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Chad D. McEvoy

Alan L. Morse

Stephen L. Shapiro
Old Dominion University, sshapiro@odu.edu

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Factors Influencing Collegiate Athletic Department Revenues

Chad D. McEvoy
Syracuse University

Alan L. Morse
Mississippi State University

Stephen L. Shapiro
Old Dominion University

One of the primary challenges of Division I Football Bowl Subdivision (FBS) collegiate athletic programs is revenue generation, particularly in light of increasing costs and competition. Surprisingly, a limited number of studies have investigated factors related to athletic department-generated revenues. A statistically significant multiple regression model was created, explaining 76.7 percent of the variance in annual generated revenues among FBS programs. Factors such as conference affiliation, success in football and men's basketball, enrollment, and time were identified as important in predicting revenue generation. The Revenue Theory of Costs was put forth as a framework for better understanding the financial behavior of intercollegiate athletic programs.

Revenue generation has become an essential component of National Collegiate Athletic Association (NCAA) Division I athletic operations in modern times. Over the past two decades, in particular, athletic department revenues have increased dramatically. For example, according to Fulks (2011), median generated revenues increased approximately $13 million (54.8%) from 2004 to 2010. Furthermore, the *SportsBusiness Journal* (SBJ) reported that more than one-half of schools from the six major Bowl Championship Series (BCS) member conferences have increased their budgets by ten percent or more in just two years from 2010 to 2012 (Smith, 2011a). Whereas athletic directors were once usually current or former coaches,

today's athletic director is most typically someone who has displayed a track record of success in generating revenues for athletic departments or other businesses in areas such as fundraising, sales, and marketing (Wong, 2009).

While several factors have played a role in the large growth in revenues in Division I athletics, one of the most significant has been television media rights. Recently, at the national level, the Bowl Championship Series (BCS) for football and for the NCAA men's basketball tournament have realized considerable increases in rights fees. In football, the five BCS bowl games distribute in excess of $174 million annually (Smith, 2011b). In basketball, CBS and Turner agreed to terms with the NCAA for rights to broadcast the "March Madness" men's basketball tournament from 2011 to 2028 for $10.8 billion (Vedder & Denhart, 2011). Lately, even greater growth has occurred at the conference level. Recently negotiated conference television contracts include the Pacific 12 Conference receiving $225 million annually from FOX and ESPN, the Southeastern Conference receiving $205 million per year from CBS and ESPN, and the Big Ten Conference earning $252 million annually from their own Big Ten Network (Forde, 2011). Additionally, the University of Texas partnered with ESPN to launch the Longhorn Network, which will generate $300 million for the school over the next 20 years (Longhorn, Inc., 2011).

Television contracts primarily benefit schools in the six major BCS conferences, which has widened the financial gap between those schools and their counterparts in non-BCS conferences. Seifried & Smith (2011) discussed the "financial chasm" that has been increasing between BCS and non-BCS programs. Even the NCAA has acknowledged this gap. In reference to a 2011 report of presidential findings on the matter, NCAA President, Mark Emmert stated, "the disparity this report shows among athletics programs in Division I is cause for concern" (M. Brown, 2011, para. 6). "That gap in revenue, either from self-generated or institutionally allocated sources, is significant," Emmert said. "Indeed, it is coming to redefine what we mean by competitive equity" (para. 7).

In addition to television revenues, other factors leading to dramatic increases in college sports revenue generation in recent years include ticket sales, charitable contributions, and corporate sponsorships. In 2010, ticket sales accounted for 29% of generated revenue at Football Bowl Subdivision (FBS) institutions. The median ticket sales revenue for these athletic departments was over $9 million (Fulks, 2011). College athletic departments, conferences, and bowls have each partnered with StubHub in an effort to secure additional ticket revenue in the secondary market. A total of 23 college sport properties have current partnerships with the secondary market's largest platform ("Company Partners," 2012).

In terms of fundraising, donations are the second largest revenue source for college athletic programs, accounting for 23% of generated revenues. The median fundraising revenue for these athletic departments was almost $7 million (Fulks, 2011), with almost $1 billion in total fundraising revenues for the BCS Conference schools in 2010 (Eichelberger, 2011). During the recent recession, athletic departments have had to focus closely on relationships with donors and efficiency within the department, as they could no longer take the steady flow of donations for granted, (N. Brown, 2011).

Finally, according to the Knight Commission (2011), local marketing income such as in-stadium signs and payments from corporate sponsors, and local radio-TV rights fees comprise approximately 10% of athletic departments' external sources of revenue. The University of Wisconsin's athletic department generates over $5 million in revenue from sponsorship deals, with over $3.5 million of the $5 million coming from their contract with Learfield/Badger Sports

Properties (Jessop, 2012). Despite the increasing interest in the value of contracts in collegiate athletics, there are limited reports available which publicize this information.

One of the few tools made available for the dissemination of college sports financial information is a biannual report compiled by Daniel Fulks and published by the NCAA. This report, unfortunately, lacks full transparency as the NCAA releases financials displayed only in aggregate form, compiled from all schools belonging to a specific NCAA classification level, rather than on a school-by-school basis. Each Fulks Report, and the media coverage that follows, focuses discussion on the relatively small number of intercollegiate athletic programs that generate a net profit (Brown, Rascher, Nagel, & McEvoy, 2010).

This profit-focus narrative is deceiving as intercollegiate athletic programs are not profit seeking organizations, but rather, highly-commercialized non-profit divisions of the larger academic institutions they operate within. College sports programs operate as non-profit organizations, and thus do not behave in a manner befitting a profit/loss paradigm. According to Bowen's (1980) Revenue Theory of Cost, an increase in expenses is an outcome of non-profit organizations spending all revenue to avoid a significant surplus. Bowen has applied this theory within the context of higher education and is the theoretical foundation of the current examination of athletic department revenue generation. The financial structure of college athletic departments within the framework of Bowen's Revenue Theory of Cost guided the current investigation.

Review of Literature

Despite the millions of dollars generated and spent by NCAA Division I athletic departments annually, which make it "the biggest operating unit on a university, second only, perhaps, to a very large medical school" (Padilla & Boucher, 1988, p. 61), the literature examining factors that influence revenue generation in college athletics is quite limited.

Literature does exist examining issues related to individual revenue sources, such as fundraising or ticket sales, but relatively few studies have examined overall sport organizations', and specifically collegiate athletics departments', revenue generation from a macro-level perspective. Some in this area have focused on factors that influence revenue in professional sport (Brown, Nagel, McEvoy, & Rascher, 2004; O'Reilly & Nadeau, 2006), with three identified as examining revenue factors specifically in collegiate athletics (McEvoy, 2005; Mondello, 1999; Wells, 2001).

While focusing specifically on predictors of fiscal solvency within Division I athletic programs, Mondello examined the influence of 23 predictor variables on total annual profit, or revenues subtracted by expenses. Results showed that revenue sport profits and recruiting expenses significantly influenced total annual profits. However, only one performance factor was examined (Director's Cup Standings), and factors such as university location and local population and income levels were not accounted for in Mondello's study. Additionally, this investigation focused on factors affecting profit, which may encompass allocated revenues provided by the institution, such as student fees.

We contend there are two considerable concerns here. First, examining profit is flawed as collegiate athletic departments operate as non-profit organizations, as will be discussed throughout our paper. Second, it is important to differentiate between allocated revenues, such as student fees, which are essentially transfers of funds internally within the larger university institution rather than truly being revenue, and department-generated revenues like ticket sales

and fundraising. In this current study, researchers will attempt to provide a more accurate assessment of the influence various revenue determinants have within an athletic department's budget.

For the 2000 season, Wells (2001) identified factors related to annual fund raising program contributions in Division I. As a result of an extensive literature review, Wells selected 15 predictor variables. After analyzing survey responses from 70 Division I development officers, five of those factors proved to be statistically significant: 1) number of years of experience of the development director, 2) number of years full-time fund raising position was established, 3) season football ticket sales, 4) total number of living alumni, and 5) size of prospective donor list. Interestingly, some factors that are strongly tied to competition and winning were not significant, such as winning percentage in football and appearance in a football bowl game. Wells used these findings to develop an equation for estimating schools' annual fund raising revenues.

In 2005, McEvoy created a model to predict annual fund raising contributions to NCAA Division I-A (now known as FBS) athletic programs. Football home attendance and conference affiliation had the strongest influence on annual athletic contributions, followed by 1) football home attendance, 2) conference affiliation, 3) football winning percentage, 4) type of institution, and 5) men's basketball home attendance.

Focusing more specifically on individual revenue sources, the research conducted on ticket sales in collegiate sport has primarily focused on consumer motivations (James & Ross, 2004; Kahle, Kambara, & Rose, 1996) and teaching/implementing ticket sales programs (Bouchet, Ballouli, & Bennett, 2011; Irwin & Sutton, 2011; McKelvey & Southall, 2008). Literature on television revenues in collegiate sports has previously focused mostly on the Supreme Court ruling, NCAA v. Board of Regents of the University of Oklahoma (1984), including Mawson and Bowler's (1989) study on the effects of said ruling. Studies conducted involving corporate sponsorship in collegiate athletics focused on exploring the benefits, criteria, and company factors (Weight, Taylor, & Cuneen, 2010), along with other non-revenue related topics.

Two recent studies have also focused on revenues in intercollegiate athletics. Caro and Benton (2012) examined football-related revenue in FBS schools. They found a strong positive correlation between conference classification and revenue. The increase in revenues has created an imbalance and inequity in college football between the automatic qualifying (AQ) conferences and the non-automatically (Non-AQ) qualifying conferences. Furthermore, these authors discovered lower-tiered schools in AQ conferences do benefit, however, there is still a financial imbalance when compared to the upper echelon of the AQ conferences.

Matheson, O'Connor, and Herberger (2012), investigated profitability in Division I athletic programs and identified three themes. The first was the dependence athletic departments had on direct and indirect subsidizations from the student body, the university, and state governments. All of these subsidizations are previously mentioned in this paper as allocated revenues. The second theme discovered was the importance of donations, which already has been identified as a major source of revenue for athletic departments. Lastly, it was found that only the top echelon of BCS schools were highly profitable. As noted related to Mondello's (1999) work, of concern here is the examination of athletic departments' profitability, which is inconsistent with the non-profit structure and behavior of collegiate athletic programs.

Conceptual Framework

As discussed, college athletic programs have witnessed tremendous growth in both their revenues and expenses in recent years. The trend of expenditures increasing at a similar rate to revenues is not uncommon in a non-profit setting. Non-profit organizations are tax-exempt; therefore, they must spend all resources on organizational operations (Martin, 2009). This phenomenon is the foundation of Bowen's (1980) Revenue Theory of Cost. The Revenue Theory of Cost states that in a non-profit setting expenditure increases are a direct result of increased revenue that must be spent by the organization in order to avoid a significant surplus. Bowen's work focused specifically on institutions of higher education. Colleges and universities generate increased revenue primarily through, tuition increases (either through increasing enrollment, raising tuition price, or both), government funding, private grants and contracts, and fundraising ("At Postsecondary Institutions," 2010). Institutions, due to their non-profit status, spend this additional revenue, which results in increased expenditures. Martin (2009) refers to this spending environment as the revenue-to-cost spiral. Educational administrators are incentived to spend whatever revenue they generate. It is important to note, that it is legal for nonprofit organizations to retain a profit (or "surplus") as long as dividends are not awarded and the surplus is held in some form of a reserve (Hansmann, 1980).

Bowen (1970, 1980) created five laws to explain costs in higher education. First, the primary goals of institutions are educational excellence, prestige, and influence. The main goal is to be perceived as a high quality educational institution. Second, in the quest for excellence, prestige, and influence there is no limit to what an institution will spend. There are never 'enough' resources. Third, institutions will raise all the money it can. Since current resources are never acceptable, institutions will always attempt to increase revenue. Fourth, each institution spends all that it raises. Institutions have reserves and endowments, but the amount of money saved in a given fiscal year is negligible compared to spending. The fifth and final law states that the cumulative effect of following these laws leads to a consistent increase in expenditures. Limits are not set in this environment as there is no determination of the minimal amount needed to run a quality college or university. A cycle is created where increases in revenue are the source for increases in expenditures. In an effort to maximize reputation, a revenue-to-cost spiral is created in higher education (Martin, 2009).

College athletic departments are unique segments of higher education, yet they operate in a similar environment. Athletic departments are non-profit entities; therefore, all revenue in a given year are expected to be spent. Although the Revenue Theory of Costs and the revenue-to-cost spiral concepts were not developed with college sports in mind, they provide a framework for understanding financial decisions by athletic departments (Suggs, 2009). According to Suggs, athletic departments focus all resources on prestige, not profit. This behavior is generally supported by the institution as a whole which seeks the same result.

In this regard, we can apply Bowen's (1970, 1980) laws help to explain revenue and expenditures in college athletic departments. The first law is consistent with athletic department behavior. A primary goal for college athletics programs is success, prestige, influence, and ultimately a positive reputation. Athletic departments will exhaust all resources in this pursuit, which is evident, with 81.7% of the 120 FBS programs losing money despite dramatic revenue increases in recent years (Fulks, 2011). The third law applies as we've witnessed escalating revenues with Division I athletic programs increasing staffing and sophistication in their revenue generation recently. A decade ago, no college athletic department had a formalized outbound

ticket sales force, but today the vast majority of major college athletic departments have outbound ticket sales staffs either within their athletic departments or outsourced to third-party firms such as IMG Learfield Ticket Solutions or The Aspire Group. Similarly, Division I athletic departments have made strides in enhancing their revenue generation efforts through other streams such as fundraising, licensing, the creation of conference and individual program television networks, and partnerships with the secondary ticket market. These innovative strategies have increased athletic department revenue substantially. Previous research provides evidence of a consistent increase in revenue (Fulks, 2011), which creates an environment where non-profit college sport programs must continue to increase expenditures in order to spend any increases in revenue. Programs will spend even more than they generate to stay competitive, creating a considerable need to generate more revenue in the future.

Purpose of the Study

As indicated previously, the purpose of this study was to examine the factors that influence revenue generation in NCAA Division I university athletic departments. Limited research has been conducted in this area, and this topic is of relevance and importance to the sport industry due to the ever-increasing importance placed on revenue generation in Division I athletics today. Additionally, a primary weakness of the previous research in this area is the reliance upon total athletic department revenues as the dependent variable. As discussed by Brown et al. (2010, see pages 372-374), a key distinction exists between department-generated revenues, such as ticket sales and donations, and allocated revenues like student fees and direct allocations from the university, which are more appropriately described as internal (i.e. within the university) transfers of funding, rather than true revenues. Including allocated revenues in a model predicting revenue generation creates significant validity concerns. Take, for example, a school that generates $40 million per year in ticket sales, donations, corporate sponsorship sales, and so on, and receives no allocated revenues from the university. When compared to another institution that generates just $20 million per year within its athletic department in addition to receiving an internal transfer from the university of $20 million in student fee allocation, the former institution would seemingly be considerably stronger than the latter in generating revenues, yet their overall revenues, the figure relied upon in previous research as a dependent variable, would be equal. Accordingly, a key contribution of this present study is the focus on and collection of department-generated revenues as the dependent variable in our statistical model. Finally, we will examine whether support exists for utilizing Bowen's Revenue Theory of Costs to explain the financial behavior of college athletic programs.

Method

Subjects

All NCAA Division I- FBS athletic departments were included as subjects in the study. The researchers made the decision to delimit the subject pool to FBS programs, rather than including all Division I institutions, due to the heterogeneity of the more than 340 Division I athletic programs. Developing a statistical model to effectively predict department-generated revenues, and examine the factors within such a model, for schools as different as Ohio State and Ohio University is challenging, whereas also including much smaller athletic programs such as

New Jersey Institute of Technology and Alabama A&M poses severe difficulties in developing an effective single predictive model. As such, the population was delimited to FBS athletic programs. Additionally, while approximately 90 percent of FBS schools are public institutions, the ten percent of FBS members that are private were not included in the final sample as data for yearly department-generated athletic revenues could not be collected from private institutions. Data for this variable was collected through a database published in *USA Today*, who obtained this information through public records requests with each institution. As they were not legally compelled to respond to such a request, no private institution provided this information to *USA Today* and therefore could not be included in our final subject list. We note this as a limitation of the generalizability of our study.

Each FBS program was examined as separate subjects for the five years/seasons from 2002-03 to 2006-07. This time period was selected based on data availability, the importance of providing a relative cross-section of time to minimize the possibility that data from a single year or two is inconsistent with longer trends, and the need to have sufficient sample size for statistical purposes. As will be discussed later, a fixed effects regression model was utilized to account for this use of panel data.

Variables

A multiple regression model was created to predict department-generated revenues and examine factors within the model. These other explanatory variables were chosen based on previous literature (Brown, et al., 2004; Mondello (1999); O'Reilly and Nadeau (2006); McEvoy (2005); Wells (2001).

Dependent Variable. The dependent variable in the regression model was annual department-generated revenues for D-I FBS athletic programs. As noted earlier, an important contribution of this present study is the use of department-generated revenues, rather than total revenues, which includes intra-institution transfers of funding like student fees and direct subsidization. Data for this variable was collected from a database compiled by *USA Today* available at http://www.usatoday.com/sports/college/ncaa-finances.htm, which compiles expense reports from more than 200 public institutions at the Division I level.

Explanatory Variables. The first group of explanatory variables examined the effects of past and present success in football and men's basketball on revenue generation. This group of variables included the number of football bowl games and men's basketball NCAA and NIT tournament appearances in the previous ten years, whether the program participated in those same three postseason events in the current year, and current season and previous season winning percentages in football and men's basketball.

The next group of explanatory variables examined several institutional factors. These variables included university enrollment, market area population, annual household income, and geographic region, the latter of which was represented through time zone dummy variables. The geographic variables were eventually eliminated from the analysis as they presented multicollinearity issues in the regression model as athletic revenues were considerably lower in the Mountain Time Zone, where relatively few major conference athletic programs exist, thus confounding the model. The school's total number of student-athletes and a dummy variable as to whether the institution was a member of one of the six major Bowl Championship Series (BCS) conferences were also included. Finally, year-by-year dummy variables, (as mentioned above) in order to account for the inclusion of panel data, were also examined.

Unlike some previous studies (McEvoy, 2005; Wells, 2001), we elected not to include independent variables that were of a revenue generation nature, such as attendance for football and/or men's basketball, ticket sales, and donation totals. We believe that including revenue variables in a model to predict generated revenues is severely problematic, leading to confounding results related to independence and/or mulicollinearity issues; thus the decision to discard such variables from inclusion in our statistical model. Similarly, expense-related variables were also discarded as potentially confounding, particularly in light of Bowen's (1980) Revenue Theory of Costs, which suggests a strong linkage between expenses and revenues in non-profit academic settings.

Statistical Design

Descriptive statistics and a correlation matrix were used for an initial examination of the data. A fixed-effects ordinary least squares (OLS) multiple regression equation was developed to empirically examine department-generated revenues at each subject athletic program. The fixed effects model was used to account for the data being in panel form. Four variables were used to represent the five years of data. Multiple regression assumptions and multicollinearity were examined, after which a reduced final regression model was created. A significance level of .05 was established *a priori* in analyzing the regression model and related variable correlations.

Results and Discussion

Table 1 displays descriptive data for all variables included in the study. The results show the mean department-generated yearly revenues for subject institutions were $35,931,888, with a standard deviation of $29,756,321. While this standard deviation was high relative to the mean figure, this finding is in line with similar previous research of NCAA athletics programs (McEvoy, 2005). Even though this study was delimited to FBS programs for the purpose of comparing relative similar athletic departments, there is still a diversity of such programs within this level. For example, while Ohio State University generated an average of more than $100 million per year in athletic revenues during the five years examined, Ohio University's athletic program generated less than $5 million per year.

Table 1 - *Descriptive Statistics*

Variable	*Variable Description*	*Mean*	*SD*
GENRREVS	Yearly department-generated revenues	35931888.45	29756321.04
YEAR03	2002-03 dummy	.20	.40
YEAR04	2003-04 dummy	.20	.40
YEAR05	2004-05 dummy	.20	.40
YEAR06	2005-06 dummy	.20	.40
YEAR07	2006-07 dummy	.20	.40
BBHISNCA	NCAA Men's Basketball Tournament appearances in previous ten years	3.34	3.09
BBHISNIT	NIT Men's Basketball Tournament appearances in previous ten years	1.75	1.47
BBHISTOT	Combined NCAA+NIT tournament appearances in previous ten years	5.09	3.19
BBCYNCAA	Played in NCAA MBB Tournament in current year (1=no, 2=yes)	.35	.48
BBCYNIT	Played in NIT MBB Tournament in current year (1=no, 2=yes)	.18	.39
ENROLL	Total university enrollment	26855.25	10052.86
SPORTS	Number of varsity sports teams	16.68	3.96
ATHLETES	Number of varsity student-athletes	551.29	155.64
CONFBCS	Whether the school was a member of the six BCS conferences (1=no, 2=yes)	1.45	.49
FBCYBOWL	Played in NCAA Tournament in current year (1=no, 2=yes)	1.47	.50
FBWINCUR	Football winning % in current season	.53	.21
FBWINPRE	Football winning % in previous season	.53	.21
BBWINCUR	MBB winning % in current season	.56	.17
BBWINPRE	MBB winning % in previous season	.56	.17
FBHISTORY	Football bowl game appearances in previous ten years	4.14	3.28
POPULATE	County population	253007.30	454589.46
INCOME	County per capita income	20348.24	9455.49

Note: N=477.

Although not shown in Table 1, as it was not included in the statistical models examined in our study, the mean total athletic yearly revenues were $43,392,441 among the same 477 subjects examined, which includes both athletic department-generated revenues in addition to monies allocated to athletics by the college or university. Accordingly, allocated revenues comprised a mean of $7,460,553 per year among subject athletic programs, or 17.2 percent of total revenues. In other words, more than one-sixth of FBS programs' revenues were not generated by the athletic department, but rather, were allocated to athletics from the institution. Table 1 also shows that all 477 subjects in the final sample were public institutions.

Correlations

Table 2 provides correlation data for each of the study's independent variables and dependent variable, yearly department-generated athletic revenues. Several findings merit discussion. First, the strongest correlation (-.782) between any of the independent variables and generated revenues is whether the school was a member of one of the six BCS conferences – Atlantic Coast Conference, Big 12 Conference, Big East Conference, Big Ten Conference, Pacific 10 (now Pacific 12) Conference, or Southeastern Conference. By squaring this correlation coefficient, we learn that BCS conference affiliation alone explains more than 60 percent of the variance in department-generated revenues among Division I FBS member schools, a remarkably high figure. This finding will be examined and discussed further related to the multiple regression results to follow.

Table 2 - *Independent Variable Correlations with Yearly Generated Revenues*

Variable	*Generated Revenues*
YEAR03	-.106*
YEAR04	-.028
YEAR05	.001
YEAR06	.065
YEAR07	.069
BBHISNCA	.512*
BBHISNIT	.119*
BBHISTOT	.551*
BBCYNCAA	-.348*
BBCYNIT	-.063
ENROLL	.508*
SPORTS	.359*
ATHLETES	.447*
CONFBCS	-.782*
TZEAST	.035
TZCENT	.160*
TZMOUNT	-.201*
TZPAC	-.089*
FBCYBOWL	-.416*
FBWINCUR	.390*
FBWINPRE	.387*
BBWINCUR	.336*
BBWINPRE	.335*
FBHISTORY	.679*
POPULATE	.033
INCOME	.084

Note: * Correlation is significant at the .05 level. N=477.

The correlations results also reveal moderately strong relationships between generated revenues and the number of varsity sports (.359) and student-athletes (.447) at the institution. While this cannot be put forth as a causal explanation, we believe these findings suggest support for the use of Bowen's (1980) Revenue Theory of Cost to explain changes in the financial landscape of intercollegiate athletics in recent years. As discussed previously, the Revenue Theory of Cost states that in a non-profit setting, such as an intercollegiate athletic program, cost increases directly result from increased revenues that must be spent by the organization in order to avoid a significant surplus, which is incompatible with non-profit status. Bowen applied this theory specifically to institutions of higher education, and we suggest the theory is useful in explaining dramatic cost increases in college athletics over the past two decades. As Division I athletic programs have become more effective in their ticket sales and fund raising efforts over time, and have realized substantial increases in broadcast revenues, their non-profit status has required these revenues to be offset by comparable increases in expenses. These expense increases have been further accentuated by constraints in the labor market in that student-athletes have not directly received as compensation a large portion of the dramatic spending in college athletics based on NCAA prohibitions thereof. As a result, athletic programs have instead increased expenses substantially in areas like coaching and administrative payroll, facility construction, and recruiting in an effort to remain competitive with other Division I programs. The correlation findings here suggest that schools with high revenue levels subsequently use those revenues to fund more varsity sports and support more student-athletes, consistent with Bowen's Revenue Theory of Cost. To this point, NCAA data shows that the number of Division I athletes and sports teams have both increased in each of the past ten years, despite a major economic recession and consider cuts in public funding of higher education during this span (NCAA, 2012).

Examining the correlation coefficients displayed in Table 2 between the five year-by-year dummy variables and generated revenues reveals an interesting trend. In each successive year from 2002-03 to 2006-07, the bivariate correlation between the year-by-year variables and generated revenues moved in the positive direction. This finding is consistent with media coverage and data showing increased revenues (and expenses) in Division I intercollegiate athletics in recent years, as part of what is often referred to as the "arms race" of college sports.

Another theme emerging from the correlation results is the importance of football more than men's basketball in driving revenue generation. From Table 2, this theme is supported by three separate correlation findings between generated revenues and variables related to football and men's basketball performance, both past and present. First, the correlation between generated revenues and football history, measuring the number of appearances the school made in a postseason bowl game in the previous ten years, was stronger in the positive direction (.679) than the comparable correlations between generated revenues and the number of appearances the school made in the previous ten years in the NCAA Tournament (.512) or in any postseason tournament (.551), whether NCAA or NIT. Second, whether the school made a bowl game in the current season (-.416) correlated more strongly with generated revenues than did whether the school played in the NCAA Men's Basketball Tournament in the current season (-.348). Finally, both football winning percentage variables, current season (.390) and previous season (.387) had stronger positive correlations with generated revenues than did the similar men's basketball current season (.336) and previous season (.335). These findings are consistent with others in the literature and with media reports discussing the importance of football performance to the overall success of an athletic program (McEvoy, 2005; Wells, 2001). We also note the importance of

football over men's basketball and other sports as a driving factor in the conference realignment movement since 2010. This has been seen with nearly every major realignment action of the past several years in Division I-FBS, but is perhaps no more evident than in the case of the Big East Conference, which has historically been one of the top men's basketball leagues in the country, but has witnessed significant turnover in membership as its football and non-football members wrestled with the future direction of the league.

Another finding of note from Table 2 was the relationships between department-generated revenues and the four geographic time zone dummy variables. Of the four time zones, schools in the Central Time Zone had the strongest (albeit fairly weak) positive relationship with generated revenues (.160). Upon reflection, this should not be surprising as many of the strongest intercollegiate athletic programs exist in the Central Time Zone, including many of the SEC and Big Ten schools, plus Big 12 powers like Texas, Oklahoma, and, formerly, Nebraska. In contrast, the Mountain Time Zone variable correlated most strongly in the negative direction with generate revenues (-.201). This, too, is not surprising as few BCS conference schools exist in this time zone, while two FBS non-BCS conferences, the Mountain West Conference and Western Athletic Conference, have a number of member institutions in the Mountain Time Zone. As noted earlier, because of the high degree of multicollinearity between the geographic variables and BCS conference affiliation, the geographic variables were removed from the regression analysis.

Finally, in examining the correlation statistics presented in Table 2, we note that university enrollment correlated more strongly in the positive direction with generated revenues than did all but just a couple of other independent variables (.508). While our data does not allow for an answer to the question of whether athletic success causes increased enrollment, or vice versa, the presence of a moderately strong positive correlation was expected as several elite athletic programs are housed within some of the largest universities in the country in terms of enrollment, such as the University of Texas, The Ohio State University, and the University of Florida.

Regression

Table 3 displays the results of the multiple regression analysis used to predicted yearly department-generated revenues at Division I FBS athletic programs. The F-statistic was 75.113 and the model was significant at the .01 level ($p<.001$). The regression model explained more than three-quarters ($R^2=.767$) of the variance in generated revenues. This finding is nearly identical to the level of variance explained in other similar revenue generation studies (McEvoy, 2005; Mondello, 1999; Wells, 2001), although as discussed earlier, a considerable amount of the explained variance in each of those studies was due to the use of attendance (particularly football) as an independent variable in predicting revenues. As attendance is the leading determinant of ticket revenues (along with ticket price), and ticket revenues are the primary source of revenues for Division I athletic programs (Fulks, 2010), the use of attendance to predict revenues creates a major independence concern in the regression models of those previous studies. We are encouraged that the model in this study was able to explain an approximately equal amount of variance in generated revenues, nearly 80 percent, despite choosing not to include attendance as an explanatory variable.

Table 3 - *Regression Results (Dependent Variable = Generated Revenues)*

Variable	*Unstandardized Beta Coefficient*	*Standard Error*	*T-statistic*	*P-value*
YEAR04	4373524.528	2128732.514	2.055	.040
YEAR05	5698524.537	2122921.312	2.684	.008
YEAR06	8440114.038	2133807.101	3.955	.000
YEAR07	7939997.592	2152773.764	3.688	.000
BBHISNCA	1281666.323	317057.853	4.042	.000
BBHISNIT	-152531.477	498140.983	-.306	.760
BBCYNCAA	1351347.190	2382716.890	.567	.571
BBCYNIT	29366.932	2161557.434	.014	.989
ENROLL	518.452	83.068	6.241	.000
SPORTS	224069.901	295142.810	.759	.448
ATHLETES	-2387.557	7893.581	-.302	.762
CONFBCS	24390900.398	2229564.637	10.940	.000
FBCYBOWL	1119653.219	2032202.706	.551	.582
FBWINCUR	11995122.435	5025408.457	2.387	.017
FBWINPRE	9092496.160	4182707.844	2.174	.030
BBWINCUR	9918140.586	5061288.778	1.960	.051
BBWINPRE	9977629.789	6413994.747	1.556	.120
FBHISTORY	2207281.256	309764.358	7.126	.000
POPULATE	-3.050	1.596	-1.910	.057
INCOME	-70.515	77.280	-.912	.362
(Constant)	-3.3353785.506	4809817.259	-6.935	.000

Note: $\underline{F}(20,456) = 75.113$, $\underline{p} = <.001$, $R^2 = .767$

Many of the same findings of note from the correlation results are present with the regression model as well. The year-by-year dummy variables were all significant in the regression model (note that the 2003 year dummy was excluded to avoid perfect multicollinearity with the use of panel data in the OLS regression model). The beta weights in the regression model display a trend towards gradual increases in revenue over time, with schools generating approximately $8 million more in 2006 and 2007 than they did in 2003, ceteris paribus, an increase of more than 20 percent over just three-to-four years. This finding again is consistent with the notion of the "arms race" of revenue generation in college sports and the recent escalation of conference television contract revenues.

An examination of the t-statistics reveals that membership in a BCS conference was the single-most important predictor of department-generated revenues. The beta weights show that BCS conference membership is worth more than $21 million annually to member institutions, *ceteris paribus*. With the mean annual generated revenues from the sample at just less than $36 million, this difference between BCS and non-BCS schools of more than $21 million is considerable, providing support for those using the labels of the "have's" and "have not's" to describe such athletic programs.

We also note that university enrollment was one of the strongest predictors of department-generated revenues in the regression model. This finding is not overly surprising, as many of the top athletic programs in the country are housed in some of the largest, mostly public, universities, such as the University of Texas, the University of Florida, and The Ohio State University for example. This provides additional support for the applicability of Bowen's Revenue Theory of Cost, in that institutions with large enrollments and strong university revenues in areas like tuition and contributions can invest heavily in their athletic programs, which may lead to athletic success and resulting revenue generation within the athletic program. The University of Central Florida, which is one of the largest universities in the United States in terms of enrollment, is an example of this, where Central Florida has increased both its athletic spending and profile significantly over the past decade.

Finally, the regression results revealed that county population and per capita income were not significant predictors of athletic department-generated revenues within the model. While we would expect population, in particular, to be a significant predictor of revenues in professional sport, and correlated in the positive direction, the concepts of "big markets" and "small markets" simply do not appear to apply in college sports. Within the three largest U.S. metropolitan markets of New York, Los Angeles, and Chicago, only the University of Southern California would be considered a truly elite football program, whereas many of the largest athletic budgets in the country reside in medium-sized markets or even small cities like Gainesville, Florida for example.

Theoretical Implications

While the work of Mondello (1999), Wells (2001), and McEvoy (2005) parallel the present study, insofar as each predicted revenues to intercollegiate athletic programs, this was the first study to examine department-generated revenues as the dependent variable in the prediction model. As discussed earlier, Mondello instead examined annual profits of athletic programs, while Wells and McEvoy created models solely predicting fund raising revenues. Despite these differences in defining the predictor variable, a number of similarities exist between the present study and those prior works. For example, both this study and McEvoy's research found conference affiliation to be a primary predictor of revenues. As mentioned previously, and in addition to the key difference in defining the dependent variable of interest, a major improvement of this study versus the previous research in this area was the elimination of attendance as an explanatory variable, which can create difficulties in results interpretation.

We believe the use of Bowen's Revenue Theory of Costs (1970, 1980) to explain the financial behavior of college athletic programs is an important contribution of this study. Given the highly commercialized nature and extraordinary revenues and expenses of Division I athletic programs, it is understandable that those outside the realm of college sports, and even many inside it, mistakenly view college athletics financing through the lens of profits and losses. As

non-profit organizations, their behavior cannot be examined in this manner. A typical for-profit business is motivated to maximize revenues, as college athletic programs seemingly do. The distinction, however, is on the expenses side. Whereas a for-profit business attempts to minimize expenses relative to revenues in order to yield as much profit as possible, non-profits have no such motivation, particularly in an environment of revenue growth, as has been the case in Division I intercollegiate athletics in recent years, particularly among the major BCS conferences. When college athletic programs generate increased revenues, as our results reveal has been the case in recent years, expenses must be raised accordingly so as to generate no profit at the completion of the fiscal year. In this regard, Bowen's Revenue Theory of Costs, which explained such behavior throughout higher education without specifically examining intercollegiate athletics, is an appropriate lens through which to examine the revenue generation and spending behavior of college sports programs. Several findings in this study, including the relationships identified between revenues and the number of varsity sports sponsored and student-athletes, as well as with university enrollment, support the use of the Revenue Theory of Costs in explaining financial behavior within college athletics.

Consistent with Bowen's theory, it is interesting to note that we could not identify any universities through a media search that elect to treat their major conference athletic department as a "cash cow" product within the larger university umbrella and adopt a "profit-," or surplus-, taking financial strategy where athletic expenditures in non-revenue areas like "Olympic" sports would be minimized in order to shift a large athletic surplus to counter financial deficiencies throughout the university, such as the decrease in state support that has affected many public universities. Some BCS member universities were identified, including the University of Florida, University of Tennessee, and Louisiana State University, which do transfer athletic surplus to the general university, but these transfers generally represent well below ten percent of the total athletic budget (Addo, 2012). Again, we believe this is consistent with Bowen's Revenue Theory of Costs, where athletic departments are increasing expenditures directly in line with revenues rather than behaving more efficiently to seek profits, as would be expected of a traditional, for-profit organization. Thus, it appears that college athletic departments focus more on excellence and prestige, consistent with Bowen's second law of the Revenue Theory of Cost, rather than seeking financial surplus to aid the university's overall financial condition.

Industry Implications

The primary purpose of this study was to provide understanding of factors explaining athletic department-generated revenues in NCAA Division I Football Bowl Subdivision athletics. Understanding these factors relating to revenue generation is vital to the budgeting and financial activities of athletic programs. One of the more challenging activities in this area for programs is budget forecasting. Many traditional businesses have predictable sales figures from one financial period to another where, for example, a company like Nike may be able to predict with considerable accuracy how many athletic shoes it will sell this holiday season based on past figures. While athletic programs also base projected revenues on past activities, a product like a football team lacks the consistency and reliability of a pair of athletic shoes. Accordingly, an understanding of factors related to revenue generation, as this study provides, is important for athletic practitioners. One interesting specific use of this study's regression model is the finding of BCS conference membership being worth $21.4 million in annual revenues, *ceteris paribus*. For schools such as the University of Utah and Texas Christian University, who have moved

from non-BCS to BCS conferences, this finding provides a useful estimation of the potential effects of such a change. Conversely, for programs facing the possibility of moving in the other direction to a non-BCS conference, as could occur in the present climate of potential conference realignment towards "superconferences" of 16 or more teams, knowing how such a move could negatively impact their revenues would also be quite informative.

Recommendations for Future Research

As stated before, our study is the first to predict department-generated revenues for college athletic programs. One area that future studies should examine is the differences we found between members of BCS and non-BCS conferences. Future studies could create separate statistical analysis for each of these two groups of schools and examine differences in factors related to their generated revenues. Further study is also need on schools that have transitioned to the FBS level to enhance the profile of their football program and university, as well as the impact of moving to BCS conferences as has been the case at schools like Texas Christian University and the University of Utah in recent years. Another area for future study is further investigation of the applicability of Bowen's Revenue Theory of Costs to the financial behavior of college athletic programs. We believe that the identification and use of this theory to understand college sports finance is a key contribution of this study, and is worthy of future exploration and discussion.

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