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Competitive Balance in College Football: Additional Analysis on the Effects of Changes in Conference Membership

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Abstract

Numerous studies (Perline & Stoldt, 2007; Perline, Stoldt & Vermillion, 2012: Rhoads, 2004) have indicated that changes in college athletic conference membership at the NCAA Division I FBS level result in greater levels of competitive balance in football. The purpose of this study is to determine if member churning in the Atlantic Coast Conference (ACC) and the Big East between the years of 1999 and 2011 led to a greater degree of competitive analysis. Three methods of assessing competitive balance were employed. Two—the standard deviation of winning percentages and the Hirfindahl-Hirschman Index—are commonly used in competitive balance studies. The authors included range of winning percentages as an additional method. Results indicate that competitive balance in football improved in both conferences after changes in membership. This aligns the findings of this study with previous research and supports the contention that football is the primary consideration when conferences make changes in their membership (Fort & Quirk, 1999).

Over the next four years, 32 institutions will change conference affiliation for football at the NCAA Division I Football Bowl Subdivision (NCAA D-1 FBS) level ("NCAA Division I…," 2012). The last 10 years saw 30 NCAA D-I FBS schools change conference affiliation for football (NBC Sports, n.d.). The reasons for these changes in conference membership, often referred to as member churning, are myriad, ranging from political squabbles (see, for example, the case of Texas A&M as described in Halliburton, 2011; Wieberg & Berkowitz, 2011) to opportunities to achieve automatic qualifier status for the now soon-to-be extinct Bowl Championship Series (see, for example, the case of Boise State as described in NewsCore, 2012). Economic considerations are often a major factor in realignment decisions (Depken II, n.d.; Mitchell, 2011; Thamel, 2011; Wieberg & Berkowitz, 2011). Further, football has been identified as the key sport in realignment decisions (Fort & Quick, 1999; Thamel, 2011; Wieberg & Berkowitz, 2011). Certainly, competitive balance is a relevant consideration in discussions about the effects of member churning. It is related to revenue maximization because of its relationship to consumer demand (Depken & Wilson, n.d; Dittmore & Crow, 2010; Humphreys, 2002; Rein, Kotler & Shields 2006; Rhoads, 2004). The uncertainty of outcome 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. 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 (Rhoads, 2004; Staurowsky & Abney, 2011).

Several studies have been conducted over the last decade examining the effects of member churning on competitive balance in conferences at the NCAA D-I FBS level. Conferences studied have included the Big XII (Perline & Stoldt, 2007), Conference USA (Perline, Stoldt & Vermillion, 2012), Mountain West (Rhoads, 2004) and Western Athletic Conference (Rhoads, 2004). In each case, analysis of competitive balance in the sport of football has indicated an improvement in competitive balance after the most recent round

of churning (Perline & Stoldt, 2007; Perline et al, 2012; Rhoads, 2004).

Given past studies, it seems appropriate to further investigate whether increased churning leads to the same results. The purpose of this study, then, is to analyze how member churning affects competitive balance in college football for conferences at the NCAA D-I FBS level. To investigate this, we compare competitive balance in two conferences, the Atlantic Coast Conference (ACC) and the Big East, before and after membership changes that occurred following the 2003 and 2004 seasons. After those seasons, the ACC grew from 9 to 12 teams, and the Big East welcomed six new members after the departure of four others. Such analysis is important as scholars and practitioners continue to ascertain the impact of member churning and related considerations in the sport that drives the process of realignment.

Literature Review

The review of salient scholarship with regards to competitive balance in this research is organized into three sections. The first section provides relevant background information on the nature of athletic conferences in college sports, while the second section reviews the research that has examined the effects of member churning on competitive balance within athletic conferences. Finally, the third section offers specific background information on the ACC and Big East, including recent changes in membership within those conferences.

College Conferences

Intercollegiate athletic conferences are a part of the governance structure administering collegiate athletics (Barr, 1998). As constructed, the conferences serve many functions. These functions include providing competitive opportunities for member institutions (Staurowsky & Abney, 2011), while delivering of a range of services to member schools (Barr, 1998). Athletic conferences, additionally, assist in generating and subsequently organizing how revenue is distributed to member schools (Depken II, n.d; Grant, Leadley &

Zygmont, 2008). One of the goals of athletic conferences is to "sustain a level playing field for member institutions" (Staurowsky & Abney, 2011, p. 149) and in so doing, facilitate some level of competitive balance (Rhoads, 2004).

As previously noted, competitive balance is associated with maximizing revenue (Depken & Wilson, n.d.; Dittmore & Crow, 2010; Humphreys, 2002; Rein, Kotler & Shields 2006; Rhoads, 2004). There are many ways conferences can generate revenue for distribution to member schools. Two of these major strategies include staging championship events and distributing conference-specific sport content through rights-paying media partners or conference media properties (e.g., television network). While consumer demand for both in-person and media consumption of athletic competitions or events is associated with the idea that the event's outcome is not predetermined (Depken & Wilson, 2005; Dittmore & Crow, 2010; Humphreys, 2002; Rein, Kotler & Shields 2006; Rhoads, 2004), higher degrees of competitive balance for conferences may be interrelated to member schools' increased revenues. And to the extent that at least some conference churning at the NCAA I FBS level involved institutions moving from conferences that did not have automatic qualifier (AQ) status in the BCS to those that did hold such status (Perline, Stoldt, & Vermillion, 2013), realignment has had additional economic ramifications. Caro and Benton (2012) analyzed data from FBS conferences and teams and found that schools in AQ conferences received significantly more football revenue than their non-AQ counterparts.

Competitive Balance

The scholarship associated with competitive balance specific to intercollegiate athletics has identified a variety of factors and methods for examining the complex nature of intercollegiate athletics. Conference churning can be conceptualized as a form of conference realignment, which is hypothesized to impact competitive balance (Perline & Stoldt, 2007; Perline et al, 2012; Rhoads, 2004). Indeed, Perline and Stoldt (2007) noted the effect conference churning has upon competitive balance with specific regards to the Big XII. Specifically, there was more competitive

balance in the first decade of the Big XII as compared to the last decade of the Big 8. Rhoads (2004) examined the churning effect in two conferences and his conclusions also indicated an increased competitive balance in football.

With regards to NCAA FBS (Football Bowl Subdivision) athletics, there are a number of studies highlighting the highly variegated nature, impact, and measurement of competitive balance. Several factors appear to impact competitive balance within intercollegiate athletics, including the NCAA's enforcement of bylaws in 1953, the 1984 Supreme Court ruling that gave individual schools the right to negotiate their own broadcast agreements, and the NCAA's scholarship limitations. Each of these factors are addressed in the following paragraphs.

The NCAA's enforcement of governance and compliance to organizational bylaws, which began in the early 1950s, decreased the competitive balance in college athletics (Eckard, 1998). After studying a number of conferences prior to—and after—1953 when the NCAA began enforcing official rules violations for member schools, Eckard determined the NCAA reduced competitive balance, which was correlated with fewer changes in national and conference rankings. Bennet and Fizel (1995) identified how three decades later—in 1984—the improvement in competitive balance in college athletics could be associated with the Supreme Court ruling with regards to television distribution rights. Finally, Sutter and Winkler (2003) examined the role scholarship limitations had upon competitive balance. They noted the negative effect these limitations had upon balanced competition.

There are a variety of ways to examine competitive balance, especially within intercollegiate athletics. For example Depken and Wilson (2004) examined first four years of the BCS (Bowl Championship Series for FBS college football) and noted the impact it had on all college football programs. Specifically, they found the BCS did not affect competitiveness in college football when they used the HHI (Hirfindahl-Hirschman Index), which measures the number of teams that are able to become champions within a given period of time (Perline & Stoldt, 2007). A negative impact on competitive balance, however, was identified when using the SCP

(Structure-Conduct-Performance) measure, which examines how performance within the industry is associated with market influences. Also using the HHI method, Depken and Wilson (2006) studied the effects of NCAA enforcement on competitive balance in major conferences. The results indicated support for the NCAA's claim that enforcement of its membership enhances competitive balance.

Dittmore and Crow (2010) examined BCS conferences during three five-year periods. The first period was 1993-1997, which was before the BCS was implemented. The second period was 1998-2002, which was the first five years of the BCS, and the last period was 2003-2007, which was the 2nd 5 years of the BCS system. They discovered that the within-season competitive balance, which was measured as the actual standard deviation/ideal standard deviation, improved with the BCS system. According to Dittmore and Crow's (2010) research, the ACC (Atlantic Coast Conference) demonstrated the most improvement in within-season competitive balance, with the addition of three new teams serving as a key factor. Conference realignment in the Big East also contributed to improved competitive balance in the last five-year period (2003-2007). The between-season competitive balance, however, improved in only three conferences--the ACC, Big 8/12, and Southeastern Conference--with the other conferences top rated teams remaining relatively unchanged. The present analysis brings these results up-to-date, and thus measures whether these conclusions remain valid.

The ACC and Big East Conference

As of 2012-13, 11 conferences compete at the NCAA FBS level (ESPN, n.d.), including the ACC and Big East. Both conferences hold AQ status in the Bowl Championship Series (BCS), meaning their champions automatically receive a bid to a BCS game. Although a new college football playoff system has been announced that will no longer include AQs, it will not take effect until 2014 (Dinich, 2012). As a result of the current system and their AQ status, the ACC and Big East enjoy considerable prestige.

The ACC. The ACC was founded in 1953 with seven charter institutions—Clemson College, Duke University, the University of

Maryland, the University of North Carolina, North Carolina State University, the University of South Carolina, and Wake Forest College (ACC, 2011). The University of Virginia became the eighth member of the conference later that same year, and the ACC enjoyed membership stability until 1971 when South Carolina left the conference (ACC, 2011). In 1978, Georgia Institute of Technology (i.e., Georgia Tech) joined to bring conference membership back to eight. Florida State University joined in 1991 (ACC, 2011). In 2004, Virginia Polytechnic Institute and State University (i.e., Virginia Tech) and the University of Miami brought conference membership to 11 (ACC, 2011). Boston College became the league's 12th member in 2005 (ACC, 2011).

In 2011, the ACC announced that the University of Pittsburgh and Syracuse University would be joining the league effective in 2014 (Smith, 2012). Syracuse subsequently negotiated an early exit from the Big East, which will allow it to join the ACC in 2013 (Smith, 2013). The ACC lost a member in 2012 when Maryland announced it would shift to the Big 10 starting in 2014. However, the conference gained two additional members when the University of Louisville announced it would depart the Big East for the ACC in 2014 (Himmelsbach, 2012) and Notre Dame University announced it would join in all sports except football and hockey in 2015 (Dodd, 2012).

The Big East. The Big East was established in 1979 with seven charter institutions—Boston College, the University of Connecticut (i.e., UConn), Georgetown University, Providence College, Seton Hall University, St. John's University, and Syracuse University (Big East Conference, n.d.a). However, the conference did not stage championship competition in football until 1991 ("Membership Timeline…," n.d.). At that time, Boston College, the University of Pittsburgh (which joined the conference in 1982), and Syracuse were joined by a new member, the University of Miami, and four new associate members competing in football only ("Membership Timeline…," n.d.). The associate members were Rutgers University, Temple University, Virginia Tech, and West Virginia University. Notre Dame joined in 1995, but maintained its independent status in football ("Membership Timeline…," n.d.).

The Big East experienced considerable churning in the mid-2000s. Miami and Virginia Tech departed for the ACC and Temple left for the Atlantic 10 after the 2003 season ("Membership Timeline…," n.d.). Boston College left the Big East for the ACC after the 2004 season. The conference added six new members in 2005, three of whom competed in football ("Membership Timeline…," n.d.). The three football-playing institutions were the University of Cincinnati, the University of Louisville, and the University of South Florida.

The Big East's roster of conference members has changed frequently in recent year, and it will continue do so in the near future. West Virginia departed for the Big 12 in 2012. Texas Christian University jumped to the Big 12 too, marking a change after announcing in 2010 that it would become a member of the Big East in 2012 (ESPN, 2012). Boise State University and San Diego State University, both of which had announced decisions to leave the Mountain West Conference and join the Big East in 2013, opted to reverse course and remain in the Mountain West (Fowler, 2013a; Wolken 2012).

Other changes in membership are also scheduled (Big East, n.d.b). Pittsburgh and Syracuse depart for the ACC in 2013. Rutgers has announced its intention to leave for the Big 10 in 2014 (McMurphy & O'Neil, 2012) and Louisville (Himmelsbach, 2012) and Notre Dame (Dodd, 2012) have similarly announced moves to the ACC.

The Big East will add the University of Central Florida, the University of Houston, the University of Memphis, Southern Methodist University, and Temple University in 2013. In addition, Tulane University will join the Big East in 2014 as a conference member in all sports. Two other institutions are scheduled to join as football only members—East Carolina University in 2014 and the U.S. Naval Academy in 2015. Despite these gains, the conference's future viability was further muddled by a Dec. 15, 2012 announcement from seven schools, none of which competed within the conference in football, that they would leave the Big East in 2015 (Fowler, 2013b).

Methods

As stated, our purpose is to compare competitive balance in two conferences—the ACC and the Big East—before and after membership changes that occurred after the 2003 and 2004 seasons. Specifically, we compare the time periods 1999-2003 and 2005-2011. Each period represents a multiple-year period when membership was stable in the two conferences. We skip 2004 because it was a year of transition for both conferences. The ACC added Miami and Virginia Tech in 2004, but it did not add Boston College until 2005. Each of the three aforementioned institutions left the Big East, and that conference did not add its six new members until 2005. The 2011 season marked the end of the most recent span of conference stability since West Virginia departed for the Big 12 in 2012.

Table 1 lists the various institutions that were members of the ACC during the time periods being examined. Table 2 serves in like fashion for the football membership in the Big East.

Table 1
Atlantic Coast Conference Membership 1999-2011

School	Year Joined
Boston College	2005
Clemson	1953
Duke	1953
Florida State	1991
Georgia Tech	1953
Maryland	1953
Miami	2004
North Carolina	1953
North Carolina State	1953
Virginia	1953
Virginia Tech	2004
Wake Forest	1953

Source: ACC (2013).

Table 2
Big East Conference Football Membership 1999-2011

School	Year Joined
Boston College	1991
Connecticut	2004
Cincinnati	2005
Louisville	2005
Miami	1991
Pitt	1991
Rutgers	1991
South Florida	2005
Syracuse	1991
Temple	1991
Virginia Tech	1991
West Virginia	1991

Source: "Membership Timeline…," (n.d.).

We utilized three methods of assessing competitive balance. 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. Accordingly, higher standard deviations are associated with lower levels of competitive balance, and lower standard deviations are linked with higher levels of competitive balance.

The second method we employed is the Hirfindahl-Hirschman Index (HHI), which was originally designed to measure concentration among firms within an industry (Leeds & von Allmen, 2005). The HHI may be adapted to measure the concentration of championships within a given sport over time. The formula for the HHI follows, with f standing for the number of times each team in the conference wins a championship in a given time period and T standing for the number of years in that time period.

$$HHI = \frac{\Sigma f^2}{T}$$

If for instance, 10 different teams win a championship in a given sport over a 10-year period, the HHI would be 1.00. If just one team won all 10 titles over that same period, the HHI would be 10.00. Accordingly, the lower the HHI value, the better the competitive balance.

The third tool we used to evaluate competitive balance was the range of winning percentages for members of the conference during each time period. Winning percentages near .500 for conference games are indicative of better competitive balance. We set .500 plus or minus .100 as a range that would suggest a high degree of competitive balance over each time period. This range has been utilized in a previous published study on competitive balance within college football (Perline & Stoldt, 2007).

Results

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

The ACC

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

Standard Deviation of Winning Percentages. Tables 3 and 4 display the winning percentages for the ACC for the years 1999-2003 and 2005-2011 respectively. Table 5 displays the standard deviations of winning percentages for all three time periods. As indicated in Table 5, the standard deviation was 0.253 for the 1999-2003 period and 0.228 for the 2005-11 period. The lower standard deviation for the latter period would indicate an improvement in competitive balance after the addition of the three new members.

Table 3

ACC: Winning Percentage for Football Teams, 1999 through 2003

Year	FSU	UNC	UV	GTI	CU	NCSU	WFU	UM	DU
1999	1	0.25	0.625	0.625	0.625	0.375	0.375	0.25	0.375
2000	1	0.375	0.625	0.75	0.75	0.5	0.125	0.375	0
2001	0.75	0.625	0.375	0.5	0.5	0.5	0.375	0.875	0
2002	0.875	0.125	0.75	0.5	0.5	0.625	0.375	0.75	0
2003	0.875	0.125	0.5	0.5	0.625	0.5	0.375	0.75	0.25
Mean	0.9	0.3	0.575	0.575	0.6	0.5	0.325	0.6	0.125

Table 4

ACC: Winning Percentage for Football Teams,2005 through 2011

Year	FSU	UNC	UV	GTI	CU	NCSU	WFU	UM	DU	BC	VPI	UM
2005	0.625	0.5	0.375	0.625	0.5	0.375	0.375	0.375	0	0.625	0.875	0.75
2006	0.375	0.25	0.5	0.875	0.625	0.25	0.75	0.625	0	0.625	0.75	0.375
2007	0.5	0.375	0.75	0.5	0.625	0.375	0.625	0.375	0	0.75	0.875	0.25
2008	0.625	0.5	0.375	0.625	0.5	0.5	0.5	0.5	0.125	0.625	0.625	0.5
2009	0.5	0.5	0.25	0.875	0.75	0.25	0.375	0.125	0.375	0.625	0.75	0.625
2010	0.75	0.5	0.125	0.5	0.5	0.625	0.125	0.625	0.125	0.5	1	0.625
2011	0.625	0.375	0.625	0.625	0.75	0.5	0.625	0.125	0.125	0.375	0.875	0.375
Mean	0.571	0.429	0.29	0.66	0.607	0.411	0.482	0.393	0.107	0.589	0.821	0.5

Table 5

ACC: Standard Deviation for Winning Percentages

Year	SD
1999	0.242
2000	0.319
2001	0.250
2002	0.222
2003	0.233
Mean SD (99-03)	0.253
2005	0.226
2006	0.255
2007	0.244
2008	0.141
2009	0.232
2010	0.267
2011	0.232
Mean SD (05-11)	0.228

Note: 2004 is omitted from our analysis because it was a year of membership transition between periods of membership stability.

HHI Championship. Using the data from Tables 3 and 4 to construct the HHI to measure competitive balance between the two periods, again we found more competitive balance in the 2005-11 period than in the earlier period. Table 6 lists the conference champions by year based on our calculations. When we measured the regular season standings in the 1999-03 period we found Florida State won the championship four times, while Maryland won once (2001).

HHI= $4^2 + 1^2 = 16+1 = 17/5 = 3.4$

Table 6

ACC: Regular Season Conference Champions, 1999-2003, 2005-2011

Year	Champion(s)
1999	Florida State
2000	Florida State
2001	Maryland
2002	Florida State
2003	Florida State
2005	Virginia Tech
2006	Georgia Tech
2007	Virginia Tech
2008	BC, FSU, GTI, VPI
2009	Georgia Tech
2010	Virginia Tech
2011	Virginia Tech

Note: 2004 is omitted from our analysis because it was a year of membership transition between periods of membership stability.

When measuring the HHI in the 2005-11 period we found that Virginia Tech won the outright championship four times and Georgia Tech did so twice. In 2008 there was a four-way tie among Boston College, Florida State, Virginia Tech and Georgia Tech. Giving the whole point for an outright championship and .25 for the four-way tie, we found:

HHI= $4^2 + 2.25^2 + .25^2 + .25^2 + .25^2 = 16 + 5.06 + .063 + .063 + .063 = 21.25/7 = 3.04$

Given the fact that the lower the HHI, the more competitive balance, we can conclude that there was more competitive balance in the 2005-11 time period than in the earlier period.

Range of Winning Percentage. Setting .500 plus or minus .100 as a range which would suggest a high degree of competitive balance over each time period, we again find more competitive balance after realignment in the ACC. Table 3 indicates that in the 1999-2003 period, five of the nine member institutions (55.6%) met this criteria. Table 4 indicates that after realignment in the 2005-11 period six institutions (50.0%) of the expanded twelve member conference met the criteria. This would suggest that there was slightly more competitive balance in the ACC prior to realignment. Our conclusion, however, is based on the majority of measures and it points to more competitive balance in the latter time period.

The Big East

The following sections provide the results of the study based on the three methods of analyzing competitive balance.

Standard Deviation of Winning Percentages. Tables 7 and 8 display the winning percentages for the Big East for the years 1999-2003 and 2005-11 respectively. Table 9 displays the standard deviations for both time periods. As shown in the Table 9, the mean standard deviation in the 1999-2003 period was .301, and in the 2005-11 period was .243. Given the standard deviation was lower in the later period, it is apparent that there was more competitive balance in the 2005-11 period.

Table 7

Big East: Winning Percentage for Football Teams, 1999 through 2003

Year	UM	WVU	PU	VPI	BC	SU	RU	TU
1999	0.857	0.429	0.286	1	0.571	0.429	0.143	0.286
2000	1.00	0.429	0.571	0.857	0.429	0.571	0	0.143
2001	1.00	0.143	0.571	0.571	0.571	0.857	0	0.286
2002	1.00	0.857	0.714	0.429	0.429	0.286	0	0.286
2003	0.857	0.857	0.714	0.571	0.429	0.286	0.286	0
Mean	0.943	0.543	0.571	0.686	0.486	0.486	0.086	0.200

Table 8

Big East: Winning Percentage for Football Teams, 2005 through 2011

Year	WVU	UL	RU	USF	PU	UConn	CinU	SU
2005	1.000	0.714	0.571	0.571	0.571	0.286	0.286	0
2006	0.714	0.857	0.714	0.571	0.286	0.143	0.571	0.143
2007	0.714	0.429	0.429	0.571	0.429	0.714	0.571	0.143
2008	0.714	0.143	0.714	0.286	0.714	0.429	0.857	0.143
2009	0.714	0.143	0.429	0.429	0.714	0.429	1.000	0.143
2010	0.714	0.429	0.143	0.429	0.714	0.714	0.286	0.571
2011	0.714	0.714	0.571	0.143	0.571	0.429	0.714	0.143
Mean	0.754	0.489	0.510	0.429	0.571	0.449	0.612	0.184

Table 9
Big East: Standard Deviation for Winning Percentages

Year	SD
1999	0.276
2000	0.311
2001	0.319
2002	0.311
2003	0.286
Mean SD (99-03)	0.301
2005	0.286
2006	0.257
2007	0.175
2008	0.277
2009	0.276
2010	0.202
2011	0.226
Mean SD (05-11)	0.243

Note: 2004 is omitted from our analysis because it was a year of membership transition between periods of membership stability.

HHI Championships. Using the data from Tables 7 and 8 to construct the HHI to measure competitive balance between the two periods, again we found more competitive balance in the 2005-11 period than in the earlier period. Table 10 lists the conference champions by year based on our calculations. When we measured the regular season standing in the 1999-2003 period we found Miami was the outright champion three times, Virginia Tech was the champion once, and in one instance Miami and West Virginia shared the championship (2003).

$HHI = 3.5^2 + 1^2 + .5^2 = 12.25 + 1 + .25 = 13.50/5 = 2.7$

Table 10

Big East: Regular Season Conference Champions, 1999-2003, 2005-2011

Year	Champion(s)
1999	Virginia Tech
2000	Miami
2001	Miami
2002	Miami
2003	Miami, West Virginia
2005	West Virginia
2006	Louisville
2007	UConn, West Virginia
2008	Cincinnati
2009	Cincinnati
2010	UConn, Pitt, West Virginia
2011	Cincinnati, Louisville, West Virginia

Note: 2004 is omitted from our analysis because it was a year of membership transition between periods of membership stability.

When we measured the HHI in the 2005-11 period we found that Cincinnati won the championship twice, West Virginia and Louisville won once, and in three years (2007, 2010, and 2011) there were multiple ties for the championship. In 2007 there was a two-way tie, and in 2010 and 2011 a three-way tie. Giving a whole point for an outright championship, .5 for a two-way tie, and .33 for a three-way tie, we found:

$HHI = 2.33^2 + 2.16`^2 + 1.33^2 + .833^2 + .33^2 =$
$5.42+4.67+1.77+.694+.109/7= 1.81$

Given the fact that the lower the HHI, the more competitive balance, we can conclude that there was more competitive balance in the 2005-11 period than in the earlier period.

Range of Winning Percentage. Again, setting .500 plus or minus .100 as a range which would suggest a high degree of competitive balance over each period, we find more competitive

balance after realignment in the Big East. In this case the data in Table 7 indicate that in the period before realignment (1999-2003) four of the eight institutions (50%) met this criteria. After realignment in the 2005-11 period those within this range increased to five of the eight member institutions (62.5%).

It can be concluded that the competitive balance in Big East football improved after the addition of Connecticut, Cincinnati, South Florida, and Louisville. This reinforces the results of other research that examined the effects of conference realignment on competitive balance in football.

Discussion

The conclusion that competitive balance in ACC and Big East football was better after changes in conference membership align the findings of this study with other research examining the effects of conference membership changes on competitive balance in football. Rhoads (2004) examined the Western Athletic and Mountain West Conferences and found improved competitive balance after member churning. Perline and Stoldt (2007) compared the later 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. Perline et al. (2011) found slightly higher levels of competitive balance in Conference USA football after a recent round of churning.

The findings of each of these studies support the contention that football is a primary consideration in conference realignment decisions (Fort & Quirk, 1999). If competitive balance is indeed a central concern for college athletic conferences (Rhoads, 2004; Staurowsky & Abney, 2001), then it is reasonable to expect that higher levels of competitive balance in that important sport will be found following conference realignment.

Recent developments in conference realignment, specifically announced moves by Maryland and Rutgers to the Big 10, have been largely driven by the opportunity for conferences to expand their geographic footprint to new major television markets (Eisenberg, 2012). However, even in a television-driven climate, competitive balance remains a valid consideration. Anticipated viewership drives

the value of television rights agreements, and uncertainty of outcome, a result of competitive balance, has been found to positively impact television ratings for football (Paul & Weinbach, 2007). As a result, competitive balance seems likely to be a key issue for college athletics administrators, particularly at the NCAA I FBS level, for some time to come.

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