

Does becoming a Member of the Football Bowl Subdivision Increase Institutional Attractiveness to Potential Students

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Abstract In recent years, a number of colleges and universities have made the decision to pursue membership in the NCAA's Football Bowl Subdivision (FBS) with the idea that participating in higher profile intercollegiate football can help attract students to their institution. This belief, however, has not been empirically examined. Using difference-in-differences estimation, this study examined freshmen application trends at three colleges and universities (Florida Atlantic University, Florida International University, and Western Kentucky University) which moved from the Football Championship Subdivision (FCS) to the FBS in the mid-2000s relative to similar FCS institutions which did not move to the FBS. Findings showed that moving to the FBS had a positive, statistically significant correlation with freshmen applications at the two institutions located in Florida but not at Western Kentucky University.

Keywords Football Bowl Subdivision · Freshmen applications

Since the National Collegiate Athletic Association (NCAA) created subdivisions in 1979, a distinctive two-tiered system of intercollegiate football has developed. Schools which field football teams that compete in the Football Bowl Subdivision (FBS), such as the University of Florida, Notre Dame University, and the University of Oregon, often play in front of tens of thousands of fans in state-of-the-art stadiums, draw millions of viewers in nationally televised broadcasts, and receive extensive football related media coverage. Schools with football programs competing in the Football Championship Subdivision (FCS), such as the University of Richmond, Alabama A&M, and The University of Montana, play in much smaller stadiums, receive less television exposure, and generally receive much less football related publicity.

Recently, a number of FCS (Football Championship Subdivision) colleges and universities have made the decision to pursue membership in the FBS (Football Bowl Subdivision).

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Between 1990 and 2005, 13 institutions moved their football programs from the FCS to the FBS (Suggs 2005). In 2012, *USA Today* reported that “as many as 15 other institutions across the country are publicly or privately discussing such a move” (Pennington 2012, par. 7). Competing in the FBS, however, can be a very expensive endeavor. The cost of athletic scholarships, escalating coaches’ salaries, and the need to improve athletic facilities means that many schools which move to the FBS lose millions of dollars on football. Accounting Professor Daniel Fulks noted that “the reality is that football schools who move up a division almost always lose even more money. There’s not much defense of the economics in the short term or the long term” (Pennington 2012, par. 9).

The argument put forth by administrators at many institutions is that these economic losses are outweighed by the intangible benefits of FBS football such as national exposure, increased institutional prestige, and an improved college experience for students. As articulated by Middle Tennessee State University President Sidney A. McPhee, whose football program moved to the FBS in 1999:

There's no question for Middle Tennessee State University that moving to (the FBS) has been a great influence for the institution's image among its alums. (The FBS) has propelled us onto the front page of the newspaper. Athletics really is the front porch of the university. It's not something I'm particularly happy about, but it's the reality (Suggs 2005, par. 7).

Charlie Donnor, an athletic administrator at the University at Buffalo, which also moved to the FBS in 1999, said, “The purpose of FBS football is to brand the university—it gives us exposure in places we could never go before” (Pennington 2012, par. 55). Georgia State University Athletic Director Cheryl Levick noted that the school’s move to the FBS was in part motivated by wanting “to add a more traditional college campus experience, to add some vibrancy to the campus life here” (Estes 2012, par. 9). The Old Dominion University Athletic Director told *The New York Times* that “One major reason [for adding FBS football] was to assist in the effort to become more than a commuter school. It fits with the strategic plan to groom a residential campus” (Pennington 2012, par 22).

Administrators argue that the increased exposure and more desirable campus environment brought about by membership in the FBS translates into more admissions applications, better quality students, and increased alumni donations (Estes 2012; Pennington 2012; Toma 2003). This argument, however, has rarely been empirically examined. In particular, very little is known about the relationship between making the transition to the FBS and an institution’s ability to recruit potential students.

The goal of the study reported in this article was to address this void. Treating three institutions which moved from the FCS to the FBS in the mid-2000s as natural experiments, this study contrasted freshmen applications at Florida Atlantic University (FAU), Florida International University (FIU), and Western Kentucky University (WKU) with those of other FCS institutions which did not make the transition to the FBS. Three research questions guided the study:

- Does becoming a member of the FBS correlate with the total number of freshmen admissions applications received by an institution?
- Does becoming a member of the FBS correlate with the number of male freshmen admissions applications received by an institution?
- Does becoming a member of the FBS correlate with the number of female freshmen admissions applications received by an institution?

Literature Review and Frameworks

Relevant Studies

Research on the relationship between intercollegiate athletics and an institution's ability to recruit potential students has largely focused on athletic success. A number of studies have used aggregate institutional level data to explore how various measures of team on-field success correlates with the number of freshmen admissions applications received. Murphy and Trandel (1994) were among the first to explore this relationship. Using data from 42 colleges and universities, they found that increasing the percentage of conference wins in football correlated with a modest increase in applications received the following year. Toma and Cross (1998) examined admissions applications at institutions with football programs that won an NCAA Division I-A National Championship between 1979 and 1992. Using largely descriptive measures, they concluded that winning a national championship was positively correlated with the number of admission applications received by a university in both absolute terms and relative to peer institutions. Using panel data from 1980–1995, Zimbalist (1999) also found that football success correlated with increased applications.

More recently, Pope and Pope (2009) looked at data from all institutions with FBS football programs between 1983 and 2002. They found a positive correlation between having a football team finish the season in the Associated Press Top 20 and the number of admissions applications received the following year. Winning a football national championship was also positively correlated with the quantity of admissions applications. Jones (2009) found that FBS institutions which compete in higher watched postseason bowl games experience a statistically significant increase in applications the following year. Chung (2013) found that, as FBS schools go “from being mediocre to being great on the football field, applications increased by 17%” (p. 5).

These studies present strong evidence that fielding a successful, higher level football program can have a positive impact on the number of applications an institution receives. Whether only the presence of a higher division, but potentially less successful, football program can have the same positive impact, however, has been less frequently studied; and I found only two published studies related to this question. Mixon and Hsing (1994) attempted to examine the determinants of out-of-state enrollment among institutions of higher education. Using a sample of 220 institutions, their study found that competing in a higher level of NCAA competition (i.e., competing at the NCAA Division I level vs. competing at the NCAA Division II or III level) positively correlated with out-of-state enrollment. The authors concluded from this data that “students seem to favor those universities that participate in the most popular and competitive, higher-division sports” (Mixon and Hsing 1994, p. 332). A study by Orszag and Orszag (2005) focused on the characteristics of NCAA Division II athletic programs. Among the questions examined in this report was the empirical impact on institutions which moved from the NCAA Division II level to the NCAA Division I level. Analyses showed that making this switch was not correlated with a statistically significant increase in student enrollment. The authors did note, however, that “some schools did experience rapid increases in enrollment after switching divisions” (Orszag and Orszag 2005, p. 20). Neither of these two studies focused on FCS schools moving into the FBS.

Thus, while there is strong evidence suggesting that having a successful FBS level football program can increase student applications, little research has explored whether or not the simple presence of a higher division football program helps attract students. A greater understanding of this relationship is important for institutional policy makers given that many institutions struggle both on and off the field upon joining the FBS. A majority of schools

which have moved to the FBS have very low home game attendance numbers (Pennington 2012; Suggs 2005). This lack of spectator interest is likely driven by the lack of on-field that success new FBS schools experience. Only a handful of institutions which have transitioned to the FBS in the past 20 years have experienced winning seasons and the increased notoriety that comes along with it (Dosh 2013). Many schools early in their transition experience what The University of Massachusetts-Amherst (UMass) did in the 2012 season. UMass, which had been a perennial power in the FCS for many years, finished the 2012 season (their first in the FBS) with one win and eleven losses and was outscored by opponents 482–152. At their final home game of that season, UMass drew only 6,385 fans (Pennington 2012).

This suggests that moving to the FBS may not correspond with more on-field wins and the subsequent increases in media attention and fan interest. This possibility, however, has not deterred several institutions from pursuing membership in the FBS due to the fact that many administrators feel the simple presence of a higher division football program can make a school more attractive to potential students.

Frameworks

To understand how FBS level football impacts student recruitment, a review of two theoretical frameworks is needed. Toma (2003) theorized that spectator sports at American colleges and universities (especially football) can be an important tool for institution building by helping a school distinguish itself and underscore its commitment to the collegiate ideal for internal and external constituencies. Following the Civil War, a number of universities, especially state flagship institutions, grew into larger, more complex, more impersonal organizations (Duryea 1997). As they evolved, however, these institutions continued to embrace elements of the collegiate ideal associated with small colleges (Rudolph 1990; Toma 2003).

One of the most visible expressions of this collegiate ideal has become intercollegiate football. Toma (2003) argued that the presence of a high profile football program helps an institution underscore its collegial aspects in a number of ways. Football helps a school build community through pep rallies, tailgating, and home game attendance. Football is often the source of institutional distinctiveness as highlighted by school colors, mascots, slogans, and rituals. Football may also create an important point of institutional identification for students, faculty members, administrators, and individuals from the local community. A sense of community, institutional distinctiveness, and points of institutional identification are important aspects of institutional culture and the collegiate experience many students look for when deciding which college they will attend. Toma argued that “the students who are likely to apply to a flagship state university want a collegiate experience—and football is part of that” (p. 235).

Not every institution, however, is able to use football as a tool for institution building. At colleges and universities with lower profile, non-FBS programs, Toma (2003) theorized, football is largely a student activity that does little to impact external relations or the collegiate character of a campus. FBS level football programs, however, transcend the participants on the field and become a commodity which can be exchanged either directly or indirectly for external resources (such as new students). This theory suggests that, when an institution escalates its commitment to football by moving from the FCS to the FBS, the football program becomes a venue where an institution highlights its distinctiveness and signals its commitment to the collegiate ideal many students want from an institution of higher education. As a result, applications to that institution could increase largely due to the presence of an upper division football program.

A second theory which could help explain how the presence of an upper division football program could increase student applications is *new institutionalism*. New institutionalism

argues that individual organizations are nested within the institutional field in which they exist (Tolbert and Zucker 1983). This institutional environment imposes a legitimacy imperative on individual organizations which creates homogeneity among organizations with regard to form and structure (DiMaggio and Powell 1983). This process of homogenization among organizations in a given field is captured by the concept of isomorphism. Isomorphism is a process that forces one unit within a population to resemble other units that face a similar set of environmental conditions (Hawley 1968). Failure to resemble peer units deemed as successful can result in that unit losing prestige and legitimacy within the field.

Given the ambiguous mission and uncertain technologies of higher education, colleges and universities may be especially affected by isomorphism. DiMaggio and Powell (1983) offered several hypothesized predictors of isomorphic change in organizations. Two have direct application to higher education. The first hypothesis states that “the more uncertain the relationship between means and ends the greater the extent to which an organization will model itself after organizations it perceives to be successful” (p. 154). The second states that “the more ambiguous the goals of an organization, the greater the extent to which the organization will model itself after organizations that it perceives to be successful” (p. 155).

These concepts may help explain why several schools, especially public institutions, are pursuing membership in the FBS and the potential impact of this move on student applications. Most of the highest ranked public colleges and universities in the United States field FBS level football programs. Of the 25 highest ranked National Public Universities in the 2013 *U.S. News and World Reports* college rankings, 22 have FBS level football programs. For universities aspiring to this level of prestige, moving to the FBS allows them to look more similar to the most highly regarded schools within their organizational field. Looking similar to these “successful” institutions, according to new institutional theory, affords these new FBS schools a greater level of legitimacy among constituencies. It is possible, and the universities anticipate, that this legitimacy, derived solely from moving a football program into the FBS, could translate into higher numbers of student applications.

Summary

To summarize, a number of studies have found that fielding a successful FBS level football program can help an institution of higher education attract potential students. Little research, however, has explored whether just the presence of an upper division football program correlates with student applications. Toma’s (2003) spectator sports framework and the theory of new institutionalism suggest that schools which invest in FBS level football programs can increase their attractiveness to potential students and as a result experience an increase in student applications. The study reported here tests these hypotheses by examining admissions applications trends at three universities which moved from the FCS to the FBS in the 2000s in comparison to other institutions which were also members of the FCS but did not make the transition to the FBS.

The Study

Institutions Examined

As noted earlier, several colleges and universities have recently made the decision to pursue membership in the FBS. Due to the limited availability of institutional level admissions data, however, this study focused on only three institutions with enough data available to conduct

the analyses. The first institution, Florida Atlantic University (FAU) located in Boca Raton, Florida, is a public institution founded in 1964 with a current enrollment of over 20,000 undergraduates. The institution began its intercollegiate football program in 2001 and, after 3 seasons at the FCS level, moved to the FBS for the 2004 season. The second institution, Florida International University (FIU) in Miami, Florida, is a public institution founded in 1969 that enrolls over 36,000 undergraduates. Its football program began in 2002 at the FCS level and in 2005 moved to the FBS. The final focus institution, Western Kentucky University (WKU) located in Bowling Green, Kentucky, was founded in 1907 and has an undergraduate enrollment of around 19,000. WKU's football program started in 1908 and competed in the FCS from 1979 to 2007. In 2008, the school began play in the FBS.

Estimation Strategy

These three instances were treated as natural experiments to test the relationship between the moving to the FBS “treatment” and admissions applications received. To identify and analyze this relationship, difference-in-differences estimation was used to compare admissions applications received before and after FAU, FIU, and WKU moved to the FBS relative to other FCS schools which did not move to the FBS. Difference-in-differences (DD) is a regression technique which attempts to measure the impact of a treatment by comparing an outcome of interest among a group of treated institutions before and after the administration of a treatment relative to a control group during the time period in which the aforementioned treatment group was studied (Abadie 2005; Meyer 1995). This design, in principle, creates a counterfactual which shows what happened to a treatment group as a result of the treatment and what would have happened to the treatment group in the absence of any treatment. Scholars have widely used the DD estimation strategy to examine the impacts of higher education policy changes (Cornwell, Mustard, and Sridhar 2006; Seftor and Turner 2002; Zhang and Ness 2010).

Zhang (2011) noted that the selection of a comparable control group is critical when using DD estimation. Treatment and control institutions should have similar characteristics in order to construct the counterfactual of what potentially would have happened to the treatment institutions had the treatment not been administered (Meyer 1995). For this study, control groups consisted of public, non-Historically Black, non-military colleges and universities located in the southeast region of the United States (Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia) that did not move from the FCS level during the time period studied. For FAU, which was examined from 2001–2010, this group control consisted of 16 colleges and universities. For FIU, which was examined from 2002–2010, this control group also consisted of 16 colleges and universities. For WKU, which was examined from 2005–2010, this control group consisted of 18 colleges and universities. The names of these institutions are in the [Appendix](#).

The construction of comparison groups using institutional control, location, and FCS affiliation allows this study to control for unobservable characteristics which could impact the number of applications a college or universities receives in a given year. Public institutions in the same region likely share similar demographic, social, and economic conditions (Zhang 2011). These similarities make public institutions within the southeast region, where the three treatment schools are located, ideal comparison schools for these DD analyses. Supplemental analyses using different control groups (such as FCS institutions designated by the National Center for Education Statistics as peer institutions and FCS institutions within boarder states) returned findings similar to those reported here.

A second important consideration when using DD analyses is the selection of pre- and post-treatment time periods. Ideally, researchers using this methodology are able to examine

multiple time periods to help control for nonparallel trends among treatment and control groups (Meyer 1995). Due to data availability and the timing with which the 3 treatment institutions made the transition to the FBS, each analysis used a slightly different time period of study. For FAU (which moved to the FBS in 2004) and its control institutions, the pre-treatment period was 2001–2003 while the post-treatment period was 2004–2010. For FIU (which moved to the FBS in 2005) and its control institutions, the pre-treatment time period was 2002–2004; and the post-treatment time period was 2005–2010. For WKU (which moved to the FBS in 2008) and its control institutions, the pre-treatment time period was 2005–2007; and the post-treatment time period was 2008–2010.

The primary equation used in this study was

$$\ln \text{Apps}_{it} = \alpha + \delta(\text{TreatmentSchool}_i * \text{Post}_t) + X'_{it} + \gamma_i + \eta_t + \varepsilon_{it} \tag{1}$$

where the dependent variable (ln Apps) is the natural log of the total number of admissions applications from first-time, degree seeking undergraduates received by institution *i* during the fall semester of year *t*. Treatment School *i* is a binary variable set to one if the observation is one of the institutions which moved to the FBS. Post *t* is a binary variable set to one if the observation occurs in the post-treatment time period. Delta (δ), the interaction between Treatment School *i* and Post *t*, represents the reduced-form effect of moving to the FBS on student applications. The key identifying assumption is that δ would be equal to zero if the treatment schools had not moved to the FBS. In order to explore whether or not moving to the FBS had a greater impact on male or female applications, gender specific application data were also used as dependent variables.

To control for economic and demographic conditions possibly correlated with the number of applications an institution receives in a given year, a set of covariates (X'_{it}) was included in model estimations. Following the literature on the factors affecting institutional enrollment (Cornwell et al. 2006; Heller 1997; Hemelt and Marcotte 2011), the following variables were included: number of public high school graduates in the state where the college/university is located during year *t*; average tuition and fees for full-time, in-state undergraduates at institution *i* in year *t*; total institutional assets (defined as current and noncurrent assets minus current and non-current liabilities) for institution *i* in year *t*; per-capita income in the state where the college/university is located during year *t*; and unemployment rates in the state where the college/university is located during year *t*. These data were available from the National Center for Education Statistics, Bureau of Labor Statistics, institutional factbooks and the Common Data Set (Bureau of Labor Statistics, n.d.; Common Data Set Initiative, n.d.; National Center for Education Statistics, n.d.). Each of these variables was log transformed for analyses.

Equation 1 also includes year and institutional fixed effects. The year fixed effect (η_t) controls for national trends (e.g., economic conditions or the opportunity cost of higher education) which could impact the number of applications received by all colleges and universities in a given year. The institutional fixed effect (γ_i) controls for any unchanging or very slowly changing institutional characteristic such as location and academic reputation which could impact student recruitment from one year to the next. Finally, ε_{it} is the error term.

Findings

Figures 1, 2, and 3 plot total freshmen application trends at the schools which moved to the FBS and comparison institutions over the time period studied. Figure 1 shows that FAU

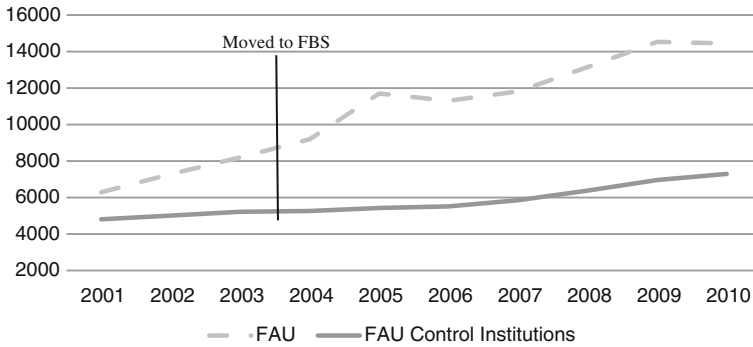


Fig. 1 Total application trends at FAU & control institutions, 2001–2010

experienced a steady increase in freshmen applications from 2001–2010. Applications appeared to increase more rapidly, however, after the school moved to the FBS in 2004. Applications among the FAU control institutions also increased during this time period, but at a much slower rate. Figure 2 shows that in the 3 years before moving to the FBS, freshmen applications to FIU fluctuated greatly. After 2005, however, the school saw a consistent increase in applications. This positive slope from 2005–2010 appears to be slightly steeper than the application trend among the FIU control institutions during this time period. Figure 3 shows that application trends at WKU and its control institutions were relatively similar from 2005–2010. After moving to the FBS in 2008, applications to WKU and its control institutions increased at a similar rate.

In Tables 1, 2, and 3, pre- and post-FBS move application averages are presented. These statistics are similar to the DD estimates found in the regression table except that application data is not log transformed and covariates are not controlled for. These tables show that two schools experienced a relative increase in applications after moving to the FBS while one school saw a relative drop in applications. FAU, as displayed in Table 1, received 3,963 more applications after moving to the FBS relative to public, southeastern institutions with FCS football programs. FIU, as displayed in Table 1, received 1,576 more applications relative to public, southeastern institutions with FCS football programs. WKU, on the other hand, experienced a relative drop of 510 applications in comparison to public, southeastern colleges and universities with FCS football programs (displayed in Table 3).

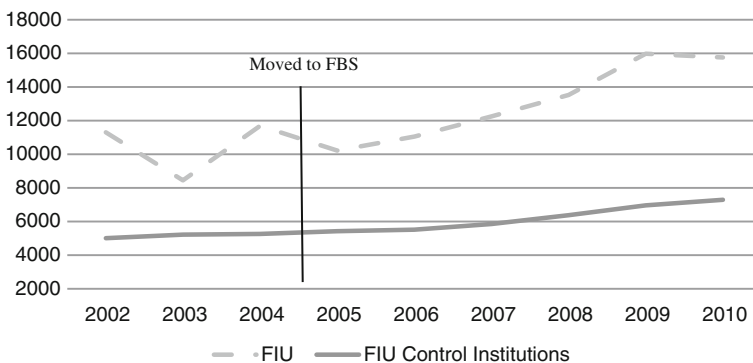


Fig. 2 Total application trends at FIU & control institutions, 2002–2010

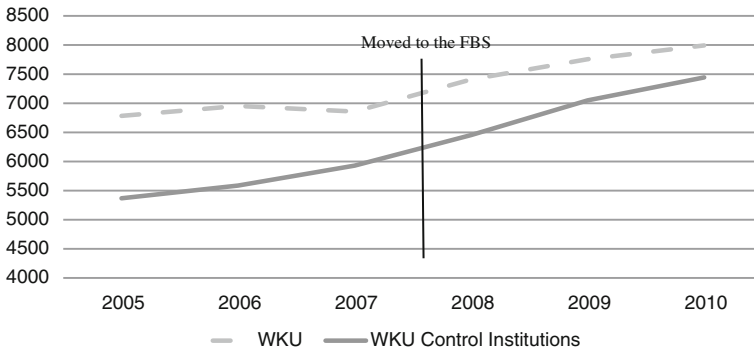


Fig. 3 Total application trends at WKU & control institutions, 2005–2010

DD regression coefficients are presented in Table 4. Column one shows that the DD estimated effect of moving to the FBS on total applications received at FAU was 32.1 %, controlling for other factors. This suggests that applications to FAU were 32 % higher relative to control institutions in the years after FAU moved to the FBS. FAU’s move to the FBS was also correlated with a 32.1 % increase in male applications and a 32 % increase in female applications relative to control institutions. Each of these findings was statistically significant at the 0.01 level.

For FIU, the DD estimated effect of moving to the FBS, controlling for other variables, was 8.8 % for total applications, 11.8 % for male applications, and 6.6 % for female applications. The total applications coefficient and the male applications coefficient was statistically significant at the 0.05 level. Female applications to FIU were not significantly correlated with moving to the FBS.

The final column of Table 4 shows that, controlling for other factors, the DD estimated effect of moving to the FBS on total freshmen applications at WKU was 1.5 %. For male applications, the estimated effect was 1.1 % while for female applications the estimated effect was 1.7 %. These coefficients were not statistically significant, suggesting that relative to control institutions freshmen applications received by WKU were not significant after moving the FBS.

Study Limitations

The findings of this study should be considered in light of several important research limitations. The DD estimation strategy has the potential to suffer from omitted variable bias if time-varying factors which are correlated with the treatment administered and the dependent

Table 1 Average freshmen applications received at FAU and FAU control institutions

	Pre FBS Move (2001–2003)		Post FBS Move (2004–2010)		Diff-in Diff
	FAU	FAU Control Institutions	FAU	FAU Control Institutions	
Total Freshmen Applications	7,258	5,013	12,306	6,098	3,963
Male Freshmen Applications	3,246	2,172	5,396	2,596	1,726
Female Freshmen Applications	4,011	2,898	6,910	3,536	2,261

Table 2 Average freshmen applications received at FIU and FIU control institutions

	Pre FBS Move (2002–2004)		Post FBS Move (2005–2010)		Diff-in Diff
	FIU	FIU Control Institutions	FIU	FIU Control Institutions	
Total Freshmen Applications	10,483	5,165	13,132	6,238	1,576
Male Freshmen Applications	4,304	2,210	5,538	2,655	789
Female Freshmen Applications	6,179	2,955	7,594	3,625	745

variable of interest are not controlled for in model estimations (Zhang 2011). One such variable in this study could be the introduction of state or institutional policy initiatives which could have effected student applications during the time periods studied. Collecting accurate information on these types of initiatives, unfortunately, is very difficult. A search for specific policies designed to increase student enrollment at FAU, FIU, and WKU did not return anything significant. So, while it is not believed that this study suffers from omitted variable bias, it is important to acknowledge the potential of this when interpreting findings.

The validity of these findings is subject to the accuracy with which institutions of higher education reported admissions data. In the age of college rankings, some institutions have purposely reported inaccurate data to external agencies in an effort to improve their academic reputation. Given the importance of institutional selectivity in many ranking methodologies, admissions applications received could be subject of inaccurate reporting. Thus the validity of these findings is strongly related to the validity with which colleges and universities reported admissions data to IPEDS and to the Common Data Set Initiative.

Finally, these findings rely on the accuracy with which the selected control institutions create the counterfactual of what would have happened to freshmen applications at FAU, FIU, and WKU had these schools not moved to the FBS. While it is believed that the control institutions selected are valid comparison schools, a different group of control institutions could have produced different findings than those presented here. As noted earlier, however, alternative control groups constructed of FCS institutions designated by the National Center for Education Statistics as peer institutions for the three treatment universities and FCS institutions within border states of the treatment universities returned findings similar to those presented in this article.

Discussion and Conclusion

The goal of this study was to explore whether having an intercollegiate football program which competes at the FBS level correlated with the number of admissions applications an institution

Table 3 Average freshmen applications received at WKU and WKU control institutions

	Pre FBS Move (2005–2007)		Post FBS Move (2008–2010)		Diff-in Diff
	WKU	WKU Control Institutions	WKU	WKU Control Institutions	
Total Freshmen Applications	6,865	5,628	7,719	6,992	–510
Male Freshmen Applications	2,935	2,416	3,359	2,974	–134
Female Freshmen Applications	3,929	3,275	4,360	4,018	–312

Table 4 Estimated Relationship between Moving to the FBS and Freshmen Applications

	FAU vs FAU Control Institutions	FIU vs FIU Control Institutions	WKU vs WKU Control Institutions
Log Total Applications	0.321** (0.10) n-169	0.088* (0.04) n-152	0.015 (0.10) n-113
Log Male Applications	0.321** (0.10) n-167	0.118* (0.04) n-151	0.011 (0.10) n-112
Log Female Applications	0.320** (0.10) n-167	0.066 (0.04) n-151	0.017 (0.10) n-112
Institutional Effects Included	Yes	Yes	Yes
Year Effects Included	Yes	Yes	Yes
Covariates Included	Yes	Yes	Yes

Clustered standard errors in parentheses; number of observations below the standard errors. Because of fixed effects, each model explained over 90 % of the variance in the dependent variables. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

received. Three institutions (Florida Atlantic University-FAU, Florida International University-FIU, and Western Kentucky University-WKU), which moved from the FCS to the FBS in the mid-2000s, were the focus of this analysis. Given the nature of the study, these findings should be interpreted as three independent case studies of the moving to FBS treatment of freshmen applications to a college or university. The primary findings of the study were that at the two Florida institutions there is evidence that the average effect of moving to the FBS was positive and statistically significant. At FAU, moving to the FBS correlated with a large jump in admissions applications. Controlling for other factors, FAU received 32 % more admissions applications after moving to the FBS relative to other public universities in the same region which remained in the FCS. This increase was consistent among both male and female applications. Of the three institutions studied, moving to the FBS had by far the greatest effect on applications at FAU.

Findings from FIU were less drastic than at FAU, but still suggest that the institution received an admissions boost by moving to the FBS. Total applications at FIU, controlling for other characteristics and relative to control institutions, increased 8.8 % in the six years after their transition to the FBS. This increase was driven largely by male applications, which increased 11.8 % after the move to the FBS. Female applications, however, were not significantly correlated with moving to the FBS.

Freshmen applications at WKU were not significantly correlated with the move to the FBS. The DD coefficients for data using WKU and its control institutions was positive, suggesting that applications to WKU did slightly increase after the move to the FBS. This increase, however, was not statistically significant using convention thresholds.

An interesting question that arises from these findings is why the move to the FBS was significantly correlated with freshmen applications at FAU and FIU, but not at WKU. Institutional geography and the culture of football in Florida and Kentucky may offer an explanation. Florida is one of the two or three states in America where football is the most culturally ingrained. According to the organization’s website, Florida has one Pop Warner youth football league for every 1.61 million people in the state (Pop Warner is the nation’s

largest and oldest youth football program). In one non-Pop Warner youth football league, the South Florida Football League, over 30,000 children participate (Lavigne 2012). This interest extends into the high school level, where over 38,000 students compete in Florida Interscholastic Football (Jackson 2011). Spectator attendance at youth and high school football games is also higher in Florida than in most other states (Greer 2013).

The level of football interest in Florida is in sharp contrast to the level of interest in Kentucky. Due largely to the on-court success of the state's flagship institutions (The University of Kentucky and the University of Louisville), Kentucky is viewed as more of a "basketball state." Kentucky has one official Pop Warner youth football league for every 4.38 million people in the state. Though other youth football programs can be found throughout the state, the level of participation is much lower. Few would argue that the fervor for football in Kentucky is equal to that in Florida.

This difference in fervor could be reflected in these findings. For students growing up in Florida, where the value of football is high in so many communities, attending a university with a high profile football program may be of some importance. Therefore, when FAU and FIU decided to make the transition to the FBS, they would become more attractive to high school students in the state who had grown up watching, participating, or in some way actively engaged in football. In Kentucky, where football's cultural value is not as great, the attraction of attending a school with a high profile football program may be significantly less. Therefore, WKU's transition to the FBS may have largely been met with indifference among high school students in the state.

A second explanation for the different findings at FAU and FIU versus WKU is the length of time studied. Due to data availability, the post-treatment time period studied for FAU and FIU was seven and six years, respectively. For WKU, the post-treatment time period was only three years. It could be that if additional years of data were available the findings at WKU would be similar to those from FAU and FIU. An analysis of the data from FAU and FIU using only the first three years after their FBS move as the post-treatment period, however, again returned a positive, statistically significant DD coefficient. This suggests that the length of time studied did not lead to the different findings among the schools.

The results of this study provide much needed data and evidence for university administrators and scholars in the area of intercollegiate athletics. As noted earlier, a number of colleges and universities are in the process of considering a move from the FCS to the FBS. The assumption has been that the high cost of making this move is somewhat offset by the increased publicity (and subsequent increased student interest) which come with membership in the FBS. While this assumption is supported by these findings, this positive correlation was not universal. As a result, administrators should assess the context of their institution when considering the cost and benefits of moving to the FBS. Given the structure of this study and the number of institutions examined, broad scientific generalizations of these findings are impossible. Administrators can make naturalistic generalizations to interpret and utilize study findings. Schools thinking about making the move to the FBS with strong similarities to FAU or FIU with regard to institutional type, size, and environmental context might expect to see that move correspond with increased applications. Schools with characteristics similar to WKU, however, might not see such an increase associated with a move to the FBS. College and university administrators and trustees should engage in this kind of analysis in order to make better, more informed decisions about whether to pursue FBS membership.

More research is needed before the higher education community is able to gain a more complete picture of the relationship between fielding an FBS level football program and institutional admissions success. As more data become available, other schools which recently moved to the FBS such as Troy University, University of South Florida, and Texas State University should be examined using a similar methodology to that employed in this study. Other institutional outcomes such as admissions yield, student quality, and student enrollment could be used in this research.

Future research may also engage in a more complete costs-benefit analysis of moving to the FBS. For example, how much of an increase in applications and institutional enrollment is needed to offset the cost of moving to the FBS? Such questions merit serious consideration.

Appendix

FAU Comparison Group

Appalachian State University
 Austin Peay State University
 College of William and Mary
 Eastern Kentucky University
 Georgia Southern University
 Jacksonville State University
 James Madison University
 McNeese State University

Morehead State University
 Murray State University
 Nicholls State University
 Northwestern State University of Louisiana
 Tennessee Technological University
 University of Tennessee-Chattanooga
 University of Tennessee-Martin
 Western Carolina University

FIU Comparison Group

Appalachian State University
 Austin Peay State University
 College of William and Mary
 Eastern Kentucky University
 Georgia Southern University
 Jacksonville State University
 James Madison University
 McNeese State University

Morehead State University
 Murray State University
 Nicholls State University
 Northwestern State University of Louisiana
 Tennessee Technological University
 University of Tennessee-Chattanooga
 University of Tennessee-Martin
 Western Carolina University

WKU Comparison Group

Appalachian State University
 Austin Peay State University
 Coastal Carolina University
 College of William and Mary
 Eastern Kentucky University
 Georgia Southern University
 Jacksonville State University
 James Madison University
 McNeese State University

Morehead State University
 Murray State University
 Nicholls State University
 Northwestern State University of Louisiana
 Southeastern Louisiana University
 Tennessee Technological University
 University of Tennessee-Chattanooga
 University of Tennessee-Martin
 Western Carolina University

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