

U.S. Labor Market Regulation and the Export of Employment: Major League Baseball Replaces African-Americans with Latins

By
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Our analysis of the market for professional baseball players shows that domestic labor-market restrictions have reduced domestic employment, especially of African-Americans, with employers instead shifting employment overseas. Our theoretical model suggests that, in 1965, the imposition of both the player draft and stricter age minimums for hiring U.S. players reduced the benefits of signing and developing U.S. players, especially players from disadvantaged groups such as African-Americans. Our empirical analysis, using a new data set, then shows that, in response, teams have shifted to hiring and training players from other countries where the regulations do not apply, especially Latin America.

A persistent puzzle is the persistence of high unemployment among African-Americans and other less-educated groups during periods of low unemployment for others.¹ One controversial hypothesis blames labor market regulations, such as the minimum wage and limits on child labor: instead of helping low-skill workers, they cause employers both to reduce employment of low-skill workers in the U.S. and, for production of goods that can be transported, to shift employment overseas. The employers hire and train fewer young, uneducated domestic workers, sealing off the ground floor for many careers.²

We show here that professional baseball provides some evidence to support the hypothesis, helping to explain why the number of U.S.-born players in Major League Baseball (MLB), especially African-Americans, has declined over the last two decades at the same time that the number of players from Latin America has increased. Our theoretical model suggests that, in 1965, the imposition of both the player draft and stricter age minimums for hiring U.S.

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¹ See generally Cherry and Rodgers (2000).

players reduced the benefits of signing and developing players from the U.S., especially players from disadvantaged groups such as African-Americans. Our empirical analysis, using a new data set, then shows that, in response, teams have shifted to hiring and training players from other countries where the regulations do not apply, especially Latin America. That is, the regulations have caused teams to replace U.S. players from disadvantaged groups with foreign workers. No other paper has addressed these issues.³

I. The Demographics of Major League Baseball

A disheartening riddle has been the decline in hiring of African-American MLB players. As we show below, and as others have noted, the fraction of African-American players, after growing for two decades after Jackie Robinson broke the color barrier in 1947, began to decline and is now at its lowest point in more than 25 years (Lapchick and Mathews, 2001 p. 19).

Commentators have struggled to explain this. Some suggest that, influenced by stars such as Michael Jordan, African-Americans' preferences have changed to playing basketball (Ebony, 1992). Others explain the decline by noting the high numbers of athlete-aged African-Americans in jail (Edwards, 1997 pp. 1024-25). Another possible explanation is that improved prospects for African-Americans in other fields have made baseball less desirable. Worried about this trend, MLB has instituted many programs to reverse it.⁴

At the same time that they began to hire smaller proportions of African-Americans, MLB teams expanded greatly their hiring of foreign-born players, especially Latins. More than 40% of

² See generally Kennan (1995).

³ An extensive literature describes the increases in numbers of MLB players from various foreign countries. Examples are Bjarkman (1994) and Regalado (1998). Commentators have noted in passing the decline in number of African-American players. We are the first to identify the common cause of these two trends.

⁴ A top MLB official noted, "We are, without question, going to aggressively pursue the development of the African-American ballplayer . . . Turning this thing around is one of baseball's top priorities." Ebony (1992), quoting MLB Executive Director Leonard Coleman. See MLB (1998 pp. 12-16) for a list of MLB's many programs to recruit African-Americans.

current major- and minor-league professional baseball players were born outside the United States, with foreigners comprising more than one-quarter of major-league starters.⁵ Baseball officials predict that, by 2007, more than 50% of major league players will be Latins (Bellemore, 2001 p. 358 n.2). In the 1960s, teams might have hired African-American players such as Willie Mays. Now they hire Latin players like Sammy Sosa.

Figure 1 shows the average number of African-American and Latin-born starting players on major-league teams between 1947 and 2001. Figure 2 plots the participation of African-Americans and Latins as percentages. After 1947, the numbers of African-American and Latin-born players both increased substantially at first. However, the numbers of African-American players peaked around 1980, and has now declined substantially. At the same time, the number of Latin players continues to grow ever faster.

We will show that these two trends have a common cause: labor market regulations that MLB imposed in 1965. Before 1965, teams could contract with any high-school graduate that their scouts identified. In 1965, believing that this unfairly advantaged wealthy teams that could afford both more scouts and richer player salaries, MLB imposed the player draft. Players who were U.S. citizens could no longer be signed immediately by the team that first identified them. Instead, in order to promote team parity and reduce players' salaries, teams selected players in each round of the draft in reverse order of the teams' record the previous year. A team that had first identified and nurtured a player could now often expect that another team would draft the player.

In addition, purportedly to protect underage players from exploitation, MLB imposed new minimum age requirements for a player's being drafted and signed. Although a player who

⁵ Of all major league players, 20% are foreigners from countries other than Puerto Rico and Canada; the figure is almost 50% for minor leaguers (Singer, 2002, and Madden, 2000). If players from Puerto Rico and Canada were

did not attend college could, as before, be drafted after finishing high school at age 18, a player who attended college could now be drafted upon reaching age 21.

II. Baseball Employment Regulation and Hiring Incentives

The draft rules govern the market for U.S. professional baseball players as completely as any government regulation of any other labor market. Buttressed by its antitrust exemption,⁶ MLB with its farm teams is the only employer of professional baseball players in the United States. As with the minimum wage and child-labor laws, these laws apply to all potential employees in the market from the United States.

However, again like the minimum wage and child-labor laws, the draft does not apply to players from other countries—although in 1989 and 1991 respectively, MLB expanded the draft to cover players from the U.S. territories such as Puerto Rico and Canada. Unlike with U.S. players, MLB teams can sign and develop a foreign player directly with no fear that another team will steal away the player in the draft. Moreover, for two decades after 1965, no minimum age limits governed foreign players. Teams could and did sign foreign players as young as 12 or 14 (Klein, 1991 p. 43; Regalado, 2000 p. 17). In 1984, MLB imposed an age minimum for foreigners of 16, although this age limit is often ignored.⁷

A simple investment model predicts teams' response to these labor market regulations. Locating and developing skilled baseball players is expensive. To find the talented few, teams must hire scouts and pay their expenses to travel widely and view tens of thousands of players in

included, the fractions would be higher. Our data show that, for major-league starters, the fraction is 26%.

⁶ The Supreme Court exempted MLB from the antitrust laws until 1998, when Congress eliminated the exemption (Fuhrman, 2001 pp. 592-93).

⁷ MLB imposed the rule in response to the signing of Latino Jim Kelly at age 14 (Joyce, 1990 pp. 28-29). "MLB teams routinely sign Latino children younger than is permitted by MLB rules" (Vargas, 2000 p. 26; Cwierny, 2000 p. 423 n.341).

thousands of high-school and little-league games.⁸ In addition, excelling in baseball requires large amounts of organized, intensive instruction at an early age, especially in the player’s mid-teens; unlike in some other sports such as basketball, excellent baseball skills cannot be developed easily through informal pick-up games.⁹ Although some players receive the necessary training from youth and high-school coaches, players without access to these coaches often benefit substantially from extensive nurturing from MLB scouts.¹⁰ Maintaining scouts to provide this nurturing is expensive for MLB teams.

In deciding whether to invest its scouting resources in U.S. players or foreign players, a team will tend to invest where the expected returns are highest. Assume that F is the return that a MLB team expects from its investment in scouting and nurturing a foreign player:

$$F = P_f \sum_{i=1}^{N_f} \left[\frac{B_{fi} - C_{fi}}{(1+r)^i} \right], \quad (1)$$

where $i=1$ is the first year that the team signs the player, the team expects the player to have a career with the team lasting N years, and B_{fi} is the benefits that the team expects from the player each year directly in more wins and indirectly in higher ticket and TV revenues. Likewise, C_{fi} is the cost to the team each year in salary, bonus, and training costs once it has signed the player, and r is the interest rate. However, even if the team devotes time to scouting and nurturing a player, only a probability P_f exists that the team will actually succeed in signing the player; a $1-P_f$ chance exists that some other team will learn of the prospect and sign him before the first

⁸ Murff (1996) describes the efforts that teams must devote to scouting players.

⁹ Leading scouts confirm this (Murff, 1996 pp. 223-226, 304). Denying that any player is a “natural,” a senior scout noted, “No player is born knowing how to play the game at the major-league level. If a player has done something in a game—even if it looks like a miracle play—you can bet he’s done it a thousand times in practice” (Joyce, 1990 p. 43).

¹⁰ For example, scout Red Murff for several years observed, advised, and attended scores of high-school games of future hall-of-fame pitcher Nolan Ryan before signing him (Murff, 1996 pp. 43-50).

team does. In this case, the team's return will be zero. Likewise, for a domestic U.S. player, the return on scouting investment will be

$$D = P_d \sum_{n=1}^{N_d} \left[\frac{B_{di} - C_{di}}{(1+r)^i} \right], \quad (2)$$

with variables defined similarly.

Even for foreign and domestic players of equal talent (so that $B_{fi} = B_{di}$), the draft causes the expected return on the domestic player to be lower. Most importantly, the draft causes $P_d < P_f$: the probability that a team will be able actually to sign a domestic player that it scouts and nurtures is much lower than for a foreign player. Because a team cannot immediately sign a domestic prospect, but instead must await the draft, a high probability exists that the team's investment in scouting and nurturing the prospect will be lost; a high probability exists that some other team will draft the player. For example, a team that identifies a very talented 16-year-old will expect that by the time the player becomes eligible for the draft, many other teams will inevitably know of him and seek to draft him. Regardless how grateful the player feels toward the team that found and developed him, the draft renders him powerless to choose the team, even if the team is willing to offer more money than the team that actually selects him in the draft. Because the draft forces a team to invest in identifying and developing a domestic player with no property right in the player, it creates a great danger that another team will draft the player and reap the return from the first team's investment.

Also reducing the return on domestic players compared to foreign players, all else equal, are the draft's stricter age minimums for domestic players. A domestic player can be signed only after reaching age 21 for college players or 18 for others, compared to 16 or younger for foreigners. The age minimums combine with the draft to reduce the probability that a team that

identifies and nurtures a player will succeed in signing him; because by age 18 or 21, players are physically mature with substantial records of performance, many teams will know of any given player's talent. Moreover, because the age minimums delay the start of a domestic player's career, his team can reap the benefits of its investment in him for a shorter career, so that $N_f > N_d$. For example, the Atlanta Braves signed center fielder Andruw Jones, born in Curacao in the Caribbean, at age 16. By age 18, he had worked his way to the major leagues through the Braves' farm system, and soon became an all-star. Catcher Ivan Rodriguez, signed in Puerto Rico at age 16, was promoted to the major leagues by age 19, and was an all star by age 20.¹¹ In contrast, a domestic player who attended college could not even be signed until age 21.

Equations (1) and (2) show that the draft will cause investment in foreign players to be more attractive than in domestic players. For example, suppose that, conservatively and counterfactually, a team expects a domestic player and a foreign player to have the same career duration and the same yearly costs C .¹² Manipulation of (1) and (2) indicates that the expected returns from scouting and developing the domestic player will exceed the returns from the foreign player only if

$$\sum_{i=1}^N \frac{B_{di}}{(1+r)^i} > \frac{P_f}{P_d} \sum_{i=1}^N \frac{B_{fi}}{(1+r)^i} \quad (3)$$

However, we have seen that the draft causes the probability P_d that a team will be able to sign a domestic prospect to decline substantially, so that P_f/P_d will be large. A large P_f/P_d makes the right-hand-side of equation (3) very large. Seldom will the expected returns from a domestic

¹¹ He was signed in 1988, before Puerto Rican players became subject to the draft in 1989.

¹² In reality, foreign players should be more desirable than domestic players on both counts. Foreign players' careers should be longer because the draft permits teams to sign them younger. Teams can generally initially pay foreign players less because players' opportunity costs are lower in Latin America, although salaries are beginning to increase for top Latin players toward levels for U.S.-born free agents. (Regalado, 2000 p. 18; Joyce, 1990 p. 39; and Newhan and Reid, 1999, p. []).

player B_{fi} sufficiently exceed the returns from the foreign player so as to compensate for the much greater probability that any investment in nurturing the domestic player will be lost.

The model thus shows that the draft established incentives for teams to switch from scouting and developing U.S. players to scouting and developing foreign players. Equation (3) shows that, if groups of foreign and domestic players have similar promise, or even if the domestic players appear to have substantially more promise, then the draft will cause teams nonetheless to choose to nurture and develop the foreign players. The teams will invest only in the foreign players as long as

$$\sum_{i=1}^N \frac{B_{fi}}{(1+r)^i} > \frac{P_d}{P_f} \sum_{i=1}^N \frac{B_{di}}{(1+r)^i}, \quad (4)$$

where we know that P_d/P_f will be small.

A further implication is that the draft will cause teams to sign only those U.S. players who would require the teams to make little or no investment in nurturing and development before they reach signing age; a large probability exists that any investment before age 18 or 21 would be lost. That is, the teams will sign only those U.S. players who receive the necessary intensive development and training during their teen years from sources other than MLB.

III. The Shift to Foreign Training and Hiring.

The following history of MLB player development before and after 1965 demonstrates that teams behaved the way that the theoretical model predicts. Because the draft caused teams to believe that scouting and developing foreign players would provide greater benefits than developing domestic players, teams' behavior changed in two ways. First, teams shifted large fractions of their budgets for scouting and player development to Latin America, with most teams establishing more than one baseball academy there. Second, as our empirical analysis

suggests, the shift in scouting/development resources caused major leagues to hire sharply increasing fractions of Latin-born players. The new foreign players replaced U.S. players from disadvantaged groups, especially African-Americans.

A. Shifting Hiring and Training Resources Overseas.

Before 1965, MLB teams would identify U.S.-born prospects when they were in their mid-teens, devote large resources to observing and developing them for several years, and then sign them at age 18. The teams' large investments in developing young players benefited the teams in two ways. First, it created close relationships that increased the probability that a player would choose to sign with the team at 18. Second, it assured that during the critical teen years, the player would gain the necessary skills for later MLB success (Murff, 1996 pp. 45, 48-49, 59).

The draft induced large changes. A leading scout has written, "Since the major-league draft began in 1965, the scouting profession has changed drastically" (Murff, 1996 p. 43). As with the adoption of any other technical innovation, impacts occurred gradually in stages.

After a few years of experience with the draft, teams recognized that scouting/development resources were no longer well-spent in the U.S. Beginning in the 1970s, teams increasingly moved their scouts from the U.S. to Latin American (Klein, 1991 pp. 42, 62).¹³ They did this explicitly to evade the U.S. draft. One extensive study of Latin baseball players notes that

"the institution of the draft in 1965 dramatically altered the role of scouting in MLB in the United States. Scouting plays a major role in MLB teams' hunt for baseball talent in Latin American because Latino players (excluding those in Puerto Rico) are not included in the draft. In fact, scouting has developed an importance for MLB in Latin America

¹³ In a phone interview on September 21, 2002, former scout Red Murff, a MLB scout from 1960-93 who found Nolan Ryan, confirmed that the draft caused teams to refocus scouting and development to Latin America. As a top MLB consultant noted in 1997, "Teams have many more scouts looking for talent in the Caribbean-Central American region than they did 10 years ago" (Bellemore, 2001 p.358).

that echoes the old role of scouting in the United States . . ." (Marcano and Fidler, 1999 p. 537).¹⁴

Pleased with the results of their foreign scouting, teams that hoped to gain competitive advantage began in 1974 to plan the establishment of academies in Latin America to develop local players. The first, the Toronto Blue Jay's academy, opened in 1977. The Blue Jays, an expansion team in the early 1970s, quickly built a successful team by circumventing the draft. As a close observer notes, their general manager's "reliance on Latin American scouting reflects a long-standing policy of the Toronto organization to build quickly by circumventing the traditional amateur draft of U.S. college and high school talent. This normal drafting procedure early proved a major disappointment . . ." (Bjarkman, 1994 p. 117).

Encouraged by the success of these initial entrepreneurs and worried about competing with them,¹⁵ other teams then also began to establish academies. By 1990, 13 teams had academies in the Dominican Republic (Klein, 1990 p. 42). By 2000, 28 of 30 teams had academies in Venezuela, with similar numbers of academies in the Dominican Republic (Vargas, 2000 p. 28). Often run like regimented military schools, the academies are full-time boarding schools for baseball (Klein, 1991 pp. 70-72; Marcano and Fidler, 1999 pp. 544-45). With large budgets and enrolling hundreds of prospects per year, they educate the prospects in baseball skills and other subjects, including English. Entering the academies as early as age 12, students sometimes remain in the academies for three or more years, receiving the intensive, organized training that baseball excellence requires (Klein, 1991 pp. 69-84; Vargas, 2000 p.29; Marcano and Fidler, 1999 p. 544). The academies also permit teams to conceal talented youths from other

¹⁴ As one sports reporter noted, "because players outside the U.S. aren't subject to the amateur draft, clubs willing to scout and spend have an advantage" (Marcano and Fidler, 1999 p. 538).

¹⁵ For example, the Los Angeles Dodgers established their training complex because, as their Dominican Republic director noted, "[b]y that time Toronto was ahead of us. They had an academy and a big budget" (Klein, 1990 pp. 64-65).

teams until they can be signed at age 16 or 17 (Klein, 1991 pp. 53-54; Marcano and Fidler, 1999 p. 541; Regalado, 2000 p. 18). No such academy exists in the U.S.

As MLB executives acknowledge, teams have established the Latin academies because the draft does not cover Latin players. “Some executives worry that should MLB fold such players into the draft, teams wouldn’t invest the millions of dollars they currently do on academies because there’s no sense in developing a player to get drafted by another club.” (Schwarz, 2002).

The teams’ hunt for Latino talent runs wide and deep. A leading baseball writer noted, “there’s not a kid in the Caribbean who reaches his 14th birthday without being seen by the major-league teams” (Vargas, 2000 p.24). Even in 1986, a leading commentator noted that “to a large extent, a team’s ability to compete for a pennant today is determined by its scouting organization in Latin America” (Marcano and Fidler, 1999 p. 519).

B. Replacing Domestic Workers with Foreigners.

The teams’ shift in scouting and development resources away from the U.S. and toward other countries soon had the expected impact: teams began to hire foreign players rather than domestic ones. We demonstrate this with our new data set of the demographics and performance of all MLB players from 1947 until 2001.¹⁶ After we investigate the draft’s impact by looking at general trends in the data, we test our predictions with an econometric model. Finally, we explore evidence from the addition to the draft of the U.S. Territories and Puerto Rico.

¹⁶ The year 1947 was when a MLB team hired the first African-American, Jackie Robinson. As in other studies, race data came from external observers (Goff, McCormick, and Tollison, 2002, pp. 23-24). For the 1947-1990 race data, we visually inspected baseball cards (Slocum, 1990). We purchased more recent cards or use the authors’

General Trends

General trends will show that the draft is associated with a decline in the number of African-Americans who are starters on major-league teams, and an increase in Latins.¹⁷ We will also see that the draft's impact occurred neither fully nor immediately in 1965. Instead, initial effects occurred with a four year delay, gaining strength after that.

This delayed and gradual response is to be expected. Firms often innovate slowly in response to a shock. For example, although the first African-American player joined MLB in 1947, many teams had no African-American players more than a decade later (Goff, McCormick, and Tollison, 2002 Figure 1). Moreover, even if the draft had caused teams to begin signing different players immediately in 1965, the new players would not have entered the majors and our data for several years. Several years of minor-league development usually separate a team's signing of a player and the player's MLB debut. Between 1968 and 1977, the average time spent in the minor leagues until advancement to the major leagues was 4.8 years (Markham and Teplitz, 1981).

As shown in Figures 1 and 2, the number of African-Americans initially increased steadily, from none in 1947 to more than two starters per team, or 14% of the average team's starting lineup, in 1967. Then in the years after 1965, as the impact of teams' shift in scouting and development resources away from U.S. players began to be felt, the growth in the number of

knowledge augmented by that of several colleagues. We discarded the few players for whom we could not make a determination of race.

¹⁷ Mirroring the approach in Goff, McCormick, and Tollison (2002 p. 23 n.15), we analyze starting players for two reasons. First, starters have a greater impact on the game than part-time players. Second, racial classification of many part-time players is difficult because they lack baseball cards. We include nonpitchers who appear in at least 120 games, or 75 percent of the games in a given year. We include starting pitchers who pitched in at least 20 games (12.5 percent of season games) and relief pitchers who started in no games but pitched in at least 40 games (25 percent of season games). For the strike years of 1981 and 1994, we reduce the thresholds for qualifying as a starter proportionately to the strikes' shortening of the seasons.

African-American players began to slow: from 1969 to 1981, the number and percent of African-Americans continued to grow, but at a generally decreasing rate.¹⁸

In 1981, as the market began to reflect the impact of the 1977 opening of the first Latin training academies, the number and percent of African-Americans began to decrease. In the late 1980s and 1990s, as more teams shifted more resources to more academies, the rate of decline accelerated. From 1981 to 2000, the average proportion of African-American starters declined by about one-third, from 19% to 13%. The decline has struck some teams with special force. As Figure 3 shows, starting in 1993 some teams began to have no African-American starters.

Figures 1, 2, and 3 reveal the general trends in the numbers and percentages of Latin players. Because desegregation also reduced discrimination against Latins (Tygiel, p. 505), the number of Latin starters increased at approximately the same pace as for African-Americans for the first decade after 1947.

The variation in the numbers of Latin-born players in MLB in the late 1960s and early 1970s was caused by changes in the numbers of Cuban players. The peaks and declines were due both to the restrictions on emigration that Castro instituted beginning in 1959 and the embargo that was imposed after the 1961 Bay-of-Pigs; in the 1950s, Cuba was by far MLB's most important source of foreign players, with 36 of the 70 foreigners debuting during this decade (Bjarkman, 1994 pp. 385-86). The initial peak was not reached until five years after the embargo because of the many Cuban players who were already in the minor-league pipeline at the time of the embargo.¹⁹ Because of Cuba's unique history, Figures 1 and 2 also present data

¹⁸ Although the declining rate of increase is apparent by observation, the next section also demonstrates it econometrically.

¹⁹ The number of Cuban players debuting in MLB was 7 in 1958, 8 in 1960, 4 in 1964, 2 in 1966, and averaged 0 starting in 1969. (Bjarkman, 1994 Appendix C). As seen in Figures 1 and 2, because of normal retirement patterns, MLB had no Cuban starters by 1983. A trickle of Cuban defectors began to debut in the late 1980s (ibid.)

for Latin-born players excluding Cubans. There appears to be no change in the growth rate of non-Cuban Latins in the 1960s and 1970s.

As the impact of the draft finally began to work its way fully onto MLB rosters, the year 1981 was also a turning point for the numbers of Latins in MLB. As shown in the figures, the number of Latin players in MLB steadily increased until the early 1980s, and then, began to increase more rapidly. The initial establishment of Latin-American academies in the late 1970s led to accelerating increases in Latin MLB players in the 1980s—the opposite of African-Americans.

For the most part, Latins have replaced the lost African-Americans. As the numbers of African-Americans swiftly declined and Latins quickly increased during the 1990s, Latins for the first time outnumbered African-Americans in 1997. As shown in Figures 3 and 4, 1993 was not only the first year since 1971 that some teams had no African-American starters, it was also the first year that all teams had at least some Latin starters. In 1981, the fraction of African-Americans was more than double that of Latins: 19% compared to 8%. Today, considering both Latins and other foreigners, 26% of major-league starters are foreigners, double the fraction of African-Americans (Singer, 2002). Of major-league starters, 21% are Latins.

Of course, Latins have replaced not only African-Americans; they have also replaced U.S. whites. As figure 5 shows, the recent surge in foreign players has also coincided with a reduction in U.S. born white players.²⁰ However, African-American players have borne more of the brunt: from 1980 to 2001, the number of African-American players has declined 31 percent,

²⁰ The percentage of white players declined during the period from 1947 to the late 1960s, when the numbers of both African-Americans and Latins were increasing quickly. The decline appears to level off in the early 1970s. At this point, Latin players continue to replace white Americans at the same rate, but fewer African-Americans replace U.S. whites. The decline picks back up in the 1980s.

compared to only 8 percent for U.S. whites. The whites who have been eliminated are probably those who share African-Americans' socioeconomic disadvantages.

That the draft has caused greater declines in African-American players than in U.S. whites can be explained by relative socioeconomic disadvantages that, as a group, African-Americans suffer. Because baseball success requires intense organized training during the mid-teen years, the shift of teams' training resources from the U.S. to Latin America would be expected to hinder the development of groups who could not obtain training elsewhere. African-Americans are a group that is especially unable to provide their own training. Because African-American households have 35% less income on average than U.S. white households (U.S. Census Bureau, 2001, Table 662), few discretionary resources remain for families to pay for baseball camps, baseball leagues, and transportation to practices and games.

In addition, compared to U.S. whites, a much higher proportion of African-American children are raised by single mothers or grandmothers, with little male influence.²¹ Unlike two-parent households, these single parents lack the time and resources necessary to transport children to practices and games; it is difficult for a single parent to be a soccer mom. The absence of males also eliminates a traditional source of early baseball training. Moreover, large proportions of African-Americans dwell in dense urban areas, which contain few baseball fields (South and Crowder, 1997).

An Econometric Model

To test both our theoretical model and the evidence from MLB insiders, we now estimate an empirical model. The general framework for our econometric model is:

$$RACE_{it} = \alpha_i + \psi_t + \beta x_{it} + e_{it} \quad (5)$$

where $RACE_{it}$ is the number or percent of African-American, Latin-born, and American white players on team i in year t .²² The model includes franchise-level fixed effects, α_i , to account for franchise-specific practices in hiring. For example, certain teams specialized in foreign players. For example, of the 36 Cuban players who debuted in MLB during the 1950s, 18 were with the Washington Senators (Bjarkman, 1994 Appendix C).

The x_{it} variable provides measures across each franchise and over time of a franchise's perception of marginal revenue product from using players of different races. It includes the number of games out of first place a team is in year $t-1$. This *games back* variable measures relative team performance and the ability to sign desired players; teams select players in each round of the draft in reverse order of the teams' record the previous year. We also include *median family income* for each team's city in year t both to control for the relationship between discrimination and income and to measure the ability of a team's local fans to attend games. Finally, x_{it} includes the percentage of each team's city population in year t that is nonwhite. The *nonwhite* variable represents the possibility that minority populations may prefer minority players. Goff, McCormick, and Tollison (2002) establishes the importance of the variables in x_{it} for a team's perception of marginal revenue product.²³

The variable ψ_t represents a time trend. Our theoretical model, evidence from MLB insiders, and examination of the raw data suggests that the relationship between baseball demographics and the time trend will change over time. Specifically, the enactment of the MLB

²¹ In 1999, 69% of births of African-American children were to unmarried mothers, compared to 27% for whites (U.S. Census Bureau, 2001, Table 76).

²² We estimate the models with both the numbers and percentages of players from each race because changes in the average roster size over time may bias the data on the numbers of players.

²³ We thank those authors Games back data for 1947-1971. The later years of games back data are from The Baseball Archive at <http://www.baseball.com>. Demographic and income data are from U.S. Department of Commerce, Bureau of the Census, *County and City Data Book* (various issues). The median family income data are only collected in census years. The annual values for other years are linear interpolations. The percentage nonwhite census data are used for the four years preceding and five years after each census year.

draft and the establishment of Latin American training academies will cause structural changes in the relationship between team demographics and time. Due to the four or five year lag between drafting a player and his entering the major leagues, we expect knots, or thresholds, in the data to exist four or five years after the draft and establishment of training academies: in 1969 and 1981. Our theoretical expectation is that slope of the time trend variable, equivalent to the growth rate of the numbers of players from each race over time, will change at these thresholds. Our specific expectations are as indicated above in our discussion of the general trends.²⁴

We estimate the model with a spline regression to account for the piecewise relationship between the demographics of each team and the time trend variable (Greene 1993 p. 237). The variable ψ_t will measure changes in the growth rate of the different races in MLB between the threshold years; the time intervals measured are 1947-1968, 1969-1980, and 1981-2001.²⁵ The coefficients will represent the change in the slope of the time trend variable--the change in the growth rate--from the preceding time interval.²⁶

Table 1 reports the estimated ordinary least-squares coefficients of equation (5) for African-Americans. During the pre-Draft period, 1947-1968, the number and percentages of

²⁴ Before 1969, the increase of both African-American and Latin-born players should be similar as desegregation permitted both groups to replace U.S. whites. After 1969, we expect the growth rate of African-American players to decline as MLB teams lose the incentive to invest in American players. The growth rate of Latin-born players should remain stable after 1969; Latin-born players continue to replace white Americans at the same rate as before. Because the draft does not eliminate the incentives to invest in foreign players, the growth rate of Latin-born players will not slow down like the growth rate of African-American players. However, because it takes time for teams to change their training resources, the growth rate of Latins will also not increase. Similarly, we expect the decline in the number of U.S. whites in MLB to slow after 1969, because of the reduced growth rates of African-American players. After 1981, the growth rates of Latins should increase, and the rates for both African-Americans and U.S. whites should decline further as Latin-born players from the training academies begin to replace Americans.

²⁵ The results are similar in magnitude and significance when we allowed 3, 5, or 6 years for the draft and training academies to affect the relationship between the time trend and the demographic composition of MLB teams.

²⁶ If the disturbance variances differ across time intervals, pooling the observations can result in a biased estimate of both disturbance variances (Greene, 1993 p.236). The results are similar in magnitude and significance when the model is estimated on the three time intervals separately, which allows for different disturbance variances across the time intervals.

African-Americans on MLB teams increased with each year, as indicated by the positive and significant coefficient. However, starting in 1969, the growth rate slows with each passing year, as evidenced by the period's negative and significant coefficient. Between 1969 and 1980, ever fewer African-Americans join MLB teams; while the stock of African-American players is still increasing, the flow is decreasing. The negative and significant coefficient for the 1981-2001 period indicates that the growth rate declines even more as the years pass during this period. Eventually, the decreasing flow of African-American players, coupled with the normal retirement from the league, combine to result in a decreasing stock of African-American players.²⁷

Table 2 reports the estimated coefficients of equation (5) for Latin-born players. We report the results both with and without Cuban players because of the unusual circumstances affecting Cuban players during this period. The positive and significant coefficients for the pre-Draft period indicate that the number and percentages of Latin-born players on MLB teams increases with each passing year. During the 1969-1980 period, the growth rate does not change in the estimation excluding Cuban players. The insignificant coefficients indicate that the relationship between the time trend and Latin-born players is not different in this period than the

²⁷ The decrease in African-American players could also be explained by better labor market prospects; as job opportunities improve for African-Americans, they may spend less time practicing baseball. Alternatively, the decrease could be explained by the increasing numbers of African-American men in prison. To test these theories, we include measures of the number and percent of African-American men in prison and the number and percent of African-Americans that were unemployed. The African-American prison variable was constructed using data on the number of sentenced prisoners under State and Federal jurisdiction that were black, the total prison population, and the percent of new admissions to State and Federal prison that were black. These variables come from the Bureau of Justice Statistics, Correctional Populations in the United States (various years), the Bureau of Justice Statistics, Sourcebook of Criminal Justice Statistics (various years), and Langan (1991). The African-American unemployment variables were constructed from data on the number of unemployed African-Americans and the total African-American population from the U.S. Census Bureau, Statistical Abstract of the United States (various years).

The results do not support the alternate explanations. The estimation including the African-American prison variables produced coefficients that were similar in magnitude and significance to our primary estimation. The coefficients on the prison variables were insignificant. Similarly, the estimation including the African-American unemployment variables produced coefficients that were similar in magnitude and significance for most

previous period. The stock of Latin-born players on MLB teams continued to increase at the same rate as the previous period. In the estimation including Cuban players, the growth rate appears to decrease during this period. This is caused by the emigration restrictions and embargo that caused a substantial decrease in the flow of Cuban players into the league. Finally, during the 1981-2001 period, the growth rate of the number of Latin-born players increases, as indicated by the positive and significant coefficient for this period. That is, more and more Latin-born players are drafted each year, an increase in the flow and stock of Latin-born players.

Table 3 presents the results for U.S white MLB players. The negative and significant coefficient for the 1947-1968 period indicates that the number and percentages of white-Americans on MLB teams was decreasing with each passing year. However, during the 1969-1980 period, this decline slowed down. The positive and significant coefficients for this period indicate that the slope of the time trend variable has become less negative. In other words, the decreasing flow of U.S. whites slows with each passing year. However, beginning in 1981, the decline picks back up, as evidenced by the negative and significant coefficients for the 1981-2001 period in the estimation of the percentage of U.S. whites.²⁸

The coefficients on the other variables differ among the different estimations. Games back is negatively related to the number and percentage of African-American players. This result indicates that the earlier the team's order in the draft, the fewer African-Americans they choose. Median family income is negatively related to the number and percentage of both African-American and Latin-born players, whereas median family income is positively related to

of the variables. The negative coefficients for our third time interval, 1981-2001, became insignificant in this regression. The coefficients on the unemployment variables were insignificant.

²⁸ The coefficient for the 1981-2001 period is insignificant in the estimation of the number of U.S. whites. However, the data on the number of players may be biased because of changes in the roster size over time. The estimation on the percentages of players is probably more useful.

U.S. white players. This suggests that more affluent local fans prefer white players over minority players.²⁹

The empirical evidence supports our theoretical predictions. Before the draft, scouts often developed and guided talented African-American players, helping to compensate for the players' lack of other resources. The draft then caused teams to shift these resources to Latin America. Before the draft, teams helped train underprivileged African-Americans. After, they poured resources into baseball academies to train underprivileged Dominicans and Venezuelans.

After losing these necessary training resources, African-Americans have shifted to sports that require less organized training, such as basketball; at the same time that the proportion of professional African-American baseball players has fallen, the proportion of pro basketball players has risen (Lapchick and Matthews, 2002 p. 18). Unlike with baseball, youths can acquire excellent basketball skills in informal pick-up games on urban playgrounds, with no parents or coach necessary to provide transportation or supervise. Michael Jordan was not the cause of African-Americans' focus on basketball. Instead, he was a symptom of the changes in opportunities for African-Americans that the draft caused. As much as Jordan dreamed of a career in baseball—as shown by his minor-league adventure after his first basketball retirement—the lack of training opportunities in baseball instead directed him into basketball.

Today, as theory predicts, the U.S. players that teams sign are those who require little training or development before they can be signed; the draft creates a high probability that these

²⁹ The coefficient on the percentage nonwhite is insignificant in all of the estimations. This is the only variable representing minority populations available over our entire time period. The percentage of the city population that is African-American is available for 1956-2001. When this variable is used instead of the percentage nonwhite, the coefficients on the time trend variables don't change, but the coefficient on the percentage African-American is positive and significant in both African-American estimations. This suggests that African-American local fans prefer to watch African-American players. Ideally, we could also include the percentage of the population that is Hispanic. However, prior to 1970, Hispanics were classified as white in all census reports. The data on Hispanic populations in 1970 is questionable because it was poorly worded and not asked to all respondents. (Campbell and Jung, 2002 p. 1) Nevertheless, including the available data on the Hispanic population did not change our results.

investments would be lost. Teams draft complete, mature players, who have been able to train and develop without help from the teams. These tend to be the white, affluent players who have honed their skills in little league, high school, and college, supported and transported by middle-class parents. Unlike in the U.S. before 1965 and unlike in Latin America now, the teams ignore young, raw U.S. talent.

The draft and the accompanying flow of training resources into Latin America have made the area the world's most prolific supplier MLB players. The Dominican Republic provides more MLB players per capita than any other country, including the U.S. (Klein, 1991 p. 2).

Evidence from the U.S. Territories

To provide further evidence of the impact of the draft on hiring patterns, we examine the effect of the addition of Puerto Rico and the other U.S. territories to the coverage of the draft in 1999.³⁰ The large majority of MLB players born in the U.S. territories are from Puerto Rico. In the 1990s, Puerto Rico has been the one exception to the increasing number of Latin-born players in MLB, providing declining numbers of players. Figure 6 shows the average percentage of MLB players between 1980 and 2001 that were born in the U.S. territories. The percentages of players from U.S. territories increased until 1993, and then began decreasing.

The draft again explains this. Until 1989, Puerto Rican and other players from the U.S. territories were not subject to the MLB draft, and so they were more desirable to scouts than U.S. players. Beginning in 1989, the draft and the U.S. age minimums began to include Puerto Rican players, with supporters argued that the draft was necessary to protect young players.³¹

³⁰ Canadian players were added to the draft in 1991. However, because relatively few Canadian players have ever played in the major leagues, the addition had little effect.

³¹ Jorge Rivera, a MLB scout in Puerto Rico, argued that Puerto Rico needed the draft because "they were signing kids who were 14 and 15 years old. They're not used to being alone that early in life" (Baker, 1999).

Teams quickly cut back their scouting and development efforts in Puerto Rico. One sports reporter noted that because of the draft, “As scouts lament, there is no incentive to beat the bushes for players with long-term potential in Puerto Rico as was the case with Sammy Sosa in the Dominican Republic” (Madden, 1999). Another suggested, “Major league teams have bypassed Puerto Ricans in favor of younger players from the Dominican Republic and Venezuela who can be developed earlier on.” (Baker, 1999).

In less than a decade after 1989, the number of Puerto Rican players signed per year had dropped more than 40% (Madden, 1999). Figure 6 shows that the reduction in signings has led to a decline in the number of Puerto Ricans in MLB beginning in 1993. Once again, the draft begins to affect player demographics approximately four years after its institution.

We test empirically the effect of the draft on hiring in the U.S. territories by estimating equation (5) for players from these countries. The time trend variable, ψ_t , now includes the following time intervals: 1947-1968, 1969-1980, 1981-1992, and 1993-2001. Table 4 reports the results from this estimation. For the first three time periods, the results resemble those for other Latin American countries. The number and percentages of players from the U.S. territories increases between 1947 and 1968, as indicated by the positive and significant coefficients. Between 1969 and 1980, the growth rate of U.S. territory players remains the same, as evidenced by the insignificant coefficients. The positive and significant coefficients for the 1981-1992 period imply that the growth rate increases during this period; as with other Latin countries, ever more players from U.S. territories enter the major leagues as MLB hiring resources are transferred to foreign countries. However, beginning in 1993, the growth rate declines, as indicated by the negative and significant coefficients for the 1993-2001 period. As the years pass after the U.S. territories are added to the draft, fewer and fewer players from these areas

enter the major leagues. The declining flow and normal retirement from the league combine to result in a decrease in the stock of players from the U.S. territories.

IV. Conclusion

In 1965, professional baseball instituted labor-market regulations that, although purporting to protect young domestic players, instead penalized domestic players in favor of foreign players. Because the draft applied only to domestic players, teams soon shifted their scouting and development resources to foreign countries, especially Venezuela and the Dominican Republic. As our data show, the shift has led to large growth in the number of foreign MLB players and a similar decrease in the number of U.S. players, especially African-Americans.

Because baseball insiders recognize that the draft's partial coverage has caused recruiting and development to shift from the U.S. to overseas, a tentative agreement has been struck to extend the draft to all countries. Teams with less money assert that the draft's structure unfairly favors rich teams, which have the resources both to scout successfully and to create large academies in Latin America. They argue that, although the draft was intended to even the playing field among rich and poor teams, it has instead merely shifted the uneven field from the U.S. to Latin America. Although the draft precluded a rich team from buying the best rookies in the U.S., the team can still do just that in Latin America (Singer, 2002). As part of the 2002 MLB labor negotiations, the teams and union agreed to a worldwide draft, subject to later determination of the draft's details. The new draft is scheduled to begin in 2004 (Harding, 2002).

The worldwide draft will not solve the problem of declining African-American participation. Although it will reduce teams' incentive to invest in developing young foreign

talent, it will create no new incentive to develop young U.S. talent. The draft, wherever it applies, eliminates a team's incentive to develop a player's talents until after the team has drafted and signed the player. Thus, the worldwide draft will cause teams to hire more players whose families could afford to train them themselves, without help from MLB teams. These are middle-class and affluent U.S. white players.

The worldwide draft will cause the league to become even less diverse. The 1965 draft squeezed out the African-Americans; the draft eliminated teams' incentive to train them. The worldwide draft will additionally squeeze out the Latins; many come from humble backgrounds and the MLB teams' training academies provide their only opportunity to gain big-league skills. Baseball executives acknowledge that a worldwide draft would create incentives for teams to close the academies (Schwarz, 2002).

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Figure 1:
Average Number of African-American and Latin-Born
Starters per MLB Team

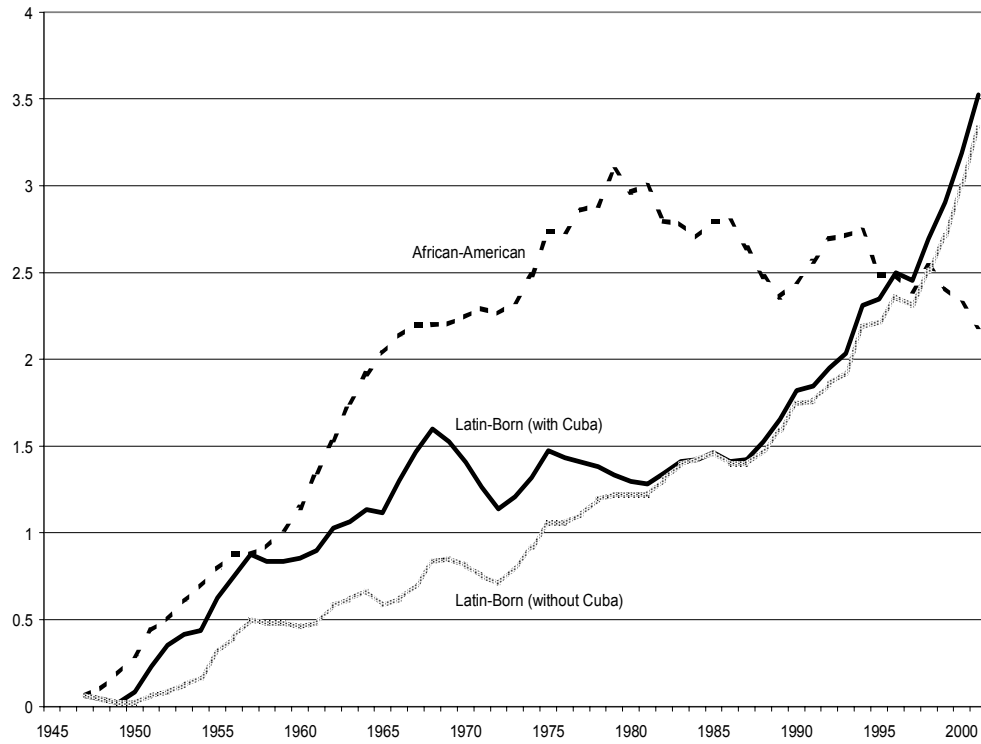


Figure 2:
Average Percentages of African-American and Latin-Born
Starters per MLB Team

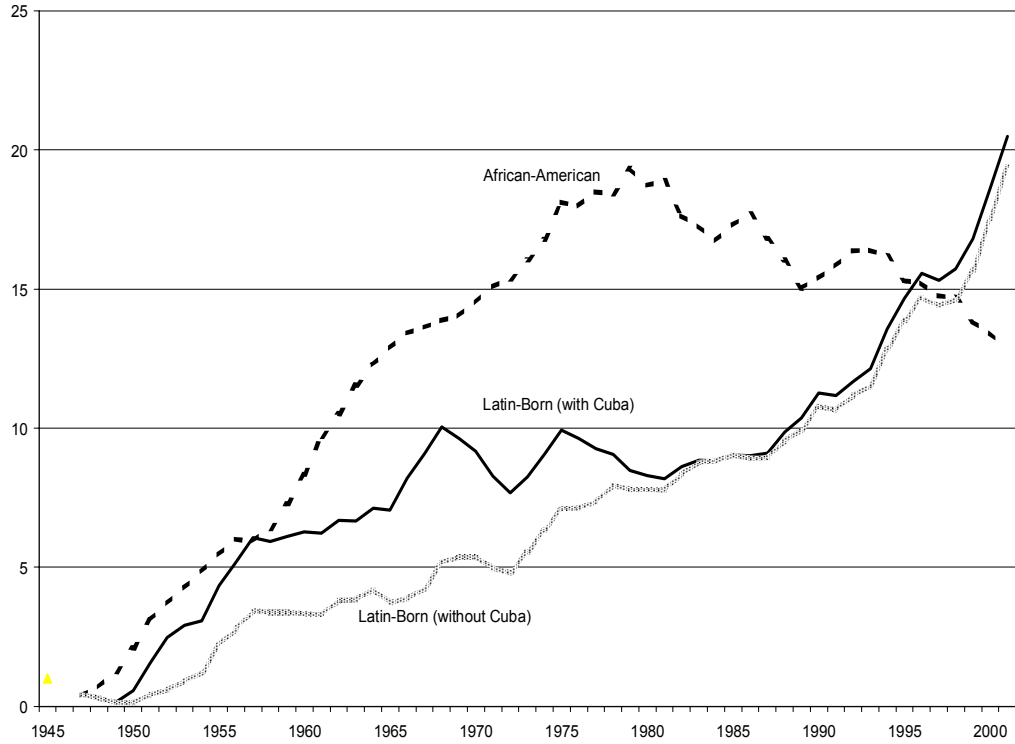


Figure 3:
Median, Maximum, and Minimum Percentages of African-American Players per
MLB Team, 1947-2001

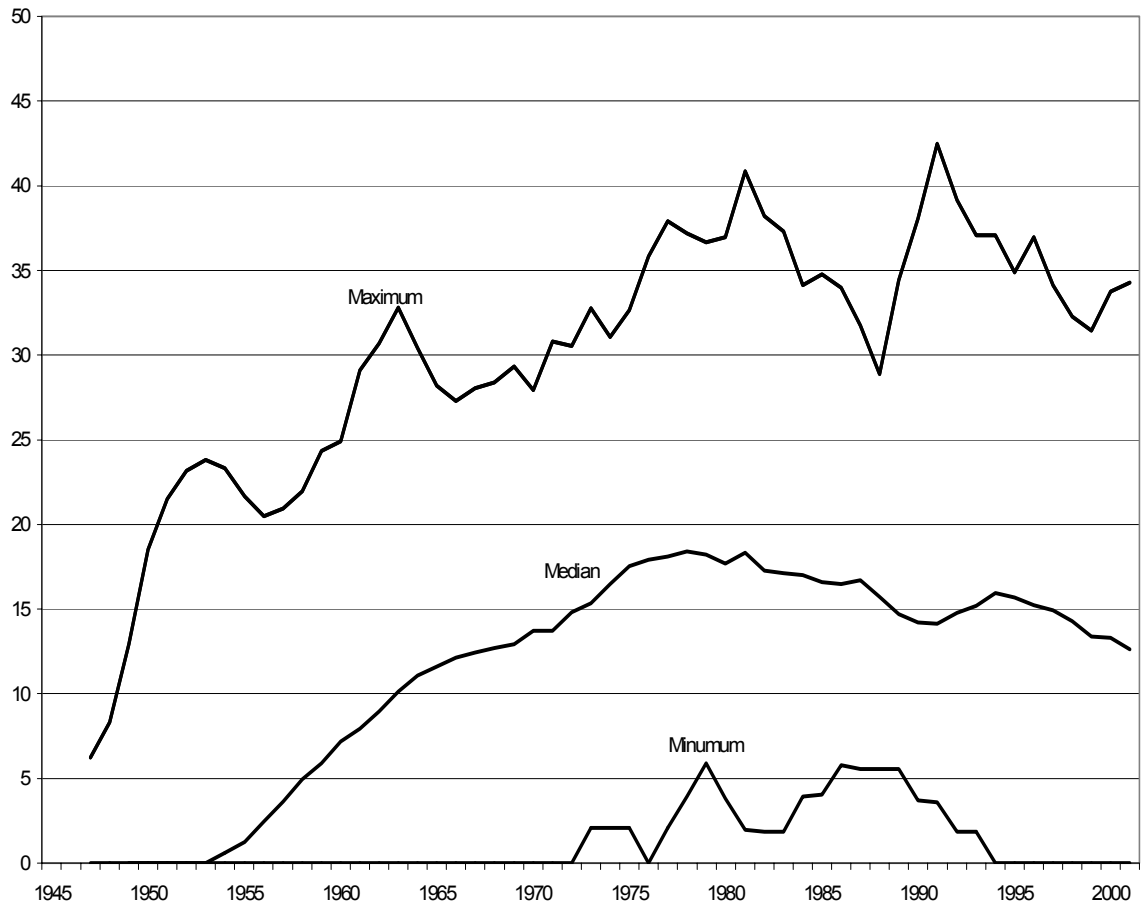


Figure 4:
Median, Maximum, and Minimum Percentages of Latin-Born Players per MLB
Team, 1947-2001

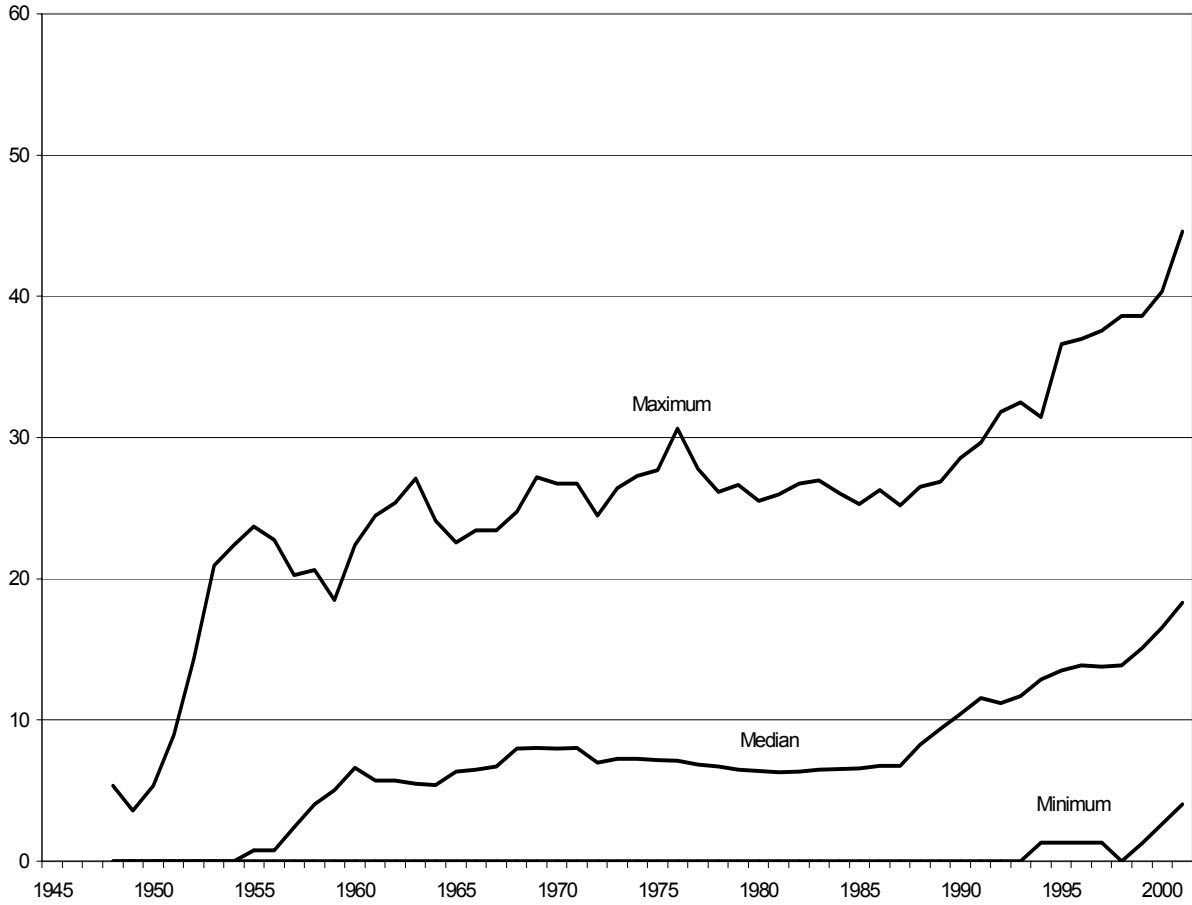


Figure 5:
Average Percentage of U.S. white Players per MLB Team,
1947-2001

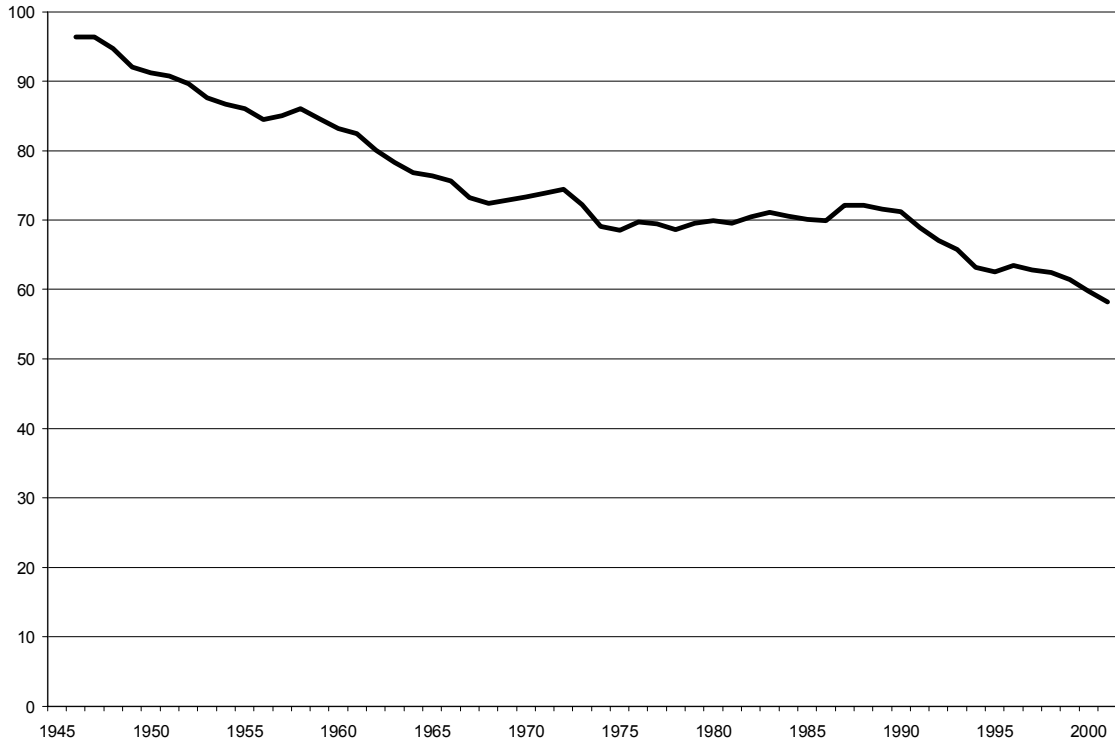


Figure 6.
Average Percentages of Players from U.S. Territories per MLB Team,
1980-2001

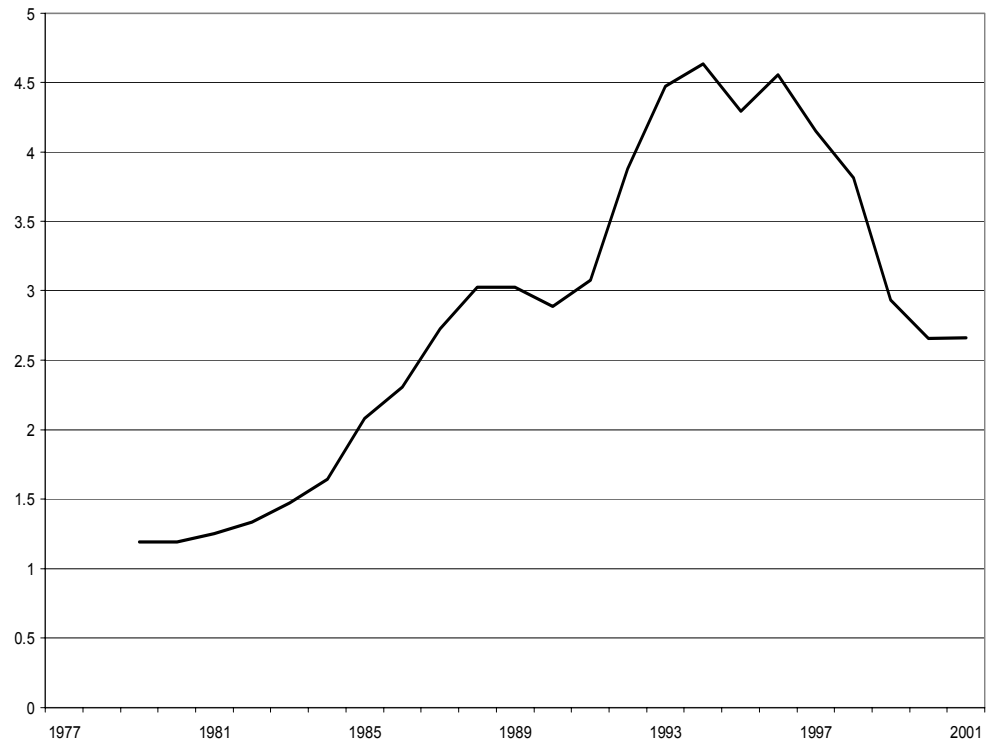


Table 1.
Spline Regression on Franchise-Level Panel Data:
African-American Players

Variable	Coefficient/t-statistics	
	Number of African-American Players per Team	Percent of African-American Players per Team
Pre-Draft Annual Growth Rate of Players, 1947-1968	.122 (12.76)*	.779 (13.05)*
Change in the Annual Growth Rate of Players after the Draft, 1969-1980	-.068 (3.27)*	-.498 (3.81)*
Change in the Annual Growth Rate of Players after the Establishment of Latin Training Camps, 1981-2001	-.037 (1.96)*	-.263 (2.25)*
Percentage Nonwhite	-.0008 (0.20)	-.020 (0.76)
Median Family Income	-.00004 (3.02)*	-.0002 (2.69)*
Games Back	-.014 (3.37)*	-.101 (3.82)*
Intercept	-236.902 (12.68)*	-1513.492 (12.97)*
R-squared	0.3615	0.3544
F-statistic	78.60	76.52

Notes: The dependent variables are the numbers and percentages of African-American players on each team. Absolute values of t-statistics are in parentheses. “*” and “+” represent significance at the 5% and 10% levels, respectively. The estimated coefficients for the franchise dummies are not shown.

Table 2.
Spline Regression on Franchise-Level Panel Data:
Latin-Born Players

Variable	Coefficient/t-statistics			
	Number of Latin-Born Players per Team		Percent of Latin-Born Players per Team	
	With Cuba	Without Cuba	With Cuba	Without Cuba
Pre-Draft Annual Growth Rate of Players, 1947-1968	.079 (8.79)*	.059 (7.32)*	.485 (8.53)*	.364 (7.24)*
Change in the Annual Growth Rate of Players after the Draft, 1969-1980	-.072 (3.63)*	.023 (1.32)	-.487 (3.92)*	.121 (1.10)
Change in the Annual Growth Rate of Players after the Establishment of Latin Training Camps, 1981-2001	.129 (7.30)*	.050 (3.18)*	.742 (6.67)*	.241 (2.45)*
Percentage Nonwhite	.004 (1.03)	-.005 (1.46)	.032 (1.29)	-.034 (1.54)
Median Family Income	-.00005 (3.72)*	-.00005 (4.34)*	-.0003 (3.19)*	-.0003 (3.80)*
Games Back	-.002 (0.59)	-.00005 (0.02)	.016 (0.63)	-.003 (0.14)
Intercept	-154.345 (8.75)*	-114.942 (7.28)*	-942.922 (8.49)*	-707.538 (7.20)*
R-squared	0.3565	0.4380	0.3214	0.4118
F-statistic	77.25	109.71	64.07	96.21

Notes: The dependent variables are the numbers and percentages of Latin-born players on each team. Absolute values of t-statistics are in parentheses. “*” and “+” represent significance at the 5% and 10% levels, respectively. The estimated coefficients for the franchise dummies are not shown.

Table 3.
Spline Regression on Franchise-Level Panel Data:
U.S. White Players

Variable	Coefficient/t-statistics	
	Number of U.S. White Players per Team	Percent of U.S. White Players per Team
Pre-Draft Annual Growth Rate of Players, 1947-1968	-.105 (6.57)*	-1.167 (14.55)*
Change in the Annual Growth Rate of Players after the Draft, 1969-1980	.057 (1.65)+	.995 (5.66)*
Change in the Annual Growth Rate of Players after the Establishment of Latin Training Camps, 1981-2001	-.040 (1.27)	-.661 (4.21)*
Percentage Nonwhite	.009 (1.32)	-.027 (0.76)
Median Family Income	.00005 (2.20)*	.0004 (3.15)*
Games Back	.008 (1.18)	.078 (2.20)*
Intercept	217.541 (6.94)*	2365.538 (15.08)*
R-squared	0.1529	0.4666
F-statistic	19.45	128.07

Notes: The dependent variables are the numbers and percentages of U.S. white players on each team. Absolute values of t-statistics are in parentheses. “*” and “+” represent significance at the 5% and 10% levels, respectively. The estimated coefficients for the franchise dummies are not shown.

Table 4.
Spline Regression on Franchise-Level Panel Data:
Players from the U.S. Territories

Variable	Coefficient/t-statistics	
	Number of U.S. Territories Players per Team	Percent of U.S. Territories Players per Team
Pre-Draft Annual Growth Rate of Players, 1947-1968	.0247 (5.16)*	.1577 (5.21)*
Change in the Annual Growth Rate of Players after the Draft, 1969-1980	-.0106 (1.02)	-.0788 (1.20)
Change in the Annual Growth Rate of Players after the Establishment of Latin Training Camps, 1981-1992	.0612 (5.04)*	.3705 (4.82)*
Change in the Annual Growth Rate of Players after the U.S. Territories are added to the Draft, 1993-2001	-.0872 (4.93)*	-.5327 (4.76)*
Percentage Nonwhite	-.0027 (1.28)	-.0175 (1.33)
Median Family Income	-.00003 (4.07)*	-.0002 (3.96)*
Games Back	-.0009 (.43)	-.0062 (.47)
Intercept	-47.921 (5.12)*	-305.50 (5.16)*
R-squared	.2063	.1970
F-statistic	14.44	12.04

Notes: The dependent variables are the numbers and percentages of players from the U.S. Territories on each team. Absolute values of t-statistics are in parentheses. "*" and "+" represent significance at the 5% and 10% levels, respectively. The estimated coefficients for the franchise dummies are not shown.