Referee Bias in March Madness

Michael Lyons

Department of Economics/Accounting Honors Thesis

Advisor: Professor Robert Baumann

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ABSTRACT

The Men's Division I National Collegiate Athletic Association (NCAA) March Madness tournament generates 85% of the NCAA's revenue in a given year. This study examines referee bias in this tournament using data from the 2016-2017 and 2017-2018 seasons. Results indicate that referees do not call more fouls upon Blueblood teams. However, more fouls are called on teams that are seeded lower than their opponents and on teams who are leading in games. This study suggests that bias exists towards keeping games close and having highly ranked teams continue through to the final rounds in the tournament. These forms of bias could positively affect consumer demand for the tournament, the NCAA's primary form of revenue each year.

1. INTRODUCTION

March Madness has become a national phenomenon. Sixty-[illegible]

highest ratings of all tournament games (Bonesteel, 2018). As Sean McManus, Chairman of CBS Sports, recently stated with respect to the 2018 tournament, "from a television standpoint you really root for the big teams…Last night's Kentucky outcome [loss] was not good for us and not good for TBS at all. Kentucky being the bluebloods that they are…that really hurt us." (Bonesteel, 2018). This explicit emphasis on the importance of historical powerhouse teams in the tournament, as well as a desire to keep games close, raises concerns about bias during the games themselves.

A handful of studies examines referee bias in the National Basketball League (NBA) and college basketball and also provides a preliminary examination of the potential profitable nature of such biases (Thu, Hattman, Hutchinson, Lueken, Davis, and Linboom, 2002; Anderson and Pierce, 2009; Price, Remer, and Stone, 2012; Caudill, Mixon, and Wallace, 2014). The present study extends the extant literature on referee bias in college basketball in a number of ways. Rather than focus on regular season games from over ten years ago (Anderson and Pierce, 2009), I provide an analysis of NCAA tournament games by using data from the 2016-2017 and 2017-2018 March Madness tournaments. Furthermore, I introduce a new way to conceptualize bias that is possibly related to consumer demand. Since the NCAA tournament is played on neutral courts, the tournament offers a unique opportunity to examine contests without definitive home team advantage. Instead of home teams benefitting in contests, I test whether historical powerhouse teams, or Bluebloods, receive preferential treatment from the referees, even when they are not playing on their home court. In addition, since the current marquee status of a team may affect referee decision making, I examine a team's seeding in the March Madness tournament relative to their opponent in each game.

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3. DATA AND METHODOLOGY

Data regarding other key variables are from ncaa.com. Specifically, the tournament seeding for each team and the round of play (Final Four or Championship) for each game are included from ncaa.com.

3.2 Methodology

Building on prior research in this area (Anderson and Price, 2009; Price, Remer, and Stone, 2012), this study utilizes linear regression models to test whether the number of fouls is affected by the team's Blueblood status and their seed in the tournament in comparison to its opponent. The study also assesses whether or not the magnitude of a lead impacts foul calling.

The initial regression model is as follows for game *i* and team *t*:

$$Fouls_{it} = \beta_0 + \beta_1 + \beta_2 + \beta_3 + \beta_4 + \beta_5 + \beta_6 + \beta_7 + \beta_8 + e_{it}$$

In the model, the dependent variable is the number of fouls committed during each observation. The independent variables include *Blueblood*, a binary variable that equals one if the team is designated as a Blueblood team. Leading or trailing status and score are incorporated into three variables. *Leading* is a binary variable that equals one if the team is leading at the time of the observation and zero otherwise. *Scorediffpos* is also a binary variable that equals one if the team is winning by greater than ten points at the time of observation and zero otherwise. Likewise, *Scorediffneg* is a binary variable that is one if the team is losing by more than ten points at the time of observation and zero otherwise.

In order to examine the possibility that the current ranking and status (and thus not only historical Blueblood status) of the team may affect foul calls, the independent variables include *seeding*, which equals one if a team is ranked higher in the tournament than the team that they

are playing and zero otherwise. The model also includes an additional team level control variable, *averageoffouls*, which is the average number fouls committed by each team during the regular season. This variable takes into consideration the idea that some teams may foul more or less than other teams by nature.

Additionally, even though NCAA March Madness games are held on neutral courts, the intensity of the crowd may influence referee decision making. Specifically, as rounds progress, the intensity of the crowd is likely to increase. Thus, the round in the tournament, *Finalfours*, serves as an additional control variable. *Finalfours* is a binary variable that equals one if the tournament round is Final Four or the Championship game and zero otherwise.

Table 1 presents the means for the aforementioned independent variables. Standard deviations are included for those variables that are non-binary.

Table 1. Summary statistics

Variable	Mean (Std. Dev.)
Blueblood	0.57
Seeding	0.5
Leading	0.46
> 10 point lead	0.15
> 10 point deficit	0.15
Average Reg. Season Fouls	17.41 (1.54)
Final Four or Further	0.086

4. RESULTS

Table 2 reports the effects of several variables upon the number of fouls called during March Madness tournament games. The variables included in the linear model are as follows: a team's Blueblood status; their seeding in the tournament relative to their opponent; whether the

not affect the number of fouls called by referees during tournament games. The *p*-value for seeding is not outside typical significance ranges ($p = 0.66$), and thus the coefficient for seeding does not differ significantly fr

variables examining the magnitude of the score differential from the second linear regression model. Table 2 reports the data examining the effects of leading status and seeding while controlling for the average number of fouls per team during the regular season and the round of each game in the tournament (Final Four or Championship game).

Table 3. Effects of seeding and leading status upon the number of fouls called in the NCAA March Madness tournament lll24285s772 772 531.24 531.24

Variable	Coefficient	Std. Err.

teams in the data during the regular season ranges from 15.03 to 20.97 and the average is 17.41. Furthermore, the round of the tournament also approaches significance in the model ($p = 0.077$). The independent variables of seeding and leading status are significant even when controlling for the average number of fouls committed by teams during the regular season and the round of play in the March Madness tournament (Final Four or Championship game).

5. DISCUSSION

The results of the present study suggest that Bluebloods, or historical powerhouse teams, do not receive preferential treatment from the referees in the NCAA March Madness tournament. However, current marquee status, as measured by a team's seeding in the tournament relative to their opponent, affects referee decision making as higher seeded teams are less likely to receive foul calls than their lower seeded opponents. In a tournament without a true home court advantage, having higher ranked teams proceed through to the final rounds of the tournament could be beneficial for the NCAA. The momentum that these teams have developed throughout the season could positively impact television ratings and the income generated from the tournament. Future research is needed to further investigate this idea.

Consistent with previous research in this area (Thu et al., 2002; Anderson and Pierce, 2009; Price et al., 2012; Caudill et al., 2014), the present study provides evidence of a close-

a more refined way. Overall, keeping NCAA March Madness games close in score could have important effects upon consumer demand for the tournament and television ratings.

There are a few key limitations to the present study. The sample is restricted to games from the 2016-2017 and 2017-2018 March Madness tournaments that include Blueblood teams. In order to fully investigate the seeding and close-game biases that have emerged during this study, further analyses are needed with the complete set of tournament games. This larger sample would also be important in order to assess the effects of game-level variables, such as round in the tournament (which approached significance in the present study), upon referee decision making. Additionally, the R-squared in the estimations are quite small, R-squared = 0.0102 and 0.0084, respectively. Future research could attempt to include a larger set of independent variables in order to increase the precision of the model.

Overall, the present study extends the literature on referee bias in NCAA basketball by providing an analysis of recent March Madness tournaments. The findings indicate that bias

REFERENCES

Anderson, Kyle J., and Pierce, David A. 2009.