NCAA Athletic Departments: An Empirical Investigation of the Effects of Revenue and Conference Changes

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Abstract

The paper uses a panel of athletic department revenue and expenditure data of 227 public colleges and universities to empirically investigate the behavior of NCAA Division I athletic departments over the period 2006 – 2011. Four primary hypotheses were tested: (1) the effect of revenue changes on individual expenditure categories, (2) how individual revenue streams influence total expenditures, (3) whether changes in individual revenue categories change the size of the athletic department's subsidy, and (4) how total revenue and expenditures change when a school switches conference affiliation. The empirical results show that when a school receives additional athletic revenue, expenditures for coaches can be as high as 10 times more than direct expenditures for athletes. For every one dollar increase in ticket sale revenue, total expenditures can rise by $0.83 and reduce a school's athletic subsidy by $0.19. Lastly, changing conferences can increase total revenue *and* total expenditures by millions of dollars.

Keywords: NCAA expenditures, athletic subsidy, athletic departments, conference realignment, bureaucracy

JEL Codes: L83 and H3

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> "The NCAA did a fabulous job of negotiating the most recent media rights agreement, but the $10.8 billion is what makes the headlines. Then you all go to your Rotary Clubs and say that in college sports we care about amateurism. And they look at you and say, '$10.8 billion and amateurism? Help me understand that.'" – NCAA Office of the President[1]

I. Introduction

Unlike traditional business enterprises, where profit-seeking is the generally-accepted *modus operandi*, the motivation for the National Collegiate Athletic Association (NCAA) is conflicted between amateurism and profit-making. While the NCAA states that amateurism and the protection of academic integrity are its unquestionable main goals, the large sums of money generated in college sports, specifically men's football and basketball, have influenced how member schools behave.

In an overwhelming majority of scenarios, the pursuit of profits and student development – both academically and athletically – can happen simultaneously without major conflict. For example, the median NCAA scholarship football player will graduate with a college degree in four years, paying significantly lower than the sticker price of tuition, all while generating a net profit for the institution. However, profits can clash with amateurism and the academic best interests of student-athletes.[2]

These controversies are highlighted in men's football and basketball, as these sports are profit-generators used to subsidize the remaining unprofitable NCAA sports, and in the

[1] http://www.ncaa.org/wps/wcm/connect/public/NCAA/NCAA+President/On+the+Mark

[2] West Virginia University's (WVU) decision to leave the Big East Conference and join the Big 12 conference highlights the tension between profits and the academic best interests of student-athletes. The conference switch dramatically increased travel times for all of WVU's athletic teams. WVU's closest in-conference opponent is Iowa State University, a mere 870 miles away. The need for multiple-day travel, combined with the expansion of nationally televised weeknight games, has increased the amount of time student-athletes spend on the road at the expense of time available for students to attend class.

conference realignment debate. The lure of lucrative revenue deals from changing conferences dominated concerns over academic integrity. In total, 13 football subdivision (FBS) schools announced conference moves between 2010 and 2013.[3]

The primary objective of this paper is to analyze the behavior of NCAA institutions and their athletic departments, given their unique set of constraints and incentives. This paper tests four general hypotheses. First, this study investigates the effects of revenue changes on NCAA athletic department spending. Second, this study disaggregates revenue into five categories and tests how each revenue category affects total expenditures. Third, this study explores if revenue from ticket sales is a substitute or compliment to subsidy revenue from the institution. Lastly, this study measures the change in total revenue and expenditures for a school that changes athletic conferences.

This paper proceeds as follows. Section 2 discusses the bureaucratic nature of college athletics. Section 3 describes the data and introduces the empirical specifications. Section 4 presents the empirical results and provides interpretation. Section 5 offers concluding remarks.

II. The Bureaucracy of College Athletics

College athletics are filled with an interesting mix of competitive and heavily restricted markets. These markets operate under a set of guidelines orchestrated by a bureaucracy – the NCAA.[4] Individual institutions and athletic departments, smaller bureaucracies themselves, are actors within these markets. The bureaucratic nature of athletic departments provides the incentive to

[3] The FBS schools that moved conferences were Rutgers - The State University of New Jersey, Syracuse University, Texas A&M University, Texas Christian University, the University of Colorado - Boulder, the University of Louisville, the University of Maryland – College Park, the University of Missouri - Columbia, the University of Nebraska - Lincoln, the University of Notre Dame, the University of Pittsburgh, the University of Utah, and West Virginia University.

[4] Along with being labeled a bureaucracy, the NCAA is often described in the academic literature as a cartel because of its restrictive policies. Humphreys and Ruseski (2009) and Fleisher et al. (1988) explore the self-monitoring and enforcement of the NCAA in the context of a cartel model.

pursue increased revenue. Between 2006 and 2011, median athletic department revenue grew $4.14 million, a 27.82 percent increase. Given the increased revenue, collegiate institutions faced several options for athletic department budgeting changes.

One option was for institutions to decrease athletic-department subsidies. The average athletic-department subsidy is $8.8 million annually. These subsidies primarily consist of student fees earmarked for athletics. Thus, decreasing athletic department subsidies would likely result in a marginally lower cost of education for students.

Alternatively, institutions could use increased athletic revenue to fund additional athletic expenditures. Applying Niskanen's (1971) bureaucracy model with the institution as a funding sponsor and the athletic department as a bureau, the athletic department would exploit an informational advantage in order to spend all of its revenues each year and continually request additional funding in subsequent years. Wycoff (1990) expands Niskanen's models, describing that bureaucrats will prefer to maximize discretionary spending and Hoffer (2013) adds that bureaucrats also generate rents to the factors of production, preferring to increase wage rates above equilibrium rather than increase labor hours (quantity).

However, the manner in which the athletic department can spend its funds is unique.[5] The NCAA explicitly prohibits athletic departments from exercising these preferences by restricting payments to certain factor inputs. Most notably, collegiate athletes must be amateurs, receiving no compensation other than payments to cover the costs[6] of attending the academic institution (i.e. tuition, room, board, etc.).

[5] The restrictions of markets give the NCAA an important responsibility to impartially enforce the regulations it sets. Depken and Wilson (2006) investigated how NCAA enforcement affects the competitive balance of major college football departments.

[6] The term *costs* in this sentence does not include opportunity costs of attending college or participating in amateur athletics.

The amateur-athlete provision substantially distorts the labor market for athletes. Institutions are unable to reward players with additional pay when players generate extra revenue for the school. Schools are also unable to compete in the labor market using wages. This forces athletic departments to compete by offering players non-monetary benefits.

School prestige and academic standards remain relatively steady, but recently, stadium upgrades and supplemental (practice) facilities have created a "facilities arms race" (Bennett, 2012). Table 1 provides a list of some of the most recent college football facility renovations.[7] Alabama's $9 million locker room renovation includes an arcade, a nutrition bar, a "hydrotherapy area" (a hot and cold pool with a waterfall), and a "no expenses spared" locker area. Nick Saban, Alabama's head football coach – the highest paid public employee in the U.S. at $5.5 million per year – says about Alabama's new facility, "Now, our players have one-stop shopping. They can do everything in one place. They don't need to go outside."

[Insert Table 1]

Similarly, the University of Kentucky built a $7 million dorm facility to house its men's basketball players. The facility includes single rooms for each resident, a private chef, flat-screen monitors describing each player's itinerary, and a lounge complete with a pool table.

The competition for premier athletes persists because athletic departments seek benefits, other than profits, unique to contest markets: wins and championships. Wins and championships generate large utility boosts for students, employees, fans, and alumni. Empirical research has further investigated whether athletic department success generates positive externalities elsewhere for their institutions.[8]

[7] Virtual tours of the new Alabama locker room can be found, http://www.rolltide.com/allaccess/?media=394427.
[8] A more complete summary of the literature regarding the effects of university athletics on the university can be found in Goff (2000).

Frank (2004) found victories in men's football and basketball had no statistically significant impact on the number of applications to the school or the SAT scores of the school's applicants. Conversely, Pope and Pope (2009) found that success in football and basketball, particularly for top-ranked teams and private schools, significantly increases the number of applications and the quality of applications to a school.

At least a dozen empirical studies have examined the relationship between atletic success and alumni donations, summarized in Frank (2004). Several studies find that athletic success can increase donations, but Humphreys and Mondello (2007) describe how donations earmarked for athletics act as a substitute for unearmarked alumni donations, causing athletic success to have no statistical impact on *total* alumni donations.

Orszag and Orszag (2005) find no correlation between increased spending on athletics and wins. Unfortunately for athletically-successful schools, the academic literature presents a mixed picture on the link between athletic success and additional benefits for the school.

Financially, college athletics represent a zero-sum game. Orzag and Israel (2009) describe spending on athletics as an "arms race" between schools. Despite the glaring evidence that the financial incentives for athletic department spending are nonexistent, heavy competition for athletic success persists. Unable to increase player pay, schools have found a number of ways to try and obtain those much sought-after wins.

While the market for student athletes has strict compensation restrictions, the market for coaches is relatively unregulated. The result is that the salaries paid to head coaches in college football and basketball have skyrocketed. In 39 states, the highest paid public employee is a college football or basketball coach, illustrated in Figure 1 in Appendix 1.

These examples provide *prima facie* evidence that academic institutions and athletic departments spend vast amounts of money in recent years to compete for wins and championships, but little of that money has gone to player compensation. In the following section, we present data and a formal econometric model to explore athletic department spending practices.

III. Data and Estimation

The paper uses a panel of athletic department revenue and expenditure data of 227 public colleges and universities in the NCAA's Division I from 2006 to 2011. Private schools are not required to release revenue and expenditure reports publicly so they are excluded (e.g Northwestern University). Some states also shield public schools from fully disclosing their athletic revenue and expenditure data so they are also excluded (e.g. Temple University). The panel is unbalanced because not every school participated each year in the NCAA's Division I throughout the sample time period. Revenue and expenditure data are in constant 2012 USD.

Revenue data is divided among six categories: ticket sales, student fees, school funds, contributions, rights and licensing, and other revenue. Ticket sales are the sale of admissions to athletic events. Student fees represent the fees levied on students to support a school's athletic program. School funds are the direct and indirect financial support from the college or university towards athletic programs. Contributions are any additional financial contributions beyond ticket sales, such as alumni giving towards athletic programs.[9] Rights and licensing represent revenue from media rights, sponsorships, licensing, advertisements, trademarks, and royalties. Any additional revenue stream, such as revenue from tournament or bowl game appearances is

[9] Coughlin and Erekson (1984) provide a systematic analysis of the economic determinants of athletic contributions.

captured in the category of other revenue. Total Revenue is the sum total of the six revenue categories.[10]

Expenditure data is divided among four categories: scholarships, coaching staff, building and grounds, and other expenditures. Scholarships represent athletically-related student aid. Coaching staff captures expenditures on coaching salaries, bonuses, and benefits. Building and grounds are all expenditures on facilities and maintenance. Any additional expenditure, such as conference dues and travel expenses, is lumped into other expenditures. Total expenditures is the sum total of the four revenue categories.

The paper tests four hypotheses using Least Squares Dummy Variable (LSDV) estimations. Fixed school effects are included as specified by the Hausman test. Time effects are included because the null hypothesis that all year coefficients are jointly equal to zero was rejected. Robust standard errors are used to reduce idiosyncratic disturbances through time.[11] For robustness, each of these models are tested with all colleges included, when only Bowl Championship Series (BCS) conferences are included, when only non-BCS conferences are included, and when only Automatic Qualifying (AQ) conferences are included. [12]

To test hypothesis one, model (1) measures the effect of an additional dollar of total revenue on each expenditure category, excluding total expenditures. The basic specification of the empirical model is:

[10] Table 9 includes a more detailed description of the expenditure and revenue variables and Table 10 provides summary statistics. Both tables are in Appendix 1.

[11] The models were also estimated using clustered standard errors (clustered by conference), in order to reduce idiosyncratic disturbances across conferences through time. Using clustered standard errors does not change the basic results and the results are available upon request.

[12] BCS conferences are all eleven conferences in the NCAA Division I for football, the six automatic qualifying conferences and the five non-automatic qualifying conferences. An AQ conference is an athletic conference whose league champion receives an automatic berth in one of the five football Bowl Championship Series bowl games. The six AQ conferences are the American Athletic Conference (formerly the Big East), the Atlantic Coast Conference (ACC), the Big Ten Conference, the Big 12 Conference, the Pac-12 Conference, and the Southeastern Conference (SEC). The five non-automatic qualifying conferences are Conference USA, the Mid-American Conference (MAC), the Mountain West Conference (MWC), and the Sun Belt Conference.

$$\text{Expenditure Category}_{i,t} = \alpha_i + \beta_1 \text{Total Revenue}_{i,t-1} + \eta_t + \varepsilon_{it} \quad (1)$$

where *i* and *t* are the school and year indices, respectively, α_i represents school fixed effects, and η_t represents time effects.[13]

To test hypothesis two, model (2) explores the degree to which each revenue category affects total expenditures. The basic specification of the empirical model is:

$$\text{Total Expenditures}_{i,t} = \alpha_i + \beta_1 \text{ Ticket Sales}_{i,t-1} + \beta_2 \text{Student Fees}_{i,t-1} + \beta_3 \text{School Funds}_{i,t-1} + \beta_4 \text{ Contributions}_{i,t-1} + \beta_5 \text{ Other Revenue}_{i,t-1} + \eta_t + \varepsilon_{it} \quad (2)$$

where *i* and *t* are the school and year indices, respectively, α_i represents school fixed effects, and η_t represents time effects.

Testing hypothesis three, model (3) measures how changes in revenue categories affect the size of the athletic subsidy. Since the athletic subsidy is defined as the sum of student fees plus school funds, the basic specification of the empirical model is:

$$\text{Subsidy}_{i,t} = \alpha_i + \beta_1 \text{ Ticket Sales}_{i,t-1} + \beta_2 \text{ Contributions}_{i,t-1} + \beta_3 \text{ Other Revenue}_{i,t-1} + \eta_t + \varepsilon_{it} \quad (3)$$

To test the fourth and final hypothesis three, models (4) and (5) examine the changes in total revenue and expenditures when a school changes conference affiliation. The basic specifications of the empirical models are:

$$\Delta\text{Total Revenue}_{i,t} = \alpha_i + \beta_1 \Delta\text{Conference}_{i,t} + \eta_t + \varepsilon_{it} \quad (4)$$

$$\Delta\text{Total Expenditures}_{i,t} = \alpha_i + \beta_1 \Delta\text{Conference}_{i,t} + \eta_t + \varepsilon_{it} \quad (5)$$

[13] A general rule of thumb for outliers suggests any data point three or more standard deviations from the mean is defined as an outlier. Total revenue from Oklahoma State University in the year 2006 is excluded because total revenue is 9.58 standard deviations from the mean. This is *most clearly* seen in Figure 2 (Appendix 1), which plots Total Revenue and Coaching Staff Expenditures. Oklahoma State's Total Revenue in 2006 was abnormally high because of a $165 million donation from alumnus T. Boone Pickens, the largest single donation given to a NCAA athletic department.

where *i* and *t* are the school and year indices, respectively, α_i represents school fixed effects, and η_t represents time effects.

IV. Empirical Work

The results from (1) identify the effect of an additional dollar of total revenue on each expenditure category, excluding total expenditures (Table 2).

[Insert Table 2]

When all colleges are included, an additional dollar of total revenue increases scholarship expenditures by $0.02 and coaching staff expenditures by $0.15. Both coefficients are statistically significant at the 1 percent level. The coefficients for building and grounds and other expenses are not statistically significant at conventional levels of significance. The coefficients for scholarships and coaching staff suggest that with additional total revenue, expenditures for coaches increases 7.5 times the direct expenditures for athletes.

The spread between coaching and athlete expenditures is also seen when the model is tested on schools in AQ and BCS conferences. In both models, only the coefficients for scholarships and coaching staff are statistically significant (at the 1 percent level). When only AQ schools are considered, an additional dollar of total revenue increases scholarship expenditures by $0.01 and coaching staff expenditures by $0.10, suggesting one more dollar of total revenue increases coaching expenditures 10 times more than direct expenditures for athletes. For BCS schools, an additional dollar of total revenue increases scholarship expenditures by $0.02 and coaching staff expenditures by $0.12.

For non-BCS schools, an additional dollar of total revenue increases scholarship expenditures by $0.10, coaching staff expenditures by $0.10, building and grounds expenditures

by $0.06, and expenditures for other expenses by $0.12. For non-BCS schools, additional revenue increases direct spending for athletes and coaches by the same amount. There are two possible explanations for this result. First, non-BCS schools have a more difficult time earning revenue (e.g. lack of access to lucrative bowl games, tournaments, and media deals), thus constraining the financial packages they can offer coaches. Second, coaches at non-BCS schools are more likely to be unproven and therefore cannot command the salary premium coaches at BCS schools (specifically AQ schools) earn, keeping coaching expenditures lower for non-BCS schools.

Since football is often the most profitable and sometimes only profitable sport for a school, a small extension to the first model is tested. The models are estimated with a binary dummy variable indicating if a school has a football program (Table 3). Since every BCS and AQ school has a football program, only the results for all colleges and non-BCS schools are shown.

[Insert Table 3]

The inclusion of the *football* variable does not change the basic results by much. When all colleges are included, scholarships and coaching staff remain statistically significant at the 1 percent level. The coefficients are similar to those in Table G; again suggesting expenditures for coaches increases 7.5 times the direct expenditures for athletes. The coefficient for *football* is also positive and statistically significant at the 1 percent level, but only when scholarships is the dependent variable. A school with a football team spends on average $780 thousand more on scholarships than schools without a football team. This result makes sense because football typically requires the largest number of athletes. NCAA schools can offer 85 scholarships in

football for Football Bowl Subdivision (FBS) schools, 63 scholarships for Football Championship Subdivision (FCS) schools, and 36 scholarships for Division II.[14]

For non-BCS schools, the coefficients for each of the expenditure categories are positive, of similar magnitudes, and of the same statistical significance as the basic model. An additional dollar of total revenue increases scholarship expenditures by $0.09, coaching staff expenditures by $0.08, building and grounds expenditures by $0.04, and expenditures for other expenses by $0.10. Additional revenue increases direct expenditures for athletes 1.125 times the amount for coaching expenditures. A non-BCS school with a football team spends $633 thousand more on scholarships and $947 thousand more on other expenses than non-BCS schools without a football team.

Disaggregating the revenue categories, (2) measures how each revenue category affects total expenditures (Table 4).

[Insert Table 4]

The coefficients for tickets sales are positive and statistically significant in every college grouping. An additional dollar of ticket sale revenue increases total expenditures between $0.45 and $0.83. An additional dollar of student fees increases total expenditures by $0.36 when all colleges are included and $0.66 when only non-BCS conferences are included. An additional dollar of school funds increases total expenditures by $0.20 when all colleges are included and $0.44 when only non-BCS conferences are included.

These coefficients suggest that ticket sales are the most important revenue factor in explaining increased expenditures, except for non-BCS conferences, where the coefficient for student fees is larger. Schools in BCS and AQ conferences tend to be larger than non-BCS

[14] FBS schools were formerly designated as Division I-A while FCS schools were formerly designated as Division I-AA. Division III schools do not offer athletic scholarships.

schools and have the ability to draw more people to their athletic events. Non-BCS schools are more reliant on other sources of revenue, such as student fees, because attendance at their sporting events is lower.[15]

Like (1), (2) was also estimated with the football dummy variable included (Table 5).

[Insert Table 5]

The inclusion of *football* does not change the basic results. When all colleges are included, an additional dollar of ticket sale revenue increases total expenditures by $0.83, an additional dollar of student fees increases total expenditures by $0.32, and an additional dollar of school funds increases total expenditures by $0.19. A school with a football team spends slightly more than $2 million more than schools without a football team.

For non-BCS schools, an additional dollar of ticket sale revenue increases total expenditures by $0.54, an additional dollar of student fees increases total revenue by $0.59, and an additional dollar of school funds increases total expenditures by $0.44. A non-BCS school with a football team spends about $1.86 million more than a non-BCS school without a football team.

With tuition and fees increasing, students, administrators, and legislators are questioning the size of athletic subsidies. The only schools that did not give a subsidy to its athletic departments in all years were Louisiana State University (LSU) and the University of Nebraska-Lincoln. The largest athletic subsidy was at the University of Nevada Las Vegas (UNLV) in 2010 ($35.876 million) and the largest athletic subsidy at a BCS or AQ school was at Rutgers University in 2011 ($29.125 million). Rutgers University had the three highest single year BCS

[15] For example, in 2012, six of the top seven basketball conferences in terms of attendance were AQ conferences (http://www.ncaa.org/wps/wcm/connect/public/NCAA/Resources/Stats/Football/Attendance/index.html). For football, the AQ conferences were the top conferences in terms of attendance and the rest of the BCS conferences had higher attendance than any of the FCS or Division II and III conferences (http://fs.ncaa.org/Docs/stats/football_records/Attendance/2012.pdf).

or AQ athletic subsidies in the data. To investigate the degree to which revenue sources act as a substitute for school subsidy revenues, (3) utilizes subsidy revenue as the dependent variable and each other disaggregated revenue variable as independent variables (Table 6).

[Insert Table 6]

The only revenue variable that is statistically significant is ticket sales, though it is not statistically significant when only non-BCS school are considered. As expected, the coefficients for ticket sales are negative and between $0.09 and $0.19, suggesting that increased ticket sales decreases the athletic subsidy. The large standard deviations of contributions and other revenue may help explain the statistical insignificance of the two coefficients. These revenue streams are not as reliable as ticket sales and so schools may not depend on them to fund their athletic programs.

When the dummy variable for football is added to the model, the basic results are similar (Table 7).

[Insert Table 7]

None of the revenue variables for non-BCS schools are statistically significant, though a non-BCS school with a football team will have a $4.45 million larger subsidy than a non-BCS school without a football team. When all colleges are considered, the coefficient for ticket sales is negative and a one dollar increase in ticket sales decreases the athletic subsidy by $0.17. A school with a football team has a $4.49 million larger subsidy than a school without a football team. The football coefficients support the notion that having a football team is expensive, thus the need for a larger athletic subsidy.

The fourth and last hypothesis this study examines is the changes in total revenue (4) and expenditures (5) when a school changes conference affiliation (Table 8).

[Insert Table 8]

These results should only be considered a first rough approximation of how a change in conference affiliation affects total revenue and expenditures because only 12 schools changed conferences in the time period examined. Of the 12 schools, only 3 BCS and 1 AQ schools changed conferences. The model is included because the number of schools that have changed conferences since 2011 has increased and most schools that change conferences cite financial reasons as their main priority. Therefore, the model gives a glimpse as to what may happen to total revenue and expenditures for schools that move conferences.

The results show that changing conferences increases total revenue *and* total expenditures, but only for BCS and AQ schools.[16] A BCS school that changes conferences increases total revenue by $6.48 million and total expenditures by $5.1 million per year. An AQ school that changes conferences increases total revenue by $12.30 million and total expenditures by $10.29 million per year. These results illustrate the financial motivation to change conferences.

V. Conclusion

NCAA athletic departments operate under a unique set of constraints and incentives. Athletic departments claim to not have a profit-seeking primary objective; athletic departments can't pay players (labor); and athletic departments dually operate in private and public markets by collecting revenues from selling tickets to private customers, donations from alumni, and subsidies from publicly-funded academic institutions.

[16] The model was also estimated with the football dummy variable, which is dropped from the AQ and BCS college groupings because of colinearity. The inclusion of football did not affect the results of the all colleges and non-BCS groupings.

This paper empirically investigates the behavior of NCAA Division I athletic departments, specifically examining the way in which athletic departments respond to changes in revenues. This paper tested four primary relationships: (1) the effect of total revenue on individual expenditure categories, (2) how individual revenue streams changes total expenditures, (3) how changes in individual revenue categories changes the size of the athletic subsidy, and (4) how total revenue and expenditures change when a school changes conference affiliation.

The empirical results show that when a school receives additional athletic revenue, expenditures for coaches are 7.5 times more than direct expenditures for athletes (in the form of scholarships) for all NCAA Division I colleges and this spread can be as high as 10 times when only automatic qualifying schools are considered. Ticket sales are the most important revenue stream in explaining increases in total expenditures, particularly for schools in Bowl Championship Series or automatic qualifying conferences. For every one dollar increase in ticket sale revenue, total expenditures can rise by as much as $0.83. Increasing revenue for ticket sales also reduces the subsidy athletic departments receive from schools, by as much as $0.19 for every additional dollar of ticket sales revenue. Lastly, the empirical results suggest that changing conferences can increase total revenue *and* total expenditures, but only for schools in Bowl Championship Series or automatic qualifying conferences.

College athletics is a major source of revenue and expenditures for most colleges and universities. As media and licensing deals become more lucrative and costs increase for schools to remain competitive, how schools financially support their athletic programs and where the money is spent will continue to be an important issue. The empirical exercise in this paper

presents a picture of the revenue and expenditure trends across the NCAA Division I college landscape.

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Table 1 Recent Facility Upgrades at Division I Universities

Team	Facility Upgrade
University of Alabama	A $9 million locker room upgrade
University of Arizona	A $378 million north end zone expansion at Arizona Stadium that will add about 7,000 seats.
University of Arkansas	A new, $35 million football operations center.
Baylor University	Building a new stadium at estimated cost of $250 million.
Boise State University	A new, $22 million football complex.
University of California - Berkeley	Completely renovating Memorial Stadium at an estimated cost of $321 million.
University of Iowa	$57 million plan to build a new practice facility and operations building.
Kansas State University	A $75 million project to upgrade west side of Bill Snyder Family Stadium.
Louisiana State University	Recently approved $100 million expansion of Tiger Stadium, bringing capacity close to 100,000 seats.
University of Louisville	Has begun fundraising for a $7.5 million, 18,000-foot addition to its football complex.
Michigan State University	Installing new $10 million scoreboard at Spartans Stadium that will be largest in the state.
Mississippi State University	$25 million football complex
University of Nebraska - Lincoln	A $63.5 million expansion of the east side of Memorial Stadium that will add about 6,000 seats
Oklahoma State University	A $16 million indoor practice facility, plus new outdoor fields that will cost $3 million.
Ohio State University	Spending $7 million for new scoreboard and improved sound system and other touches at Ohio Stadium.
University of Syracuse	Upgrading locker rooms and other team areas at a cost of $5 million.
University of Tennessee	A $45 million new football complex that will contain 145,000 square feet.
Texas Christian University	$164 million expansion and renovation to Amon G. Carter Stadium
University of Southern California	Scheduled to open the $70 million, 110,000-square foot John McKay Center this summer; complex includes locker rooms, training areas, football offices and a two-story video board.
University of Utah	Coaches are working in trailers as a new, $30 million football complex is being built.
Virginia Tech University	Has announced plans to build a $20 million indoor practice facility.
University of Washington	Work is ongoing on a $250 million renovation of Husky Stadium.
University of Wisconsin - Madison	An $86 million upgrade to locker rooms, weight training and academic areas at Camp Randall Stadium, which also got new turf.

Source: Bennet, 2012

Table 2: Effect of an additional dollar of total revenue on each expenditure category

Dependent Variables	Regressors	All Colleges	Automatic Qualifiers	BCS Conferences	Non-BCS Conferences
Scholarships	**Total Revenue (t-1)**	0.02 (0.004)***	0.01 (0.004)***	0.02 (0.004)***	0.10 (0.021)***
	F Statistic	74.95	31.78	38.17	63.11
	R-squared (within)	0.51	0.56	0.49	0.61
Coaching Staff	**Total Revenue (t-1)**	0.15 (0.021)***	0.10 (0.028)***	0.12 (0.023)***	0.10 (0.031)***
	F Statistic	51.81	38.34	40.97	29.15
	R-squared (within)	0.44	0.64	0.52	0.16
Building and Grounds	**Total Revenue (t-1)**	0.04 (0.054)	-0.005 (0.065)	0.02 (0.059)	0.06 (0.027)**
	F Statistic	5.00	2.89†	3.74	5.43
	R-squared (within)	0.05	0.08	0.06	0.11
Other Expenses	**Total Revenue (t-1)**	0.01 (0.031)	-0.02 (0.036)	-0.01 (0.032)	0.12 (0.035)***
	F Statistic	7.69	3.39	4.56	9.58
	R-squared (within)	0.04	0.06	0.05	0.15
	Number of Schools	225	54	100	125
	Number of Observations	1094	265	492	486
Notes:	The regressions cover years 2006 - 2011. The set of regressors also include school fixed effects, year fixed effects, and a constant term, which are excluded for reasons of space. Robust standard errors are in parentheses. *** = 1% and ** = 5% significance level. All F-Statistics are significant at the 1% level unless marked by †, which indicates significance at the 5% level.				

Table 3: Effect of an additional dollar of total revenue on each expenditure category, including football

Dependent Variables	Regressors	All Colleges	Non-BCS Conferences
Scholarships	**Total Revenue (t-1)**	0.02	0.09
		(0.004)***	(0.018)***
	Football	780.12	633.426
		(216.375)***	(194.371)***
	F Statistic	70.82	77.44
	R-squared (within)	0.52	0.62
Coaching Staff	**Total Revenue (t-1)**	0.15	0.08
		(0.022)***	(0.029)***
	Football	17.67	731.181
		(373.149)	(500.491)
	F Statistic	46.26	24.85
	R-squared (within)	0.44	0.17
Building and Grounds	**Total Revenue (t-1)**	0.03	0.04
		(0.054)	(0.020)**
	Football	437.15	758.029
		(585.442)	(572.076)
	F Statistic	4.55	4.55
	R-squared (within)	0.05	0.13
Other Expenses	**Total Revenue (t-1)**	0.01	0.10
		(0.031)	(0.034)***
	Football	111.48	947.415
		(309.300)	(289.335)***
	F Statistic	14.68	14.05
	R-squared (within)	0.04	0.16
	Number of Schools	225	125
	Number of Observations	1094	486
Notes:	The regressions cover years 2006 - 2011. The set of regressors also include school fixed effects, year fixed effects, and a constant term, which are excluded for reasons of space. Robust standard errors are in parentheses. *** = 1% and ** = 5% significance level. The coefficients for Football are in constant 2012 USD thousands.		

Table 4: Expenditure results

Variable	All Colleges	Automatic Qualifiers	BCS Conferences	Non-BCS Conferences
Ticket Sales (t-1)	0.83	0.45	0.63	0.54
	(0.16)***	(0.23)*	(0.17)***	(0.24)**
Student Fees (t-1)	0.36	0.98	0.15	0.66
	(0.15)**	(1.02)	(0.24)	(0.09)***
School Funds (t-1)	0.20	0.05	0.10	0.44
	(0.11)*	(0.35)	(0.16)	(0.08)***
Contributions (t-1)	0.01	0.00	0.01	0.00
	(0.040	(0.03)	(0.030	(0.09)
Other Revenue (t-1)	-0.18	-0.11	-0.17	-0.05
	(0.12)	(0.11)	(0.13)	(0.19)
Number of schools	225	54	100	125
Number of observations	1095	266	493	602
F statistic	28.57	11.87	16.59	43.83
R-squared (within)	0.31	0.36	0.32	0.56
Notes:	The dependent variable is Total Expenses. The regressions cover years 2006 -2011. The set of regressors includes school fixed effects, year fixed effects, which are exluced for reasons of space. Robust standard errors are in parentheses. *** = 1%, ** = 5%, and * = 10% significance level			

Table 5: Expenditure results, including football

Variable	All Colleges	Non-BCS Conferences
Ticket Sales (t-1)	0.83	0.54
	(0.16)***	(0.22)**
Student Fees (t-1)	0.32	0.59
	(0.15)**	(0.08)***
School Funds (t-1)	0.19	0.41
	(0.11)*	(0.08)***
Contributions (t-1)	0.01	-0.05
	(0.04)	(0.09)
Other Revenue (t-1)	-0.19	-0.08
	(0.12)	(0.19)
Football	2002.45	1863.72
	(1101.21)*	(755.33)**
Number of schools	225	125
Number of observations	1095	602
F statistic	28.77	51.4
R-squared (within)	0.31	0.57
Notes:	The dependent variable is Total Expenses. The regressions cover years 2006 -2011. The set of regressors includes school fixed effects, year fixed effects, which are exluced for reasons of space. Robust standard errors are in parentheses. *** = 1%, ** = 5%, and * = 10% significance level. The coefficients for Football are in constant 2012 USD thousands.	

Table 6: Subsidy Results

Variable	All Colleges	Automatic Qualifiers	BCS Conferences	Non-BCS Conferences
Ticket Sales (t-1)	-0.18	-0.09	-0.19	0.54
	(0.04)***	(0.05)*	(0.05)***	(0.34)
Contributions (t-1)	0.0002	-0.001	-0.0005	0.13
	(0.002)	(0.002)	(0.002)	(0.17)
Other Revenue (t-1)	-0.03	-0.05	-0.02	0.01
	(0.03)	(0.03)	(0.03)	(0.20)
Number of schools	225	54	100	125
Number of observations	1095	266	493	602
F statistic	20.88	2.5†	7.26	19.23
R-squared (within)	0.25	0.06	0.18	0.36
Notes:	The dependent variable is Subsidy. The regressions cover years 2006 -2011. The set of regressors includes school fixed effects, year fixed effects, which are exluced for reasons of space. Robust standard errors are in parentheses. *** = 1%, ** = 5%, and * = 10% significance level. All F-Statistics are significant at the 1% level unless marked by †, which indicates significance at the 5% level.			

Table 7: Subsidy results, including football

Variable	All Colleges	Non-BCS Conferences
Ticket Sales (t-1)	-0.17	0.34
	(0.04)***	(0.26)
Contributions (t-1)	0.00	-0.01
	(0.002)	(0.14)
Other Revenue (t-1)	-0.03	-0.05
	(0.03)	(0.18)
Football	4490.10	4456.87
	(1618.69)***	(1646.16)***
Number of schools	225	125
Number of observations	1095	602
F statistic	21.88	23.55
R-squared (within)	0.29	0.45
Notes:	The dependent variable is Subsidy. The regressions cover years 2006 -2011. The set of regressors includes school fixed effects, year fixed effects, which are exluced for reasons of space. Robust standard errors are in parentheses. *** = 1%, ** = 5%, and * = 10% significance level. The coefficients for Football are in constant 2012 USD thousands.	

Table 8: Change of Conference

Dependent Variables	Regressors	All Colleges	Automatic Qualifiers	BCS Conferences	Non-BCS Conferences
Change in Total Revenue	**Change in Conference**	1717.35 (1104.59)	12295.18 (2153.48)***	6476.13 (2935.79)**	126.09 (197.23)
	F Statistic	2.20††	13.72	2.50†	3.74†
	R-squared (within)	0.01	0.05	0.03	0.03
Change in Total Expenditure	**Change in Conference**	1347.03 (988.05)	10285.35 (1319.55)***	5109.69 (2718.24)*	71.46 (197.20)
	F Statistic	6.31	27.64	4.91	4.46
	R-squared (within)	0.02	0.05	0.03	0.07
	Number of Schools	225	55	100	125
	Number of Observations	1094	246	492	602
Notes:	The regressions cover years 2006 - 2011. The set of regressors also include school fixed effects, year fixed effects, and a constant term, which are excluded for reasons of space. Robust standard errors are in parentheses. *** = 1% and ** = 5% significance level. All F-Statistics are significant at the 1% level unless marked by †, which indicates significance at the 5% level or ††, which indicates significance at the 10% level.				

Appendix 1

Table 9: Variable Description and Sources

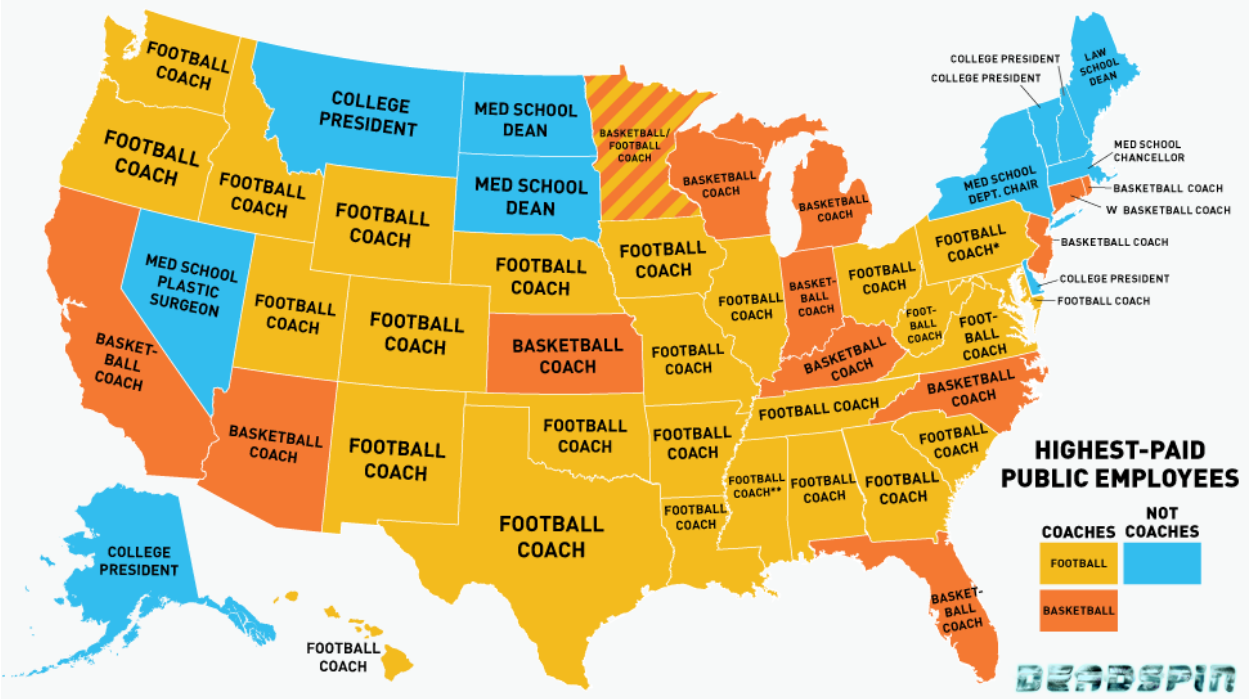
Variable	Description	Source
Ticket Sales	Includes ticket sales to the public, faculty and students, and money received for shipping and handling of tickets. Does not include amounts in excess of face value (such as preferential seating) or sales for conference and national tournaments that are pass-through transactions.	USA TODAY public-records requests to each university
Student Fees	Fees assessed to support athletics.	USA TODAY public-records requests to each university
School Funds	Includes both direct and indirect support from the university, including state funds, tuition, tuition waivers etc. as well as federal Work Study amounts for athletes. It also includes university-provided support such as administrative costs, facilities and grounds maintenance, security, risk management, utilities, depreciation and debt service.	USA TODAY public-records requests to each university
Contributions	Includes amounts received directly from individuals, corporations, associations, foundations, clubs or other organizations by the donor for the operation of the athletics program. Report amounts paid in excess of a ticket's value. Contributions include cash, marketable securities and in-kind contributions such as dealer-provided cars, apparel and drink products for team and staff use. Also includes revenue from preferential seating.	USA TODAY public-records requests to each university
Rights and Licensing	Includes revenue for athletics from radio and television broadcasts, Internet and ecommerce rights received from institution-negotiated contracts, the NCAA and conference revenue sharing arrangements; ; and revenue from corporate sponsorships, licensing, sales of advertisements, trademarks and royalties. Includes the value of in-kind products and services provided as part of the sponsorship (e.g., equipment, apparel, soft drinks, water and isotonic products).	USA TODAY public-records requests to each university
Other Revenue	All other sources of revenue including game guarantees, support from third-parties guaranteed by the school such as TV income, housing allowances, camp income, etc.; tournament/bowl game revenues from conferences; endowments and investments; revenue from game programs, novelties, food or other concessions; and parking revenues and other sources.	USA TODAY public-records requests to each university
Total Revenue	Includes Ticket Sales, Student Fees, School Funds, Contributions, Rights and Licensing, and Other Revenue.	USA TODAY public-records requests to each university
Scholarships	Athletically-related student aid, including summer school and tuition discounts and waivers (including aid given to student-athletes who have exhausted their eligibility or who are inactive due to medical reasons), and aid for non-athletes such as student managers.	USA TODAY public-records requests to each university
Coaching Staff	All salaries, bonuses and benefits reported on the university's tax forms for coaches and staff, as well as third-party contributions.	USA TODAY public-records requests to each university
Building and Grounds	Facilities costs charged to the athletics program, including debt service, maintenance, utilities and rental fees.	USA TODAY public-records requests to each university
Other Expenses	Includes guarantees paid to other schools, severance payments to past coaches and staff, recruiting, team travel, equipment and uniforms, game day and camp expenses, fundraising and marketing costs, spirit group support, medical expense/insurance and conference dues. It also includes expenses charged to athletics by the university, such as building maintenance.	USA TODAY public-records requests to each university
Total Expenses	Includes Scholarhips, Coaching Staff, Building and Grounds, and Total Expenses.	USA TODAY public-records requests to each university
Subsidy	Student Fees plus School Funds	USA TODAY public-records requests to each university
DConference	Binary dummy variable where DConference = 1 represents a school that has changed conference affilitation and DConference = 0 represents a school that has not changed conference affiliation.	Individual school websites
Football	Binary dummy variable where Football = 1 represents a school with a football program and Football = 0 represents a school without a football program.	Individual school websites
Notes:	Data from USA Today was compiled by Christopher Schnaars, Jodi Upton, Jerry Mosemak and Kristin DeRamus. Reporting by Steve Berkowitz, Erin Durkin and Jodi Upton of USA TODAY; and Jason Bailey, Timothy Burnsed, Andrew Crum, Erin Foley, Yasha Ghamarian, Erin Glueckert, Thomas Hotchkiss, Zachary Keefer, Younghwan Lim, Eduardo Martinez, Amy Mills, Romy Schwaiger and Joshua Weinfuss of Indiana University's National Sports Journalism Center. The USA Today data is publicly available here: http://usatoday30.usatoday.com/sports/college/story/2012-05-14/ncaa-college-athletics-finances-database/54955804/1	

Table 10: Summary Statistics

Variable	Mean	Std. Dev.	Minimum	Maximum	Observations
Ticket Sales	5737.757	9596.228	0.5896	62463.13	1326
Student Fees	3838.907	4092.905	0	26377.22	1326
School Funds	4962.781	4546.905	0	33467.59	1326
Contributions	5470.987	10794.68	0	240325.6	1326
Rights and Licensing	6753.376	10138.42	0	47712.88	1326
Other Revenue	2185.991	2795.191	-15874.57	35948	1326
Total Revenue	28950.38	28676.48	2259.023	274880.6	1326
Scholarships	4675.963	2794.828	0	16661.02	1326
Coaching Staff	9358.433	8728.737	0	50944.74	1326
Buildings and Grounds	3431.088	5985.007	0	44191.15	1326
Other Expenses	10336.53	9960.958	0	69577.75	1326
Total Expenses	27820.79	25967.34	2731.44	137338.3	1326
Subsidy	8801.688	5376.117	0	35876.32	1326
Dconference	0.011	0.1058	1	1	1326
Football	0.8137	0.3894	0	1	1326

Note: Revenue and Expenditure categories, including Subsidy, are in constant 2012 USD (in thousands).

Figure 1: Highest Paid Public Employee By State (2011-2012)



Source: Reuben Fischer-Baum of Deadspin.com (http://deadspin.com/infographic-is-your-states-highest-paid-employee-a-co-489635228)
* In Pennsylvania, Penn State, the University of Pittsburgh, and Temple University are "state-related" schools and do not have the same disclosure requirements as public schools.
** As noted by Mr. Fischer-Baum, "It's difficult to track down salary information for employees at Ole Miss and Mississippi State, but the highest non-coach salaries we could find top out at around $500,000. While we can't prove that nobody [sic] at these schools earns more than Dan Mullen's [Mississippi State's football coach] $2.65 million per year, we think it's very unlikely."

The data in the map were compiled by comparing public government and university salary databases to public coaching contracts on a state-by-state basis. In an email correspondence, Mr. Fischer-Baum confirmed that the details of many of the contracts could only be gleaned from "trusted media reports" and that the "results of this map were independently fact-checked by Harper's Magazine for use in their July Harper's Index." Given these caveats, this figure should only be used anecdotally.

Figure 2: Total Athletic Revenue and Coaching Staff Expenditures, 2006 – 2011