 were included.

that students borrowed a total of \$85.9 billion for the 2007-2008 school year.⁴² What affect do these loans have on affordability?

There is a tendency for schools where students borrow more to have a higher net tuition. In fact, for every dollar of student loans, net tuition is \$1.42 higher at public schools and \$1.68 higher at private schools. The fact that both figures are greater than 1 indicates that this finding is probably more useful in demonstrating the differences among schools than in drawing conclusions about the effect of student loans on affordability. For instance, differences in the composition of the student body by income, with students from richer families going to more expensive schools, could well explain such a finding.

Again, to control for all these idiosyncratic differences among schools, we'll look at changes at the same school over time. The results of this process are indicated in figures 18 and 19. They indicate that an increase in the average student loan of \$1 is associated with a net tuition that is \$0.93 higher at public schools and \$0.55 higher at private schools.

This is disturbing. The evidence suggests that the out of pocket costs to students at public schools are hardly lowered at all with increased lending (tuition rises 93 cents for each dollar more provided in loans). Neither the original nor the revised theory argue that loans should reduce net tuition (recall that net tuition is sticker price minus grants – loans are not subtracted), but the revised theory notes that if loans are too widely available, they can contribute to the arms race which drives up costs and in turn tuition, and therefore reduces affordability. These findings, that higher loan amounts are associated with higher tuition, are certainly consistent with the revised theory.

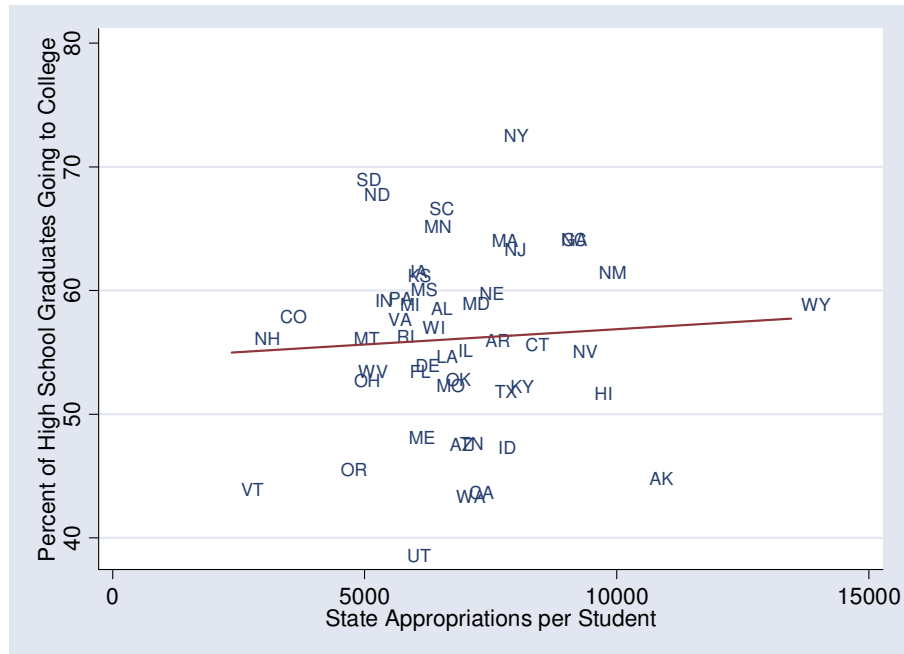
The Impact of Current Financial Aid Programs on College Access

The second main goal of financial aid is to increase access to college. Many scholars have examined this issue and until recently, the historical evidence indicated “that a \$1,000 change in college costs is associated with about a 5 percent difference in college enrollment rates.”⁴³ Thus the consensus was that there was a “small, positive enrollment response to financial aid.”⁴⁴ However, recent studies have begun to question this result, and find that there “is little to no persuasive evidence that the federal aid programs are... at all effective - in increasing the college enrollment of young people”⁴⁵ and that “there was no disproportionate increase in enrollment.”⁴⁶

One of the main reasons put forward for the meager response of enrollment to aid is that “the vast majority of the general public does not know what opportunities for aid exist, how to access the various programs, and what one can expect to receive. As a result, students from poor families who would likely qualify for all or nearly all of the aid required to finance college fail to even apply.”⁴⁷ Moreover, even if they do apply, they don't know what the outcome will be because “the aid process is not only complex but also highly uncertain.”⁴⁸ While this analysis will not reexamine this issue in great detail, a couple of things are worth pointing out.

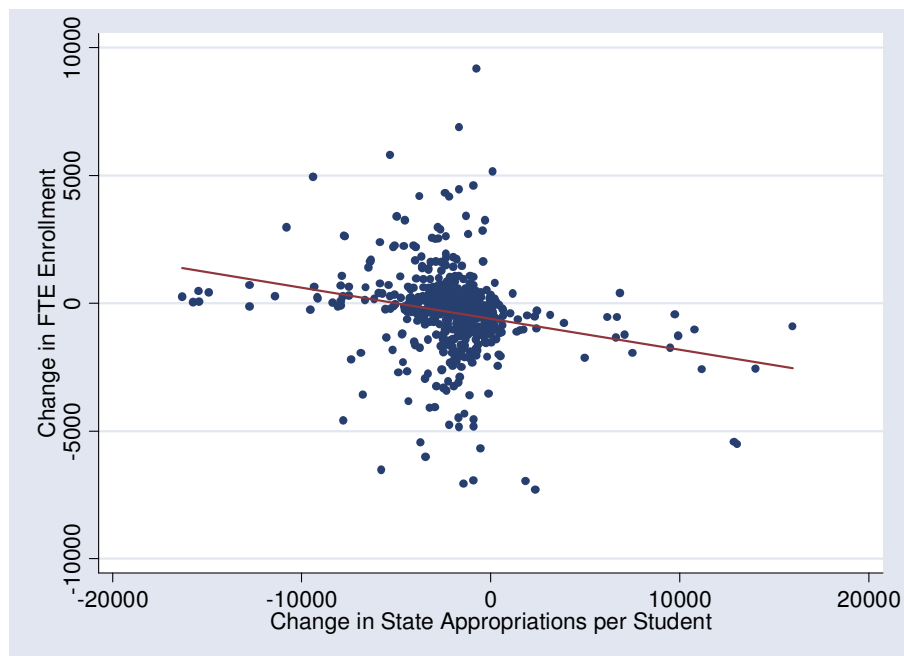
First, states that provide more state appropriations per student do not have that many more of their high school graduates continuing on to college, as shown in figure 20. While there is a positive trend, the correlation is very small – an increase in appropriations of \$1,000 per student is only associated with 0.2% more high school graduates attending college.

Figure 20: State Appropriations and College Enrollment by State



Source: *Digest of Education Statistics 2007, Table 194 and State Higher Education Finance, FY 2007, Table 5.*

Figure 21: Change in State Appropriations and Enrollment, 2000-2005



Source: *IPEDS, Note that only four-year public schools with FTE enrollment greater than 500, change in state appropriations between -20,000 and 20,000 and change in enrollment between -10,000 and 10,000 were included.*

Kane (1995) offers one explanation for this low impact: “Much of this money is pure transfer, received by students who would have attended college in the absence of public support... Even using the large elasticities estimated in this paper, only 11 to 29% of the money invested in keeping public tuition low goes to marginal entrants.”⁴⁹ In other words, much of the money from state appropriations goes towards lowering tuition for existing students, rather than lowering tuition enough to attract new students.

A second point of interest is that at any given school, when state appropriations are increased, enrollments tend to go *down* instead of up. Figure 21 shows the change in state appropriations and change in enrollment from 2000 to 2005. The negative slope indicates that as appropriations at existing schools increased, enrollments at those same schools tended to fall. Perhaps schools bundle higher appropriations with more restrictive enrollment policies in an attempt to “move to the next highest level” in terms of prestige. At the very least, this indicates that if increases in college access are deemed desirable, entirely new institutions may be needed since existing ones have a tendency to contract in terms of access when given more resources.⁵⁰

The Impact of Current Financial Aid Programs on Equality of Opportunity

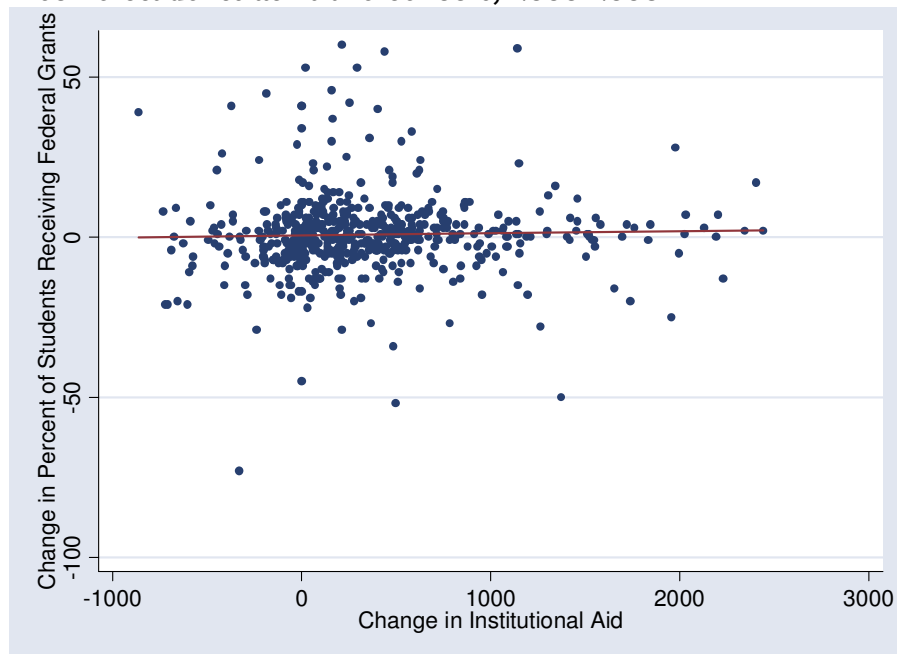
While the previous sections demonstrated that price discrimination allows schools to increase their revenue, it is not clear for what these extra funds are used. It is possible, and many schools claim, that they pursue a “high-tuition – high-aid” strategy not to enable them to increase spending in other areas, but to increase their aid budget in order to enroll more low-income students who would otherwise be unable to attend. Many schools claim that the extra tuition revenue will allow them to enroll more students from low-income backgrounds. While it is true that more tuition revenue *can* be used to increase the financial aid budget for this purpose, the evidence is clear that in general, this is not the case.

Data on the socioeconomic background of students is difficult to obtain, but, since the vast majority of federal grants like the Pell are restricted to students from low-income households, we can use the percentage of students receiving federal grants as a proxy of the enrollment share of low-income students. When doing so, it is apparent that schools with a high tuition rate enroll fewer low-income students. In fact, at public schools, a \$630 increase in tuition is associated with a 1% decrease in the percentage of students at a school that are from low-income families. At private schools, the amount is \$520.

While it probably comes as no surprise that low income students are underrepresented at more expensive schools, it is welcome news that *increases in tuition are not associated with further decreases in the enrollment of low-income students*, almost certainly due to the availability of financial aid. At public schools, tuition increases have virtually no impact on the proportion of low-income students enrolled, and at private schools, there is a slight positive effect, with high tuition leading to slightly more low-income students.

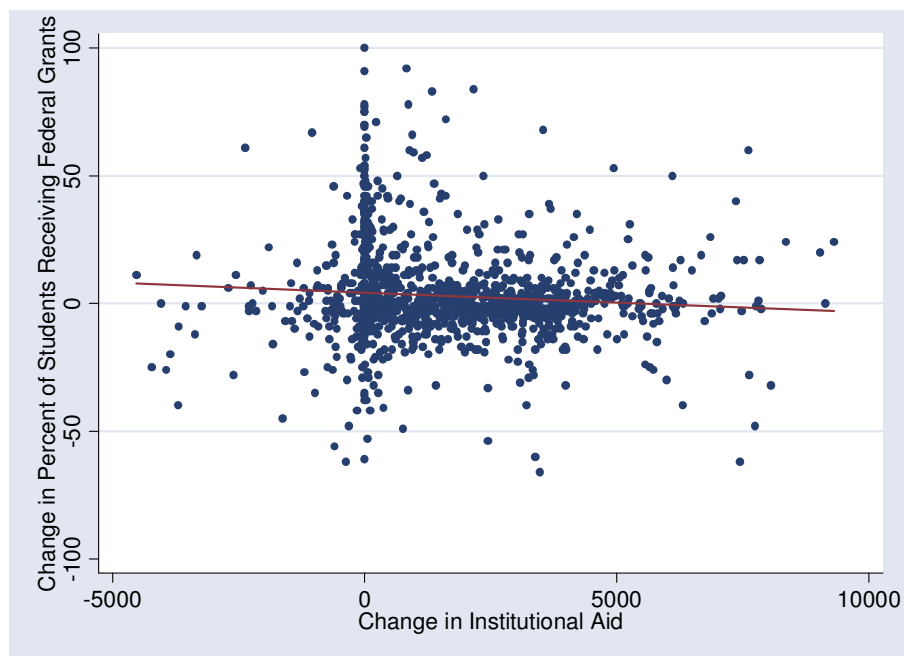
However, schools that give more institutional aid are less likely to enroll a greater percentage of low-income students. In fact, as the average amount of institutional aid increases, the percentage of low-income students at the school declines. This is consistent with conventional wisdom that states that

Figure 22: Change in Institutional Aid and Percent of Low-income Students at Public Schools, 2000-2005



Source: IPEDS, Note that only four-year public schools with FTE enrollment greater than 500 and change in institutional aid between -1,000 and 2,500 were included.

Figure 23: Change in Institutional Aid and Percent of Low-income Students at Private Schools, 2000-2005



Source: IPEDS Note that only four-year private schools with FTE enrollment greater than 500 and change in institutional aid between -5,000 and 10,000 were included.

students from low income families often suffer from sticker shock (high prices discourage them from even applying) and that many schools are engaged in aid wars, where merit aid is used to lure promising students to the school. At some schools where the goal of prestige (derived from having more good students) conflicts with the goal of increased access, increased access often loses out.

Figures 22 and 23 compare the change in institutional aid to the change in enrollment of low-income students from 2000 to 2005. Changes in institutional aid have a slight positive effect on the enrollment share of low-income students at public schools, and a slight negative effect at private schools. In other words, changes in the amount of institutional aid given to students have virtually no impact on the share of low-income students enrolled. While this may or may not mean that schools are lying when they say they are pursuing a “high-tuition, high-aid” strategy, it does mean that if they are pursuing such a strategy, they are not succeeding.

Since expensive schools also tend to be ‘better’ schools, it seems as though low-income students get shut out of many of the best schools. The absence of low-income students cannot be blamed entirely on the colleges. For instance, behavioral economists have “concluded that people's choices are strongly influenced by the default provided them... [and] the default option for low-income students is to not go to college.”⁵¹ But neither are colleges entirely blameless. As Kevin Carey has said, it’s generally not “a case of screwing poor students by overcharging them. Instead, it’s a case of screwing poor students by not admitting them in the first place.”⁵²

Recommendations for Reforming Financial Aid

The fundamental lesson to draw from this analysis is that financial aid needs to be designed in a way that does not contribute to the arms race in spending. The arms race is driven by the fact that institutions have little incentive to try to hold down costs. Rather, each continues to focus on attracting more resources so that it can maintain and try to improve both its absolute quality and its relative position...⁵³

Because current financial aid practices do not take this into account, they end up contributing to the problem. If the goal is to increase equality of opportunity, then financial aid in the form of lump sum subsidies and widespread loans will only be partially effective, and may even be counterproductive. The burden for low-income students may be lowered, but the burden on many will not be affected (those who can pay more than T_E in figure 4). To avoid contributing to the arms race, grants and loans need to be restricted to low-income students exclusively. Any aid made available to students who can already pay for the cost of attendance will simply encourage schools to try and ‘capture’ that aid, which will then be used to fuel the arms race.

Some will note that increasing revenues for colleges is not necessarily bad. For some colleges, particularly two-year schools, I would tend to agree. But for the most part, I think diminishing returns set in long ago, and that additional revenue is unlikely to be spent in ways that improve *educational* outcomes, though perhaps I am giving too much credence to the following examples of how schools have recently decided to spend money:

- The University of Illinois spent \$6 million on the Irwin Academic Services Center which “helps only about 550 of the school's 37,000 students” because it is restricted to athletes. But, “at least four other schools have multimillion-dollar tutoring centers just for their athletes” including the \$12 million facility at the University of Michigan.⁵⁴
- Princeton built a \$136 million, 500-bed dorm (\$272,000 per bed, much more than the median home costs).⁵⁵ MIT's Simmons Hall cost \$194,000 per bed.⁵⁶
- “Framingham State College will spend more than \$191,000 building a two-car garage and stone patio for its state-owned president's house ...even as the college's budget faces a potential \$2 million cut”⁵⁷
- The University of Medicine and Dentistry of New Jersey “spent more than \$80,000 in 2005 to shuttle the head of a volunteer advisory board from her home in Pennsylvania's Poconos to the school's Newark campus.”⁵⁸
- “Students now get massages, pedicures and manicures at the University of Wisconsin in Oshkosh” and students at Indiana University of Pennsylvania can play “one of 52 golf courses from around the world on the room-sized golf simulators”⁵⁹
- Ohio State University spent \$140 million⁶⁰ “to build what its peers enviously refer to as the Taj Mahal, a 657,000-square-foot complex featuring kayaks and canoes, indoor batting cages and ropes courses, massages and a climbing wall big enough for 50 students to scale simultaneously”⁶¹
- The University of California gave 16 employees severance checks, and then rehired them. In the most egregious example, one person “left her old job on April 30 and began her new one on May 1.” She was given the same salary, but managed to collect a \$100,202 severance payment anyway. And prior to this she was given “a \$44,000 relocation allowance and a low-interest \$832,500 home loan, for which she was not otherwise entitled.”⁶²
- In 2006-2007, 293 employees at private schools made more than \$500,000. “[T]he highest-paid college employee in the country was Pete Carroll, head football coach at the University of Southern California, with \$4.4-million in total compensation (pay plus benefits).”⁶³

Perhaps I have not fully developed the requisite comfort level with cognitive dissonance to constantly hear schools complaining about not having enough money and then witness them spending the money they do have like this. The problems of higher education that lead to the arms race will ultimately need to be addressed (by developing measures of outputs rather than inputs), but in the meantime, the key issue with respect to financial aid is how to avoid exacerbating these problems.

The recommendations below are based on the propositions that it is socially desirable to: 1) enable more people to attend college than otherwise would; 2) reduce the financial burden on students and their families; and 3) promote equality of opportunity. These three goals are the primary rationale for government provided financial aid.⁶⁴

These can be accomplished by shifting the current practice of providing subsidies to all students, loans to most students, and grants to some students, to a system that relies on means-tested grants and loans exclusively.

The first step is to determine the cost of providing an education. Note that this is not the cost of providing an education at a particular institution, but rather the cost in general of providing an education. In *The \$7,376 “Ives”: Value-Designed Models of Undergraduate Education*, an earlier CCAP publication, Vance Fried estimated that a first rate education could be delivered for \$7,376 per year.⁶⁵

Alternatively, we could examine the total actual expenditures of schools. A new report by the Delta Project determined that in 2006, per FTE student education and related spending (this is known as the “full cost of education” and includes instructional spending as well as an allowance for other costs) varied from \$33,234 at private research schools to \$10,835 at public masters’ schools.⁶⁶ The median student attends a public research university, which had education and related costs of \$13,819 per student. We will use this figure and the corresponding figure for two-year schools of \$9,184 as our baseline. In 2008 dollars, these work out to \$14,758 and \$9,808 respectively. Thus, the cost of educating a student at a four-year school is about \$15,000, and the cost of educating a student at a two-year school is about \$10,000. We’ll call these figures C^* .

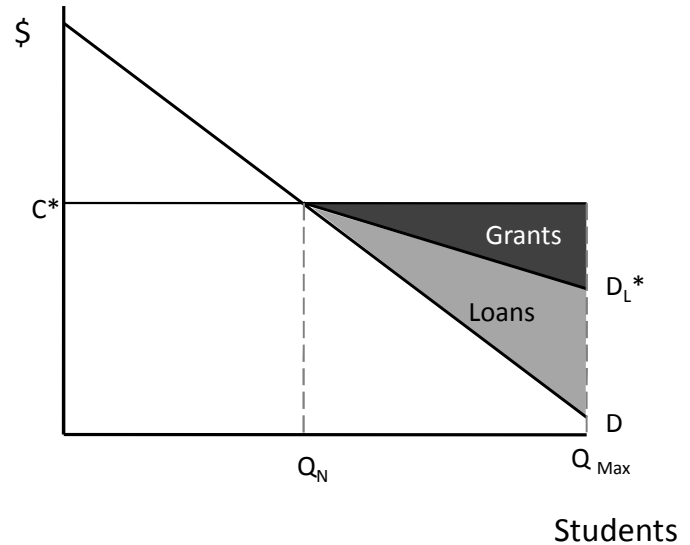
As an aside, an extremely good case can be made that in the absence of proof of educational differences, the baseline should be the spending of the lowest cost provider – e.g. the public masters’ figures. Since we do not measure the output of schools, there is no way of knowing if they are providing any worse of an education than top spending schools, so why should we pay more for something without knowing it is any better? Using those figures would also encourage high spending schools to come up with output measures to try and justify their high costs, something that they currently resist tooth and nail. However, for the purpose of this illustration, I conservatively chose to use the median spending figure, which is certainly defensible given that *half of students already attend schools that spend that amount or less*.

In the second step, the government figures out what each student can afford to pay. This is already being done, and the figure is called the “expected family contribution” or EFC. While this formula is undoubtedly in need of revision (the “current formula absorbs student earnings from work ... at a very high rate of 50 percent,”⁶⁷ which is outrageous), there is no reason in principle that it could not be fixed and amended for these purposes. Importantly, *the government should not share this information with the schools* – there is little to be gained by facilitating price discrimination.

Next, simply take the difference between the two, and have the federal and state governments provide “Super Pell” grants for as much of the difference as they can. If a student’s EFC is \$10,000, and the cost of providing an education, C^* , is \$15,000 at a four year school, then the student should be eligible for \$5,000 in financial aid. Given current and projected budgetary strains, it is possible that even the state and federal government combined would not be able to fully fund these “Super Pell” for every student, so federally sponsored loans could be used to fill in the gap. Note however, that, if used at all, the loans should not be made available to everyone, just to those whose EFC and Super Pell still do not cover C^* .⁶⁸

The results of this process are depicted in figure 24. The idea is to allow all students to pay tuition equal to C^* . Students from 0 to Q_N can pay this amount, and are not given aid. However, students from Q_N to Q_{Max} cannot pay C^* on their own, and receive grants and loans sufficient to cover the amount that they cannot pay.

Figure 24: A Better Financial Aid Design



This is only a slight departure from current practice for the federal government. Federal grants are already restricted to low-income students, so no fundamental modification is necessary with respect to grants. Federally backed loans on the other hand, are not restricted to low-income students and are currently too widely available (while there are generally income limits, these limits are well above C^*). Loans made to students who can

afford to pay more than C^* are ineffective in reducing the financial burden for students and merely result in the school capturing more money. Thus the federal loans need to be restricted so that they are only available to students that cannot afford to pay C^* . The big changes in the practice of the federal government concerns the FAFSA and the tuition tax credits. The FAFSA information should not be given to schools. This will help reduce price discrimination, since without the FAFSA information schools will not know as much about the demand curve. The tax credits have a similar effect as loans (they shift the demand curve out) but because they primarily benefit upper and middle income families, who are most likely to be above C^* , they are probably largely ineffective in reducing the financial burden of college. They effectively take money that would have been paid in taxes, and transfer it to colleges. In this respect, the expanded tuition tax credits in the 2009 stimulus bill are probably a step backward with respect to reforming the system.

Note that this is a significant departure from contemporary practice for states. Currently, states tend to fund public institutions directly through lump sum subsidies (rhetoric sometimes refers to this as a per student subsidy, but the amount provided changes over the years in a manner much more consistent with states figuring out the total amount they can afford and then calculating the per student rate as opposed to changing the per student rate based on some other criteria). However, states then impose restrictions on the schools, such as limiting the amount that they can charge in tuition. Thus states try to exert pressure on the public schools along both the price and quantity dimensions. This proposal recommends the abandonment of this system. Instead, public schools would face no pressure on either price or quantity, and would enjoy more autonomy. However, the schools would no longer receive direct appropriations/subsidies, and money would be given directly to the students rather than to the schools.

A worrisome objection to this proposal is that “[m]eans-tested aid is better targeted but, it seems, less

effective in promoting college enrollment”^{69,70} than across the board subsidies. However, it is my belief that this is due to the complex and convoluted financial aid *process*. This proposal would eliminate virtually all of that process, and result in predictable and prior knowledge about aid, which would reduce the uncertainty and confusion that currently prevents many students who would qualify for aid from getting it.⁷¹ Even supposing I am wrong on this point, this proposal would still be more effective than current policy in the long run. Since “the best financial aid is lower tuition,”⁷² and this proposal would end the arms race, it stands to reason that over time tuition would be lower under this proposal than under the status quo.

Conclusion

Several key parts of current financial aid practice are ineffective in achieving their primary goals (promoting college affordability, access, and equality of opportunity) because aid is often structured in such a way that it reinforces undesirable traits within the higher education sector. Specifically, financial aid programs fuel an arms race in spending among schools. Programs are structured in such a way that governments are essentially subsidizing the inflation of college costs.

Schools generally cannot compete with each other by demonstrating that they provide a better education than others, because the outputs of school (learning and its consequences in a value added sense) are not measured. Since there are not generally accepted measures of outputs, and it is reasonable to think that high quality inputs will lead to high quality outputs, schools compete on inputs instead. Any input that is plausibly thought to affect learning (superstar faculty, world class laboratories, fancy dorms, etc.) becomes the focus of competition, and each school tries to have the best inputs. The result has variously been described as the Bowen Rule, the Ehrenberg Cookie Monster, or more generally the academic arms race, and it inevitably leads to an explosion in costs. Is it any wonder that when we measure schools based on inputs, which are costly, that costs continually rise?

Perhaps the most important consequence of the resulting explosion in costs has been a reduction in college affordability and access. As costs have been ratcheted up, governments have been forced to cut back on funding (as a percent of total costs), which is increasingly leaving the financial burden on students and their families. In other words, policy makers have designed a convoluted financial aid system that inadvertently leads to higher tuition. However, if ineffective practices are terminated or altered, and effective practices are expanded, then the system will be able to achieve its goal of making college less of a financial burden.

Ultimately, the dilemma is how to ensure equality of opportunity (that qualified low-income students have the financial aid they need to allow them to attend college), without contributing to the academic arms race. The recommendations above are a step in that direction.

NOTES

1. Goldrick-Rab Sara and Roksa Josipa. *A Federal Agenda for Promoting Student Success and Degree Completion*. A report by the Center for American Progress. August, 2008.
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4. Ehrenburg, Ronald G. *Why College Costs So Much*. Harvard University Press, 2002.
5. This is almost a direct quote. From Easterly, William. *Everyone Should Be Responsible...(except the aid agencies)*. Blog post on Aid Watch (<http://blogs.nyu.edu/fas/dri/aidwatch/>), January 26, 2009.
6. Ehrenburg, Ronald G. *Why College Costs So Much*. Harvard University Press, 2002.
7. One of the main points to be addressed later is that the availability of loans does affect the *amount* paid, rather than just the *timing*, but we are getting ahead of ourselves.
8. Kane, Thomas J. *Rising Public College Tuition and College Entry: How Well Do Public Subsidies Promote Access to College?* NBER Working Paper 5164. 1995.
9. The Obama administration has recently proposed shifting federal loans from the FFELP to the Direct Loan program, which would alter the immediate budgetary distinction between loans and grants for the government.
10. Altig, David. *Will tax stimulus stimulate investment?* Blog post on Macroblog. January 7, 2009. <http://macroblog.typepad.com/macroblog/2009/01/will-tax-stimul.html>
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 29. Wolfram, Gary. *Making College More Expensive The Unintended Consequences of Federal Tuition Aid*. CATO Institute Policy Analysis no. 531. January, 2005.
 30. Quote is from F King Alexander as reported in Wolfram (2005).
 31. Stampen, Jacob. *The Financing of Public Higher Education*. AAHE-ERIC/Higher Education Report no. 9, 1980.
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 33. For example, Long, Bridget Terry. *How do Financial Aid Policies Affect Colleges?* *Journal of Human Resources* (4):1045-1066 (2004).
 34. For example, McPherson, Michael S, and Schapiro, Morton Owen. *Keeping College Affordable: Government and Educational Opportunity*. Brookings Institution, 1991.
 35. Rizzo, Michael J. and Ehrenberg, Ronald G. *Resident and Nonresident Tuition and Enrollment at Flagship State Universities*. NBER working paper 9516. February, 2003.
 36. USNWR refers to this as the Peer Assessment survey, and it accounts for 25% of the weighting in their rankings. The most recent year's score (the issue for the 2009-2010 school year) was used.
 37. See *The Student Aid Game* (McPherson and Schapiro, 1998), *Aiding Students, Buying Students* (Wilkinson, 2005), and *Crafting a Class* (Duffy and Goldberg, 1998).
 38. Net tuition is calculated as published tuition minus average federal, state, local, and institutional grant aid. Student loans, which must be paid back, are not subtracted. See the CCAP publication titled *Net Tuition in the United States* for a more detailed explanation of the methodology and caveats.
 39. Of course, there is now the possibility that there was something that affected the variables over time.
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50. This is also consistent with the 2009 Annual Letter from Bill Gates, where his charitable foundation had more success with starting new schools than with trying to change existing ones.
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61. Winter, Greg. Jacuzzi U.? A Battle of Perks to Lure Students. New York Times. October 5, 2003.
62. Doyle, Jim. UC admits misleading public about buyout-taker. San Francisco Chronicle. February 9, 2009.

63. Brainard, Jeffrey. The Biggest Campus Paycheck May Not Be the President's. The Chronicle of Higher Education. February 27, 2009.
64. If it is decided that schools need more money for other reasons, and are provided with lump sum subsidies to that end, then so be it. Research might be a good example. But do not try to rationalize that decision by deluding yourself into thinking that that money will go towards making college more affordable or more accessible. If the theory laid out above and the historical evidence are any indication, chances are it will not.
65. Available at http://www.centerforcollegeaffordability.org/uploads/Vance_Fried_Report_Final.pdf
66. The report, titled *Trends in College Pricing*, defines education and related expenses as "all spending for instruction and student services, plus a portion of spending on academic and institutional support and for operations and maintenance of buildings. E&R spending is sometimes also called a 'full cost of education' measure."
67. Goldrick-Rab Sara and Roksa Josipa. *A Federal Agenda for Promoting Student Success and Degree Completion*. A report by the Center for American Progress. August, 2008.
68. Note that C* does not include room and board, which are valid educational expenses for students. I would argue that any aid for room and board should take the form of loans, but given that there will be insufficient grant money to cover instructional costs, let alone room and board, a debate over this issue is largely irrelevant. However, some fixed amount for room and board should be added to C* and made eligible for financial aid monies.
69. Kane, Thomas J. Rising Public College Tuition and College Entry: How Well do Public Subsidies Promote Access to College? NBER working paper 5164. July, 1995.
70. Also see Hansen (1983) and McPherson and Schapiro (1993).
71. While I do not address it in this study, there seems to be little disagreement that the process for applying for aid is seriously flawed to the point of being counterproductive. For an excellent primer on the issue, see Complexity and Targeting in Federal Student Aid by Susan Dynarski and Judith E. Scott-Clayton.
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