Diverging Revenues, Cascading Expenditures, and Ensuing Subsidies: The Unbalanced and Growing Financial Strain of Intercollegiate Athletics on Universities and their Students

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Abstract

We present a three-part conceptual model that illuminates key dynamics promoting financial unsustainability within intercollegiate athletics. *Revenue divergence* comprises the first part as the influx of commercial athletic revenues primarily benefits a small set of universities housing prominent athletic programs. These schools then increase athletic expenditures, which promotes *expenditures cascades* as their spending spurs expenditure growth at other athletic programs. Because external revenues do not increase alongside expenditures at these other programs, *subsidies ensue* as student fees and institutional subsidies are increased to fill growing deficits. These increases, however, will be difficult to sustain in an era of tight academic budgets and rising student debt. We describe each part of the model using a range of organizational theories and use financial data from intercollegiate athletic programs to demonstrate that the patterns predicted by our framework are supported empirically.

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"I think when we make it, we have a right to spend it. That's the way America is."
--- Mack Brown, University of Texas head football coach.

"We eat what we kill"
--- Ed Goble, Chief Financial Officer, University of Texas Athletic Department.

"At Texas, it may be sustainable. But think about the schools that are desperately struggling to stay in the game and are dramatically increasing the university's subsidy of intercollegiate athletics and aren't succeeding in improving their financial position. Texas, in a certain sense, elevates the stakes of the game so that schools … are further motivated to make financial commitments to try to catch up."
--- Peter Likins, Former President, University of Arizona

Multiple reports have raised concerns about problematic financial trends within the highest level of competition in intercollegiate athletics (Knight Commission, 2010; Presidential Task Force, 2006). The nature of the financial challenges within high-level athletics is complicated because the intercollegiate athletics system is extremely diverse, much like the U.S. higher education system more generally. Some athletic programs acquire revenues from external sources in excess of $100 million, take fewer dollars from student fees or institutional subsidies, have extremely large and devoted fan bases, and receive heavy coverage by national media sources. Other programs obtain revenues from external sources that fall below $10 million, rely primarily on funding from student fees and institutional subsidies, have dramatically smaller fan bases, and receive more limited attention from the national media. Other athletic programs lie somewhere between these two extremes. Because athletic programs compete on the playing field, compete for coaches and administrators, and compete for student-athletes, they are bound together within a complex system. In this article, we seek to highlight important dynamics underling that system by presenting the following three-step framework:

1. **Diverging Revenues**: A small set of leading athletics programs increasingly generates high levels of revenue from external sources.

2. **Cascading Expenditures**: Athletic expenditures at leading athletic programs increase when the externally generated athletic revenues at these programs increase. These increased expenditures among elite programs subsequently lead other programs to increase their expenditures.
3. **Ensuing Subsidies**: Increased spending at non-elite athletic programs occurs without simultaneous growth in external revenues, which leads to increased institutional subsidies or student fees for athletics.

We describe each of these processes and use financial data from intercollegiate athletic programs to demonstrate that the patterns predicted by our theoretical framework were present in recent years. A major question underlying our model is the sustainability of the intercollegiate athletics system, as the subsidies required to support less prominent athletic programs are large and growing. As we reveal in this paper, student fees and institutional subsidies can sometimes exceed $1,000 per student. If these subsidies continue to grow and/or the financial situations of these institutions and their students deteriorate, substantial resistance to these subsidies may build.

As a backdrop for this dilemma, credit ratings agencies predict difficult financial times in the future for most colleges and universities (Kiley, 2013). Escalating budgetary challenges within state and federal governments are likely to lead to reduced governmental support for higher education (Kane et. al, 2003; State Budget Crisis Task Force, 2012). Colleges and universities are consequently seeking new revenue sources to replace declining public funding, but the currently available sources are unlikely to replace lost governmental dollars (Cheslock & Gianneschi, 2008). Historically, institutions have relied on heightened tuition and fee revenues to balance budgets, but past increases in these revenue streams may have led many institutions to

approach their price ceilings. At these schools, further tuition increases could "price out" qualified students which could more than offset the increased revenue collected from the remaining students Cost pressures may increase concurrently with these declining revenues, acting to complicate this conundrum even further. Because higher education is a personnel-services industry that relies heavily on highly educated skilled labor and cannot easily reduce costs through technological progress, costs historically rise faster in higher education than in other industries (Archibald & Feldman, 2011).

In such a fiscal environment, substantial levels of student fees and institutional subsidies will be harder to maintain. Our three-step framework provides a new perspective on the dynamics promoting increases in athletic subsidies over time and illuminates the driving forces behind those increases. As we demonstrate in the concluding sections of this paper, our model clearly and concisely frames the challenges that policymakers and university leaders face and the alternative policies that they might consider. We also posit that our three-step model could be applied to other organizations that similarly are linked across a system, such as higher education institutions in general.

Our Approach: Theory, Data, and Methods

Albert Einstein noted, "Everything should be made as simple as possible but no simpler." In accordance with this perspective, we purposefully distilled our core ideas into three basic concepts: diverging revenues, cascading expenditure, and ensuing subsidies. The core elements of this article are organized around these three steps, with the supporting empirical findings for each step presented alongside theoretical explanations.

We drew financial data from the *USA Today* NCAA athletics database, which contains publicly available data from NCAA financial reports for nearly all public Football Bowl Subdivision (FBS) athletics programs for the 2005-2011 fiscal years.[1] The sample is comprised of the 95 FBS institutions that reported sufficient data for the examined variables during the period of study. All figures were adjusted to fiscal year 2011 dollars using the consumer price index (CPI). Because an important aspect of our theoretical framework considers institutional subsidies provided to athletics programs, we calculated a "subsidy" variable comprised of the sum of the following revenue subcategories: student fees, direct state/governmental support, direct institutional support, and indirect facilities/administrative support. We refer to the sum of the remaining revenue categories as "external revenues," as they represent dollars the athletic program generated from external sources through ticket sales, television contracts, or other transactions.

Though this dataset is fairly comprehensive in scope, it contains imperfections. In cases where individual revenue/expenditure categories did not sum to the total reported revenue/expenditures for a year, we contacted institutions directly to correct for the discrepancy. These errors were typically caused by improper data entry and were easy to address. We were unable to adjust for other imperfections, such as accounting irregularities across institutions that have been identified in previous work (Clotfelter, 2011; Weisbrod et al., 2008; Zimbalist, 1999). Because we primarily study basic relationships of considerable strength in this paper, measurement error is unlikely to obscure the examined relationships.

[1] The analysis in this article focuses on FBS athletic program, which differ dramatically in financial scale from the approximately 2,000 other athletic programs in the nation. The other programs are primarily located in the National Junior College Athletics Association, the National Association of Intercollegiate Athletics, or other divisions of the NCAA.,

One differential accounting issue is noteworthy. Some institutions sell tickets directly to students and consider these proceeds to be ticket revenue, but other institutions charge higher student fees and allow students to attend games without further charge. The data used in this study do not allow us to correct for this somewhat arbitrary difference. We consider the former payments as revenues generated by the athletic program and the latter payments as subsidies provided by the student body. Our analysis will consequently be especially relevant for students who have no interest in attending a sporting event but are required to pay athletic fees.

These financial data are supplemented with data from several other sources used to characterize athletics programs and institutions of higher education, including the following:

- **Institutional enrollments**: Full-time equivalent enrollment data based on 12-month instructional activity were obtained from the Integrated Postsecondary Educational Data System (IPEDS)[2].
- **Conference and Divisional Affiliations:** Data were readily available and corroborated from a number of sources, including the Equity in Athletics Disclosure Act (EADA) dataset[3], the NCAA[4], and end-of-season standings published by ESPN[5].
- **Current Athletics Success Measures**: A number of measures were used to gauge the success of an athletic program. These include Sagarin Indices for both basketball and football[6], the ratings percentage index (RPI) for basketball[7], NCAA tournament appearance for basketball[8], football winning percentages for multiple seasons[9], season-

[2] http://nces.ed.gov/ipeds/datacenter/
[3] http://ope.ed.gov/athletics/
[4] http://www.ncaa.com/standings/football/fbs; http://www.ncaa.com/standings/basketball-men/d1
[5] http://espn.go.com/college-football/standings; http://espn.go.com/mens-college-basketball/standings
[6] http://usatoday30.usatoday.com/sports/sagarin/fbt10.htm; http://usatoday30.usatoday.com/sports/sagarin/bkt1011.htm
[7] http://espn.go.com/mens-college-basketball/rpi
[8] http://www.cbssports.com/collegebasketball/ncaa-tournament/history
[9] http://espn.go.com/college-football/standings

ending BCS rankings for football[10], per game season attendance totals for football[11], and final overall score in the Director's Cup[12]. These data were obtained from a variety of sources, including the *USA Today*, ESPN, CBS Sports, the National Association of Collegiate Directors of Athletics, and the NCAA websites.

- **Historical Athletics Success Measure:** Historical success of football programs, the traditional cornerstone of an athletic department's budget, was based on a program's total number of wins over time[13]. Programs in the top-40 all-time were considered to be the most successful historically.
- **Institutional Success Measures:** Two measures were used to indicate the overall success or prestige of an institution: 1) membership in the Association of American Universities (AAU)[14], and 2) *US News and World Report* ranking[15].

We describe the financial situation within the intercollegiate system using a variety of statistical tools. We employ basic descriptive statistics, correlations, inequality indices, and mobility indices. Graphical depictions of the data—that thoroughly describe the distribution of revenues, expenditures, and subsidies across higher education institutions—are also utilized (Cleveland, 1993, 1994).

Empirically Supported Three-Step Framework

In the sections that follow, we present our three-step conceptual framework. We describe the processes underlying each step and often rely upon academic theories to illuminate and

[10] http://espn.go.com/college-football/bcs/_/year/2013
[11] http://www.ncaa.org/championships/statistics/ncaa-football-attendance
[12] http://www.nacda.com/directorscup/nacda-directorscup-previous-scoring.html
[13] http://fs.ncaa.org/Docs/stats/football_records/2012/fbs.pdf
[14] http://www.aau.edu/about/article.aspx?id=5476
[15] http://colleges.usnews.rankingsandreviews.com/best-colleges

explain specific points. We also present empirical evidence regarding the propositions underlying each step.

Step #1: Diverging Revenues

Derek Bok (2003) noted the rapid growth of revenue-increasing opportunities for higher education institutions that were created by the rise of the knowledge-based economy. Financial opportunities were also increasing within intercollegiate athletics, although a different set of forces were driving revenue growth. For example, television became an important revenue source over time, especially as cable television expanded and the country grew more affluent (Clotfelter, 2011). Elite athletic programs gained the most from the rise of television because their games were disproportionately broadcast, which gave them an unequal share of the revenue and visibility associated with national television coverage (Dunnavent, 2004, pp. 64-66). The benefits grew more unequal after a 1984 Supreme Court decision that prevented the NCAA from limiting the number of games on television and allowed individual schools or associations of schools to negotiate directly with television networks. Elite athletic conferences were for the first time permitted to retain the revenues associated with their television appearances, and they were able to increase these revenues drastically over time. All institutions shared approximately $50 million per year in the mid-1980s; by 2011; the total annual revenue from television contracts had risen to over $1 billion (Peloquin, 2011; Zimbalist, 1999, p. 101).

The growing affluence within the United States, especially among the wealthiest members of society, in combination with new revenue-generating strategies employed by athletic programs, also led to major revenue gains. Premium seats at sporting events were increasingly provided only to those individuals who donated large sums of money to the athletic program. Especially passionate fans were given the opportunity to donate even more money to receive

invitations to banquets and receptions, public recognition in athletic program materials, premier parking for athletic events, and special access to coaches and players, among other incentives (Clotfelter, 2011).

As Figure 1 demonstrates, the revenues that flooded into athletics from external sources have not been evenly distributed across all programs. In both 2005 and 2011, vast differences exist, as the leading FBS athletic programs generated well over $100 million dollars, while those at the bottom of the hierarchy generated less than $10 million. The gap increased over our period of record, as programs at the very top experienced a revenue growth of approximately $30 million, while external revenue totals at programs near the bottom remained fairly stable.

This high level of revenue inequality within intercollegiate athletics is not surprising because the system possesses many of the core features of a winner-take-all market described by Frank and Cook (1995). Payoffs are determined by relative performance; when an athletic team wins regularly by outperforming their opponents on the playing field, their fan base grows, which allows the athletic program to generate more money from ticket sales, donations, and other items. Small differences in talent and effort across institutions coincide with large differences in rewards, with the highest rewards concentrated among a small number of programs.

Frank and Cook (1995) note that self-reinforcing processes (i.e. positive feedback loops) are important elements of many winner-take-all markets, and we believe these types of feedback loops are central to the case of intercollegiate athletics. These processes, illustrated in Figure 2, promote revenue divergence. Major fan interest and related revenue sources play central roles, as large and passionate fan bases allow athletic programs to negotiate more lucrative television packages and charge higher prices for tickets and merchandise, while selling larger quantities of

both. The resulting revenue allows a subset of athletic programs to build superior facilities and hire coaches at high salaries. In turn, those facilities and coaches, coinciding with the attractiveness of playing for a winning team, help the program recruit top athletes. Completing the feedback loop, top coaches and recruits are then likely to succeed on the playing field, which continues to build the history of winning within the program and further solidifies the fan base.

These positive feedback loops should allow most of the institutions at the top of the revenue distribution to remain there over time. Such consistency occurred between 2005 and 2011. Of the programs residing in the top 10 percentiles of external revenue in 2005, 67% were still in the top 10 percentiles in 2011. Considering the top 20 percentiles, there was a 79% overlap between 2005 and 2011. The positive feedback loop logic also predicts that high-revenue programs possessed strong fan bases and experienced on-field success during this period and in previous periods. Several different measures of athletic success for basketball, football, and the entire athletic program exhibited a moderate to high correlation with total external revenue for an athletic program (see Table 1). Stark differences were apparent in mean external revenue between teams participating in the NCAA tournament or ranked in the final BCS standings compared to those who were not as successful. This pattern also was evident historically, as external athletic revenues at programs containing the top-40 winningest football teams were more than twice as high as external revenues at other programs. Moreover, the total external revenue gap between those in the top-40 and the other programs in the sample has widened over our 7-year period of record, which suggests the value of initial advantage may be strengthening over time.

The lack of institutional mobility within the distribution of external revenue partially occurs because elite programs can maintain their revenue advantages even during occasional

periods of subpar performance. Historical success and the long-term nature of facility investments allow elite programs to weather these storms, as supported by previous research on athletics. The literature distinguishes between "die hard" and "fair weather" fans and notes that die hard fans support their teams even during periods of poor performance (Clotfelter, 2011; Fink, Trail & Anderson, 2002; Wann & Branscombe, 1990). To build a fan base of "die hards," organizational identity and status must be high, which can be achieved through a rich history of success (Robinson, Trail, Dick & Gillentine, 2005; Wann & Branscombe, 1990). For football during our period of study, we examined the relationship between winning and per-game attendance, a proxy for fan interest. The average correlation between football attendance and football winning percentages at BCS-conference schools was .16, while it was .35 at non-BCS schools. Football programs that are in the top-40 all-time exhibited an average correlation coefficient of .05 compared to .31 for all other programs. This finding demonstrates that a tradition of success on the field leads to more stable fan attendance, regardless of the team's short-term performance.

In addition to limiting access to various revenue sources, the positive feedback-loop phenomena makes it difficult for programs to move up the hierarchy of intercollegiate athletics. Without substantial amounts of revenue, large fan bases, and existing facilities, a program faces huge challenges that impede success on the playing field against elite programs. Short-term success caused by a recruit overlooked by elite institutions or an emerging coach is difficult to maintain; only a few institutions, such as Gonzaga in men's basketball and Boise State in football, have been able to succeed in this manner. Very few institutions in major athletic conferences have been able to jumpstart a positive feedback loop through the infusion of major amounts of external revenue from a specific donor. Oklahoma State and Oregon, who received

gifts in the hundreds of millions of dollars from T. Boone Pickens and Phil Knight, are rare exceptions to the immobility rule.

An institution's conference affiliation plays a major role in determining its current revenue levels and its ability to increase revenue in the future, primarily because television and postseason revenues are typically shared among conference members. To explore between- and within-conference external revenue inequality, we use the Thiel index, which can decompose overall inequality into between-group and within-group shares (Cowell, 1995). The results in Table 2 demonstrate that external revenue inequality grew between 2005 and 2011, which is consistent with what we observed in Figure 1. Between-conference inequality accounted for the vast majority of inequality in both years and accounted for the entire increase in inequality observed during our period of study. The important role played by conference affiliation explains the intense effort expended by many universities to gain acceptance into the high-revenue athletic conferences. Table 3 describes between-conference inequality by reporting the average external revenue separately for each conference. Conference averages ranged from $5 million to $68 million in 2005, and that gap widened over our period of record. The top three conferences saw revenue gains of approximately $20 million per school, while average revenues only increased by $1 to $5 million among the bottom five conferences.

In summary, we have proposed in this **Diverging Revenues** step that a small set of leading athletics programs increasingly generates high levels of revenue from external sources. The presented empirical evidence revealed such revenue divergence. As the next step illustrates, the increases in external revenue at leading athletic programs allow them to increase spending on athletics without relying on institutional funds.

Step #2: Cascading Expenditures

This second step contains two elements. First, athletic expenditures at leading athletic programs increase when the externally generated athletic revenues at these programs increase. Second, these increased expenditures among elite programs subsequently lead other programs to increase their expenditures. Thus, expenditures cascade from high-revenue programs to lower-revenue programs.

These propositions are supported by our empirical evidence. Figure 3A presents lowess (locally weighted regression) curves for the scatter plot for externally generated revenues in 2005, Figure 3B does the same for expenditures, and Figure 3C reproduces the lowess curves for externally generated revenues and expenditures. Figure 4 displays similar findings for the changes in revenues and expenditures between 2005 and 2011. Athletic expenditures appear to increase alongside externally generated athletic revenues at leading athletic programs. Figure 3C demonstrates that high-revenue athletic programs spend nearly all of the revenue they generate in a given year, and Figure 4C highlights how expenditures at high-revenue athletic programs increase over time alongside externally generated revenues. The evidence for low-revenue programs also aligns with our cascading expenditure argument. Although expenditure increases at low-revenue athletic programs do not equal the spending growth occurring at high-revenue athletic programs, expenditures still increase by a meaningful amount at less-elite programs (see Figure 4). Expenditure growth outpaces revenue growth at these programs so that athletics deficits, which have to be covered by subsidies, increase, as explained by Step #3 of our framework. The sections that follow draw on contemporary examples and academic theories to further examine the propositions underlying the cascading expenditures portion of our model.

Expenditures at Elite Athletic Programs

When elite athletic programs successfully increase external revenues, are these new dollars spent on athletics or on other university activities? Because the marginal benefit from increased expenditures on athletics is not necessarily greater than the marginal benefit associated with other activities, we might expect the university to redirect these dollars to non-athletic pursuits. Moreover, a university may seek to avoid treating their elite athletic program as a self-contained financial unit, where the athletic program is allowed to retain and spend any increases in externally generated athletics revenue. Athletic programs that "own" their revenue have an incentive to spend it even if that spending is wasteful (Weisbrod, Ballou, and Asch, 2008, p. 243). Although these arguments are compelling, they do not account for dynamics pertaining to the competition across elite athletic programs and the decision-making processes within universities. These dynamics cause universities housing elite athletic programs to increase athletic expenditures when externally generated athletic revenues increase.

Economists note that positional arms races can occur when rewards depend upon rank. Such rank-based competition is central to intercollegiate athletics, as success of an athletic team is based on its position relative to other teams: Did you have a winning record? Were you ranked first in your conference? Were you one of the select number of teams invited to the NCAA tournament? Were you one of the tournament's final four teams? When competition is based by rank, arms races can ensue in which each athletic program seeks to gain an advantage by spending more than other programs on coaching salaries, athletic facilities, and other items deemed to promote athletic success. If all schools similarly increase spending, however, no advantage is gained for any one school.

Externally generated athletic revenues provide the fuel for such spending competitions among elite academic programs. Consider the three universities in our sample that spent the

most on athletics in 2011: Texas, Ohio State, and Michigan. These three schools each spent over $110 million on athletics in 2011, currently pay their head football coaches above $4 million per year, and possess some of the most expensive and luxurious athletic facilities. Almost 100% of the revenue supporting these three athletic programs comes from external sources, as these three programs received the highest level of external revenues and some of the lowest levels of subsidies. Although a school could theoretically seek to outspend Texas, Ohio State, and Michigan by heavily subsidizing its athletic program, such a practice would be difficult to sustain, as the resulting student fees and institutional subsidies would likely provoke considerable unrest among faculty and students in an era when salaries and facilities within elite athletic programs are far superior to those in most academic units. Athletics and university leaders can more easily defend high athletic spending when little or no subsidies are provided. The memorable phrase noted at the beginning of this article, "We eat what we kill," was employed to deflect critiques of high levels of athletic spending at Texas (Dexheimer, 2007, para. 6).

If externally generated revenues only increased at one of the institutions at the top of the expenditure hierarchy, then that institution could use these newfound athletic revenues to increase academic spending while maintaining their athletic program's competitive advantage. No arms race would then ensue. Increases in external revenue, however, are likely to occur along similar timelines at leading athletic programs. Elite programs who reside in the same conference experience revenue increases simultaneously for revenues shared within the conferences, such as television dollars. Although trends in shared conference revenues will be not be identical for elite programs in different conferences, the elite conferences experience television revenue increases along roughly similar timelines (Fort, 2010, p. 8, Peloquin, 2011). Elite athletic

programs will also likely experience increases along similar timelines for non-shared revenues, as they leverage emerging revenue-generating opportunities.

If external athletic revenues increase at a number of leading programs, an arms race would not ensue if most or all of these universities use newfound revenues to boost spending in areas besides athletics. These universities could choose to forego opportunities to gain a competitive advantage within athletics (if other schools do not increase athletics spending) or choose to accept a competitive disadvantage (if other schools increase athletics spending). A recent survey of college presidents, however, highlighted challenges faced by college presidents seeking to implement such choices (Art & Science Group, 2009). Three-quarters of FBS presidents agreed that athletics presents unique challenges as compared to other parts of the university when seeking to control costs. Furthermore, presidents reported a limited power to effect change on their own campuses. As one president observed, "The real power doesn't lie with the presidents; presidents have lost their jobs over athletics. Presidents and chancellors are afraid to rock the boat with boards, benefactors, and political supporters who want to win, so they turn their focus elsewhere" (Art & Science Group, 2009, p. 16).

The dynamics described by university presidents match those highlighted in resource dependency theory, which outlines how an organization can be influenced by those who provide critical resources (Pfeffer & Salancik, 1978). As government funding has not kept pace with university costs, fundraising has become an increasingly important part of the financial strategy supporting universities (Cheslock & Gianneschi, 2008). Many potential large donors are passionate fans of the university sports teams, and Clotfelter (2011) outlines how presidents use access to athletic events to strengthen relationships with potential donors. Resource dependency theory suggests that this passion for athletics can be a double-edged sword, as donors may

pressure university leaders to support policies that increase the chances of competitive success within athletics, such as allowing athletic programs to spend all of their externally generated revenue. Another quote from a university president succinctly describes these pressures: "Presidents are also expected to raise a lot of money from the private sector and they are trying not to alienate their major donors. Even if major athletic donors are not giving to the rest of the university, they can make your life miserable" (Art & Science Group, 2009, p. 16).

Because governmental policies and funding levels are also critical to university leaders, similar logic could be employed to describe the potential influence of key lawmakers that strongly desire competitive success within athletics. Members of the board of trustees with similar preferences can also shape athletic spending decisions through their influence over presidential hiring, retention, and compensation. These pressures could cause a president wishing to redirect newfound athletic revenues to academic areas to act otherwise. Furthermore, many presidents might not even wish to redirect athletic revenues, especially if other leading athletic programs are increasing their spending. The recent presidential survey revealed that large majorities of FBS presidents believe that athletics success enhances school spirit (97%), helps to gain national publicity and media attention (94%), raises the profile of their institution among elected officials (93%), provides opportunities for socio-economically disadvantaged students (86%), attracts greater numbers of prospective students (82%), generates higher levels of giving for uses outside of athletics (72%), improves the overall reputation of the institution among university presidents (69%), and attracts higher quality students (69%) (Art & Science Group, 2009, p.42). [16] Presidents might not wish to risk these perceived benefits by choosing not

[16] Anderson (2012), Clotfelter (2011), Frank (2004), Lifschitz et al. (2011), and Toma (2005) examine some of the potential benefits – such as increased student applications and enrollments, improved fundraising and public relations, increased institutional status, and enhanced campus spirit – that accrue to college and universities from

to use newfound external athletic revenues to match the athletic spending increases that occur at competing universities.

We have sought to establish the pressures that encourage athletic programs to spend newfound external athletic revenues on salaries, facilities, and other items that promote athletic success. These pressures are important because they can cause an arms race to ensue among elite athletic programs that similarly experience increases in external athletic revenues over time. In such an arms race, no school gains a competitive advantage among the elite athletics programs, but all schools forego the opportunity to use some of these revenues to advance academics or other activities at the university.

Expenditures at Other Athletic Programs

When elite athletic programs increase expenditures after their external athletic revenues increase, will that lead other athletic programs to increase athletic expenditures as well? In other words, do expenditures cascade from high-revenue programs to low-revenue programs? Expenditures cascades could occur in a variety of settings. Expenditures could cascade from elite athletic programs in major conferences (e.g. Florida, Texas, Ohio State) to programs in those major conferences with substantially lower-revenues (e.g. Mississippi, Iowa State, Purdue). They can also cascade from programs in major conferences to programs in lower revenue conferences (e.g. San Jose State, Arkansas State, Ball State). The external revenue inequality within-conferences and between-conferences is quite complex so expenditure cascades likely flow down multiple revenue tiers rather than between two basic groups.[17]

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participating in major athletics. Presidential opinions, however, appear to be formed more by personal experience than by the academic literature (Art & Science Group, 2009, pp. 45-46).

[17] The revenue figures by conference presented in Table 3 reveal multiple differences across conferences. Similar complexity occurs within conferences. In 2011, the Big Ten conference contained a range of external revenue figures, including $132 million (Ohio State), $89 million (Wisconsin), and $55 million (Purdue). The Big 12 conference, which doesn't employ as much revenue sharing, revealed even more degrees of inequality by containing

Much of the competition for coaches and student-athletes likely occurs within revenue tiers, but competition can also occur across tiers. Coaches and athletic administrators may choose a senior position at a program within lower-revenue tiers over a junior position at a program within higher-revenue tiers. Coaches and administrators also may select a position at a lower-revenue program over an identical position at a higher-revenue program because of non-financial considerations, such as geographical preferences or institutional loyalty. Similarly, student-athletes may choose a lower-revenue program close to home over a higher-revenue program that would leave them far from family and friends. In these scenarios, a lower-revenue program can successfully win these competitions for personnel, but only if the gap between the lower- and higher-revenue programs' salaries, facilities, and other factors is not too large. Consequently, lower-revenue programs have an incentive to increase athletics spending in response to spending increases at higher-revenue programs to ensure the gap does not grow too greatly.

Lower-revenue programs face a more daunting choice than elite programs when considering spending increases. Unless new donors step forward, this spending increase will require increased student fees and/or institutional subsidies, which could increase student debt and/or weaken the academic portion of the university. Despite such costs, university leaders with lower-revenue athletic programs still may choose to increase athletic spending for a range of reasons.

Many of the dynamics encouraging increased spending for lower-revenue programs are similar to those discussed above for elite programs, although less intense. Donors, politicians, and board members who are fervent fans may pressure university leaders to recruit or retain

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figures of $150 million (Texas), $104 million (Oklahoma), $76 million (Oklahoma State), and $45 million (Iowa State).

desired coaching and administrative personnel and make enhancements that keep the university competitive when recruiting student-athletes. Even without pressure, university leaders may believe that high-level athletic participation and success provide considerable benefits to the institution in the multiple areas noted earlier in the paper and consequently view greater athletics spending as a sound investment.

Plans for greater athletic success could be part of a larger strategic plan for the university to enhance its prestige and reputation. Because most academically prestigious public universities have successful high-expenditure athletic programs, university leaders may believe that athletic prominence is an important component of university advancement.[18] For our sample in 2011, the average athletics expenditures for AAU member institutions, a prestigious subset of research universities, were $73.7 million compared to $42.2 million at non-AAU institutions. For that same year, average expenditures for institutions that were ranked by the *US News and World Report* were $74.8 million compared to an average of $40.2 million for unranked institutions. As shown in Table 4, institutions that are considered more academically prestigious also exhibit advantages over other institutions on a variety of athletic success measures, ranging from basketball to football to an entire athletic program.

The positive feedback loops described earlier in Figure 2 suggest that plans for greater athletic success by programs without a history of success are unlikely to succeed. Rational analysis may consequently lead board members, presidents, and other university leaders not to expect increased levels of success in the future, but Frank (2004) suggests that several psychological processes may cause university administrators to overestimate the likelihood of

[18] University leaders employing such logic would be consistent with the mimetic isomorphic processes described in new institutional theory. Mimetic isomorphism occurs when organizations are unsure about the best way to proceed; they navigate uncertainty by modeling themselves after organizations perceived to be more legitimate or successful (DiMaggio & Powell, 1983). Such uncertainty arises regularly for organizations—like higher education institutions—that have ambiguous goals and are unclear about the best way to achieve those goals.

competitive success for any given level of financial investment. For example, optimism regarding athletic success could be driven by the human tendency to contemplate familiar and vivid cases, such as elite athletic programs and surprising cases of athletic success, when retrieving events from memory (Frank, 2004; Tversky, & Kahneman, 1974).

University leaders do not need to overestimate the probability of future success to choose to continue increasing athletic spending over time. Leaders may view the existing benefits associated with participation in high-level athletic competition as substantial and believe that greater spending to maintain their current position to be a sound investment. Alternatively, university leaders may grow concerned with the cost-benefit calculations associated with greater athletics spending but find it more personally advantageous to continue to increase spending while hoping for different, improved future returns rather than admitting past mistakes publicly. Leaders may also find it difficult to shift strategies within a large organization comprised of multiple stakeholders and considerable inertia (Staw & Ross, 1989).

To this point, we have focused on how spending at elite athletic programs can influence spending at other programs through direct competition. More nuanced effects are also possible. In discussing expenditure cascades from high-income Americans to middle- and lower-income citizens, Frank (2007) highlights how spending patterns in the upper tail can affect the perceptions and satisfaction of those in other parts of the distribution. The salaries and facilities of elite programs can serve as powerful reference points to other institutional leaders, which may make more modest, although still considerable, investments appear to be more reasonable (Tversky & Kahneman, 1974; Kahneman, 2011).[19] Disparities across programs can also affect the satisfaction of coaches, administrators, and student-athletes that may lead these individuals to

[19] For example, a $1 million dollar coaching salary appears less extreme when considered in reference to the $5 million salaries that occur at some elite athletic programs. Similar comparisons can be made in reference to the size, cost, and opulence of athletic facilities at leading athletic programs.

press for greater investment in their own programs after observing the resources provided at other programs.

In summary, this second step of **Cascading Expenditures** comprises two elements. First, athletic expenditures at leading athletic programs increase when externally generated athletic revenues at these programs increase. Second, these increased expenditures among elite programs subsequently lead other programs to increase their expenditures. Thus, expenditures cascade from high-revenue programs to lower-revenue programs.

Step #3: Ensuing Subsidies

A number of athletic programs *will not* enjoy large revenue increases (as described in step #1) but *will* bear the costs associated with cascading expenditures (step #2). Over time, these programs will need to increase their reliance upon institutional subsidies and student fees. The results in Figure 5 indicate that institutional subsidies and student fees have indeed been growing over time. Total subsidies increased by several million dollars at athletic programs in the lower half of the external revenue distribution, while subsidies exhibited very little change in the upper half.

Subsidies are not necessarily a bad thing. Higher education institutions subsidize a wide array of activities and justify such funding as appropriate because these activities help institutions meet their overall missions (Zemsky, Wegner, & Massy, 2005). Athletics can be deemed mission-enhancing because participation provides valuable learning opportunities for student athletes and enhances the larger student body by providing a common bond (Toma, 2003). The difficult question facing colleges and universities is how much to subsidize each mission-enhancing activity given limited funds.

The size of these subsidies to athletic programs is substantial. Among the 95 schools in the 2011 fiscal year, 40 had annual athletics subsidies that exceeded $500 per student; in 2005, only 27 eclipsed the $500 mark. The number of schools with extremely high subsidies per student (above $1,000) grew from two to eight over the period of study.[20] In 2010–2011, the average listed tuition and fee price was $7,605 at four-year public institutions, and the average net tuition and fee price was $1,540 (Baum & Ma, 2010). Athletic subsidies per student in the range of $500-$1,500 would comprise a major portion of tuition and fees at many public higher education institutions.

We previously outlined several reasons why universities do not ignore pressures to increase spending and simply accept losses or move to less competitive conferences or divisions. This third step outlines the consequences of those choices and prompts the following question: Will public universities with low-revenue athletic programs continue to increase subsidies in future years if revenues continue to diverge and if spending pressures continue to cascade?

In general, a practice of continual subsidy increases is difficult to sustain. As expenditures cascade within the athletics system, the quality of facilities at low-revenue athletic programs grow as do the salaries of coaches and administrators. If facilities and salaries do not improve at the same pace elsewhere within the university, resistance to athletic subsidies will grow. To date, such resistance has not yet been sufficient to overcome the variety of pressures noted earlier that cause institutions to increase athletics spending.

Athletic subsidies will be increasingly difficult to maintain in the future because of a number of problematic financial trends. Many state governments face unprecedented financial

[20] As one would predict based on Figure 5, the inequality across universities in athletic subsidies per student is large and growing. The number of schools with subsidy levels below $100 per student actually increased from 18 to 23 between the 2005 and 2011 fiscal years, so some schools have been able to decrease athletic subsidies per student. These declines only occurred at the lowest subsidy levels. The number of schools below $200 per student decreased slightly from 38 to 35. If we use $300 as the cut-off, the count fell from 50 to 44.

difficulties for a variety of reasons, most notably rising health care costs and unfunded pension liabilities (Kane, Orszag, & Gunter, 2003; State Budget Crisis Task Force, 2012). State governments typically treat higher education funding as a balance wheel, cutting during tough times and increasing during good times (Hovey, 1999). Funding from the federal government may also decline as partisan gridlock, growing health care costs, and high deficits may lead to reductions in financial aid programs and research funding. For most higher education institutions, tuition is the primary revenue source that could possibly replace lost governmental funding, but further price increases could lead to enrollment declines, higher student debts, and increased public antipathy towards colleges and universities. These larger financial challenges will make it increasingly difficult for colleges and universities to raise institutional subsidies or student fees to cover rising athletic expenditures.

In summary, the logic underlying this third step of **Ensuing Subsidies** is straightforward: Increased spending at non-elite athletic programs occurs without simultaneous growth in external revenues, which leads to increased institutional subsidies or student fees for athletics. The sustainability of this third step is unclear as growing institutional subsidies or student fees may promote resistance if subsidy levels grow too high and/or the financial situation of the institution and its students deteriorates. With growing financial pressures, reliance on subsidies will likely face much resistance in the coming years, which will make attempts to sustain the current intercollegiate athletics system quite difficult.

Conclusion

The concepts of diverging revenues, cascading expenditures, and ensuing subsidies highlight key elements that promote financial unsustainability within the intercollegiate athletics

system. Our framework consequently has implications for policies and research pertaining to intercollegiate athletics, and we conclude with a discussion of those implications.

Policy Implications

Because rising institutional subsidies and student fees are occurring alongside constrained academic budgets and rising student debt, policies that could limit the financial strain of athletics are worthy of consideration. Four potential system-wide policy approaches flow from our model. First, revenue distribution policies could be altered to dampen inequality across athletic programs. Greater revenue equality would reduce the level of spending among elite athletic programs, which could then change the way that expenditures cascade throughout the system. More equal revenue distribution would also directly increase revenue of less affluent athletic programs, allowing these programs to rely less upon institutional subsidies and student fees. Because athletics subsidies are distributed unevenly and more likely to be greater at institutions enrolling higher numbers of low-income students, alterations to the current patterns of athletics subsidies could help address larger financial challenges within higher education (Denhart & Vedder, 2010). The process by which greater revenue equality would alter expenditure and subsidy levels would be complicated, however, as increased revenue sharing could increase the number of athletic programs seeking membership in the highest NCAA divisions and subdivisions. Further complications arise because of the limited means by which revenue distribution could be altered. Ticket revenues and donations are mostly in control of individual athletic programs, and much of the television revenue is controlled by individual athletic conferences. The most promising options for increased revenue sharing lie with funds from the NCAA basketball championship and the new FBS playoff system.

A second policy approach could limit the extent to which high-revenue programs can set expensive spending norms which cascade down to other programs. The available policies in this arena, however, are restricted by past legal rulings against NCAA regulations to limit the size of coaching salaries. Unless Congress grants intercollegiate athletics an anti-trust exemption, which does not appear likely at the moment, these restrictions will likely remain in place. Policies that limit the financial benefits provided to student-athletes would also face resistance, as elite programs are under considerable pressures to share more of their revenues with their student-athletes. Recent NCAA proposals have focused on specific items, such as the number of non-coaching personnel that may be employed or the ability to take teams on foreign tours over the summer. The response to such proposals has been predictable, with elite athletic programs objecting on the grounds of student welfare. These objections likely are also rooted in a desire to avoid any restrictions that limit the advantages made possible by superior revenue levels.

A third approach could reduce the extent to which expenditures can cascade down from high-revenue athletic programs to low-revenue athletic programs. The most direct route to limit expenditure cascades would be creating a new division only comprising high-revenue athletic programs. Greater divisional separation should reduce or eliminate a number of the mechanisms by which expenditures cascade through the system. This idea would also face great resistance from multiple directions. Many athletic programs that would not qualify for the highest level of competition would still want their athletic programs to be associated with elite athletic programs and the elite universities within which they reside and may thus resist this plan. The athletic programs comprising the high-revenue division also would object, as the presence of low-rank competitors enhances their statuses as "winners." In addition, high-revenue programs may find it more difficult to maintain their tax-exempt status and to treat their athletes as amateurs if they

are in a separate division than less-commercial athletic programs. The extent to which elite programs would object to an elite-only NCAA division would demonstrate the benefits that these programs receive from the presence of low-revenue programs. Such benefits would support arguments for greater revenue sharing among athletic programs.

An alternative to these policies is to take no action at the system-level. Revenue divergence is not a natural law, so perhaps shifts in the marketplace will lead to major revenue convergence in the future. Such a shift seems unlikely, however, given the large fan bases of elite programs and the steady increase of money-making opportunities as technology advances. If revenue divergence continues and no system-level changes occur, individual universities and conferences will face difficult decisions. Will universities housing elite athletic programs change course and choose to spend more of their athletic revenues on academic pursuits? Will universities housing lower-revenue programs no longer increase its athletic subsidies in response to spending pressures or even choose to decrease subsidies? These questions are challenging to answer. On one hand, a reduced willingness to invest in athletics seems unlikely in an environment in which university presidents perceive substantial benefits from athletic success and feel they possess little power to restrain athletic spending (Art & Science Group, 2009). On the other hand, the financial challenges facing the academic portion of universities could grow so large that they may rival the pressures driving athletics spending.

Pressures to restrain athletic spending may be most salient at universities housing lower-revenue athletic programs because the consequences of such spending can be connected more concretely to student fees and/or the amount of university funds available for academic activities. The trend in subsidy levels observed for our period of study cannot be reasonably sustained far into the future, so if the pressures for increased athletics expenditures and subsidies continue to

mount for lower-revenue programs, a breaking point will eventually be reached. Predicting the timing of and specific requirements for such a breaking point, however, is likely an impossible task.

Future Research

Our research illuminates a wide range of key processes that are important drivers of the financial challenges facing intercollegiate athletics. Although we reveal patterns in existing data that are consistent with the propositions underlying each step of our model, future research could test these propositions more thoroughly. Furthermore, each step contains numerous processes, and each process could be explored in greater depth.

We examine athletics revenues generally, and future research could examine trends, inequality, and key issues associated with specific revenue sources, such as television contracts, guarantees for visiting teams, ticket sales, and licensing. Future work could also investigate how commercialism—which can conflict with the larger goals underlying intercollegiate athletics and universities—interacts with the forces described in this paper. If leading athletic programs adopt commercial practices, a set of competitive and institutional pressures may lead other programs to follow suit. The Big Ten network and its imitators is an example of such a "commercialism cascade." Alternatively, commercialism can be driven from below. Athletic programs currently facing the largest deficits may find the trade-offs associated with increased commercialism less unnerving than raising student fees or institutional subsidies. Given their small fan bases, these athletic programs may also need to make larger compromises to generate commercial revenues.

Our analysis of expenditure cascades considered a wide range of processes that translate increased spending at high revenue programs into increased spending at other programs, and many of these processes could be fruitfully examined within case studies of individual

institutions and conferences. Such research could examine the pressures driving expenditure increases at individual athletic programs and examine the extent to which those pressures are created by spending at other programs. Qualitative researchers could also build upon the work of Bouchet and Hutchinson (2010; 2011) and further examine the decision-making processes employed by university leaders when considering how to respond to spending pressures. Comparisons over time and across contexts will be especially fruitful, as a key question flowing from our model is whether athletic subsidies will continue to ensue if the required subsidy levels and larger financial challenges within higher education increase.

Future research could also include more extensive quantitative approaches to examine the presence and magnitude of expenditure cascades. Frank, Levine, and Dijk (2010) examined expenditure cascades across individual citizens, for example, and used variation across large counties to examine the effect of income inequality on the level of financial distress in the county. For intercollegiate athletics, researchers could similarly examine whether inequality in external revenues within an athletic conference relates to athletic subsidies. The number of conferences containing a substantial number of programs with meaningful levels of external revenue is limited, however. Researchers could alternatively use variation across time and examine whether subsidies at lower-revenue programs follow increases in externally generated revenues at elite programs, but properly specifying the timing of such relationships and controlling for other expenditure drivers would be a challenging task. All quantitative work in this area is complicated by the considerable amounts of measurement error currently present in athletic financial data. Our solution to this problem was to restrict our analysis to basic relationships of considerable strength that are unlikely to be obscured by measurement error. If

data quality improves over time, more thorough and definitive analysis could be conducted in the future.

Finally, though our paper applies our three-step model to intercollegiate athletics, the core ideas could also be applied to higher education more generally, which we will explore in future work. Revenue divergence appears relevant, as private gifts and endowments have historically been concentrated in a small set of higher education institutions (Cheslock & Gianneschi, 2008). Scholars have long contended that the wealthiest institutions set standards and practices that are adopted by other institutions, which suggests that expenditure cascades likely play an important role as well (Reisman, 1956). A key question for higher education is similar to the one we posed in this paper for intercollegiate athletics: Will the subsidies which sustain this system continue to be provided?

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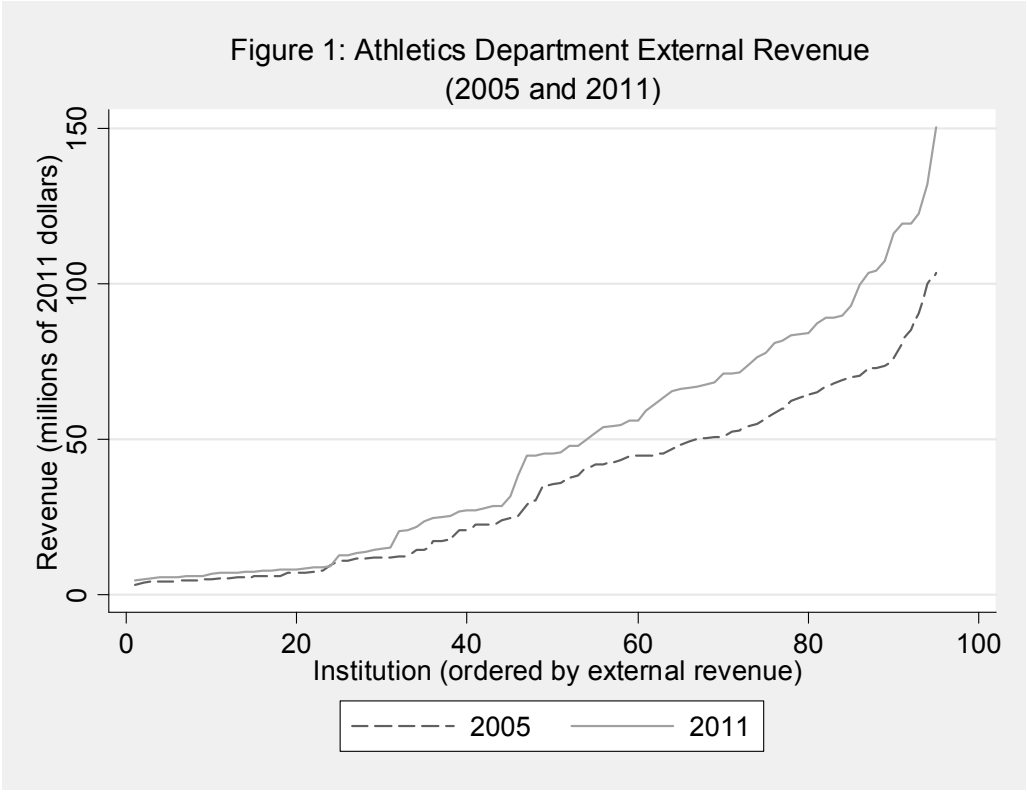
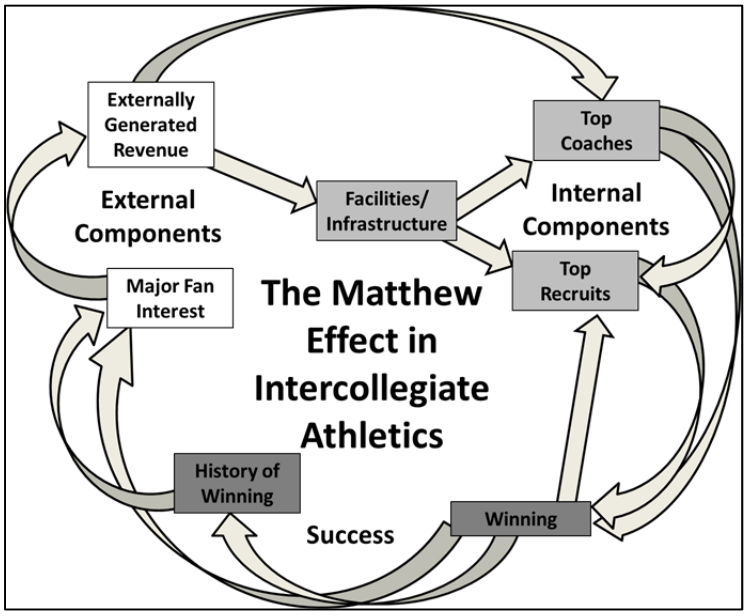


Figure 1: Athletics Department External Revenue
(2005 and 2011)
Revenue (millions of 2011 dollars)
0
50
100
150
0
20
40
60
80
100
Institution (ordered by external revenue)
2005
2011

Figure 2. The Matthew Effect within Intercollegiate Athletics



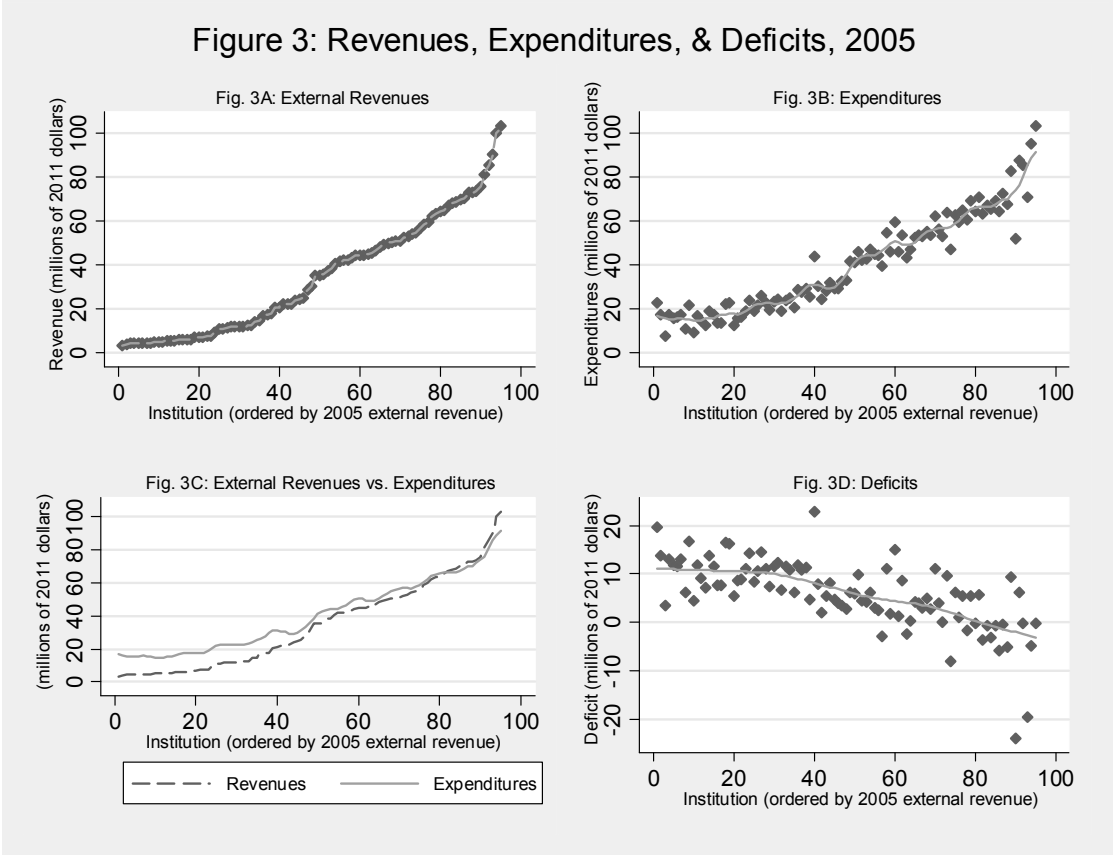


Figure 4: Changes in Revenues, Expenditures, & Deficits, 2005-2011

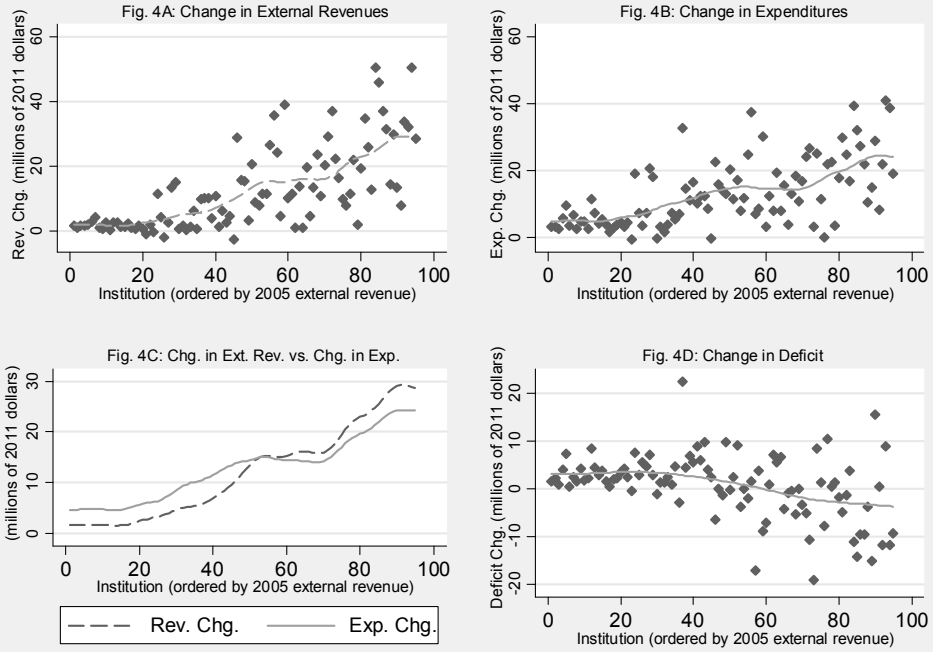


Figure 5: Total Subsidies

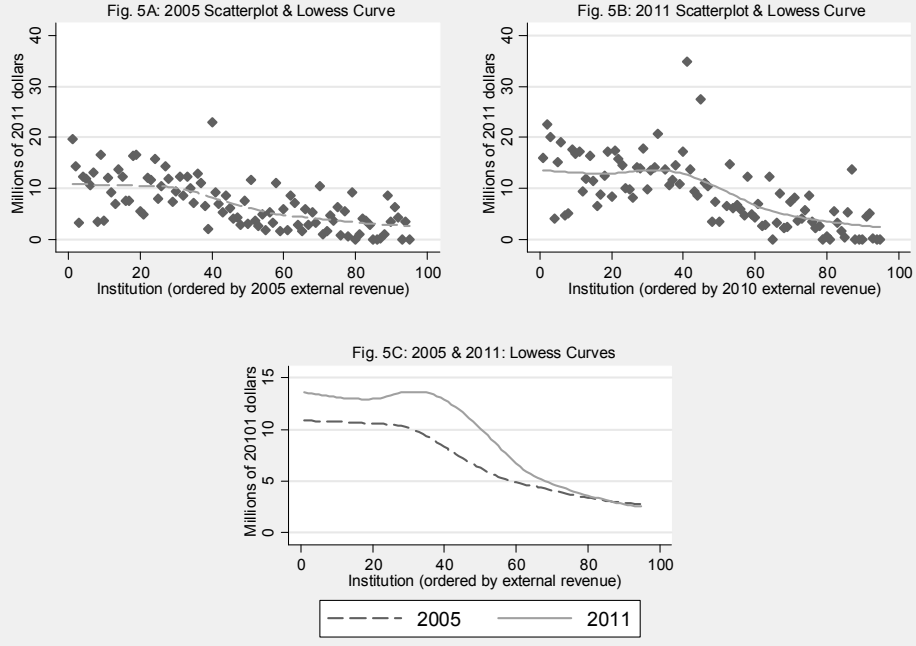


Table 1: Relationship between athletics success measures and total external revenue

	Measure	2005	2006	2007	2008	2009	2010	2011
Correlations with External Revenue Total	Sagarin Index, Basketball	0.50	0.50	0.67	0.55	0.60	0.47	0.58
	RPI, Basketball	0.45	0.44	0.59	0.46	0.53	0.32	0.49
	Sagarin Index, Football	0.63	0.54	0.71	0.72	0.62	0.70	0.64
	Football Attendance	0.91	0.62	0.87	0.84	0.87	0.91	0.93
	Director's Cup						0.82	0.84
Average External Revenue by Category (in millions of dollars)	No NCAA Tournament	36.3	38.5	39.3	43.4	40.0	48.7	45.1
	NCAA Tournament Berth	47.4	59.4	61.3	63.6	69.6	66.1	73.7
	Unranked in BCS	32.8	38.7	38.2	42.2	45.8	46.3	48.3
	BCS-Ranked	65.6	72.4	76.1	72.1	68.8	85.4	74.8
	Not Top 40 All-time	32.2	37.2	36.5	38.8	39.7	42.6	43.0
	Top 40 All-time	65.1	70.4	77.3	82.1	83.1	88.8	90.1

Note: The top half of the table presents correlation coefficients while the bottom half presents average revenue by category.

Table 2: Overall, within-conference, and between-conference inequality in external revenue

		# Obs.	Overall	Within	Between
All Programs	**2005**	95	0.304	0.043	0.261
	2011	95	0.320	0.044	0.276
	Change		0.016	0.001	0.015
Programs Not Switching Conferences	**2005**	84	0.268	0.040	0.229
	2011	84	0.290	0.040	0.250
	Change		0.022	0.000	0.021

Note: The Theil index was used to estimate overall inequality, and a decomposition of the Theil index was used to estimate within-conference and between-conference inequality.

Table 3: Average external revenue by conference

	# Obs.	2005	2011	$ Change	% Change
Big 10	10	$68,198	$91,266	$23,068	33.8%
SEC	11	$60,194	$90,280	$30,086	50.0%
Big 12	11	$57,193	$76,871	$19,678	34.4%
ACC	8	$50,122	$57,792	$7,670	15.3%
Pac 10	8	$40,465	$54,157	$13,692	33.8%
Big East	3	$33,280	$45,287	$12,007	36.1%
Mountain West	6	$17,774	$22,591	$4,817	27.1%
WAC	6	$13,560	$16,940	$3,380	24.9%
Conference USA	5	$14,479	$16,382	$1,903	13.1%
Sun Belt	4	$5,433	$7,079	$1,646	30.3%
Mid-American	12	$5,531	$6,615	$1,084	19.6%

Note: Values are in thousands of dollars. Schools that switched conferences between 2005 and 2011 were not included in these estimates.

Table 4. Athletic success measures by AAU membership and *US News* rankings.

	Measure	Not AAU	AAU	Not Ranked	US News Ranked
Average Values (2011)	Bball Sagarin	75.9	83.5	75.9	82.8
	Fball Sagarin	69.0	74.1	67.8	76.0
	RPI, bball	0.52	0.57	0.52	0.57
	Fball win pct	0.50	0.53	0.48	0.57
	Director's Cup	305.0	729.7	303.8	708.8
	Fball Attendance	39,481	62,828	35,828	67,017
	% Among Top-40 All-Time	16%	39%	9%	53%