

# **Challenging the Myth: A Review of the Links Among College Athletic Success, Student Quality, and Donations**

by

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## **Abstract**

Do successful college athletic programs stimulate additional applications from prospective students and greater contributions by alumni and other donors? And if so, is it likely that additional investment in such programs is a cost-effective way of increasing these benefits?

In this paper I first consider these questions from a theoretical perspective that focuses on the economic incentives confronting institutions that participate in big-time college athletics. I then review numerous empirical studies that have attempted to measure various aspects of the relationships between athletic success and success in other domains.

The findings reported in these studies are mixed, but the overall message is easily summarized: It is that if success in athletics does generate the indirect benefits in question, the effects are almost surely very small.

I also suggest that the most important decisions confronting policy makers, both at individual institutions and at collective athletic governing bodies, do not hinge significantly on how strongly alumni giving and the quality of entering students depend on athletic success. Policies that would create incentives for all institutions to reduce their spending on big-time athletic programs would free up resources for other purposes at no cost either to alumni giving or the size of applicant pools.



## Introduction

Big-time college athletic programs are expensive. At the University of Michigan, for example, total spending on athletics approached \$50 million in the 2003-2004 academic year.<sup>1</sup> Athletic budgets are also rising quickly. Between 1995 and 2001, they rose more than twice as fast as university budgets overall in Division I schools, the most competitive NCAA classification. In real terms, athletic program spending rose about 25 percent during that period, while overall spending rose only about 10 percent.<sup>2</sup>

In view of the enormous revenues that can accrue to the most successful programs, the incentives to compete for the limited number of positions at the top of the college athletics hierarchy are strong. In 2003, the NCAA's postseason football Bowl Championship Series alone distributed \$104 million among 64 Division I college programs.<sup>3</sup> Yet the overall distribution of financial rewards is highly skewed, and at all but a small proportion of institutions, revenues are now outweighed by expenditures on athletic programs. Athletic budgets are increasingly funded by student fees, which range from \$50 to \$1,000 per student each year. Such fees now account for an average of 20 percent of the athletic budgets at Division I Schools.<sup>4</sup>

If expenditures exceed revenues in most college athletic programs, why are universities investing so much more each year in these programs? I will consider two possible explanations. The first is a structural one common to many other markets in which reward is determined by relative performance. In such markets, we will see, it is not uncommon for contestants to invest more in performance enhancement than can

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<sup>1</sup> Henning, 2004.

<sup>2</sup> Sylwester and Witosky, 2004. These figures, which omit capital expenditures, are likely to substantially understate the overall rate of athletic spending growth.

<sup>3</sup> Young, 2003.

reasonably be justified by the expected gains. The second possibility is that although a successful athletic program may fail to cover its direct costs, it may generate indirect benefits in other domains that are of sufficient value to make up the shortfall. Two such indirect benefits have been widely claimed to exist—namely, that successful college athletic programs stimulate both additional alumni donations and additional applications from prospective students. Since tuition payments typically fall well short of the cost of educating each student, additional applications do not improve a university's financial position directly, and may even hinder it if they result in larger numbers of students admitted. Yet by enabling an institution to become more selective, additional applications could help a university move up in the race for academic prestige, a valuable benefit in its own right.

### **College Athletics as a Winner-Take-All Market**

It might seem that a university's decision about whether to mount a big-time college athletic program is like any other ordinary business decision about whether to enter a particular market. The general rule is that if a business expects that it can enter a market profitably, it will do so; otherwise, it will not. But attempts to apply this rule often play out with unanticipated consequences when the reward from entering a market depends less on the absolute quality of the business's product than on its relative quality. Philip Cook and I use the term *winner-take-all markets* to describe arenas with this form of reward structure. In winner-take-all markets, the expectation is often that participants as a whole will not make any money, and that indeed a substantial majority will suffer losses.

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<sup>4</sup> Sylwester and Witosky, op. cit.

A feel for how winner-take-all markets differ from ordinary markets is afforded by experiments involving a simple auction called the entrapment game. First described by the economist Martin Shubik, this game is just like a standard auction except for one feature. The auctioneer announces to an assembled group of subjects that he is going to auction off some money—say, a \$20 bill—to the highest bidder. Once the bidding opens, each successive bid must exceed the previous one by some specified amount—say, 50 cents. The special feature of the entrapment game is that once the bidding stops, not only must the highest bidder remit the amount of his bid to the auctioneer, but so must the second-highest bidder. The highest bidder then gets the \$20 bill and the second-highest bidder gets nothing. For example, if the highest bid were \$8 and the second-highest bid were \$7.50, the auctioneer would collect a total of \$15.50. The highest bidder would get the \$20, for a net gain of \$12; and the second-highest bidder would experience a loss of \$7.50.

Players in this game face incentives much like the ones that confront participants in winner-take-all markets as they consider whether to undertake investments in performance enhancement. In both cases, by investing a little more than one's rivals, one can tip the outcome decisively in one's favor.

Although the subjects in these experiments have ranged from business executives to college undergraduates, the pattern of bidding is almost always the same. Following the opening bid, offers proceed quickly to \$10, or half the amount being auctioned. There is then a pause as the subjects appear to digest the fact that, with the next bid, the two highest bids will sum to more than \$20, thus taking the auctioneer off the hook. At this point, the second-highest bidder, whose bid stands at \$9.50, invariably offers \$10.50,

apparently thinking that it would be better to have a shot at winning \$9.50 than to take a sure loss of \$9.50.

In most cases, all but the top two bidders drop out at this point, and the top two quickly escalate their bids. As the bidding approaches \$20, there is a second pause, this time as the top bidders appear to be pondering the fact that even the top bidder is likely to come out behind. The second bidder, at \$19.50, is understandably reluctant to offer \$20.50. But consider his alternative. If he drops out, he will lose \$19.50 for sure. But if he offers \$20.50 and wins, he will lose only 50 cents. So as long as he thinks there is even a small chance that the other bidder will drop out, it makes sense to continue. Once the \$20 threshold has been crossed, the pace of the bidding quickens again, and from then on it is a war of nerves between the two remaining bidders. It is quite common for the bidding to reach \$50 before someone finally yields in frustration.

One might be tempted to think that any intelligent, well-informed person would know better than to become involved in an auction whose incentives so strongly favor costly escalation. But many of the subjects in these auctions have been experienced business professionals; many others have had formal training in the theory of games and strategic interaction. For example, the psychologist Max Bazerman reports that he earned more than \$17,000 by auctioning \$20 bills to his MBA students while he was a professor at Northwestern University's Kellogg Graduate School of Management, which is consistently among the top-rated MBA programs in the world. In the course of almost 200 of his auctions, the top two bids never totaled less than \$39, and in one instance totaled \$407.<sup>5</sup>

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<sup>5</sup>Personal communication.

Shubik's entrapment game obviously doesn't capture the rich details that characterize the current market for big-time college athletics. So I now consider an example that, while still highly simplified, resembles this market more closely. Suppose 1,000 universities must decide whether to launch an athletic program, the initial cost of which would be \$1 million a year. Those who launch a program then compete in an annual tournament in which finishers among the top 10 earn a prize of \$10 million each. To further simplify matters, suppose that those deciding to launch an athletic program all have equal access to the limited pool of talented players, skilled coaches, and other inputs required for these programs (making each participant as likely as any other to finish in the top 10). If schools make their decisions about whether to launch a program in sequence, and each school can observe how many other schools have already entered the arena, how many schools will decide to compete?

If every institution's decision were driven solely by whether it could expect to make a profit (or at least avoid a loss) by launching a program, we would expect only 100 of the 1,000 institutions to launch athletic programs and the remaining 900 to sit out. That way, the competing institutions would each have a one-tenth chance at winning a prize of \$10 million, or an expected revenue of \$1 million, just enough to cover the cost of entry. In any given year, the top 10 finishers will thus post net gains of \$9 million each, while the 90 remaining institutions will post a net loss of \$1 million each. Under the assumption that all contestants have equal access to the inputs for athletic programs, each program will end up winning once every 10 years, on average. Under these simplifying assumptions, maintaining a big-time athletic program would be, in effect, a

break-even proposition over the long run. Participants wouldn't make any money, on the average. But they wouldn't lose any money, either.

This example abstracts from reality in at least two ways that make launching a big-time athletic program seem more economically attractive than in fact it is. For one, it assumes that when a university assesses its prospects, it is accurate in its estimate of the probability that its own program will be among the winners. Yet there is abundant evidence that potential contestants are notoriously optimistic in their estimates of how well they are likely to perform relative to others.

This tendency has been recognized for centuries. As Adam Smith described it,

The over-weening conceit which the greater part of men have of their own abilities, is an ancient evil remarked by the philosophers and moralists of all ages. Their absurd presumption in their own good fortune, has been less taken notice of. It is, however, if possible, still more universal. There is no man living who when in tolerable health and spirits, has not some share of it. The chance of gain is by every man more or less over-valued, and the chance of loss is by most men under-valued, and by scarce any man, who is in tolerable health and spirits, valued more than it is worth.<sup>6</sup>

Smith's characterization of human nature is no less accurate today than when he offered it more than 200 years ago. Studies have found, for example, that most people think they are more intelligent<sup>7</sup> and better drivers than the average person.<sup>8</sup> Workers asked to rate their productivity on a percentile scale relative to their coworkers responded with an average self-assessment of 77, and more than 90 percent felt they were more productive than the median worker.<sup>9</sup> More than 70 percent of high-school seniors reported in a survey that they had above-average leadership ability; only 2 percent saw

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<sup>6</sup>Smith, 1776, Book I, Chapter 10, part I.

<sup>7</sup>Wylie, 1979.

<sup>8</sup>Svenson, 1981.

<sup>9</sup>Parker, et. al, 1959.

themselves as below average. When asked about their ability to get along with others, virtually all of those same students said they were above average; 60 percent thought they were in the top 10 percent, and 25 percent thought they were in the top 1 percent.<sup>10</sup> Another survey revealed that 94 percent of university professors thought they were better at their jobs than their average colleague.<sup>11</sup> People also see themselves as more likely than their peers to earn a large salary, and less likely to get divorced or suffer from lung cancer.<sup>12</sup> Another survey found that although only a quarter of the population thought the economy would do better in the coming year, more than half thought that they personally would do better.<sup>13</sup>

Psychologists call this pattern the “Lake Wobegon Effect,” after Garrison Keillor’s mythical Minnesota town “where the women are strong, the men are good-looking, and all the children are above average.”<sup>14</sup> The phenomenon has most often been explained in motivational terms by authors who note that the observed biases are psychologically gratifying.<sup>15</sup> Thus, since it is unpleasant to think of oneself as below average, a cheap solution is simply to think of oneself as above average. Consistent with this view, one study found that a sample of clinically depressed patients had remarkably accurate assessments of their various abilities and social skills—this in sharp contrast to a group of ostensibly normal subjects, who had significantly inflated self-assessments.<sup>16</sup>

But the Lake Wobegon bias clearly has cognitive dimensions as well. Thus psychologists Amos Tversky and Daniel Kahneman have shown that when people try to

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<sup>10</sup>College Board, 1976-77.

<sup>11</sup>Cross, 1977.

<sup>12</sup>Weinstein, 1980; Weinstein, 1982; Weinstein and Lachendro, 1982.

<sup>13</sup>Psychology Today, October 1989, p. 16, reported in Gilovich, 1991.

<sup>14</sup>Gilovich, 1991, p. 77.

<sup>15</sup>The anthropologist Lionel Tiger, for example, takes this approach in his 1979 book. See also Gilovich, 1991, chapter 5.

estimate the likelihood of an event, they often rely on how easily they can summon examples of similar events from memory.<sup>17</sup> Yet, although ease of recall does, in fact, rise with the frequency of similar events, it also depends on other factors. For example, events that are especially salient or vivid are easily recalled even if they happen only infrequently. Since teams from the most successful college athletic programs appear in a disproportionate share of the televised games and capture a disproportionate share of national media coverage, the good fortunes of these programs are nothing if not salient. In contrast, the fates of unsuccessful programs, which receive little or no media attention, are much less likely to spring to mind.

If the university administrators who decide whether to launch big-time athletic programs are like normal human beings in other domains, they are likely to overestimate the odds that their programs will be successful. The upshot is that many more institutions are likely to launch big-time athletic programs than would be warranted by unbiased profit-and-loss estimates.

A second misleading simplification in my illustrative example is the assumption that the level of expenditure required to launch and maintain a big-time athletic program is fixed. Expenditures on these programs are in fact constantly subject to reassessment and adjustment. As in Shubik's entrapment auction, any given athletic director knows that his school's odds of having a winning program will go up if it spends a little more than its rivals on coaches and recruiting. But the same calculus is plainly visible to all other schools. And again as in Shubik's auction, the gains from bidding higher turn out

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<sup>16</sup>Alloy and Abramson, 1979.

<sup>17</sup>Tversky and Kahneman, 1974.

to be self-canceling when everyone does it. The result is often an expenditure arms race with no apparent limit.

Evidence suggests that big-time college athletic programs find themselves embroiled in just such an arms race. NCAA Division I-A head football coaches, for example, earned an average annual base salary of more than \$388,000 last year, an increase of more than 80 percent in real terms over the 1998 average.<sup>18</sup> But base salary is often only a small component of coaches' total annual compensation. Thus, Louisiana State head football coach Nick Saban will receive an annual base salary of \$400,000 under a contract signed in 2004, but his total annual compensation—including fees for TV, radio, and personal appearances—will be at least \$2.3 million and could reach \$2.7 million.<sup>19</sup>

In sum, the logic of competition in winner-take-all markets suggests that participants in these markets are likely to experience much less favorable economic results than they had expected at the outset. Upward biased estimates of success will tempt more institutions to enter than would be warranted by the logic of profit and loss. And each institution, once entered, will face powerful incentives to increase its expenditures in search of a competitive edge. This logic is in harmony with the observation that the revenues generated directly by college athletic programs fall far short of covering their costs in the overwhelming majority of cases.

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<sup>18</sup> USA Today, op. cit.

<sup>19</sup> Athens Banner-Herald, 2/20/04. [http://www.onlineathens.com/stories/022004/dog\\_20040220074.shtml](http://www.onlineathens.com/stories/022004/dog_20040220074.shtml) .

### **Indirect Benefits of College Athletic Programs**

Even if a college athletic program fails to generate sufficient direct revenue to cover its costs, it might generate indirect benefits of sufficient magnitude to bridge the shortfall. Two such indirect benefits have been widely discussed: 1) that a winning athletic program leads to additional contributions from alumni and others; and 2) that a winning program generates additional applications from prospective students (resulting, presumably, in a higher quality freshman class). How do these indirect benefits affect the theoretical presumption that an institution that launches a big-time athletic program should expect to lose money?

Consider first the issue of alumni donations. Given that many alumni donations are earmarked specifically for college athletic programs, there is no doubt that many alumni feel strongly about these programs. Whether such donations simply displace donations that would have been made for academic programs is an empirical question, one that I will address presently. But suppose, for the sake of discussion, that having a winning athletic program leads to a net increase in the flow of alumni donations. How do these additional revenues alter an institution's expectation about the financial consequences of launching a big-time athletic program?

From an economic perspective, indirect revenues from donations are functionally equivalent to revenues generated directly by athletic programs, such as those from ticket sales and television contracts. Growth in direct sources of revenue has two effects: It induces more institutions to launch athletic programs, and it induces those having such programs to invest more heavily in them. Following a once-for-all increase in the revenue distributed from the NCAA's annual March Madness basketball tournament, for

example, the expectation is that a new equilibrium will eventually be reached in which there are more institutions that have serious basketball programs, and in which average expenditures on such programs are higher than before. But just as each competing institution faced the expectation of an economic loss in the original equilibrium, the same will be true in the new equilibrium. From the perspective of each competing institution, the gains from the additional revenues are offset by the presence of additional competitors (which reduces each institution's odds of having a winning program) and by increased spending on coaches, recruiting, and other inputs.

Adding alumni donations into the revenue mix has precisely the same effect as increasing the payout from television contracts. In the presence of such donations, a new equilibrium results in which both the expected number of athletic programs and the expected level of total expenditures in each become larger than before.

What about the possibility that a successful athletic program might boost the number of prospective students who apply, thus enabling an institution to become more selective, in turn boosting its position in rankings such as those published by the *US News and World Report*? As in the case of alumni donations, there can be little doubt that a successful athletic program will encourage at least some additional applications. But since all institutions are likely to operate under the same expectation, the existence of this benefit is analogous in its effects to higher TV revenues and increased alumni donations. That is to say, it will cause additional institutions to enter the big-time athletic arena and those already in that arena to spend more than before on their athletic programs. So to the extent that having a successful big-time athletic program stimulates additional

applications, that fact implies that institutions will have to spend more money than before to achieve a winning program.

Viewed from the perspective of institutions of higher learning as a whole, it is impossible for additional investment in athletic programs to cause schools to become more selective on the average. Selectivity, after all, is a purely relative concept: It is mathematically impossible for more than ten percent of all schools to be among the ten percent most selective. Still, if applications track athletic success closely, any single school's failure to invest in a big-time athletic program might mean that its selectivity would fall relative to that of other schools. But even that would not imply that investment in a big-time athletic program is an efficient strategy for becoming more selective. The same funds used to boost athletic performance could be used in other ways that make schools more attractive to potential applicants—financial aid, for example, or increased direct marketing, or improved academic programs. So here again, it becomes an empirical question as to whether greater investment in big-time athletic programs is likely to improve the quality of a school's entering freshman class relative to what it would have been had the same money been spent in other ways.

### **Empirical Evidence: A Survey**

What does the empirical evidence say about whether success in big-time college athletics stimulates additional applications and alumni giving? Different authors have attempted to answer these questions in a variety of ways. I discuss first the studies that examine the how a school's athletic success affects the size of its applicant pool.

### **Does Athletic Success Increase Applications?**

Success in big-time college athletics may influence applications for admission in at least two ways. One is that many prospective students are sports fans, some of whom may decide where to apply in part on the basis of their assessments of which institutions are most likely to play host to exciting athletic contests. A second influence is the broader effect of university name recognition. The names of institutions with successful big-time athletic programs appear frequently in the media, making them generally more familiar to prospective students. On this view, a big-time athletic program serves much like a national advertising campaign.

Other factors held constant, if students are indeed more likely to apply to an institution with a successful athletic program, one observable consequence should be that such schools will be more selective than others on such measures as the average SAT scores of entering freshmen. How does this hypothesis fare empirically?

In a widely-cited 1987 study, Robert McCormick and Maurice Tinsley collected data on approximately 150 schools for 1971, 63 of which they identified as having big-time athletic programs. They estimated a multiple regression model in which the average SAT score of an institution's entering freshmen in any given year depended on a variety of academic control variables and on whether it was a participant in big-time college athletics. The control variables included the number of volumes in the school's library, the average salary of its faculty, as well as its student-faculty ratio, endowment per student, tuition, enrollment, age, and whether it was public or private. On the basis of various permutations of this basic model, McCormick and Tinsley estimated that a school with a big-time athletic program could expect an entering freshmen class with an average

SAT score roughly 33 points—or 3 percent—higher than if it did not have a big-time athletic program.

A difficulty with this type of analysis is that it is impossible to gather data on all the various causal factors that might shape an outcome like an institution's average SAT scores. If schools with big-time athletic programs are different in other ways that prospective applicants find appealing, the regression model will wrongfully attribute the influence of the omitted factors to athletic programs.

In an attempt to control for this difficulty, McCormick and Tinsley employ a second strategy in which they examine the link between changes in average SAT scores and changes in athletic success. Focusing exclusively on schools with big-time athletic programs, their measure of an institution's athletic success is the trend in its won-lost percentage between 1971 and 1984. Their dependent variable was the change in entering freshmen SAT scores between 1981 and 1984. In various permutations of their model, they found positive estimates of the effect of athletic success trends on change in SAT scores. But in each case the effects were extremely small, and none of their estimates was statistically significantly different from zero at conventional confidence levels.

In a 1993 paper, Irvin Tucker and Louis Amato examine the relationship between a school's athletic success and the size of its applicant pool by utilizing a different performance measure from one used by McCormick and Tinsley. They measure football success, for example, by assigning points based on the Associated Press's end-of-season top-20 rankings, and they construct a similar measure for basketball success. Using these measures, football success, but not basketball success, was positively and statistically significantly associated with increases in SAT scores between 1980 and 1989. But here,

too, the effect was small. A school whose football program finished in the top twenty for each of the 10 years in the sample would expect to attract a freshman class with 3 percent higher SAT scores than a school whose program never finished in the top 20.

Working with data for the same set of institutions belonging to major college football conferences, Robert Murphy and Gregory Trandel (1994) utilize still another measure of football success—namely, the within-conference won-lost percentage (as opposed to the overall won-lost percentage utilized by McCormick and Tinsley). By constructing a 10-year panel from 1978-1987, they were also able to estimate separate intercept coefficients for each institution, a more reliable way of controlling for unobserved differences among institutions. Murphy and Trandel find that improvements in within-conference won-lost percentages are positively associated with the number of applications received, although the size of the effect is again small. For example, a school that posts a 50 percent increase in its percentage of games won (by moving from, say, winning half of its games to winning 75 percent of them) would on average see its number of applicants rise by only 1.3 percent. The effect they estimate is thus even smaller than the ones estimated by McCormick and Tinsley and by Tucker and Amato.

Although Tucker and Amato found that an institution's basketball success had no effect on its students SAT scores, Franklin Mixon (1995) argues to the contrary on the basis of study in which he employs a different measure of success—the number of rounds through which the school's team advanced in the NCAA tournament in the spring before applications are filed the next fall. This measure is positively and statistically

significantly associated with average SAT scores of the relevant entering class.<sup>20</sup> The effect, however, is extremely small. By the largest of Mixon's three published estimates, advancing an additional round in the NCAA tournament results in a 1.7 point increase in the entering class's average SAT score.

An alternative to the statistical regression approach to studying causal relationships is the event study, which focus on the experiences surrounding conspicuous examples of changes in a causal factor. For present purposes, the most spectacular such change is winning a national championship trophy in one of the two biggest sports, football and basketball. If athletic success matters, then a school should receive significantly more applications in the wake of a championship season than in the years preceding it.

In a 1996 paper, Douglas Toma and Michael Cross examined records for the 13 different institutions that won the NCAA Division I-A national football championship between 1979 and 1992<sup>21</sup> and the 11 different institutions that won the NCAA men's basketball tournament during those same years. For each institution with a championship, they tracked the quantity and quality of undergraduate applications for the five years before and after the championship season.

Toma and Cross report that two football championship seasons in particular were followed by large increases in applications. Applications to the University of Miami increased by 33 percent for the three years following the school's national title in 1987; and when Georgia Tech shared the national title in 1990, its applications rose by 21

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<sup>20</sup> In papers with different co-authors (Mixon and Ressler, 1994; and Mixon and Hsing, 1995), Mixon argues that athletic success stimulates additional applications primarily from out-of-state residents who are shopping, in effect, for pleasurable consumption experiences.

percent over the following three years. Five other football championship seasons were followed by applications increases of between 10 and 20 percent, and the remaining championship seasons were followed by “only modest gains.” Two schools—Alabama in 1979 and Miami in 1993—actually saw applications drop by roughly 5 percent in the three years following a championship season. Toma and Cross report a similar pattern of findings in the wake of championship seasons in basketball. Ten of the 13 schools that won the NCAA Basketball Tournament between 1979 and 1993 experienced increases in applications.

In an attempt to control for other factors that might have influenced changes in applications, Toma and Cross matched each of the championship institutions in both sports with a small number of similar peer institutions. The results of this adjustment varied considerably across institutions, but in general tended to attenuate their estimates of the gains in applications attributable to winning a championship.

Given the enormous visibility of winning a national title in football and basketball, it is perhaps not surprising that significant increases in applications followed in the wake of championship seasons in at least some schools. Much less expected, however, is that Toma and Cross were unable to find any measurable impact of these increases on the quality of admitted or entering students. Perhaps the institutions experiencing increased applications found opportunities to increase their selectivity in ways not reflected in SAT scores, grades, and other student quality measures. Or perhaps, as Toma and Cross speculate, a school’s national championship visibility may have “more impact on the search phase, and less on the choice phase, of student college

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<sup>21</sup> Toma and Cross define a national football championship as a first-place finish in either the AP poll or the CNN/USA Today poll.

choice.”<sup>22</sup> If their conjecture is accurate, it suggests the intriguing possibility that an institution’s athletic success might actually reduce its admissions yield, thereby reducing its position in the *US News* rankings.

Perhaps the most careful study to date of the relationship between athletic success and various other outcomes was published as a 2003 interim report by the consulting firm Sebago Associates under a commission from the National Collegiate Athletics Association. In this report, authors Robert Litan, Jonathan Orszag, and Peter Orszag present statistical analyses based on a new database they compiled from information collected as part of the Equity in Athletics Disclosure Act, which was then merged with data from other sources, including proprietary NCAA data and the authors’ own survey of chief financial officers from 17 Division I schools. Because of gaps in data from the various sources, the resulting data set spans only the years from 1993 to 2001. Even so, this study rests on by far the most comprehensive data set used in any of the studies on college athletics published to date. Using fixed-effects models to control for unobserved institutional characteristics, Litan et al. estimate that football winning percentage is positively associated with average incoming SAT scores, but that the effect is small and not significantly different from zero at conventional confidence levels.

How are we to interpret the disparate findings in the empirical literature on athletic success and applications? Before turning to this question, I discuss the studies that focus on athletic success and alumni giving, for these studies are also difficult to interpret, and for essentially similar reasons.

### **Athletic Success and Alumni Giving**

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<sup>22</sup> 1996, p. 21.

With the publication of their 1979 paper, Lee Siegelman and Robert Carter launched an intense debate, much of it carried out in *Social Science Quarterly*, about whether success in big-time college athletics stimulates alumni to donate more to their alma maters than they otherwise would have. The same technical issues that arose in the debate about athletic success and SAT scores surface in this debate as well. Focusing on Division I schools, Siegelman and Carter performed separate regressions to estimate how an institution's football winning percentage affected alumni donations to its annual fund for each year in a multiyear sample. Their conclusion was that such donations are essentially independent of football success.

In a follow-up study, George Brooker and T.D. Klastorin (1981) raise the familiar objection that the Siegelman and Carter study is compromised by its implicit assumption that, apart from athletic success, institutions in Division I are alike in all other important respects that influence alumni giving. In an attempt to control for institutional heterogeneity, Brooker and Klastorin estimate separate coefficients for universities in different university groupings over a multi-year sample. They find positive links between alumni giving and some measures of athletic success for some university groups and negative links for others. Unfortunately, they report only the signs of their estimated coefficients, not their numerical magnitudes, making it impossible to assess whether the links they find are economically significant.

In a 1983 paper, Siegelman and Samuel Brookheimer take even further steps to control for institutional heterogeneity by conducting a full panel study with separate fixed effects for each school. They also break alumni donations down into two components, restricted gifts made directly to the athletic department and unrestricted gifts to the

annual fund. They report that the two types of giving are essentially uncorrelated with each other, and that only direct gifts to the athletic department depend in any way on athletic success, and those only on football success, not basketball success. By their estimates, a ten-percent increase in football winning percentage sustained over a four-year period would increase donations to the athletic program by more than \$125,000 in 1983 dollars.

Unlike most other authors, who focus on a large sample of different institutions, Paul Grimes and George Chressanthins (1994) attempt to estimate the link between athletic success and alumni giving by confining their attention to a single school, Mississippi State University, during the 30-year period between 1962 and 1991. Grimes and Chressanthins also depart from tradition by studying the effects of athletic success not just in football and basketball, but also in baseball. They find that winning percentage in football is actually negatively associated with alumni giving, although not statistically significantly so. Basketball winning percentage has a positive estimated coefficient, but again one that is not statistically significant at conventional levels. Only baseball winning percentage is statistically significantly linked to alumni giving. But the estimated effect is extremely small. Their estimates of the effect of postseason appearances are statistically insignificant for all three sports, and actually negative for basketball.

Grimes and Chressanthins also examine one other factor ignored by the other studies just described—namely, the effect on giving of being sanctioned by the NCAA for rules violations. Being placed on NCAA probation is a non-negligible risk for institutions seriously attempting to field winning programs, since these institutions are

often forced by competition to operate close to the margins of allowable conduct. The authors estimate, for example, that a year's sanction for a rules violation in football would cost MSU more than \$1.6 million in lost donations in 1982 dollars.

In a 1996 paper, Robert Baade and Jeffrey Sundberg constructed separate data sets for public universities, private universities, and liberal arts colleges to examine the factors that governed alumni giving during the period from 1973 to 1979. They also refined previous measures of athletic success by looking not only at won-lost percentages but also bowl game appearances. They concluded that although winning records do not translate into higher gifts at public and private universities, bowl game appearances do result in significantly higher gifts (an estimated average gift increment of \$40 per year per alumnus at private universities, \$6.50 per year per alumnus at public universities). They also found that NCAA basketball tournament appearances result in higher gifts at public universities (an annual increment of \$5.60 per alumnus). At liberal arts colleges, which do not normally appear in postseason bowls, they found a “statistically significant, but very small, correlation between winning percentage and alumni giving.”

In a 2000 paper, Thomas Rhoads and Shelby Gerking provide a useful illustration of the extent to which unobserved institutional heterogeneity can bias estimates in studies that fail to control for it. Focusing on much the same sample of Division I schools studied by Baade and Sundberg, Rhoads and Gerking examine the relationship between athletic success and giving for the period from 1986-87 to 1995-96. Using a standard OLS regression model without fixed effects as a baseline, they estimate that football bowl wins and NCAA basketball tournament wins have positive and statistically significant effects on both total giving and giving by alumni. These effects are about the same

magnitude as those estimated by Baade and Sundberg. But when Rhoads and Gerking then run essentially the same model with fixed effects for each institution, they find that none of the athletic success variables has a coefficient that is statistically different from zero. Rhoads and Gerking also estimate that being placed on NCAA probation for a basketball violation reduces total giving by \$1.6 million in 1987 dollars.

The 2003 NCAA-commissioned study by Litan et al. also examines the relationship between football success and both total alumni giving and alumni giving to football programs. As noted earlier, Litan and his co-authors have assembled perhaps the most comprehensive database employed in any of the studies described in this review. Using carefully specified fixed-effects models to control for institutional heterogeneity, they report that both football winning percentage and lagged football winning percentage are negatively linked with both total alumni giving and alumni donations to football programs. None of these estimates, however, is statistically significant at conventional levels. Litan et al. also fail to find statistically significant links between football spending or lagged football spending on either form of alumni giving.

Several other studies I will not describe in detail here also look for possible links between athletic success and alumni giving. Some (for example, Coughlin and Erekson, 1984, and Goff, 2000) report positive links. Others (for example, Frey, 1985, and Grace, 1988) do not. Still others (for example, Turner, Meserve, and Bowen, 2001) even suggest that athletic success may diminish the amount that donors contribute for general purposes.

### **What Are the Policy Implications of the Empirical Literature?**

As many of the authors of the studies discussed above would be quick to concede, the limitations of existing data and methods of statistical inference make it exceedingly difficult to reach definitive general conclusions about the strength, or indeed even the existence, of the causal relationships in question. Perhaps the only firm conclusion that can be drawn from a review of the empirical literature on the indirect effects of athletic success is that each of the competing claims regarding these relationships is likely to be true under at least some circumstances.

Certainly there are instances in which the presence of a specific causal link appears compelling, as when Boston College experienced a 12-percent increase in applications during the year following its football team's dramatic come-from-behind victory over Miami in 1984. Replays of Doug Flutie's 48-yard touchdown pass to Gerard Phelan as time expired were broadcast so frequently over the ensuing months that the drama of this story could hardly have escaped the attention of even a single American high-school sports fan. Such vivid episodes notwithstanding, the existing empirical literature suggests that success in big-time athletics has little, if any, systematic effect on the quality of incoming freshmen an institution is able to attract (as measured by average SAT scores).

By the same token, precious little can be said with confidence about the relationship between alumni giving and successful performance in big-time college athletics. That there are many wealthy donors who care deeply about the athletic success of their alma maters cannot be questioned. Nor is there any doubt that the good will generated by a successful athletic program prompts many of these people to donate more

generously. Yet all major college athletics programs go through cycles of relative success and relative failure. And if success stimulates alumni giving, then failure must inhibit it. The empirical literature seems to say that if the overall net effect of athletic success on alumni giving is positive, it is likely to be small.

As the psychologist Tom Gilovich has suggested, someone who wants to believe a proposition tends to ask, “*Can* I believe it?” In contrast, someone who wants to deny its truth tends to ask “*Must* I believe it?”<sup>23</sup> With such a variety of claims and findings in the empirical literature, we must expect individual differences in motivation to explain a substantial share of the variance in beliefs about the links between athletic success and other outcomes. Important players in the debate about college athletic spending are thus likely to cling to conflicting beliefs about the facts.

Under the circumstances, it is all the more important that our thinking about the effects of spending on athletic programs be informed by a clear understanding of the economic forces that govern behavior in big-time college athletic markets. Fortunately, what we know about how such markets function suggests that the answers to many important policy questions may not hinge strongly on the strength of the empirical relationships just examined.

Policy questions arise at two distinct levels in the athletic arena. First, individual institutions must decide whether, and, if so, how much, to invest in pursuit of big-time athletic success. And second, governing bodies, both public and private, must decide whether, and if so, how, to regulate the behavior of individual athletic programs.

Consider first the individual institution’s investment decision. How would this decision be affected by its beliefs about whether successful athletic programs stimulate

additional applications or greater alumni giving? What we know from the structure of competition in winner-take-all markets with free entry is that if the reward from successful performance increases, more contestants will compete and each will invest more heavily in performance enhancement. If prospective contestants tend toward optimism in assessing their odds of success (as we saw earlier, a near universal tendency in other domains), or if contestants become involved in expenditure arms races (as we saw in the bidding war among contestants in Shubik's entrapment game), the clear expectation is that participation in big-time college athletics will be a losing proposition for all but a handful of institutions. That is, once participants respond to an increase in the reward for successful performance, market forces all but assure that participation in big-time college athletics will again be financially unremunerative for most institutions. Indeed, with higher stakes, the expected financial losses are likely to be even larger than before. In Subik's entrapment game, for example, bidders' losses are roughly proportional to the denomination of the bill being auctioned.

The same logic holds, irrespective of the size of the indirect effects of athletic success. So from the individual institution's perspective, even if an academic study were to establish with certainty that athletic success stimulates large increases in, say, alumni giving, this would not constitute an argument for increased investment. Competition among institutions to capture those gains would have already eliminated any unexploited opportunities for gain that might initially have been available. Conversely, discovering the link between success and alumni giving to be weak would provide no additional reason to curtail investment, since the weakness of that link would already be reflected in the current market equilibrium. Rational investment decisions are forward looking, and

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<sup>23</sup> Cite.

in either case, once the market has reached equilibrium, the expected return to additional investment is likely to be negative.

Similar conclusions apply to the relationship between an institution's athletic success and the size of its applicant pool. Here, too, if the link were known to be strong and positive, more contestants would enter the arena and each would invest more intensely in performance enhancement. A big-time athletic program might be a cost-effective means of expanding the applicant pool if a highly visible winning program could be launched at moderate expense. But as we have seen, even the cost of fielding a losing program is extremely high and growing rapidly. If expanding its applicant pool is an institution's goal, it faces many more attractive investment opportunities than those it confronts in the domain of big-time college athletics.

If investment in big-time college athletics is unlikely to yield high returns from the perspective of any given institution, it is an even less attractive proposition from the perspective of institutions as a whole. The distinction between the two perspectives is precisely analogous to the distinction we see in the entrainment game. From the perspective of any individual bidding to win the \$20 bill, boosting one's bid beyond that of the current high bidder entails at least the possibility of a favorable outcome. From the perspective of bidders as a group, however, additional bidding serves only to guarantee a smaller overall return than before. It is the same in college athletics. No matter how many hundreds of millions of dollars institutions spend, only 20 teams will finish in the AP's top 20 in football each year, and only four teams will reach the final four in the NCAA basketball tournament.

The empirical literature does not rule out the possibility that a given institution's success in big-time college athletics might attract additional applicants or stimulate greater alumni giving. But even if both of those links were strong and positive at the individual level, they would essentially vanish from the perspective of institutions as a whole. Success, after all, is a purely relative phenomenon. Upward movements in the national rankings for some teams necessarily entail downward movements for other teams. If institutions in the first group attracted more applicants and larger donations as a result, the corresponding movements would be in the opposite direction for the institutions in the second group.

The NCAA and other athletic governing bodies have long since recognized the distinction between the incentives facing individual institutions and those facing institutions as a group. When, as in college athletics, reward depends on rank, institutions face powerful incentives to engage in costly "positional arms races."<sup>24</sup> The incentive to spend more may seem compelling from the perspective of each institution, even though each realizes that when all spend more, the competitive balance will be unaffected. The familiar stadium metaphor captures the essential idea: Each spectator stands to get a better view, but when all stand nobody sees any better than if all had remained seated.

Under these circumstances, individual institutions can often achieve better outcomes by empowering a larger governing body to restrict their own behavior. Such "positional arms control agreements" are found in virtually every domain in which the rewards of individuals depend on strongly on rank.<sup>25</sup> Even when the stakes in athletic

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<sup>24</sup> See Frank, 1992.

<sup>25</sup> Again, see Frank, 1992.

competition are relatively modest, as in the Ivy League, governing bodies typically restrict their members' ability to compete freely.

As in the case of military arms control agreements, however, positional arms control agreements in athletics are often hard to enforce. Sometimes the problem is that the governing body's jurisdiction is too narrow. A case in point was the Ivy League's decision to abandon a rule that prevented its members from holding football practice in the spring. The rationale for the rule was that if any one institution held practice in the spring, others would be forced to follow suit. Student-athletes would lose time from their studies, yet the competitive advantage each team sought to achieve would vanish in the end. Half of all teams would still lose on any given fall Saturday, and half would win. The difficulty was that Ivy League football schedules included not just opponents from within the league but also from outside it. At the time, Ivy League teams were losing consistently to rivals from the Colonial League, which allowed spring football practice. The ban was finally lifted in response to complaints from angry alumni.

A second problem is that positional arms control agreements are often mistaken by the antitrust authorities as unlawful cartel behavior. Many elite institutions, for example, were once party to an agreement whereby they pledged to target limited financial aid money for those students with the greatest financial needs. This was essentially a positional arms control agreement to curb competition among member institutions for students with elite credentials. Animated by its belief that unbridled competition always and everywhere leads to the best outcome, the Justice Department took a dim view of this agreement. And it brought an antitrust suit that led to its termination.

Once we appreciate the logic of the financial incentives that confront participants in winner-take-all markets, however, we may feel less inclined to embrace the mantra that all outcomes of open competition must be good. The problem, as noted, is that when reward depends on rank, behavior that looks attractive to each individual often looks profoundly unattractive from the perspective of the group. Collusive agreements to restrain these behaviors can create gains for everyone. Of course, cooperative agreements to limit competition can also cause harm, as in the notorious price-fixing cases of antitrust lore.

The challenge, of course, is to make informed distinctions. Antitrust authorities might consider a retreat from their uncritical belief that unlimited competition necessarily leads to the greatest good for all. Manifestly it does not. Collective agreements should be scrutinized not on quasi-religious grounds, but according to the practical test of whether they limit harmful effects of competition without compromising its many benign effects. The collective agreement among universities to concentrate financial aid on families with the greatest financial need was a positional arms control agreement that clearly met this test.

Because the reward structure in college athletics is so strongly rank dependent, the design and implementation of positional arms control agreements are by far the most important policy decisions that athletics governing bodies such as the NCAA must confront. And these decisions would take essentially the same form irrespective of the strength of the individual links between athletic success, on the one hand, and indirect benefits, such as larger applicant pools and greater alumni giving, on the other. A review of the empirical literature suggests that these indirect benefits constitute at most only a

small fraction of the total revenue stream generated by big-time college athletic programs. If those indirect benefits were found either not to exist at all, or else to be larger than existing studies suggest, participating institutions would still find themselves embroiled in a positional arms race with very high stakes.

### **Concluding Remarks**

To observe that the reward structure in big-time college athletics gives rise to costly positional arms races is in no way to deny that athletic programs generate numerous real benefits to the institutions that sponsor them. As a report recently commissioned by the athletics subcommittee of the board of trustees at Rice University noted, for example,

Athletic competitions serve as focal points to which diverse constituencies of the University, who might otherwise never share a common experience, can relate. ... Athletics also helps achieve the diversity goals of the school—athletes often bring a completely different set of social, ethnic, economic, and experiential backgrounds to the University. Finally, NCAA athletics provide a phenomenal training ground for participants, with valuable instruction in teamwork, leadership, discipline, and goal setting.<sup>26</sup>

For policy purposes at the collective level, however, the important point is that each and every one of these benefits would occur with equal measure if every institution were to reduce its expenditures on big-time college athletics by half. Any institution that made such a cutback unilaterally would substantially increase its risk of fielding consistently losing teams. But if all institutions cut back in tandem, competitive balance would be maintained.

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<sup>26</sup> 2004, p. 54.

Policies that curtail positional arms races promise large benefits for participating institutions at little or no cost to the spectators who consume big-time college athletics. For these consumers, it is much less the absolute performance of teams that matters than the fact of there being spirited contests. (If absolute performance were of primary concern to spectators, they would have long since deserted college athletic contests in favor of their professional counterparts.) So if governing bodies such as the NCAA were able (or were permitted by the antitrust authorities) to create incentives for each program to limit its expenditures, resources can be diverted to meet other pressing ends without sacrificing any of the real benefits that college athletic programs generate.

The most forceful conclusion that can be drawn about the indirect effects of athletic success is that they are small at best when viewed from the perspective of any individual institution. Alumni donations and applications for admission sometimes rise in the wake of conspicuously successful seasons at a small number of institutions, but such increases are likely to be both small and transitory. More to the point, the empirical literature provides not a shred of evidence to suggest that an across-the-board cutback in spending on athletics would reduce either donations by alumni or applications by prospective students.

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The report, "Challenging the Myth: A Review of the Links Among College Athletic Success, Student Quality, and Donations," contradicts the conventional wisdom that a successful sports program -- mainly in football and basketball -- benefits a university as a whole. The widely held belief is that when teams win, happy alumni give more money and prospective students are drawn to apply. "If success in athletics does generate the indirect benefits in question, the effects are almost surely very small," writes Robert H. Frank, a professor of economics at Cornell University and the author of the report. Mr. Frank based his findings on several empirical studies that have sought to verify the conventional wisdom. Challenging the myth: A review of the links among college athletic success, student quality, and donations. Commissioned by the Knight Foundation Commission on Intercollegiate Athletics. Miami, FL. Intercollegiate athletics and student college choice: Exploring the impact of championship seasons on undergraduate applications. Research in Higher Education, 39, 633-661. Zimbalist, A. (2001). Are student athletes just "dumb jocks?" The answers to these questions might surprise you. Much research has been done to dispel the myth that athletes going to college are only there to play sports with little regard to their education. Programs have been created to assure that colleges and universities hold athletes to the same standards as the everyday student. The National Collegiate Athletic Association (NCAA) has decided that the "magic number" to put the "student" back into "student-athlete" is 925 (Hamilton). "The impact of college athletic programs on academics has always been a controversial and contentious topic. It seems that athletic programs have some contemplative effects on academics of colleges and universities. This study was commissioned by the National Collegiate Athletic Association (NCAA) as an independent analysis of the empirical effects of college athletics. The views and opinions expressed in this study are solely those of the authors and do not necessarily reflect the views and opinions of the NCAA or the institutions with which the authors are associated. The authors thank three independent economists who reviewed the preliminary analysis and conclusions in November 2002. and the NCAA staff for helpful conversations and suggestions; and Daniel Fulks for his assistance with the survey and with the NCAA/EADA data." Challenging the Myth : A Review of the Links Among College Athletic Success , Student Quality , and Donations by. R. Frank, Henrietta Johnson.