REVENUE PATTERNS AND COLLEGE FOOTBALL REALIGNMENT

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ABSTRACT

Studies of college football realignment have primarily focused on on-field characteristics with little attention being paid to the revenue aspects of changing conferences. In this study, we show that there is a greater reliance on certain types of revenue; student fees, school funds, and rights and licenses; by those institutions changing conferences than by those that remained in a single conference. These differences are similar to differences identified between Power-5 and non-Power-5 institutions. **JEL Classification:** C2, G1

INTRODUCTION

A number of studies have examined the demand for college football games by focusing primarily on such on-field factors as competitive balance, rivalries, and uncertainty of outcomes. Related studies have examined those factors which cause college athletic programs to change conference affiliation. However, research is sparse on the topic of the revenue sources used by schools going through the process of realignment. It is important to understand that institutions in different circumstances will need to employ different revenue sources. In this work, we show that reliance on different sources of revenue varies between institutions that change conferences and those that do not. We also show that the reliance varies between Power 5 (Big 10, Big 12, Atlantic Coast, Pac 12, and SEC) and non-Power 5 conferences (American, Conference USA, Mid-American, Mountain West, and Sun Belt).

The remainder of the paper is organized into five sections. The first section provides a review of the relevant literature. The second section describes the data and variables used in the study. The third section introduces the predictive model. This provides a theoretical basis for evaluating the different influences on total revenue. The fourth section describes the methodology and results. The paper concludes with a summary of the main findings and recommendations for further study.

LITERATURE REVIEW

The demand for college football games, measured by home attendance figures or home attendance as a percentage of stadium capacity, has been explained using numerous on-field variables. Not surprisingly, the number of home team victories has been positively associated with demand for college football games in several studies. An early analysis of game day attendance for 1997 season (Price and Sen, 2003) found the number of victories in the previous eleven games to be a significant variable in game day attendance. A more recent study of game day attendance for the period 2004 to 2009 (Falls and Natke, 2014) found season wins to have a similar impact. A study of four non-AQ (non-Power conferences) conferences (Paul, Humphreys, and Weinbach, 2012) identified home team winning percentages as a significant variable explaining attendance.

Another measure of on-field success, bowl game appearances, was a significant variable in several studies. In a study of realignment and game day attendance (Groza, 2010) home team bowl appearances were found significant. These results agree with results found by Price and Sen (2003) and Falls and Natke (2014). Measures of more long-term success have also been successful explanatory variables. Historic win percentage (Kaempfer and Pacey 1986) and lifetime win percentage Falls and Natke (2014) were shown to be significant explanatory factors as were the number of years of the football programs' existence Price and Sen (2003).

Demand is also thought to be influenced by the competitiveness of the game. Price and Sen (2003) and Falls and Natke (2014) both found games against traditional rivals to be important factors. However, Paul, Humphreys and Weinback (2012) found that uncertain outcomes, associated with close contests, did not lead to increased attendance as predicted. Rather attendance was found to increase with the probability or greater certainty of a home team victory.

Although ticket sales are important, revenues for athletic programs are also obtained from sources other than ticket sales. Student fees, school funds, contributions, and rights and licensing fees are all used to support athletic programs. Attendance; i. e., ticket sales; is a major source of revenue that Groza (2010) found has remained the largest source of revenues for the programs he studied. No doubt, this is the case for most programs. Programs, dependent upon their circumstances, will make use of the other revenue sources in varying degrees. Apart from ticket revenues there has not been much research focusing on other revenue sources. Humphreys (2006) and Humphreys and Mondello (2007) studied, respectively, how athletic success effected state appropriations and private donations but beyond those studies little analysis is available.

Conference realignment has become much more common in recent years and has been studied primarily as a function of on-field performance. Eckard (2017) found that competitive imbalance is a cause of stronger teams leaving their present conference for a stronger one. Groza (2010) found that a change in conferences was statistically significant in explaining attendance as a percentage of stadium capacity. Jensen and Turner (2014) used cluster analysis of financial revenues and on-field variables to propose conference realignments in a manner similar to the way that European soccer leagues realign through a system of relegations and promotions.

DATA

Our data are composed of 1084 observations of revenue types taken from the annual reports to the Department of Education of public FBS colleges and universities for the years 2006 to 2015. The data represent an unbalanced panel. During the period, some schools added football (e.g., North Carolina Charlotte in 2013), others moved from FCS to FBS (e. g., Appalachian State in 2014) and one dropped football for a year (Alabama Birmingham in 2015).

Variables included in the study:

TR: total revenue expressed in 2005 dollars (dependent variable).

Power5: a dummy variable that equals 1 if an institution was in a Power 5 during the year and 0 otherwise.

bef/aftyrs: counts the number of years prior to a conference change (negative values) and the number years after a conference change (positive values). Zero values are assigned to those institutions that did not change conferences during the study period.

Ticket%: it is the percentage of TR accounted for by ticket sales. Ticket sales include sales to the public, faculty, and students, and money received for shipping and handling of tickets. They do not include amounts in excess of face value or sales for conference and national tournaments that pass-through transactions.

Fee%: it is the percentage of TR accounted for by fees assessed to support athletics.

Fund%: it is the percentage of TR accounted for by school funds. School funds include both direct and indirect support from the university, including state funds, tuition, tuition waivers, etc. as well as federal work study amount for athletes. It also includes university-provided support such as administrative costs, facilities and grounds maintenance, security risk management, utilities, depreciation, and debt services.

Contr%: it is the percentage of TR accounted for by amounts received directly from individuals, corporations, associations, foundations, clubs, or other organizations by the donor for the operation of the athletics program. Amount paid in excess of a ticket's value. Contributions in cash, marketable securities, and in-kind contributions such as dealer-provided cars, apparel and drink products for team and staff uses. Also includes revenue from preferential seating.

Rights/Lic%: it is the percentage of TR accounted for by revenues from radio and television broadcasts, internet and e-commerce rights received from institution-negotiated contracts, the NCAA and conference revenue sharing arrangements; and revenue from corporate sponsorships, licensing, sales of advertisements, trademarks, and royalties. Includes the value of in-kind products and services provided as part of the sponsorship (e.g., equipment, apparel, soft drinks, waters, and isotonic products).

The revenue types represent five of six classifications of revenue for all public universities reported to the Department of Education and published by *USA Today*. The sixth category, other revenue, is a loosely defined collection of other sources which is not included in the analysis.

The demographics of the values used for each of the equations are presented in Tables 1-5. Table 1 provides means, standard deviations, maximums, and minimums for all variables. Tables 2 (Power-5 institutions) and 3 (non-Power-5 institutions) make it clear that the Power-5 and non-Power 5 institutions live in different worlds with regard to overall revenues. The mean TR figure for Power-5 institutions is almost three times that of the non-Power 5 schools. Furthermore, the minimum Power-5 TR figure is larger than the mean value for non-Power 5 schools. The minimum non-Power 5 figure is roughly 1/10 of the Power-5 mean.

Tables 4 (non-changers) and 5 (conference changers) show that the non-changers have a TR mean that is about 65% higher than those that change conferences. The Power-5 variable mean indicates that non-changers are 3 times as likely to be Power-5 members as are those changing conferences. This supports the notion that much of the realignment involves the movement of non-Power 5 institutions either to Power-5 conferences or into a reshuffling process among the non-Power 5 conferences.

MODEL

A model estimating the reliance on different revenue sources by institutions considering realignment was tested for schools that changed conferences and those that did not. The same model also examined Power-5 versus non-Power-5 schools. The model took the following form:

$$TR = f(\text{Power5, bef/aft yrs, ticket\%, fee\%, fund\%, contr\%, rights/lic\%}) \qquad (1)$$

Five variants of the model were tested using OLS regression; (1) All—data from all institutions for each year of the study period, (2) Power 5—data for institutions in Power 5 conferences during a given year (3) Non-Power 5—institutions that were not part of a Power-5 conference during a given year (4) Non-Changers—composed of institutions that made no conference change during the period (5) Conference Changers—includes only institutions that changed conferences during the time period.

RESULTS

Table 6 presents the regression results of five models. Most variables are significant across all equations. The Power-5 dummy was significant in each of the equations where it appeared, making it clear that the major differences observed in the demographic tables are present in the equation. The bef/aft yrs variable was also significant across all equations where it appeared. The significantly positive signs indicate that those institutions in the process of change see revenues grow the more years they are into the process. Real ticket sales % was positive and significant in all but the Power-5 equation. This is consistent with Groza's (2010) finding of the importance of ticket sales and with the importance assigned to attendance in many

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other studies. Every estimate found the real contribution % was significant and positive. Clearly, contributions are important regardless of level or change status.

However, there are also notable differences in the impact certain variables among equations. The reliance on student fees and school funds as revenue sources are not significant in the overall equation but both are significant in all but one of the other equations. The Power-5 equation shows that reliance on student fees has a significantly negative impact on overall revenue, but the non-Power5 equation indicates that the same variable has significantly positive impact. A similar result is apparent for school funds variable. The overall equation does not show a significant relationship, but there is a negative and significant relationship when only the Power-5 schools are considered and a positive and significant relationship when only the non-Power-5 schools are included. These results are not surprising because Power-5 institutions are more likely to have access to revenues from outside of the institutions. When Power-5 schools must rely on internal sources of revenues they are probably having difficulties raising funds. Additionally, non-Power-5 schools, with their more limited revenue sources, typically rely more on internal sources.

Although the rights/licenses variable is significant for the overall equation there is still a difference in signs between the Power-5 and non-Power-5 institutions. Heavy reliance on rights and licensing revenues have a negative impact on Power-5 institution revenues but a positive impact on non-Power-5 revenues. This result does suggest institutions in established Power-5 conferences that are forced to rely more heavily on rights and licenses for revenue are likely to have less revenue.

The overall comparison of Power-5 and non-Power-5 institutions shows that all types of revenue are significantly and positively important to non-Power-5 schools whereas Power-5 schools forced to rely on the less abundant sources like student fees, school funds, and rights and licensing will have more difficulty. That said the Power-5 equation is the poorest fit on all the equations, explaining only 32.2% of the revenue variation. Clearly variables other than those hypothesized by the model are important in explaining the size of Power-5 institution revenues.

Several variables are positively significant in Conference Changer regression but not significant in the Non-Changers regression. These results are consistent with differences found between the Power-5 and non-Power-5 results. It is clear from Tables 4 and 5 that the Conference Changer observations are composed mostly non-Power-5 institutions and that the non-changers data are taken mostly from Power-5 observations. The mean of Power-5 dummy variable indicates the percentage of observations that equal 1; that is, it shows the proportion of the observations that represent Power-5 schools. For the conference changers, 19% of the observations came from the Power-5 while the non-chargers show a 57% mean. Therefore, we should expect that changer results will tend to reflect the non-Power 5 results and the non-changer results will reflect the Power-5 results.

The Conference Changer equation identifies all revenue source percentages as having a significant positive impact total revenues just as the non-Power-5 equation did. This is not surprising because about 80% of changer observations came from non-Power-5 institutions. The non-Changer equation is not as consistent but the same group of variables show different results between Changers and non-Changers. When comparing Power-5 to non-Power-5 findings three variables; student fees, school funds, and rights and licensing; produced significantly different signs from those in the non-Power-5 equations. The comparison of Changers and non-Changers also shows

different results for each of those variables. Each is significantly positive for Changers but non-significant for the non-Changers.

CONCLUSIONS

The results of our study make it clear that institutions changing conferences are more likely to rely on sources of revenue beyond traditional ticket sales. Although ticket sales are important to all institutions, the relative importance of other sources is significant only among the colleges changing conferences. Reliance on student fees, school funds, contributions, and rights and licensing all are positively related to total revenues of Conference Changers. Of those variables, only relative reliance on contributions significantly impacted the revenues of non-Changers. The results also show that revenues of the Conference Changers increase as they progress through the years leading up to and following the change. This result is unsurprising because many of those changing conferences are moving to a more prestigious conferences where they will require more resources to compete. Add to that the greater conference revenue distributions of Power-5 conferences and one should expect to revenues to increase for institutions moving from less to more prestigious conferences.

The observed differences in the reliance on non-ticket revenue sources appear to be, in part, a product of the type of institutions that choose to change conferences. Institutions from non-Power-5 conferences were several times more likely to change conferences than were those within the Power-5 conferences. Therefore, one would expect the Conference Changer results to be similar to those of the non-Power-5 schools and for the results of the non-Changers to be similar to the results from Power-5 schools. Our findings generally support this conclusion. The comparison of those results show the differences between the Power-5 and non-Power-5 schools are similar to those found between Conference Changers and non-Changers.

It is noteworthy that the Power-5 equation was the poorest fit of any of the equation, explaining only about one third of variation in total revenue. There are clearly other factors that impact the Power-5 institutions' ability to raise funds. Identifying and measuring additional variables provides a potential area for future research that can build on this paper's results and analysis.

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TABLE 1
DESCRIPTIVE STATISTICS ---- ALL

Variable	Mean	Maximum	Minimum	STD	n
TR	9,848,227.71	259,613,111.60	7,884,540.34	32,506,690.73	1,084
Power 5	0.46	1	0	0.499	1,084
Bef/Aft Yr	-0.61	10	-8	2.014	1,084
Ticket Sales%	17.317	48.494	0.329	10.905	1,084
Student Fees%	15.565	84.71	0	19.811	1,084
School Funds%	18.106	80.43	0	19.59	1,084
Contribution%	17.01	87.429	0	10.19	1,084
Rights/Lic%	24.21	56.949	2.603	12.556	1,084

TABLE 2
DESCRIPTIVE STATISTICS --- POWER 5 ONLY

Variable	Mean	Maximum	Minimum	STD	n
TR	77,789,771.42	259,613,111.60	27,792,194.34	26,654,491.92	497
Bef/Aft Yr	-0.14	4	-8	0.499	497
Ticket Sales%	26.417	48.494	5.609	7.307	497
Student Fees%	3.168	17.685	0	4.114	497
School Funds%	4.088	46.992	0	6.063	497
Contribution%	24.393	87.429	0	8.439	497
Rights/Lic%	34.912	56.949	4.358	7.456	497

TABLE 3
DESCRIPTIVE STATISTICS --- NON-POWER 5 ONLY

Variable	Mean	Maximum	Minimum	STD	n
TR	26,229,877.90	85,017,464.49	7,884,540.34	11,469,028.23	587
Bef/Aft Yr	1.01	10	-8	2.478	587
Ticket Sales%	9.633	34.403	0.329	6.722	587
Student Fees%	26.024	84.710	0	21.702	587
School Funds%	29.951	80.430	0	19.268	587
Contribution%	10.766	38.181	0	6.817	587
Rights/Lic%	15.172	56.262	2.603	8.080	587

TABLE 4
DESCRIPTIVE STATISTICS --- CONFERENCE CHANGERS ONLY

Variable	Mean	Maximum	Minimum	STD	n
TR	34,206,465.91	174,300,365.60	8,491,623.85	21,924,797.33	318
Power 5	0.19	1	0	0.394	318
Ticket Sales%	13.441	39.211	0.329	9.798	318
Student Fees%	25.653	84.71	0	23.438	318
School Funds%	21.606	59.792	0	16.462	318
Contribution%	14.316	47.798	0	8.21	318
Rights/Lic%	17.791	51.06	2.863	9.495	318

TABLE 5
DESCRIPTIVE STATISTICS --- NON-CHANGERS ONLY

Variable	Mean	Maximum	Minimum	STD	n
TR	56,391,186.90	2,596,131,186.90	7,884,540.34	33,959,489.40	766
Power 5	0.57	1	0	0.495	766
Ticket Sales%	18.939	48.494	0.494	10.942	766
Student Fees%	11.345	75.587	0	16.342	766
School Funds%	16.642	80.430	0	20.593	766
Contribution%	18.136	87.429	0	10.718	766
Rights/Lic%	26.894	56.494	2.603	12.711	766

TABLE 6
REGRESSION RESULTS

Variable	ALL	Power 5	Non-Power 5	Conf. Changers	Non-Changers
Power 5	25,730.83			22,528.21	22,488.37
	(.000)*			(.000)*	(.000)*
Bef/Aft Yr	1,580.62	2,636.27	966.89	1,495.31	
	(.000)*	(.003)*	(.000)*	(.000)*	
Ticket Sales%	677.75	-272.85	1,082.21	957.60	669.32
	(.000)*	(.296)	(.000)*	(.000)*	(.000)*
Student Fees%	104.83	-2,389.26	667.44	487.55	-72.20
	(.375)	(.000)*	(.000)*	(.008)*	(.637)
School Funds%	104.66	-1,523.26	696.26	481.32	-7.82
	(.398)	(.000)*	(.000)*	(.012)*	(.960)
Contribution%	953.43	505.09	764.43	1,112.89	937.50
	(.000)*	(.035)*	(.000)*	(.000)*	(.000)*
Rights/Lic%	262.87	-703.45	1,163.33	604.61	164.24
	(.044)*	(.005)*	(.000)*	(.011)*	(.292)
Constant	1,179.62	111,398.31	-473229.46	-29457.69	104,273.83
	(.912)	(.000)*	(.000)*	(.095)	(.428)
F Stat	351.64	40.30	99.06	114.03	247.38
	(.000)*	(.000)*	(.000)*	(.000)*	(.000)*
Adjusted R^2	0.694	0.322	0.501	0.713	0.659
n	1084	497	587	318	766

Coefficients are expressed thousands of dollars.
* denotes Significance level below .05.
The dependent variable is Total Revenue (TR).