Introducing Bennett Hypothesis 2.0

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Center for College Affordability and Productivity

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Center for College Affordability and Productivity

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Table of Contents

Table of Figures and Tables

Introduction

A quarter of a century ago, then Secretary of Education William J. Bennett made waves by declaring:

> "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."[1]

From that point forward, the notion that increases in financial aid cause increases in tuition has gone by the moniker of the Bennett Hypothesis, and its validity has been hotly debated ever since.

Many within higher education view the idea as preposterous. Most colleges are public or non-profit, so how could they possibly be greedily seeking "profits"? At the same time, many observers of higher education view it as an accurate depiction of reality. As Arthur Hauptman has noted, "just as one couldn't imagine house prices being as high as they now are if mortgage financing were not available, it is difficult to believe that colleges and universities could have increased their charges so rapidly over time without the ready availability of students' ability to borrow."[2]

Scholars have found evidence that contradicts the notion, but they have also found evidence that confirms the idea, which has allowed both opponents and supporters to claim vindication. In this paper, I argue that all the mixed evidence and subsequent controversy is a consequence of an overly simplified view of the Bennett Hypothesis. Tweaking the concept to account for a more realistic view of who receives financial aid, the actions available to colleges, and the nature of competition in higher education leads to predictions that are more consistent with the data than the original hypothesis or its antithesis. The three refinements are:

1. All Aid is Not Created Equal
2. Selectivity, Tuition Caps, and Price Discrimination are Important
3. Don't Ignore the Dynamic Story

Collectively, these changes to the original theory yield what I call Bennett Hypothesis 2.0. As we will see in the sections that follow, these changes help explain the mixed empirical evidence and offer a more accurate understanding of the relationship between financial aid and tuition.

The Original Bennett Hypothesis

The Bennett Hypothesis holds that colleges will raise tuition when financial aid is increased, with the implication that increases in financial aid will not improve college affordability. Intuitively, it can be understood as a logical consequence flowing from the following observations:

1. Individually, each college is trying to improve (the pursuit of excellence).

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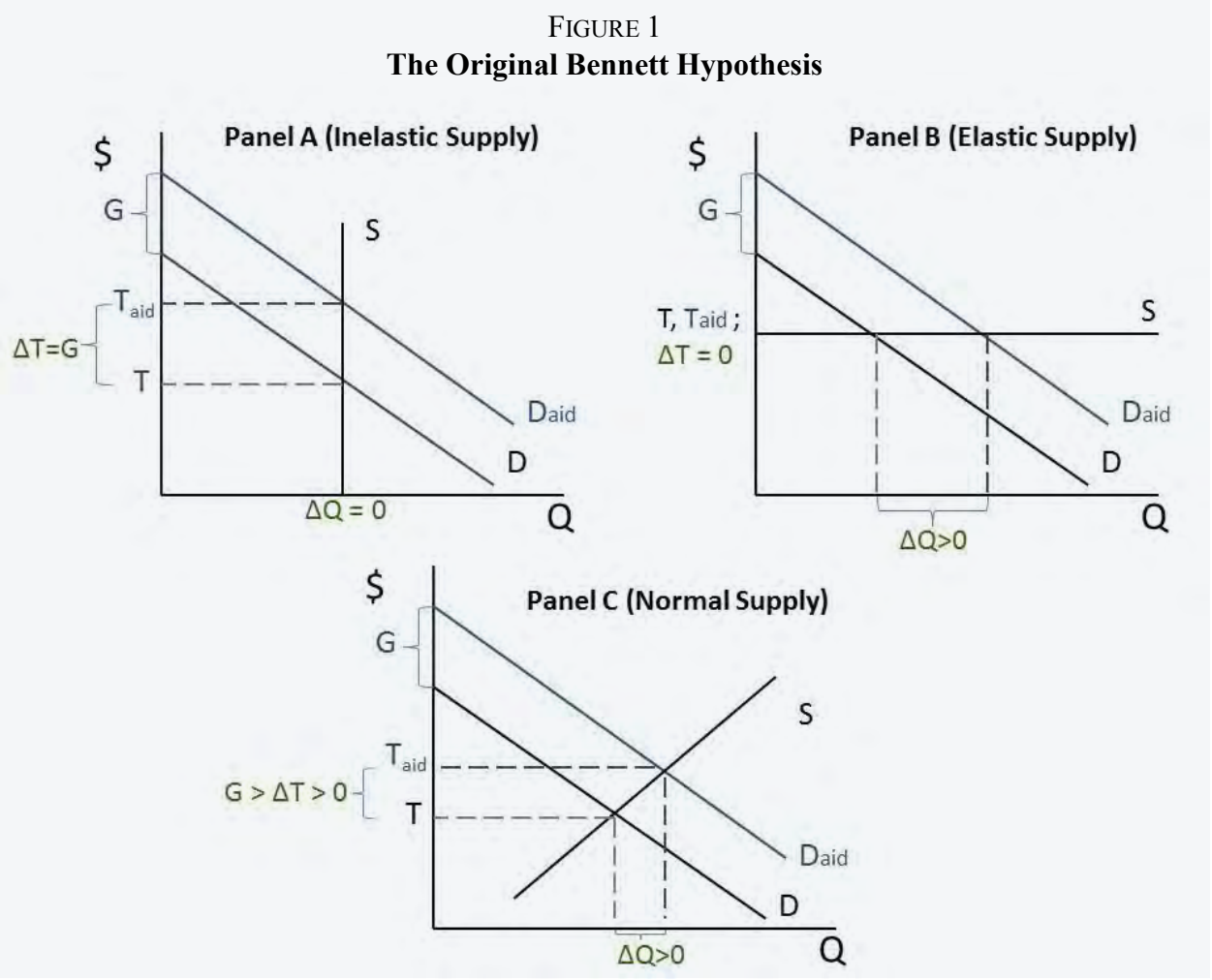
[1] William J. Bennett, "Our Greedy Colleges," *The New York Times*, February 18, 1987.
[2] Arthur M. Hauptman, "Class Differences in Room for Debate, Rising College Costs: A Federal Role?" *The New York Times Room for Debate Blog*, February 3, 2010.

2. More revenue is very useful in the quest for improvement.
3. An increase in the generosity of financial aid gives colleges the option of acquiring more revenue by raising tuition to capture some of the aid.
4. Most colleges will succumb to the temptation to raise tuition.
    a. Some colleges will exploit (3) immediately to help them accomplish (1).
    b. To keep from falling behind the colleges in (4a), even colleges that did not exploit (3) initially are pressured to do so in the future.
5. Thus, an increase in financial aid leads to higher tuition (the Bennett Hypothesis).

While logical and intuitive enough, it is helpful to examine the idea in a little more detail. Figure 1, which shows three versions of the "market" for a typical college, will help explain the logic behind the Bennett Hypothesis. In all three panels, the horizontal axis measures the number of students (Q), and the vertical axis measures dollars ($). The demand curve (D) is downward sloping, indicating that as tuition falls, the number of students wanting to attend the college increases. The intersection of the supply and the demand curves gives us tuition (T) and enrollment (Q).

FIGURE 1
The Original Bennett Hypothesis



Panel A assumes that the college is capacity constrained, meaning that it has a vertical (perfectly inelastic) supply curve though we vary this assumption in the other two panels.[3] Next, the government offers financial aid in the form of a grant of size G to each student. This shifts the demand curve up by G (to D_{aid}). The new intersection with the supply curve gives a new tuition level (T_{aid}). With a vertical supply curve, the change in tuition will be exactly equal to the financial aid grant ($\Delta T = G$), and there will be no change in enrollment ($\Delta Q = 0$). Thus, in this version of the model, tuition increases $1 for every $1 increase in financial aid.

This is the model most people have in mind when they think of the Bennett Hypothesis, and the version that is most frequently referred to in policy discussions. However, it is worth introducing two other variations of the model as well.

Panel B is the same as Panel A, except that the supply curve is horizontal (perfectly elastic) rather than vertical. Financial aid still shifts the demand curve (to D_{aid}), but with a horizontal supply curve, tuition is left unchanged ($T = T_{aid}$), meaning there is no change in tuition ($\Delta T = 0$), but there is an increase in the number of students attending the college ($\Delta Q > 0$).

Lastly, Panel C repeats the exercise but with a typical upward sloping supply curve. The financial aid still shifts the demand curve (to D_{aid}), but the new intersection of supply and demand imply an increase in the number of students ($\Delta Q > 0$) and an increase in tuition, though tuition increases by less than the increase in financial aid ($G > \Delta T > 0$).

It is clear that the effect of financial aid on tuition depends heavily on the nature of the supply curve. Table 1, which summarizes the results of an increase in financial aid of $G based on the different supply curves, indicates that the Bennett Hypothesis effect ($\Delta T > 0$) will occur whenever supply is not perfectly elastic.

TABLE 1

Results of an Increase in Financial Aid of $G in the Original Bennett Hypothesis

Panel	Supply is…	Change in Tuition (ΔT)	Change in Enrollment (ΔQ)
A	Inelastic (vertical)	G	0
B	Elastic (horizontal)	0	> 0
C	Normal	> 0	> 0

[3] A vertical, or perfectly inelastic supply curve tells us that a college only has X number of seats, and cannot expand or contract enrollment.

The Scholarly Evidence

Many scholars have examined the validity of the Bennett Hypothesis. A non-random sample of findings includes:

- "Of the many studies that have tried to identify whether colleges react to federal financial aid, most find little to no response. While several studies do find a college price response, their overall results are mixed and often contradictory."[4]
- "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… we find no evidence in support of the Bennett hypothesis among public or lower-ranked private universities… Among the best private universities, though, we find strong evidence of sharp increases in net tuition associated with increases in Pell aid."[5]
- "We found no evidence of the 'Bennett Hypothesis,' [at private institutions]… We did, however, find that public four-year institutions tended to raise tuition by $50 for every $100 increase in federal student aid."[6]
- "Estimates 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."[7]
- "we find that higher education institutions raise net-price and lower their average institutional financial aid award when their states increase need-based awards, an indication that they are capturing increased state financial generosity."[8]
- "Previous studies of the Bennett hypothesis among public and non-profit institutions have found mixed results… we find large and significant differences between the tuition charged by [aid eligible] and [aid ineligible] institutions… [aid eligible] institutions charge about 56 log points, or 75 percent, more… The magnitudes are comparable to average per-student federal grant aid awards, suggesting that [aid eligible] institutions may indeed raise tuition to capture the maximum grant aid available."[9]

While certainly not a comprehensive review, these excerpts are representative of the typical findings in the literature and lead to three general observations. One, most studies find no evidence of the Bennett Hypothesis for at least some segment of higher education. Two, many studies find support for the Bennett Hypothesis for some segment of higher education, and three, among the second group, the increase in tuition is usually less than the increase in aid. This mixed and often contradictory evidence leads to the

[4] Bridget Terry Long, "What Is Known About the Impact of Financial Aid? Implications for Policy," *National Center for Postsecondary Research*, April, 2008.
[5] Larry D. Singell and Joe A. Stone, "For Whom the Pell Tolls: Market Power, Tuition Discrimination, and the Bennett Hypothesis," *University of Oregon Economics Working Paper No. 2003-12*, April, 2003.
[6] Michael S. McPherson and Morton Owen Schapiro, *The Student Aid Game: Meeting Need and Rewarding Talent in American Higher Education*, Princeton University Press, 1998.
[7] Michael J. Rizzo and Ronald G. Ehrenberg, "Resident and Nonresident Tuition and Enrollment at Flagship State Universities," *NBER working paper 9516*, February, 2003.
[8] Bradley R. Curs and Luciana Dar, "Do Institutions Respond Asymmetrically to Changes in State Need and Merit Based Aid?," November, 2010.
[9] Stephanie Riegg Cellini and Claudia Goldin, "Does Federal Student Aid Raise Tuition? New Evidence on For-Profit Colleges," *National Bureau of Economic Research working paper 17827*, February, 2012.

obvious conclusion that "the issue of whether various forms of financial aid 'cause' tuition increases remains unresolved."[10,11]

Bennett Hypothesis 2.0

As the previous section indicates, the empirical evidence on the Bennett hypothesis is quite mixed. Strikingly, there is no evidence that a $1 increase in financial aid yields a $1 increase in tuition, which convincingly rules out the most common version of the Bennett Hypothesis - Panel A of Figure 1 (inelastic/vertical supply). Given the numerous findings that a $1 increase in aid results in an increase in tuition of greater than $0 but less than $1, we can also probably rule out Panel B (elastic/horizontal supply). Thus, to explain the scholarly findings in terms of the model presented above, we'd have to conclude that Panel C (which has an upward sloping supply curve) is the best description of the higher education market.

However, this conclusion is problematic. Most traditional colleges are capacity constrained at or near their current enrollment, especially in the short run, which means that their supply curve should be fairly inelastic (not necessarily perfectly vertical, but close to it).[12] This is problematic for the Bennett Hypothesis because if supply curves are inelastic (or close to it), then as shown in Panel A of Figure 1, tuition should increase 1 for 1 (or close to it) with increases in financial aid, but the empirical evidence is clear that it does not.

In other words, we likely live in a world in which most colleges have fairly inelastic (fairly vertical) supply curves, but the tuition increases we observe in response to aid are too small to be consistent with that. I believe that some simple refinements of the original Bennett Hypothesis could help resolve this dilemma. I will refer to the collective refinements as Bennett Hypothesis 2.0 to emphasize that this is the next generation of the Bennett Hypothesis, and that there are important differences in assumptions, implications, and results.

The three key refinements of the original that constitute Bennett Hypothesis 2.0 are as follows:

1. All Aid is Not Created Equal
2. Selectivity, Tuition Caps, and Price Discrimination are Important
3. Don't Ignore the Dynamic Story

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[10] Alisa F. Cunningham, Jane V. Wellman, Melissa E. Clinedinst, Jamie P. Merisotis, and C. Dennis Carroll, *Study of College Costs and Prices, 1988–89 to 1997–98, Volume 1*, National Center for Education Statistics, December, 2001.

[11] Ironically, the quoted study has gained almost mythical status among opponents of the Bennett Hypothesis, and is continually cited as proving that the Bennett Hypothesis is a myth in spite of the authors' warnings against drawing such a conclusion. See <http://centerforcollegeaffordability.org/archives/6625> for more details.

[12] Moreover, even in the long run, supply curves typically remain inelastic. In most industries, leading firms expand output to gain market share, which has the tendency to make supply curves more elastic over time. But in higher education, the competition is not over market share, but over quality/excellence/prestige. As a result, leading colleges rarely expand, and typically lose market share. In fact, rejecting potential customers is seen as a good thing since it is a marker of selectivity, which is highly prized in higher education.

All Aid is Not Created Equal

There is reason to suspect that different aid programs have different effects on colleges' ability to raise tuition. In particular, aid programs that are restricted to low income students are less likely to allow colleges to raise their tuition. Intuitively, aid that is only available to low income students will mostly just allow those students previously priced out of the market to pay the prevailing tuition, without giving the college the capability of raising tuition. Figure 2 illustrates this story.

FIGURE 2
Aid for Low Income Students is Not the Same as Aid for Everybody

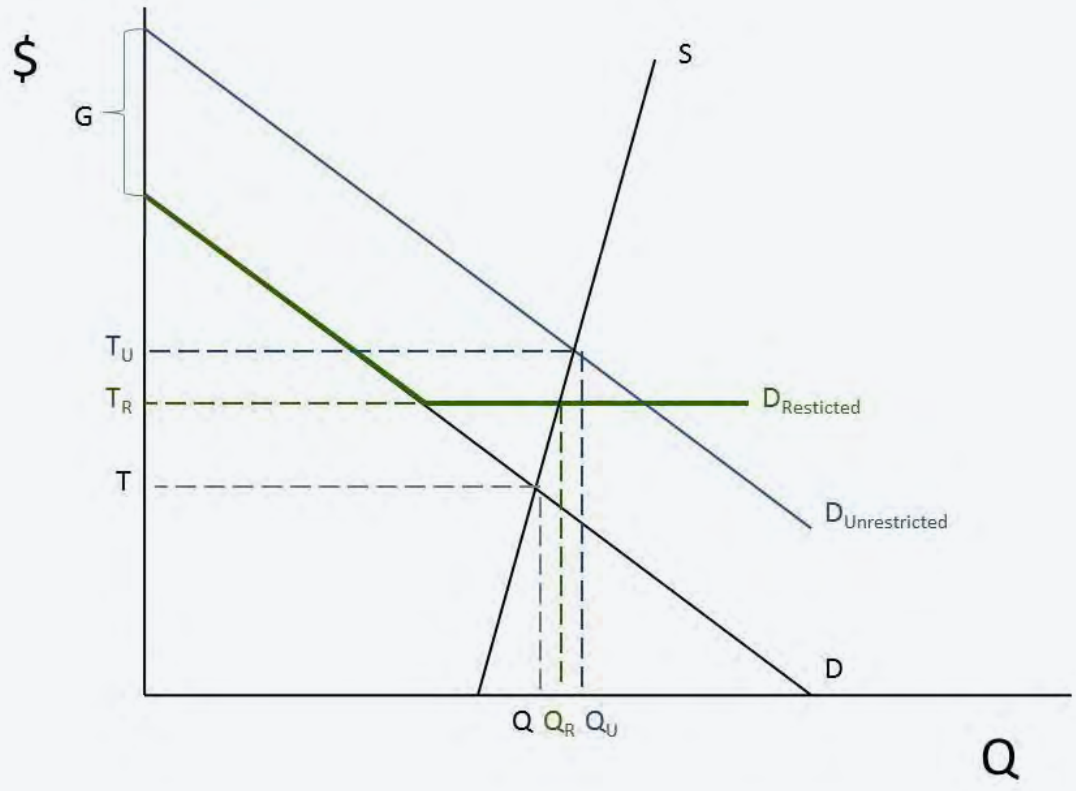

Figure 2 begins with our standard demand curve (D), but we will make the further assumption that income is the dominant factor in determining willingness to pay, meaning that the top left of the demand curve consists of rich students, and the bottom right portion consists of low income students. When we add a fairly inelastic supply curve (S), the result is tuition of T and enrollment of Q.

Now consider the effect of two different aid programs. The first program is just like the universal grant G we introduced earlier. It is unrestricted (by income), with every student being provided with $G to help pay for college. This shifts the demand curve out (to $D_{Unrestricted}$), and since the supply curve isn't perfectly inelastic, results in higher tuition ($T_U > T$) and higher enrollment ($Q_U > Q$).

The alternative aid program restricts aid to low income students only. Since low income students are clustered in the lower portion of the demand curve, this means that rather than shifting the demand curve out, it introduces a kink into the curve.[13] The top portion of the demand curve remains unchanged because rich students do not qualify for the aid, but the bottom portion pivots at the point where poor students start to qualify for the program.[14] The intersection of supply and demand now imply enrollment of Q_R and tuition of T_R.

There are two key implications. First, financial aid that is restricted to low income students will result in a smaller increase in tuition ($T_R < T_U$). Second, if the income cut-off is low enough colleges may not be able to raise tuition at all (if the kink is drawn at T or below, T and Q will be unaffected).[15]

How Does This Help Explain the Scholarly Evidence?

This refinement helps explain why the scholarly evidence generally finds that a $1 increase in aid tends to lead to less than a $1 increase in tuition. As we just saw, we should not expect a $1 to $1 relationship when aid is contingent upon income, since such aid does not give colleges as much room to raise tuition (any room if the income cutoffs for recipients are low enough).[16] This is particularly important because findings that Pell grants do not lead to (much) higher tuition are typically taken as strong evidence against the Bennett Hypothesis. But once Pell grants are modeled as a kink in the demand curve rather than shift of the demand curve, we wouldn't expect a 1 to 1 relationship, taking away some of the strongest evidence against the Bennett Hypothesis.

What are the Main Lessons?

The main lesson from this first refinement is that aid targeted to low income students (such as the Pell grant and subsidized Stafford loans) kink the demand curve, while universal (or near universal) aid (such as unsubsidized Stafford loans and the education tax credits) shift the entire demand curve. These programs therefore have very different implications when it comes to their impact on tuition.

For policy makers, the key point is that financial aid that is restricted to low income students is much less likely to be captured by colleges, and will therefore be more likely to succeed in making college more affordable and therefore accessible (for low income students). In contrast, universally available programs are more likely to simply fuel tuition increases and therefore more likely to fail to make college more affordable.

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[13] Andrew Gillen, "Financial Aid in Theory and Practice: Why It Is Ineffective and What Can Be Done About It," *Center for College Affordability and Productivity*, April, 2009.

[14] As drawn, the restricted program assumes that all students initially unable to pay T are provided with just enough aid to allow them to pay T after receiving aid.

[15] While Q, the total number of students, is unaffected, aid can allow high achieving low income students to replace less qualified students, as we'll see in the next section.

[16] It may seem like this does not apply to a perfectly inelastic supply curve, but if combined with refinement number 3 below, the result still holds.

From a scholarly perspective, there are three important points to emphasize from this refinement. First, results from one program may not generalize to other programs, particularly when the programs have different beneficiaries. The second, related point is that summing all financial aid programs into one aggregate financial aid variable is inappropriate. If Pell grants and unsubsidized Stafford loans have different effects, then summing them together will not yield results reflective of either program. The third point is that the same program can have different effects at different colleges, leading to higher tuition at some but not others based on the existing level of costs and tuition.[17]

Selectivity, Tuition Caps, and Price Discrimination are Important

The second refinement accounts for two common practices within higher education that weaken the link between aid and tuition; tuition caps and price discrimination.

Tuition Caps

Many public universities are subject to tuition caps or growth rate caps by their state legislators as a condition of receiving state funding. Figure 3 illustrates the mechanics of a tuition cap. We start with an inelastic supply curve and no aid, yielding tuition T and enrollment Q. We then give each potential student aid of G, which shifts the demand curve (to D_{aid}). If the legislature does nothing, we'd expect for tuition to increase to $T_{Uncapped}$. But what happens if the state legislature caps tuition at T_{Capped}?

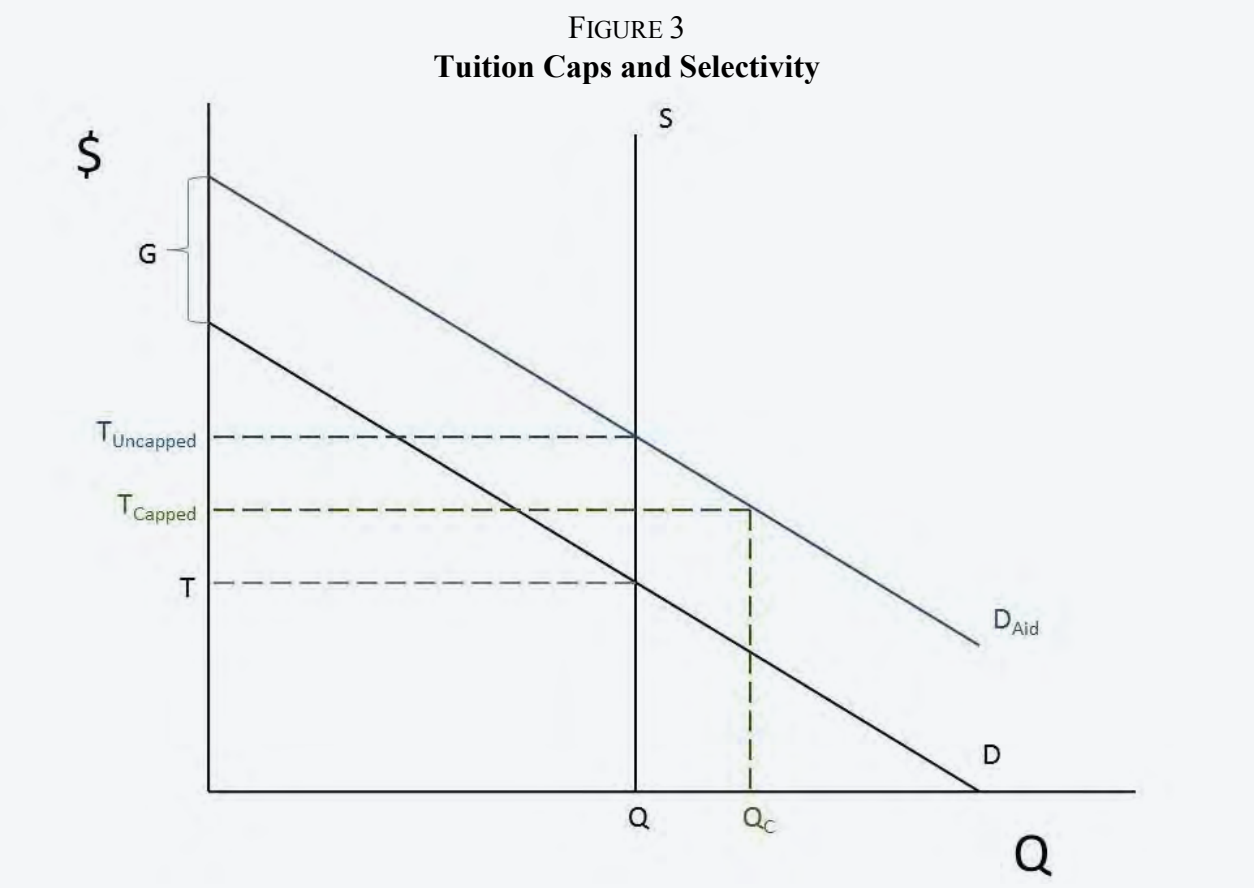
At T_{Capped}, Q_C students would like to enroll in the college, but because the college is capacity constrained, it can only enroll Q students. With a surplus of applicants at the legislatively capped tuition rate, the college needs to ration enrollment slots in some manner, and the most common method is to use students' previous academic performance. In terms of figure 3, this implies that among all the students from the origin to Q_C only the best Q students will be offered admission and the bottom Q_C - Q will be rejected.

While state governments may force such decisions on some public colleges, this has a much broader implication of illuminating a key tradeoff for colleges between increasing tuition and improving the quality of their student body. Even colleges that are not subjected to legislatively imposed caps on tuition may decide that the benefits of being able to select the best Q students from among the Q_C applicants outweighs the benefits of increasing revenue by charging the highest possible tuition. Indeed, we do not observe many traditional colleges charging as much as they possibly can, indicating that significant value is placed on the quality of students even when it comes at the expense of lower revenue. [18]

[17] Using the D_{Aid} curve in Figure 2, aid will not lead to an increase in tuition at a college with an initial tuition level of T_U, but would lead to an increase in tuition at a college with an initial tuition level of T.

[18] For instance, elite colleges like Yale could probably still fill all their seats even if they charged $200,000 a year in tuition, but they don't do so, in large part to ensure that they can recruit the students they want.

FIGURE 3
Tuition Caps and Selectivity



Price Discrimination

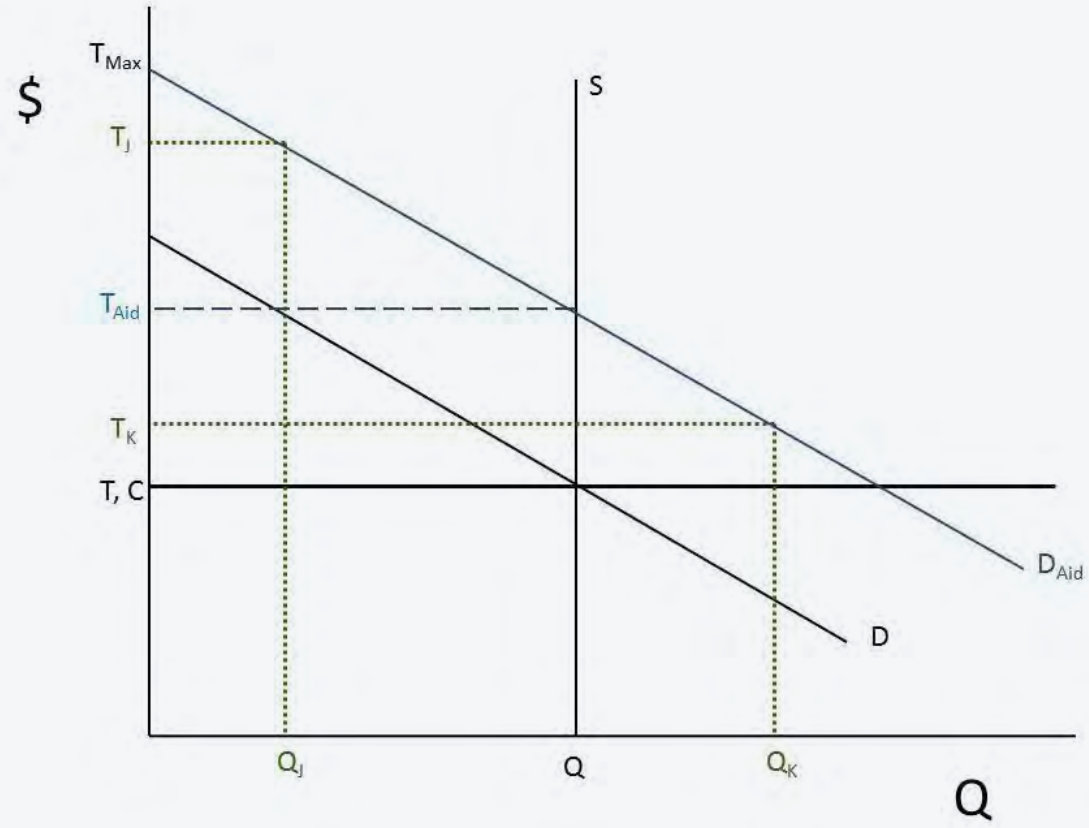
Up until now, we have been assuming that colleges set one tuition level for all students. While this is typically the case for public colleges, many private colleges engage in price discrimination, which entails charging different students different tuition (accomplished by offering students discounts or college funded scholarships, collectively referred to as institutional aid). Figure 4 will help illustrate the mechanics and implications of price discrimination.

Imagine that we have a traditional private college that is capacity constrained. As we saw in Panel A of Figure 1, a college that doesn't price discriminate would charge a price of T before the financial aid, and a price of T_{Aid} after the aid. But a college that price discriminates does not have just one price, but rather a different price for each student.[19] Mechanically, the college sets a high tuition level, such as T_{Max}, but then offers students institutional aid of varying amounts resulting in varying tuition charges. Student J could be offered a relatively small scholarship, resulting in a high price of T_J while student K could be offered a large scholarship, resulting in a low price of T_K. By charging each student their maximum willingness to pay, the college can increase their revenue significantly.

[19] Assuming perfect price discrimination for simplicity.

For simplicity, we'll assume that the college has constant marginal costs of C, and that it is unwilling to take a loss on students (for each student, $T_i > C$). Offering financial aid grants to students at a college that price discriminates puts them in a similar situation as the public university subjected to a tuition cap - the number of students wanting to enroll exceeds the college's capacity. Just like the tuition capped college, a college which engages in price discrimination could use this surplus of applicants to enhance its selectivity. However, the price discriminating college also has the option to squeeze more revenue out of wealthier students.

FIGURE 4
Price Discrimination and Selectivity



Note that without aid, student K is unable to cover the college's costs (C), and would therefore not be admitted. But with aid, student K can now cover costs C, and could be a viable candidate. But that does not guarantee that student K will replace a lesser qualified student. To see why, suppose that the university has already admitted Q-1 students, and is now faced with a choice between student J (who is rich but a bad student) and student K (who is poor but a good student) to admit as its last student. For the college, the advantage of admitting J is that he/she would pay more in tuition, and that extra money could be used to improve the college, while the advantage of admitting K is that he/she is a better student whose admission will improve the selectivity of the college. Some colleges would choose student J, but some would choose student K.

How Does This Help Explain the Scholarly Evidence?

Tuition caps and price discrimination (and the resulting trade-offs concerning selectivity and revenue) help explain the scholarly evidence because they weaken the predicted relationship between increases in aid and increases in tuition. Intuitively, public colleges are often subject to tuition caps, and private colleges typically practice price discrimination (and some public colleges do too). Both result in a tradeoff between increasing revenue and increasing the size of the applicant pool which allows the college to become more selective. Because selectively is also valued by colleges, we should not expect for tuition to increase 1 for 1 with aid even when supply is inelastic, meaning that this refinement helps make Bennett Hypothesis 2.0 more consistent with the empirical evidence.

What are the Main Lessons?

For policymakers, the first lesson is that capping tuition at public universities will encourage those universities to become more selective. This may be a good thing in some respects, but it does have drawbacks as well. The second lesson for policymakers concerns private universities. Price discrimination allows these colleges to raise tuition in response to aid at an individual level (this is just the Bennett Hypothesis at an individual level). But in order for colleges to price discriminate, they must know each student's ability to pay. This means that providing colleges with students' financial background will lead to more aid being captured. Bizarrely, the government currently provides colleges with this information, thus encouraging and facilitating price discrimination.[20] Ending the counterproductive practice of providing colleges with information on the financial background of students and parents would curtail price discrimination, which would increase the effectiveness of aid in improving college affordability.

For scholars, the main lesson is that it is highly unlikely that traditional colleges' actions are consistent with simple objective functions such as profit or revenue maximization. While higher revenue is undoubtedly viewed as positive, *ceteris paribus*, other objectives, such as boosting selectivity, may be hurt by a single minded pursuit of higher revenue. This makes modeling university behavior more complex.

Don't Ignore the Dynamic Story

The first two refinements of the Bennett Hypothesis can be considered minor tweaks of the model (that nevertheless have important implications). The third refinement is a more substantive change. The Bennett Hypothesis is generally understood in terms of the models presented above, which are essentially snapshots in time (static). But there is reason to believe that changes over time (dynamic) can be just as if not more important than the static considerations.

[20] Students' Student Aid Report (SAR), which contains financial information on both students and their parents, are currently given to colleges by the Department of Education.

A Short Detour to Introduce Bowen's Rule

Before going further, we first need to take a short detour to discuss Bowen's Rule. In 1980, Howard R. Bowen introduced the five laws of higher educational costs:

1. "The dominant goals of institutions are educational excellence, prestige, and influence."
2. "In quest of excellence, prestige, and influence, there is virtually no limit to the amount of money an institution could spend for seemingly fruitful educational needs."
3. "Each institution raises all the money it can."
4. "Each institution spends all it raises."
5. "The cumulative effect of the preceding four laws is toward ever increasing expenditure."[21]

These five laws have been summarized as "Bowen's Rule," which holds that colleges raise and spend all the money they can in the pursuit of excellence. Virtually everyone who has studied the issue has verified Bowen's Rule as an accurate description of colleges' behavior:

- Charles Clotfelter: "the operational objective of the research university is simply to 'be the best.' At the same time, each research university is locked in continual battle with its competitors… Expenditures on salaries, facilities, and amenities are crucial to this competition, and therein lies the source of an ongoing, unsatisfied demand on the part of universities for more revenue… every private research university worth its salt always has a list of worthwhile projects to fund."[22]
- Derek Bok: "Universities share one characteristic with compulsive gamblers and exiled royalty: there is never enough money to satisfy their desires."[23]
- Ronald G. Ehrenberg: "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."[24]
- Robert Martin: "higher education finance is a black hole that cannot be filled."[25]

The Implications of Bowen's Rule

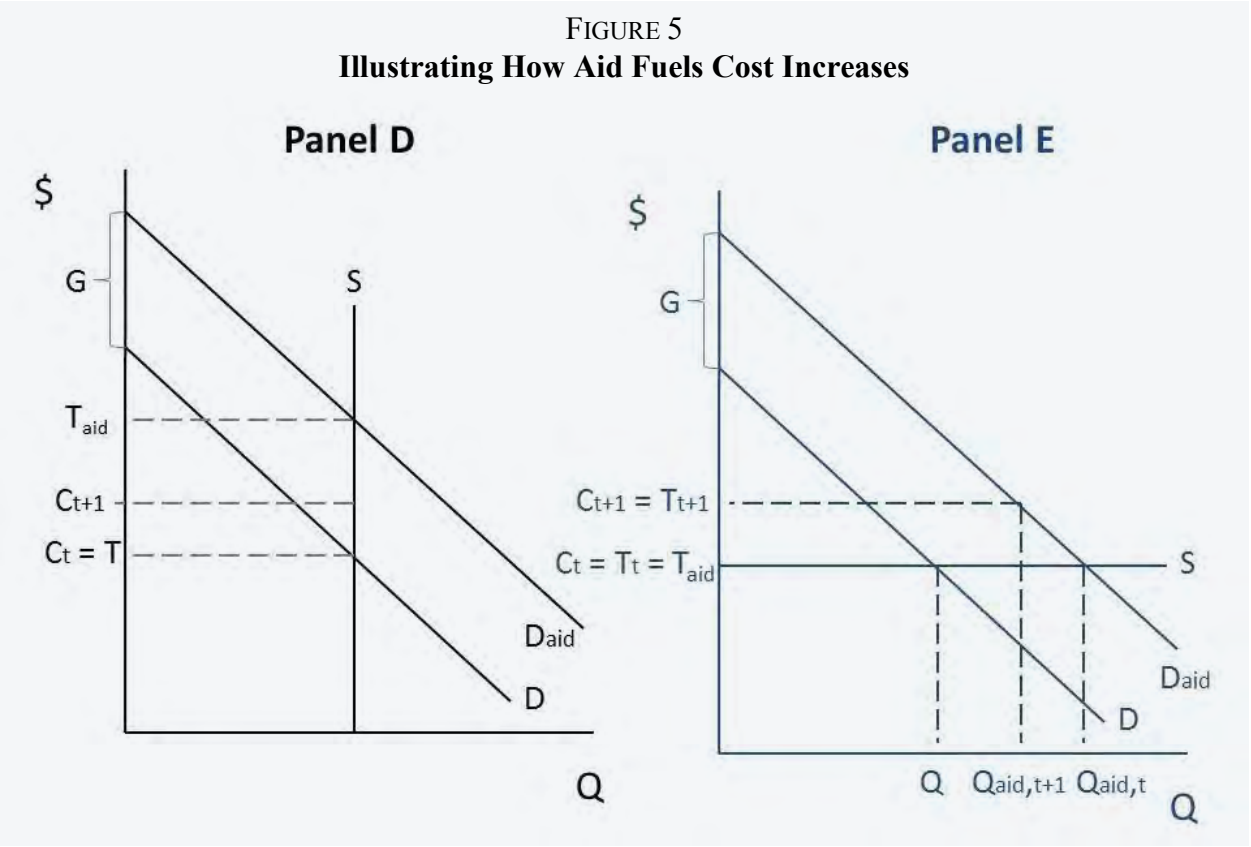
Bowen's Rule provides powerful insights into the effects of financial aid over time. To explore this dynamic story, consider Figure 5.

Suppose that the higher education sector consists of just two colleges, D and E, and that in time period t, they both have constant marginal costs of C_t. The first college is capacity constrained (inelastic supply), while the second is not (elastic supply). Now suppose all students are given a grant of G, shifting the demand curve out (to D_{aid}). As we saw (in Panel A of Figure 1), we would expect to see this aid lead to

[21] Howard R. Bowen, *The Costs of Higher Education*, Jossey-Bass Publishers, 1980.
[22] Charles Clotfelter, *Buying the best: Cost escalation in elite higher education*, Princeton University Press, 1996.
[23] Derek Curtis Bok, *Universities in the marketplace: the commercialization of higher education*, Princeton University Press, 2003.
[24] Ronald G. Ehrenburg, *Tuition Rising: Why College Costs So Much,* Harvard University Press, 2002.
[25] Robert E. Martin, "The Revenue to Cost Spiral in Higher Education," *John William Pope Center for Higher Education Policy*, July, 2009.

higher tuition for college D. But we also saw (in Panel B of Figure 1) that we would not predict higher tuition for college E. We will even go a step further and assume that college E will always set tuition equal to costs, to further emphasize the lack of any way for aid to lead to higher tuition.

FIGURE 5
Illustrating How Aid Fuels Cost Increases



Intuitively, the financial aid increases the ability of students to pay for both colleges. Since college D is capacity constrained, they raise tuition, become more selective, or do some combination of both. For simplicity, assume that it raises tuition to T_{aid} (though as we saw in Figures 3 and 4, this is unlikely). In contrast, college E will leave tuition unchanged (at $C_t = T_t$) and simply enroll more students. Thus, we should not be worried about the Bennett Hypothesis at all at college E.

But this is only the immediate (static) story. What happens the next year, and the year after that (the dynamic story) is also relevant and much less reassuring. To understand this dynamic story, we return to college D. It raised tuition, which gives it more revenue. But what does it do with that revenue? Because most colleges are public or non-profit, they cannot distribute the money to shareholders, which means that the extra revenue will be spent to improve the institution. It may hire more professors to conduct more research, to lower class sizes, or to allow teaching loads to be reduced. Or perhaps it builds new laboratories or classrooms, or expands student services to improve its graduation rate. Each of these may be an appropriate expenditure in some cases, but each will also raise the college's costs in the future. Tenured faculty are difficult to get rid of, new labs and buildings must be maintained, and new

bureaucracies become entrenched. What it spends the money on is irrelevant for our purposes; the important point is that the college spends it, and virtually regardless of what they spend it on, it will result in higher future costs. So at college D, costs in the next time period (t+1) are higher than starting costs ($C_{t+1} > C_t$). This is not necessarily a problem for college D, since it is already charging students enough to cover its higher costs.

But what about college E? We know that initially, aid does not affect tuition at all at college E. But as college D spends more money, college E needs to spend more to avoid falling behind. If it wants to attract the best professors, it needs to increase pay, lower teaching loads, and build state of the art labs when college D does. And if it wants to recruit good students, it has to offer the same amenities that college D does. Thus, the same things that lead to higher future costs at college D lead to higher future costs at college E, so $C_{t+1} > C_t$, which for college E means that $T_{t+1} > T_t$.

The story told in Figure 5 is truly remarkable. For college E, we have stacked the deck against the Bennett Hypothesis as much as possible, assuming both a perfectly elastic supply curve and that it mechanically sets tuition equal to cost. Either of these assumptions should be enough to rule out the Bennett Hypothesis completely, and, in the static case, they do. But as soon as we look past the immediate (static) term, and think about the future (dynamic) impact, we find that Bennett Hypothesis 2.0 applies.

There is Almost No Escaping Bennett Hypothesis 2.0

The lesson from Bennett Hypothesis 2.0 is that there is an overwhelming danger, especially over time, that higher financial aid will lead to higher tuition. While the first two refinements reduce the threat of this result in the short run by weakening the tie between aid and tuition, the third indicates that in the long run, the two are tightly related even in situations where there is little immediate danger.

Is there any way to circumvent Bennett Hypothesis 2.0 - to avoid financial aid leading to higher tuition? Yes, but before we get there, we first need to explore the driving force behind Bennett Hypothesis 2.0.

The Nature of Competition Drives Bennett Hypothesis 2.0

In Figure 5, we saw that in higher education, even with an elastic supply curve, a subsidy (financial aid) leads to an increase in price (tuition) over the long run. In a typical market with an elastic supply curve, subsidization does not have this effect. For instance, suppose that the supply curve for bread is perfectly elastic, and that the government starts subsidizing bread. We would not expect bread producers to simply spend more making bread until they had captured the entire subsidy, so why does this happen in higher education?

The key difference between higher education and the bread industry is the nature of competition: In higher education, colleges essentially compete in a zero-sum game for relative standing. Due to the lack of measures of output and outcomes, colleges cannot compete on quality, and instead compete based on reputation/prestige/excellence. Essentially, they use high quality inputs as proxies for quality because there is no way to demonstrate high quality directly. Since high quality inputs are costly, and colleges are

playing a zero-sum game of relative position, there is no limit to what college will spend in the pursuit of excellence. Thus, they will spend as much as they can, meaning that revenues drive costs (an implication of Bowen's Rule).

In contrast, bread producers compete based on value (roughly defined as quality divided by price, both components of which are observable to consumers). Costly improvements to bread making will only be undertaken if they improve quality enough to compensate for the increase in costs (and therefore, in the long run, price). Bread makers seek to make the bread with the highest value, they do not seek to spend as much as possible in the pursuit of the highest quality bread regardless of cost. In other words, there is no Bowen's Rule for bread making. And because there is no Bowen's Rule for bread making, there is no need to worry that subsidizing bread will lead to higher bread prices and capture of the subsidy by bread makers (assuming a perfectly elastic bread supply curve, as is likely in the long run).

Escaping from Bennett Hypothesis 2.0

Because the nature of competition in higher education is the driving force behind these dysfunctional results, the clearest way to escape Bennett Hypothesis 2.0 is to change the nature of competition. Colleges compete in a zero-sum game based on prestige because they cannot compete based on value, and they cannot compete based on value because measures of both quality and price (net tuition) are obscured. If information on those two were available, the pursuit of excellence would be replaced by the pursuit of value, Bowen's Rule would break down, and Bennett Hypothesis 2.0 would no longer be a concern.[26]

Progress is being made in making pricing information available (colleges are now required to publish net price calculators), but there is no progress regarding quality. A good start would be to publicize employment outcomes, value-added pass rates on certification exams, etc. Until information on such outputs and outcomes is available, we will be stuck in a world where competition is based on prestige, which in turn means we will continue to suffer from Bowen's Rule and Bennett Hypothesis 2.0.

Barring an overhaul of the nature of competition in higher education, there are a few other ways to avoid Bennett Hypothesis 2.0. While Bowen's first two laws hold for most public and private non-profit colleges, for-profit colleges don't care about prestige, they care about profits. Thus, if competition in higher education worked like it does in other industries, the Bennett Hypothesis would not apply to for-profits. Unfortunately, competition in higher education is broken, so we can expect the Bennett

[26] Aid could still affect tuition for the standard elasticity reasons, but in such a world, the long run supply curve would likely be fairly elastic, meaning this would be of minor concern.

hypothesis 2.0 to apply even to for-profits,[27] and indeed a recent study finds that the Bennett Hypothesis does apply to for-profits.[28]

Another way to avoid Bennett Hypothesis 2.0 was pointed out earlier - restrict aid to only the very poorest. If aid is only provided to those that were previously priced out of higher education, then colleges cannot raise prices when aid is given without again pricing them out of the market. Of course, this implies giving aid only to the very neediest students and even then only a limited amount of aid.

With minor exceptions, all of the potential escapes from Bennett Hypothesis 2.0 are unlikely to apply to higher education in the near future.[29] This means we should be worried about Bennett Hypothesis 2.0 in most situations.

Evaluating Bennett Hypothesis 2.0

The implications of Bennett Hypothesis 2.0 are certainly worrying, but how would we test Bennett Hypothesis 2.0 to see if it is valid?

The Gold Standard Test

What would the ideal test of Bennett Hypothesis 2.0 look like? The gold standard would be a plethora of randomized controlled trials (RCTs). Because the theory concerns institutional responses to changes in non-institutional financial aid, RCTs would entail randomly assigning colleges to either a treatment group (whose students would receive large grants) or a control group (whose students would not receive grants).[30] This would allow for comparisons of the pricing decisions of the treatment group compared to the control group with the ultimate goal of determining the effect of aid on tuition.

If all versions of the Bennett Hypothesis are wrong, meaning that colleges do not take financial aid into account when setting tuition, then published tuition should change by the same amount at the treatment and control colleges, but net tuition (tuition less financial aid) should be reduced by the amount of the

[27] Competition in higher education is broken for two reasons. The first is the lack of information necessary to judge quality discussed above, which precludes competition based on quality. The second reason only applies to for-profits, and it is the ill-conceived 90-10 rule. This rule dictates that for-profits cannot get more than 90% of their revenue from financial aid. Since colleges can't limit the amount of federal aid their students choose to take, this encourages for-profits to set tuition higher than federal aid alone can cover, which rules out price competition. Since for-profits can't compete based on price or quality, they mostly compete on marketing prowess, which is even more wasteful than competition based on prestige since it doesn't even have the possibility of leading to a better education for students.

[28] Stephanie Riegg Cellini and Claudia Goldin, "Does Federal Student Aid Raise Tuition? New Evidence on For-Profit Colleges," *National Bureau of Economic Research working paper 17827*, February, 2012.

[29] There are other potential escapes, but they are not on the horizon either. For example, if technological improvements allowed for colleges to cease competing among themselves for costly inputs such as professors, then costs would not be driven higher by competition among colleges. Needless to say, that is unlikely to happen in the near future.

[30] Many types of aid would be tested, starting with those that we already suspect matter. For instance one variant would restrict grants to low income students.

grant at the treatment colleges. If the original version of the Bennett Hypothesis is correct (and the colleges have inelastic supply curves), then published tuition at the treatment colleges relative to the control colleges should increase by the amount of the grant, while the change in net tuition should be the same as at the control colleges. Finally, if Bennett Hypothesis 2.0 is correct, then published tuition should increase by more at the treatment colleges than at the control colleges, while net tuition should increase by less.

Needless to say, a RCT testing Bennett Hypothesis 2.0 would be objectionable on both moral and political grounds. Sometimes, flukes of history result in natural experiments that are close to being a RCT, but this is unlikely for federal financial aid. With controlled experiments ruled out, and natural experiments unlikely, we will probably never have gold standard evidence.

Some Indirect Evidence Supporting Bennett Hypothesis 2.0

Given the very low likelihood of a RCT or natural experiment, we are forced to rely on indirect evidence. While each piece of indirect evidence is not as persuasive as an RCT, they can collectively be quite persuasive. This point was brilliantly noted by Gordon C. S. Smith and Jill P. Pell who noted that we are quite confident that parachutes increase one's chances of survival when jumping from a plane even through there has never been a RCT of parachute use.[31] So what indirect evidence do we have that supports Bennett Hypothesis 2.0?[32]

Theoretical Plausibility

A plausible theoretical model is a definite advantage when proposing a new theory. Three different theoretical frameworks all indicate that Bennett Hypothesis 2.0 is theoretically plausible.

Supply and Demand Approach

The simple supply and demand framework is a workhorse model within economics and has been shown to capture the basic operations of a wide variety of markets. All of the figures presented so far have used this supply and demand model, and as we've seen, Bennett Hypothesis 2.0 is certainly consistent with such models.

Game Theory Approach

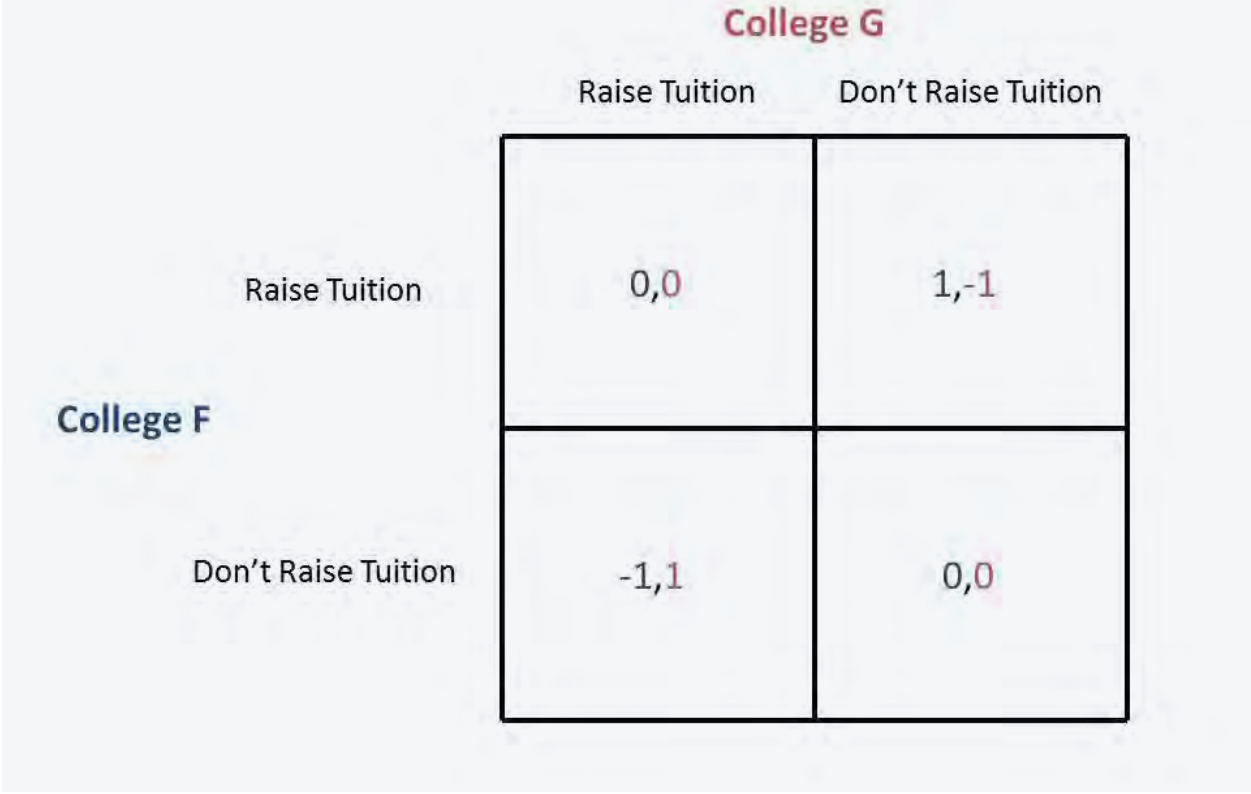
Game theory provides an alternative theoretical framework. In particular, we will use a modified Prisoner's Dilemma game. In this version, we have two colleges, F and G. These colleges both use the *US News and World Report* college rankings as a marker of where they stand, meaning that both would like to move up in the rankings. Note that this is a zero-sum game - a college can only move up in the

[31] Gordon C. S. Smith and Jill P. Pell, "Parachute use to prevent death and major trauma related to gravitational challenge: systematic review of randomised controlled trials," *British Medical Journal* 327, December 2003.
[32] Note that much of what follows would also support the original Bennett Hypothesis.

rankings if the other college moves down. Colleges that spend more than their rivals can move up in the rankings since they can hire better professors, build better labs, recruit better students, etc.

To determine what happens when the government increases financial aid, consider Figure 6. Each college has the choice between raising tuition (and using the money for improvement) or not raising tuition. The matrix lists the payoffs of the two actions, in the form of moving up or down in the rankings relative to the other college (the first number is College F's payoff, the second is College G's payoff). For example, if college F raises tuition, and college G does not, we are in the upper right corner, and college F moves up one position relative to college G, and college G moves down one.

FIGURE 6
A Game Theory Explanation of Bennett Hypothesis 2.0



The first noteworthy observation is that each college's payoff depends not only their own decision, but also on the choice made by the other college. The potential advantage of raising more revenue for improvement is only realized if the other college does not raise tuition and spend it on improvement as well since relative standing is a zero-sum game. If both colleges raise tuition and spend the money to improve (the upper left corner), then their relative position does not change. Similarly, if neither raises tuition (the bottom right corner), their relative positions do not change. It is only when one college raises tuition and improves and the other does not that the relative ranking of the colleges changes.

The second noteworthy observation is that if a college does not raise tuition, it will remain at the same position or move down relative to the other college, but if it raises tuition, it will stay at its current ranking or move up relative to the other college. In other words, each college's dominant strategy is to always raise tuition.

Because both colleges will rationally choose "raise tuition," we will likely end up in the upper left corner. For the colleges, this is not a big deal - all raising tuition did was allow them to maintain their current relative ranking (since both college improved, their relative ranking did not change). But from the perspective of society, this is very problematic. The goal of providing financial aid is to improve college affordability, but the competitive mechanism within higher education ensures that colleges will raise tuition to capture the aid, undermining the goal of providing aid.

On a side note, it is true that both colleges did "improve" in the sense that they spent more money. But keep in mind this is an industry that produced 21,674 academic pieces on Shakespeare between 1980 and 2006.[33] If one's idea of financial aid money well spent is piece number 21,675, then one should have no problem with ending up in the upper left corner. However, if, as I do, one can think of better uses of society's scarce resources, including actually lowering the cost of college attendance, then ending up in the upper left corner is quite worrisome.

Maximization Approach

Another theoretical approach that lends credibility to Bennett Hypothesis 2.0 is a simple maximization problem. Suppose colleges have some objective function (π) that they are seeking to maximize. π is a function of revenue (R) and other things (X).[34] Colleges choose tuition (T) and other things (Y) subject to a series of constraints (Z).[35] We can frame the college's problem in each period (ignoring time subscripts) as

$$\max_{T,Y} \pi(R, X) \text{ s.t. } Z$$

Students are trying to maximize their utility (U), which is determined by their college attendance (A) and other things (B).[36] Students choose college attendance (A) and other things (D) subject to a series of constraints (E). Thus, for each student i (ignoring the student and time subscripts), the student's problem in each period is

$$\max_{A,D} U(A, B) \text{ s.t. } E$$

[33] Mark Bauerlein, "Professors on the Production Line, Students on Their Own," *AEI Future of American Education Project Working Paper 2009-01*, 2009.
[34] For our purposes, revenue is defined as revenue net of institutional aid spending.
[35] Assuming no price discrimination.
[36] "A" could be a dummy variable or a continuous variable denoting intensity of college attendance. It makes the math a little clearer to think of it as a continuous variable.

Other things equal, college attendance is desired ($\partial U_i/\partial A_i > 0$), but one of the E constraints is a budget constraint, so the cost of college (H) affects each student's decision regarding college attendance, with higher costs reducing college attendance ($\partial A_i/\partial H_i < 0$). In the absence of financial aid, this cost is just tuition (H_i=T), and higher tuition will reduce college attendance and utility. But when we introduce financial aid (F), the cost of college becomes tuition minus financial aid (H_i=T-F_i). While higher tuition increases H (reducing A and U), higher financial aid reduces H (increasing A and U). Bennett Hypothesis 2.0 merely notes that F and T may be related ($\partial T/\partial F \neq 0$ in all cases). Indeed, it is likely that higher financial aid will lead to higher tuition ($\partial T_t/\partial F_t$ and/or $\partial T_{t+1}/\partial F_t > 0$). There are two channels for this to occur.

The most direct route to Bennett Hypothesis 2.0 is the following chain of plausible observations: Colleges want to spend more money on the pursuit of excellence ($\partial \pi_t/\partial R_t > 0$), higher tuition leads to higher revenue ($\partial R_t/\partial T_t > 0$), and higher financial aid allows for higher tuition ($\partial T_t/\partial F_t > 0$).[37] If these three observations hold, then Bennett Hypothesis 2.0 is in effect. Of course, it is also possible these observations do not hold. Some examples would be if tuition is restricted to very low income students (in which case ($\partial T_t/\partial F_t$ =0), or a legislative cap freezing or lowering tuition (T_{t+1}=K*T_t where K could be $\leq$ 1), or if the college uses *all* the extra revenue from higher tuition for institutional aid (in which case $\partial R_t/\partial T_t = 0$ since we've defined revenue as net of institutional aid).[38] Moreover, for some colleges, tuition may increase revenue, but higher tuition could have too big of a negative impact on other objectives ($\partial R_t/\partial T_t > 0$ but $\partial \pi_t/\partial T_t < 0$). The exact conditions under which the hypothesized relationships hold are unknown at this time, but it is certainly plausible that the suggested relationships hold, which in turn means that the direct route to Bennett Hypothesis 2.0 is plausible.

The indirect route to Bennett Hypothesis 2.0 holds that an increase in current costs at college j leads to an increase future costs for college k ($\partial C_{k,t+1}/\partial C_{j,t} > 0$)[39] and that higher future costs put upward pressure on future tuition ($\partial T_{k,t+1}/\partial C_{k,t+1} > 0$). In a bit more detail, an increase in aid leads college j to raise tuition ($\partial T_{j,t}/\partial F_{j,t} > 0$), which raises revenue ($\partial R_{j,t}/\partial T_{j,t} > 0$), which raises spending in the current period (from Bowen's Rule, we know that any increase in revenue (R) will be spent on costs (C), so $\partial C_{j,t}/\partial R_{j,t} = 1$), which leads to higher spending in the future period ($\partial C_{j,t+1}/\partial C_{j,t} > 0$),[40] and due to the nature of competition in higher education, this leads to higher future costs at college k ($\partial C_{k,t+1}/\partial C_{j,t+1} > 0$) which in turn leads to higher future tuition at college k ($\partial T_{k,t+1}/\partial C_{k,t+1} > 0$). Again, there are cases where these relationships will not have the hypothesized signs, but the signs used are all plausible, meaning that there is an indirect route to Bennett Hypothesis 2.0 even if the direct route is blocked.

[37] Technically, this claims that the price elasticity of demand for the college is less than negative one <-1 at the relevant point, but I've jumped to the implication of this assumption to avoid confusing readers with a discussion of the point elasticity of demand (what we are talking about here) when all the discussion elsewhere in the paper talks about the elasticity of entire curves.

[38] Note that in this case, it is still possible that tuition increases but that this would involve redistribution of a fixed amount of tuition revenue, rather than an increase in the amount of tuition revenue, which is what the Bennett Hypothesis is generally understood to mean.

[39] To avoid falling behind, as college k spends more, college j has to spend more too.

[40] See the discussion in the earlier subsection *The Implications of Bowen's Rule*.

Practitioners Confess

Support for Bennett Hypothesis 2.0 does not just come from theoretical plausibility. There is also empirical support, including confessions from higher education administrators. Numerous administrators have noted that more generous aid allows colleges to raise tuition more than they otherwise could:

- "When the federal government introduced what are now called Pell Grants, it was obvious that public institutions with zero tuition could gain revenue by introducing tuition—a point that was made, controversially, in 1972 when the Keppel Task Force recommended introducing tuition at the City University of New York."[41]
- "it seems plausible to me that the availability of loan finance has made it easier for some institutions to raise prices"[42]
- "Ironically, federal programs in totality give incentive for institutions to increase tuition and to set high sticker prices"[43]

While these administrators were speaking about the actions of other colleges, at least one college (the University of Phoenix) has admitted that "it sets its tuition with the loan limits in mind."[44] It is rather difficult to argue that the Bennett Hypothesis is baseless when the very people running colleges admit that it is not a myth.

Empirical Evidence

In addition to theoretical plausibility and confessions from practitioners, Bennett Hypothesis 2.0 is also supported by the data.

Previous Studies

As noted earlier, there are numerous studies that have found evidence that financial aid does lead to higher tuition. For example, a new study by Stephanie Riegg Cellini and Claudia Goldin compares tuition at for-profit colleges that are eligible for federal aid with comparable for-profit colleges that are not eligible. They "find that the Title IV institutions charge tuition that is about 75 percent higher than that charged by comparable institutions whose students cannot apply for federal financial aid. The dollar value of the premium is about equal to the amount of financial aid received by students in eligible

[41] Michael McPherson, Comment to Bridget T. Long, *The Impact of Federal Tax Credits for Higher Education Expenses*, in College Choices: The Economics of Where to Go, When to Go, and How to Pay For It, September 2004.
[42] David W. Breneman, *Testimony Prepared on The Rising Cost of College Tuition and the Effectiveness of Government Financial Aid*, Testimony for the Committee on Governmental Affairs United States Senate, February 9, 2000.
[43] F. King Alexander as quoted in Gary Wolfram, "Making College More Expensive: The Unintended Consequences of Federal Tuition Aid," *CATO Institute Policy Analysis No. 531*, 2005.
[44] Paul Basken, "Financial-Rescue Plan, in Shift, Could Aid Student-Loan Providers," *Chronicle of Higher Education*, November 13, 2008.

institutions, lending credence to the 'Bennett hypothesis.'"[45] Eligibility for aid is not randomly determined, so it is possible that some unobserved variable is driving both the difference in eligibility for aid and the differences in tuition. But Cellini and Goldin control for many of the most plausible such variables, even controlling for educational quality in some cases.

Correct Predictions/Accurate Explanations

In addition to all the various scholarly studies that lend support, Bennett Hypothesis 2.0 offers perhaps the only plausible explanation for modern trends in financial aid and tuition.[46] Perhaps the most important is the prediction, born out in the data, that *there will never be enough financial aid because there is no limit to tuition*.

A depressing realization among those who recognize the dangers of the Bennett Hypothesis is the prediction that many efforts to improve college affordability by increasing financial aid will be rendered ineffective. A terrifying realization is that there is no end to the process. For decades we have been caught in the vicious cycle of Bennett Hypothesis 2.0:

1. In an effort to improve college affordability, the government increases financial aid funding.
2. The financial aid allows colleges to raise tuition so as to gain more revenue to pursue excellence.
3. The higher tuition reduces affordability, leading to calls for more financial aid, sending us back to step 1 and starting the process all over again.

The predicted outcome of this cycle is higher aid spending, without an improvement in affordability. What do we observe?

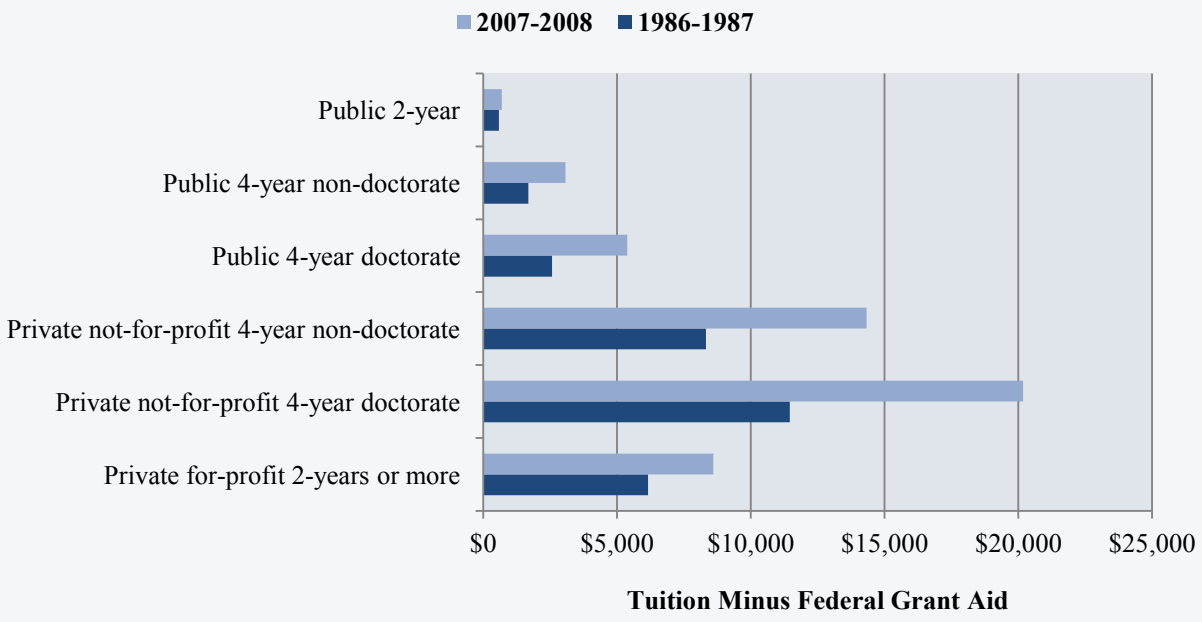
We are certainly spending more on aid. In 1987-88, when Secretary Bennett first connected the dots, total federal financial aid spending adjusted for inflation was $32.8 billion.[47] In 2010-11, it was $169 billion. To put the magnitude of that increase into perspective, consider that the $169 billion spent *just* on financial aid in 2010-11 was roughly equal to *all* college spending in 1983-84.

But while spending on aid has exploded, affordability has not improved. Figure 7 shows tuition minus Federal grant aid[48] as reported by the Department of Education for 1986-87 and 2007-08 (these are the closest years available).[49]

[45] Stephanie Riegg Cellini and Claudia Goldin, "Does Federal Student Aid Raise Tuition? New Evidence on For-Profit Colleges," *National Bureau of Economic Research working paper 17827*, February, 2012.
[46] Many theories, such as Baumol's Cost Disease, are theoretically plausible but have relatively minor empirical significance.
[47] All figures here are in real 2010 dollars, and are converted from the College Board's Trends in Student Aid series.
[48] Note that loans, which constitute the bulk of federal financial aid, are not subtracted. Since they must be paid back, they are typically understood as primarily affecting the timing of payment rather than the amount of payment. This does not undermine the overall point, since grant aid increased.
[49] The increase is even larger than shown here as the 2007-08 figures also subtracts federal tax and veterans benefits while the 1986-87 figures do not.

After adjusting for inflation, total Federal grant spending increased from $10.2 billion in 1986-87 to $49 billion in 2010-11. Yet in spite of this massive increase, tuition less Federal grants increased in every sector of higher education. This result, higher spending on aid but no improvement in college affordability, is exactly what we would expect to see from the vicious cycle predicted by Bennett Hypothesis 2.0.[50]

FIGURE 7
Tuition Minus Federal Grants in 1986-87 and 2007-08



Source: U.S. Department of Education's Data Analysis System and author's calculations.
Note: Dollar amounts expressed in terms of 2010 dollars.

Nor is there a reason to expect these trends to stop. As we have seen, the nature of competition in higher education ensures that the revenue needs of colleges are insatiable. As a result, as long as financial aid allows students to pay more in tuition, colleges will face irresistible pressure to raise tuition to capture the aid. The implication of this is that there will never be "enough" aid, because there is never a point at which spending or tuition will stop increasing. Consider, for instance, that administrative spending alone is $75,000 per student at Wake Forest.[51] So long as there is no point at which spending will stop, there is no limit to tuition. And so long as there is no limit to tuition, there is no point at which Bennett Hypothesis 2.0 will not be a danger.

[50] Of course, the Bennett Hypothesis only explains why the 2007-08 values aren't smaller than the 1986-87 values. There are a number of explanations for why they are bigger. The most important is Bowen's Rule though there are other relevant factors such as Baumol's Cost Disease, larger enrollments, etc.
[51] Jay P. Greene, Brian Kisida, and Jonathan Mills, "Administrative Bloat at American Universities: The Real Reason for High Costs in Higher Education," *Goldwater Institute*, 2010.

These points are illustrated by what is perhaps the poster boy example of Bennett Hypothesis 2.0 - law schools. First, some background. To determine a student's eligibility for federal financial aid, the government essentially subtracts the student's expected family contribution from the cost of attendance. If a college raises tuition, the cost of attendance goes up and the student qualifies for more aid. Needless to say, this is an invitation for colleges to raise tuition.[52] However, the government was not completely insane, and, at the undergraduate level, caps maximum benefits for most programs at a level that keeps this from being an unmitigated disaster. For instance, in addition to yearly limits of a few thousand dollars, dependent undergraduate students cannot borrow more than $31,000 in Federal Stafford loans over the course of their education.

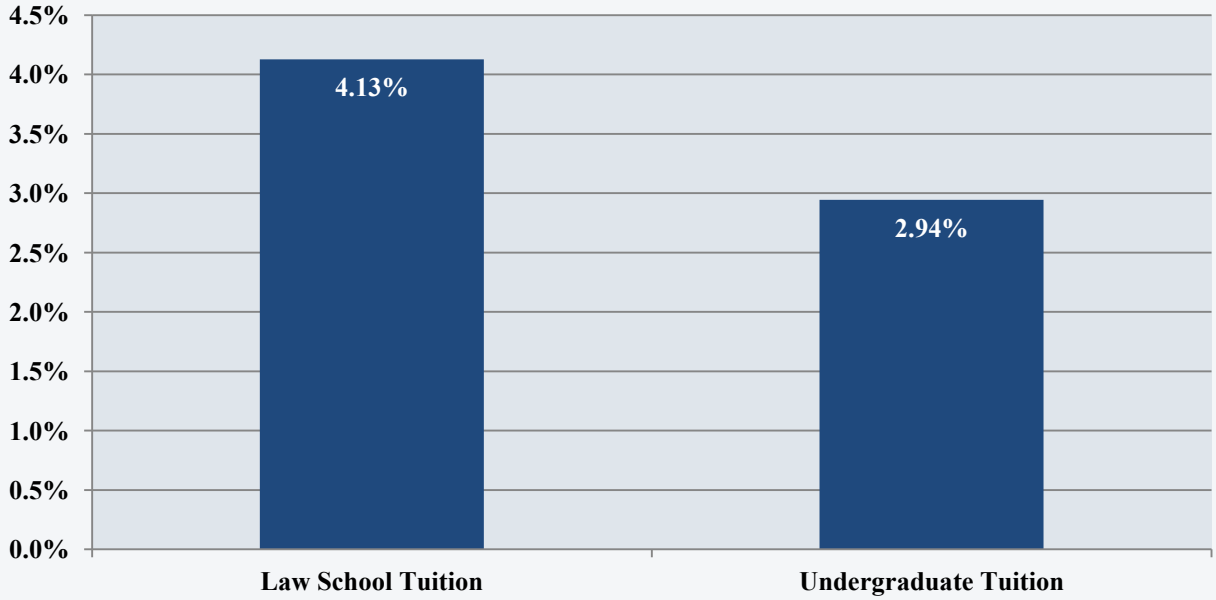
But these limitations are much looser for graduate students, who can borrow up to $138,500 in Stafford loans, and may also take out GRAD PLUS loans (PLUS loans are restricted to parents at the undergraduate level). But graduate study in most fields is unpopular relative to capacity, meaning that most colleges cannot exploit this loose lending without shrinking enrollments to the point of endangering the program. The glaring exception is law school, which students inexplicably flock to like lemmings. This allows law schools to all but ignore capacity concerns, focusing instead on revenue and selectivity considerations. Thus, compared to undergraduate students, law school students have access to a massive amount of aid and according to Bennett Hypothesis 2.0, law schools will take advantage of this situation by increasing tuition. That is exactly what we see.

Figure 8 shows the annualized increase in inflation adjusted tuition at law schools and for undergraduates from 1988-1989 to 2008-2009. On average, tuition grows more than 1% faster at law schools than it does at the undergraduate level. This is all the more surprising once we account for the fact that law school tuition generally covers all of the costs of providing a law education, whereas many colleges claim that undergraduate tuition does not.[53] In other words, many schools are making a "profit" on law school students, using them as cash cows to fund other activities, and yet tuition is still rising faster at law schools. Bennett Hypothesis 2.0 offers one of the few explanations for this phenomenon: more generous financial aid for law school students allows law schools to raise tuition more.

[52] This structure gives Bennett Hypothesizers heart attacks. If there is even a grain of truth to the Bennett Hypothesis, a much more logical structure would replace the cost of attendance (which varies by school) with some universal value that would apply to all schools, such as the Median Cost of College, or at least estimates of what different types of education should cost.

[53] This claim is not true at many schools. See: Andrew Gillen, Matthew Denhart and Jonathan Robe, "Who Subsidizes Whom? An Analysis of Educational Costs and Revenues," *Center for College Affordability and Productivity*, March 2011.

FIGURE 8
Annualized Growth of Real Tuition for Law School and Undergraduates, 1988-89 to 2008-09



Source: U.S. Department of Education's Digest of Education Statistics and author's calculations.

Rampant tuition increases at law schools illustrate the danger of Bennett Hypothesis 2.0, but none of higher education is safe.

Conclusion

Original Bennett Hypothesis + a couple refinements + Bowen's Rule = Bennett Hypothesis 2.0.

The original Bennett Hypothesis held that increases in financial aid will lead to higher tuition, but the empirical evidence testing the hypothesis is inconclusive. The next generation of the concept, Bennett Hypothesis 2.0, adds three refinements.

1. All Aid is Not Created Equal
2. Selectivity, Tuition Caps, and Price Discrimination are Important
3. Don't Ignore the Dynamic Story

These three refinements not only help explain the mixed empirical evidence, but also provide a better understanding of the relationship between financial aid and tuition. While the first two refinements weaken the link between the two (lessening our concern about Bennett Hypothesis 2.0), the third refinement strengthens the link, implying that we should almost always be concerned about financial aid leading to higher tuition.

Given the current structure of the higher education system, Bennett Hypothesis 2.0 implies that the government will always be fighting a losing battle to increase access to college or improve college affordability since "additional government [financial aid] funds keep providing revenues that, under the current incentive system, increase costs."[54] As higher financial aid pushes costs higher, it inevitably puts upward pressure on tuition. Higher tuition, of course, reduces college affordability, leading to calls for more financial aid, setting the vicious cycle in motion all over again.

Bennett Hypothesis 2.0 exacerbates rather than causes out of control spending by colleges, the ultimate cause of which is Bowen's Rule. Nevertheless, that is no excuse for ill-designed financial aid programs to pour fuel the fire. As Bennett noted:

> "Federal student aid policies do not cause college price inflation, but there is little doubt that they help make it possible."[55]

Those words remain just as true today as they were a quarter century ago.

[54] Robert E. Martin, "The Revenue to Cost Spiral in Higher Education," *John William Pope Center for Higher Education Policy*, July, 2009.
[55] William J. Bennett, "Our Greedy Colleges," *The New York Times*, February 18, 1987.

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