

THE EMPIRICAL EFFECTS OF COLLEGIATE ATHLETICS: AN UPDATE

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ABOUT THIS UPDATE

This note was commissioned by the National Collegiate Athletic Association (NCAA) as an update to the August 2003 study (“The Effects of Collegiate Athletics: An Interim Report”).

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.

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AN UPDATE TO THE INTERIM REPORT

In a previous interim report (“The Effects of Collegiate Athletics: An Interim Report”), we explored the financial effects of operating expenditures associated with collegiate athletics.¹ That report drew upon a comprehensive database linking information collected by the National Collegiate Athletic Association (NCAA) in conjunction with the Equity in Athletics Disclosure Act (EADA) to a variety of other data sources.

The interim report underscored two concerns with the existing data at that time: First, the data suffered from poor measurement of capital expenditures and the capital stock used in collegiate athletics. A companion analysis addresses this concern.² Second, the available data covered only an eight-year period. Using more recently available data, this update extends the analysis so that it covers a 10-year period.

The interim report specifically examined ten hypotheses about college athletics, focusing primarily on Division I-A schools. Using updated data and other recently released information, we re-examine each of the hypotheses. Our analysis confirms five of the hypotheses; the other five are not proven and require further empirical analysis.³

Hypothesis #1: Operating athletic expenditures are a relatively small share of overall institutional spending.

- According to Department of Education data, reported athletic spending represented roughly four percent of total higher education spending for Division I-A schools in 2001 (the most recent comprehensive Department of Education data publicly available). In 1997, this share was roughly three percent.
- In 2003, NCAA/EADA data suggest that operating athletic spending represented roughly 3.8 percent of total higher education spending for Division I-A schools. By comparison, the share was roughly 3.3 percent in 2001.
- The share of operating athletic spending in a university’s total budget is higher for smaller Division I-A schools than for larger Division I-A schools because of the fixed costs associated with an athletic department.

¹ Robert E. Litan, Jonathan M. Orszag, and Peter R. Orszag, “The Empirical Effects of Collegiate Athletics: An Interim Report,” August 2003, available at <http://www.ncaa.org/databases/baselineStudy/baseline.pdf> (“Interim Report”).

² Jonathan M. Orszag and Peter R. Orszag, “The Physical Capital Stock Used in Collegiate Athletics,” April 2005.

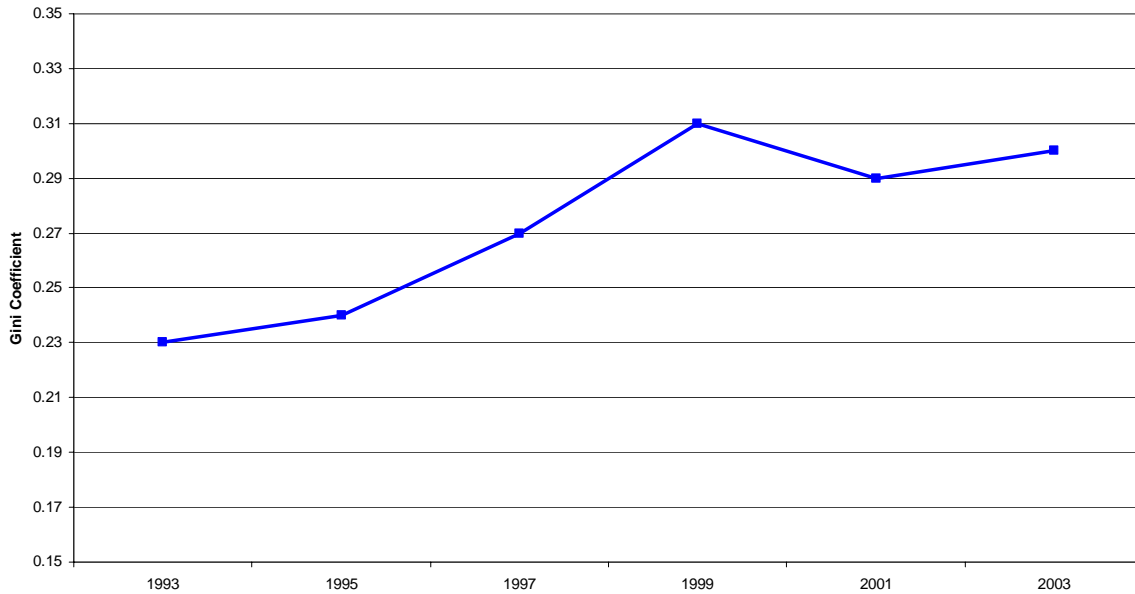
³ We note that since our interim report was released in August 2003, an analysis prepared for the Knight Foundation Commission on Intercollegiate Athletics reached many of the same conclusions. Robert H. Frank, “Challenging the Myth: A Review of the Links Among College Athletic Success, Student Quality, and Donations,” May 2004, available at http://www.knightfdn.org/athletics/reports/2004_frankreport/KCIA_Frank_report_2004.pdf

- The share of operating athletic spending in overall higher education spending has increased over time as indicated by the comparisons above. In recent years, athletic spending has been growing more rapidly than total spending, so the athletics' share of the total has been increasing. In particular, total athletic spending increased by roughly 20 percent in nominal terms between 2001 and 2003; total institutional spending rose by less than five percent during the same period, according to NCAA/EADA data.
- Despite the recent increase in relative athletic spending, we continue to conclude that operating athletic expenditures in the aggregate are a relatively small share of total higher education spending for Division I-A schools.
- These spending shares exclude capital spending. Our companion piece finds that including capital spending for both athletics and the overall university budget modestly raises the share of total spending attributed to athletics, but does not alter the fundamental conclusion that athletic spending represents a small share of total institutional spending.

Hypothesis #2: Football and basketball exhibited increased levels of inequality in the 1990s.

- A common measure of inequality is the Gini coefficient, which would equal one if one school accounted for all spending and zero if spending were the same across schools. Increases in the Gini coefficient represent increased levels of inequality and vice versa.
- Between 1993 and 2003, the Gini coefficient for Division I-A football spending rose from 0.23 to 0.30. See Figure 1. The Gini coefficient for Division I-A basketball spending also rose sharply, from 0.24 to 0.30.
- We continue to conclude that football and basketball exhibited increased levels of inequality between 1993 and 2003.

Figure 1: Gini Coefficient for Operating Football Spending, Division I-A Schools



Hypothesis #3: Football and basketball exhibit mobility in expenditure, revenue, and winning percentages.

- More than 30 percent of the schools that were in the top quintile of Division I-A football spending in 1993 were no longer in the top quintile by 2003. More than three-fifths of the schools in the middle quintile in 1993 were no longer there in 2003; less than two-fifths had moved up and one-fourth had moved down.

Table 1: Mobility of Division I-A Football Spending, 1993-2003

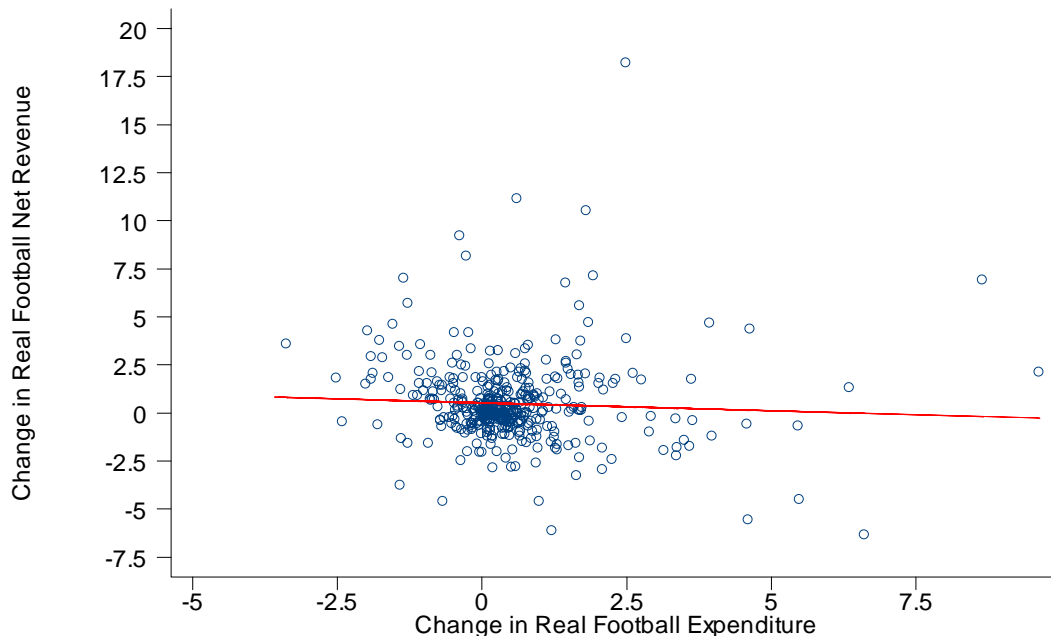
		2003					
		Bottom 20 Percent	Second 20 Percent	Middle 20 Percent	Fourth 20 Percent	Top 20 Percent	Total
1993	Bottom 20 Percent	13	2	0	0	0	15
	Second 20 Percent	2	10	2	2	0	16
	Middle 20 Percent	0	4	6	3	3	16
	Fourth 20 Percent	0	0	8	6	2	16
	Top 20 Percent	0	0	0	5	11	16
	Total	15	16	16	16	16	79

- Net revenue also exhibited some degree of mobility: Among the schools in the middle quintile of football net revenue in 1993, roughly three-quarters were no longer in the middle quintile in 2003.
- A school's winning percentage exhibits only modest levels of persistence. For example, the correlation of winning percentages from one year to the next is only about 50 percent. The correlation dissipates over time: The correlation between winning percentages ten years apart is 20 to 30 percent.
- We continue to conclude that football and basketball exhibit some degree of mobility in expenditure, revenue, and winning percentages.

Hypothesis #4: Increased operating expenditures on football or basketball, on average, are not associated with any medium-term increase or decrease in operating net revenue.

- Our statistical analyses suggest that between 1993 and 2003, an increase in operating expenditures of \$1 on football or men's basketball in Division I-A was associated with approximately \$1 in additional operating revenue, on average. The implication is that spending an extra \$1 was not associated with any increase or decrease in *net* revenue, on average, from these sports.

Figure 2: Change in Football Spending and Net Revenue, \$ million
Division I-A, 1993-2003



- These results continue to have limitations. For example, our database covers a 10-year time period, but any effects may have longer lags. If this were the case, our database may be too short to capture the “true” effects of increased spending. In addition, as noted above, the NCAA/EADA data do not adequately record capital expenditures; our analysis therefore focuses on operating spending. It is

possible that the effects of operating spending differ from the effects of capital spending.

- We continue to conclude that over the medium term (ten years), increases in operating expenditures on football or men's basketball are not associated with any change, on average, in operating net revenue.

Hypothesis #5: Increased operating expenditures on football or basketball are not associated with medium-term increases in winning percentages, and higher winning percentages are not associated with medium-term increases in operating revenue or operating net revenue.

- A variety of econometric exercises suggests no robust statistical relationship between changes in operating expenditures on football and changes in football winning percentages between 1993 and 2003.
- A variety of econometric exercises also suggests no robust statistical relationship between changes in winning percentages and changes in football operating revenue or net revenue between 1993 and 2003.
- We continue to conclude that increased operating expenditures on football or basketball are not associated with medium-term increases in winning percentages, and higher winning percentages are not associated with medium-term increases in operating revenue or operating net revenue.

Hypothesis #6: The relationship between spending and revenue varies significantly by sub-groups of schools (e.g., conferences, schools with high SAT scores, etc.).

- With the updated database, we examined the relationship between spending and revenue across various subsets of schools. We were still not able to detect evidence of systematic differences when separating the schools by characteristics such as: public vs. private schools; schools with high SAT scores vs. schools with low SAT scores; large student populations vs. small student populations; schools that were ever in the Associated Press (AP) rankings; and schools that were ranked in the top 25 in the AP poll in 1993.
- In many cases, the sample sizes for the subsets of schools were quite small; given the paucity of data in some cases, it is difficult to reject the hypothesis outright. Instead, we continue to conclude that the hypothesis that the relationships vary significantly by sub-groups of schools is not proven.

Hypothesis #7: Increased operating expenditures on big-time sports affect operating expenditures on other sports.

- Our statistical analysis of the updated data suggests that each dollar increase in operating expenditures on football among Division I-A schools may be associated

with a \$0.27 increase in spending on women's sports excluding basketball and \$0.37 including basketball, but the results are not robust to changes in the econometric specification. Such a potential spillover effect may be expected given Title IX and other pressures to ensure equity between men's and women's sports.

- Previous studies have found that increases in football spending are associated with increased spending on women's sports.
- Given the lack of robustness of the results, we continue to conclude that the hypothesis that increased operating expenditures on big-time sports affect operating expenditures on other sports is not proven.

Hypothesis #8: Increased operating expenditures on sports affect measurable academic quality in the medium term.

- Our statistical analysis of the updated data suggests no relationship – either positive or negative – between changes in operating expenditures on football or basketball among Division I-A schools and incoming SAT scores or the percentage of applicants accepted.
- The academic literature is divided on whether athletic programs affect academic quality. While our results suggest no statistical relationship one way or the other, our data are limited to ten years and such a relationship may exist over longer periods of time. In addition, the relationship between athletics and academic quality may manifest itself in ways other than the effect on SAT scores or other directly measurable indicators.
- We continue to conclude that the hypothesis that changes in operating expenditures on big-time sports affect measurable academic quality in the medium term is not proven.

Hypothesis #9: Increased operating expenditures on sports affect other measurable indicators, including alumni giving.

- Econometric analysis using our updated database shows little or no robust relationship between changes in operating expenditures on football or basketball among Division I-A schools and alumni giving (either to the sports program or the university itself).
- The academic literature is again inconclusive on this issue. As with the previous hypothesis, our results suggest little or no statistical relationship – but our data are limited to ten years and such a relationship may exist over longer periods of time.

- We continue to conclude that the hypothesis that increased operating expenditures on sports affect other measurable indicators, including alumni giving, is not proven.

Hypothesis #10: Football and basketball exhibit an “arms race” in which increased operating expenditures at one school are associated with increases at other schools.

- Analysts have used the term “arms race” to describe a variety of phenomena. We use the term to refer to a situation in which increased spending at one school are associated with increases at other schools.⁴
- In our updated analysis, some econometric analyses suggest that increased operating expenditures on football at one school may be associated with increases in operating expenditures at other schools within the same conference, but most specifications suggest no relationship.
- We continue to conclude that the hypothesis that football and basketball exhibit an “arms race” in which increased operating expenditures at one school are associated with increases at other schools is not proven.
- It is important to emphasize that the existence of an “arms race” may be concentrated in capital expenditures, which are not adequately recorded in the NCAA/EADA data, rather than in operating expenditures.
- In our companion paper on capital expenditures, we explore this issue in more detail. We examined whether an increase in football stadium capacity by other members of a school’s conference statistically increased the likelihood that the school itself expanded stadium capacity.
- The analysis suggests the possible, albeit weak, presence of an arm’s race in football capital spending within Division I-A: The expansion of a stadium at one school within a conference appears to make it more likely that others schools within that same conference will expand the capacity of their stadiums, although this finding is sensitive to specific assumptions employed in the statistical analysis. Even in the regression specifications where the effect is statistically significant, the practical implications appear to be limited because the magnitude of the effect is small.

⁴ In particular, we define an “arms race” as occurring when an increase in spending at School A triggers an increase in spending at School B, which then feeds back into pressure on School A to further raise its own spending. To examine this definition of an arms race, we examined whether increased spending by other members of a school’s conference was statistically associated with increased spending by the school itself.

Conclusion

This update reflects an effort to continue exploring the empirical effects of collegiate athletics. It updates the analysis contained in the interim report with new data and information. As in the interim report, we continue to find that many widely held perspectives about spending on big-time sports by colleges – by both proponents and opponents of such spending – are not supported by the statistical evidence.

Our results must continue to be qualified, however. Although the data in this paper are more comprehensive than other datasets that have been used in the past, they remain imperfect: They are available only between 1993 and 2003, and they fail to capture fully various components of athletic activities (especially total capital expenditures and staff compensation from all sources). Further efforts are underway to improve the data; in conjunction with National Association of College and University Business Officers (NACUBO), the NCAA has devised a new annual financial survey that will better capture ongoing capital expenditures. As these new data become available, they should provide additional insights into the effects of college athletics on institutions of higher education.