RACE AND NBA TELEVISION CONSUMPTION: EVIDENCE FROM NIELSEN RATINGS

A THESIS

Presented to

The Faculty of the Department of Economics and Business

The Colorado College

In Partial Fulfillment of the Requirements for the Degree

Bachelor of Arts

By

Mateo Ferguson Garcia

March 2007

RACE AND NBA TELEVISION CONSUMPTION: EVIDENCE FROM NIELSEN RATINGS

Mateo Ferguson Garcia

March, 2007

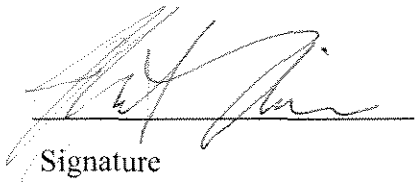
Economics

Abstract

This study investigates the effects of consumer-based discrimination on consumption of nationally televised NBA games. Previous research has found that NBA games enjoy increased viewership when there is greater participation by white players. This suggests that consumers of the NBA may discriminate against non-white players which, in the NBA, consist mainly of African-Americans. The present study reexamines the possibility of consumer based discrimination among NBA fans by employing an ordinary least squares (OLS) model to test for the determinants of the Nielsen ratings of nationally televised NBA games. Controlling for a wide variety of other variables that may affect Nielsen ratings, this study finds that fans have no preference against African-American players, but that they may discriminate against African-American head coaches. As the present study employs a more recent data set than those used in previous research, the results suggest that consumer tastes may be changing with respect to African-American players, but there may be some resistance towards the increasing number of African-Americans in the head coaching position.

KEYWORDS: (Consumer-based discrimination, Professional basketball, race)

ON MY HONOR, I HAVE NEITHER GIVEN NOR RECEIVED
UNAUTHORIZED AID ON THIS THESIS



Signature

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGMENTS

I would like to thank Professor Aju Fenn for his guidance, wisdom, and kindness in the context of the present research and otherwise. In addition, I would like to thank Joel Ross, Arthur Steiker, and Mark Kanazawa.

CHAPTER I

INTRODUCTION

Much scholarly attention has been directed towards examining racial discrimination against professional athletes. Economists have tested for discrimination against a variety of racial and ethnic groups across almost every popular sport imaginable: from French Canadian professional hockey players, to Hispanic baseball pitchers, to African-American basketball stars. Despite the plethora of studies that the field has enjoyed, the question of whether or not there exists racial or ethnic discrimination against specific groups of professional athletes remains far from conclusive.

The National Basketball Association (NBA) provides particularly interesting grounds for examining issues of racial discrimination because of its unique status as a largely African-American league with a largely white fan base. Over the past 4 decades, the league has grown increasingly African-American; in 1970 the NBA was only 54.3% black, but by 1980 that number had increased to nearly 75%--where it remains today.[1] Given the racial differences between NBA fans and employees, it is no surprise that both scholars and the popular media have expended a large amount of effort claiming that fans display consumer based discrimination towards NBA players. In a 2001 study,

[1] Rick Harrow, "NBA At Finals Time: Sustaining Three Business Goals," available from http://cbs.sportsline.com/general/story/6408583 (accessed March 16, 2006).

economists Kanazawa and Funk found evidence in television ratings supporting this idea of customer discrimination.[2] In a *Wall Street Journal* interview, NBA Commissioner David Stern expressed his view that NBA fans discriminate against black players; When asked whether he believed the league received scrutiny because of racial attitudes, the Commissioner responded:

> Well, I choose not to dwell on it, but you may be on to something. We were the first sport to be identified as black. And, despite the fact that the starters in other sports like football could be equally, percentage-wise, black, our guys are [visible] out there. We can see them, they don't come encumbered by hat, helmet, long sleeves and pants. You just touched on the global conversation, which is the role of race, and certainly, I would not be fully honest if I didn't say it's always there, in some shape or form.[3]

Stern's remarks not only display the perception that the NBA receives scrutiny because it is a "black" league, but they also highlight that which distinguishes the NBA from other popular American professional sports leagues; whereas National Football League (NFL) and Major League Baseball (MLB) players wear long pants and helmets or caps, NBA players wear much less clothing and fans can easily distinguish player race, even from the upper deck of most basketball stadiums. For this reason, consumer discrimination may, indeed, be more present in the NBA than in other professional sports leagues. However, is it truly the case that NBA fans discriminate against black players, or is this just a common misperception?

Importance of the Study

---

[2] Mark T. Kanazawa and Jonas P. Funk, "Racial Discrimination in Professional Basketball: Evidence From Nielson Ratings," *Economic Inquiry*, Volume 39, 2001:599-607

[3] Russell Adams and Adam Thompson, "Welcome to My World," *The Wall Street Journal*, 17 January 2007, B1.

There is mixed and inconclusive evidence regarding the question of whether or not NBA consumers display a distaste for African-American basketball players. Kanazawa and Funk (2001) introduced an interesting method for testing for consumer discrimination by examining patterns of television consumption.[4] This is a particularly effective method of measurement because television consumption can be reliably measured by use of the Nielsen rating. Kanazawa and Funk found evidence in Nielsen rating patterns supporting the hypothesis that NBA fans do display discrimination against African-American NBA players. However, Kanazawa and Funk's study was limited to examining television consumption patterns of locally televised games in local markets, and employed data from the 1996-1997 NBA season. At the time of the present study, the data employed by Kanazawa and Funk is nearly 10 years old, and fan preferences may have changed over time.

Determining what role team racial composition presently plays to NBA consumers could have important implications for both NBA franchises and television broadcasting stations. The four major networks broadcast a total of over 2,100 hours of sports per year, and ESPN alone broadcasts more than 8,000.[5] In 2002, the NBA signed a $4.6 billion deal distributing television broadcasting rights over six years, through to the 2007-2008 seasons.[6] Due to these large amounts of money at stake, teams and networks obviously have advantages to be gained from knowing why a consumer might tune-in to a particular game. For instance, if adding an African-American player to a roster can

---

[4] Mark T. Kanazawa and Jonas P. Funk, "Racial Discrimination in Professional Basketball: Evidence From Nielson Ratings," *Economic Inquiry*, Volume 39, 2001:599-607

[5] Soonhwan Lee and Hyosung Chung, "Economic Values of Professional Sports Franchises in the United States" *The Sport Journal*, Volume 5, 2002: 2-13.

[6] Rick Harrow, "NBA at Finals Time: Sustaining Three Business Goals," available from http://cbs.sportsline.com/general/story/6408583

increase the amount of viewers willing to watch a team play, then networks may be able to capture higher Nielsen ratings and more advertising revenue by broadcasting teams with greater proportions of African-Americans. Conversely, NBA franchises may want to pay white players a higher salary if it can be shown that they are valued more by the consumer, and thus have a higher marginal revenue product.

Overview of the Present Study

The present study employs data for nationally televised NBA games over the 2005-2006 season in an effort to determine if NBA television consumption is systematically correlated to team and player racial characteristics. The next chapter will discuss important works dealing with the economics of discrimination, beginning with the foundations laid by the theories of Gary Becker and Lester Thurow. Chapter III, then, will provide a detailed discussion of the theories underlying the methods this study employs. Economic theory and the findings of previous studies suggest that a number of different variables may be significant determinants of NBA television consumption, and Chapter III will explore each of these variables. Chapter IV will describe the data set and model used to test the theory of consumer discrimination in the market for NBA players. Finally, Chapter V will report the results of the model. The principal conclusion is that NBA fans do not discriminate against African-American players, and is in contrast to those results found by Kanazawa and Funk (2001).[7] In addition, the results provide evidence suggesting that NBA consumer based discrimination is present in the market for NBA head coaches. Lastly, Chapter V will discuss avenues for further research.

[7] Ibid.

CHAPTER II

LITERATURE REVIEW

The purpose of this chapter is to review the literature on racial discrimination in professional sports. As many of the theories and models developed in this field are derived from earlier work in the more general field of discrimination, seminal works, such as those of Becker (1971)[1] and Thurow (1969)[2], will also be discussed. Each of the papers will be discussed in relation to the present research on consumer discrimination in the National Basketball Association (NBA). The chapter will proceed as follows: The first section will discuss the general theories of discrimination which influence the current body of work in the sports field. The next section of the chapter will review the body of literature on racial discrimination in professional sports. The chapter will conclude with a discussion of papers that examine the determinants of television consumption patterns.

Theories of Discrimination

Perhaps the most well known model of discriminatory behavior is the one presented by Becker in *The Economics of Discrimination* (1971). Becker treats blacks

---

[1] Gary S. Becker, The Economics of Discrimination(Chicago: University of Chicago Press, Ltd., 1971).

[2] Lester C. Thurow, Poverty and Discrimination(Washington D.C.: The Brookings Institution, 1969).

and whites as though they were two separate countries, engaged in trade.[3] He claims that, because blacks are labor abundant, and whites capital abundant, trade should happen between the two sectors until the marginal products of labor and capital are equal in each. If discrimination exists, however, a tariff exists on black labor and goods—which Becker calls a "discrimination coefficient". This tariff is tantamount to the compensation that whites must receive for hiring, working alongside, or purchasing products from blacks; it is essentially an extra, theoretical cost of production that must be factored into transactions between the two groups. This tariff exists because whites have a "taste" for discrimination—as Becker treats discrimination simply as a preference that cannot be changed.[4] The discrimination coefficient would be factored into transactions between employer and employee, among employees, and between a producer and consumer of goods: employer discrimination is present when a white employer treats the wage he would have to pay a black worker, $л$, as $л(1+d_i)$, where d_i represents the tariff or discrimination coefficient (DC). Similarly, employee discrimination exists when a white employee, faced with the possibility of working alongside a black employee, perceives his wage, w, as $w(1-d_j)$, with d_j=DC. Finally, consumer discrimination can be modeled as a higher perceived price for a good, p, where a white consumer perceives the price of a good produced by a Black producer as $p(1+d_k)$, where d_k=DC.

In each case, DC represents the amount of compensation that a white would have to receive for any sort of interaction with a black—as this interaction produces disutility

---

[3] Becker, Thurow, and Bergmann all use the example of blacks and whites, but the ideas are applicable to any discriminated against grou-p.

[4] Further discussion of Becker's treatment of tastes can also be found in: George J. Stigler and Gary S. Becker, "De Gustibus Non Est Disputandum," *The American Economis Review*, Volume 67, Number 2, 1977: 76-90.

to the white that he must be compensated for. Becker stated that the DC was a result of whites attempting to maximize a utility function—in which physical distance from a black was one argument.[5]

Lester Thurow presents an alternative model to that of Becker in *Poverty and Discrimination.*[6] Thurow asserts that Becker's model of two sectors involved in trade is too simple to accurately describe discriminatory behaviors, and an alternative method may be to look at whites as utilizing monopoly or monopsony power to maximize their utility. As government and institutions in the U.S. are predominantly controlled by whites, Thurow hypothesizes that blacks face monopolies and monopsonies—and, because the black labor supply curve is most likely inelastic (due to high unemployment and basic subsistence needs), whites could pay blacks a wage rate lower than their marginal revenue product. In particular, white discriminators should behave in a manner that maximizes the distance between the relative incomes of themselves, and blacks. (They would want to maximize the distance between *relative* incomes, Thurow says, because certain discriminatory practices may reduce both black and white incomes, yet still be desirable). This practice would allow whites to maximize a utility function in which *social* distance between whites and blacks is the main argument:

> The discriminator may prefer to hire Negro maids, Negro garbage collectors, or to work with Negros if he can be in a position of authority. He may also prefer to hire Negro labor if it can be exploited to increase his own profits.[7]

---

[5] Gary S. Becker, The Economics of Discrimination(Chicago: University of Chicago Press, Ltd., 1971).

[6] Washington D.C.: The Brookings Institution, 1969. This discussion of Lester Thurow's theories is based on Chapter VII, pages 111-138.

[7] Ibid: 117.

Both Thurow's (1969) and Becker's (1971) theories have much to offer the study of discrimination in sports. For instance, if consumers who discriminate against blacks act in a manner commensurate with Becker's hypothesis, they may perceive the cost of attending or viewing a sporting event where black players are playing as higher than it actually is. This may be observable in their consumption patterns. If white consumers attempt to maximize social distance between themselves and black athletes, they may draw disutility from seeing highly-paid black athletes—which should also be evident in their consumption patterns.

Bergmann (1969) criticizes Becker's idea of a discrimination coefficient, and discounts Thurow's hypothesis that discriminating whites will use monopsony power to pay blacks subsistence wages. Bergmann instead expands on a "crowdedness" hypothesis first formulated by Edgeworth (1922)[8]: black wages will be forced downward due to the white employers who will not hire blacks, rather than the employers who will hire blacks at artificially low wages (either to compensate them for their disutility, as in Becker, or because of monopsony power, as in Thurow). Because blacks are forced into a small pool of jobs that whites are willing to hire them in, the abundance of supply pressures wages downward by market forces. With this "crowdedness" hypothesis in mind, Bergmann sets out to estimate economic losses from discrimination, and gains or losses that might occur with labor integration. Employing data from the 1969 Census Bureau Current Population Report, and 1967 Consumer Income data, Bergmann estimates production functions and marginal products by race, sex, and education level.

---

[8] Edgeworth, F.Y. "Equal Pay to Men and Women." *Journal of Economics*. Volume 32, 1922: 431-457

She then assumes that, given the absence of discrimination, the marginal productivities of both black and white labor should be equal[9]. Bergmann finds discrimination to be a zero-sum game—though losses and gains from discriminating or not discriminating are of trivial magnitudes. Uneducated white males may be the only group to take significant income losses from black gains, estimated at ten to twenty percent.[10]

This idea of overcrowding can be applied to professional sports markets. It has been shown that blacks are overrepresented in American professional sports—representing only about 12% of the U.S. population, yet 73% of National Basketball Association players and 57% of National Football League Players.[11] If blacks represent more than six times their share in the NBA, overcrowding—and suppressed wages—may result. This may be symptomatic of a tolerance for having blacks employed as professional athletes, so that we may not be able to detect discrimination by consumers against these athletes.

The ideas of Becker, Thurow, and Bergmann all share the common idea that, where discrimination exists, the group discriminated against will usually have suppressed wages—that is, wages which are lower than their marginal revenue products or are lower than the wages of a worker who is not discriminated against. Much scholarly attention has been paid to detecting such salary differentials in the market for professional athletes. At this point, it is necessary to examine some of these studies.

---

[9] Barbara R. Bergmann, "The Effect on White Incomes of Discrimination in Employment," *The Journal of Political Economy*. Volume 79, Number 2. 1971: 300.

[10] Ibid. 294-313

[11] Gary A. Sailes, "The Myth of Black Sports Supremacy," *Journal of Black Studies*, Volume 21, Number 4. 1991: 480-487.

Racial Discrimination in Professional Sports

Scully (1973) accumulates different evidence used to show discrimination in sports prior to his study, and he breaks down discrimination into various types. He examines data from the NFL, MLB, NBA, and American Basketball Association (ABA) over various years ranging from 1954 to 1971, and he documents racial discrimination of three types: positional segregation, entry barriers, and salary discrimination. His empirical evidence of positional segregation is shown in the small percentages of black players that hold leadership roles (such as quarterback, pitcher, or center). He finds evidence of entry barriers in the fact that black athletes are statistically better than whites at their positions—implying blacks must be better than their white counterparts in order to hold the same position. Scully then employs regression analysis, with team revenue as dependent upon team win records, SMSA size, stadium quality, and percentage of black players on the team. He finds percentage of black players on the team to negatively affect revenue, which he cites as evidence of a salary gap.[12]

In another study, Scully sets out to show that Major League Baseball players are subject to pay discrimination due to the reserve clause. He employs data for the 1968-1969 baseball seasons, and he estimates equations for marginal revenue product of each player, and player salary. He finds that marginal revenue product is less than player salary—due to franchise monopsony power—implying players are underpaid. He also, however, finds in his revenue equation that black players reduce team revenue,

[12] Gerald Scully, "Economic Discrimination in Professional Sports," *Law and Contemporary Problems*, Volume 38, 1973: 67-84.

specifically, that a 1% increase in black players equates to a $59,000 decrease in revenue.[13]

Kahn and Sherer (1988) examine salary determination and salary differentials in the NBA. Employing 1985-1986 salary data obtained in surveys, as well as player and team characteristics from *Sporting News* and metropolitan information from 1985 and 1986 editions of *The United States Statistical Abstract,* they relate player salaries to team and player performance characteristics, player race, and various metropolitan area data. They find that—although black players make higher average salaries than whites—holding on-court performance constant reveals that there is actually a 20% black salary shortfall. For this salary discrimination to exist, they say, it is either profitable (because of consumer preferences) or owners must be willing to sacrifice profits in order to indulge their own tastes for discrimination.[14] Kahn and Sherer then find that the number of whites on a team's roster is positively correlated with attendance revenue; they use these results to conclude that the source of the black-white salary gap must be attributable to consumer discrimination.[15]

Koch and Vander Hill (1988) test for racial discrimination in the NBA by looking for differences in 1984-1985 salaries of 278 white and black players, as reported by *Sporting News*. They estimate an equation for determining salaries that includes both individual player and team characteristics and utilize regression analysis in which the

---

[13] Gerald Scully, "Pay and Performance in Major League Baseball", *The American Economic Review*, Volume 64, 1974: 915-930.

[14] This hypothesis assumes competitive markets, so that paying blacks an artificially low wage sacrifices efficiency.

[15] Lawrence M. Kahn and Peter D. Sherer, "Racial Differences in Professional Basketball Players' Compensation," *Journal of Labor Economics*, Volume 6, Number 1, 1988: 40-61.

dependent variable is the natural logarithm of 1984-1985 salaries, with a race dummy variable assigned. Their results show that there is a penalty of as much as $26,000 per year imposed upon black players—holding on-court performance constant. They also find that the marginal benefits of those factors which positively affect salaries are greater for white players than black players; for example, the annual salary of a white player is increased by $10.47 for each additional 1,000 people in the franchise area—while that figure is only $7.27 for a black player, *ceteris paribus*. The authors conclude that there are two possible reasons for the financial penalties imposed upon black players. First, consumer discrimination might be present (or managers believe consumer discrimination is present), so that actual or perceived marginal products are higher for white players than for blacks. This idea would be consistent with the theories of Becker (1971).[16] Second, Koch and Vander Hill conclude that black players and their respective agents may not negotiate as aggressively for high salaries—due to the fact that these players come from poorer backgrounds and negotiate for salaries in relative terms.[17]

Kahn (1992) examines salary dispersions in the NFL to test if the same salary differentials in professional basketball exist in professional football. Kahn uses 1989 salary data from the National Football League Players Association (NFLPA), as well as race and performance data from *Sporting News*. He regresses player salary on a variety of team and player quality measures, as well as race composition data for the metropolitan area and player race. Kahn finds that there is little to no salary differential between white and non-white players—yet he does find that non-white salaries vary

---

[16] Becker, 75-81

[17] James V. Koch and C. Warren Vander Hill, "Is There Discrimination in the 'Black Man's' Game?" *Social Science Quarterly*, Volume 69, 1988: 83-94.

positively with the proportion of non-whites in the team's host city. A similar correlation exists for white players and relatively whiter host cities. Kahn sees this as evidence of consumer discrimination; fans place a higher value on same-race players.[18]

As Kahn and Sheerer (1988) and Koch and Vander Hill (1988) have shown, a significant salary gap existed between black and white NBA players during the 1980s. Bodvarsson and Brastow (1999) claim that this salary gap had disappeared by the early 1990s, and they test the hypothesis that this decrease was due to the decreased monopsony power brought about by a 1988 collective bargaining agreement and the entry of four new teams during the same time period. The authors generate a model in which player salary is dependent upon manager race and player race, and a variety of player and team quality control variables. They find that salary determination for black players employed by white managers differed significantly from salary determination for all other groups in the 1985-1986 season, but this difference was non-existent by the 1990-1991 season. They conclude that the disappearance of employer discrimination was consistent with the decrease in monopsony power that occurred as a result the NBA's structural changes.[19]

As each of the studies of salary discrimination described above suggest, salary gaps may be evidence of any of a number of different types of discrimination. Gary Becker (1971) suggested that discrimination could originate from employers, employees, or consumers—or some interaction of the three. As the current study focuses on testing

---

[18] Lawrence M. Kahn, "The Effects of Race on Professional Football Players' Compensation," *Industrial and Labor Relations Review*, Volume 45, Number 2. 1992: 295-310.

[19] Orn B Bodvarsson and Raymond T. Brastow, "A Test of Employer Discrimination in the NBA," *Contemporary Economic Policy*, Volume 17, Number 2. 1999: 243-255.

for evidence of consumer discrimination, following is a brief discussion of some of the existing literature examining consumer discrimination in sports.

Schollaert and Smith (1987) test the hypothesis that team racial composition is a significant determinant of NBA attendance. They relate attendance to variables describing team racial composition, metropolitan area characteristics, and team, player, and facility quality measures, over the 1969-1982 seasons. They find that team racial composition has no impact on attendance—suggesting that customers of the NBA are indifferent to race.[20]

Burdekin and Idson (1991) also test the hypothesis that consumer preferences shape NBA team racial composition. They examine team composition and Standard Metropolitan Statistical Area (SMSA) data over the 1980-1981 to 1985-1986 seasons, and generate a model explaining team racial composition, and a model explaining attendance. They find strong evidence suggesting consumer discrimination: the proportion of whites in the SMSA significantly explains the proportion of whites on the team (this relationship is nearly one-for-one), and attendance is higher for those teams which more closely match their racial composition with that of the surrounding area.[21]

Their results may differ from those of Schollaert and Smith (1987) because they use more recent data. Schollaert and Smith's dataset contains observations from the 1960s and 1970s, whereas Burdekin and Idson only employ data from the 1980s. The league held a significantly higher proportion of black players in the 1980s than in the

---

[20] Paul T. Schollaert and Donald Hugh Smith, "Team Racial Composition and Sports Attendance," *The Sociological Quarterly*, Volume 28, Number 1. 1987: 71-87.

[21] Richard C. Burdekin and Todd L. Idson, "Customer Preferences, Attendance and the Racial Structure of Professional Basketball Teams," *Applied Economics*, Volume 23. 1991: 179-186.

1960s and 1970s—and perhaps fans began to place a higher value on white players as they became more and more scarce.

Brown and Jewell (1994) examine consumer based discrimination in college athletics by looking at gate revenues and team structure for NCAA basketball and football. They use data over the 1988-1989 season for 42 schools, and they regress gate revenues on team racial composition—while controlling for several other factors which may influence gate revenue. They find that fans will pay a $121,575.84 annual premium to view players of their own race; these results contrast to those of Schollaert and Smith (1987).[22]

Burdekin, Hossfield, and Smith document the changes in discrimination in the NBA that have occurred from the 1980s to 1990s. They also look at team racial composition as relates to SMSA composition but use more recent data over the 1990-1999 seasons. Team racial composition is their dependent variable, with percent white in the SMSA as explanatory. Their evidence also suggests consumer-based discrimination—though small. They find that a 1% increase in white players equates to a $1000 increase in revenue per game, which is a very small percent of total revenue. They also point out that there seems to be no employee discrimination in the form of entry barriers, as the best players seem to be playing in the league regardless of race. These results may be an indication that consumer discrimination has declined significantly since the 1980s and, presently, may be undetectable.[23]

---

[22] Robert W. Brown and R. Todd Jewell, "Is There Customer Discrimination in College Basketball? The Premium Fans Pay for White Players," *Social Science Quarterly*, Volume 75, 1994: 401-414.

[23] Richard Burdekin, Richard Hossfield, and Janet Kiholm Smith, "Are NBA Fans Becoming Indifferent to Race? Evidence From the 1990s," *Claremont Colleges Working Papers in Economics*, 2002

As Becker (1971) first pointed out, employee, employer, and consumer discrimination may all occur at once—so that detecting the exact magnitude of any 1 might be difficult if not impossible.[24] For instance, if the racial composition of an SMSA is shown to be a significant determinate of team racial structure, can we attribute this to fan racial preferences and profit-maximizing team owners, or simply the preferences of a team owner or manager, who has *both* racial preferences for his team *and* the city he lives in? There have been several interesting techniques employed to capture only consumer discrimination.

Nardinelli and Simon (1990) employ a unique method in testing for consumer discrimination in professional baseball (MLB): they test if race has any effect on the value of a player in the market for baseball cards. Baseball card prices may me a more accurate means of detecting consumer discrimination than other methods, they say, because there are only a handful of factors which determine baseball card price—most of which are observable. The authors examine the 1989 prices of 334 *Topp's* cards issued in 1970, and they hypothesize that these prices should be a function of player performance, player position, and race. They find a significant penalty placed upon card values of non-whites—10% for non-white hitters and 13% for non-white pitchers.[25] The greater penalty applied against pitchers complies with the theoretical framework of Becker (1971), as he hypothesized that consumer discrimination would be greater the more contact a worker had with the customer. We might also expect consumer discrimination

---

[24] Becker. 13-18

[25] Clark Nardinelli and Curtis Simon, "Customer Racial Discrimination in the Market for Memorabilia: The Case of Baseball," *The Quarterly Journal of Economics*. Volume 105, Number 3. 1990: 575-595.

against basketball players to be more robust than discrimination against most other athletes, as uniforms are less obscuring.[26]

In a similar study, Gabriel, Johnson, and Stanton (1995) examine the 1992 price of all *Topp's* rookie baseball cards issued between 1984 and 1990. They employ a model quite similar to that of Nardinelli and Simon (1990), in which card price is dependent on player age, race, and a variety of performance characteristics. The authors do not find any indication of customer discrimination in the market for baseball cards, as there is no significant correlation between player ethnicity and card price.[27] Perhaps these results indicate that discrimination among professional sports fans is a trend which is declining with time.

Following the methodology of the previous two studies, Stone and Warren (1999) test for consumer discrimination in the NBA by analyzing trading card prices. The authors relate the 1993 prices of 258 players active in the 1976-1977 season to team quality and an index of player performance measures—while controlling for the left-censoring of the dependent variable from "common price" cards.[28] In contrast to the results of Nardinelli and Simon (1990), the authors find that player race has no effect on card price. They do find that career length provides greater returns to the card price of black players, but a subsequent coaching career provides lower returns to the same group. This may be an indication that white fans do not discriminate against black players yet

---

[26] Schollaert and Smith (1987) discuss this point, 74-75,

[27] Paul E. Gabriel, Curtis Johnson, and Timothy J. Stanton, "An Examination of Customer Racial Discrimination in the Market for Baseball Memorabilia," *The Journal of Business*, Volume 68, Number 2. 1995: 215-230.

[28] Almost half of the cards in the sample sold for "common price"—the intrinsic value of the card itself with no premium for player characteristics. The authors state the "common price" to be .$50.

have a preference for white coaches—a form of positional segregation.[29] The present study includes a variable testing for fan bias for a white coach.

Another interesting technique for finding evidence of consumer discrimination is that employed by Desser, Monks, and Robinson (1999). Desser, Monks, and Robinson explore the relationship between player race, and election into the Baseball Hall of Fame, for 427 players eligible for Hall of Fame nomination between 1976 and 1998. The authors generate two models: a probit model for probability of a player appearing on the Hall of Fame ballot, and a model relating number of votes to lifetime player performance variables and player race. They find that both Latino and African American players are discriminated against in the voting process: African American players would have received 44% more votes and Latinos 62% if treated the same as whites.[30] Although the Baseball Hall of Fame nominations are given by baseball writers, it would be quite difficult to make the argument that the racial preferences of baseball writers differ significantly from those of baseball fans.

Discrimination and Television Consumption Patterns

Yet another technique employed to isolate consumer discrimination, is the examination of television viewing patterns. Nielsen Media Research produces a statistic commonly known as the "Nielsen rating"; this rating represents the percentage of households in a given area with televisions tuned in to a particular show at a given time.

---

[29] Eric W. Stone and Ronald S. Warren Jr. "Customer Discrimination in Professional Basketball: Evidence from the Trading Card Market," *Applied Economics*, Volume 31. 1999: 679-685.

[30] Arna Desser, James Monks, and Michael Robinson, "Baseball Hall of Fame Voting: A Test of the Customer Discrimination Hypothesis," *Social Science Quarterly*, Volume 80, 1999: 591-603.

Nielsen Media Research adheres to a very strict method of random sampling, and their ratings are widely used by television broadcasters and advertisers as a measure of popularity of a given program. Aldrich, Arcidiacono, and Vigdor, (2005) point out that Nielsen ratings for National Football League (NFL) games are significantly higher for games involving at least one black quarterback. They test three different hypotheses for the higher ratings: that quarterback race proxies for other player or team attributes that may attract viewers, that black viewership patterns are sensitive to quarterback race, and that all viewers are displaying a taste for diversity. The authors examine Nielsen ratings for 82 Monday Night Football games shown on ABC over the 1997-2001 seasons. They find that, while controlling for observed team and player characteristics, there is a 13% increase in viewership for games involving at least one black quarterback—and that this effect is 80% stronger among 18 to 34 year-old males than all other demographics combined. They then compare these results to results from 1994, 1996, and 1998 General Social Survey (GSS) questions. Because the GSS suggests that eighteen to thirty-four year olds value racial diversity most, the authors conclude that the greatest contributing factor to the "black quarterback effect" is viewers displaying a taste for diversity.[31]

Concomitant with Aldrich, Arcidiacono, and Vigdor's, (2005) results, Fenn and Carney (2004) find that NFL viewership decreases with the percentage of white players on the local team. Fenn and Carney examine data for 496 regular season games over the 2000-2001 period, and they relate the Nielsen rating for each game to SMSA statistics, and team and player characteristics—including percentage of whites on each team. Not

---

[31] Eric M. Aldrich, Peter S. Arcidiacono, and Jacob L. Vigdor, "Do People Value Racial Diversity? Evidence from Nielsen Ratings" *Topics in Economic Analysis and Policy*. Volume 5, 2005. pp. 1-21.

only do they find a negative relationship between the percentage of whites on the local team and the Nielsen rating, they find that an increase in the percentage of whites in the SMSA has a positive impact on the Nielsen rating.[32] Perhaps present day NFL fans do, in fact, have a taste for diversity.

In examining professional basketball viewership, it is important to keep a number of issues in mind. On average, NBA games sell out less and have lower Nielsen ratings than NFL games. Football remains the most popular sport in the U.S., and NFL football games are consistently on week top-ten lists for highest Nielsen ratings.[33] The popularity of NFL football relative to NBA basketball suggests that consumers of the NFL may have less elastic demand curves than those of the NBA. Peripheral influences, such as racial preferences, may play a more significant role in NBA viewership. Furthermore, NBA players are hidden less by their uniforms. Becker's (1971) theory of consumer discrimination suggests that this may lead to stronger discrimination. Holzer and Ihlanfeldt (1998) find empirical evidence that discrimination is stronger against blacks who hold higher paid positions—as well as blacks who hold jobs with closer contact to whites.[34] We may expect to see stronger evidence of consumer preferences in basketball, then, than in other sports.

---

[32] Shannon Carney and Aju J. Fenn, "The Determinates of NFL Viewership: Evidence From Nielsen Ratings," *Colorado College Economics and Business Working Paper No. 2004-02*

[33] USA Today, "TV Expanded Nielsen Ratings," available from http://www.usatoday.com/life/television/nielsen-more.htm, accessed October 7, 2006

Nielsen Media Research, "Top Ten TV Ratings, Broadcast Programs," available from http://www.nielsenmedia.com/ratings/broadcast_programs.html, accessed October 7, 2006.

[34] Harry J. Holzer and Keith R. Ihlanfeldt, "Customer Discrimination and Employment Outcomes for Minority Workers," *The quarterly Journal of Economics*, Volume 113, Number 3. 1998: 835-867.Holzer and Ihlanfeldt (1998) investigate the effects of consumer based discrimination on employment outcomes for minority workers. They employ data from a survey administered between June of 1992 and May of

Perhaps the most pertinent study to the present research is that by Kanazawa and Funk (2001). Kanazawa and Funk tests the hypothesis that television viewing patterns are systematically correlated with visibility of white NBA players. The authors utilize Nielsen ratings for 258 local, non-cable games, and they regress the rating on SMSA, game, and team characteristics—including race variables. They test one model which relates percentage of white playing time to the Nielsen rating, and another that relates only the number of whites on the team's roster to the Nielsen rating. They find that an additional white player increases the Nielsen rating by 0.54 points, significant at 99%. They also find that an additional 27 minutes contributed by white players increases the Nielsen rating by about the same amount. This coefficient, however, is significant at only 90%—and so deserves some scrutiny. The authors then examine broadcast revenue data and find that the addition of one white player to a team's roster may add as much as $27,000 per game of broadcasting revenues. The authors conclude that the magnitude of this number suggests that much of the black-white salary gap can be explained by the higher marginal revenue product of white players.[35]

Previous research examining consumer discrimination in professional basketball lacks consensus, despite the variety of methods used. To this author's knowledge, only

---

1994, which surveyed eight-hundred employers in Atlanta, Boston, Detroit, and Los Angeles. The authors generate a model which explains the race of the last hired worker by the percentage of customers who are Black or Hispanic, controlling for a variety of variables. They find that the increase of new hires who are Black or Hispanic rises from ten to sixty moving from areas with predominantly white customers to areas with predominantly Black or Hispanic customers. They then examine comparative, "difference-in-difference" statistics and find that Blacks and Hispanics are much less likely to be hired for white-collar jobs among a white customer base, and are much less likely to be hired to jobs such as sales positions, where they have closer contact with whites[34]. These results agree with the theories of consumer discrimination developed by Gary Becker (1957); Becker hypothesized that consumer discrimination should have greater consequences for jobs requiring closer contact between the consumer and producer[34].

[35] Mark T. Kanazawa and Jonas P. Funk, "Racial Discrimination in Professional Basketball: Evidence From Nielson Ratings," *Economic Inquiry*, Volume 39, 2001:599-607

Kanazawa and Funk (2001) have examined television viewing patterns in order to determine the influences of team racial composition on television viewing patterns. The present study employs a method similar to that of Kanazawa and Funk, albeit with some important differences. The present study uses data for nationally televised games rather than just data for local markets. Results using national data would be more telling—as nationally televised games tend to be between better teams and discrimination among consumers would have to be more robust to be detectible. Furthermore, the present research employs an updated data set, so that we may determine if preferences have evolved over time.

CHAPTER III

THEORY

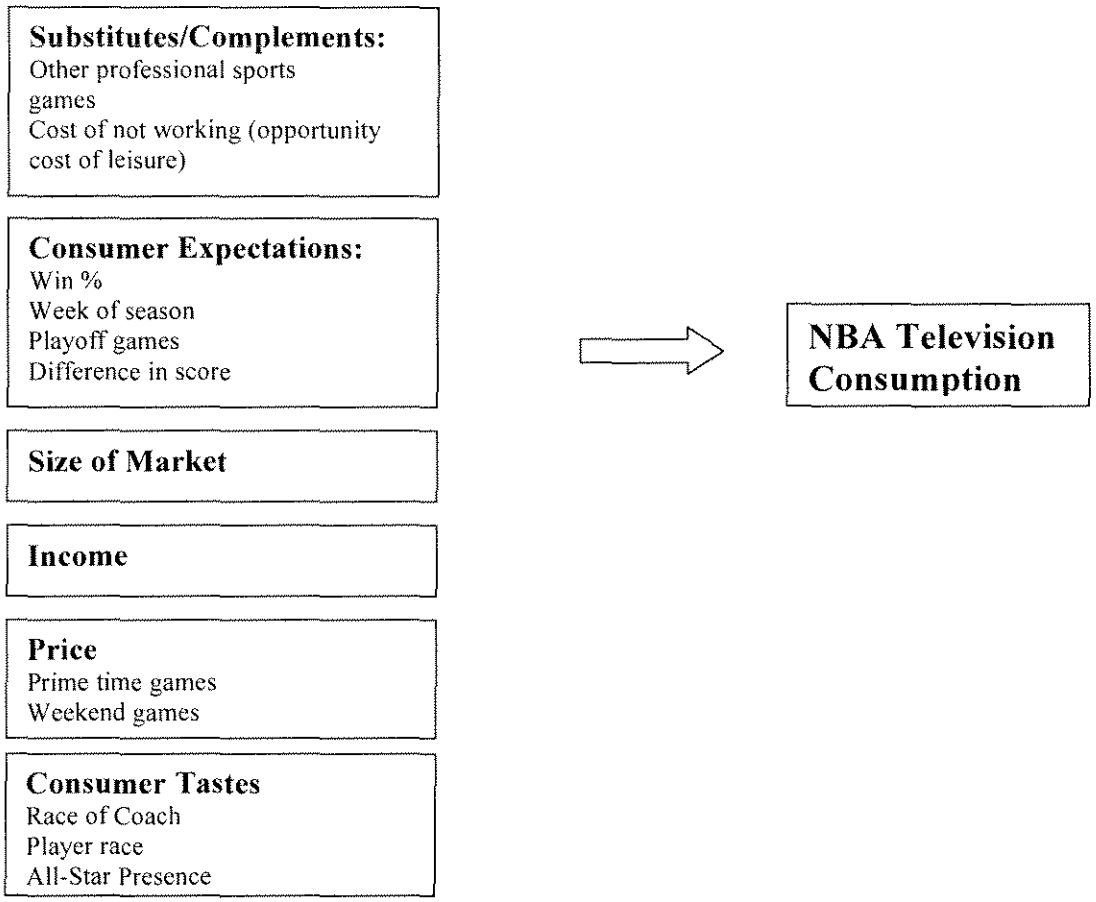
The purpose of this chapter is to explain the theory behind the determinants of NBA television consumption. Economic theory and the findings of previous studies suggest that a number of different variables may be significant determinants of viewership. Each of these variables will be discussed. The chapter will begin with a brief discussion of basic demand theory as it applies to NBA consumption. An analysis of the individual variables affecting the demand for televised NBA games will follow.

The demand for televised NBA games—like the demand for any good or service—is determined by the following factors: own price of the good, the prices of substitutes and complements, the expectations that consumers hold, consumer tastes, the number of consumers in the market, and consumer income.[1] Following is am examination of each of these factors as pertains to NBA television consumption. A conceptual model summarizing the theoretical determinants of NBA television consumption that will be discussed is included below.

[1] Michael Leeds and Peter Von Allmen, The Economics of Sports (Boston: Pearson Education, Inc. 2005). 19

FIGURE 3.1

Factors Affecting National Basketball Association Viewership



Substitutes and Complements

Many NBA host cities are also host to various other professional sports franchises. These other franchises may produce games that compete with NBA games, as they may be televised on the same day or at the same time. The very existence of alternative professional sports teams in a given area may decrease NBA consumption, as consumers may decide that different professional sports are substitutes and choose to

consume, for instance, only Denver Broncos games and not Denver Nuggets games. Indeed, Kanazawa and Funk (2001) find a negative relationship between the Nielsen rating for an NBA game and the number of alternative sports franchises in the viewing area.[2]

Conversely, NBA games may be consumed as complements to other sports games; cities with multiple sports franchises may also contain sports fans who take pride in following various sports at once. A Denver Nuggets fan may be more likely to also support the Denver Broncos, than someone who does not follow basketball at all. In this case, we may expect NBA viewership to vary positively with the number of other games or teams.[3] To capture the effects of other teams that may be substitutes or compliments, the present study includes a variable controlling for the number of alternative professional sports franchises in a team's viewing area.

Consuming NBA games is certainly a leisure activity, so we may also think of work as a substitute for NBA games. With this in mind, consumption of NBA games should be inversely related to the costs of not working (the "opportunity cost" of leisure). We may expect that NBA television consumption is greater during times when leisure is cheaper for most—that is, on evenings or weekends. Kanazawa and Funk (2001) indeed find that Nielsen Ratings for NBA games are higher by about 0.9 points for games televised on weekends.[4] This study posits that NBA television consumption should be greater during evenings (during "prime time" hours) and on weekends, *ceteris paribus*.

---

[2] Mark Kanazawa and Jonas P. Funk, "Racial Discrimination in Professional Basketball: Evidence from Nielsen Ratings," *Economic Inquiry*, Volume 39, Number 4. 2001:599-608.

[3] This point is made by Shannon Carney in her thesis paper. Shannon Carney, "The Determinates of NFL Viewership: Evidence From Nielsen Ratings," *A Thesis Presented to the Department of Economics, The Colorado College*. 2003

[4] Kanzawa and Funk, 604

The model includes a control variable for games played during prime time hours, and games played during weekends.

Consumer Expectations

Previous studies have shown that sports teams who perform better than other teams in their league attract more television viewers.[5] This seems to make intuitive sense, but economic reasoning relates this phenomenon to consumer expectations. Consumers base their decision of whether or not to watch an NBA game (or consume anything, for that matter) on the utility they expect to derive from watching. If we make the reasonable assumption that fans obtain more utility from a watching a game if their team wins rather than loses, we can model a fan's expected utility as follows:

$$E(U)= Pr_W(U_W) + P_{rL}(U_L)$$

And, assuming fans draw utility of 100 for a home team win and 50 for a loss:

$$E(U)=P_{rW}(100) + P_{rL}(50)$$

The utilities derived from a win (U_W) and a loss (U_L) are weighted by their respective probabilities, (Pr_W) and (Pr_L), to yield a simple equation for expected utility of watching any NBA game. A team who has a record of winning 80% of their games (a win percentage of .800) most likely has a higher perceived probability of winning their next game than a team who has won only 30% (.300 win percentage) of their games. With this in mind, it is easy to see from our equation that as the quality of a team improves, Pr_W rises, and fans can expect more utility from watching a game. In other words, more fans will tune in the better their team performs.

---

[5] Aldrich, Arcidiacono, and Vigdor (2005), Carney and Fenn (2004), Kanazawa and Funk (2001)

A higher win percentage for the opposing team may also have a positive affect on consumption, however. Fans may draw even more utility if their team can beat a better team and defy popular expectations—an "upset" win. Indeed, Kanazawa and Funk (2001) find that Nielsen ratings for NBA games are higher as the quality of the local team *and* its opponent improves, all else being equal.[6] The present study relates win percentages for both teams to viewership.

It would be a mistake, however, to reason that a team who wins *all* of their games will attract the most viewers. Leeds and von Allmen point out that:

> The Cleveland Browns' dominance of the All American Football conference in the late 1940's led to declining attendance at all games, including those played in front of Cleveland fans. The predictability of the outcome made the game boring, even for Browns fans.[7]

Another conjecture regarding consumer expectations is that competition should have a positive effect on consumption. If consumers expect that they already know the outcome of a game before it is played, they have little incentive to watch (this idea is also know as the "uncertainty of outcome hypothesis", and was first presented by Rottenberg in 1956)[8]. The present study contains a variable for competitiveness of a given game, as related by the difference in final score.

NBA teams play 82 regular season games, which is much more, for instance, than NFL teams—which play 16 games per season. Because there are so many games played over the course of the season, early season games may matter less to consumers due to

---

[6] Kanazawa and Funk. 604

[7] Michael Leeds and Peter von Allmen, The Economics of Sports (Boston: Pearson Education, Inc. 2005). 41.

[8] Simon Rottenberg, "The Baseball Players' Labor Market," *The Journal of Political Economy*, Volume 64, Number 3. 1956: 242-258.

their weaker playoff implications. If consumers derive more utility from watching meaningful games than meaningless games, they may attempt to maximize an expected utility function as follows:

$$E(U)=P_{rM}(U_M) + P_{rN}(U_N)$$

where Pr_M is the probability of watching a meaningful game, and Pr_N the probability of watching a meaningless game. If consumers derive greater utility from watching games with playoff implications—that is $U_M>U_N$—then we would expect Nielsen ratings to be higher for games later in the season; Pr_M increases as the season progresses (and Pr_N decreases).[9] Carney and Fenn (2004) find that this relationship holds for the NFL, and again, the influence of time on consumption may be even more robust for the NBA. The present study controls for games played later in the season by adding a time variable, and includes a dummy variable for playoff games.

Consumer Tastes and Preferences

Consumer tastes and preferences may also significantly affect consumption patterns. For instance, consumers may prefer to watch All-Star players because of their celebrity status and dazzling play[10]. The presence of All-Star players may not necessarily be correlated with win percentages; one can certainly cite examples of teams such as the Minnesota Timberwolves or Philadelphia 76rs who have popular All-Stars, yet fail to consistently reach the playoffs. A control variable for participation of All-Star players has been included in the present study.

---

[9] This model is a modified version of that formulated by Leeds and von Allmen. 39

[10] *See*: David J. Berri, Martin B. Schmidt, and Stacey L. Brook, "Stars at the Gate: The impact of Star power on NBA Gate Revenues," *Journal of Sports Economics*, Volume 5, Number 33. 2004: 33-52.

Kanazawa and Funk's (2001) most important finding was that televised games involving a greater proportion of white players enjoy higher Nielsen ratings, *ceteris paribus*.[11] This suggests that consumers may display what Becker (1971) referred to as a "taste for discrimination" against black players.[12] An analysis using Becker's theories can explain why a taste for discrimination would alter consumption. If we assume that the price to a consumer of watching any NBA game is p, then Becker tells us that, where a taste for discrimination is present, viewers will perceive the price of a game in which players he discriminates against are participating as $p(1+d_i)$, where $d_i>0$. At this higher perceived price, only those consumers with a perfectly inelastic demand curve will not alter their consumption patterns. Other consumers will consume less NBA games involving the discriminated against group, or none at all. Consumers may choose to consume a close substitute product, with a lower perceived price—other NBA games produced by teams who they do not discriminate against. If the majority of NBA consumers have a taste for discrimination against black players (meaning what Becker calls the Market Discrimination Coefficient MDC is positive) then *ceteris paribus*, we should expect to see television consumption vary positively with the proportion of an NBA team that is white. The present study includes variables that account for the proportion of black athletes in a game, as well as the race of the coach.

Number of Consumers in the Market

---

[11] Kanazawa and Funk. 604

[12] Gary S. Becker. The Economics of Discrimination(Chicago, University of Chicago Press, 1971).

The number of available consumers may also significantly affect demand. The market demand curve is just the summation of every individual's quantity demanded at each price, so the more individuals in the market, the higher should be market demand. We should expect NBA television consumption to vary positively with the number of consumers in the market. Previous research, however, finds only weak evidence that larger markets boost Nielsen ratings.[13] The present study controls for population in the viewing areas.[14]

Consumer Income

Depending on whether televised NBA games are a normal or inferior good, greater income may either increase or decrease consumption. If televised games are a normal good, an increase in income may mean that an individual can devote less time to working, and more to leisure activities such as watching sports. Televised games may be inferior, however; an increase in income may result in a consumer choosing to attend games, whether than watch them on television. In their studies on the determinants of NBA attendance, Schollaert and Smith (1987) find that income does positively affect attendance,[15] while Burdekin and Idson (1991) find that it has no impact.[16] Income effects on television consumption may be difficult to observe—as watching an NBA game on television comes at relatively little direct financial cost. Previous research on

---

[13] Mark Kanazawa and Jonas P. Funk, "Racial Discrimination in Professional Basketball: Evidence from Nielsen Ratings". 604

[14] It will be shown in the next chapter that the number of households is found in the denominator of the present study's dependent variable (the Nielsen rating), and so it has not been included as a separate, independent variable.

[15] Schollaert and Smith. 80

[16] Burdekin and Idson, 184

NBA television consumption has not taken income into account (although Carney and Fenn (2004) find that *NFL* television consumption varies negatively with income).[17] The present study controls for average income in the viewing areas.

The Economic theory and previous research discussed in this chapter have yielded some testable hypotheses. Substitutes and compliments, such as other professional sports franchises, should affect NBA television consumption. Similarly, consumer expectations should also affect consumption, and would be measurable in certain team performance variables such as win percentage. Consumer preferences for player or coach race may also affect demand, along with the number of market participants, income, and own price of watching NBA games. The hypothesis that each of these variables is a significant determinant of NBA television consumption is tested in the following chapter.

---

[17] Kanazawa and Funk

Shannon Carney and Aju J. Fenn, "The Determinants of NFL Viewership: Evidence from Nielsen Ratings," *Colorado College Working Paper 2004-02.*

CHAPTER IV

DATA AND METHODS

This study uses data on television viewing of cable and broadcast network NBA games televised in national markets. All games were played over the 2005-2006 regular NBA season, beginning in November and ending in April. The unit of observation is a single game, and observations are included for 29 of the 30 NBA teams (the sole exclusion is the only Canadian team, the Toronto Raptors, for which Nielsen ratings data could not be obtained). The data set represents 148 games over the period, which comprises the majority of nationally televised games during the 2005-2006 season. The size of the audience watching each game is measured by the Nielsen rating (*RATING*), provided by Nielsen Media Research. FIGURE 4.1 provides a description of the empirical model used, while TABLE 4.1 provides a list of variables and definitions.

FIGURE 4.1

Empirical Model of the Determinates of NBA Game Viewership

RATING= f(WIN%LOC, WIN%OP, ALLSTARSLOC, ALLSTARSOP, PRIMETIME, WEEKEND, PROGAMES, WEEK, PLAYOFF, BLKCOACHLOC, BLKCOACHOP, DIFSCORE, WHPLAYLOC(or WHMINLOC), WHPLAYOP(or WHMINOP), POPLOC, POPOP).

TABLE 4.1

Definitions for the Explanatory Variables

Variable	**Definition**
RATING	Nielsen Rating for game
WIN%LOC	Win percentage of home team
WIN%OP	Win percentage of away team
WHMINLOC	Number of minutes played by white players on the local team's roster
WHMINOP	Number of minutes played by white players on the opposing team's roster
WHPLAYLOC	Number of white players on home team roster
WHPLAYOP	Number of white players on away team roster
ALLSTARSLOC	Number of players on home team who participated in last All-Star game
ALLSTARSOP	Number of players on away team who participated in last All-Star game
PRIMETIME	Dummy for games shown between 6:30 and 9p
WEEKEND	Dummy for weekend games
PROGAMESLOC	Number of competing franchises in local team market
PROGAMESOP	Number of competing franchises in opposing team market
BLKCOACHLOC	Dummy for a black coach
BLKCOACHOP	Dummy for a black coach for away team
WEEK	Week of Season
DIFSCORE	Absolute value of difference in score
POPLOC	Estimated population in local market
POPOP	Estimated population in opposing market

In the model presented, the dependent variable is the Nielsen rating *(RATING).* Nielsen ratings represent the number of televisions tuned in to a specific program divided by the total number of televisions in a specific viewing market. A television is

considered to be tuned into a particular program if Nielsen's monitoring meters indicate that that television is tuned in for at least 6 minutes. Nielsen collects television viewership data by selecting a random sample of households in each of 56 viewing markets in the US and measuring the viewing activity of these households using meters and participant's journals. Nielsen Media Research chooses viewing households in a manner such that no demographic group, such as teens or African-Americans, is systematically under or overrepresented with respect to their presence in the overall US population. Therefore, the percentage of teen or African-American viewers in a Nielsen sample closely resembles the percentage of teen or African-American viewers in the greater US population.[1]

The goal of the model presented here is to capture the effects of those factors which influence a viewer's decision to watch a particular NBA game. The variable *(RATING)* is a proxy for television viewership. Other determinants of viewership are represented with variables that proxy team, player, and game characteristics and statistics. Data for these variables has been collected from the Official Website of the National Basketball Association.[2]

Following the methodology of Kanazawa and Funk (2001), the present study uses two measures of white player presence to test for consumer preferences for white players. The variables *(WHMINLOC)* and *(WHMINOP)* provide the number of minutes played by white players in each game for the local and opposing teams, respectively. Minutes of white playing time were collected by examining box scores for each of the 148 games,

---

[1] Nielsen Media Research, Guide to Reports and Services, 2006

[2] The Official Website of the National Basketball Association, *http://www.nba.com*. NBA Media Ventures, 2006.

which provide statistics on the number of minutes each player played in each game. Measuring white minutes controls for the possibility that fans may not respond to marginal white player presence; a team with a roster comprised of 14 players, 9 white and 5 black, may receive the same viewership as an all-black team if only the 5 black players receive playing time. Conversely, fans may respond to white player presence even if these players are on the bench. If this is the case, the number of white minutes of playing time may not matter as much as the number of white players on the team's roster. The variables *(WHPLAYLOC)* and *(WHPLAYOP)* relate the number of white players on both the local and opposing teams who were listed as active on the roster at the time of the game. Because rosters can continuously change throughout the season—marginal players especially may be relegated to the National Basketball Association Development League (NBADL) or traded—careful attention has been made to include a count of only those white players active on each roster at the time of each game.

The possibility that fans may have racial preferences for coaches is tested by including variables which relate the races of the head coaches on the local and opposing teams. The variables *(BLKCOACHLOC)* and *(BLKCOACHOP)* are dichotomous variables measuring the effect of the race of each coach on the Nielsen rating. Each variable takes on the value 1 if the coach is black, and 0 otherwise. If fans display a taste for white players, it is plausible to reason that they may also prefer to watch games coached by white coaches.

To isolate the effects of the variables relating coach and player race, it is necessary to control for all other factors which may influence a viewer's decision to view a particular basketball game. The variables *(WIN%LOC)* and *(WIN%OP)* measure team

quality for local and opposing teams. These variables relate game day win percentage for both teams, which is calculated as the number of games won divided by the total number of games played in the season up to that point. Kanazawa and Funk found that team quality as measured by win percentages for both teams had a stronger effect on viewership than any other factor.[3] We should expect to see positive coefficients on each of these variables because better teams should attract more viewers.

Viewer interest may also be greater for teams with players who are easily recognizable and have proved their abilities on the court. The variables *(ALLSTARSLOC)* and *(ALLSTARSOP)* relate the number of players on each team's roster who were named to last season's (2004-2005) All-Star Game. All-Star players are chosen every year by seasoned basketball media, and the players named to the All-Star team represent the most popular and best performing athletes. These variables should vary positively with the Nielsen rating if fans prefer to watch players with celebrity status and established track records.

The previous chapter has provided the theoretical basis for the effect that the timing of the telecast may have on the Nielsen rating. With these ideas in mind, we should expect that games shown on evenings and weekends may systematically enjoy higher Nielsen ratings, as well as games shown later in the season. Kanazawa and Funk find that games shown on weekends are subject to Nielsen ratings higher by about 0.9 percentage points. The present study uses the variable *(PRIMETIME)*, which takes on the value 1 if the game is shown between 6:30 and 9:00P.M. and 0 otherwise, and *(WEEKEND)*, which takes on the value 1 for games shown on weekends and 0 otherwise,

[3] They find that an increase of .10 in home team win percentage leads to an increase in the Nielsen rating of 1.8, and a similar increase in the Away team's win percentage leads to an increase of .28 in the Nielsen rating.

to measure the possibility of higher Nielsen ratings due to lower opportunity costs of time. The variable *(WEEK)* relates the week of the season, with the week beginning November 1st as week 1 (November 1st marked the opening of the regular season, and was the date of the first nationally televised game that year). The coefficient on the variable *(WEEK)* should be positive if indeed fans are more likely to watch games with greater playoff implications.

Competition may also affect demand for any particular NBA game. Sports fans may prefer to follow professional football, baseball, ice hockey, or another professional basketball team (Los Angeles, for instance, has 2 professional basketball teams). Variables relating the number of competing professional sports franchises, *(PROTEAMSLOC)* and *(PROTEAMSOP)* have been provided as a proxy for competition. These variables relate the number of men's professional ice hockey teams (as designated by the National Hockey League), professional baseball teams (Major League Baseball teams), or other professional basketball teams in the designated team's host city area.[4] If competition detracts from viewing for a particular basketball game, coefficients on these variables should be negative (although they may be insignificant if the effects cancel each other out).

As explained in the previous chapter, competitiveness of each game may also affect viewership because the outcome of the game is less predictable. The present study attempts to control for competitiveness of each game with the variable *(DIFSCORE),* which relates the absolute value in the difference in the final score for each game. By employing this variable, the assumption is made that NBA consumers know that a game

[4] All data for these variables was collected from the official municipal websites of the appropriate host cities.

is going to be competitive prior to the game being played, and that this competitiveness is reflective in the final score. Indeed, this methodology has been employed by Carney and Fenn (2004) in their study on the determinants of NFL viewership.[5]

Summary statistics for selected explanatory variables are presented in TABLE 4.2 below.

TABLE 4.2

Definitions and Summary Statistics for Selected Explanatory Variables

Variable	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
WIN%LOC	0.57	0.13	0.30	0.82
WIN%OP	0.58	0.12	0.29	0.81
WHMINLOC	49.16	30.68	0.00	152.23
WHMINOP	44.88	27.93	0.00	116.07
WHPLAYLOC	3.45	1.31	0.00	6.00
WHPLAYOP	3.45	1.36	0.00	6.00
ALLSTARSLOC	1.22	0.92	0.00	3.00
ALLSTARSOP	1.35	0.85	0.00	3.00
PROGAMESLOC	2.39	1.54	0.00	7.00
PROGAMESOP	2.50	1.45	0.00	7.00
DIFSCORE	10.08	7.36	1.00	36.00
POPLOC	2304902.99	1642049.12	566960.00	7366950.00
POPOP	2530593.47	1778640.85	664290.00	7366950.00

As indicated in TABLE 4.2, there is an average of 3.45 white players on each NBA team's roster, who play an average of about 47 minutes (the average of the values for home and away teams) per game. This represents 19.59% of all minutes played in the sample, or about one-fifth. Assuming an average roster size of 14 players, whites represent about 24% of the roster, so white playing time is roughly proportional to white presence. Also worth noting is that mean win percentages are not far from .500,

[5] Shannon Carney and Aju J. Fenn, "The Determinates of NFL Viewership: Evidence From Nielsen Ratings," *Colorado College Economics and Business Working Paper No. 2004-02*

indicating that the sample includes games played by teams with a wide range of skill levels. The remaining summary statistics yield expected results: teams win or lose games by an average of 10 points (with a standard deviation close to 7), indicating a fair amount of competition in the league. There are less than 2 All-Star players on the average NBA team, and between 2 and 3 alternative professional sports franchises in average viewing areas of over 2,000,000 people.

This chapter has presented descriptions of the data for each of the variables used in the model. The Ordinanry Least Squares (OLS) method is used to test the adequacy of the model and the significance of the variables. Regression results are provided in the next chapter.

CHAPTER V

RESULTS AND CONCLUSIONS

This chapter will discuss the results of the regression models described in the previous chapter. The first section of the chapter will discuss the regression results for race variables in all 3 models. The next section will focus on Model 3, which achieves a slightly higher F-statistic and coefficient of determination than the other two models. The final portion of the chapter will discuss the conclusions that can be drawn from the results, and provide suggestions for further research.

TABLE 5.1 displays the regression results for all 3 models. T-statistics are displayed beneath their respective coefficients in parentheses, and significant t-statistics are denoted with a (*).[1] A blank cell indicates that the variable was not included in that particular regression.

TABLE 5.1

Results for OLS Regression Models

VARIABLE	MODEL 1	MODEL 2	MODEL3
Intercept	-0.065	-0.155	-0.164
	(-0.220)	(-0.554)	(-0.590)
WHMINOP	--	-0.002	-0.002
		(-2.764)***	(-2.962)***
WHMINLO	--	-0.001	-0.001
		(-1.593)*	(-1.659)**

[1] * = 10% significance, ** = 5%, *** = 1%

WHPLAYOP	-0.041	--	--
	(-2.244)**		
WHPLAYLO	0.016	--	--
	(-0.732)		
STARSOP	0.005	0.002	--
	(-0.234)	(-0.094)	
STARSLO	0.012	0.014	--
	(-0.54)	(-0.643)	
WINPEROP	0.262	0.266	0.299
	(-1.560)*	(-1.569)*	(-1.779)**
WINPERLO	0.539	0.402	0.381
	(-3.019)***	(-2.306)**	(-2.405)***
DIFSCORE	-0.003	-0.003	--
	(-1.232)	(-1.083)	
PROGMOP	-0.029	-0.029	-0.027
	(-1.832)**	(-1.891)**	(-1.922)**
PROGLO	0.016	-0.001	-0.001
	(-0.960)	(-0.096)	(-0.104)
WEEKEND	0.554	0.579	0.590
	(-8.861)***	(-9.422)***	(-9.993)***
PRTIME	-0.157	-0.130	-0.134
	(-3.033)***	(-2.469)***	(-2.641)***
BKCOCOP	-0.104	-0.070	-0.060
	(-1.937)**	(-1.448)*	(-1.296)*
BKCOLO	-0.110	-0.127	-0.130
	(-2.009)**	(-2.343)***	(-2.420)***
AVGTKOP	0.002	0.003	0.003
	(-0.878)	(-1.438)*	(-1.639)*
AVGTKLOC	0.005	0.005	0.005
	(-2.885)***	(-3.098)***	(-3.165)***
INCMLO	0.000	0.000	0.000
	(-3.769)***	(-3.157)***	(-3.413)***
INCMOP	0.000	0.000	-4.92E-06
	(-2.647)***	(-1.825)**	(-1.772)**
Adjusted R-squared	**0.703**	**0.717**	**0.721**
F-statistic	**9.224**	**9.794**	**10.713**

Race Variables in Models 1 and 2

Model 1 uses variables which relate the number of white players on each team's roster, as well as dummy variables for black coaches, to test for consumer based discrimination. Several of the coefficients yield noteworthy results; the number of white players on the opposing team's roster (WHPLAYOP) seems to negatively affect the

Nielsen rating; an additional white player on the opposing team's roster decreases the Nielsen rating by .04 percentage points; this represents an average decrease of 55,266 viewers nationwide. The coefficient on this variable is highly significant, with the t-statistic of -2.24 indicating that we can accept the coefficient results at higher than the 95% significance level (though not quite at the 99%). The coefficient on the variable relating the number of white players on the home team's roster is insignificant at standard levels, indicating that fans' demand for televised NBA games is unrelated to the racial characteristics of the local team. This indicates that fans may be more worried about the performance of the local team than more peripheral characteristics (the results of the coefficients on the win percentage variables confirm this hypothesis). The negative coefficient on the (WHPLAYOP) suggests that NBA fans display a taste for diversity, or what Gary Becker refers to as "nepotism."[2] These results are in stark contrast to those of Kanazawa and Funk (2001)[3] who find that NBA fans have a taste for discrimination against black players.

This taste for diversity is present in the results of Model 2, which show a negative and highly significant coefficient on the variable (WHMINOP) relating the number of minutes played by whites on the opposing team. The coefficient shows that an additional hour of white playing time decreases the Nielsen rating by about .13 percentage points, an average of 179,614 viewers in the sample. This coefficient is significant at higher than the 1% level. Again, the variable relating white minutes for the local team is

---

[2] Gary S. Becker, The Economics of Discrimination(Chicago: University of Chicago Press, Ltd., 1971). 15

[3] Mark T. Kanazawa and Jonas P. Funk, "Racial Discrimination in Professional Basketball: Evidence From Nielson Ratings," *Economic Inquiry*, Volume 39, 2001:599-607.

insignificant at the 5% level, although the win percentage (WINPERLO) for the local team has relatively high explanatory power.

Coefficients on the black coach variables in both Model 1 and Model 2 provide some interesting results. Although the variables that test for the significance of a black coach on the opposing team (BKCOCOP) are insignificant at the 95% level, the variable (BKCOCLO) testing for effects of head coach race on the local team is highly significant and negative in both models. In the first model, a black head coach on the local team reduces the Nielsen rating by .11 percentage points, close to a 152,000 viewer decrease. In the second model a black head coach reduces the rating by .13 percentage points. (This is about the same effect that an additional hour of white playing time has on the rating). In all 3 models, the (BKCOLO) variable is negative and significant at higher than the 95% level.

Model 3 Results

Model 3 removes some of the insignificant variables, yielding a higher adjusted R-squared and a stronger F-statistic. Model 1 explains 70.3% of the variation in the Nielsen rating, Model 2 explains 71.7%, and Model 3, 72.1%. Because explanatory power is slightly stronger for variables relating white playing time than for variables relating number of white players on the roster, Model 3 uses the variables relating (WHMINLO) and (WHMINOP). Neither Model 1 nor Model 2 finds the number of All-Stars on either team to be significant. This is consistent with the findings of Kanazawa and Funk (2001), who also find no explanatory power in the number of All-Stars participating in a game. This may be because fans place more interest in the team's

success overall than on individual star power. The variables (STARSOP) and (STARSLO) have been removed from Model 3.

Neither Model 1 nor Model 2 finds significance in the variable relating the difference in score (DIFSCORE) as a measure of competitiveness. A further examination of the (DIFSCORE) variable reveals why: the variable may not be as good a measure of competition as previously thought. The variable assumes that viewers have a good idea that a game will be competitive before the game takes place. Viewers can not, in actuality, predict the final score before hand, and so the difference in final score should not have any affect on a viewer's decision to watch. However, if people who were not watching the game learned that the game was close, they may choose to turn it on. This hypothesis would assume that potential viewers who were not watching had some other way of knowing the score. Insignificance of the (DIFSCORE) variable suggests that this hypothesis is inaccurate, and so difference in final score has no impact on viewership.

Model 3, then, removes the All-Star and difference-in-score variables, and is rewarded with higher explanatory power. Because Model 3 has the best fit, the remainder of this discussion will be dedicated to the results of this model. As with the previous 2 models, Model 3 finds high explanatory power in the variable (WHMINOP) relating number of minutes played by whites on the opposing team. All other things held constant, an additional hour of opposing team white playing time (WHMINOP) decreases the Nielsen rating by about .53 percentage points, representing a decrease of 732,274 nationwide viewers on average. This variable is significant at higher than the 99% level, and is consistent with the results of the other 2 models. The variable relating number of minutes played by whites on the home team (WHMINLO) shows that an additional hour

of white playing time by the home team yields a Nielsen rating lower by about .08—or about 110,532 viewers on average (this result should be interpreted with some scrutiny, however, as it is significant at only the 90% level). Results of the (BLKCOLO) variable are also consistent with the results of the previous 2 models. All other things constant, a black coach on the local team reduces the Nielsen rating by about .13 percentage points, which represents an average decrease of over 179.615 viewers nationwide. This variable is significant at higher than the 98% confidence level.

Other variables yield expected results. Win percentages have a significant impact on Nielsen ratings; an increase of .10 in the win percentage of the local team (say, the difference between a team playing .400 ball versus .500 ball) increases the Nielsen rating by .04 percentage points, significant at higher than 98%. The Nielsen rating increases by .03 percentage points (about 41,450 viewers) for a .10 increase in the opposing team's win percentage (this coefficient should be eyed with some scrutiny, as it is significant at only the 90% level).

The number of competing pro games in each team's market, represented by the variables (PROGLO) and (PROGOP), are insignificant at standard levels. This shows that fans may be indifferent to the number of other professional sports teams in the same area as a professional basketball team.

Average ticket price in each viewing market was controlled for in order to test the hypothesis that viewing a game is a substitute for watching a game. If this were the case, the higher the ticket price, the higher should be the Nielsen rating (assuming that attendance and television viewership are substitutes, and that tickets are a normal good). Coefficients suggest that there is a weak relationship between ticket prices and

viewership. Average ticket price in the local market (AVGTKLO) is significant at higher than the 99% level, and an increase in the ticket price of $1 leads to a .005 percentage point increase in the Nielsen rating, or 6,908 viewers on average. This is consistent with the idea that an increase in the price of substitutes leads to an increase in demand—as viewing a game or attending a game are substitutes. Average ticket price in the opposing team's market (AVGTKOP) is insignificant at standard levels.

The variables relating income in both the local and opposing team markets prove to have little effect on the Nielsen rating. Although the variable on (INCMLO) is highly significant, its coefficient is such a small number (-0.000000492) that an income increase of $1 has almost no effect on the Nielsen rating. However, because the coefficient is negative, televised basketball games may be an inferior good. The coefficient on (INCMOP) is insignificant.

Games shown on weekends enjoy significantly higher Nielsen ratings. A game shown on the weekend enjoys, *ceteris paribus,* a rating .59 percentage points higher than a game shown during the week. This coefficient is significant at higher than the 99% level, confirming the hypothesis that fans have a lower opportunity cost of watching televised NBA games on weekends. Games shown during prime time, however, have lower Nielsen ratings. A game shown during prime time has a Nielsen rating .13 percentage points lower than other games, *ceteris paribus*. This coefficient is highly significant, at higher than the 99% level. This may be because of the increased competition faced during prime time hours. Networks show their most popular shows during prime time, and these shows may be substitutes for NBA games. The increased availability of substitutes may decrease the demand for televised NBA games.

Most of the coefficients on the week variables are significant, and a few of the results of these variables are worth noting. All other things held constant, games shown during the eighth week of the season enjoy the highest Nielsen ratings, higher by about .64 percentage points, or 88,426 viewers *ceteris paribus*. A closer examination of the eighth week of the season reveals why: in the 2005-2006 season, week 8 represented the week of Christmas. This week hosts the wildly popular and publicized Christmas day games, which are often between historical rivals or the best teams in the league. For instance, the 2005-2006 season Christmas day games were all between teams that eventually made the playoffs (Dallas Mavericks versus Sacramento Kings, San Antonio Spurs versus Detroit Pistons, and Los Angeles Lakers versus Miami Heat)—and 1 of the 3 games was between teams that had both won championships in the past 2 seasons (San Antonio and Detroit). Two of the other teams playing on Christmas, Dallas and Miami, would compete for the championship later that season. In addition, there was a highly publicized rivalry between the Miami Heat and Los Angeles Lakers instigated by a previous season trade of a high profile Lakers star to the Heat. The higher Nielsen ratings enjoyed in week 8 are undoubtedly due to these popular Christmas Day game teams, and perhaps the lower opportunity cost of time most people have on Christmas.

Econometric Problems and Fixes

Econometric problems were detected and corrected for in all 3 of the models. In particular, heteroskedasticity and non-normality were detected. Heteroskedasticity was initially present in all three of the models.[4] A correction suggested by White (1980)[5] was

[4] In Model !, the Obs*R-squared was originally 66.50
In Model 2, the Obs*R-squared was originally 100.12

used to correct for heteroskedasticity. Non-normality was detected using the Jarque-Bera test for each of the models.[6] Non-normality was corrected for by taking the log of the dependant variable in each of the three models. This yielded appropriate Jarque-Bera statistics and normality.

Conclusions

The factors that have been shown to determine the Nielsen ratings of NBA games are as follows: player race, coach race, game-day win percentages, time of day the game is shown, time of week the game is shown, and time of season the game is shown. The results are in agreement with those of Kanazawa and Funk (2001) in all respects sans the race variables.

The high levels of significance of the race variables in all 3 models provide means for drawing conclusions regarding consumer based discrimination in the NBA. This study finds results that are in agreement with Kanazawa and Funk (2001) in one respect: race does matter to NBA fans, though not in the way that many might expect. Fans display a taste for diversity, or "nepotism" as Becker (1971) calls it[7], in their taste for watching black players on the court. This would mean that Becker's "discrimination coefficient" (DC) is negative for NBA fans with regards to black players.

In Model 3, the Obs*R-Squared was originally 63.94

[5] H. White, "A Heteroscedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroscedasticity," *Econometrica*, 48, 1980, 817-838.

[6] Original Jarque-Bera Stats were as follows:
Model 1: 264.19
Model 2: 407.86
Model 3: 456.46

[7] Gary S. Becker, The Economics of Discrimination(Chicago: University of Chicago Press, Ltd., 1971). 15

These results are consistent with results in studies examining viewership of professional football; Aldrich, Arcidiacono, and Vigdor (2005), for instance, find that fans of the NFL display a taste for diversity in favoring games which involve black quarterbacks. [8]

Of equal importance are the negative and significant coefficients on the black coach variables in all three models. All other things constant, a black coach heading the local team decreases viewerhip by an average of 179,615 viewers nationally. During the 2005-2006 NBA season, 10 NBA teams (exactly one-third of all teams in the league) were headed by black coaches. Nine of these teams are represented in the sample set (the sole exclusion is the Toronto Raptors, headed by coach Sam Mitchell). It is doubtful that this study, then, is subject to some of the problems Carney and Fenn (2004) faced in their study in determining the effects of a black coach on NFL viewership—as there were very few black NFL coaches available for their test.[9] It is important to note that the teams headed by black coaches represent a wide range of skill levels; 3 of the 9 made the 2006 NBA playoffs, and one of these teams even competed in the championship game that same year. In addition, 7 out of these 9 teams contributed All-Star players in the All-Star game of that season (10 of the 24 total players who played in the 2005-2006 All-Star game were from teams headed by black coaches). As All-Star players are elected All-Stars by the press, these teams don't represent lower profile teams or have less popular

---

[8] Eric M. Aldrich, Peter S. Arcidiacono, and Jacob L. Vigdor, "Do People Value Racial Diversity? Evidence from Nielsen Ratings" *Topics in Economic Analysis and Policy*. Volume 5, 2005. pp. 1-21.

[9] Shannon Carney and Aju J. Fenn, "The Determinates of NFL Viewership: Evidence From Nielsen Ratings," *Colorado College Economics and Business Working Paper No. 2004-02*

Carney and Fenn's regression results find that games headed by white coaches have lower Nielsen ratings, *ceteris paribus*. However, they also point out that only 3 NFL teams in their sample had black coaches, all 3 teams of high quality. Therefore, their coach race variable may pick up underlying effects of the 3 teams being better than average.

players. It is highly unlikely, then, that the negative coefficients on the black coach variable would be picking up some other underlying effects.

The fact that some of the race variables differ in significance for home and away teams deserves some discussion. The ratings data employed in this study represent national ratings for nationally televised games, so if national markets were uniform in viewer taste, we would expect variables for both home and away teams to yield similar results. In other words, (BKCOLO) *and* (BKCOOP) should be significant if fans prefer not to watch blacks in leadership positions. An interesting finding here is that win percentage of the local team (WINPERLO) seems to have a greater effect and greater significance than (WINPEROP), and race of the local coach (BKCOLO) seems to have greater significance and impact on the Nielsen rating than race of the opposing team coach (BKCOCOP). These results make sense if local markets have more weight in the Nielsen ratings data than the other markets surveyed; fans in local markets may be more likely to watch a game that was happening in their back yard than fans in other markets, and their preferences may have greater weight to the overall regression results. The stronger coefficients on (BKCOCLO) and (BKCOCOP) would suggest that local fans care more about the coach and win percentage of their local team. An examination of the Nielsen ratings data provides a possible reason why this greater weight to local market preferences might occur: national data represents samples collected from 56 different national markets. Each of the 29 US NBA teams is located in 1 of the 56 Nielsen markets. Fans may display greater interest in games being played in their own city or region; they may be more interested in home games than away games. Although this theory is not tested here, it could explain the greater effects of (BKCOLO) and

(WINPERLO) over (BKCOCOP) and (WINPEROP), as home fans may make up a larger portion of the Nielsen data.

This study has found player race and coach race to have significant power in determining NBA game viewership. NBA viewers display a taste for black players; on average the addition of one white player to a team's roster leads to a decrease of 55,266 viewers nationally, whereas an additional minute of white playing time leads to a decrease of 12,205 viewers. Conversely, evidence found in this study shows that fans display a distaste for black coaches. A black head coach reduces viewership by an average of 179,615 viewers nationwide. A reexamination of Thurow(1969) and Becker's (1971) theories of racial discrimination may explain why. Becker hypothesized that when a discriminating group had closer contact with a discriminator, discrimination would be greater. Thurow then presented the idea that a discriminator may attempt to maximize social distance between themselves and the discriminated against group. The pool of NBA players is majority black, and has been since the 1960's.[10] However, NBA coaches are majority white, and more black coaches have coached in the past decade than at any other time in the league's history.[11] Because these black coaches are entering into new labor markets, and they are in leadership positions rather than just entertainment positions, they may face the social discrimination Thurow described.

The results found in this study support results of Holzer and Ihlanfeldt's (1998) study of consumer discrimination, which found that blacks in higher paid and leadership

---

[10] The NBA integrated in 1950, when the Boston Celtics drafted the first black player ever to play in the NBA.

[11] Sam Smith, "Coaches Still Earning Stripes of Another Color," *ESPN Media.* http://espn.go.com/nba/columns/misc/1434380.html. September 20, 2006; David Leonhardt, "Career Span of Black NBA Coaches," Story Originally Aired March 25, 2005 on National Public Radio.. Available from http://www.here-now.org/shows/2005/03/20050324_9.asp

positions faced greater discrimination.[12] The results of this study suggest that blacks may be preferred as entertainers, but not as leaders or decision-makers. In conclusion, results here contradict results found in previous studies of determinants of NBA viewership, and further research may be necessary.

Avenues for Further Research

One possible reason for the negative coefficients on the variables relating white players on the roster (WHPLAYOP) and white playing time (WHMINOP) is NBA fan discrimination against foreign-born players. Many of the NBA's most high profile white players are foreign born, a relatively new phenomenon for the league. At the start of the 2006-2007 season, there were 54 foreign players on NBA opening-day rosters, or 12.2% of the NBA total.[13] The results of this study—that fans prefer not to watch white players—may be a result of strong discrimination against foreign players. Fans may simply prefer to watch American players, regardless of whether they are black or white, and it just so happens that the majority of American players are black. Although it has been shown here that fans display distaste for black coaches, further research might explore the idea that fans might also display distaste for foreign born players.

---

[12] Harry J. Holzer and Keith R. Ihlanfeldt, "Customer Discrimination and Employment Outcomes for Minority Workers," *The Quarterly Journal of Economics*, Volume 113, Number 3. 1998: 835-867

[13] "Where the NBA Players Come From," *Collegiate Basketball News Online*. Available from RPI News Online, http://www.rpiratings.com/NBA.html Accessed December 19, 2006.

APPENDIX A

WEEK DUMMY VARIABLES

WEEK1D	0.554	0.578	0.580
	(-4.795)***	(-4.09)***	(-4.121)***
WEEK2D	0.436	0.458	0.468
	(-3.787)***	(-3.355)***	(-3.445)***
WEEK3D	0.332	0.367	0.372
	(-2.674)***	(-2.470)***	(-2.442)***
WEEK4	0.213	0.236	0.231
	(-1.498)*	(-1.422)*	(-1.427)*
WEEK5	0.474	0.507	0.514
	(-3.901)***	(-3.686)***	(-3.556)***
WEEK6	0.338	0.376	0.372
	(-3.287)***	(-2.678)***	(-2.587)**
WEEK7	0.366	0.423	0.433
	(-3.144)***	(-2.865)***	(-3.044)***
WEEK8	0.660	0.662	0.643
	(-2.932)***	(-2.843)***	(-2.770)***
WEEK9	0.368	0.394	0.404
	(-2.450)***	(-2.023)**	(-2.115)**
WEEK10	0.108	0.186	0.190
	(-0.533)	(-0.854)	(-0.887)
WEEK11	0.389	0.459	0.472
	(-1.758)**	(-2.138)**	(-2.179)**
WEEK12	0.461	0.500	0.500
	(-4.684)***	(-3.760)***	(-3.716)***
WEEK13	0.191	0.196	0.189
	(-1.891)*	(-1.473)*	(-1.377)*
WEEK14	0.332	0.317	0.308
	(-3.087)***	(-2.147)**	(-2.145)**
WEEK15	0.299	0.335	0.320
	(-2.626)***	(-2.417)***	(-2.260)***
WEEK16	0.173	0.223	0.203
	(-1.523)*	(-1.538)*	(-1.414)*
WEEK17	0.223	0.269	0.272
	(-1.745)**	(-1.759)**	(-1.827)**
WEEK18	0.244	0.253	0.259
	(-2.188)***	(-1.774)**	(-1.787)**
WEEK19	-0.019	0.010	.0.000
	(-0.160)	(-0.062)	(-0.006)
WEEK20	0.103	0.113	0.100
	(-0.702)	(-0.701)	(-0.625)

WEEK21	0.246	0.241	0.231
	(-2.173)**	(-1.758)**	(-1.695)**
WEEK22	0.293	0.314	0.325
	(-2.401)***	(-2.267)**	(-2.321)**
WEEK23	0.238	0.258	0.233
	(-2.341)***	(-1.958)**	(-1.763)**

SOURCES CONSULTED

Books

Becker, Gary S. *The Economics of Discrimination.* Chicago: University of Chicago, 1971.

Greene, William H. *Econometric Analysis.* New York: Macmillan, 1990.

Kahane, Leo H. *Regression Basics.* London: Sage Publications, 2001.

Leeds, Michael and Peter Von Allmen. *The Economics of Sports.* Boston: Pearson Education Inc., 2005

Pascal, Anthony H. *Racial Discrimination in Economic Life.* Lexington: Rand Corporation, 1972.

Sporting News Report. *The 2005-2006 Official NBA Register.* New York: Sporting News, 2005.

Thurow, Lester C. *Poverty and Discrimination.* Washington D.C: The Brookings Institution, 1969.

Journal Articles

Aldrich, Eric M.; Peter S. Arcidiacono, and Jacob L. Vigdor, "Do People Value Racial Diversity? Evidence from Nielsen Ratings." *Topics in Economic Analysis and Policy* 5, (2005): 1-21.

Bergmann, Barbara R. "The Effect on White Incomes of Discrimination in Employment." *The Journal of Political Economy* 79, no. 2 (1971): 294-313.

Berri, David J.; Martin B. Schmidt, and Stacey L. Brook, "Stars at the Gate: The impact of Star power on NBA Gate Revenues." *Journal of Sports Economics* 5, no. 33. (2004): 33-52.

Brown, Robert W. and R. Todd Jewell, "Is There Customer Discrimination in College Basketball? The Premium Fans Pay for White Players," *Social Science Quarterly* 75, (1994): 401-414.

Bryant, Jennings and Rockwell, Steven. "'Buzzer Beaters' and 'Barn Burners': The Effects on Enjoyment of Watching the Game Go 'Down to the Wire.'" *Journal of Sport and Social Issue* 18, no. 4 (1994): 326-340.

Burdekin, Richard C. and Todd L. Idson, "Customer Preferences, Attendance and the Racial Structure of Professional Basketball Teams," *Applied Economics* 23. (1991): 179-186

Bodvarsson, Orn B and Raymond T. Brastow, "A Test of Employer Discrimination in the NBA." *Contemporary Economic Policy* 17, no. 2. (1999): 243-255.

Desser, Arna; James Monks, and Michael Robinson, "Baseball Hall of Fame Voting: A Test of the Customer Discrimination Hypothesis." *Social Science Quarterly* 80, (1999): 591-603

Edgeworth, F.Y. "Equal Pay to Men and Women." *Journal of Economics* 32, (1922): 431-457.

Gabriel, Paul E; Curtis Johnson, and Timothy J. Stanton, "An Examination of Customer Racial Discrimination in the Market for Baseball Memorabilia," *The Journal of Business* 68, no. 2. (1995): 215-230.

Holzer, Harry J. and Keith R. Ihlanfeldt, "Customer Discrimination and Employment Outcomes for Minority Workers." *The Quarterly Journal of Economics* 113, no. 3. (1998): 835-867.

Kahn, Lawrence M. "The Effects of Race on Professional Football Players' Compensation." *Industrial and Labor Relations Review* 45, no. 2. (1992):295 -310.

Kahn, Lawrence M. "Discrimination in Professional Sports: A Survey of the Literature." *Industrial and Labor Relations Review* 44, no. 3, (1991): 395-419

Kahn, Lawrence M. and Peter D. Sherer, "Racial Differences in Professional Basketball Players' Compensation." *Journal of Labor Economics* 6, no. 1 (1988): 40-61.

Kanazawa, Mark T. and Jonas P. Funk, "Racial Discrimination in Professional Basketball: Evidence From Nielson Ratings," *Economic Inquiry* 39, (2001):599-607.

Koch, James V. and C. Warren Vander Hill, "Is There Discrimination in the 'Black Man's' Game?" *Social Science Quarterly* 69, (1988): 83-94.

Lee, Soonhwan and Chung, Hyosung, "Economic Values of Professional Sports Franchises in the United States," *The Sports Journal* 5, no.3 (2002): 2-13.

Nardinelli, Clark and Curtis Simon, "Customer Racial Discrimination in the Market for Memorabilia: The Case of Baseball," *The Quarterly Journal of Economics* 105, no. 3. (1990): 575-595.

Rottenberg, Simon, "The Baseball Players' Labor Market." *The Journal of Political Economy* 64, no. 3. (1956): 242-258.

Sailes, Gary A. "The Myth of Black Sports Supremacy." *Journal of Black Studies* 21, no. 4 (1991): 480-487.

Schollaert, Paul T. and Donald Hugh Smith, "Team Racial Composition and Sports Attendance." *The Sociological Quarterly* 28, no. 1. (1987): 71-87.

Scully, Gerald. "Economic Discrimination in Professional Sports." *Law and Contemporary Problems* 38, (1973): 67-84.

Scully, Gerald "Pay and Performance in Major League Baseball." *The American Economic Review* 64, (1974): 915-930.

Stone, Eric W. and Ronald S. Warren Jr. "Customer Discrimination in Professional Basketball: Evidence from the Trading Card Market." *Applied Economics* 31. (1999): 679-685.

Working Papers and Dissertations

Burdekin, Richard; Richard Hossfield; and Janet Kiholm Smith, "Are NBA Fans Becoming Indifferent to Race? Evidence From the 1990s," *Claremont Colleges Working Papers in Economics*, 2002

Carney, Shannon. "The Determinates of NFL Viewership: Evidence From Nielsen Ratings," *A Thesis Presented to the Department of Economics, The Colorado College*. 2003

Carney, Shannon and Aju J. Fenn, "The Determinates of NFL Viewership: Evidence From Nielsen Ratings." *Colorado College Economics and Business Working Paper No. 2004-02*

Periodicals

Adams, Russell and Adam Thompson, "Welcome to My World." *The Wall Street Journal*, 17 January 2007..

Electronic Documents

"Coaches Still Earning Stripes of Another Color," available from http://espn.go.com/nba/columns/misc/1434380.html; Internet; accessed December 4, 2006.

"If West is NBA's Logo, Should He Be?" available from http://msn.foxsports.com/nba/story/5328860; Internet: accessed March 13, 2006

"NBA At Finals Time: Sustaining Three Business Goals," available from http://cbs.sportsline.com/general/story/6408583; Internet; accessed March 13, 2006.

"The Official Website of the National Basketball Association," available from http://www.nba.com; Internet; accessed October 18, 2006.

"The Rivalries Heat Up," available from http://www.nba.com/features/rivalryweek_050220.html; Internet; accessed March 13, 2006.

"Where the NBA Players Come From," available from RPI News Online, http://www.rpiratings.com/NBA.html; Internet; accessed December 19, 2006.

Miscellaneous

Nielsen Media Research, Guide to Reports and Services, 2006

Leonhardt, David. "Career Span of Black NBA Coaches," Story Originally Aired March 25, 2005 on National Public Radio. Available from http://www.here-now.org/shows/2005/03/20050324_9.asp; Internet; accessed December 7, 2006.