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# Does Increasing Salary Discrimination in the NBA Reflect Disparity of Fans' Purchasing Power?

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## Abstract

From the late 2000s, racial salary discrimination against black players emerged in the National Basketball Association (NBA) league. At the same time in the United States, the income gap between white and black citizens, which had been decreasing in the previous 20 years, stalled in the mid-2000s and started to increase again from the late 2000s. In this study, we examine whether increasing racial salary discrimination against black players in the NBA is a reflection of the non-shrinking disparity of purchasing power of white and black citizens. Using census data, we calculate the median income ratio of white and black males in each metropolitan area where at least one NBA team is located. Then, we examine whether the white premium of the salary of an NBA player is correlated with the median income ratio between white and black citizens of the metropolitan area where the player's team is located. We find that the white premium becomes higher in a metropolitan area where the median income gap is smaller. This suggests that the non-shrinking income gap between white and black citizens is not the cause of increasing salary discrimination against black players in the NBA in the late 2000s and 2010s.

JEL Classification: J71

Keywords: racial discrimination, NBA, labor markets, salary discrimination, black–white wage gap

## 1 Introduction

Racial discrimination in the National Basketball Association (NBA) league has attracted considerable attention in both the media and economics literature. For example, in April 2014, the owner of Los Angeles Clippers was banned from the NBA permanently and fined \$2.5 million for his racism comments. Kanazawa and Funk (2001) find that TV viewing is strongly affected by the ratio of white players in the team by examining viewing data in the 1996–1997 season. Price and Wolfers (2010) show that a referee prefers players whose race is the same as the referee when he or she makes a decision about a foul.

Regarding racial salary discrimination in the NBA, the past economic literature suggests that although there was racial salary discrimination against black players in the 1980s, from the 1990s, there was no racial salary discrimination against black players (for a comprehensive survey of the literature, see Kahn (2012)). The literature even suggests there is reverse racial salary discrimination (i.e., white players are discriminated against compared to black players (Yang and Lin, 2012; Ajilore, 2014)). However, using unbalanced panel data of salaries and productivity over a long period, we find that while in the 1980s and 1990s there was no discrimination against non-white players, from the late 2000s, there was significant salary discrimination against non-white players (Naito and Takagi, 2016). More specifically, we find that white players are paid 20–25 percent more than non-white player with similar characteristics in the late 2000s and 2010s, and that this result is robust to many specification checks, such as quantile regression and controlling sample selection, type of contracts, foreign players, and a team fixed effect interacted with a year dummy.<sup>1</sup>

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<sup>1</sup>Since the majority of non-white players are black players, we assume that black players represent non-white players. Our results do not change even if we restrict to the sample including only white and black players.

A natural question arising from this finding is why racial discrimination started to arise in the NBA suddenly from the late 2000s. One hypothesis is that the increasing salary gap between white and non-white players in the NBA is a reflection of the increasing disparity of purchasing power between white and black fans. Interestingly, until the late 2000s, the median income ratio between white and black citizens was falling. However, since the late 2000s, it started to rise again (Figure 1). If each citizen prefers to see NBA players of their own race, the increasing salary discrimination against non-white players could be a reflection of the disparity of fans' purchasing power.

This study examines whether an increase of the racial salary gap between white and non-white players with similar characteristics in the NBA is a reflection of the income gap between white and non-white fans. To examine this hypothesis, we use census data from 1990, 2000, and 2010, which contain information on the income of residents of each metropolitan area where at least one NBA team is located. For each metropolitan area where at least one NBA team is located, we calculate the ratio of median income of black and white residents in the 1990, 2000, and 2010 census. Then, we check whether the white premium in the NBA is correlated with the increasing income gap between white and black residents of the metropolitan area of the team to which the players belong.

## **2 Datasets**

This study obtains information on salaries and players' productivity from several sources. We obtain information on the annual salaries of players from the ESPN

salary-ranking website<sup>2</sup>, the NBA’s reference website<sup>3</sup>, and a fan website<sup>4</sup>. For indexes of performance, birthplace, nationality, height, weight, and birth year, we collect information from the ESPN website and the reference website of the NBA players.<sup>5,6,7</sup> The salary data are available from the 1985–1986 to 2015–2016 seasons, except the 1986–1987 and 1989–1990 seasons.<sup>8</sup> We pick up observations where the starting year of the season is equal to the census year or is 1 year before or 1 year after the census year.<sup>9</sup> The median incomes of white and black residents in each metropolitan area are calculated from the census data, which are available from IPUMS USA<sup>10</sup>. Because we map the ratio of the median income of each metropolitan area calculated from the US census to the salary data, we drop the observations of Canadian teams.

### 3 Empirical model

First, we estimate the following equation separately for three different periods (1990–1991, 1999–2001, and 2009–2011):

$$\ln S_{ijt} = \beta_0 + \beta_1 White_i + \gamma_1 X_{1ijt} + \gamma_2 X_{2i} + \gamma_j + \gamma_t + \varepsilon_{ijt} \quad (1)$$

where  $i$  is the index of the individual;  $j$  is the index of the team; and  $t$  is the index of the season. To simplify the notation, we define the year  $k$  to year  $k + 1$  season

<sup>2</sup><http://espn.go.com/nba/salaries>

<sup>3</sup><http://www.basketball-reference.com/players/>

<sup>4</sup><https://www.eskimo.com/~pbender/>

<sup>5</sup><http://espn.go.com/nba/statistics>

<sup>6</sup><http://www.basketball-reference.com/players/>

<sup>7</sup>For indexes of the performance of players, we use the 12 indexes. Those indexes are discussed in detail in Naito and Takagi (2016).

<sup>8</sup>For the 1986–1987 and 1989–1990 seasons, the player’s Union and teams refused to release salary information due to a dispute.

<sup>9</sup>This implies that we pick up the 1990–1991, 1991–1992, 1999–2000, 2000–2001, 2001–2002, 2009–2010, 2010–2011, and 2011–2012 seasons.

<sup>10</sup><https://usa.ipums.org/usa/>

as season  $k$ . As discussed in the preceding dataset section, we select the observation whose season is equal to the census year or 1 year before or 1 year after the census year<sup>11</sup>.  $X_{1,ijt}$  are the indexes of performance in season  $t - 1$ . To avoid an endogeneity problem, we control the performance in season  $t - 1$  instead of the performance in  $t$ .  $X_{2i}$  represents the time invariant player characteristics, such as height.  $\gamma_j$  is the team's time invariant fixed effect.  $\gamma_t$  is the time fixed effect.  $\beta_1$  is the white premium and shows the percentage premium of the salary of a white player over a black player with similar characteristics.

In the next step, we examine whether an increase of the white premium in the late 2000s and 2010s is associated with a change of income gap of white and black fans. To denote three separate periods (1990–1991, 1999–2001, and 2009–2011), we write 1990–1991, 1999–2001, and 2009–2011 as the 1990s, 2000s, and 2010s, respectively. Let  $T = \{1990s, 2000s, 2010s\}$ . Then, we estimate the following equation:

$$\begin{aligned} \ln S_{ijt} = & \beta_0 + \sum_{k \in T} \beta_{1,k} White_i D_t^k + \sum_{k \in T} \beta_{2,k} White_i Std\_gap_{jt} D_t^k \\ & + \gamma_1 X_{1ijt} + \gamma_2 X_{2i} + \gamma_j + \gamma_t + \varepsilon_{ijt} \end{aligned} \quad (2)$$

$D_t^{1990s}$  is the dummy variable indicating whether  $t$  belongs to the first period (1990–1991). It is equal to 1 if  $t=1990$  or  $1991$ , and 0 otherwise.  $D_t^{2000s}$  is a dummy variable indicating whether  $t$  belongs to the second period (1999–2001) and is equal to 1 if  $t=1999$ ,  $2000$ , or  $2001$ , and 0 otherwise.  $D_t^{2010s}$  is a dummy variable that is equal to 1 if  $t=2009$ ,  $2010$ , or  $2011$ , and 0 otherwise.  $Std\_gap_{jt}$  is the standardized income gap between black and white citizens and is defined as

$$Std\_gap_{jt} = (gap_{jt} - \overline{gap_{jt}}) / sd\_gap. \quad (3)$$

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<sup>11</sup>The salary data of the 1989-1990 season are not available due to a dispute between players and the owners of the NBA.

$gap_{jt}$  is the median income ratio of male white citizens to male black citizens in year  $t$  in the metropolitan area where team  $j$  is located. The term  $\sum_{k \in T} \beta_{1,k} White_i D_t^k$  in equation (2) allows the coefficients of the white dummy to be different in three separate periods (1990–1991, 2009–2001, and 2009–2011). The term  $\sum_{k \in T} \beta_{2,k} White_i Std\_gap_{jt} D_t^k$  allows the coefficients of the white dummy to be dependent on the income gap between white and black citizens in three separate periods. To calculate the median income in each metropolitan, we restrict citizens to those aged from 23 to 60 years. For the season when the census is conducted, we use the census data to calculate the median income. For the season when the census is not conducted, we use the closest census data. For example, to calculate  $gap_{jt}(t = 2009, 2011)$ , we use the median income ratio calculated from the census in 2010. For  $gap_{jt}(t = 1999, 2001)$ , we use the ratio of the median income between white and black citizens calculated from the census in 2000. Similarly, for  $gap_{jt}(t = 1991)$ , we use the census in 1990.  $\overline{gap_{jt}}$  is the sample mean of  $gap_{jt}$ .  $sd\_gap$  is the sample standard deviation of  $gap_{jt}$ . In equation (2), we do not include the term  $White_i$  and  $White_i Std\_gap_{jt}$  themselves owing to multi-collinearity. Our main interest is  $\beta_{2,2010s}$ , which shows how much the percentage of the white premium increases when the white–black income ratio increases by one standard deviation. If the increasing white premium is a reflection of the disparity of purchasing power of white and black citizens, then  $\beta_{2,2010s}$  should be positive.

## 4 Result

Table 1 shows the estimation results. In columns (1)–(3), we estimate the white premium in three separate samples (1989–1991, 1999–2001, and 2009–2011). As shown in our previous study (Naito and Takagi, 2016), the columns (1)–(3) indicate that the white premium is statistically and economically significant only in the 2009–2011 sample. Column (1) shows that in 2009–2011, white players were paid 28 percent more

on average than non-white players with similar characteristics. In column (4), we estimate the white premium by pooling the three samples and allowing the white premium to vary in each decade. Columns (5) and (6) examine the hypothesis that increasing salary discrimination is a reflection of the disparity of fans' purchasing power. Columns (5) and (6) show that in an area where the ratio of the median income of white and black males is one standard deviation larger, the white premium is 9 percent lower. In columns (1)–(6), we assume that the error term is clustered for the same player. In column (7), we assume that the error term is clustered at the metropolitan area  $\times$  period. We do so because  $Std\_gap_{jt}$  is the same for the same metropolitan area and the same period. Column (7) shows that the statistical significance does not change even when we change the assumption on clustering. The results from columns (4)–(7) suggest that the non-shrinking income gap between white and black males is not the cause of increasing salary discrimination against black players in the NBA.

## 5 Conclusion

In the late 2000s and 2010s, salary discrimination against black players became significant in the NBA. White players were paid about 27 percent more than black players with similar characteristics in the 2010s. Concurrently, around the mid-2000s, the declining trend in the white–black income gap stalled and from the late 2000s, started to increase.

This study examined whether increasing salary discrimination against black players is a reflection of a change of the purchasing power of white and black citizens. Contrary to our prediction, we find that the income gap between white and black residents is not the reason for the increasing salary gap between white and black NBA players. Thus, the cause of increasing salary discrimination against black players remains unclear.

Table 1: Estimated Coefficients of Main Variables of Interest

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
white	0.276*** (0.0897)	0.0977 (0.0897)	0.0143 (0.0727)				
white×2010s dummy				0.259*** (0.0875)	0.263*** (0.0875)	0.319*** (0.0916)	0.319*** (0.0966)
white×2000s dummy				0.0444 (0.0916)	0.0406 (0.0918)	0.0636 (0.0975)	0.0636 (0.102)
white×1990s dummy				0.106 (0.0703)	0.107 (0.0705)	-0.0144 (0.0719)	-0.0144 (0.0799)
white×2010s dummy×Standardized income gap					-0.0989** (0.0473)	-0.0916* (0.0476)	-0.0916** (0.0400)
white×2000s dummy×Standardized income gap					0.00631 (0.0967)	0.0112 (0.0967)	0.0112 (0.0844)
white× 1990s dummy× Standardized income gap					0.0204 (0.0530)	0.0203 (0.0460)	0.0203 (0.0393)
season dummy × player characteristics	No	No	No	No	No	Yes	Yes
sample seasons	2009–2011	1999–2001	1990–1991	1990–1991, 1999–2001, 2009–2011	1990–1991, 1999–2001, 2009–2011	1990–1991, 1999–2001, 2009–2011	1990–1991, 1999–2001, 2009–2011
N	983	959	547	2,489	2,489	2,489	2,489
R-squared	0.521	0.607	0.597	0.618	0.618	0.650	0.650

Notes: The year  $t$  to year  $t+1$  season is defined as season  $t$ . The 2010s dummy is equal to 1 if the season is 2009, 2010, or 2011. The 2000s dummy is equal to 1 if the season is 1999, 2000, or 2001. The 1990s dummy is defined similarly. The data for the 1989 season are not available owing to a dispute between players and owners. Standardized income gap is the standardized ratio of the median income of white and black males aged 23–60 years. Clustering robust standard errors are in parentheses. All specifications are clustered at the player's level except (7). In (7), it is assumed that the error term is clustered within the metropolitan area  $\times$  period, where period is defined as 1990–1991, 2009–2011, or 2009–2011. All regression specifications include the indexes of performance, weight, height, team fixed effect, and season fixed effect as additional explanatory variables. In addition, specifications (4)–(7) include standardized income gap as an explanatory variable.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

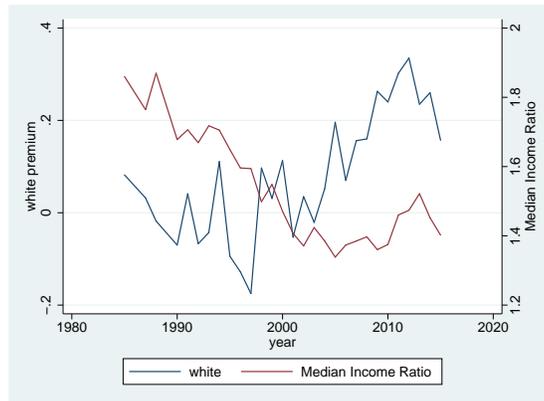


Figure 1: White at year  $t$  plots the coefficient of the white dummy when the log of salary is regressed on the white dummy and other covariates using the sample of year  $t$ . The median income ratio plots the ratio of the median income of male white and black citizens aged 23 to 60 years, calculated from the CPS data.

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