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Competitive Balance in Conference USA Football: The Effects of Membership Churning

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The Effects of Membership Churning

ABSTRACT
Conference USA a major college athletic conference that experienced a number of membership changes in 2005. The purpose of this study was to assess the effects of those changes on competitive balance in the sport of football. Three measures of competitive balance were employed, and while results were mixed, the findings indicated slightly more competitive balance in the five years following the membership changes than in the five years before. This result supports the findings of previous studies on the effects of membership churning in other conferences on competitive balance in football.

Like most NCAA Division I Football Bowl Subdivision conferences, Conference USA has experienced a number of changes in its membership in recent years. As those changes—sometimes referred to as member churning—have occurred the issue of competitive balance has been a relevant concern because of the value conferences place on providing level playing fields for their member institutions (9, 10). Competitive balance is linked to undoubtedly the value of fair play, and it is also an important consideration as conferences seek to maximize revenue. Rhoads (9) linked competitive balance with increased ticket sales and enhanced television rights fees. Other scholars have supported the idea that the greater the uncertainty of a game's outcome (i.e., competitive balance), the greater the consumer interest in that contest (1, 2, 4, 8).

Prior to some membership changes that were announced in 2011, but have yet to be completed, the most recent change in membership in Conference USA occurred in 2005. At that time, four institutions left the conference and five others joined. This study examines the impact of those membership changes on competitive balance in the sport of football, which has been acknowledged as the predominant sport driving conference realignment (3). Specifically, the purpose of this study is to compare levels of competitive balance in Conference USA football between the time periods of 2000-2004 and 2005-2009.

METHODS
Table 1 lists the various institutions that were members of Conference USA during the time periods being examined.

Table 1
Conference USA Football Membership 2000-2009

School	Years in Conference
Cincinnati	1995-2005
Houston	1995-Present
Louisville	1996-2005

Memphis	1996-Present
Southern Mississippi (USM)	1995-Present
Tulane	1995-Present
Alabama-Birmingham (UAB)	1999-Present
Southern Florida (USF)	1995-2005
Central Florida (UCF)	2005-Present
Texas Christian (TCU)	1999-2005
East Carolina (ECU)	1996-Present
Army	1997-2005
Marshall	2005-Present
Rice	2005-Present
Southern Methodist (SMU)	2005-Present
Tulsa	2005-Present
Texas-El-Paso (UTEP)	2005-Present

Three methods of assessing competitive balance are employed in this study. The first is the standard deviation of winning percentages, which measures the dispersion of winning percentages for conference games around the overall average, which will always be .500. The formula for the standard deviation is:

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

The higher the standard deviation the greater the dispersion of winning percentages around the mean; and therefore, the lower the level of competitive balance.The second method employed is designed to determine the level of turnover among overall winners. The Hirfindahl-Hirschman Index (HHI), which was originally to measure concentration among firms within an industry (5), may be adapted to measure the concentration of championships within a given sport over time. The HHI is calculated by counting the number of times a team won a championship during a given period, summing those values and then dividing by the number of years in the period considered. The formula:

$$HHI = \frac{\Sigma f2}{T}$$

Lower HHI values are indicative of more teams winning championships in a given time period, which is related to better competitive balance.The third tool for evaluating competitive balance is to examine the range of winning

percentages for members of the conference during each time period. Winning percentages near .500 for conference game are indicative of better competitive balance. Therefore, the lower the range of winning percentages, the better the overall competitive balance.

RESULTS AND DISCUSSION

The following sections provide the results of the study based on the three methods of assessing competitive balance described above.

Standard Deviation of Winning Percentages

Tables 2 and 3 display the winning percentages for Conference USA football for the years 2000-04 and 20005-09 respectively. Table 4 displays the standard deviations for both time periods.

Table 2

Winning Percentage for Football Teams, 2000 through 2004

Year	Lou	Cin	ECU	USM	UAB	Tul	Mem	Hou	Army	TCU	USF
2000	0.857	0.714	0.714	0.571	0.429	0.429	0.286	0.286	0.143	—	—
2001	0.857	0.714	0.714	0.571	0.714	0.714	0.429	0	0.286	0.571	—
2002	0.625	0.75	0.5	0.625	0.500	0.5	0.222	0.375	0.125	0.75	—
2003	0.625	0.25	0.125	1.000	0.500	0.375	0.625	0.5	0	0.875	0.625
2004	1.000	0.625	0.25	0.625	0.625	0.375	0.625	0.375	0.25	0.375	0.375
Mean	**0.793**	**0.611**	**0.461**	**0.678**	**0.554**	**0.364**	**0.437**	**0.307**	**0.161**	**0.643**	**0.5**

Table 3

Winning Percentage for Football Teams for 2005 through 2009

Year	UCF	Mem	USM	ECU	UAB	Marshall	Tulsa	UTEP	Houston	SMU	Tulane	Rice
2005	0.875	0.625	0.625	0.5	0.375	0.375	0.75	0.625	0.5	0.5	0.125	0.125
2006	0.375	0.125	0.75	0.625	0.25	0.5	0.625	0.375	0.875	0.5	0.25	0.75
2007	0.875	0.75	0.625	0.75	0.125	0.375	0.75	0.25	0.75	0	0.375	0.375
2008	0.375	0.5	0.5	0.75	0.375	0.375	0.875	0.5	0.75	0	0.125	0.875
2009	0.75	0.125	0.625	0.875	0.5	0.5	0.375	0.375	0.75	0.75	0.125	0.25
Mean	**0.65**	**0.425**	**0.625**	**0.7**	**0.325**	**0.425**	**0.675**	**0.425**	**0.725**	**0.35**	**0.2**	**0.475**

Table 4

Standard Deviation for Winning Percentages

Year	SD

2000	0.238
2001	0.280
2002	0.208
2003	0.301
2004	0.224
5-Year Mean SD	**0.250**
2005	0.226
2006	0.232
2007	0.287
2008	0.277
2009	0.256
5-Year Mean SD	**0.256**

As shown in Table 4, the mean standard deviation was .250 in the 2000-04 period and .256 in the 2005-09 period. While the difference is not great, there is slightly more competitive balance in the earlier period. One could reasonably conclude that using the standard deviation as a measure of competitive balance indicated there was very little difference when comparing the two five year periods.

HHI Championships

Using the data from Table 5 to construct the HHI to measure competitive balance between the two periods we find somewhat more competitive balance in the later period.

Table 5
Regular Season Conference Champions, 2000 through 2009

Year	Champion(s)
2000	Louisville
2001	Louisville
2002	Cincinnati, TCU
2003	Southern Mississippi
2004	Louisville
2005	Central Florida
2006	Houston

2007	Central Florida
2008	Rice, Tulsa
2009	East Carolina

When we measure the regular season standings in the 2000-04 period we found Louisville won the championship three times, while Southern Mississippi won once, and in one year (2002) there was a tie between TCU and Cincinnati. Giving one point for an outright championship and .5 to each team for a two-way tie, we found:
HHI= 32+12+.52+.52 = 9+1+.25+.25= 10.50/5=2.1
When measuring the HHI in the later period we found that Central Florida won two championships, with Houston and East Carolina winning one, while there was a two-way tie between Tulsa and Rice (2008). Using the same point distribution as indicated above, we found:
HHI=22+12+12+.52+.52 = 4+1+1+.25+.25=6.50/5=1.3
Given the fact that the lower the HHI, the more competitive balance, we can conclude that there was more competitive balance in the 2005-09 period than in the earlier period.

Range of Winning Percentage Imbalance
The mean winning percentages displayed for each team in Table 2 (2000-04) and Table 3 (2005-09) indicate that the range from the top to the bottom in the earlier period was .632 (Louisville .793 and Army .161) whereas in the later period it was .525 (Houston .725 and Tulane .2) This would suggest somewhat more overall balance in the 2005-09 period.

Another way of viewing competitive balance would be to arbitrarily set .500 plus or minus .100 as a range which would suggest a high degree of competitive balance and the more teams in this range, the greater the tendency toward competitive balance. In using such a measure we find little difference between the two periods. Again referring to Tables 2 and 3 we found four teams within this range in the 2000-04 period (East Carolina, Alabama-Birmingham, Memphis and South Florida) and four teams within this range in the 2005-09 period (Memphis, Marshall, Rice, and Texas-El Paso). Overall, the fact that the range of winning percentages from the top to the bottom of the standings was about 20% lower in the later period, would suggest a somewhat better balance in this period.

CONCLUSIONS
While the conclusions reached by using the three above techniques offer some mixed results, it is reasonable to give a slight edge on the question of competitive balance to the 2005-09 period. Although there was a very small difference in the standard deviation favoring more competitive balance in the 2000-04 period, the fact that there was a smaller range of winning percentages from top to bottom in the 2005-09 period and a lower HHI in this period tend to indicate there was a bit more competitive balance in this later period.

The conclusion that competitive balance in football was better after the most recent round of member churning aligns with the findings of this study with other research examining the effects of conference membership changes on competitive balance in football. Rhoads (9) examined the Western Athletic and Mountain West conferences and found better competitive balance in football after member churning. Perline and Stoldt (7) compared the final years of the Big 8 with the early years of the Big 12 and found improved levels of competitive balance after the Big 8 added four members formerly in the Southwest Conference.

The findings of each of these studies also support the contention that football is a primary consideration in conference realignment decisions (3). If competitive balance is indeed a central concern for college athletic conferences (9, 10), then it is reasonable to expect that higher levels of competitive balance in that predominant sport will be found following conference realignment.

APPLICATIONS IN SPORT

More than institutions at the NCAA Division I FBS level are scheduled to change conferences in the next four years (6). Therefore, an understanding of the key considerations associated with conference churning in college athletics is critical for practitioners, scholars, and students with interests in college athletics.

1. While a change in conference membership affects multiple sports programs within an athletics department (unless is the change is limited to just one sport), achieving desirable outcomes such as increased interest in and revenue from the sport of football is commonly the most important consideration (3).
2. The greater the uncertainty associated with a game's outcome, the greater the likely consumer interest in the contest (1, 2, 4, and 8). Accordingly, achieving high levels of competitive balance can be expected to yield positive financial results (e.g., ticket sales, rights fees values) for college athletic conferences.
3. Research points toward a pattern in which realignment decisions at the NCAA Division I FBS level produces higher levels of competitive balance in football (7, 9). This study provides additional support for that expectation.

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In the 2000-04 period there was only one division whereas in the 2005-09 period, the conference went to two divisions with the champion being the winner between the first place finishers in each division. Since there was no playoff in the earlier period we needed to measure the regular season champion. For a better comparison we chose to measure the regular season champion, as opposed to the tournament victor, in the latter season as well. In this case we declared the regular season champion to be the team with the best won-lost record over the two divisions.