

Article

Tests of Racial Discrimination in a Simple Financial Market: Managers in Major League Baseball

Rodney Paul ^{1,*}, Andrew Weinbach ² and Justin Mattingly ¹

¹ Falk College of Sport and Human Dynamics, Syracuse University, Syracuse, NY 13244, USA; jmatting@syr.edu

² Department of Finance and Economics, Coastal Carolina University, Conway, SC 29528, USA; aweinbac@coastal.edu

* Correspondence: rpaul01@syr.edu; Tel.: +1-315-443-1870

Received: 22 December 2017; Accepted: 23 February 2018; Published: 1 March 2018

Abstract: This study tests for racial discrimination against minority managers in Major League Baseball using financial-market imbalances as it relates to the wagering marketplace for the sport. Using detailed betting data on the percentage bet on the favorite from Sports Insights, we test for prejudice against minority managers using an ordinary least squares multiple regression model. The results reveal that bettors have a clear preference for the favored team as the percentage bet on the favorite increases with the odds on the favorite. In addition, they prefer road favorites by an even greater margin. In terms of minority managers, there is no evidence of discrimination against minorities. In fact, bettors prefer to wager on minority managers by a statistically significant margin when they are favorites. This finding suggests that either the participants in this financial marketplace are not prejudiced against minority managers or the financial incentives inherent in the market drive out discrimination against the minority managers.

Keywords: race; discrimination; betting markets; managers; baseball

JEL Classification: Z2; D91

1. Introduction

Sports wagering markets are simple financial markets that have been advantageous to the study of finance and economics due to their popularity, clear and straightforward framework, quick realization of returns, and the ease of testing market efficiency (Sauer 1998). Betting markets also serve as a prime place for studying behavioral biases as sports bettors are often emotional and attached to their favorite teams and players. Past studies showed behavioral biases of sports bettors in different ways, such as their preference for the best teams (i.e., Levitt 2004; Humphreys et al. 2013), but this study takes the study of behavioral bias in a different direction, to that of race.

Major League Baseball (MLB) is a sport that has a long history as it relates to race and society. The story of Jackie Robinson breaking the color barrier is well-known and plays an important part in history in general, not just in relation to sports. As players broke the color barrier and baseball went from being all White to much more diverse, it should not be surprising that managers also broke the color barrier. Frank Robinson, former player and winner of the Most Valuable Player award in both the National and American Leagues, became the first African-American manager in 1974. Miguel Gonzalez was the first Hispanic manager in MLB history, although he only served as interim manager in 1938 and 1940, while Preston Gomez was the first Latin American manager to manage from the beginning of a season.

Studies of racial discrimination are prevalent in the sports economics literature. Studies of the National Football League (NFL) found discrimination against Black coaches by owners and

general managers (Madden 2004; Madden and Ruther 2009). Firings of Black coaches occurred sooner and more frequently than White coaches, despite having greater regular-season success in the league. Research also found discrimination against players, as Black players experienced lower overall compensation and fewer years of contract length compared to White players in the National Basketball Association (NBA) (Kahn and Shah 2005) and were discriminated against in English soccer (Szymanski 2000). Price and Wolfers (2010) found discrimination by referees in the NBA against Black players, where predominantly Black teams had more fouls called when assigned White referees (Price and Wolfers 2010).

Research also found racial biases on the part of sports fans, when behaving as consumers in the marketplace. Attendance and team revenues increased in the NBA when teams added White players to the roster (Burdekin et al. 2005). In addition, for the NBA, television ratings increased with the number of White players on the roster, which led teams with more White players to experience an increase in advertising revenues (Kanazawa and Funk 2001). In the Major League Baseball market for collectors, minority players, compared to their White counterparts with similar statistics, had lower prices for their baseball cards (Fort and Gill 2000). Consumer discrimination against racial integration in Major League Baseball was a key factor in why some teams integrated later than others (Hanssen 1998).

Given these and other similar findings in the literature, we wish to extend the study of race to sports bettors. With findings of racial bias by sports fans, team owners, general managers, and referees, it is possible that bias also exists for participants in sports betting markets. Given findings that consumption plays a major role in sports gambling and sports-bettor decisions (i.e., Paul and Weinbach 2013; Humphreys et al. 2013), sports bettors are likely to also be fans and could exhibit the same sort of prejudices seen in the previous literature.

A key difference in the sports-betting market, as opposed to other markets where consumers have exhibited discriminatory behavior, is that there is a financial incentive inherent in a wager. When fans choose to not buy tickets, watch a game on television, or purchase specific players' trading cards there is little direct impact on their finances associated with being discriminatory. With betting, however, behavioral biases such as being discriminatory by race can and will cause losses as reality corrects improper perceptions quickly in the marketplace. If any type of overt or subconscious racism exists in bettors, it could manifest itself in terms of bias against teams with minority managers.

Few studies exist on the backgrounds of sports bettors, but one study from the legal betting market in Australia found that sports bettors, on average, were more likely to have a college degree and earn higher incomes (Gainsbury et al. 2012). Unfortunately, we could not find survey results of the demographic breakdown of baseball bettors (or sports bettors in general) in the United States. The Nielsen Year in Sport Media Report for 2013 reported that 83% of baseball fans were White, with an equal split of Black and Hispanic fans of around 8–9% each (Nielsen 2014). This percentage of White baseball fans is greater than the estimates of the White percentage of the population in both the 2000 (75.1%) and 2010 (72.4%) U.S. Censuses (Humes et al. 2011). In terms of the Black and Hispanic percentages of the population, the 2010 Census (conducted during the available data period used in this research) revealed 12.6% and 16.3% of the population, respectively. We assume that the bettor make-up of the population is like the make-up of fans of the sport, but we do not have any explicit proof of the exact breakdown of the baseball betting public, which is an admitted shortcoming of this research.

With more details of the betting market becoming available in recent years, it is now possible to directly test for behavioral biases of bettors. Testing of both market returns and biases in betting percentages, which note imbalances in betting action on one team compared to another, now provide two ways to test for behavioral biases in wagering market participants. These betting percentages allow for the testing of the balanced-book hypothesis (i.e., Sauer et al. 1988; Gandar et al. 1988), where it was assumed that sportsbook managers set prices to balance the betting dollars on each side of the wagering proposition (or in the case of odds-betting, as in baseball, to proportionately balance the betting action as it relates to the odds on the game). Rejection of the balanced-book hypothesis

occurred in various sports, including Major League Baseball (Paul and Weinbach 2011). Findings reveal bettors prefer favorites (especially road favorites), which translates more simply into bettors prefer wagering on the best teams. The literature review in section two of the paper presents further background on these studies and their findings.

Using the same methodology and data in previous studies as it relates to behavioral biases toward the best teams, we change the attention of the bias towards the race of the manager. Using data from 2003 to 2011 from www.sportsinsights.com that contains the betting percentage on each side of the wagering proposition for Major League Baseball games, and matching these games to the team's manager and his race, we tested for discrimination in this marketplace. We used this sample of seasons as Sports Insights sold their data to researchers for these years. In subsequent seasons, they stopped selling the data to interested parties. Therefore, to be consistent in terms of the source of the data and sportsbooks used in obtaining the data, our sample used the available data on betting percentages from Sports Insights.

Using dummy variables for the race of the manager, along with the expected win probability (based on closing odds) and a dummy for road favorites, we tested if bettors place fewer wagers on teams with minority managers in Major League Baseball. If discrimination exists, this sheds further light on how biases persist in relation to race when the marketplace for baseball managers has historically been and continues to be majority White. If not, this lack of discrimination could be due to the presence of financial incentives associated in the market, which may drive away prejudiced actions by participants.

The paper proceeds as follows. Section two is a literature review related to sports and race, placing this type of study in context. Section three lays out the ordinary least squares multiple regression model to test for different behavioral biases (biases for favorites and road favorites—typically the best teams—and biases by race in games where a minority manager faces a White manager), and illustrates and explains the empirical results from the model. Section four discusses the findings and concludes the paper.

2. Literature Review

There are many areas where racial discrimination has been studied as it relates to sports. Various studies have considered discrimination by consumers of sporting events, the link between discrimination and head coaches, and refereeing as it relates to the race of the referee and the players.

In terms of racial discrimination on the part of consumers of the sport of baseball, Hanssen (1998) investigated integration in Major League Baseball and found that the key reason why American League (AL) teams integrated at a slower rate than National League (NL) teams was due to discrimination against Black players by fans, as Black players on AL rosters decreased attendance by a greater margin than attendance for NL teams. Fort and Gill (2000) studied the market for baseball cards and found that baseball collectors discriminated against Black hitters and pitchers and Hispanic hitters.

Research also revealed racial biases as it relates to consumers of other sports besides baseball. In terms of attendance, Burdekin et al. (2005) found that NBA teams that added White players in predominantly White cities increased their revenues and that the top-performing White NBA players chose to locate in cities with larger White populations. Kanazawa and Funk (2001) examined television ratings for the NBA and found that viewership increased when there were a greater number of White players, which added to the marginal revenue product of the team through greater advertising revenues.

Economic research investigated racial discrimination as it relates to coaches, both in the NFL and the NBA. In the NFL, Madden (2004) found that between 1990 and 2002, African-American coaches outperformed White coaches in the regular season and, given fewer African-American coaches in the league, this provided evidence that African-American coaches must outperform White coaches to retain their position with the team. Madden and Ruther (2009) provided supporting evidence of

discrimination against African-American coaches in terms of involuntary dismissal from the team. [Goff and Tollison \(2009\)](#) found that racial integration of coaches proceeded more rapidly in larger population centers and that winning organizations were more likely in first hiring Black coaches. [Kahn and Shah \(2005\)](#) found shortfalls in salary, overall compensation, and contract duration for non-White players in a study of NBA players in the 2001-02 season. In a later study of the NBA, [Fort et al. \(2008\)](#) used stochastic production-frontier estimates of team-win production to observe technical efficiency of coaches. Their results were based upon the concept of technical efficiency and found no difference in race-based retention of NBA coaches.

In relation to players, [Szymanski \(2000\)](#) found statistically significant evidence of discrimination against Black players in English professional soccer leagues. Racial discrimination was also studied as it relates to refereeing and the calling of fouls. [Price and Wolfers \(2010\)](#) studied NBA referees and found a statistically significant increase in fouls called against players when the game is officiated by an opposite-race crew and that the bias was large enough that predominantly Black NBA teams were more likely to lose when assigned a White group of referees. In addition, [Price and Wolfers \(2010\)](#) found that teams with White starters were impacted by an even greater margin than teams with Black starters. In their study, if referees were race-normed (same race), games won by White starters would decrease by 1.4% (51.8% to 50.4% in their sample), while race-norming referees with Black starters would only increase their win percentage by 0.2% (49.7% to 49.9% in their sample) due to a greater number of White referees in the NBA. This research led to a study by [Larsen et al. \(2008\)](#) of the impact of refereeing on the NBA betting market and found that a betting strategy based upon the race of the referees would beat the point spread often enough to earn statistically significant returns.

[Kahn \(1991\)](#) presented a history of the early research on the topic of racial discrimination in sports in his literature review of the subject. Although there are some exceptions, most of these studies found some evidence of racial discrimination against minority groups.

In terms of the methodology used in this study, the relevant literature on testing behavioral biases in the betting market, the assumption was the balanced-book hypothesis (i.e., [Sauer et al. 1988](#); [Gandar et al. 1988](#)), as it relates to the actions of bookmakers. In betting markets using point spreads, the balanced-book hypothesis assumes 50% of the wagers on each side of the proposition as the sportsbook aims to set lines to balance betting action.

Rejection of the null hypothesis of a balanced book occurred in studies of a betting tournament for the NFL by [Levitt \(2004\)](#) and when using actual sportsbook data for both the NFL and the NBA by [Paul and Weinbach \(2008a, 2008b\)](#). In each of these cases, bettors preferred to wager on favorites, especially road favorites, as a much higher percentage of the bets accumulated on that side of the proposition. Although [Levitt \(2004\)](#) showed this behavior led to slightly biased point spreads (the point spreads are too high), [Paul and Weinbach \(2008a, 2008b\)](#) showed that despite significant and highly predictable imbalances, sportsbooks still choose to price as a forecast, yielding a result where one is unable to reject the null of market efficiency, despite clear behavioral biases on the part of participants (sports bettors).

In betting markets that use odds in wagering, like baseball, the balanced-book hypothesis states that the betting action should be proportional to the odds on the game, with bigger favorites attracting more bets in direct relation to the magnitude of the odds in their favor. [Paul and Weinbach \(2011\)](#) showed that much like point-spread markets, the odds-based marketplace for baseball wagering exhibits considerable bias toward favorites. Favorites in Major League Baseball tended to attract a much higher, and consistent, percentage of bets than the odds on the game would suggest. Like in the NFL and NBA, however, bookmakers did not price these biases fully into the odds on games, as wagering against the public's bias toward favorites did not yield profitable returns.

3. Regression Model and Results

The goal of this research was to test for racial biases against minority coaches in the betting market for Major League Baseball. To that end, we used financial data from the wagering market for

the sport compiled by www.sportsinsights.com. Sports Insights uses data from offshore sportsbooks and includes the percentage bet on each side of the wagering proposition. Specifically, in the case of this research, we are examining if games involving minority managers received fewer bets on the team with the minority manager (more bets on the White manager). Minority managers were identified through internet and press stories on backgrounds of managers such as Wikipedia (https://en.wikipedia.org/wiki/Category:African-American_baseball_managers) and http://www.pennlive.com/sports/index.ssf/2016/04/the_latino-born_managers_in_maj.html. For validity, cross-referencing of these lists with www.baseball-reference.com and www.mlb.com occurred. There has been one Asian-American manager in Major League Baseball, Don Wakamatsu, who started in 2009. Given only one Asian-American manager and the small sample size, this study omits these games from the studied sample. Appendix A shows the list of Black and Hispanic Major League Baseball managers during the sample.

Before describing and estimating an ordinary least squares multiple regression model of betting percentages to test if bettors are racially biased, it is useful to test if a simple strategy of wagering on all minority coaches happened to earn positive returns. If so, this would imply that the odds on baseball games, either set by the sportsbook independent of the action of bettors or influenced by bettor behavior, are biased. If not, we could proceed to see if the betting percentages on the favorite and the underdog reveal any systematic bias against minority coaches.

Table 1 shows the returns to the simple strategy of wagering on the situation where there is a minority coach against a White coach in our sample for Major League Baseball. The table shows the aggregated return based upon a one-dollar bet, the total number of games (n), and the average return for Black and Hispanic Managers.

Table 1. Returns to Betting on Minority Managers in Major League Baseball 2003–2011.

Coach Race	Aggregated Return	Number of Games	Average Return
Black	−85.4034	3902	−0.0219
Hispanic	−80.7331	3128	−0.0258

In each case, the average return was negative. On average, Black and Hispanic coaches lost more than two cents per dollar bet in this simple strategy, with Hispanic coaches performing slightly worse than Black coaches in the betting market (although both losses are like the overall loss in betting all games in the sample of −0.0238 per dollar wagered). In any case, with all returns negative, there did not appear to be an overall simple bias in the closing odds yielding positive returns to bettors who would simply back minority coaches.

To investigate the role of minority coaches on the behavior of bettors and determine possible discrimination, we use a regression model with the percentage bet on the favorite as the dependent variable. The foundation for the methodology used is past studies testing the balanced-book hypothesis and behavioral biases of bettors toward the best teams as outlined in the literature review in point-spread markets (i.e., Levitt 2004; Paul and Weinbach 2008a, 2008b) and in the odds-based market of Major League Baseball betting (Paul and Weinbach 2011). Equation (1) below notes the ordinary least squares multiple regression model.

$$\begin{aligned}
 (\% \text{ Bet on Favorite Team})_i = & \alpha_0 + \beta_1 (\text{Favorite Team Win Probability})_i \\
 & + \beta_2 (\text{Road Favorite Dummy})_i + \beta_3 (\text{Minority Manager—Home Favorite}) \\
 & + \beta_3 (\text{Minority Manager—Home Favorite}) + \beta_4 (\text{Minority Manager—Road Underdog}) \\
 & + \beta_3 (\text{Minority Manager—Road Favorite}) + \beta_3 (\text{Minority Manager—Home Underdog}) + \varepsilon_i
 \end{aligned} \tag{1}$$

The dependent variable of the regression model is the percentage bet on the favorite (expressed as a whole number). These data are taken from www.sportsinsights.com from their daily posted figures on the website during the sample.

The independent variables included an intercept, the win probability of the favorite taken from the betting-market odds, a road favorite dummy variable, and a series of dummy variables representing when there is a minority manager in all possible betting situations (home favorite, road underdog, road favorite, home underdog). In the second model specification, Equation (1) was expanded to include the race of the manager by interacting the race (Black and Hispanic) with the dummy variables for being a home favorite, road underdog, road favorite, and home underdog.

The win probability of the favorite, based upon the market odds, was expected to have a positive and statistically significant relationship with the percentage bet on the favorite. Under the balanced-book hypothesis, expectations were for a one-to-one relationship (in this case a coefficient on the win probability of 100 with percentages expressed as whole numbers) as the bets would expect to accumulate on the favorite and underdog in proportion to the stated market odds on the baseball game.

From past research, the road favorite dummy variable was expected to have a positive and significant effect on the percentage bet on the favorite (i.e., [Paul and Weinbach 2011](#)). Findings reveal bettors prefer to wager on the best teams on the road, as they need to either lay fewer points (in point-spread markets) or face less-steep odds (in odds-based markets).

If bettors are racially biased, we would expect that dummy variables based upon race of manager would be statistically significant. If there was discrimination against minority managers, the sign of the coefficient on home and road favorites should be negative. The sign on the home and road underdog variables for minority managers should be positive, if discrimination against these groups exist. The first specification includes a simple dummy for the manager being of a minority group (Black or Hispanic) in each setting, while the second specification investigates each racial subgroup in all situations.

Table 2 presents the results of the regression model. *-notation notes statistical significance of the *t*-test that the coefficient is equal to zero at the 10% (*), 5% (**) and 1% (***) levels.

The overall ordinary least squares multiple regression results showed that the percentage bet on the favorite increased with the probability of a favorite team win. Road favorites were shown to be more popular than home favorites, with an increase in the percentage bet on the favorite when the favorite is a road team of around 14.5%. Both the favorite win probability and the road favorite dummy variables were statistically significant at the 1% level in both specifications.

In terms of the key variables of interest, the race of the manager, the first model specification revealed statistically significant results in the case where the minority manager was a favorite, both at home (significant at the 1% level) and on the road (significant at the 10% level). In each case, the sign of the coefficient was positive. These results highlight that bettors are not discriminating against minority managers when they are managing the favorite team, but the opposite. In these cases, the results revealed a bias against White Major League Baseball managers. No statistically significant bias existed when the minority coach was the underdog. Overall, in the first specification, we found no evidence of discrimination against minority owners, but some discrimination against White managers when they were managing the underdog team.

The second regression model specification expanded the results to look at the individual races of the minority managers. In relation to minority managers being home favorites, in each case (Black and Hispanic) the coefficient on the dummy variables were positive and statistically significant. As with the first model specification, this revealed no evidence of discrimination against minority managers, but discrimination against White managers in this scenario (White managers of road underdog teams). Other results revealed statistically significant results for Hispanic managers as road favorites, but not Black managers. In this case, Hispanic managers as road favorites had a positive and significant effect on the percentage bet on the favorite revealing another case where there is discrimination against White managers, not Hispanic (or Black) managers. For the results related to minority managers being underdogs at home or on the road, results were not statistically significant, implying no evidence of racial discrimination.

Table 2. Regression Model of Percentage Bet on the Favorite in Major League Baseball: Minority Managers: Dependent Variable: Percentage Bet on Favorite ($n = 19,395$).

Variable	Coefficient (<i>t</i> -Statistic)	Coefficient (<i>t</i> -Statistic)
Intercept	−14.2606 *** (−11.6836)	−14.2895 *** (−11.7115)
Favorite Win Probability	122.6547 *** (59.6222)	122.7038 *** (59.6578)
Road Favorite Dummy	14.4513 *** (49.7897)	14.4526 *** (49.7889)
Minority Manager—Home Favorite	0.9403 *** (2.7068)	
Minority Manager—Road Underdog	−0.1435 (−0.4616)	
Minority Manager—Road Favorite	1.0256 * (1.7350)	
Minority Manager—Home Underdog	0.3578 (0.7870)	
Black Manager—Home Favorite		0.7212 * (1.6812)
Hispanic Manager—Home Favorite		1.2302 ** (2.3966)
Black Manager—Road Underdog		0.1953 (0.5024)
Hispanic Manager—Road Underdog		−0.5501 (−1.2559)
Black Manager—Road Favorite		0.3218 (0.4173)
Hispanic Manager—Road Favorite		1.9699 ** (2.3756)
Black Manager—Home Underdog		0.1641 (0.2983)
Hispanic Manager—Home Underdog		0.5922 (0.9037)
R-squared	0.2510	0.2512

Overall, the results of this research illustrated no racial bias against minority managers when facing White managers in Major League Baseball. Subsets of the results showed the exact opposite result, in that there was a bias of bettors in favor of minority managers compared to Major League Baseball teams with White managers when minority managers were favorites.

4. Discussion and Conclusions

Sports-betting markets serve as a valuable laboratory to study a variety of aspects of financial markets in conjunction with theories of economics and finance. In this study, the baseball betting market served as a setting to test if bettors are discriminatory in their actions against minority coaches in Major League Baseball. The majority of baseball consumers are White, with estimates of around 83% of the fanbase, and we assumed that most bettors on the sport are also likely to be White. As mentioned in the introduction, we do not have explicit proof of the breakdown by race of baseball or sports bettors, which we admit as a major limitation of the study, as we could not find any surveys related to the race of baseball or sports bettors in the United States. However, given most baseball fans (and

the overall population of the United States) were found to be White and findings of racial bias were found in other areas by consumers of baseball, we believe this assumption to be reasonable. Therefore, if bettors exhibit bias against minority coaches, either overtly or even subconsciously, their actions in the betting market may illustrate these undesirable preferences.

In Major League Baseball, there is a growing number of minority head coaches. If bettor bias exists against Black or Hispanic managers, it could be revealed by the bets they place. Bettors have no reason to believe they are monitored when placing wagers and have no reason to fear a backlash of any type if they are prejudiced against non-White coaches in the sport.

Simple wagering strategies of betting on minority coaches in Major League Baseball games did not earn profitable returns in the sample. As the returns did not reveal any significant bias, we turned to the betting market percentages on each team in each contest to ascertain if it revealed any prejudice on the part of bettors.

Rejections of the traditional model of sportsbook behavior, the balanced-book approach, have occurred in recent years across a variety of sports. [Levitt \(2004\)](#) illustrated an imbalanced sportsbook for a betting tournament of NFL games and [Paul and Weinbach \(2008a, 2008b\)](#) used actual betting data from offshore sportsbooks to show a rejection of the balanced-book hypothesis in the NFL and NBA, in addition to other sports, including the sport studied in this paper, Major League Baseball ([Paul and Weinbach 2011](#)).

When looking at the betting percentages and accounting for the favorite win probability (based on the odds on the game), a few things became apparent in baseball games involving teams with minority managers. First, the baseball market for the years studied exhibited the same sort of general bias seen in other sports. Favorites were much more popular than the odds indicate, as the percentage of bet on the favorite was much larger than the proportion of bets on the favorite expected under the balanced-book hypothesis. Second, road favorites were even more popular bets than home favorites, which also supported previous findings in the literature. Baseball bettors, like bettors of other sports, perceived the better team as a discount on the road, even though the odds account for the home field advantage occurring in the games.

In relation to the key item of interest for this research, dummy variables accounting for the presence of a minority manager in the game, a rejection of the null hypothesis of no racial bias occurred in the subset of games where minority managers were favorites. However, this was not in the anticipated direction under the assumption that bettors exhibit racial bias against minority managers. Bettors were found to be biased toward minority managers and against White managers in this situation. Individually, both Black and Hispanic managers attracted a higher percentage of the bets when situated as home favorites and Hispanic managers attracted a higher percentage of bets as road favorites (all cases noted being statistically significant).

Overall, we found no evidence of bias by bettors against minority coaches in Major League Baseball, with the surprising result of bettor bias against White managers. These results could imply a few important notions. First, perhaps bettors are simply not prejudiced against minority managers. Given public information on the lack of minority managers in baseball and other sports (with encouraged efforts by the professional sports leagues in North America to have more minority managers), participants in the wagering market for baseball could believe teams managed by minorities are undervalued, leading to more bets being placed on the teams managed by minorities and resulting in the bias seen against White managers. Second, there could simply be more fans of teams with minority managers, leading to more wagers on these teams. This, too, would create a bias against teams with White managers. Third, with the betting market being a simple financial market with quick realization of returns, the incentives in this marketplace could drive away prejudiced participants who are against minorities. This is not to say that bettor bias does not exist, as in this sample and others (including many different sports) bias of bettors toward the best teams, particularly on the road, routinely occurs. However, there could be a hierarchy of prejudice as the preference to wager on the best teams may overpower any bias against minorities that may exist. In this case, the desire to win

money, or at least to gain the consumption value inherent in wagering on a good team to win the game, outweighs any prejudice against minority managers. This possible explanation also overlaps the first suggestion above, as the bettors that do participate in the marketplace could favor teams with minority managers, believing them to be of higher quality than teams with White managers. Last, and most hopeful for society, is the potential that racial biases are not as strong and prevalent as media stories tend to imply. Perhaps the racial and cultural diversity of athletes in sports, including baseball, has led there to be less discrimination in society. Sport, by being a meritocracy, allows fans to see and appreciate great performances by those of any race, which could create more general acceptance across society and improve race relations. Major League Baseball's annual celebration of Jackie Robinson and his accomplishments may constantly reinforce the notion that racial barriers are possible to overcome and the elimination of racism offers great benefits for society.

In any case, we found no evidence of racial discrimination against minority coaches in Major League Baseball. Our findings revealed that bettors tend to prefer to wager on teams with minority coaches, despite not earning profits when taking these positions in the betting market. These results suggest the possibility that when financial incentives are present and markets are generally open (as a betting market for sports tends to be), less discrimination against minorities may occur. Therefore, to reduce racial discrimination against minorities in other areas of sports and general society, more open and transparent marketplaces may help to reduce or eliminate biases against minorities. However, when this does occur, as found in this research, it is possible the bias could occur in the opposite direction, against the majority in the marketplace.

Author Contributions: Each of the authors participated in the study in a variety of ways. Justin Mattingly gathered the data, researched the history and frequency of minority managers, and helped with writing of paper. Andrew Weinbach analyzed and cleaned data and helped with the writing of the paper. Rodney Paul modeled the relationship, analyzed the data, and wrote the paper, with input from the other authors.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix List of Minority Managers

Black: Cecil Cooper, Cito Gaston, Dave Clark, Dusty Baker, Frank Robinson, Jerry Manuel, Lloyd McClendon, Ron Washington, Willie Randolph.

Hispanic: Al Pedrique, Carlos Tosca, Edwin Rodriguez, Felipe Alou, Fredi Gonzalez, Manny Acta, Ozzie Guillen, Tony Pena.

References

- Burdekin, Richard C. K., Richard T. Hossfeld, and Janet Kiholm Smith. 2005. Are NBA Fans Becoming Indifferent to Race? Evidence from the 1990s. *Journal of Sports Economics* 6: 144–59. [\[CrossRef\]](#)
- Fort, Rodney, and Andrew Gill. 2000. Race and Ethnicity Assessment in Baseball Card Markets. *Journal of Sports Economics* 1: 21–38. [\[CrossRef\]](#)
- Fort, Rodney, Young Hoon Lee, and David Berri. 2008. Race, Technical Efficiency and Retention: The Case of NBA Coaches. *International Journal of Sport Finance* 3: 84–97.
- Gainsbury, Sally, Robert Wood, Alex Russell, Nerilee Hing, and Alex Blaszczyński. 2012. A Digital Revolution: Comparison of Demographic Profiles, Attitudes, and Gambling Behavior of Internet and Non-Internet Gamblers. *Computers in Human Behavior* 28: 1388–98. [\[CrossRef\]](#)
- Gandar, John, Richard Zuber, Thomas O'Brien, and Ben Russo. 1988. Testing Rationality in the Point Spread Betting Market. *Journal of Finance* 43: 995–1008. [\[CrossRef\]](#)
- Goff, Brian L., and Robert D. Tollison. 2009. Racial Integration of Coaching: Evidence from the NFL. *Journal of Sports Economics* 10: 127–40. [\[CrossRef\]](#)
- Hanssen, Andrew. 1998. The Cost of Discrimination: A Study of Major League Baseball. *Southern Economic Journal* 64: 603–27. [\[CrossRef\]](#)

- Humes, Karen R., Nicholas A. Jones, and Roberto R. Ramirez. 2011. Overview of Race and Hispanic Origin: 2010. 2010 Census Briefs—U.S. Census Bureau. Available online: <https://www.census.gov/prod/cen2010/briefs/c2010br-02.pdf> (accessed on 1 February 2018).
- Humphreys, Brad R., Rodney J. Paul, and Andrew P. Weinbach. 2013. Consumption Benefits and Gambling: Evidence from the NCAA Basketball Betting Market. *Journal of Economic Psychology* 39: 376–86. [CrossRef]
- Kahn, Lawrence M. 1991. Discrimination in Professional Sports: A Survey of the Literature. *International Labor Review* 44: 395–418. [CrossRef]
- Kahn, Lawrence M., and Malav Shah. 2005. Race, Compensation and Contract Length in the NBA: 2001–2002. *Industrial Relations: A Journal of Economy and Society* 44: 444–62. [CrossRef]
- Kanazawa, Mark T., and Jonas P. Funk. 2001. Racial Discrimination in Professional Basketball: Evidence from Nielsen Ratings. *Economic Inquiry* 39: 599–608. [CrossRef]
- Larsen, Tim, Joe Price, and Justin Wolfers. 2008. Racial Bias in the NBA: Implications in Betting Markets. *Journal of Quantitative Analysis in Sports* 4: 1–21. [CrossRef]
- Levitt, Steven D. 2004. Why Are Gambling Markets Organized So Differently from Financial Markets? *The Economic Journal* 114: 223–46. [CrossRef]
- Madden, Janice Fanning. 2004. Differences in the Success of NFL Coaches by Race, 1990–2002: Evidence of Last Hire, First Fire. *Journal of Sports Economics* 5: 6–19. [CrossRef]
- Madden, Janice Fanning, and Matthew Ruther. 2009. Reply to: Difference in the Success of NFL Coaches by Race: A Different Perspective. *Journal of Sports Economics* 10: 543–50. [CrossRef]
- Nielsen. 2014. Year in Sports Media Report 2013. Available online: <http://www.nielsen.com/content/dam/corporate/us/en/reports-downloads/2014%20Reports/year-in-sports-media-report-2013.pdf> (accessed on 8 February 2018).
- Paul, Rodney J., and Andrew P. Weinbach. 2008a. Does Sportsbook.com Set Point spreads to Maximize Profits? Tests of the Levitt Model of Sportsbook Behavior. *Journal of Prediction Markets* 1: 209–18.
- Paul, Rodney J., and Andrew P. Weinbach. 2008b. Price Setting in the NBA Gambling Market: Tests of the Levitt Model of Sportsbook Behavior. *International Journal of Sports Finance* 3: 2–18.
- Paul, Rodney J., and Andrew P. Weinbach. 2011. Behavioral Biases and Sportsbook Pricing in Major League Baseball. In *Oxford Handbook of Sports Economics*. Oxford: Oxford University Press. [CrossRef]
- Paul, Rodney J., and Andrew P. Weinbach. 2013. Baseball: A Poor Substitute for Football—More Evidence of Sports Gambling as Consumption. *Journal of Sports Economics* 14: 115–32. [CrossRef]
- Price, Joseph, and Justin Wolfers. 2010. Racial Discrimination among NBA Referees. *Quarterly Journal of Economics* 125: 1859–77. [CrossRef]
- Sauer, Raymond D. 1998. The Economics of Wagering Markets. *Journal of Economic Literature* 36: 2021–64.
- Sauer, Raymond D., Vic Brajer, Stephen Ferris, and M. Wayne Marr. 1988. Hold Your Bets: Another Look at the Efficiency of the Gambling Market for National Football League Games. *Journal of Political Economy* 96: 206–13. [CrossRef]
- Szymanski, Stefan. 2000. A Market Test for Discrimination in the English Professional Soccer Leagues. *Journal of Political Economy* 108: 590–603. [CrossRef]



© 2018 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).