A Reexamination of Salary Discrimination in Professional Basketball*

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Objective. Recent studies of race-based salary discrimination in professional basketball have found that black players are paid less than white players for similar levels of performance. This paper reexamines the question using an alternate method of sample selection. Methods. Rather than use annual salaries for all players from a given season, this analysis will focus on free-agent salaries over a 12-year period. In much of the literature annual wage figures for players are measured against performance that was conducted long after their multiyear contracts, and the prevailing salaries used in the samples, were negotiated. By focusing solely on players who have recently negotiated new contracts, a better fit between salary and past performance is achieved. Results. Controlling for performance and other explanatory effects, regression results indicate that no significant salary shortfall exists for black players. This null finding is supported by an accompanying Chow test, which shows that the return in the form of salary to higher performance levels is the same for both races. Conclusions. This study analyzes whether race-based salary discrimination exists in the NBA after measurement error prevalent in other analyses is reduced. Findings from a less noisy sample indicate that race is not a factor in determining salary. This suggests that, at least with regard to veteran free agents, the NBA is a level playing field for players of both races.

Is there a significant difference in earnings between black and white NBA players, once performance and other explanatory effects are controlled? Previous research in this area is plentiful and has evolved over time. Early studies conducted by Rockwood and Asher (1976), Mogull (1977, 1981), and Scott, Long, and Somppi (1985) found that on average both black and white players perform equally and are paid equally; however, the sample of NBA players used in each of these

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studies was not random and was too limited to provide definitive empirical proof. Later studies conducted by Wallace (1988), Koch and Vander Hill (1988), Kahn and Sherer (1988), and Brown, Spiro, and Keenan (1991) that dealt with a much larger sample of NBA players consistently found evidence of salary discrimination, based on substantial, significant discrepancies between black and white player salaries for given levels of athletic performance. Results from these later studies are considered by some to be more accurate based on their use of larger samples, which suggests that general trends have been captured rather than characteristics of a particular sample (Koch and Vander Hill, 1988; Kahn, 1991).

This study reexamines the issue. It differs from other studies of race-based salary discrimination in the way the sample of players was selected. When distinguishing between salary dispensation and athletic performance by race, previous studies have included a sample of players from a single season and incorporated their career performance statistics along with their annual salaries for that particular year into a single regression equation. This method of sampling implicitly assumes that players sign new, single-year contracts every season; however, the norm over the last several decades has been the multiyear contract. As such, these studies make no distinction between players who have just signed contracts and players who are currently in the midst of completing contracts. Thus, in many cases annual wage figures for players are measured against performance that was conducted long after their multiyear contracts, and the prevailing salaries used in the sample, were negotiated (Mason, 1975; Meyer, 1975). This systematically introduces measurement error into the model.

By focusing solely on players who have recently signed new contracts, noise is reduced as performance variables more accurately measure the level at which productivity affects wage. Because a relatively small number of players sign new contracts in any given year, free-agent signees will be “pooled” across seasons in this analysis; more

1 The same sample of players was used by Mogull (1977, 1981) and Rockwood and Asher (1976). A questionnaire was sent to all professional basketball players during the 1970–71 season and only 28 players, or 10 percent of the population, responded. The respondents were evenly split between blacks and whites, while the professional basketball population at the time was over two-thirds black. Scott, Long, and Somppi (1985) were vague in detailing how their sample of 26 players was collected, stating only that they included “numerous players whose salaries could be ascertained” (p. 55).

2 Wallace (1988) included 229 players from the 1984–85 season, Koch and Vander Hill (1988) included 278 players from the 1984–85 season, Kahn and Sherer (1988) included 226 players from the 1985–86 season, and Brown, Spiro, and Keenan (1991) included 227 players from the 1984–85 season. Using ordinary regression equations that contained a number of performance variables, along with a dummy variable to account for race, those authors, respectively, found a 16.8 percent, 11 percent, 20 percent, and 14 percent salary gap significant at the 5 percent level.
explicitly, this study’s sample is comprised of free-agent players who signed new contracts during the 12-year period from 1983 to 1994. Since salary is considered to be a function of past NBA performance (among other things), all first-year players and those players still working under their first NBA contracts were excluded from the sample; these players had no NBA performance experience at the time their most recent contracts were signed. Hence, my sample was restricted to veteran NBA free agents who would be performing under at least their second NBA contract.

The Salary Cap: A Digression

A point that must be addressed when considering player salaries is the NBA salary cap. In 1983 when a majority of teams were struggling financially, the NBA adopted a league-wide salary cap. The cap was to act as a ceiling by limiting the amount of money teams could spend on players. Further, the cap would equalize spending across the board; this would allow smaller markets to compete effectively with larger markets (Hackney, 1990). In theory, the salary cap could prevent talented players in some cases from receiving their due. For example, talented players who perform for talent-rich teams could not command the salaries that talented players on talent-poor teams could. In addition, trades would be difficult to consummate; only players making near-identical salaries could be dealt for one another (Berry, Gould, and Staudohar, 1986; Noll, 1991).

While the salary cap appears quite stringent in theory, upon further inspection it proves to be rather “toothless” (Kahn and Sherer, 1988). First, the cap allows each team to spend whatever sums necessary to re-sign its own free agents, even if such expenditures place the team above the stated cap (Hausman and Leonard, 1994). Second, the cap focuses on year-to-year expenditures. A team has the ability under the cap’s guidelines to offer a player a long-term contract with highly skewed terms; the contract may pay very little in the current year, which would allow a team to squeeze the player under the current cap, while paying much higher sums (often in the form of “balloon payments”) in the future. In the case of a player acquired in a trade, a team has the ability under the cap’s guidelines to rework the terms of the player’s contract. A large portion of the player’s salary may be

3 The reason for selecting the 12-year period from 1983 to 1994 will be discussed in the next section.

4 All veteran free agents who were reported to have signed guaranteed contracts during the 12 years of analysis (1983 to 1994) were included in the sample, effectively capturing a majority of the veteran NBA free-agent population during the period in question.
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defered to later years in order to fit him under the team’s current cap (Hackney, 1990).

The preceding examples illustrate the relative ineffectiveness of the NBA salary cap with regard to preventing professional basketball players from receiving their financial dues. The cap offers sufficient latitudes that allow players to receive fair market value based on their own individual abilities and performance levels. In addition, even if the cap did provide difficulties, the period on which the free-agent sample of players was drawn, 1983 to 1994, coincides with the period in which the salary cap has applied. Thus, all contracts in the survey were signed under the auspices of the cap, thereby eliminating any problems that could occur between contracts signed under cap limitations and contracts signed without cap interference. Therefore, the NBA salary cap, as a possible variable that could affect player salaries (and thereby infringe upon a study of discrimination), is ignored throughout the duration of this study.

Data and Model

As first conceived by Scully (1974) and Mogull (1974), this study applies economic theory to the study of race-based salary discrimination. Financial compensation in the form of average annual salary levels for similarly performing black and white NBA players is compared to test for the existence of discrimination. An OLS regression model serves as the impetus for providing empirical results. Productivity is measured by using individual performance characteristics, along with other variables to control for position, contract length, and individual year effects, as proxies. The following equation is estimated:

\[ \ln S = \beta'X + \gamma R + \varepsilon. \]

- **S** = the player’s average annual salary level over the length of his contract;
- **X** = a vector of performance and other explanatory variables;
- **R** = a dummy variable to control for a player’s race, 1 for black players and 0 for white players; and
- **\varepsilon** = a random error term, with the classical normality properties, summarizing all other influences on player compensation.

A \( \gamma < 0 \) result indicates that controlling for all explanatory variables black players earn lower levels of compensation than white players.

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Professional basketball player salaries are highly skewed, ranging from as little as $100,000/year to nearly $6,000,000/year. Taking the natural log of salary moderates or dampens the influence of these exceptionally high or low salaries that only a select few players earn.
A sample of 368 veteran free agents over the 12-year period from 1983 to 1994 was collected and consists of 281 black players (76.4 percent of the total) and 87 white players (23.6 percent of the total), which effectively reflects the actual NBA racial breakdown during the seasons in question. NBA performance is represented by average career performance for a player through the particular year when his most recent contract was signed. Average career performance is used due to the advent of guaranteed multiyear contracts, which have steadily developed in professional basketball over the past decade. Year-to-year contracts based on recent performance are an anachronism in today’s NBA. Multiyear contracts and long-term expenditures have become the norm, so athletes are believed to be judged and paid in relation to their entire professional career, not just their recent performance. At the same time, there is some anecdotal evidence that suggests a player strives for greater productivity in his “option year” as a way of obtaining an additional multiyear contract; thus, additional variables will be included to test for said option year effects.

Player performance statistics come from various editions of The Sporting News Official NBA Register and The Complete Handbook of Pro Basketball. Salary data come from the “Pro Transactions” section of The Sporting News over the nine-year period from 1983 to 1991 and from the 1992, 1993, and 1994 versions of The Complete Handbook of Pro Basketball. The salary figures reflect only guaranteed money, and consist of an average of base salary, deferred money, and bonuses over the length of any long-term contracts. The salary figures do not incorporate incentive-laden clauses tied to specific performance levels, which are found in many guaranteed contracts; these incentive-based clauses reflect nonguaranteed payments and therefore cannot be calculated as guaranteed salary. In addition, contract values only reflect those years which are guaranteed; no option years are considered or included. Annual salaries in the sample represent one-year salary averages; long-term contract terms are converted into one-year averages by dividing the total value of the contract by the number of years the contract runs. When comparing average annual salaries across years, I have set 1983 as the base year and deflated annual salary averages in succeeding years by the appropriate inflation level, as measured by the Consumer Price Index.

Salary data in each of the studies discussed were drawn from various newspapers and The Sporting News. The only exception was Mogull’s study, in which salary data were received directly from professional basketball players through the use of questionnaires.

The terms of a majority of long-term contracts do not call for identical annual payments; most, if not all, contracts are escalating. Unfortunately, specific contract terms are rarely disclosed, with contract lengths and total contract values all that are usually available. Thus, representing annual salaries as one-year averages seems to be the most consistent, if not the best, result that can be achieved.
The model’s independent variables, in large part, attempt to measure a player’s individual worth to his team’s success. Two productivity variables, one that measures a player’s career productivity (Career-Prod) and one that measures his most recent season’s productivity (SeasonProd), were included in the sample as index variables; these variables include all possible ways a player can help or limit his team’s performance. By indexing a number of statistical measures into a single variable, a more accurate assessment of a player’s worth can be ascertained (Quirk and Fort, 1992; Scully, 1995).\(^8\) Two “court-time” variables, one representing career (CareerCT) and one representing most recent season (SeasonCT), are also included to measure a player’s impact on his team’s success. Court time is defined as the number of minutes a player logs relative to the number of minutes that are possible. The court-time variables measure (1) how prone a player is to injury and (2) how highly his coach values his play; it is assumed that a healthy, valued performer will spend more time on the court. A player’s experience is also proxied by including a seasons-played variable. It is hypothesized that a player performs more consistently as he matures (Seasons), but at some point his skills begin to diminish and he becomes less valuable to the team; this decline in physical ability is proxied by squaring seasons played (SqSeasons).

Additional explanatory variables are included that also relate to performance. It is often speculated that taller players are more valuable to a team than shorter players, because talented “big men” are harder to find than talented “small men.” This effect can be tested through the use of two dummy variables: Center and Forward. Since bigger players almost always play either center or forward, these dummy variables will determine if taller players are indeed paid a premium. A variable, Star, that measures how many times a player has been selected as an all-star by the fans relative to his years in the league is included to proxy for a player’s popularity; it is assumed that management wants not only to win, but also to increase attendance, so an exciting player that fans enjoy watching should be worth a premium (Hausman and Leonard, 1994). An additional variable, Champ, that measures the number of championship teams a player has been affiliated with as a percentage of his years in the league is also included. Champ serves as a proxy for both popularity and experience; a player with a championship past is assumed to be quite recognizable to fans as well as possess a “winning” attitude.

\(^8\) The index is constructed as follows: [Points + Rebounds + Assists + Steals + Blocked Shots - .5(Personal Fouls) - Turnovers – Field Goal Attempts Missed – Free Throw Attempts Missed]/(Minutes Played). This index is used both for a player’s career performance as well as his most recent season’s performance (Bellotti, 1992).
The length of player’s contract (Length) is also included as an explanatory variable. It is unclear whether players who make large annual sums are also granted longer contracts. Perhaps teams are willing to pay more annually over a shorter period of time than commit to a more modest annual salary over a longer timespan; Length provides some insight into this matter. Finally, 11 dummy variables (Dummy8384 through Dummy9394) that proxy for the 12 years that the analysis spans are used to control for individual year effects. The amount of revenues a team has to spend, as well as the amount a team is allowed to spend under the cap, changes from year to year; the inclusion of dummy variables is intended to control for these changing effects.

Empirical Results

Before an analysis of regression results is undertaken, an analysis of means of the variables is considered. As shown in Table 1, black players generally outperform white players as measured by the model’s performance and explanatory variables; black players log more court time during their most recent seasons (SeasonCT) and over their careers (CareerCT), as well as producing better during their most recent seasons (SeasonProd) and over their careers (CareerProd). All these

<table>
<thead>
<tr>
<th>Variable</th>
<th>Black Mean</th>
<th>Black SE</th>
<th>White Mean</th>
<th>White SE</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salary</td>
<td>13.49</td>
<td>0.055</td>
<td>13.37</td>
<td>0.099</td>
<td>0.120</td>
</tr>
<tr>
<td>Length</td>
<td>3.537</td>
<td>0.145</td>
<td>3.517</td>
<td>0.232</td>
<td>0.020</td>
</tr>
<tr>
<td>Forward</td>
<td>0.384</td>
<td>0.003</td>
<td>0.310</td>
<td>0.005</td>
<td>0.074</td>
</tr>
<tr>
<td>Center</td>
<td>0.171</td>
<td>0.002</td>
<td>0.391</td>
<td>0.005</td>
<td>-0.220**</td>
</tr>
<tr>
<td>Seasons</td>
<td>5.847</td>
<td>0.196</td>
<td>5.655</td>
<td>0.308</td>
<td>0.192</td>
</tr>
<tr>
<td>SqSeasons</td>
<td>44.94</td>
<td>3.113</td>
<td>40.11</td>
<td>4.173</td>
<td>4.830</td>
</tr>
<tr>
<td>CareerCT</td>
<td>0.496</td>
<td>0.010</td>
<td>0.396</td>
<td>0.018</td>
<td>0.100**</td>
</tr>
<tr>
<td>SeasonCT</td>
<td>0.515</td>
<td>0.012</td>
<td>0.428</td>
<td>0.025</td>
<td>0.087**</td>
</tr>
<tr>
<td>CareerProd</td>
<td>0.474</td>
<td>0.006</td>
<td>0.436</td>
<td>0.012</td>
<td>0.038**</td>
</tr>
<tr>
<td>SeasonProd</td>
<td>0.466</td>
<td>0.008</td>
<td>0.435</td>
<td>0.015</td>
<td>0.031*</td>
</tr>
<tr>
<td>Star</td>
<td>0.121</td>
<td>0.015</td>
<td>0.094</td>
<td>0.024</td>
<td>0.027</td>
</tr>
<tr>
<td>Champ</td>
<td>0.040</td>
<td>0.007</td>
<td>0.046</td>
<td>0.012</td>
<td>-0.006</td>
</tr>
</tbody>
</table>

*N = 281 87

*p < .05 (two-tailed test).

**p < .01 (two-tailed test).
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Differences are statistically significant at the 5 percent level. White players are more likely to be taller on average than black players, as the Center variable shows a significant difference for whites. Finally, a glance at the Salary variable shows that black players on average actually earn $81,662 more per year than white players, which amounts to an 11.3 percent salary gap; this difference, however, is not statistically significant.

Table 2 presents regression results. Three separate regressions are considered: a regression that includes all 368 players and includes the Race variable (column 1), and two separate regressions for black (column 2) and white (column 3) players, respectively. Contract length (Length) is significant for both black and white players, showing that a direct relation exists between the length and the average annual value of a player’s contract. These results suggest that a valued player not only receives a longer contract, but also a larger annual salary over the duration of said contract. Aside from Length, however, black and white players appear to be judged quite differently with regard to compensation. Bigger (Forward and Center) black players are rewarded, whereas similar white players are not. White players earn more with experience (Seasons) until their skills diminish (SqSeasons), while such criteria do not affect black players. Court time is important for both black and white players in terms of their careers (CareerCT), but the most recent season’s court time (SeasonCT) is only significant for blacks. Popularity (Star) and championship experience (Champ) do not significantly affect compensation for either black or white players. Lastly, only black players are rewarded for productivity, and then only with regard to their career accomplishments (CareerProd). This result proves to be quite detrimental to advocates of the “option year” hypothesis; no significant results are uncovered that show that players of either race are rewarded for production in the last season of a contract.

If race-based salary discrimination exists in professional basketball, the coefficient on Race will provide an estimate of the direction and magnitude. In this case, the Race variable indicates that a 5.3 percent salary shortfall exists for black players relative to white players; this finding, however, is not statistically significant at the 5 percent level ($p = .41$). Given this result, the null hypothesis ($H_0$: no compensation differentials based on race) cannot be rejected. This result is in stark contrast to previous studies that consistently report significant salary differentials between black and white players.

Before a conclusion that black and white players earn similar salaries for similar levels of performance is reached, possible criticisms of procedures should be entertained. The statistical technique used in this study, a single regression equation for both black and white players combined with a dummy variable accounting for race, could lead to
### TABLE 2
Regressions Investigating the Determinants of LnSalary

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>LnSalary, All Players</th>
<th>LnSalary, Blacks</th>
<th>LnSalary, Whites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>11.762 (0.188)**</td>
<td>11.727 (0.217)**</td>
<td>11.767 (0.392)**</td>
</tr>
<tr>
<td>Race</td>
<td>-0.053 (0.064)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length</td>
<td>0.099 (0.014)**</td>
<td>0.089 (0.015)**</td>
<td>0.137 (0.037)**</td>
</tr>
<tr>
<td>Forward</td>
<td>0.158 (0.059)**</td>
<td>0.188 (0.067)**</td>
<td>0.030 (0.148)</td>
</tr>
<tr>
<td>Center</td>
<td>0.221 (0.075)**</td>
<td>0.306 (0.094)**</td>
<td>0.119 (0.140)</td>
</tr>
<tr>
<td>Seasons</td>
<td>0.005 (0.028)</td>
<td>-0.015 (0.031)</td>
<td>0.180 (0.076)</td>
</tr>
<tr>
<td>SqSeasons</td>
<td>-0.001 (0.002)</td>
<td>-0.001 (0.002)</td>
<td>-0.014 (0.006)</td>
</tr>
<tr>
<td>CareerCT</td>
<td>1.057 (0.287)**</td>
<td>0.753 (0.331)*</td>
<td>1.828 (0.623)**</td>
</tr>
<tr>
<td>SeasonCT</td>
<td>0.752 (0.207)**</td>
<td>0.863 (0.244)**</td>
<td>0.830 (0.443)</td>
</tr>
<tr>
<td>CareerProd</td>
<td>2.134 (0.591)**</td>
<td>2.250 (0.663)**</td>
<td>1.828 (1.411)</td>
</tr>
<tr>
<td>SeasonProd</td>
<td>0.430 (0.431)</td>
<td>0.538 (0.468)</td>
<td>-1.516 (1.555)</td>
</tr>
<tr>
<td>Star</td>
<td>-0.168 (0.211)</td>
<td>-0.211 (0.245)</td>
<td>-0.010 (0.482)</td>
</tr>
<tr>
<td>Champ</td>
<td>0.286 (0.230)</td>
<td>0.142 (0.265)</td>
<td>0.742 (0.516)</td>
</tr>
<tr>
<td>Dummy8384</td>
<td>-1.553 (0.133)**</td>
<td>-1.555 (0.143)**</td>
<td>-1.490 (0.395)**</td>
</tr>
<tr>
<td>Dummy8485</td>
<td>-1.381 (0.138)**</td>
<td>-1.295 (0.159)**</td>
<td>-1.643 (0.294)**</td>
</tr>
<tr>
<td>Dummy8586</td>
<td>-1.393 (0.126)**</td>
<td>-1.336 (0.138)**</td>
<td>-1.562 (0.309)**</td>
</tr>
<tr>
<td>Dummy8687</td>
<td>-1.122 (0.124)**</td>
<td>-1.020 (0.138)**</td>
<td>-1.427 (0.300)**</td>
</tr>
<tr>
<td>Dummy8788</td>
<td>-1.061 (0.133)**</td>
<td>-0.998 (0.142)**</td>
<td>-1.576 (0.374)**</td>
</tr>
<tr>
<td>Dummy8889</td>
<td>-0.757 (0.126)**</td>
<td>-0.731 (0.142)**</td>
<td>-0.828 (0.297)**</td>
</tr>
<tr>
<td>Dummy8990</td>
<td>-0.561 (0.117)**</td>
<td>-0.540 (0.130)**</td>
<td>-0.734 (0.272)**</td>
</tr>
<tr>
<td>Dummy9091</td>
<td>-0.495 (0.122)**</td>
<td>-0.449 (0.135)**</td>
<td>-0.699 (0.280)**</td>
</tr>
<tr>
<td>Dummy9192</td>
<td>-0.344 (0.130)**</td>
<td>-0.198 (0.156)</td>
<td>-0.585 (0.272)**</td>
</tr>
</tbody>
</table>
### TABLE 2—continued

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>LnSalary, All Players</th>
<th>LnSalary, Blacks</th>
<th>LnSalary, Whites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dummy9293</td>
<td>-0.353</td>
<td>-0.391</td>
<td>-0.173</td>
</tr>
<tr>
<td></td>
<td>(0.124)**</td>
<td>(0.135)**</td>
<td>(0.310)</td>
</tr>
<tr>
<td>Dummy9394</td>
<td>-0.321</td>
<td>-0.192</td>
<td>-0.839</td>
</tr>
<tr>
<td></td>
<td>(0.129)*</td>
<td>(0.142)</td>
<td>(0.302)**</td>
</tr>
<tr>
<td>Cases</td>
<td>368</td>
<td>281</td>
<td>87</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.7513</td>
<td>.7581</td>
<td>.8190</td>
</tr>
<tr>
<td>Adj. $R^2$</td>
<td>.7347</td>
<td>.7375</td>
<td>.7568</td>
</tr>
<tr>
<td>Overall $F$</td>
<td>45.19</td>
<td>36.75</td>
<td>13.16</td>
</tr>
</tbody>
</table>

**Note:** Figures in parentheses are standard errors.

* $p < .05$ (two-tailed test).

** $p < .01$ (two-tailed test).

Spurious interpretations (Goldberger, 1984; Kahn, 1991). This kind of model assumes the same slope for each race, thereby assuming that black and white players experience the same return (in the form of salary) to higher performance levels, and simply asks: controlling for performance, do black players receive lower salaries simply for being black? It may be the case that white players are rewarded at higher rates relative to black players for increased performance; this is discriminatory. Thus, before a confident interpretation of regression results is reached, it must be ascertained whether black players do indeed receive the same return to higher performance levels as do white players. Following the lead of Mogull (1981), an additional test, the Chow test, will be employed for this purpose.

A Chow test determines if a significant difference between two sets of regression parameters (in this case black and white athletic performance) exists when the variables within each equation are the same. Stated differently, the Chow test is used to evaluate the relative magnitudes of the two coefficients of determination that are garnered from the separate regressions run on black and white players (Mogull, 1981; Kennedy, 1992). While the Chow test does not identify the direction or the magnitude of discrimination, it can identify whether salary discrimination exists across the performance spectrum and provides a lens through which regression results may be interpreted. To fulfill the

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9 Stated another way, is there a difference between black and white intercepts, i.e., is the coefficient on the race variable significant?

10 For a more detailed description of the Chow test, see Chow (1960) and Kennedy (1992).
requirements for a Chow test, three separate regressions were run; the first incorporated the whole sample (without the inclusion of the RACE variable) while the second and third incorporated just black and white players, respectively. The equation for the Chow test is as follows:

\[
F = \frac{[\text{SSE}_t - (\text{SSE}_b + \text{SSE}_w)]/k}{(\text{SSE}_b + \text{SSE}_w)/(t - 2k)}
\]

where

- \(\text{SSE}_t\) = sum of squared regression residuals for the entire sample (blacks and whites included);
- \(\text{SSE}_b\) = sum of squared regression residuals for black observations;
- \(\text{SSE}_w\) = sum of squared regression residuals for white observations;
- \(t\) = number of black and white players estimated in the regression; and
- \(k\) = number of parameters estimated in the model, including the constant term.

To reiterate, the Chow test indicates whether a significant difference exists between the athletic performance of black and white athletes with respect to receiving financial compensation. The null hypothesis \((H_0)\) states that no difference in pay across the performance spectrum exists between the two races; stated differently, no discrimination exists. The alternative hypothesis \((H_a)\) states that a racial difference does exist between pay and performance; stated differently, discrimination exists.

The result of the Chow test for the regression on LnSalary is as follows:

\[
F = \frac{[76.887 - (56.759 + 13.196)]/23}{(56.759 + 13.196)/(368 - 46)} = 1.39.
\]

The critical \(F\) (numerator = 23 df, denominator = 322 df) is greater than 1.39 at the 5 percent level, so the null hypothesis of no discrimination cannot be rejected.

In summary, the results from the Chow test together with the regression evidence provide a strong case against the existence of race-based salary discrimination in professional basketball. The regression results indicate, assuming the same slope for each race, that a significant salary shortfall for black players does not exist; i.e., black players do not start at a lower level of income simply for being black. The Chow test evaluates whether the “same slope” assumption is justified, i.e., whether black and white players receive the same salary return for increased performance. Results from the Chow test indeed reflect that blacks and whites receive the same return to higher performance levels.
Thus, these null results suggest that at least with regard to veteran free agents the NBA is a level playing field for players of both races.

A Corollary: The Mid-1980s Hypothesis

It has been assumed to this point that noise prevalent in other studies' samples led to significant findings of race-based salary discrimination against black players. Once this noise is reduced, by limiting the selection set to free-agent players only, no significant discriminatory findings are uncovered. An alternate hypothesis to this story could be offered: perhaps recent seasons have displayed less discrimination than was present in the mid-1980s when all of the aforementioned analyses were undertaken. If this is indeed the case, then perhaps the different findings (discrimination versus no discrimination) are due to the different time periods sampled (single-year studies in the mid-1980s versus a pooled analysis spanning the years from 1983 through 1994).

This hypothesis can be tested using the data in this analysis. If there was something systematically different about the mid-1980s with regard to salary discrimination, it should appear in free-agent contracts that were signed during that period. By interacting Race with the dummy variables that represent particular seasons in the mid-1980s, it can be determined whether race was a factor in salary dispensation. Five interaction terms (Race × Dummy8384 through Race × Dummy8788) were created and added as separate variables to the original regression equation. The particular regression results that are of interest, the coefficients and standard errors of these five interaction

| TABLE 3 |
| Analysis of Interaction Terms |
| Coefficient (SE) |
| Race × Dummy8384 | -0.319 (0.311) |
| Race × Dummy8485 | 0.105 (0.222) |
| Race × Dummy8586 | -0.224 (0.230) |
| Race × Dummy8687 | 0.224 (0.208) |
| Race × Dummy8788 | 0.221 (0.305) |

*p < .05 (two-tailed test).
**p < .01 (two-tailed test).
terms, are presented in Table 3. None of the five interaction terms are significant, and three of the five coefficients actually exhibit the wrong signs (indicating discriminatory treatment against white players). These results suggest that the mid-1980s hypothesis is unfounded; there is nothing systematically different about the mid-1980s from other years used in this study with regard to salary discrimination against black players.

Conclusion

The majority of research conducted in recent years concerning salary discrimination in professional basketball has found significant salary shortfalls of varying degrees for black players. These results have suggested that salary discrimination with regard to race in professional basketball is a foregone conclusion; black players, as compared to white players, do not receive equivalent salaries for equivalent levels of production. All these studies, however, share a common deficiency: no distinction was made within their samples as to when a given player signed a contract. Thus, some of the performance history that was used to explain a given player’s salary occurred long after his contract, as well as his current annual wage, was negotiated; this leads to results that might be interpreted spuriously. By concentrating solely on veteran NBA players who had just signed guaranteed free-agent contracts, this analysis provides a better fit between salary and past performance. Regression results from this less noisy sample run contrary to previous findings: no statistically significant salary differentials based on race are uncovered. An accompanying Chow test supports the regression findings: the return (in the form of salary) to increased performance is the same for both races. Thus, once noise is eliminated from the sample, the evidence suggests that the labor market for veteran free agents in the NBA is a level playing field with regard to race.

These results, however, do not suggest that discrimination in all forms is absent from professional basketball. For example, regression results indicate that differences exist in which variables are significant for each race; this suggests that perhaps blacks and whites are judged by different criteria with regard to salary. This is not salary discrimination per se (as the Chow test shows that both races receive the same return to performance), but it does suggest that some sort of differential evaluation is taking place. In terms of sampling, by limiting the analysis to veteran free agents, the dynamics that are involved in rookie salaries are neglected. As such, there may exist barriers to entry into professional basketball that are not uncovered in a study of veteran free agents. There is also a pool of “fringe” players that exists in professional basketball; these players never sign guaranteed contracts and
must earn their spots on teams via preseason camps. Again, discrimi-
nation may occur in this labor market that is not uncovered in a study
of veteran free agents.¹¹ Findings with regard to these and other forms
of potential discrimination will be left to other research studies. SSQ

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¹¹ A summary of research conducted with regard to other forms of discrimination in
basketball and other sports is found in Kahn (1991).


