**Salary Discrimination by Race & Nationality in the NBA**

International Wage Premiums in the NBA

 An Undergraduate Research Opportunity Project

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1. **Introduction**

Throughout the years, there has been an increasing number of professional basketball players recruited by National Basketball Association (NBA) teams from countries all over the world. According to the NBA’s own statistics (NBA, 2018), the recently completed NBA season began with 108 international players, from 42 different countries. By allowing for a variety of foreign players, the American league is able to expand its fan base beyond the domestic market, ultimately leading to an increase in the demand for its product. Such an increase in viewers creates an increase in a team’s support, leading to a noticeable increase in revenue.

Previous studies have examined the existence of salary discrimination in earlier years. Are foreign born players underpaid relative to players born in the United States? Hoffer and Friedel (2014), wages for foreign players and wages for their American counterparts have equilibrated. They found that an average wage premium of approximately $900,000 was being received by foreign born recruits. In contrast to these results, Gaines (2016) established that only early foreign recruits have a foreign wage premium and in later years, his panel showed no existence of such premiums.

This study explores the question of whether different nationalities are being paid appropriately for their contributions to the team, or if salary discrimination, based on race and nationality, exists within the NBA. Contributions to the literature on the potential existence of wage premiums for foreign born players, and thereby providing further clarity between the opposing views of the previously mentioned studies will be shown. Therefore, through analysis, we shall find out whether discrimination exists, as well as its trajectory over time. Are the salaries of domestic and foreign athletes diverging or converging?

**2. Literature Review**

As discussed in the introduction, Hoffer and Friedel (2014), found that wages have equilibrated. Gaines (2016) contradicted Hoffer and Friedel by establishing that only early foreign recruits have a foreign wage premium. Additionally, he claimed that in later years, his panel showed no existence of such premiums. Both studies wanted to know whether foreign players were being paid differently than their American counterparts. It is clear that premiums may have been changing over time, but where are they at now?

Yang *et al.* (2010), investigated discrimination by salary and wage premiums between the 1999-2000 and 2007-2008 seasons. A main difference between the given article and what this study will focus on is that this study uses regression analysis on the same equation for three different seasons. Yang *et al.* (2010)included fixed-effects models to incorporate their unbalanced panel. Yang *et* al. (2010) utilized the Mincer-type earning equation to create their own empirical equation filled with determinants. They were able to deem that forward, center, experience, age, game, minute, rebound, assist, steal, blocks, points, change, and star were the variables of utmost interest out of all the player characteristic and performance statistics.

Yang *et al.* (2010) determined that a player’s position impacts the wage earned. Forwards were paid less than guards, while centers receive higher wages than both forwards and guards. One (potential) reason provided for this result may derive from offensive strategies transitioning as time goes on. Being a starter was seen to positively indicate a wage premium while the number of steals had the opposite effect. Most variables were found significant in determining salary were on-court records. As expected, change was negative and statistically significant. Implying that the changing of teams in the previous season decreases salary in the current-season. On the other hand, being a star player grants higher pay, since star players attract more fans and increase revenue for NBA teams overall. When taking into account nationality, statistical tests showed that the foreign variable had a negative coefficient, significant at the 1% level, suggesting lesser salaries for international players. Interesting enough, Yang *et al.* (2010) found that salary premiums based on nationality became significantly negative compared to 1996-1998 when it was positive, as well as in 1998-2002 when Eschker *et al.* (2004) claimed indifference.

Since the 1990s, several studies revealed no statistically significant difference between Blacks and Whites in terms of salary (Dey, 1997; Hamilton, 1997; Gius & Johnson, 1998; Kahn & Shah, 2005). Even further, Yang *et al.* (2010) displayed that Blacks or Non-White players receive higher pay than Whites in the NBA. It is possible that discrimination now lies on Whites. This may be due to the increasing odds of Black players being starters over Whites. In that case, a change in higher salaries would be justifiable based on on-court performance and skill. Due to the consistent results since the 1990s, this study does not further implore the possibilities of discrimination within Black and White players.

**3. Model**

To examine the roles of on-court performance and nationality on salary, two equations were utilized. For the first model, the dependent variable will be the expected salary of NBA players. The independent variables can be found in Table 1 with their corresponding definition. To assess each independent variable, the Mincer-type earning equation was used to specify the following salary equation:

Salaryit = β0 + β1Star + β2Change + β3PF + β4SF + β5C + β6PG + β7Age + β8Age2+ β9Games + β10Starter + β11Minutes + β12Rebounds + β13Assists + β14Steals + β15Blocks + β16Turnovers + β17Fouls + β18ppg + ui + eit (1)

While Yang *et al.* (2010) established an assumption that a player’s current salary should be determined by the personal characteristics and on-court statistics for the previous year, this study employed statistics of the same year due to time constraints in data collecting and cleaning. However, STAR and CHANGE determinants were taken from previous years despite the others. Many on the court variables {*Blocks, Steals, Assists*} are expected to be positive, based on the predictions of Yang *et al.* (2010) and with basic knowledge of the sport of basketball. A player who scores a large number of points per game (*ppg*), would be expected to receive a higher salary. We would however expect CHANGE, whether or not a player changed teams in the previous season, to be negative due to the fact that changing teams usually corresponds with negative explanations. Additionally, FOULS could be another variable with negative effects on salary since an increase in fouls can cause an increase in player dissatisfaction and possible on-court sportsmanship that is less than satisfactory. Otherwise, Yang *et al.* (2010) also includes no indication on player positions due to contradicting results in their literature reviews.

In addition to the Mincer-type earning equation, we take from that model the individual wage premium (ui), the fixed part of the wage premium. The unobserved heterogeneity among players or market premium will give light into wage premiums due to time-invariant characteristics. The predicted individual-specific wage premium (ûit) on nationality, foreign market size, GDP by country, and foreign professional basketball leagues is as follows:

ûit = α0 + α 1International+ α 2lgdp + α 3lpop + α 4ProLeague + wi . (2)

 A binary variable (*International*) was created, that equals one if the player is an international player and zero if the player is U.S. born. A negative coefficient would indicate that there is salary discrimination based on nationality. Alternatively, a significantly positive coefficient would indicate that the NBA has a nationality premium. LGDP, LPOP, and PROLEAGUE would be expected to all have positive signs. The NBA going global brings in the possibility for foreign fans that will increase revenue for the organization as a whole. Therefore, bringing in players from larger economies (*lgdp*) and large population countries (*lpop*) would be of greater benefit to the NBA and its teams. Therefore, if wage premiums are what it takes to increase the number of individuals being recruited from those large markets, then it would be important for the NBA to account for premiums.

**4. Data**

This study removed the variable of experience and added some additional characteristics such as more specific positions (*PF, SF, C, PG, SG*) as well as STARTER, TURNOVERS, and FOULS in comparison with variables discussed in the literature review. An expansion of variables was used to determine the most important and understandable variables for this specific study.

 Binary variables, based on the five on court positions {power forward, small forward, center, point guard, and shooting guard} were created. The shooting guard position was withheld in order to avoid falling into the dummy variable trap. There was also a large amount of additional dummy variables included within this study. The STAR, CHANGE, INTERNATIONAL, and professional league (*ProLeague*) variables were also included in the study as dummy variables. For each, we had the variable equal to one if true and zero if false.

Data is obtained for three different seasons, 2009-2010, 2014-2015, and 2018-2019. Since there are gaps in between with varying players within each season. Each season is run separately in our testing since few players span across the three seasons that were studied. Table 2 shows a breakdown of the sample sizes for each season, which equates to 1,166 observations. A variety of sources were used in order to collect player characteristics and home country information. Individual player’s salaries and on-court performance were gathered from the websites, including but not limited to the official NBA website (NBA.com), the Worldwide Leader in Sports website (ESPN.com), and Basketball-Reference.com. Table 1 classifies each variable to its definition for the purpose of this study. Tables 3, 4, and 5 summarize each season’s basic statistics in chronological order respectively. Generally speaking, the results of all three tables seem to be relatively close in values for all summaries. Although, the minimum salary is seen to increase as the seasons go on. The reason for this is unknown at this time.

**5. Empirical Results**

 The results of the individual season regressions, based on equation (1) are displayed in Table 6. In the first, 2009-2010 season, several determinants of NBA salary are statistically significant. The positive and significant coefficient on STAR indicates that there is an increase in salary for players that were deemed a NBA All-Star in the previous season. A player’s age (*age*), the number of games played as a starter (*Starter*), and the in game statistics (*Assists, Blocks, and ppg*) also resulted in positive significance. This implies that the number of games started in a season, the number of assists on average per game, the number of blocks per game, and of course, the number of points scored per game increases salary as the variable itself increases. However, PG, AGE2, and MINUTES resulted in negative significance. Being a point guard results in a lower salary, and this is true relative to the one position variable removed from the model (*shooting guard*). This results in a change of offensive strategy. Point guards are no longer typically the star player. They may be the position that ties the offense together, but they are the initial beginning to big plays made by other positions in the end. AGE2, being a players age squared, results expectedly as negative due to a decrease in marginal effect. As for minutes played, we would expect that the more minutes you play the more you would be paid. It may be interesting to look more into possible explanations for why this contradicts with the findings in the literature review.

 In the 2014-2015 season, there was only one variable to be found statistically significant. Having a starting spot appeared statistically significant at the 10% level. As to why this is the only determinate that came back significant, we are not certain at this point in the research. This season is definitively unique, but the explanation for that uniqueness will take more time and further testing to decipher.

 Finally, in the most recent season, the 2018-2019 season displays eleven statistically significant determinants. Those being, STAR, PG, AGE, AGE2, GAMES, STARTER, REBOUNDS, ASSISTS, STEALS, FOULS, and PPG. The positive coefficients were found on STAR, AGE, STARTER, REBOUNDS, ASSISTS, STEALS, and PPG. Likewise, the negative coefficients were found on PG, AGE2, GAMES, and FOULS. The interpretations for STAR, PG, AGE, AGE2, STARTER, ASSISTS, AND PPG remain the same as the first studied season. The greater amount of rebound and steals made by a player per game increases the salary as the variables increase. An increase in the number of personal fouls made by a player being negative indicates that the larger the number of fouls, the smaller the salary. The amount of games played raises interest since an increase in number of games played should result in an increase in salary. The results may be caused by high correlation in variables.

 The results from the estimation of equation (2), shown in Table 7, indicate whether or not a wage premium existed. INTERNATIONAL and LPOP resulted in statistical significance at the 5% level. This shows that there is a positive existing wage premium for international players. The positive coefficient on population indicates that the greater a countries population the higher the wage premium for players. This contradicts the results found by Yang *et al.* (2010) that there is a negative relationship for wage premiums. This could indicate that there is an increased need for international players or that international professional leagues have become more competitive and thus are in a higher demand for foreign players. 2009-2010 displays that the only statistically significant determinant is Gross domestic product (*lgdp*), as a measure of the market size within a country. This would indicate that as a nation's GDP increases, there is a negative resulting wage premium at the 5% statistical level. 2014-2015 appeared to have no statistically significant variables.

**6. Conclusion**

 Having the NBA expand to a global market brings in an immense amount of new revenue with easily accessible TV viewing and an increasing fan base. We can see growth in Table 2’s ratios by percentage over time for said expansion. Based on the literature review that was conducted from Yang *et al.* (2010), it was seen that there no longer exists a wage premium for White players. The study also found that international players have a negative wage premium brought on by the foreign market effect when coming from largely populated home countries. The results of this study show that in the 2018-2019 season, international and population determinants were significant and positive, indicating wage premiums have redeveloped. Although, we may note that this was not the case in the first two studied seasons. The determinants that were seen to be statistically significant, shown in Table 6, for the 2009-2010 and 2018-2019 seasons were similar. There were many variables, such as whether or not a player was a star, their age, and their points per game, that were positively significant in both seasons. Although, the 2014-2015 determinants produced unique results that were different from the others.

Data problems encountered when working on this project mostly included the data sampling itself. Originally the plan encountered going back and looking at more years of data, but the websites that were used were inconsistent with the amount of information that was needed for each player by season. For example, the 1999-2000 season did not include salaries for all the players on the rosters. There was missing information for valuable international players which caused a gap in the percentage of international players versus U.S. born players. Finding the data required going elsewhere to fill in gaps, which was the main problem with the data. The study went on with only 2009-2010, 2014-2015, and 2018-2019 seasons, that did include around 20% of the sample being international, and were deemed a large enough sample so that there were not sample biases. Additionally, Yang *et al.* (2010) assumed that a player’s current-year salary should be determined by personal characteristics and on-court performance in the previous year. Data for this study was collected with information from the same season except for star and change variables. With a lack of time to correct, the data was kept with intentions of correcting with possible further study after the completion of this first study.

With more time and expanded research, it would be interesting to find out why the 2014-2015 season was unique. Furthermore, an expanded look advancing what has been found thus far would be important when collecting more seasons, keeping a closer eye on correlations, and really grasping the changes throughout time. What was the exact path that NBA salaries have taken since 1946, when the National Basketball Association originated? Blacks seem to dominate the NBA compared to their White counterparts, but what exactly is happening when it comes to each nation individually? Where are the salary markers being set and how? To properly address these questions requires a more complete dataset, which is left for future research.

**7. Data Tables**

**Table 1:** Variable Definitions

|  |  |
| --- | --- |
| Variable | Definition |
| SALARY | Annual Salary |
| STAR | Dummy variable: equals 1 if a player was named to the all-NBA team in the previous season |
| CHANGE | Dummy variable: equals 1 if a player changed teams in the previous season |
| PF | Dummy variable: equals 1 if a player served as a power forward |
| SF | Dummy variable: equals 1 if a player served as a small forward |
| C | Dummy variable: equals 1 if a player served as a center |
| PG | Dummy variable: equals 1 if a player served as a point guard |
| AGE | A player’s age |
| GAMES | Games played in a season |
| STARTER | Games started in a season |
| MINUTES | Minutes played per game in a season |
| REBOUNDS | Number of rebounds per game |
| ASSISTS | Number of assists per game |
| STEALS | Number of steals per game |
| BLOCKS | Number of blocks per game |
| TURNOVERS | Number of turnovers per game |
| FOULS | Number of personal fouls per game |
| PPG | Number of points per game |
| INTERNATIONAL | Dummy variable: equals 1 if a player is foreign-born |
| AVGGDP | Average per capita GDP of an international player’s home country during the sample period (in thousands US$) |
| AVGPOP | Average population of an international player’s home country during the sample period  |
| PROLEAGUE | Dummy variable: equals 1 if there is a professional basketball league in a foreign player’s home country |
| *Note:* GDP = gross domestic product and NBA = National Basketball Association.  |

**Table 2:** Statistics of International Players in the NBA

|  |  |  |  |
| --- | --- | --- | --- |
| Season | 1. International Playersa
 | 1. Total Players
 | (1)/(2) Ratio (%) |
| 2009-2010 | 70 | 383 | 18.28 |
| 2014-2015 | 83 | 406 | 20.44 |
| 2018-2019 | 92 | 377 | 24.4 |
| *Note:* NBA = National Basketball Association. aAn international player is defined as a player who was foreign born. |

**Table 3:** Basic Variable Statistics, 2009-2010

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variable | N | Mean | Minimum | Maximum | Std Dev | Variance | Range | Skewness | Kurtosis |
| SALARY | 383 | 4877293.87 | 2692 | 23034375 | 4847056.0 | 0 | 23031683 | 1.4949804 | 1.8851629 |
| STAR | 383 | 0.0365535 | 0 | 1 | 0.1879084 | 0.0353096 | 1 | 4.9585791 | 22.706050 |
| CHANGE | 383 | 0.0939948 | 0 | 1 | 0.2922032 | 0.0853827 | 1 | 2.7935117 | 5.8341462 |
| PF | 383 | 0.2062663 | 0 | 1 | 0.4051532 | 0.1641491 | 1 | 1.4575997 | 0.1252235 |
| SF | 383 | 0.1958225 | 0 | 1 | 0.3973516 | 0.1578883 | 1 | 1.5390617 | 0.3706189 |
| C | 383 | 0.2140992 | 0 | 1 | 0.4107325 | 0.1687012 | 1 | 1.3994585 | -0.0417612 |
| PG | 383 | 0.1932115 | 0 | 1 | 0.3953339 | 0.1562889 | 1 | 1.5601949 | 0.4364600 |
| AGE | 383 | 26.5221932 | 19 | 37 | 4.0161850 | 16.129741 | 18 | 0.4281185 | -0.6296966 |
| GAMES | 383 | 54.3315927 | 1 | 82 | 25.8763111 | 669.58347 | 81 | -0.6478437 | -0.9947554 |
| STARTER | 383 | 28.5744125 | 0 | 82 | 31.024632 | 962.52782 | 82 | 0.6206566 | -1.2835849 |
| MINUTES | 383 | 21.9710183 | 2 | 41.4 | 10.118549 | 102.38504 | 39.4 | -0.0588336 | -1.0826117 |
| REBOUNDS | 383 | 3.8454308 | 0.1 | 13.2 | 2.5806111 | 6.6595537 | 13.1 | 1.1367617 | 0.8953888 |
| ASSISTS | 383 | 1.8986945 | 0 | 11 | 1.8674459 | 3.4873543 | 11 | 1.9603274 | 4.9527847 |
| STEALS | 383 | 0.6417755 | 0 | 2.3 | 0.4203950 | 0.1767319 | 2.3 | 0.9516092 | 1.0097143 |
| BLOCKS | 383 | 0.4472585 | 0 | 2.8 | 0.4725297 | 0.2232843 | 2.8 | 1.7912977 | 3.5873903 |
| TURNOVERS | 383 | 1.2451697 | 0 | 3.8 | 0.7782524 | 0.6056769 | 3.8 | 0.8324406 | 0.3232840 |
| FOULS | 383 | 1.9548303 | 0 | 4 | 0.7964722 | 0.6343680 | 4 | -0.1163123 | -0.4771921 |
| PPG | 383 | 9.0903394 | 0 | 30.1 | 6.0365931 | 36.440456 | 30.1 | 0.8433023 | 0.3412746 |
| INTERNATIONAL | 383 | 0.1827676 | 0 | 1 | 0.3869814 | 0.1497546 | 1 | 1.6481289 | 0.7200617 |
| AVGGDP | 383 | 50670.57 | 444.93333 | 82384.57 | 14862.43 | 220891906 | 81939.63 | -2.3070364 | 4.0289456 |
| AVGPOP | 383 | 274408186 | 108636.33 | 138287341 | 122222165 | 0 | 138278704 | 0.6810312 | 17.694026 |
| PROLEAGUE | 383 | 0.9817232 | 0 | 1 | 0.1341257 | 0.0179897 | 1 | -7.2208698 | 50.404144 |

**Table 4:** Basic Variable Statistics, 2014-2015

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variable | N | Mean | Minimum | Maximum | Std Dev | Variance | Range | Skewness | Kurtosis |
| SALARY | 406 | 4598862.34 | 29483 | 23500000 | 4801338.26 | 0 | 23470517 | 1.6618231 | 2.4875947 |
| STAR | 406 | 0.0369458 | 0 | 1 | 0.1888615 | 0.0356687 | 1 | 4.9279126 | 22.3946183 |
| CHANGE | 406 | 0.886700 | 0 | 1 | 0.2846175 | 0.0810071 | 1 | 2.9047149 | 6.4692130 |
| PF | 406 | 0.2142857 | 0 | 1 | 0.4108322 | 0.1687831 | 1 | 1.3977908 | -0.0464339 |
| SF | 406 | 0.1896552 | 0 | 1 | 0.3925119 | 0.1540656 | 1 | 1.5891555 | 0.5279918 |
| C | 406 | 0.1847291 | 0 | 1 | 0.3885564 | 0.1509761 | 1 | 1.6308143 | 0.6627959 |
| PG | 406 | 0.1896552 | 0 | 1 | 0.3925119 | 0.1540656 | 1 | 1.5891555 | 0.5279918 |
| AGE | 406 | 26.5295567 | 19 | 38 | 4.2108459 | 17.7312230 | 19 | 0.4688721 | -0.3698955 |
| GAMES | 406 | 50.9876847 | 1 | 82 | 24.5262741 | 601.531196 | 81 | -0.4595726 | -1.0621528 |
| STARTER | 406 | 26.1453202 | 0 | 82 | 28.1705751 | 793.512990 | 82 | 0.7649426 | -0.9364875 |
| MINUTES | 406 | 21.0253695 | 1 | 38.7 | 9.1037733 | 82.8786881 | 37.7 | -0.1404290 | -1.0167454 |
| REBOUNDS | 406 | 3.7593596 | 0 | 15 | 2.4688176 | 6.0950603 | 15 | 1.1157093 | 1.5301645 |
| ASSISTS | 406 | 1.8842365 | 0 | 10.2 | 1.7821745 | 3.1761460 | 10.2 | 1.8629196 | 4.0426496 |
| STEALS | 406 | 0.6701970 | 0 | 2.3 | 0.4389364 | 0.1926651 | 2.3 | 1.0324240 | 1.1716817 |
| BLOCKS | 406 | 0.4157635 | 0 | 2.9 | 0.4715593 | 0.2223682 | 2.9 | 2.1171688 | 5.2441447 |
| TURNOVERS | 406 | 1.2064039 | 0 | 4.4 | 0.7705751 | 0.5937860 | 4.4 | 1.1740268 | 1.8955172 |
| FOULS | 406 | 1.7935961 | 0 | 3.9 | 0.7220399 | 0.5213416 | 3.9 | -0.1414043 | -0.2671786 |
| PPG | 406 | 8.5938424 | 0 | 28.1 | 5.6276598 | 31.6705546 | 28.1 | 0.8408334 | 0.3271892 |
| INTERNATIONAL | 406 | 0.2044335 | 0 | 1 | 0.4037846 | 0.1630420 | 1 | 1.4712284 | 0.1653030 |
| AVGGDP | 406 | 50853.91 | 444.933333 | 82384.57 | 14591.05 | 212898866 | 81939.63 | -2.2965431 | 4.1956459 |
| AVGPOP | 406 | 266619739 | 108636.33 | 321509370 | 111048765 | 0 | 321400734 | -1.6046687 | 0.7029192 |
| PROLEAGUE | 406 | 0.9876847 | 0 | 1 | 0.1104248 | 0.0121936 | 1 | -8.8766104 | 77.1743625 |

**Table 5:** Basic Variable Statistics, 2018-2019

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variable | N | Mean | Minimum | Maximum | Std Dev | Variance | Range | Skewness | Kurtosis |
| SALARY | 377 | 8223091.4 | 116224 | 37457154 | 8096862.58 | 0 | 37340930 | 1.3815460 | 1.2741923 |
| STAR | 377 | 0.0371353 | 0 | 1 | 0.1893445 | 0.0358513 | 1 | 4.9152026 | 22.2773727 |
| CHANGE | 377 | 0.0557029 | 0 | 1 | 0.2296519 | 0.0527400 | 1 | 3.8899453 | 13.2016824 |
| PF | 377 | 0.2015915 | 0 | 1 | 0.4017218 | 0.1613804 | 1 | 1.4935708 | 0.2319560 |
| SF | 377 | 0.1538462 | 0 | 1 | 0.3612807 | 0.1305237 | 1 | 1.9264800 | 1.7204239 |
| C | 377 | 0.2042440 | 0 | 1 | 0.4036839 | 0.1629607 | 1 | 1.4730999 | 0.1709018 |
| PG | 377 | 0.2015915 | 0 | 1 | 0.4017218 | 0.1613804 | 1 | 1.4935708 | 0.2319560 |
| AGE | 377 | 26.161803 | 19 | 42 | 4.2841649 | 18.3540691 | 23 | 0.4681439 | -0.1163671 |
| GAMES | 377 | 38.954907 | 1 | 60 | 17.9245043 | 321.287854 | 59 | -0.6730358 | -0.8254180 |
| STARTER | 377 | 19.954907 | 0 | 60 | 21.8877840 | 479.075088 | 60 | 0.6749424 | -1.1782053 |
| MINUTES | 377 | 21.692838 | 2 | 37.4 | 8.7773389 | 77.0416773 | 35.4 | -0.2358905 | -0.9760495 |
| REBOUNDS | 377 | 4.0631300 | 0.2 | 13.5 | 2.5861937 | 6.6883976 | 13.3 | 1.2735137 | 1.7111767 |
| ASSISTS | 377 | 2.2228117 | 0 | 11.1 | 1.9012481 | 3.6147442 | 11.1 | 1.5148186 | 2.3140112 |
| STEALS | 377 | 0.7018568 | 0 | 2.3 | 0.4479525 | 0.2006614 | 2.3 | 0.7904878 | 0.4440803 |
| BLOCKS | 377 | 0.4535809 | 0 | 2.7 | 0.4295522 | 0.1845151 | 2.7 | 2.0350702 | 5.4044214 |
| TURNOVERS | 377 | 1.2490716 | 0 | 5.4 | 0.8430917 | 0.7108037 | 5.4 | 1.2897247 | 2.2485347 |
| FOULS | 377 | 1.9251989 | 0 | 3.8 | 0.7715876 | 0.5953474 | 3.8 | 0.0383959 | -0.4445118 |
| PPG | 377 | 9.8323607 | 0 | 36.5 | 6.3089866 | 39.8033117 | 36.5 | 0.9919595 | 0.8564954 |
| INTERNATIONAL | 377 | 0.2440318 | 0 | 1 | 0.4300825 | 0.1849709 | 1 | 1.1966697 | -0.5710393 |
| AVGGDP | 377 | 49447.19 | 444.933333 | 82384.57 | 16281.5 | 265087326 | 81939.63 | -2.0064075 | 2.7759114 |
| AVGPOP | 377 | 252305443 | 371365 | 321509370 | 123776090 | 0 | 321138005 | -1.2736062 | -0.3094982 |
| PROLEAGUE | 377 | 0.9681698 | 0 | 1 | 0.1757812 | 0.0308990 | 1 | -5.3551419 | 26.8197982 |

**Table 6:** Estimates on Determinants of NBA Player’s Salaries

|  |  |  |  |
| --- | --- | --- | --- |
| Variable | 2009-2010 | 2014-2015 | 2018-2019 |
| INTERCEPT | -386.25 (<.0001)\*\*\* | 76.46 (0.3900) | -437.17(<.0001)\*\*\* |
| STAR | 42.91 (<.0001)\*\*\* | -16.85 (0.2508) | 55.24 (0.0019)\*\*\* |
| CHANGE | -0.81 (0.8835) | 6.05 (0.4872) | -15.12 (0.2273) |
| PF | 2.44 (0.7106) | -9.86 (0.2753) | 4.37 (0.6665) |
| SF | -2.84 (0.5938) | -12.29 (0.1172) | 3.75 (0.6957) |
| C | 3.68 (0.6258) | -12.32 (0.2704) | 4.49 (0.7441) |
| PG | -10.56 (0.0812)\* | -0.75 (0.9351) | -20.57 (0.0409)\*\* |
| AGE | 25.78 (<.0001)\*\*\* | -0.99 (0.8798) | 29.97 (<.0001)\*\*\* |
| AGE2 | -0.39 (<.0001)\*\*\* | 0.007 (0.9500) | -0.45 (0.0004)\*\*\* |
| GAMES | -0.02 (0.8437) | 0.04 (0.7421) | -0.41 (0.0405)\*\* |
| STARTER | 0.25 (0.0081)\*\*\* | 0.26 (0.0978)\* | 0.47 (0.0390)\*\* |
| MINUTES | -1.35 (0.0391)\*\* | -0.61 (0.4961) | -0.26 (0.8020) |
| REBOUNDS | 1.33 (0.3742) | -0.45 (0.8453) | 5.00 (0.0282)\*\* |
| ASSISTS | 3.92 (0.0542)\* | -0.74 (0.8347) | 10.48 (0.0094)\*\*\* |
| STEALS | 3.68 (0.5950) | -14.54 (0.1074) | 18.83 (0.0745)\* |
| BLOCKS | 12.99 (0.0231)\*\* | -3.03 (0.7159) | 0.99 (0.9193) |
| TURNOVERS | -3.38 (0.5349) | -0.59 (0.9429) | -1.44 (0.8843) |
| FOULS | 0.01 (0.9969) | 0.47 (0.9345) | -12.84 (0.0504)\* |
| PPG | 4.40 (<.0001)\*\*\* | 1.75 (0.1321) | 3.27 (0.0082)\*\* |
| R2 | 0.6124 | 0.0394 | 0.5720 |
| F Statistic | 31.96 | 0.88 | 26.58 |
| OBSERVATIONS | 383 | 406 | 377 |
| *Note:*  Significance is identified by \* for the 10% level, \*\* for 5%, and \*\*\* for 1%.**Table 7:** Estimates on Determinants for Wage Premium Model |
| Variable |  2009-2010 |  2014-2015 |  2018-2019 |
| INTERCEPT | 85.51 (0.1403) |  -45.60 (0.6305) | -174.39 (0.0757)\* |
| INTERNATIONAL |  -10.19 (0.2315) | 10.49 (0.4165) | 29.31 (0.0488)\*\* |
| LGDP | -7.33 (0.0285)\*\* |  3.51 (0.5172) |  -1.27 (0.8151) |
| LPOP | -1.02 (0.6557) |  2.30 (0.5689) |  9.31 (0.0322)\*\* |
| PROLEAGUE | 14.65 (0.2385) |  -38.63 (0.1455) |  4.84 (0.8283) |
| R2 | 0.0142 | 0.0062 | 0.0144 |
| F Statistic | 1.36 | 0.62 | 1.36 |
| OBSERVATIONS | 383 | 406 | 377 |
| *Note:* Coefficients are listed first in each row for the corresponding variable and are scaled down by 100,000. Figures presented in the parentheses are p-values. Significance is identified by \* for the 10% level, \*\* for 5%, and \*\*\* for 1%. |

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