

## **The Cost of Probation in Division IA College Football**

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## **Abstract**

This paper presents an empirical investigation into the monetary effect of a football probation and associated penalties, including lost scholarships and post-season bans, on the revenues and expenditures on collegiate sports. Using data from 106 Division IA football programs from 1996-2000, we test the impact of a probation on men's football revenues and expenditures and find little evidence of a monetary effect. Extending the analysis to men's and women's basketball and aggregated men's and women's non-revenue sports, we find evidence that suggests women's sports, and to a lesser extent men's non-revenue sports, suffer reduced resources during a football probation and associated penalties. We provide possible explanations for this perhaps unintentional consequence of NCAA enforcement in collegiate football.

***JEL Classifications:*** L13, L83, D43

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## 1. Introduction

The National Collegiate Athletic Association (NCAA) serves two primary roles in collegiate sport. First, the organization sanctions sporting events and, more importantly, certifies post-season tournaments and annual national champions. Second, the NCAA regulates how schools, athletic programs, and their surrogates interact with actual and would-be student athletes. The NCAA membership agreement ostensibly aims to ensure the amateur status of student athletes and to ensure a modicum of competitive balance in particular sports.

Combined, these two roles essentially make the NCAA a cartel that regulates both the input and output markets of collegiate athletics. While some might express concern that the actions of the NCAA limit student options and cause inefficiency in the market for college sports, in many other ways the NCAA serves a valuable role in limiting the interjection of what might be considered disreputable practices in college sports. This is especially the case in the major revenue generating sports of men's football and basketball, and to a lesser extent women's basketball.

The literature focusing on the various roles of the NCAA has thus far followed four paths. First are studies that focus on the monopsony power of the NCAA, including the value that star football and basketball players provide their schools' athletic programs and the extent that schools earn rents from these players (for example, Blair and Romano, 1997, and Brown and Jewell, 2003). A second path investigates the public choice aspects of how the NCAA cartel makes decisions (e.g., DeBrock and Hendricks, 1996, and Fleisher et al, 1990). A third strain focuses on gender equity concerns, most notably focusing on Title IX issues, including opportunities for women in collegiate sports and coaches salaries (e.g., Carroll and Humphreys, 2000, and Anderson and Cheslock, 2004). A final strain, to which this study is a contribution, investigates how NCAA enforcement and rules changes impact various aspects of the input and output markets, including competitive balance.

This paper contributes to this growing literature by investigating the monetary costs of a football probation; something heretofore not considered. Depending on the egregiousness of the behavior being punished, a football probation can be a stand alone punishment or be associated with a combination of lost (football) scholarships, prohibitions on television appearances, and bans on post-season (bowl) appearances. If more serious punishments are expected to alter behavior by

sufficiently dissuading violations in the future, more serious punishments should also carry every greater monetary cost.

However, it is not necessary that the costs of football probation be borne by the football program alone. While scholarship limitations and post-season bans might impact football revenues, football expenditures can be maintained or even increased at the expense of other sports because of the fungible nature of the athletic department's budget. This may seem unfair to other sports, after all the coaches, athletes, and fans of these other sports may have had nothing to do with the violation by the football program. However, reducing expenditures on non-revenue generating sports may be a least cost decision in the long term.

Using data from 1996-2000 for 106 Division IA football programs, the impact of a football probation on revenues and expenditures on football programs is first tested. The analysis is then extended by testing whether football probations cause spillover effects on the revenues and expenditures for men's and women's basketball and separately for on men's and women's non-revenue sports. In general, there is little evidence to suggest that a probation, lost scholarships or post-season bans have a significant impact on football revenues whereas lost scholarships and post-season bans weakly reduce football expenditures. On the other hand, the evidence suggests that football probations do not impact the revenues or expenditures of men's basketball but do reduce revenues and expenditures of women's basketball. Finally, football probations correlate with less spending on non-revenue sports, but the disproportionate share of the burden is borne by women's sports, perhaps an unintended consequence of NCAA enforcement activity in football.

The remainder of this paper is structured as follows. The next section provides a brief literature review and puts the current study in the context of the received literature. Section 3 describes various hypotheses on how a football probation might impact the revenues and expenditures of the football program and also other sports. Section 4 describes the data, empirical methodology, and discusses the empirical results. The final section offers concluding remarks and suggestions for future research in this area.

## **2. Literature Review and Context**

Previous analysis into the impact of football probations finds on-field performance tends to decline sharply after a team has been placed on probation (Fleisher, et al, 1988). The NCAA is

found to infer and investigate illegal practices at universities by evaluating their athletic performance on the field, with greater variability leading to suspicion and investigation. This suggests that the NCAA acts to protect the market rents of established, consistent programs by erecting a barrier of entry embodied in prosecution directly at up and coming programs which, in turn, maintaining the status quo.

However, a credible NCAA enforcement mechanism has only existed since 1953 even though the organization has existed since 1906. During the period between its founding and the creation of the punishment mechanism of probation, lost scholarships, and post-season bans, the NCAA tried to limit the actions of its member schools towards potential and actual student athletes. The impact of various rules changes in the NCAA membership agreement on the competitiveness of Division IA football as a whole and of individual conferences has also been investigated. For example, Eckard (1998) investigates competitive balance in Division IA football conferences before and after the beginning of NCAA enforcement in 1953. He finds that his measure of competitive balance, the variance of relative team positions over time, improved for five of the seven conferences he analyzes and concludes that the NCAA acts as a traditional cartel by protecting the stability of relative team rankings within a conference.

In a different approach, Sutter and Winkler (2003) show that NCAA scholarship limitations improve competitiveness and find that stronger, more established programs are more likely to vote in favor of regulated scholarship limitations. Depken and Wilson (2004a) investigate the competitive balance of all Division IA football over the past century and show that while Division IA football has become less balanced over time, several institutional changes have had a beneficial impact on competitive balance, specifically the creation of the NCAA, the creation of a credible enforcement mechanism, and the relegation of schools to Division IAA status. However, several other major rule changes, such as academic standards and the creation of the Bowl Championship Series, have reduced competitive balance. These findings may suggest that pressure groups may motivate many of the institutional changes in the NCAA.

Still others investigate the impact of overall enforcement activity, measured by probation and severity of punishment, on various aspects Division IA football and individual football conferences. While Fleisher et al (1988) did not directly investigate the relationship between NCAA enforcement and competitive balance, their results suggest that competitive balance is likely to be made worse with NCAA enforcement. Indeed, in a pooled model, Depken and Wilson

(2004b) used data from 1953 through 2000 and found that more NCAA sanctions tend to reduce competitive balance at the conference level. However, more conference members on probation actually enhances competitive balance, arguably because of a reduction in overall cheating.

In an extension, Depken and Wilson (2004c) investigate the impact of enforcement and punishment on competitive balance, in the spirit of Becker (1968). Measuring enforcement as the odds of being on probation (alternatively being investigated) and using a battery of alternative measures of severity of punishment, the evidence suggests that NCAA enforcement efforts serve to protect the rents generated by the cartel. Empirically the NCAA monitoring/enforcement activities, especially within a conference, are found to improve competitive balance whereas the severity of punishment tends to reduce competitive balance. While the actual impact of NCAA enforcement on the level of cheating is not directly tested, the results suggest that the NCAA's enforcement actions come at the expense of a more competitive environment.

The NCAA's enforcement mechanisms ostensibly aim to provide a credible (if imperfect) threat to reduce or eliminate some if not all of the illicit gains that might arise from cheating on the membership agreement. However, the lack of ideal conditions to dissuade illegal behavior causes such behavior to continue, which in turn requires the NCAA to punish football programs with probation and various levels of associated punishments. However, competitive balance is only one concern in the case of Division IA football. Given the large revenues generated by and resources expended on big-time football programs, gender-equity concerns have also been the focus of several authors.

Due to the possibility for cross subsidization within the athletic department the effects of Title IX legislation is another important factor in budgetary considerations. Carroll and Humphreys (2000) argue that Title IX may have increased opportunities for women in intercollegiate athletics relative to men in the first half of the 1990s. However, it appears that in many cases this was achieved by reducing men's opportunities rather than by expanding women's opportunities, indicating some within department substitution of some men's and women's sports. They do not address the monetary resources dedicate to these alternative sports. However, Anderson and Cheslock (2004) find that athletic departments are more likely to add women's sports than to cut men's sports in order to meet Title IX compliance standards, which might suggest that the money spent on women's sports increased or the money spent on men's sports has gone down if the athletic

department has a fixed budget. Yet, they admit that losses to men's sports are an expected and intended consequence of Title IX.

The monetary costs of a football probation are as yet unknown. Moreover, it is unknown whether any costs are economically significant and whether they are expected to dissuade illegal behavior. Perhaps important to gender-equity concerns, there has been no investigation into the impacts of NCAA enforcement (as opposed to federal Title IX enforcement) on the distribution of resources within athletic departments. It is possible that the cost of a football probation is internalized completely by the football program itself, however a football probation might be associated with a reduction in the expenditures on non-revenue sports, including women's sports, in effect shifting the cost of illegal behavior from the football program to a sport that had nothing to do with the behavior being punished.

### **3. Hypotheses Concerning the Cost of a Football Probation**

Contemporaneous with the increase in the number of non-revenue sports on campus, the potential gains from fielding a successful football program have increased dramatically, especially for the Bowl Championship Series conferences (the Atlantic Coast, Big East, Big Ten, Big Twelve, Pacific Ten, and the Southeastern). The availability of television and post-season bowl appearances has also increased the financial reward of a competitive football team. Such rewards might increase the temptation for individual schools and their surrogates to violate the NCAA membership agreement in order to recruit or retain high quality athletes. The NCAA agreement specifically deals with the pecuniary and non-pecuniary interaction between school and team representatives and student-athletes. However, enforcement is not perfect. Thus as the expected value from cheating increases so does the probability that cheating will occur. In response, the NCAA has created a formal enforcement mechanism with which to punish cheating, using probations and additional penalties.

Probation can be a stand-alone punishment, which might cause a stigma that harms the reputation of the football program. However, this stigma alone may be insufficient to impact the revenues generated by the football program if this is a goal of the NCAA. Perhaps for this reason, probations are often associated with additional penalties and the NCAA increases the severity of these punishments with the severity of the violation: scholarship limitations, bans on television appearances, and bans on post-season play. Thus, if more serious punishment is affiliated with

more egregious violations, and the NCAA intends these punishments to exact a monetary toll on the football program, more serious punishments should impose greater monetary costs on the program placed on probation (Becker, 1968). Therefore, while the impact of probation alone on revenues is expected to be minor there seems a clear theoretical reason to assume an ordinal ranking on the expected impacts on revenues by the various punishments the NCAA imposes.

On the other side of the football program's balance sheet, probationary status alone may reduce expenditures if it leads to a reduction in coaching salaries, either through retirements or firings, or other cutbacks on the program. However, anecdotal evidence does not suggest that coaches are summarily fired on a regular basis after their team is placed on probation. This might be a function of the type of violations the NCAA typically punishes with probation alone. The NCAA will consider a bribery case against the head coach and an academic integrity case against an undergraduate tutor in qualitatively different ways. The latter might be punished with probation alone, but is unlikely to cost a coach his job. On the other hand, a bribery case might well cost a coach his job, yet this type of violation is a clear minority of those prosecuted by the NCAA.

On the other hand, the more severe punishment of a reduction in football scholarships reduces the amount spent on the football program because grants-in-kind are counted in the football budget. If scholarship reductions are affiliated with more serious violations they may correlate with the firing of staff and coaches, which could further reduce football expenditures. In other words, if the football program is required to spend less on in-kind grants, the program may also "voluntarily" spend even less after scholarship limitations by firing coaches or otherwise reducing the expenditures of the program.

Finally, although the loss of television appearances is unlikely to impact football expenditures, lost post-season appearances may reduce football expenditures. When a team accepts an invitation to play in a bowl game the team has to pay all expenses for attending the bowl game, including transportation, room and board for players, coaches, training staff, and often the marching band and cheerleaders. If post-season bans are intended to be binding, a team that would have otherwise qualified for a bowl game could spend less on football with this punishment. On the other hand, if the schools punished in this manner do not normally qualify for a post-season appearance, the bans would not alter the amount of money spent on football operations.

While a football probation might impact the fiscal position of the football program, it is also possible that football probations impact other sports offered on campus. Probation could reduce revenue to the other sports if the stigma of football probation spills over to these other sports, perhaps leading to a reduction in demand or a drop in alumni and booster donations to these sports. However, given the much lower level of revenues generated by, say, men's tennis and women's golf, these impacts are likely to be minimal, or at least difficult to detect statistically.

As for the expenditures on other sports, football probations may have a considerable impact. First, if a sport's expenditures are dependent on football surplus, probation that reduces football surplus may reduce the amount of money available to subsidize the sport. Second, a probation in football likely increases the level of scrutiny towards the overall athletic program on the part of the NCAA. This scrutiny, in turn, may motivate a school to reduce expenditures on non-football sports in an attempt to maintain a lower profile during the football probation. A final possibility is that expenditures on non-football sports are reduced because the athletic budget is fungible. As there is no requirement that a football probation impose costs only on the football program, an athletic department might decide to spend less money on non-football sports and transfer resources to the football program. Therefore, the impact of a football probation may ultimately be mitigated by reduced expenditures on other sports. If this were the case, would it be a rational decision on the part of the athletic program or evidence of an 'old boy' network lending favoritism to football at the expense of other sports on campus?

Taking an optimistic view, a school might wish to maintain a constant level of spending on football operations while on probation if the continued spending increases the probability that the football team will maintain or increase its "profitability" after probation expires. If football surplus is enhanced by the football program's reputation and reputation is enhanced by expenditures on football operations (in the form of coaches, facilities, etc.), then reducing football expenditures during probation may further reduce the program's reputation in addition to that lost by the probation. Thus, a school may indicate its continued financial support for the football program at the expense of other sports in order to minimize lost reputation and position the football program to improve its financial situation when the probation is lifted.

While this might seem unjust to the non-revenue sports that bear the costs of the football probation, schools are likely to behave in this manner if it is a least-cost alternative to the overall athletic program. Forcing a football probation to be expenditure neutral on non-football sports

might satisfy some, however curtail spending on football operations may lead to longer-term fiscal impacts that could ultimately worsen the impact on non-football sports.

Anecdotal evidence suggests that Southern Methodist University, whose football program was given the Death Penalty in 1987, has never fully recovered from that punishment. The football program which once consistently drew 50,000 plus in the now defunct Southwest Conference, averaged 17,435 per game in 2003 playing in the Western Athletic Conference. In the seven years prior to the Death Penalty, SMU competed in 5 bowl games but has not played in a bowl game since. The SMU experience provides a possible lesson. The NCAA Death Penalty may be too severe a punishment; after SMU was forced to abandon its football program it has proven exceedingly difficult to recover its previous reputational capital.

In a different case, the University of Alabama was placed on football probation in February 2002. During this probation, Alabama football was banned from post-season play for two seasons, including the 2002 season. In response, the University scheduled an away game with the University of Hawaii to be played as the finale of the 2002 season. As the head coach admitted, the program scheduled the game specifically to replace the bowl game that Alabama was not allowed to attend. Not only did current athletes enjoy the same basic experience they would have enjoyed for an actual bowl game but the University sent a signal to future recruits that the program values its football capital.

To review our hypotheses, we expect that a football probation and more serious penalties will have increasingly large impacts on football revenues and perhaps on football expenditures. The impact of a football probation on the revenue of non-football sports is not certain, although it is possible that football probation generates sufficient stigma for the rest of the athletic program that revenues fall. However, it is definitely possible that a football probation will cause a reduction in expenditures in other sports. This could occur for any of three reasons: reduced football surplus available to fund non-football sports, increased scrutiny of non-football sports on campus by the NCAA motivates the athletic department to curtail expenditures (perhaps on optional items) to avoid the appearance of impropriety, or the football program is a better long-term investment on the part of the athletic program and therefore resources are removed from non-football sports and transferred to football. Evidence that money spent on non-football sports is reduced after a football probation will be reduced form in that it is impossible to identify the true cause of any reduction.

#### **4. The Cost of Football Probation: Empirical Evidence**

To empirically test the impact of a football probation on the fiscal position of athletic programs, we employ data for 106 Division IA football programs from 1996-2000. The data include revenues and expenditures for football, men's and women's basketball, and the aggregated revenues and expenditures on all other men's and women's sports. The data were matched with conference affiliations, winning percentages for football and men's and women's basketball, whether the teams played in the postseason (either a bowl game or the NCAA basketball tournaments), and information on football probations and associated punishments, scholarship reduction and post season bans.<sup>1</sup>

Table 1 presents descriptive statistics of the variables used in the empirical analysis. The first several variables in Table 1 reflect the fiscal position of various sports on campus, all dollar figures being converted to thousands of 2000 dollars. The average dollar revenue of the 106 Division IA teams in the sample was \$10.1 million, with the lowest revenues being earned by Kent State in 1997 (\$257,000) and the most by the University of Arkansas in 2000 (\$66 million). Football (and other sports) revenues represent aggregated ticket sales, television appearances, post-season revenues, revenue sharing by the conference and the NCAA, and booster and alumni contributions to the sport. In the empirical analysis it is assumed that the impact of explanatory variables is qualitatively (and implicitly quantitatively) the same on each of the different sources of revenue to the football programs. Division IA football programs spent on average \$5.9 million per year during the sample period. This figure includes student grants (scholarships), coaching salaries, training staff salaries, training and facilities expenditures, travel costs, and other incidental costs. During the sample period, Rice University in 1997 spent the least on football operations (\$812,000) while Tennessee in 1998 spent the most (\$16.9 million).

On average, men's basketball generates considerably less revenue than football. In the sample, men's basketball teams averaged \$3.5 million in revenues with approximately \$1.8 million in expenditures. Women's basketball averaged approximately \$300,000 per year in revenue, less than

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<sup>1</sup> Financial data were obtained from the Office of Post Secondary Education in the Department of Education. Winning percentages and post-season appearances were obtained from the NCAA, David Wilson, and various press reports. Probations and associated punishments were obtained from the NCAA Major Infraction Database. During the sample period only one team was banned from television appearances for a single year. For this reason we do not include this form of punishment in the empirical analysis.

three percent of the revenue of the average football team. However, the average women's basketball program spent approximately \$1.02 million per year. Therefore it seems clear that the average women's team does not cover its operating expenses from the revenues it generates and therefore must be funded from alternative sources, whether surplus revenues from other sports or non-sports revenues such as student fees.

Lest one quickly blame the women's basketball team for not paying its own freight, the disparity between revenues and expenditures carries over to many (if not most) of the other sports offered on campus. Non-football and non-basketball men's sports revenues averaged, as a group, total revenues of \$1.3 million with average expenditures of \$2.9 million per year. Women's non-basketball sports earned average revenues of approximately \$1 million per year with expenditures of approximately \$3.3 million per year. Therefore, non-revenue generating sports, such as golf, tennis, swimming, diving, and cross-country, average considerably less in revenues than men's and women's basketball and therefore also require large subsidies.

Table 1 also reports the average overall winning percentages of football, men's basketball, and women's basketball. These percentages are greater than 0.500 because the schools in the sample are all Division IA football programs and often play teams in lower divisions and conferences. In terms of post-season appearances, approximately 44% of the sample schools played in a post-season bowl game during the sample period, 35% of the men's basketball programs played in the NCAA basketball tournament (the NIT tournament was not included), and approximately 35% of women's basketball teams played in the women's NCAA basketball tournament.

The next three variables describe the probations, scholarship limitations, and post-season bans for football programs during the sample period. Of the 424 sample observations (describing 106 schools), approximately 5% corresponded with a football team on probation during the sample period, 3% with limits on scholarships, and less than one percent with post-season bans.

The remaining variables in Table 1 indicate conference affiliations for the different schools. In some cases, schools play football in one conference and basketball in another (for example, Louisiana – Monroe plays football in the Sunbelt Conference and basketball in the Southland Conference). In these cases, a school is affiliated with their football conference throughout the various empirical models. In the empirical models reported below, the Atlantic Coast Conference (ACC) is the reference conference.

The initial focus will be on the football programs. Therefore, the first models estimated are of the form

$$DEP_{it} = \gamma CONF + \beta_1 FBWIN_{it} + \beta_2 FBBOWL_{it} + \beta_3 FBPROB_{it} + \beta_4 FBSCHOL_{it} + \beta_5 FBPSBAN_{it} + \varepsilon_{it}, \quad (1)$$

where  $DEP_{it}$  is alternatively football revenues and football expenditures. The right hand side variables include a vector of conference dummy variables ( $CONF$ ), the winning percentage of the football program ( $FBWIN$ ), whether the team participated in a post-season bowl game that year ( $FBBOWL$ ), whether the football program was on probation in that year ( $FBPROB$ ), whether the football program was punished with scholarship reductions that year ( $FBSCHOL$ ), and whether the football program was punished with a ban on post-season play that year ( $FBPSBAN$ ). The stochastic term  $\varepsilon_{it}$  is a composite zero-mean error structure that is accommodated in the estimation process using a random effects estimator.

To accommodate the possible endogeneity of winning percentage, an instrumental variables estimator is employed. The instrument is the previous year's team quality rating, as calculated by the algorithm proposed by David Wilson.<sup>2</sup> The results of estimating equation (1) are reported in Table 2, the first-stage results of the IV estimation are reported in the first column. Lagged quality rating is positively correlated with current winning percentage, as would be expected, along with whether the team played in a bowl game in the current season. While teams on probation tend to have higher winning percentages, teams with scholarship limitations tend to have lower winning percentages, supporting Fleisher et al (1988). Interestingly, post-season bans do not correlate with significant reductions in on-field performance. This suggests that a limitation on scholarships is the punishment that harms team performance the most.

The second and third columns of Table 2 report the IV estimates for football revenues and expenditures, respectively. In these regressions winning percentage is positively correlated with both revenues and expenditures, as expected. Additionally a bowl game does not significantly

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<sup>2</sup> David Wilson, no relation to either author, has calculated team quality ratings for all Division IA collegiate football programs going back to 1888. The Wilson Performance Rating System is similar to the rating system used in Chess, is based solely on win-loss records of a team and its opponents, and averages 500 across all football teams. More information on this rating system is available at <<http://homepages.cae.wisc.edu/~dwilson>>, last accessed November 2004.

impact football revenues or costs. This result may be caused by the revenue sharing agreement between the NCAA, the various Division IA conferences, and the individual schools. Most interesting, probationary status and the associated penalties do not impact football revenues directly. Whether this is intentional on the part of the NCAA is not clear.

Lost scholarships do cause a reduction in football expenditures at the 7% confidence level in a one-tailed test and a post-season ban reduces expenditures by approximately \$2.9 million per year. These results are, in a sense, reduced form because the actual cause of the lower expenditures is unknown, i.e., whether the program only reduced scholarship expenditures, fired training staff, or reduced coaching salaries. Either a post-season ban is so strict that coaching salaries are considerably reduced or a team put on probation that would have gone to a bowl game “saves” money by not attending a game. An alternative explanation is that only teams who spend considerably less on football operations than the Division IA average are placed on post-season bans. The ultimate source of this reduction is at present unknown.

The parameters on the conference dummy variables follow expectations. The average football program in the Big East, Big 10, Pacific 10, and Southeastern conferences generates more revenue than the average ACC program. The revenues to the average Big 12 program do not statistically differ from that of the average ACC program. However, programs in the non-BCS conferences in the sample (Conference USA, MAAC, Mountain West, and Sunbelt) all averaged considerably less revenue than the average ACC program. On the cost side, the pattern is the same except that the average Pacific 10 program spends the same amount of money on football operations as the average ACC program.

The results in Table 2 suggest that a football probation on its own does not significantly impact the revenues generated by a Division IA football program. However, if a probation entails lost scholarships or post-season bans, then football revenues and expenditures are slightly reduced on average. The results are only partly illuminating because an athletic department may not dramatically reduce its football expenditures after a football probation if it can shift resources from other sports in the athletic program. Such a shift could be reflected in reduced expenditures on other sports during a probation and associated punishments.

To test this possibility, for both men's and women's basketball programs we estimate the following model:

$$\begin{aligned}
 DEP_{it} = & \gamma CONF_{it} + \beta_1 FBWIN_{it} + \beta_2 FBBOWL_{it} + \beta_3 BBWINPCT_{it} + \beta_4 NCAA_{it} + \\
 & \beta_5 BPROB_{it} + \beta_6 FBSCHOL_{it} + \beta_7 FBPSBAN_{it} + \varepsilon_{it},
 \end{aligned} \tag{2}$$

where  $DEP_{it}$  is the revenue or expenditures of the men's or women's basketball program and  $\varepsilon_{it}$  is a zero-mean error structure. The explanatory variables include those used to explain the fiscal position of the football program with the addition of the appropriate team's overall winning percentage ( $BBWINPCT$ ) and whether the team played in that year's NCAA basketball tournament ( $NCAA$ ).

The success of the football team might be expected to influence the revenues generated by men's and women's basketball, however the impact is ambiguous. Football success might increase revenues to men's and women's basketball if the football success increases the notoriety of the school's athletic program and increases the demand for basketball on and off campus, e.g., football and basketball programs are complements in demand. On the other hand, football success might be a substitute for men's and women's basketball, in which case a better football team might reduce the revenues generated by the men's or women's basketball program, *ceteris paribus*. Anecdotal evidence suggests that some schools have a stronger complementarity in demand (for example Michigan football and basketball) whereas others have a stronger substitution effect (Kentucky prefers basketball whereas Georgia prefers football).

The ambiguous effects of football probations and punishments are of primary interest in these models. A football probation and additional punishments might reduce the revenue generated by either the men's or women's basketball program if there is a sufficiently large stigma associated with the probation such that the demand and booster/alumni contributions are reduced. However, a football probation might increase basketball revenues if fans substitute away from football into men's or women's basketball. On the cost side, a probation and punishment might reduce the amount of money available for cross-sport subsidies, or might cause a retrenchment on the part of the athletic program overall. However, the athletic department may actually increase basketball expenditures if it sees men's or women's basketball as a worthy investment in potential future revenues, given the existence of a football probation.

The results of estimating equation (2) with an instrumental-variables random-effects estimator are reported in Table 3.<sup>3</sup> The first two columns of Table 3 report the results for men's basketball. A better football win percentage tends to reduce basketball revenues, perhaps reflecting a substitution effect between men's football and basketball on the part of the school's fans. However, winning by the football team does not impact the expenditures on men's basketball, suggesting that men's basketball is not subsidized by football.<sup>4</sup> Schools that have a football team participate in post-season play tend to have higher basketball revenues and expenditures. The impact on revenues may come from positive spillover effects from football to the basketball program, either in the form of attendance increases, additional booster/alumni donations, more television appearances, or an at-large bid to the NCAA tournament. On the expenditures side, a bowl game might provide an infusion of funds to the school's athletic budget that is, in turn, shared with the other sports on campus.

Success of the men's basketball team offers conflicting results. The quality of the basketball team, as reflected in overall winning percentage, does not significantly impact basketball revenue or expenditures. However, if a team is good enough to play in the NCAA basketball tournament, this increases both basketball revenues and expenditures. This might indicate that there is a significant amount of investment in coaches, facilities, and trainers, required to play consistently in the post-season tournament, and obtain the payoff the tournament provides in the form of greater revenues.

As for the football probation and punishment variables, probationary status alone does not have an impact on men's basketball revenues or expenditures. However, a scholarship limitation placed on the football program does weakly reduce basketball revenues, while a post-season ban only weakly impacts expenditures on the men's basketball program. The former result may arise from a stigma that extends beyond the football program. The latter result is consistent with the earlier finding that bowl-appearance windfalls might be shared with other sports on campus and being banned from those windfalls causes a slight reduction in average basketball expenditures.

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<sup>3</sup> While reported p-values are most often interpreted as the significance for a two-tailed test, for purposes of discussion particular values of parameter estimates are not as important as the qualitative effects of an explanatory variable on revenues and expenditures. Therefore, in the following, statistical significance is called weak if the parameter estimate can be considered positive (or negative) at the ten percent level in a one tailed test. On the other hand, strong statistical significance corresponds to typical two-tailed tests.

<sup>4</sup> Alternative specifications substituted football surplus revenues for football winning percentage, continuing to use the lagged team quality score as an instrument. These models did not change the qualitative results; football surplus was not significantly related to basketball expenditures or revenues.

The conference dummy variables follow an expected pattern, as the ACC is one of the predominant college basketball conferences in the country and is the reference conference. All conferences average less revenue per team than the ACC, except for the Big 10. In terms of expenditure on men’s basketball, only teams in non-BCS conferences (Conference USA, MAAC, Mountain West, and the Sunbelt) consistently spend less than the average ACC team.

The results for women’s basketball are reported in the last two columns of Table 3. There are a few stark differences when compared to men’s basketball. If the school’s football team plays in a post-season bowl game there is a weak positive impact on women’s basketball revenues and expenditures. Additionally, women’s basketball success, both winning percentage and whether the team played in the NCAA tournament, has a strong positive impact on both revenues and expenditures. This suggests more elastic demand for women’s basketball.

Football probation and punishments have weak negative effects on both women’s basketball revenues and expenditures. The reduction in expenditures correlated with limitations on football scholarships and limits on post-season play might suggest that resources are diverted away from women’s basketball towards other more “profitable” men’s sports, whether football or basketball. If this result withstands further scrutiny it might indicate an unintended fiscal consequence of punishing malfeasance of the football program: women’s teams pay the fine for the football team’s crime.

Our final test is on the aggregated revenues and expenditures for men’s and women’s non-revenue generating sports. Traditionally, football and men’s basketball are considered revenue-generating sports while other sports, such as men’s tennis and wrestling, or women’s field hockey or swimming, are considered non-revenue sports. Therefore it is proper to test whether football probation and punishments correlate with changes in the resources that athletic departments dedicate to these non-revenue sports. We estimate the following equation for the aggregated revenues and expenditures on men’s and women’s sports:

$$\begin{aligned}
 DEP_{it} = & \gamma CONF + \beta_1 FBWIN_{it} + \beta_2 FBBOWL_{it} + \beta_3 FBPROB_{it} + \beta_6 FBSCHOL_{it} + \\
 & \beta_7 FBPSBAN_{it} + \epsilon_{it},
 \end{aligned}
 \tag{3}$$

where the variables are as defined in the previous models. This functional form does not include a generic indicator of the quality of the teams that comprise the non-revenue generating sports. Nevertheless, the results from estimating equation (3) are reported in Table 4.<sup>5</sup>

The results are basically consistent with the findings in men's and women's basketball except for a few notable differences. The most striking difference is that lost football scholarships and post-season bans correlate strongly with reduced expenditures on women's non-revenue sports, scholarship limitations in football correlate with a reduction in expenditures on women's non-revenue sports of approximately \$960,000. This impact is statistically and economically significant. For men's sports reduced scholarships weakly reduce the expenditures on men's non-revenue sports whereas post-season bans do not correlate with any changes in men's expenditures. Combined the results seem to suggest that the non-revenue sports seem to bear the cost of a football probation but that this cost is disproportionately borne by women's sports, including to some extent women's basketball.

## **5. Conclusions**

This paper empirically investigates the monetary costs of a football probation on Division IA football programs and other sports offered on campus. The question has heretofore not been investigated, yet is important for at least two reasons. First, if NCAA enforcement activity is expected to dissuade cheating on the membership's agreement, knowledge of how much probations and associated penalties impact the fiscal position of the football program is helpful in determining proper penalty structures and severity. Second, there is a possibility that the monetary costs of a football probation are borne by other sports on campus, sports which may have had no connection with the behavior being punished. In other words, because of the nature of athletic department budgets it is entirely possible that the financial burden of a football probation falls on non-football sports, an unintended consequence of NCAA enforcement efforts.

The possible negative impact on resources available to non-football sports is important in the ongoing debate over gender equity on campus, especially in the area of sports. The numerous studies focusing on Title IX and other gender equity concerns, have not considered these possible

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<sup>5</sup> In alternative specifications we included men's or women's basketball winning percentage, where appropriate, as a proxy for the quality of the non-revenue men's and women's sports. However, these variables did not improve the statistical results and basketball winning percentage was consistently insignificant in these alternative models.

negative externalities of a football probation. Cross-sport impacts are therefore of interest, especially in the case of women's sports. We test the impact of a football probation and associated penalties on the revenues and expenditures on men's and women's basketball and the aggregated revenues and expenditures of men's and women's non-revenue sports.

Using data from 106 Division IA football programs from 1996-2000, we find that in general probationary status alone has no impact on football revenues or expenditures; however scholarship limitations and post-season bans have a slight impact on football revenues with a more significant impact on football expenditures. This suggests that either NCAA probations are not intended to have any monetary impact on the football programs punished or the costs of the probations lay elsewhere.

Evidence from men's and women's basketball suggests that only the latter is impacted by football probation and punishments: revenues and expenditures on women's basketball are weakly negatively correlated with lost football scholarships and post-season bans. However, it seems that the greater financial burden of a football probation is actually felt in the expenditures on both men's and women's non-revenue sports. In both cases, expenditures are reduced when a football program is punished with lost scholarships and bowl appearances, but the burden falls disproportionately on women's non-revenue sports, such as volleyball and swimming, rather than men's non-revenue sports, such as golf and tennis. Overall, the results suggest that women's sports (especially non-basketball sports) tend to bear a greater financial burden of a football probation compared to other sports, perhaps an unintended consequence of NCAA enforcement activities.

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**Table 1: Variable Descriptions and Sample Statistics**

Variable	Description	Mean	Std. Dev.	Minimum	Maximum
FBREV	Football Revenues <sup>a</sup>	10100.37	8650.223	257.400	66289.84
FBEXP	Football Expenditures <sup>a</sup>	5939.215	2989.324	812.053	16900.37
MBBREV	Men's Basketball Revenues <sup>a</sup>	3538.194	2899.487	20.393	14714.74
MBBEXP	Men's Basketball Expenditures <sup>a</sup>	1813.172	957.766	323.231	6728.118
WBBREV	Women's Basketball Revenues <sup>a</sup>	303.007	473.464	0.160	4391.599
WBBEXP	Women's Basketball Expenditures <sup>a</sup>	1019.218	436.010	192.181	3290.194
MENSREV	Non-football and non-basketball Men's Sports Revenues <sup>a</sup>	1317.592	2137.713	<b>-1919.198</b>	12458.27
MENSEXP	Non-football and non-basketball Men's Sports Expenditures <sup>a</sup>	2895.239	2836.934	308.361	22568.27
WOMENSREV	Non-basketball Women's Sports Revenues <sup>a</sup>	1005.031	1502.507	<b>-0.360</b>	10755.82
WOMENSEXP	Non-basketball Women's Sports Expenditures <sup>a</sup>	3326.477	1987.928	340.335	12622.17
FBWINPCT	Football win percentage	509.39	232.61	0.000	1000.00
MBBWINPCT	Men's basketball win percentage	564.90	169.94	107.14	948.71
WBBWINPCT	Women's basketball win percentage	550.08	192.13	37.003	1000.00
LAGRATING	Once lagged Wilson Performance Rating <sup>b</sup>	886.37	97.786	606.00	1217.00
FBOWL	Football team played in bowl in current year	0.443	0.497	0.000	1.000
MNCAA	Men's basketball team played in NCAA tournament in current year	0.346	0.476	0.000	1.000
WNCAA	Women's basketball team played in NCAA tournament in current year	0.353	0.478	0.000	1.000
FBPROB	Football team is on probation	0.049	0.217	0.000	1.000
FBSCHOL	Football team has scholarship limitations	0.028	0.166	0.000	1.000
FBPSBAN	Football team is on post-season ban	0.002	0.048	0.000	1.000
ACC	Atlantic Coast Conference	0.084	0.279	0.000	1.000
BIGEAST	Big East Conference	0.084	0.279	0.000	1.000
BIG12	Big 12 Conference	0.113	0.317	0.000	1.000
BIG10	Big Ten Conference	0.103	0.305	0.000	1.000
CONFUSA	Conference USA	0.084	0.279	0.000	1.000
MAAC	Mid-America Conference	0.113	0.317	0.000	1.000
MTNWEST	Mountain West Conference	0.066	0.248	0.000	1.000
PAC10	Pacific Ten Conference	0.094	0.292	0.000	1.000
SEC	Southeastern Conference	0.113	0.317	0.000	1.000
SUNBELT	Sunbelt Conference	0.047	0.212	0.000	1.000
WAC	Western Athletic Conference	0.094	0.292	0.000	1.000
YEAR	Year	1998		1996	2000
	Number of Teams	106			
	Number of Observations	424			

Notes: <sup>a</sup> Measured in thousands of 2000 dollars. <sup>b</sup> David Wilson, no relation to either author, has calculated team quality ratings for all Division IA collegiate football programs going back to 1888. The Wilson Performance Rating System is similar to the rating system used in Chess, is based solely on win-loss records of a team and its opponents, and averages 500 across all college football teams, most of which are not of Division IA status. More information on this rating system is available at <<http://homepages.cae.wisc.edu/~dwilson>>, last accessed November 2004.

**Table 2: The Impact of Football Probation on Football Revenues and Expenditures**

Independent Variable	FBWINPCT	FBREV	FBCOST
LAGRATING	0.738 (0.129) [0.000]	---	---
FBWINPCT	---	18.631 (4.85)[0.000]	5.097 (1.69) [0.003]
FBBOWL	102.983 (22.03) [0.000]	-200.913 (846.04) [0.812]	-22.593 (275.52) [0.935]
FBPROB	151.614 (62.40) [0.000]	225.302 (1894.39) [0.905]	-57.486 (623.35) [0.927]
FBSCHOL	-172.954 (79.88) [0.030]	-2203.245 (2365.11) [0.352]	-1138.911 (776.88) [0.143]
FBPSBAN	-75.347 (195.52) [0.700]	-6150.459 (5407.33) [0.255]	-2946.766 (1757.22) [0.094]
BIG12	8.396 (54.76) [0.878]	1862.157 (1512.93) [0.218]	-484.859 (512.15) [0.344]
BIGEAST	5.342 (58.17) [0.927]	3129.420 (1605.82) [0.051]	1736.626 (543.92) [0.001]
BIG10	-2.377 (55.61) [0.966]	5975.365 (1536.45) [0.000]	759.37 (520.17) [0.144]
CONFUSA	23.498 (58.41) [0.687]	-5226.993 (1604.52) [0.001]	-1616.356 (543.54) [0.003]
MAAC	73.827 (57.31) [0.198]	-7657.967 (1526.80) [0.000]	-3988.089 (516.92) [0.000]
MTNWEST	57.289 (62.28) [0.358]	-5792.899 (1717.03) [0.001]	-2547.621 (581.47) [0.000]
PAC10	13.111 (56.53) [0.817]	4258.818 (1565.21) [0.007]	1955.067 (530.10) [0.000]
SEC	1.131 (54.61) [0.983]	10270.810 (1509.53) [0.000]	962.942 (511.32) [0.060]
SUNBELT	-96.550 (72.15) [0.181]	-4035.436 (2166.28) [0.062]	-3194.710 (742.08) [0.000]
WAC	5.956 (58.38) [0.919]	-5398.183 (1608.23) [0.001]	-2983.359 (545.63) [0.000]
WALD STAT	103.00	423.75	428.57

Notes: Results from instrumental variables random effects estimation where football win percentage is considered endogenous. Data describe 106 Division IA athletic programs from 1996-2000 (424 observations) for which complete data are available. Standard errors reported in parentheses, p-values in brackets. Column one reports first-stage regression.

**Table 3: The Impact of Football Probation on Men's and Women's Basketball Revenues and Expenditures**

Independent Variable	MBBREV	MBBEXP	WBBREV	WBBEXP
FBWINPCT	-4.181 (1.78) [0.019]	-0.529 (0.49) [0.288]	-0.739 (0.82) [0.367]	0.151 (0.19) [0.430]
FBBOWL	436.946 (258.33) [0.091]	192.566 (100.58) [0.056]	83.351 (54.60) [0.127]	73.375 (46.91) [0.118]
MBBWINPCT	0.937 (0.68) [0.168]	0.427 (0.26) [0.102]	---	---
MNCAA	1038.298 (255.42) [0.000]	390.385 (97.59) [0.000]	---	---
WBBWINPCT	---	---	0.298 (0.16) [0.067]	0.226 (0.10) [0.039]
WNCAA	---	---	94.983 (52.19) [0.069]	138.164 (45.85) [0.003]
FBPROB	228.662 (597.35) [0.702]	73.598 (221.01) [0.739]	113.811 (152.87) [0.457]	15.044 (100.98) [0.882]
FBSCHOL	-1085.043 (745.12) [0.145]	-260.494 (278.49) [0.350]	-118.371 (198.28) [0.551]	-209.698 (128.54) [0.103]
FBPSBAN	-1436.014 (1632.68) [0.379]	-961.700 (644.14) [0.135]	-344.142 (344.00) [0.317]	-399.485 (307.42) [0.194]
BIG12	-3187.462 (502.89) [0.000]	-49.986 (163.33) [0.760]	188.241 (147.39) [0.202]	161.645 (67.85) [0.017]
BIGEAST	-3317.686 (534.92) [0.000]	191.169 (173.22) [0.270]	15.735 (157.31) [0.920]	108.133 (71.84) [0.132]
BIG10	364.019 (511.34) [0.477]	218.316 (166.04) [0.189]	252.883 (150.07) [0.092]	178.057 (68.93) [0.010]
CONFUSA	-3344.497 (537.17) [0.000]	-384.608 (173.97) [0.027]	38.882 (158.10) [0.806]	-272.706 (72.42) [0.000]
MAAC	-5694.801 (514.42) [0.000]	-1231.055 (185.42) [0.000]	51.868 (151.60) [0.732]	-444.223 (70.51) [0.000]
MTNWEST	-3256.705 (571.73) [0.000]	-552.549 (185.426) [0.003]	183.746 (168.68) [0.276]	-339.251 (77.64) [0.000]
PAC10	-2052.554 (520.58) [0.000]	96.640 (168.66) [0.567]	460.468 (153.88) [0.003]	102.343 (70.03) [0.144]
SEC	-1516.880 (502.46) [0.000]	87.021 (162.67) [0.593]	269.651 (148.45) [0.069]	184.287 (67.66) [0.006]
SUNBELT	-6579.24 (758.67) [0.000]	-1391.381 (232.754) [0.000]	-220.436 (266.393) [0.408]	-526.058 (93.29) [0.000]
WAC	-4924.074 (546.91) [0.000]	-938.795 (175.71) [0.000]	50.963 (166.58) [0.760]	-291.243 (72.64) [0.000]
WALD STAT	413.41	358.33	36.10	473.32

Notes: Results from instrumental variables random effects estimation where football win percentage is considered endogenous. Data describe 106 Division IA athletic programs from 1996-2000 (424 observations) for which complete data are available. Standard errors reported in parentheses, p-values in brackets. First-stage regression identical to column one of Table 2.

**Table 4: The Impact of Football Probation on Men and Women's Non-Revenue Sports Revenues and Expenditures**

Independent Variable	MENSREV <sup>a</sup>	MENSEXP	WOMENSREV <sup>b</sup>	WOMENSEXP
FBWINPCT	-0.377 (0.29) [0.193]	-0.368 (2.83) [0.897]	-1.087 (2.64) [0.682]	0.964 (1.29) [0.455]
FBBOWL	51.847 (131.00) [0.692]	384.368 (295.36) [0.193]	117.054 (139.34) [0.442]	242.323 (180.86) [0.180]
FBPROB	-256.116 (366.614) [0.485]	272.327 (723029) [0.707]	-81.092 (428.74) [0.850]	11.520 (418.85) [0.978]
FBSCHOL	-326.894 (462.69) [0.480]	-1261.204 (902.59) [0.162]	-459.358 (574.29) [0.424]	-960.277 (520.95) [0.065]
FBPSBAN	-749.738 (1114.44) [0.501]	-1844.549 (1859.35) [0.321]	-695.031 (843.17) [0.410]	-1665.691 (1148.76) [0.147]
BIG12	938.326 (823.91) [0.255]	213.275 (678.71) [0.753]	-254.853 (402.11) [0.526]	-216.586 (363.10) [0.551]
BIGEAST	-318.365 (879.07) [0.717]	-30.337 (723.32) [0.967]	-509.547 (432.08) [0.238]	36.651 (386.09) [0.924]
BIG10	2024.338 (838.91) [0.016]	1792.676 (689.89) [0.009]	551.134 (409.08) [0.178]	1309.437 (368.891) [0.000]
CONFUSA	-469.124 (879.04) [0.594]	-1725.159 (723.61) [0.017]	-788.762 (434.39) [0.069]	-1876.972 (385.94) [0.000]
MAAC	-650.705 (825.03) [0.430]	-1863.992 (690.36) [0.007]	-784.529 (430.50) [0.068]	-1778.730 (366.95) [0.000]
MTNWEST	-129.904 (939.46) [0.890]	-1352.303 (772.33) [0.080]	-308.709 (458.40) [0.501]	-1367.915 (412.59) [0.001]
PAC10	-248.067 (856.72) [0.772]	58.923 (704.42) [0.933]	13.216 (418.52) [0.975]	821.117 (376.19) [0.029]
SEC	1095.986 (823.06) [0.183]	1637.113 (680.89) [0.016]	104.615 (411.03) [0.799]	1017.331 (363.04) [0.005]
SUNBELT	-921.678 (1044.93) [0.378]	-2607.189 (1085.04) [0.016]	-1300.262 (843.19) [0.123]	-2507.999 (541.14) [0.000]
WAC	-324.880 (859.47) [0.705]	-1870.732 (739.33) [0.011]	-482.648 (478.80) [0.313]	-1426.277 (389.07) [0.000]
WALD STAT	25.60	97.84	25.46	279.38

Notes: Results from instrumental variables random effects estimation where football win percentage is considered endogenous. Data describe 106 Division IA athletic programs from 1996-2000 (424 observations) for which complete data are available. Standard errors reported in parentheses, p-values in brackets. First-stage regression identical to column one of Table 2. <sup>a</sup> The IV model of this specification resulted in singularities. Therefore in this specification, the IV approach is abandoned. Moreover, two observations are dropped because of “negative” revenues. <sup>b</sup> Three observations were dropped because of “negative” revenues.