CHANGING LEVELS OF DISCRIMINATION IN THE MARKET FOR BASEBALL CARDS

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ABSTRACT

Others have analyzed the pricing structure of baseball memorabilia for evidence of discrimination regarding player race with mixed results. The authors' 2004 paper included a fame component to the Fort and Gill (2000) censored Tobit model, which came up significant and swamped any racial differences in card pricing. In this paper, we examine how the effects of a player's race as well as fame on card price has changed across time. We use our original data set covering all single player cards (of hitters that played in a given year) across the entire decade of the 1960's, comprising some 2,770 cards. Analysis of these data suggest that there is a change in the way that player race affects card price, an effect we refer to as the 'novelty effect.' Further, we investigate cards from a more recent year (some 373 cards of players who played during 1986) to determine if current era cards still have any trace of race impacts on price.

INTRODUCTION

Over the last 4 decades, baseball trading cards have moved from the shoebox under the bed to the showpiece of sport collectors. What had been a childhood hobby, collecting baseball cards that came with sticks of sugary sweet bubble gum, has become big business. Cards that once were used to make special noise effects on bikes tires are now investments in 'sports memorabilia.' Some of these cards can now sell for millions of dollars. For example, a 1910 Honus Wagner card recently sold for $2.35 Million ("$2.35M card, but how much is the bubblegum?" *USA Today*, 3/29/2007). Card collecting is clearly no longer just a hobby of pre-adolescent males, it is now a business, an investment for the buyer. The wide market for these trading cards has provided economists with a playground of data to examine how the value placed on player's cards is affected both by the player's skill and, possibly, by the player's race. For instance, if collectors display prejudice against non-white players, then cards of players with similar stats but of different races would presumably sell for different amounts. Alternatively, it may not be each individual buyer who is demonstrating prejudice so much as buyers jointly assuming that other buyers will display prejudice, thereby affecting price. This is something like England's famous "Page Two Girls" beauty contest where people are asked to pick what other people will think is the most attractive girl. At any rate, the result should be the same in this case: racial discrimination against non-white players should show up as reduced card price, all else equal.

What we bring to this discussion is two-fold. Initially, we examine how the impact of race may have changed across time as we have reason to believe that attitudes towards race may well have changed. Additionally, following our own work (Burnett and Van Scyoc, 2009), we bring the added dimension of a player's fame to the analysis. Indeed, we suspect that famous players' cards hold value distinct from racial impacts. If there is a racial bias on the part of card collectors it would most likely be seen in the cards of players not so famous and we feel we should include this idea into the academic literature.

Resale value of a particular player's card is paramount to today's buyer, which brings us to the issue of pricing these cards. Any number of player characteristics could affect the price of a given card, though chief among these elements would include demonstrated player skill (stats) as well as player race. Unobservable characteristics, such as off-field behavior (such as steroid use) may well influence the demand for cards, but since our primary data set is from the 1960's, one might expect that little of these types of influences are likely to remain in buyers minds. Though, by looking at pricing both in current markets (based on prices from 2008) and from previous markets (1981, a year that would have seen most of the players from the 1960's would have been inducted into the Hall of Fame, for instance but close enough to the time the players were on the field and well known among collectors), we may be able to ferret out changes in collector behavior. Apart from the off-field behavior, players' on-field behavior can be measured either directly by annual and lifetime player stats as well as by such awards as Most Valuable Player (MVP), election to the All Stars or Hall of Fame (HF). These observable characteristics are some measure of fame and how their careers were perceived at the time (All Stars, MVP) or since (Hall of Fame). We include all three of these measures of fame into our work, to determine if they appear to affect the value of cards. Supply conditions for these cards, according to the manufacturer, did not vary depending upon the popularity of the individual players. However, if card collectors did display any bias against non-white players, they may have been less likely to keep cards of those players, limiting the supply of those cards in later years. If that is the case, then our results, as well as the results of any work of this type may be bias downwards as a limited supply would suggest a higher price all else equal.

Exploring sports memorabilia for evidence on discrimination is hardly new, Kahn (1991) provides a nice literature survey in this field. Others, including Jewell (2002) and Fort and Gill (2000), continue this type of work. Research into the area of discrimination in sports has taken many forms; a myriad of papers have examined various aspects of discrimination from many different sports. For example, Rottenberg (1956), a forerunner in sports economics, was among the first to look at the baseball labor markets, work which was continued by Bellemore (2001) and others such as Bodvarsson and Banaian (1998). Other avenues of research have led to the examination of Hall of Fame voting, promotion to major leagues, and contract/salary issues; a nice look at Hall of Fame voting is provided by Jewell, Brown and Miles (2002), while Bellemore (2001), among others, looks at promotion issues. Many others look at contract, salary and arbitration results for evidence of discrimination (see, for instance Bodvarsson and Banaian,

1998, or Marburger, 1996). The application of economic principles and techniques to other sports in search of racial discrimination continues unabated with such articles as Szymanski (2000), who explores the English professional soccer leagues for evidence of discrimination, and Kahn and Sherer (1988), who look into racial discrimination in basketball player salaries. Fort and Gill (2000), McGarrity, Palmer and Poitras (1999), Gabriel, Johnson, and Stanton (1995), Andersen and LaCroix (1991), as well as Nardinelli and Simon (1990) all look at baseball cards for evidence of discrimination.

Some of the first work done on baseball cards used only very small samples using either single season or only selected cards (rookies, often). For example, Nardinelli and Simon (1990) explore a single season (1970) card set with only 334 hitter cards and 233 pitcher cards. Their primary contribution was to recognize that card prices are a left censored variable, so that a Tobit model would prove more appropriate (which has since become the standard for this sort of analysis). They discovered significant evidence of consumer discrimination even in their small data set. Using both hitter and pitcher cards can be problematical, as different variables are necessary to describe player skill.

Andersen and La Croix (1991) used two different time periods (1960 and 1977) and separated out non-white players into Latino and black groups. Again using a mixed sample of both hitters and pitchers, they found some discrimination though, their results were weaker than that of some previous studies. Presumably, they suspect that collectors have/had different levels of discriminatory feelings regarding Latinos versus blacks relative to white players. Tregarthen (1992), among others, shows that white player's card prices are about 10 to 20 percent higher than non-white players.

Gabriel, Johnson, and Stanton (1995) looked at only rookie cards, though they used a wider range of years, from 1984-1990. Still they had only 156 hitters and 134 pitchers. Rookie cards tend to be priced higher than cards from later on in the player's career, particularly for those players that play for several years in the major leagues (implying a high level of skill and, perhaps, fame). They employed a semi-log model, but did not find evidence of discrimination among these cards.

McGarrity, Palmer, and Poitras (1999) used cards of retiring players (again, both pitchers and hitters) from 1974. They compared results from differently constructed Tobit models and discovered that with less restrictive modeling the evidence of discrimination disappeared. Their particular choice of cards however may have pre-selected for those cards from players with a certain degree of fame and certainly for those players that played for several years, suggesting a high level of skill.

Fort and Gill (2000) suggested that previous explorations into the market for baseball cards for evidence of racial discrimination were flawed because the racial 'marker' used for the individual players is so often arbitrary (and, incidentally, the arbitrary choice of the researchers in questions, so that some level of bias may inadvertently be introduced). Our study employs a panel of both male and female raters, both undergraduates and non-students to determine the

perception of race for individual players, with no input at all from the researchers except in the case of a tie.

Fort and Gill (2000) continued, however, to use both pitchers and hitters and they discover that there are different impacts of discrimination between these two groups. Because of this difference, we have restricted our study to just hitters, completely omitting pitchers from our data set, leaving analysis of this second group to future work.

The authors (2004) used 2,833 cards collected across the 1960's that showed distinct evidence of racial discrimination among collectors of about $2.66 higher prices on average for white rather than non-white players. However, once fame variables were added, the race of the player was less significant.

DATA AND METHODOLODGY

Data

We explore a much wider sample of baseball cards than previous researchers, using all Topps cards issued during the entire 1960-69 decade of only one hitter on each card. Cards with more than one man pictured on it were dropped, as were cards with manager's cards. For example, both the 1960 Topps #7 with both Willie Mays and Bill Rigney and the 1960 Tops #18 card of the entire Dodgers team were dropped. Even limiting our set to cards with only 1 hitter on them, and only to hitters, we still have a data set of 2,787 distinct cards. Additionally, we limited the data set further by removing all players who did not play more than 4 games. Still, this gives us a substantial sample of 2770 cards with which to work.

One benefit of using the decade of the 1960's is that off-field behavior is less likely to remain firmly in the memories of collectors than that of more recent players, and the matter of steroid use can be totally ignored. However, to the extent that card collectors are more likely to collect cards from the era of play they personally observed, there may be some residual effects. That being said, the 'star power' of these players is still more likely to be mostly due to their directly observable player characteristics. Also, if collectors of cards from the 1960's are likely to be of that era, they may be more likely to demonstrate discrimination as racial discrimination was far more ubiquitous and culturally accepted during the 1960's than it is today.

In order to have a comparison year, we have also collected a more recent sub-sample of cards from only a single year, 1986. This period of history is one where racial integration was commonplace but long enough ago that players from that era have already had the opportunity to be inducted into the Hall of Fame and be subject to the 'court of hindsight' so that fans will have had some time to make an historical judgment of talent. This subset of cards contains 374 unique cards.

Both annual and lifetime stats are recorded for each player in each of the samples. Annual stats include each players' age (Age), years of experience (Exp) in the major leagues, percentage

at bats (PAB) and whether the year in question was the players' rookie year (Rookie). Lifetime stats include the number of lifetime home runs (LHR), lifetime batting average (LAVE) and lifetime slugging record (LSLG). A player's slugging percentage is the most popular measure of the power of a hitter. It is calculated as the total number of bases a player gets divided by hit at bats during a given season.

$$SLG = \frac{S + (2xD) + (3xT) + (4xHR)}{AB} \qquad (1)$$

where AB is the number of at bats, S, D, T, and HR are the number of singles, doubles, triples and home runs, respectively for a given player. The lifetime slugging percentage uses lifetime numbers rather than season numbers for these variables. Walks are excluded from this calculation.

Also, we collected the fame statistics, such as whether the player was on the year's All Star team, was voted most valuable player (MVP), played in the world series (WS) or was ever inducted into the Hall of Fame (HF). Statistics about players' performance are from T*otal Baseball IV: The Official Encyclopedia of Major League Baseball* (1995) and Slocum's *Baseball Cards of the Sixties (*1994).

Card prices are from *The Sports Americana Baseball Card Price Guide and Alphabetical Checklist* (Beckett, various years). Beckett's pricing is the most frequently used price list for baseball cards. We have collected price data for each of the cards in our sample from more than one year. For the cards from the 1960's, we have prices from 2008 (Price08) to represent the most current prices available and from 1981 (Price81) to represent the earliest reliable prices we can obtain. Additionally, we have a listing of prices from a midpoint year (Price2000).

Perceived race of the players is determined by opinions gathered from at least 3 separate observers, as perceived race is the issue not genetic race. Our panel consisted of both males and females, from the age of 19 to 54, with at least one 'non-sports-fan' in each group to try to eliminate the possibility that panelists were familiar enough with the players' actual race rather than limiting their opinion to the apparent race of the player from the card picture. Each panelist viewed the cards independently so as not to be biased by other panelists' votes. Even though there was a different selection of panelists for each card, we had a surprising amount of agreement on apparent player race. In the very few cases where there was a tie, one of the authors cast the deciding vote.

We further refine the variables dealing with player skill by constructing two additional variables from the raw data we collected. Following Fort and Gill (2000), we construct a variable from the residual from a regression of lifetime slugging average on lifetime batting average (SLUGRES).

$$SLUGRES = LAVE - \alpha - \beta LSLG \qquad (2)$$

When this residual is positive, it indicates that the player outperforms expectations given his batting average. If it is negative, the player underperforms relative to expectations.

Another indicator of performance (or, technically, the recognition of player performance) is the residual from a regression of age on numbers of years of experience in the major leagues (AGERES).

$$AGERES = Exp - \alpha - \beta Age \qquad (3)$$

Hence, a player with a positive AGERES is one that was brought up relatively early to the majors, presumably a mark of recognition of greater than average skill. Rather than truncate these residual variables into separate positive and negative variables as Fort and Gill (2000) do, we leave them as continuous variables and note that our variables have desirable properties such as being approximately normally distributed.

The tables below summarize the data from the 1960's cards. Table A shows the collected raw data with summary stats. Table B shows the summary statistics for the data broken down by race with the most current pricing. The following two tables summarize price differences for this card set, when the prices are collected from different years (the same cards, but prices from 2008 and 1981, respectively). In Table C we show the annual average price from 2008 for these cards broken down by race and year. Table D shows average price from 1981 also broken down by year and race. Figures 1 and 2 show a graphical representation of Tables C and D, respectively.

Table A: 1960's CARDS (2770 Distinct Cards, Hitters Only)				
Variable	Mean	Std. Dev.	Min.	Max
Price2000	11.49227	32.79809	1.5	550
Price81	1.021031	3.935799	.13	90
Price08	13.78587	39.69382	1.5	600
White	.7137707	.4520794	0	1
Exp (Experience)	4.288809	3.474041	0	17
Age	28.80894	3.841652	20	43
Rookie	.1517644	.358859	0	1
PAB (Percentage at Bat)	315.0458	198.0409	1	698
LHR (Lifetime Home Run)	114.8825	137.0335	0	755
LAVE (Lifetime Average)	.2543792	.02583014	.147	.386
LSLG (Lifetime Slugging)	.3828814	.0654361	.153	.559
AS (All Star)	.1405912	.347662	0	1
HF (Hall of Fame)	.0771449	.2668694	0	1
MVP (Most Valuable Player)	.0068493	.0824915	0	1
WS (World Series)	.0894016	.285374	0	1

Table B: All 1960's Data: Summary Stats by Race		
Variable	Whites	Non-Whites
Price 2008	12.82753	16.17569
Rookie	.1439	.171285
Lifetime Slugging	.3745	.40359
Percent at Bats	294.568	366.1108
Lifetime Home Runs	99.28182	153.7859
Lifetime Average	249.7833	265.84
LSLGRES	-2.3124	5.76648
AGERES	-.00125	.003103
World Series	.08989	.08816
MVP	.00505	.011335
Hall of Fame	.05252	.138539
All Star	.12424	.18136
Count	1980	790

Table C: Average Annual Prices from 2008 by Race		
Year	Whites	NonWhites
1960-1969	12.82753	16.17569
1960	13.8393	21.7377
1961	19.5913	24.5857
1962	18.0439	24.7826
1963	15.9171	23.7353
1964	12.3913	15.5385
1965	12.5300	16.5867
1966	9.7597	17.3842
1967	12.4143	11.2033
1968	6.9034	7.3635
1969	3.6148	8.9862

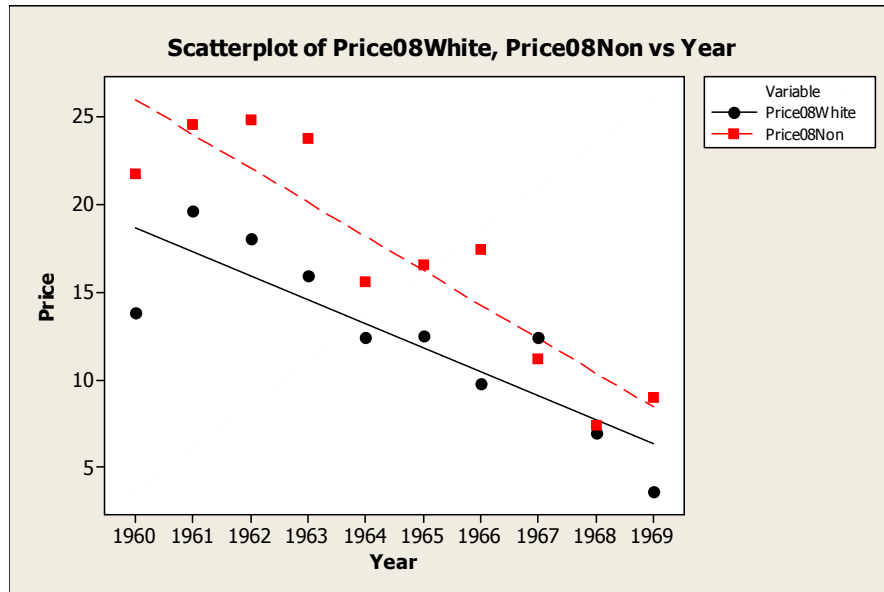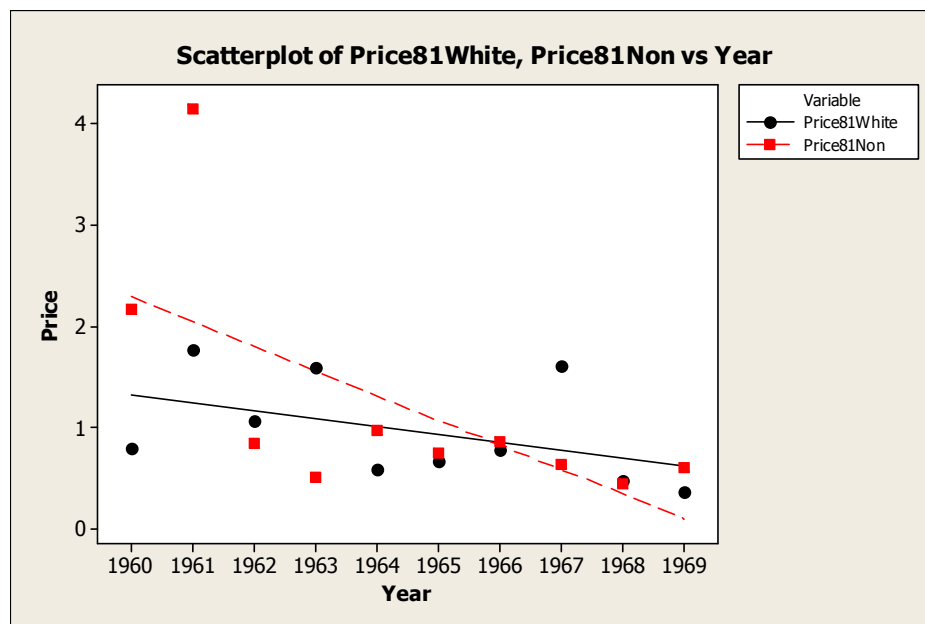| Table D: Average Annual Prices from 1981 by Race		
Year	Whites	NonWhites
1960-1969	.9896919	1.099181
1960	0.79286	2.16410
1961	1.77065	4.13757
1962	1.07105	0.83507
1963	1.59127	0.50868
1964	0.58522	0.97631
1965	0.67219	0.75267
1966	0.78083	0.85768
1967	1.60497	0.63055
1968	0.47347	0.44654
1969	0.35556	0.59486

Figure 1

Figure 2

The preceding tables and figures demonstrate the expected effect of time on prices, as older cards would demand higher prices. However, additional information here is that there is a decided difference between the impacts of race on prices by year. It is fairly clear that these patterns are quite different in the 1981 price data and the 2008 price data. In the 2008 price data, prices for non-white players' cards are strictly *above* those of the white players' cards, while in the 1981 price data, after the first two years of the decade, the cards of both groups of players appear similar. Table B, however, shows that non-white players have the higher summary stats regarding performance, so we would expect to see them with higher card prices. Also in the early 1960's, non-white players were still very much novelties. Regardless of how one interprets these figures, however, what is clear is that there is a difference between the white and non-white players' card prices over time. It is that change that we are investigating here.

METHODOLOGY

Following previous studies, we note that prices for these cards are left-censored (with a lower limit of $1.50 in the 2008 data and a lower limit of $0.13 in the 1981 price data, we also note that the percentage of non-white player cards at this lower limit of $1.50 mirrored their representation in the overall sample (both were at 28%)). Since we have a left-censored sample, OLS estimates will be both biased and inconsistent, so we use a censored Tobit estimation method on our price variable (measured in dollars). Additionally, this data has elements that can

be modeled as panel data. However, as the panels are quite limited (few players played over the entire decade and the vast majority played only a few seasons), the likelihood of getting significance using a panel approach is small, even though this approach may account for unobserved heterogeneity in our dataset.

In each of our regression pairs, we present one traditionally formatted model (much like Fort and Gill, 2000) that employs only the player stats and the *AGERES and SLUGRES* variables. The second regression in each pair also uses the fame variables that the authors have introduced elsewhere. While there is likely to be some collinearity among these variables, the measures of fame we have chosen to use (Hall of Fame, AllStar game, World Series, and MVP) are distinct enough honors so that they do not consistently overlap. By including these measures of fame, we are able to distinguish between those players that are 'famous' and those that are not.

We also introduce a *year* variable to account for changes by year, as suggested by Tables B and C (and related Figures 1 and 2) above. In order to pick up interactive effects from changes in racial impacts on the price of these cards, we also include an interactive effect with the year and *white* variables.

RESULTS

Table E shows the regression results from the player data from the 2770 cards collected over the decade of the 1960's. It is run separately for two price years – 2008 and 1981. Further, regressions are shown that both include and exclude fame components. A startling result is the size, sign and strength of the estimated coefficient on the *white* variable in the 2008 price data. It is not only positive, it is large and quite significant both with and without fame components in the regression. In the 1981 price year data, the racial component also has a positive sign, but is much less significant. Also noteworthy is that the fame components of MVP and World Series play are only significant in the 2008 data and not for the 1981 data. Our conclusions are that when personal experience of the collectors is not a strong component of the demand for cards, that collectors fall back upon their inherent biases so that the discrimination result show up.

Table E: Regression Results: All 1960's Cards, Comparison between Price2008 and Price 1981, Left-Censored Tobit, (t-stats in parentheses)				
Dependent Variable:	Y=Price 1981		Y=Price 2008	
	Without Fame	With Fame	Without Fame	With Fame
Constant	.9246256 (1.23)	.6462078 (0.86)	-10.2511 (-1.58)	-17.67859 (-2.88)
White	.3443182 (1.81)	.3480181 (1.84)	5.229857 (3.21)	5.616802 (3.65)

Table E: Regression Results: All 1960's Cards, Comparison between Price2008 and Price 1981, Left-Censored Tobit, (t-stats in parentheses)				
Dependent Variable:	Y=Price 1981		Y=Price 2008	
	Without Fame	With Fame	Without Fame	With Fame
Rookie	.0986936 (0.40)	.0615439 (0.25)	5.275444 (2.49)	4.249804 (2.12)
PAB (Percent at Bat)	-.0004584 (-0.96)	-.0006186 (-1.24)	-.0118817 (-2.88)	-.0117184 (-2.89)
LSLG (Lifetime Slugging)	-3.112661 (-1.52)	-1.804709 (-0.88)	16.31179 (0.92)	45.42265 (2.7)
LHR (Lifetime Home Runs)	.0068812 (6.4)	.0031339 (2.46)	.1356906 (14.69)	.0467147 (4.52)
AgeRes+	-.0813663 (-1.92)	-.0893844 (-2.11)	.5317871 (1.49)	.2481217 (0.72)
LSLGRes+	.0070215 (1.48)	.0044222 (0.93)	.1773863 (4.34)	.1216967 (3.15)
AS (All Star)		.6369451 (2.23)		6.371516 (2.73)
HF (Hall of Fame)		1.905586 (4.5)		49.84484 (14.56)
MVP (Most Valuable Player)		.5777601 (0.51)		39.67296 (4.85)
WS (World Series)		.242256 (0.84)		15.3028 (6.75)
n	2770	2770	2770	2770
Log Likelihood	-7190.1731	-7174.5608	-13299.073	-13139.578
Pseudo R^2	.0047	.0069	.0236	.0353
Number of Left Censored Observations	335 ($0.13)	335 ($0.13)	137 ($1.5)	137 ($1.5)
+ See text for an explanation of these variables.				

Tables F and G continue to look at regression analysis of the 1960's data set, but with the additions of a year variable, so that Table F shows that older cards have higher prices, as one would expect. It also shows that the race components has completely receded with the introduction of the year variable in the 1981 price data regression, perhaps because the first non-white players admitted to the league were so superior to the existing white players by measured skill level that their value can entirely be explained by those superior stats (with the exception that no non-white players received All Star or MVP awards in those early years, and we note that those measures are insignificant in the 1981 price data). The 1981 price regression does not

show high pseudo R^2's. In 2008, the pseudo R^2's double, perhaps showing that collectors operating some 40 years after the time of the players' careers may be reacting more to observable characteristics rather than was the case in 1981.

Table G, however, takes this concept one step further to show that there is an interactive effect between time (year) and race (white). We see that as time goes by, the 'novelty effect' that generated increased prices for non-white players' cards lessens, shown by the positive sign on the interactive variable. Indeed, we would expect this as baseball integration becomes more accepted and non-white players become more common place, the non-white players are less of a rarity making their cards relatively less valuable than previously for those collectors in 1981. Again, as in the previous table, we see stronger pseudo R^2's and more significant results from the more recent price data suggesting, perhaps, the further from personal memory the stronger the impact of observable characteristics such as player stats and race.

Table F: Regression Results: All 1960's Cards, Year Dummy, Comparison between Price2008 and Price 1981, Left-Censored Tobit, (t-stats in parentheses)				
Dependent Variable:	Y=Price 1981		Y=Price 2008	
	Without Fame	With Fame	Without Fame	With Fame
Constant	661.895 (11.43)	638.3647 (11.03)	4032.074 (8.33)	3300.868 (7.2)
White	.006332 (.03)	.02783 (0.15)	3.100776 (1.89)	3.892862 (2.52)
Year	-.3357548 (-11.42)	-.323933 (-11.02)	-2.053159 (-8.35)	-1.685472 (-7.24)
Rookie	.1634711 (0.67)	.1265779 (0.52)	5.668123 (2.69)	4.587806 (2.3)
PAB (Percent at Bat)	-.0001763 (-0.37)	-.0002705 (-0.54)	-0.0100946 (-2.46)	-.0098707 (-2.44)
LSLG (Lifetime Slugging)	-6.635793 (-3.21)	-5.348239 (-2.58)	-5.861526 (-.33)	26.36419 (1.56)
LHR (Lifetime Home Runs)	.0072739 (6.81)	.004041 (3.18)	.1384474 (15.11)	.0519885 (5.04)
AgeRes+	-.0144593 (-0.34)	-.0245166 (-0.58)	.9552596 (2.62)	.5973602 (1.73)
LSLGRes+	.0034914 (0.74)	.0015115 (0.32)	.1571634 (3.87)	.0385124 (2.80)
AS (All Star)		.4480302 (1.57)		5.32833 (2.32)
HF (Hall of Fame)		1.703607 (4.03)		48.65659 (14.29)
MVP (Most Valuable Player)		.5481909 (0.55)		39.42838 (4.85)

Table F: Regression Results: All 1960's Cards, Year Dummy, Comparison between Price2008 and Price 1981, Left-Censored Tobit, (t-stats in parentheses)

Dependent Variable:	Y=Price 1981		Y=Price 2008	
	Without Fame	With Fame	Without Fame	With Fame
WS (World Series)		.1072362 (0.37)		15.06421 (6.5)
n	2770	2770	2770	2770
Log Likelihood	-7123.9425	-7112.8374	-13264.299	-13113.444
Pseudo R^2	.0139	.0155	.0261	.0372
Number of Left Censored Observations	335 ($0.13)	335 ($0.13)	137 ($1.5)	137 ($1.5)
+ See text for an explanation of these variables.				

Table G: Regression Results: All 1960's Cards, Year Dummy, Comparison between Price2008 and Price 1981, Left-Censored Tobit, (t-stats in parentheses)

Dependent Variable:	Y=Price 1981		Y=Price 2008	
	Without Fame	With Fame	Without Fame	With Fame
Constant	914.3291 (8.67)	893.0172 (8.49)	4378.578 (4.98)	3865.153 (4.65)
White	-357.8312 (-2.88)	-360.8399 (-2.91)	-488.6701 (-.47)	-796.7635 (-.81)
Year	-.4642689 (-8.66)	-.45635795 (-8.48)	-2.22955 (-4.98)	-1.972732 (-4.66)
Year*White	.1821478 (2.88)	.183691 (2.91)	.2503036 (.47)	.4075244 (.81)
Rookie	.1381393 (.56)	.1004959 (.41)	5.63265 (2.67)	4.528558 (2.27)
PAB (Percent at Bat)	-.000216 (-.45)	-.0002955 (-.60)	-.0101534 (-2.48)	-.0099313 (-2.46)
LSLG (Lifetime Slugging)	-6.400789 (-3.10)	-5.1505478 (-2.46)	-5.535842 (-.31)	26.89933 (1.59)
LHR (Lifetime Home Runs)	.0072055 (6.75)	.003963 (3.12)	.1383645 (15.10)	.0518484 (5.03)
AgeRes+	-.018602 (-.44)	-.0289855 (-.68)	.949195 (2.60)	.5868376 (1.70)
LSLGRes+	.0041692 (.88)	.0022254 (.47)	.1581578 (3.89)	.1093939 (2.84)
AS (All Star)		.4181267 (1.47)		5.2555 (2.28)
HF (Hall of Fame)		1.724339 (4.09)		48.6999 (14.31)
MVP (Most Valuable Player)		.6256705 (.63)		39.59401 (4.87)

Table G: Regression Results: All 1960's Cards, Year Dummy, Comparison between Price2008 and Price 1981, Left-Censored Tobit, (t-stats in parentheses)				
Dependent Variable:	Y=Price 1981		Y=Price 2008	
	Without Fame	With Fame	Without Fame	With Fame
WS (World Series)		.1179788 (.41)		15.08716 (6.51)
n	2770	2770	2770	2770
Log Likelihood	-7119.8	-7108.5928	-13264.188	-13113.113
Pseudo R^2	.0145	.0160	.0261	.0372
Number of Left Censored Observations	335 ($0.13)	335 ($0.13)	137 ($1.5)	137 ($1.5)
+ See text for an explanation of these variables.				

In order to see the true impact of race on card price, we need to find the full coefficient on *white*, which can be done by combining the direct coefficient with the interactive effect as follows:

$$\alpha\, white + \beta white * year = [\alpha + \beta year] white \qquad (4)$$

where α, β are the coefficients on the two variables.

From Table G, using the Price81 regression we find a combined coefficient on *white* of [-357.8312+.1821478 year], which would suggest that partway through 1964 the break-even point would be reached.

$$\frac{-\alpha}{\beta} = year = \frac{357.3312}{.1821478} = 1964.51 \qquad (5)$$

We would expect to see then, that the coefficient on *white* would be negative before 1964 and then positive afterward, *a la* Figure 3. Given that this period was early in the racial integration of baseball, there well may be a 'novelty effect' on card collectors regarding these early players. So, it would not be unlikely that we would see collectors placing a premium on those early non-white player cards as they represented the racial pioneers in the game.

More evidence may be gleaned by exploring data taken from a more recent period, a period after the 'novelty effect' has worn off. Toward that end, Tables H and I show the summary statistics for single player, non-pitcher cards from players who played during 1986. That year was chosen to allow for the full impact of fame measurements, allowing enough time for inductions into the Hall of Fame to take place. Table I shows that white player cards garner higher prices, though a more thorough investigation is in order.

Figure 3

Table H: 1986 Card Data, Summary Stats
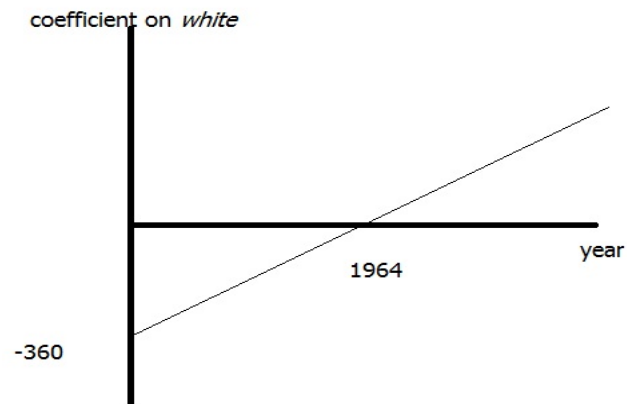
Table H: 1986 Card Data, Summary Stats (374 Distinct Cards, Hitters Only)				
Variable	Mean	Std. Dev.	Min.	Max
Price	.1600536	.1977005	.1	2
White	.6149733	.4872535	0	1
Exp (Experience)	5.818182	4.731288	0	22
Age	30.42513	4.505404	21	45
Rookie	.0882353	.2840167	0	1
PAB (Percentage at Bat)	334.7914	189.3278	2	687
LHR (Lifetime Home Run)	118.9439	115.2121	0	563
LAVE (Lifetime Average)	.2602701	.0236298	.132	.338
LSLG (Lifetime Slugging)	.3901711	.0547719	.171	.527
AS (All Star)	.1336898	.3407747	0	1
HF (Hall of Fame)	.0614973	.2405621	0	1
MVP (Most Valuable Player)	.0026738	.0517088	0	1
WS (World Series)	.0802139	.2719879	0	1

Table I: 1986 Card Data, Summary Stats By Race (374 Distinct Cards, Hitters Only)		
	Non-White	White
Price 2000	.1548611	.1633188
Exp	5.902778	5.765217
Age	30.22917	30.54783
Rookie	.083333	.0913043
PaB	369.3819	313.1348
LHR	133.6597	109.7304
LAVE	.2671319	.2559739
LSLG	.4016181	.3830043
AS	.1805556	.1043478
HF	.069444	.0565217
MVP	0	.0043478
WS	.0555555	.0956522
AGERES	.2711289	-.1697503
LSLGRES	.003839	-.0024035
Count	144	230

Table J shows the left-censored Tobit results for this data. One striking result is that the pseudo R^2 has increased substantially. It may be the case that collectors are basing purchasing decisions more on the player stats than on 'personality' or 'legend' status as compared to players from the 1960's, as those cards from the 1960's represent a much larger financial investment per card than do those cards in this more recent period. When it comes to race, the *white* variable is no quite longer significant at 20% significance, though it is positive as our earlier analysis would suggest it to be.

Table J: Regression Results: 1986 Comparison, Price = y, Left-Censored Tobit, (t-stats in parentheses)		
Price2000=y	1986 Cards	
	Without Fame	With Fame
Constant	-.61960692 (-1.9)	-.6598067 (-2.05)
White	.0591837 (1.17)	.0470278 (.95)
Rookie	.4290674 (4.54)	.4198453 (4.55)

Table J: Regression Results: 1986 Comparison, Price = y, Left-Censored Tobit, (t-stats in parentheses)		
Price2000=y	1986 Cards	
	Without Fame	With Fame
PAB (Percent at Bat)	.0001996 (1.28)	.0002515 (1.55)
LSLG (Lifetime Slugging)	.0375556 (.04)	.247862 (0.28)
LHR (Lifetime Home Runs)	.0020808 (5.15)	.0017481 (4.00)
AgeRes+	.044645 (2.84)	.0492516 (3.17)
LSLGRes+	10.26619 (6.01)	9.510943 (5.38)
AS (All Star)		-.0633627 (-.86)
HF (Hall of Fame)		.129962 (1.42)
MVP (Most Valuable Player)		.6021692 (1.76)
WS (World Series)		-.0027108 (-.03)
n	373	373
Log Likelihood	-101.62993	-98.758916
Pseudo R^2	.4542	.4697
Number of Left Censored Observations	258 ($0.1)	258 ($0.1)
+ See text for an explanation of these variables.		

BRIEF CONCLUSIONS

Our extensive analysis of discrimination on the part of baseball memorabilia collectors, via observation of baseball card pricing structure shifts across time, shows a shift in the premiums afforded to race. Looking at the data from the cards from the decade of the 1960's, a period very early in the integration of baseball, shows that initially there was a premium paid to non-white player cards due to what we refer to as the 'novelty effect'- though this effect wears off over the decade. A smaller data set, drawn from a single year (1986) shows another aspect of how race influences card price. In this second card set, chosen from a period of full racial integration in the sport but long enough ago for the players' stats to be complete (Hall of Fame entrance etc.), we see that race has ceased to become a significant factor regardless of any

mitigating factor such as measures of fame. It appears that racism on the part of sports memorabilia collectors may have run its course.

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