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Big 12 Football: Competitive Balance Before and After Realignment

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Abstract
Conference realignment among athletic programs that compete at the Division I level of the National Collegiate Athletic Association (NCAA) has been prevalent among various institutions over the past decade, particularly among institutions that sponsor football. The purpose of the study was to investigate the effects on competitive balance when a conference lost member institutions who chose to join other conferences, and then added new institutions to replace those which had departed. Specifically, the effects on competitive balance in football in the Big 12 Conference, which lost four members and replaced with two additional schools, were examined. Using the standard deviation as our measure of competitive balance it was discovered that competition among the football programs were not as competitively balanced as before the initial realignment began.

Keywords: college athletics, conference realignment, economic inequality

Introduction

Since the early 1990s numerous NCAA Division I athletic programs have changed their conference affiliation. The reasons for these changes in conference membership, often referred to as member churning, are myriad, ranging from political squabbles (13, 32) to opportunities to better position themselves for championship competition (20). There are

also ethical dimensions to competitive balance in college sports, as providing a level playing field for member institutions is one of the goals of athletic conferences (25, 28). Economic considerations are also often a major factor in realignment decisions (8, 17, 30, 32).

Closely associated with the economic consideration is the need to increase competitive balance as it is related to revenue maximization because of its relationship to consumer demand (8, 9, 14, 24, 25). The uncertainty of demand hypothesis states that fan interest (e.g., ticket sales, television viewership) is higher for games between more equally matched opponents than for games featuring mismatches.

Research on Competitive Balance in College Football

College football has been a common focus for analyses of competitive balance. Arguing that the NCAA operates as a cartel, Eckard (11) compared competitive balance in college football before and after NCAA enforcement began in 1952. Results indicated reduced competitive balance at both the national and conference levels. Sutter and Winkler (29) analyzed competitive balance in college football since the end of World War II, focusing on the effect of scholarship limits. Their study found conclusive results in regard to whether scholarship limits indeed enhanced competitive balance. An analysis of the impact of NCAA regulations conducted by Depkin and Wilson (6) went even further, examining more than 100 years of data. Using multiple measures, findings indicated a decrease in competitive balance over time. Depkin and Wilson (7) also examined the impact of NCAA sanctions on rules-breaking institutions with an assumption that a reduction in cheating would result in an increase in competitive balance. Finally, Dittmore and Crow (9) evaluated the impact of the Bowl Championship Series (BCS) on competitive balance involving the BCS's six founding conferences. They reported an increase in in-season competitive balance in all six conferences; however, an increase in between-season competitive balance was found in only half the conferences.

More specifically, multiple studies have addressed the impact of turnover in conference membership, or churning of members, on competitive balance in college football. Contrary to findings of many (but not all) of these studies, several of the projects found improved competitive balance for conferences that had experienced churning. Rhoads (25) examined the evolution of the Western Athletic Conference and Mountain West Conference over a 40 year period, concluding that most of the changes over time had resulted in improved competitive balance in football. Perline and Stoldt (22) studied changes in competitive balance in football during the 10 years before and after the Big 8 became the Big 12. Using multiple measures of competitive balance, they found a general trend toward improved balance following the formation of the expanded conference. Similarly, Perline et al. (23) compared competitive balance in football for Conference USA following member changes that occurred in 2005. Results were mixed, but indicated a slight improvement in competitive balance following the change.

Many of these studies concentrated on the competitive balance effects on the conference receiving the new members. It is not surprising that conferences expanding their memberships might view the effects on competitive balance in making their decision to admit new members, but what about the conference losing members? Given the fact that the conference losing members might need to scramble to find replacements, it could be hypothesized that those conferences losing members would find a decline in the competitive balance among its membership as the replacements would not be as perfectly a competitive balance fit as those original members.

The purpose of this study is to investigate the effects on competitive balance in a conference which has lost members, and thus needs to, often quickly, add new members to remain a viable conference. More specifically, we investigated the effects on competitive balance in football after the Big 12 Conference lost four members (Colorado, Nebraska, Missouri, and Texas A&M) between the 2010 and 2011 seasons, and then added two members (West Virginia and Texas Christian University) for the 2012 and following seasons.

History of the Big 12

The Big 12 is a collegiate athletic conference consisting of ten schools. It is a member of the NCAA, where sports other than football compete at the Division I level. Football teams are classified in the Football Bowl Subdivision (FBS, formerly Division I-A), which houses the larger, more elaborate football programs (18).

The Big 12 Conference was formally established on February 24, 1994, as four programs from the former Southwest Conference – Texas, Baylor, Texas Tech, and Texas A&M – merged with the eight schools that made up the Big 8 Conference at the time – Colorado, Iowa State, Kansas, Kansas State, Missouri, Nebraska, Oklahoma, and Oklahoma State (1). This merger was brought forth by other conferences expanding their memberships in order to attract greater revenue from television deals, most notably the Southeastern Conference (SEC) and the Big 10 (10). With the original formation its 12 members competed in two divisions for football, with the Texas and Oklahoma schools making up the South Division, and the six northernmost schools comprising the North Division. The Big 12 began play in the fall of 1996, with the Texas Tech vs. Kansas State football game being the first-ever competition put on by the conference (34).

Realignment with the conference began in 2010, as some programs within the conference were becoming unhappy with how television revenues were distributed among conference members. Rumors sprung up about the conference disbanding as the result of other conferences showing interest in luring some of the more prominent programs of the Big 12 to join them (2). In June of that year, Colorado left to become a member of the Pac 10 and Nebraska departed to join the Big Ten Conference. This led to a restructuring of the revenue

agreement among the remaining schools, which guaranteed Texas, Oklahoma, and Texas A&M $20 million each year, with the other schools splitting the rest of the revenues. It also permitted Texas to establish their own television network, the Longhorn Network (3, 10).

In September of 2011, Texas A&M accepted an invitation to join the SEC, once again leaving the Big 12 with only 9 members. As a result, the Big 12 extended an invitation to Texas Christian University (TCU) to join the conference (4). This was a controversial move at the time, as TCU had just accepted an invitation to compete in the Big East Conference. In October, TCU's Board of Trustees voted to accept the invitation, officially joining in July 2012. Later that year, Missouri also announced they were departing the Big 12 for the SEC, once again leaving the Big 12 with only nine members. Anticipating this move, the conference accepted West Virginia as their replacement (33). Since that addition, the Big 12 has maintained a steady membership with those ten programs.

Measuring Competitive Balance

Several methods have commonly been used to measure competitive balance. The most appropriate of these methods often depends on what the researcher is attempting to specifically measure. Methods most appropriate for measuring competitive balance within a given season may be different from those used to measure competitive balance between seasons (16).

Possibly the method most often used to measure competitive balance within a conference, in a given season, is the standard deviation of winning percentages. Since there will (outside of a tie) always be one winner and one loser for each game, the average winning percentage for the conference will always need be .500.

In order to gain insight into competitive balance we would need to measure the dispersion of winning percentages around this average. To do this we can measure the standard deviation. This statistic measures the average distance that observations lie from the mean of the observations in the data set.

Standard Deviation Formula

The larger the standard deviation, the greater is the dispersion of winning percentages around the mean, the thus the less the competitive balance. If all teams have winning percentages of .500, there would be a standard deviation of zero and there would be perfect competitive balance.

$$\sigma = \sqrt{\frac{\Sigma\,(\mathrm{WPCT} - .500)^2}{\mathrm{N}}}$$

Formula for Ideal Standard Deviation

Using the actual standard deviation in our case does present a potential problem. This occurs because, all things being equal, it is a likelihood that the larger the number of conference games played, the more likely there will be less deviation of winning percentages, since various lucky breaks, injuries, etc. will, over time, even out. Since the Big 12 played eight conference football games in 2010, and nine games in 2012-2014 an adjustment needs be made. This adjustment entails finding the ideal competitive balance in which each team has a 50 percent chance of winning each game. This ideal can be measured as

Results

$$\sigma = 0.5 / \sqrt{N}$$

Table 1 displays the winning percentages for the Big 12 Conference for the year 2010 when the original twelve institutions still competed, and 2012-2014 after the departure of Nebraska, Colorado, Missouri and Texas A&M, and the addition of West Virginia and TCU. Table 1 also displays the standard deviations and ratios of the actual standard deviation to the ideal standard deviation for these years.

As indicated in Table I, the standard deviation for the year 2010 prior to the breakup was .228, and the three year mean after the breakup and addition of the two new members, was .273. Possibly a better comparison would be the ratio of the actual standard deviation to the ideal standard deviation. In this case the ratio increased from 1.29 before the breakup to a three year mean of 1.63 after the break up. This amounted to an approximate 26% increase. These results were consistent with the prediction that the competitive balance would decease as the Big 12 needed to scramble to find replacements for the four departing members.

TABLE 1

BIG 12 CONFERENCE FOOTBALL WINNING PERCENTAGES

STANDARD DEVIATIONS AND ACSD/IDSD RATIOS

	2010	2012	2013	2014	2015
Oklahoma State	.750	.556	.778	.444	.778
Kansas State	.375	.889	.556	.778	.333
Baylor	.500	.444	.889	.889	.667
Oklahoma	.750	.889	.778	.556	.889
Missouri	.750				
Texas	.250	.556	.778	.556	.444
Texas A&M	.750				
Iowa State	.375	.333	.222	.000	.222
Texas Tech	.375	.444	.444	.222	.444
Kansas	.125	.000	.111	.111	.000
Colorado	.250				
Nebraska	.750				
Texas Christian		.444	.222	.889	.778
West Virginia		.444	.222	.556	.444
Standard Deviation	.228	.245	.278	.295	.264
Ideal Standard Devi.	.177	.167	.167	.167	.167
Ratio IDSD/ACSD	1.29	1.47	1.66	1.77	1.58

One indication of the decrease in competitive balance with the addition of the new teams was the distance between the team with the best record and the team with the worst record. In the original Big 12 (2010), the range after the change was .625 (.125-.750), whereas the range varied from .889 (.000-.889) in 2012, 2014, and 2015 with a slightly smaller range of .778 (.111-.889) in 2013. While this variation could not be specifically attributed to the particular teams coming and going, the range, from top to bottom, increased considerably after the departure of Texas A&M, Nebraska, Colorado, and Missouri, and the addition of West Virginia and TCU.

Discussion

This study presents an interesting lens through which to view the effects of changes in conference membership on competitive balance in football, the sport commonly identified as being the driving force in recent conference realignment (12, 23). Previous studies (22, 23,

25) have found that conferences have achieved greater levels of competitive balance in football after churning members. However, in the previous examination of the Big 12 (22), the conference had expanded, proactively seeking additions to enhance its conference membership. In the present case of the Big 12, the conference suffered the unwanted loss of four members before hurriedly reacting by adding two—TCU and West Virginia. The resultant 10-team conference has been described by insiders as “Inherently unstable” and described by David Boren, president at Oklahoma, as “psychologically disadvantaged” as it pertains to the College Football Playoff (27).

Of particular interest was the fact that for the three years after the breakup the standard deviation continued to rise. One would expect that if this rising trend continued, the conference members would make some adjustments to correct for this imbalance. This is predictable, as one would expect a certain dynamism to take place as the various institutions began to adjust to the level of commitment of their competitors, and consequently some sort of movement toward a convergence would be established with a greater competitive balance among these institutions. There did appear to be some indication that such a movement was taking place, as the standard deviation fell from .295 in 2014, to .264 in 2015. While still considerably higher than the standard deviation of .228 the last year of the original Big 12, it was an improvement over 2013 and 2014. Though it would be difficult to suggest this was a trend, it at least suggested that possibly some adjustments were taking place among the member institutions leading to a more competitive conference.

Having said this, it must be pointed out that efforts to bring about more competitive balance are often stifled by various institutional variables that make anything approaching complete competitive balance very difficult to achieve.

Although conferences are intended to include institutions that are somewhat similar in their commitment to intercollegiate sports, it is a known fact that there is considerable inequality of expenditures, even within conferences. Those with the nicer facilities, a winning tradition, and a deeper pocketbook are more likely to continue to attract the better talent making competitive balance more difficult to achieve.

On the other hand, there are some changes in intercollegiate athletics that could lead to improvements in competitive balance. For instance, a decrease in the number of football scholarships could improve competitive balance by spreading the available talent among more teams. Similarly, it is likely that the use of relegation and promotion as practiced in soccer, i.e., European football, could redistribute the teams to more similar conferences, thus leading to improved competitive balance (26). The fact that neither of these changes, particularly the latter, are likely to take place suggests that there will no doubt always be some constraints on competitive balance.

Conclusions

The purpose of the study was to investigate the effects on competitive balance when a conference lost member institutions who chose to join other conferences, and then added new institutions to replace those which had departed. Our hypothesis was that after a conference lost members, it might need to scramble to find replacements and thus not be as competitively balanced as before the initial churning began. In testing this hypothesis we investigated the Big 12 Conference, which lost four members between the 2010 and 2011 seasons and replaced those departed members with two additional schools in the 2012 season and remain as of this writing. The results suggested that, at least for the Big 12 Conference, our hypothesis was verified. Using the standard deviation as our measure of competitive balance we found that the standard deviation was considerably higher after the addition of West Virginia and TCU (2012-2015) when compared to the period when the original members of the Conference were still intact (2010).

Limitations

Given the recent reconfiguration of the Big 12, we could only test our hypothesis for four years. It would be interesting to pursue this investigation over a longer period of time to see if the original hypothesis prevailed. Certainly, over time the conference could add or drop teams which could improve the competitive balance.

From another perspective it would have been worthwhile to see how the departing schools from the Big 12 effected competitive balance in the conferences to which they migrated. Unfortunately, since the four departing schools went to three different conferences, these small changes would not be expected to make any significant change to the competitive balance in the new conferences.

Indeed, competitive balance is not the only factor that is important when a conference chooses to add members. Nwosu's model for assessing the attractiveness of expansion candidates includes increased revenue, increased exposure, athletic prestige, academic prestige, team travel and alumni proximity as additional relevant factors (21). Nevertheless, given these other factors, one would expect to find conferences seeking to add institutions with similar athletic programs, as this would allow for a certain degree of competitive balance. To the extent that fan interest, and thus revenue, are often related to competitive balance it is expected that efforts to gain, maintain, and augment competitive balance would be an in important criterion for membership. This would appear to be particularly important in the case of football for the Big 12.

Applications in Sport

The findings of this study illustrate four applications relevant to conference sport administrators. First in a climate of member churning, those leagues that are proactive in retaining and/or attracting new members seem likely to be in better position to maximize benefits than those in reactive mode. Evidence pertaining to competitive balance in football

suggests as much. Rhoads' (2004) analysis of the effects of member churning in the Western Athletic Conference and Mountain West Conference was based on six shifts in membership. Five of those six were of a proactive nature, and the resulting overall trend was increased competitive balance. Further, and as previously indicated, Perline and Stoldt (22) reported enhanced competitive balance in the Big 12 after that conference proactively attracted new members. This study revealed decreased competitive balance in football after the conference suffered defections.

A second application underscores the importance of conference and institutional administrators adopting provisions to prevent or minimize member defections. Leibovitz (15) addressed a range of such actions, largely focusing the discussion on the Big 12 in the aftermath of Nebraska's defection. Noting the priority of conference stability, Liebovitz (15) recommended media revenue sharing and rights pooling as the best mechanisms to employ, assuming a conference has leverage to secure such agreements from its members.

A third application is that conference and institutional administrators must accept that conference member churning looms as an issue warranting ongoing attention. A review of the last five years at the NCAA Division I level reveals the following (19):
• 2011: Five changes involving four conferences and one independent.
• 2012: 16 changes involving 11 conferences.
• 2013: 21 changes involving nine conferences and two independents.
• 2014: Six changes involving five conferences.
• 2015: One change involving one conference and an independent.

The five-year total at the NCAA Division I level is 49 changes made. And while the pace of the changes has slowed over the last two years, the landscape is hardly settled. Comments by the University of Oklahoma president in summer 2015 regarding the Big 12's disadvantaged status sparked a wave of speculation about potential changes on the horizon (27). Even if additional changes do not occur in the short term, the longer term picture is less settled as various conference media contracts expire and conferences, their member institutions, and their media partners continue to face financial pressures in a dynamic environment.

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