Chapter 7

Competitive Balance in Sports Leagues

BETWEEN 1946 and 1949, the best team in professional football was the Cleveland Browns of the All American Football Conference. The Browns won the AAFC championship four years in a row—every championship in the entire history of the AAFC—and had regular season records (won-lost-tied) of 12–2–0 (1946), 12–1–1 (1947), 14–0–0 (1948), and 9–1–2 (1949). These were the teams of Otto Graham, Dante Lavelli, and Marion Motley, all at their best, and coach Paul Brown was at the peak of his career as well. In 1946, the first year of the AAFC, Cleveland drew just under 400,000 for its seven home games, an average of 57,000 per game, outdrawing every other team in the AAFC, and outdrawing every team in the long-established NFL except for the New York Giants. By 1949, the Browns were drawing under 30,000 a game except for the one game matching them with their only close rival in the league, the San Francisco 49ers, featuring Frankie Albert and Norm Standlee.

The Browns and the AAFC ran into problems because of a lack of competitive balance within the league. In 1946, Dan Topping's New York Yankees won the Eastern division crown of the AAFC with a record of 10–3–1, a full seven games better than the second-place Brooklyn Dodgers (3–10–1), and the Browns won the Western title with a three-game lead over the 49ers. (By way of comparison, the NFL has never had a season in which the final lead in a division was greater than four and one-half games, and less than 10 percent of the time has a final lead in the NFL been as much as three games.) The Miami Seahawks (3–11–0) pulled out of the AAFC after the 1946 season, after averaging only 7,000 per game in attendance, to be replaced by the Baltimore Colts.

Things were a little better in 1947, when the Yankees ended up only two and one-half games ahead of the Buffalo Bills, and the Browns were again three games ahead of the 49ers. But the Colts (2–11–1) were so outmanned on the playing field that the league acted to bolster the Baltimore squad by allowing the team to draft players from other teams in the league.

The Brooklyn Dodgers (2–12–0) and the Chicago Rockets (1–13–0) were the weak teams in 1948. Average attendance at Brooklyn games fell to under 10,000 in 1948, and the Dodgers dropped out, to merge with the New York Yankees. By 1948, the AAFC had become in effect a two-tiered league, with the Browns and the 49ers in a class of their own. In 1949, the two-tiered structure continued, and the Los Angeles Dons (4–8–0) ran into problems at the gate, when their NFL rival, the Los Angeles Rams, won the Western division title. That spelled the end of the AAFC, which merged with the NFL in December 1949, with the Browns, the 49ers, and the Colts moving to the NFL—and the Browns then went on to win the NFL championship in 1950, and won two more titles in the next five years.

It is not only rival leagues, such as the AAFC, that have run into problems because of a lack of competitive balance. Back around 1910, after baseball's Washington Senators had suffered through some pretty bad years, someone coined the famous saying, "Washington—first in war, first in peace, and last in the American League." Baseball fans could certainly identify with this because in the first 10 years of operation of the American League—then an eight-team league—the Senators compiled a record of one sixth-place finish, five seventh-place finishes, and four eighth-place finishes. And all during this period, needless to say, the Senators were the poorest-drawing team in the league. Ban Johnson, president of the American League, made heroic efforts to find some way to build up the Senators. His help finally paid off when Clark Griffith moved to the Senators as manager and part owner in 1912, and almost immediately turned the team around to make it a pennant contender.

During the 1930s and 1940s, there were three perennially weak teams in the American League—the Philadelphia Athletics, the St. Louis Browns, and, once again, the Washington Senators. Over the 20-year period between 1932 and 1951, the Athletics were in the second division 16 times and were last 10 times, including one stretch (1940–1946) of six last-place finishes in seven years; the Browns were in the second division for 17 years, and were last five times; and the Senators spent 13 years in the second division, two of them in last place. It is no surprise that the first franchises in the American League to move following World War II were these three teams—St. Louis going to Baltimore in 1954, Philadelphia moving to Kansas City in 1955, and Washington moving to Minnesota in 1961.

Actually, the American League has had problems with woefully weak

1,164,000 in 1927, the runaway race caused attendance for the American League as a whole to drop by 300,000, from 4,913,000 to 4,613,000.

The record of the 1931 Philadelphia Athletics is even more striking. The Athletics featured Hall of Famers Jimmy Foxx, Al Simmons, Mickey Cochrane, Jimmy Dykes, and Lefty Gomez, and won their third straight American League pennant in 1931 by 13 games over the Yankees. Not only did attendance in the league fall some 800,000 from 1930 levels—understandable given the deepening Depression—but the Athletics themselves lost 100,000 in attendance, drawing only 627,000. In the face of this, Athletics owner Connie Mack made the decision to once again sell off his best players to other, wealthier owners. Tom Yawkey picked up Foxx and Gomez for his Red Sox, Cochrane went to the Tigers, and Simmons ended up with the White Sox. The Athletics never recovered from Mack's player sales during their remaining years in Philadelphia. Eventually the team was sold and moved to Kansas City and then to Oakland, where Charlie Finley's teams of the early 1970s brought back memories of Mack's pennant winners. And when the fans refused to come out to watch the Athletics in Oakland, Finley followed Connie Mack's lead by deciding to sell his team, player by player, to the highest bidders, leading to a bitter confrontation with Commissioner Bowie Kuhn (see *Charles O. Finley v. Bowie Kuhn*, 569 F.2d 1193 (6th Cir. 1978)), and to a revision of the laws of baseball concerning player sales.

One of the key ingredients of the demand by fans for team sports is the excitement generated because of the uncertainty of outcome of league games. For every fan who is a purist who simply enjoys watching athletes with outstanding ability perform regardless of the outcome, there are many more who go to watch their team win, and particularly to watch their team win a close game over a challenging opponent. In order to maintain fan interest, a sports league has to ensure that teams do not get too strong or too weak relative to one another so that uncertainty of outcome is preserved. If a league becomes too unbalanced, with too much playing talent concentrated in one or two teams, fan interest at the weaker franchises dries up and ultimately fan interest even at the strong franchises dries up as well.

Preservation of competitive balance is a legitimate problem for sports leagues, and deserves serious attention. Moreover, from the time that the player reservation system was introduced into baseball in the 1870s, owners have used the need for competitive balance among teams to justify restrictions on the rights of players to sell their services in a freely competitive labor market. This chapter reviews the actual performance of the major sports leagues with respect to competitive balance over their histories, and examines the arguments that owners have in a league. The main advantages of the range are that it is easy to understand and easy to calculate; the disadvantage is that the range only takes into account the two extreme (highest and lowest) W/L percentages for the league season, and ignores intermediate W/L percentages.

A better measure of dispersion of W/L percentages for a league is the standard deviation of the distribution of W/L percentages, which is calculated as follows: for each team, calculate the difference between the team's W/L percentage for the season and the league average (.500). Square the difference for each team. Add these figures for all teams in the league, and then divide the total by the number of teams in the league. Take the square root, and you have the standard deviation of the league W/L percentages for that season.

The standard deviation can be a very informative measure of the spread of a distribution. For example, if the W/L percentages for a league are distributed as the normal (bell-shaped) distribution, then approximately two-thirds of the W/L percentages will lie within one standard deviation of the league average, approximately 95 percent will lie within two standard deviations, and approximately 99 percent will lie within three standard deviations of the league average.

Using the Noll-Scully approach, we can evaluate the degree of competitive balance in a league by comparing the realized values of the standard deviation of the W/L percentages for a league to an idealized measure, namely, the standard deviation of W/L percentages for a league in which every team is of equal playing strength. That is, the idealized measure applies to a league in which, for each team, the probability of winning any game is one- half. The value of the idealized standard deviation depends on the number of games in a team's league schedule. If a team plays N league games in a season, then the idealized value of the standard deviation for the season-long W/L percentage is simply equal to $(.5)/\sqrt{N}$. For example, a league composed of teams of equal playing strengths and playing a 16-game schedule (as in the case of the NFL) would have a standard deviation of $(.5)/4 = .125$. A league composed of teams of equal playing strengths playing an 81-game schedule (roughly the NBA and NHL schedules) would have a standard deviation of $(.5)/9 = .055$. The more games in a league schedule, the lower the idealized standard deviation for the league.

It also is known that the distribution of W/L percentages for a league with teams of equal playing strengths conforms closely to the normal distribution. Thus, for a league comprising of equal playing strengths, roughly two-thirds of the W/L percentages will lie within one standard deviation of the league average (.500). For a league with a 16-game schedule and all teams of equal playing strengths, we have seen that the standard deviation would be $(.5)/4 = .125$. Thus roughly two-thirds of the W/L percentages will lie between .375 and .625; for a comparable league with an 81-game schedule, where the standard deviation would be (.5)/9 = .055, roughly two-thirds will lie between .445 and .551.

In Table 7.1, historical data are shown for the average range of the W/L percentages of the major pro team sports leagues, decade by decade, from 1901 through 1990, along with historical data on actual and idealized average annual standard deviations of W/L percentages, again on a decade-by-decade basis.

The final section of the table provides a measure of the degree of competitive balance for each league in each decade, using the following ratio: actual average annual standard deviation divided by the idealized standard deviation. The idealized standard deviation is that which would hold if all teams were of equal playing strength. The closer is the ratio of actual to idealized standard deviation to 1, the more competitive balance there is in the league.

Table 7.1 covers the period from 1901, the first year of operation of the AL, through 1990, and hence it covers the complete playing histories up to 1990 of all present-day major leagues except for the NL, which began play in 1876. Table 7.1 shows the expected result that the more games there are in a league season, the smaller the range tends to be, with baseball having an average annual range only about one-third that of NFL football. What is of interest in this respect is that NBA basketball and NHL hockey have roughly the same number of games per season, but the NBA has a significantly larger average range per season than that of the NHL, except for the decade of the 1970s. Finally, while both the AL and the NL show trends toward a lower range over time, none of the other leagues displays any discernible trends so far as the range is concerned.

Much the same comments apply to the actual standard deviation data, except that the downward trend for baseball (signaling a move toward more competitive balance) also is matched by a similar declining trend for the NFL, while neither the NBA nor the NHL shows any perceptible trend. The idealized standard deviation measures reflect increases over time in the number of league games scheduled per team, for example, baseball's moving from a 154-game schedule to its 162-game schedule after expansion (AL in 1961, NL in 1962), and NFL football's moving from a 12-game schedule in the 1950s to a 14-game schedule, and then to a 16-game schedule after 1976. Similar changes have occurred in the other leagues.

The final section of the table provides the competitive balance measures for all leagues in the form of the ratio of the actual average standard deviation to the idealized standard deviation. This section of the table also indicates the statistical significance levels associated with

Table 7.1
Competitive Balance in Team Sports Leagues: Average Dispersion of W/L Percentage

	1901–1909	*1910–1919*	*1920–1929*	*1930–1939*	*1940–1949*	*1950–1959*	*1960–1969*	*1970–1979*	*1980–1990*	*Avg.*
					Average Range of W/L Percentage					
AL	300	328	284	331	269	284	246	256	238	280
NL	364	284	257	275	290	241	266	240	210	269
NBA					554	369	489	495	558	484
NFL			936	739	795	672	769	748	738	769
NHL		479	423	346	343	344	331	513	409	391
					Average Standard Deviation of W/L Percentage					
AL	97	102	90	105	88	97	83	76	65	88
NL	123	89	87	89	96	80	82	68	65	85
NBA					161	119	147	131	150	139
NFL			299	240	261	210	222	208	191	232
NHL		190	142	110	115	113	112	142	107	123
					Idealized Standard Deviation of W/L Percentage[a]					
AL	40	40	40	40	40	40	39	39	39	40
NL	40	40	40	40	40	40	39	39	39	40
NBA					66	59	56	55	55	57
NFL			163	150	151	144	135	132	125	140
NHL		111	88	72	68	60	59	56	56	63
					Ratio: Actual Standard Deviation/Idealized Standard Deviation					
AL	2.43**	2.55**	2.25**	2.62**	2.20*	2.43**	2.13*	1.95*	1.67*	2.20**
NL	3.08**	2.22*	2.18*	2.22*	2.40**	2.00*	2.56**	1.74*	1.67*	2.12**
NBA					2.44**	2.02	2.62**	2.36*	2.73**	2.43**
NFL			1.83**	1.60**	1.73*	1.46*	1.64**	1.58*	1.53*	1.66**
NHL		1.71	1.61	1.53	1.69	1.88*	1.90**	2.54**	1.91**	1.95**

Sources: Hollander 1977; Hollander and Bock, 1970; Riffenburgh 1986; Reichler 1964; and league guides for later years.

[a]Assuming all teams of equal strength.

*Significant at the .05 level.

**Significant at the .01 level.

The history of the NBA has been hectic, as was noted in Chapter 2. During the 1946–1949 period, six of the original 11 members of the BAA (Basketball Association of America) dropped out of the league, the league added one team (Baltimore) from the American Basketball League, plus 10 teamss from the National Basketball League, and changed its name in 1949 to the National Basketball Association. The 1950s began with a winnowing out of the smaller NBL teams (Anderson, Sheboygan, Waterloo) and Denver, followed by the loss of Indianapolis and Baltimore midway in the decade, and various franchise moves (Rochester to Cincinnati, Fort Wayne to Detroit, Tri Cities to Milwaukee and then to St. Louis). During the 1960s, when the Celtics owned the league (8 of 10 titles), the NBA did battle with the ABA, added six new franchises (Chicago, Chicago once again, Seattle, San Diego, Milwaukee, Phoenix), and had more franchise moves (Philadelphia to San Francisco, Syracuse to Philadelphia, Minneapolis to Los Angeles, St. Louis to Atlanta, Chicago to Baltimore).

In the 1970s, it was more of the same. Buffalo, Cleveland, Portland, and New Orleans were added as expansion franchises; the Nets, San Antonio, Denver, and Indiana were taken in as part of the ABA-NBA merger agreement; and there were more moves (San Francisco to Oakland, Cincinnati to Kansas City-Omaha, Baltimore to Washington, San Diego to Houston, Buffalo to San Diego, New Orleans to Utah, the Nets from New York to New Jersey). Given this history, the 1980s were positively placid—there have been only five more expansion teams (Dallas, Charlotte, Miami, Minnesota, Orlando), and a mere two moves of existing franchises (Kansas City to Sacramento, and San Diego to Los Angeles).

The NHL has had only two comparably tumultuous decades—the 1920s, when Montreal (Maroons), Boston, Pittsburgh, New York (Rangers and Americans), Chicago, and Detroit came into the league, and the 1970s, when the league absorbed the six expansion franchises of 1967 (Philadelphia, Los Angeles, St. Louis, Minnesota, Pittsburgh, and Oakland); added Buffalo, Vancouver, the Islanders, Atlanta, Washington, and Kansas City as six more expansion franchises; and in addition took in Edmonton, Winnipeg, Hartford, and Quebec from the defunct WHA. Franchise moves in the 1970s were from California to Cleveland (which then merged with Minnesota), and Kansas City to Colorado.

Looking at Table 7.1, the decade of the 1970s shows up as an outlier for the NHL, with a value for the ratio of actual to idealized standard deviation that looks like the ratios for the NBA over its history. (See the discussion of franchise turnovers in Chapter 2.) The 1920s do not show up as a blip for the NHL, presumably because the expansion of though the difference between the NL and NFL is small, over the entire range of league team years.

The leagues may also be ranked in terms of Gini coefficients (see Chapter 6), that is, in terms of the area under a Lorenz curve and above the equal competitive balance line. The larger the Gini coefficient, the bigger the "bulge," and hence the less competitive balance. Gini coefficients for the concentration of league championships are as follows: NBA, .419; NHL, .386; AL, .377; NFL, .350; NL, .334. The NBA has the least competitive balance and the NL the most, in terms of concentration of championships.

Lifetime Team W/L Percentages and Competitive Balance

In a league where all teams were of equal playing strength, the lifetime team W/L percentages would be bunched closely around the league average of .500. In contrast, actual lifetime W/L performance records of teams differ significantly from this ideal. Table 7.5 lists the lifetime W/L percentages for the most successful teams (in terms of W/L percentages) in each of the five major sports leagues, and also gives relative frequencies of winning seasons for each team. Data cover the period through the 1990 (or 1990/91) season.

Among all teams with more than 10 years in a league, the best lifetime W/L record is held by the Oakland Raiders, who compiled a .699 W/L record in their 12 years in the NFL, and had winning seasons in 11 of the 12 years they were in Oakland. The Dolphins have the next best lifetime W/L record, at .682, with 19 winning seasons in 21 NFL campaigns. Then come the Los Angeles Lakers, who have had winning seasons 87 percent of the time over the 31 years since the team was moved from Minneapolis, and have compiled a .638 lifetime W/L record, just nosing out the Celtics, at .630.

Ranking far down the list of lifetime W/L records are the leading baseball teams—the Yankees, with a lifetime W/L record of .567, with 70 winning seasons in the 88 years they have been in the AL. The NL's best record is still held by the old Milwaukee Braves, who never had a losing season in their 13 years in the league, compiling a .563 W/L record.

In trying to make comparisons among the various successful teams in the different sports, we need to take into account the differences in schedules of the various leagues, and the number of years that a team has been in a league. In particular, the longer is the league schedule,

Table 7.5
Lifetime W/L Percentages of Most Successful Teams, All Leagues, Teams with at Least 10 Years in League, 1901–1990

Team	Lifetime W/L %	Years in League	Winning Seasons (%)
AMERICAN LEAGUE			
New York	.567	88	80
Baltimore	.535	37	70
Oakland	.523	23	65
K.C. Royals	.521	22	68
Detroit	.518	90	67
Boston	.510	90	63
Cleveland	.509	90	56
Minnesota	.501	30	53
NATIONAL LEAGUE			
Milwaukee Braves	.563	13	100
Los Angeles	.545	33	76
N.Y. Giants	.545	57	75
Pittsburgh	.523	90	67
San Francisco	.517	33	70
St. Louis	.515	90	62
Chicago	.509	90	49
Cincinnati	.504	90	53
NATIONAL BASKETBALL LEAGUE			
L.A. Lakers	.638	31	87
Boston	.630	44	84
Milwaukee	.610	22	77
Philadelphia 76ers	.582	28	79
Syracuse	.571	14	71
Minneapolis	.550	12	58
St. Louis	.550	13	62
Denver	.538	14	71
Washington	.520	17	47
NATIONAL HOCKEY LEAGUE			
Edmonton	.607	11	82
Montreal Canadiens	.597	73	88
Philadelphia Flyers	.582	23	74
Calgary	.578	10	80
Buffalo	.559	20	80
N.Y. Islanders	.559	18	78
Ottawa	.558	16	69
Boston	.551	66	68
N.Y. Rangers	.522	64	53

(continued)

Table 7.5 (cont.)
Lifetime W/L Percentages of Most Successful Teams, All Leagues, Teams with at Least 10 Years in League, 1901–1990

Team	*Lifetime W/L %*	*Years in League*	*Winning Seasons (%)*
NATIONAL FOOTBALL LEAGUE			
Oakland	.699	12	92
Miami	.682	21	90
Chicago Bears	.624	71	72
Cleveland Browns	.612	41	81
Dallas Cowboys	.579	31	68
L.A. Rams	.576	45	71
N.Y. Giants	.560	66	67
Denver	.554	21	71
Green Bay	.552	70	66
Minnesota	.546	30	67

Sources: As in table 7.1.

and the more years a team has been in a league, the more significant is a high lifetime W/L percentage for a team.

Once again, we are going to use the ideal of a league composed of teams with equal playing strength as a device to compare the winning percentages of teams shown. We have already seen that in a league with teams of equal strength, the standard deviation of the distribution of W/L percentages for a season is given by $(.5)/\sqrt{N}$, where N is the number of games during the season. The more games in a league season, the smaller is this idealized standard deviation, that is, the more bunched up are the team W/L percentages around .500 for teams assumed to be of equal playing strength. Because of this, under the equal playing strengths assumption, it is less likely that a team's W/L percentage will be, say, at .550 or above, if a league plays a 162-game schedule, as in baseball, than if it plays an 80-game schedule, as in the NHL.

When we calculate the lifetime W/L percentage for a team that been in a league T years, what we do is to add up the team's W/L percentage in each of the T years, and then divide by T. Suppose that the team were playing in a league where all teams were of equal playing strength. Then the lifetime W/L percentage for a team is simply the sample mean of a sample of size T drawn from a population of W/L percentages with mean .500 and standard deviation $(.5)/\sqrt{N}$. From elementary statistics, we know that, for any T sufficiently large, the sample mean will be distributed approximately as the normal distribution, with a mean of .500 and with a standard deviation equal to the population standard deviation divided by $\sqrt{T}$.

This gives us a way to evaluate the lifetime W/L percentages of teams. For each team, we know T, and we know the average league schedule N over the period in which the team was in the league. Thus we can calculate for each team, how many standard deviations above .500 the observed lifetime W/L percentage lies, assuming equal playing strengths. This becomes a measure of the "achievement" of a team, which can be used to rank teams within a league, and between leagues. Tables 7.6 through 7.10 provide a ranking of teams in the five leagues, and Table 7.11 identifies the prize "overachievers" and "underachievers" in the history of major league pro team sports.

When we adjust for the length of the season and for the number of years a team has been in a league, the New York Yankees end up as the team with the best lifetime record, 15.6 standard deviations above the mean, under the equal playing strengths assumption. If there actually were equal playing strengths in the AL, the probability that a team

Table 7.6
Lifetime W/L Percentages Ranked by Achievement Measure, American League, Teams with at Least 10 Years in League, 1901–1990

Team	*Years in League*	*Lifetime W/L %*	*Standard Deviations above .500*[a]
New York	88	.567	15.6
Baltimore	37	.537	5.6
Detroit	90	.518	4.3
Oakland	23	.523	2.8
K.C. Royals	22	.521	2.5
Boston	90	.510	2.4
Cleveland	90	.509	2.1
Minnesota	30	.501	0.1
Chicago	90	.496	−1.0
Milwaukee	21	.485	−1.7
Toronto	14	.480	−1.9
Texas	19	.472	−3.0
Philadelphia	54	.478	−4.11
Washington II	11	.418	−6.8
Washington I	60	.464	−6.9
Seattle	14	.423	−7.2
K.C. Athletics	13	.404	−8.6
St. Louis Browns	52	.434	−12.0

Sources: As in table 7.1.
[a]Under equal playing strengths assumption.

Table 7.7
Lifetime W/L Percentages Ranked by Achievement Measure, National League, Teams with at Least 10 Years in League, 1901–1990

Team	*Years in League*	*Lifetime W/L %*	*Standard Deviations above .500*[a]
N.Y. Giants	57	.545	8.5
Los Angeles	33	.546	6.6
Milwaukee	13	.563	5.7
Pittsburgh	90	.522	5.2
St. Louis	90	.515	3.6
San Francisco	33	.517	2.4
Chicago	90	.509	2.1
Brooklyn	57	.510	1.9
Cincinnati	90	.504	1.0
Montreal	22	.488	−1.4
Houston	29	.484	−2.2
N.Y. Mets	29	.466	−4.6
Atlanta	25	.462	−4.8
San Diego	22	.443	−6.7
Boston	52	.429	−12.9

Sources: As in table 7.1.
[a]Based on equal playing strengths assumption.

would end up with a record like the Yankees would be roughly comparable to the probability of coming up with the winning ticket to LOTTO America once or maybe two weeks in a row. The Celtics rank a close second, followed by the Lakers and the Canadiens. A surprising fifth place is held by the Milwaukee Bucks, ranking ahead of the NL New York Giants (1901–1957), the Philadelphia 76ers, the Bears, the Boston Bruins, and then the Philadelphia Flyers, with the L.A. Dodgers, Miami, Edmonton, the old Milwaukee Braves, and the Baltimore Orioles completing the top-15 list.

The list of all-time losers (underachievers) is headed by a trio of baseball teams—the Boston Braves, the St. Louis Browns, and the Kansas City Athletics, all long since gone to other towns. Cleveland and New Jersey from the NBA come next, followed by two hockey teams—Vancouver and the now defunct New York Americans. Then there is a matched pair from baseball—the original Washington Senators and the second Washington team, both of which have moved on. The list is completed with San Diego (NL), Tampa Bay, the Chicago Cardinals (another team that moved), the New Orleans Saints, the Pittsburgh Penguins, and the Detroit Pistons.

Table 7.8
Lifetime W/L Percentages Ranked by Achievement Measure, National Football League, Teams with at Least 10 Years in League, 1920–1990

Team	*Years in League*	*Lifetime W/L %*	*Standard Deviations above .500*[a]
Chicago Bears	71	.624	7.5
Miami	21	.682	6.5
Cleveland Browns	41	.612	5.4
Oakland	12	.699	5.2
L.A. Rams	45	.576	3.7
N.Y. Giants	66	.560	3.5
Dallas Cowboys	31	.579	3.3
Green Bay	70	.552	3.1
Washington	54	.546	2.4
Denver	21	.554	1.9
Minnesota	30	.546	1.9
San Francisco	41	.530	1.4
Cincinnati	21	.533	1.2
Baltimore	32	.523	1.0
Seattle	15	.486	−0.4
St. Louis	28	.486	−0.5
New England	21	.464	−1.3
Detroit	57	.470	−1.6
Kansas City	21	.449	−1.8
San Diego	21	.444	−2.0
Pittsburgh	58	.458	−2.3
N.Y. Jets	21	.427	−2.6
Buffalo	21	.425	−2.6
Brooklyn	15	.381	−3.1
Philadelphia	58	.440	−3.3
Houston	21	.400	−3.5
Atlanta	25	.377	−4.6
New Orleans	24	.366	−5.0
Chicago Cardinals	40	.368	−5.6
Tampa Bay	15	.304	−6.1

Sources: As in table 7.1.
[a]Under equal playing strengths assumption.

Tables 7.6 through 7.10 give us one more way to rank leagues in terms of competitive balance, by comparing the fraction of teams in each league for which the lifetime W/L record lies close to .500. Table 7.12 provides this comparison among leagues. The larger the fraction of teams with lifetime W/L percentages near .500, the more turnover occurs. Here the NBA comes out as the league with the best competitive

Table 7.9
Lifetime W/L Percentages Ranked by Achievement Measure, National Basketball Association, Teams with at Least 10 Years in League, 1946–1990

Team	*Years in League*	*Lifetime W/L %*	*Standard Deviations above .500*[a]
Boston	44	.630	15.4
L.A. Lakers	31	.638	13.7
Milwaukee Bucks	23	.609	9.2
Philadelphia 76ers	28	.582	7.7
Syracuse	14	.571	4.7
St. Louis	13	.550	3.2
Minneapolis	12	.550	3.0
Portland	21	.524	1.9
San Antonio	15	.521	1.4
Phoenix	23	.517	1.4
Denver	15	.519	1.3
Washington	18	.514	1.0
Atlanta	23	.509	0.8
N.Y. Knicks	44	.505	0.6
Philadelphia Warriors	16	.506	0.4
Utah	12	.494	−0.4
Baltimore	10	.493	−0.4
Chicago Bulls	25	.497	−0.6
Seattle	24	.492	−0.7
Houston	20	.487	−1.0
Dallas	11	.480	−1.2
Golden State	20	.481	−1.5
Kansas City-Omaha	13	.463	−2.3
Cincinnati	15	.458	−2.9
Detroit	34	.452	−4.9
Indiana	15	.410	−6.1
New Jersey	14	.392	−7.1
Cleveland	21	.409	−7.3

Sources: As in table 7.1.
[a]Under equal playing strengths assumption.

balance record, with over half the teams with lifetime W/L records within two standard deviations of the mean, using the idealized standard deviation measure. Clearly, what has been happening is that the Celtics, Lakers, Bucks and 76ers have had very good teams year after year, but most of the rest of the league go from good to bad seasons and back on a year-to-year basis.

The worst leagues shown in Table 7.12 are the baseball leagues,

Table 7.10
Lifetime W/L Percentages Ranked by Achievement Measure, National Hockey League, Teams with at Least 10 Years in League, 1917–1990

Team	*Years in League*	*Lifetime W/L %*	*Standard Deviations above .500*[a]
Montreal Canadiens	74	.596	13.1
Boston	67	.552	7.1
Philadelphia Flyers	24	.578	6.7
Edmonton	12	.598	6.0
Calgary	11	.582	4.9
Buffalo	21	.556	4.6
Ottawa	16	.558	4.1
N.Y. Islanders	19	.549	3.8
N.Y. Rangers	65	.522	3.0
Toronto	74	.508	1.1
Montreal Maroons	14	.507	0.5
Detroit	65	.496	−0.5
St. Louis	24	.488	−1.0
Winnipeg	11	.461	−2.3
Quebec	11	.452	−2.8
Washington	17	.461	−2.9
Chicago	65	.478	−3.0
Los Angeles	24	.464	−3.1
Hartford	12	.448	−3.2
Minnesota	24	.447	−4.6
Pittsburgh	24	.443	−4.9
N.Y. Americans	17	.407	−6.8
Vancouver	21	.413	−7.1

Sources: As in table 7.1.
[a]Under equal playing strengths assumption.

where teams like the St. Louis Browns and Boston Braves made lifetime careers out of being in the second division. Inability to move franchises in baseball until the 1950s played an important role in those failures, but there is also the case of the hapless Kansas City Athletics to consider. Overall, Table 7.12 provides further evidence of the limited amount of competitive balance that has characterized the major pro team sports leagues over their histories.

The Reserve Clause and Competitive Balance

One obvious conclusion from our extended look at historical data on competitive balance in the five major team sports leagues is that none

Table 7.11
Top Overachievers and Underachievers Ranked by Achievement Measure, All Sports Leagues

Top Overachievers			Top Underachievers		
	Team	*Standard Deviations over .500*[a]		*Team*	*Standard Deviations over .500*[a]
1.	N.Y. Yankees	15.6	1.	Boston Braves	−12.9
2.	Boston Celtics	15.4	2.	St. Louis Browns	−12.0
3.	L.A. Lakers	13.7	3.	K.C. Athletics	−8.6
4.	Montreal Canadiens	13.1	4.	Cleveland (NBA)	−7.3
5.	Milwaukee Bucks	9.2	5.	Vancouver Canucks	−7.1
6.	N.Y. Giants (NL)	8.5	5.	N.J. Nets	−7.1
7.	Philadelaphia 76ers	7.7	6.	Washington Senators I	−6.9
8.	Chicago Bears	7.5	7.	Washington Senators II	−6.8
9.	Boston Bruins	7.1	7.	N.Y. Americans (NHL)	−6.8
10.	Philadelphia Flyers	6.7	8.	San Diego (NL)	−6.7
11.	L.A. Dodgers	6.6	9.	Tampa Bay Buccaneers	−6.1
12.	Miami Dolphins	6.5	10.	Chicago Cardinals	−5.6
13.	Edmonton Oilers	6.0	11.	New Orleans Saints	−5.0
14.	Milwaukee Braves	5.7	12.	Pittsburgh Penguins	−4.9
15.	Baltimore Orioles	5.6	12.	Detroit Pistons	−4.9

Sources: As in table 7.1.
[a]Under equal playing strengths assumption.

Table 7.12
Percentage of Teams with Lifetime W/L Percentages Lying within Specified Standard Deviation Limits of .500 by League

League	*Within ± 1 SD*	*Within ± 2 SDs*	*Within ± 3 SDs*	*Outside ± 3 SDs*
AL	10.5	26.3	52.6	47.4
NL	6.3	18.8	37.5	62.5
NBA	34.6	57.7	69.2	30.8
NFL	13.3	36.7	50.0	50.0
NHL	13.0	17.4	39.1	60.9

Sources: As in table 7.1. (Based on equal playing strengths assumption.)

of the leagues comes close to achieving the ideal of equal playing strengths. There is ample evidence of long-term competitive imbalance in each league, despite the league rules that are supposedly designed to equalize team strengths. On the other hand, with all their flaws, the leagues have not only survived but have flourished, with growth in numbers of teams, in geographic coverage, in attendance and public interest, and in profitability.

Owners of sports teams, league commissioners, and most sportswriters argue that an important reason for this success is that the leagues have attained at least an acceptable level of competitive balance. They further argue that this acceptable level of competitive balance is due in no small part to the restrictions that have been imposed by owners on the player market in sports. These restrictions are the ones discussed in Chapter 5: the reserve or option clause in player contracts, combined with other devices—the college draft, the waiver system—that act to equalize access to players by teams. Owners continue to claim that if the reserve-option clause is eliminated, with players free to sell their services to the highest bidder, competitive balance within the league will be severely damaged. Wealthy owners with teams in the best markets will sign up the star players, and the resulting imbalance will lead first to the destruction of the weak teams and finally to the destruction of the league itself.

Free agency has now been a part of the labor picture in baseball and basketball since 1976, and we will want to see how the actual results from these free agency experiments square with the claims of the owners. But before doing this, we will take an excursion into the microeconomic theory of competitive balance; that is, we will examine the structure of profit incentives that operates in a team sports league and see what effects this structure has on competitive balance in a league. The arguments we will present follow closely those first developed in a seminal paper by Rottenberg (1956). Later extensions, including an explicit modeling and analysis of team sports leagues using a Nash equilibrium framework, appear in El Hodiri and Quirk (1974).

It will be easier to follow the economic argument if it presented graphically. In order to do this, we will look at the special case of a two-team league in which one team, team A, is located in a strong-drawing area, and the second team, team B, is located in a weak-drawing area. We should emphasize that the essence of the basic economic argument we will make extends to the case of a league with an arbitrary number of teams; it is only the graphics that restrict us to the two-team case.

We will assume that the revenue that any team earns from its home games depends on only two things: the underlying drawing potential of its franchise area, and the playing strength of the team relative to that of the other teams in the league, that is, how successful the team is on the playing field. In particular, we assume that revenue from the home games of any team varies positively with the W/L percentage of the team.

Market Equilibrium under Free Agency

We consider first the profit incentives at work in a league in which there is an unrestricted competitive labor market, with players free to sell their services to the highest bidder. For simplicity, we first consider the case where all of a team's revenues come from its own home games, that is, the case of a 100–0 gate split, as is the case in the NBA and NHL. After going through this case, we will examine what happens when there is a sharing of gate and TV revenues, as in baseball and the NFL.

Figure 7.7 shows the revenue curves for the two teams: team A, located in the strong-drawing area, and team B, located in the weak-drawing area. Revenue for each team is plotted against the team's W/L percentage, with revenue increasing as the W/L percentage increases, and with the revenue of team A higher than that of team B for any given W/L percentage.

In the upper panel of Figure 7.8, we have graphed the marginal revenue, *MR*, curves for teams A and B. For any value of the W/L percentage,

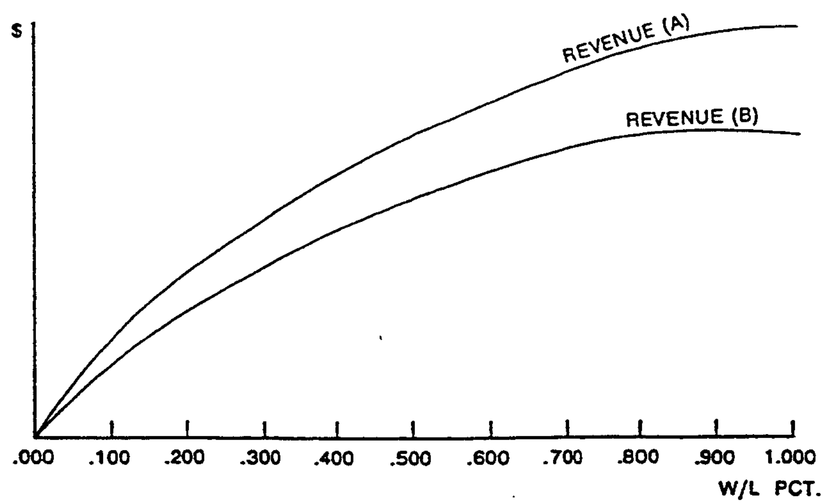

Figure 7.7 Revenue Curves, Teams A and B

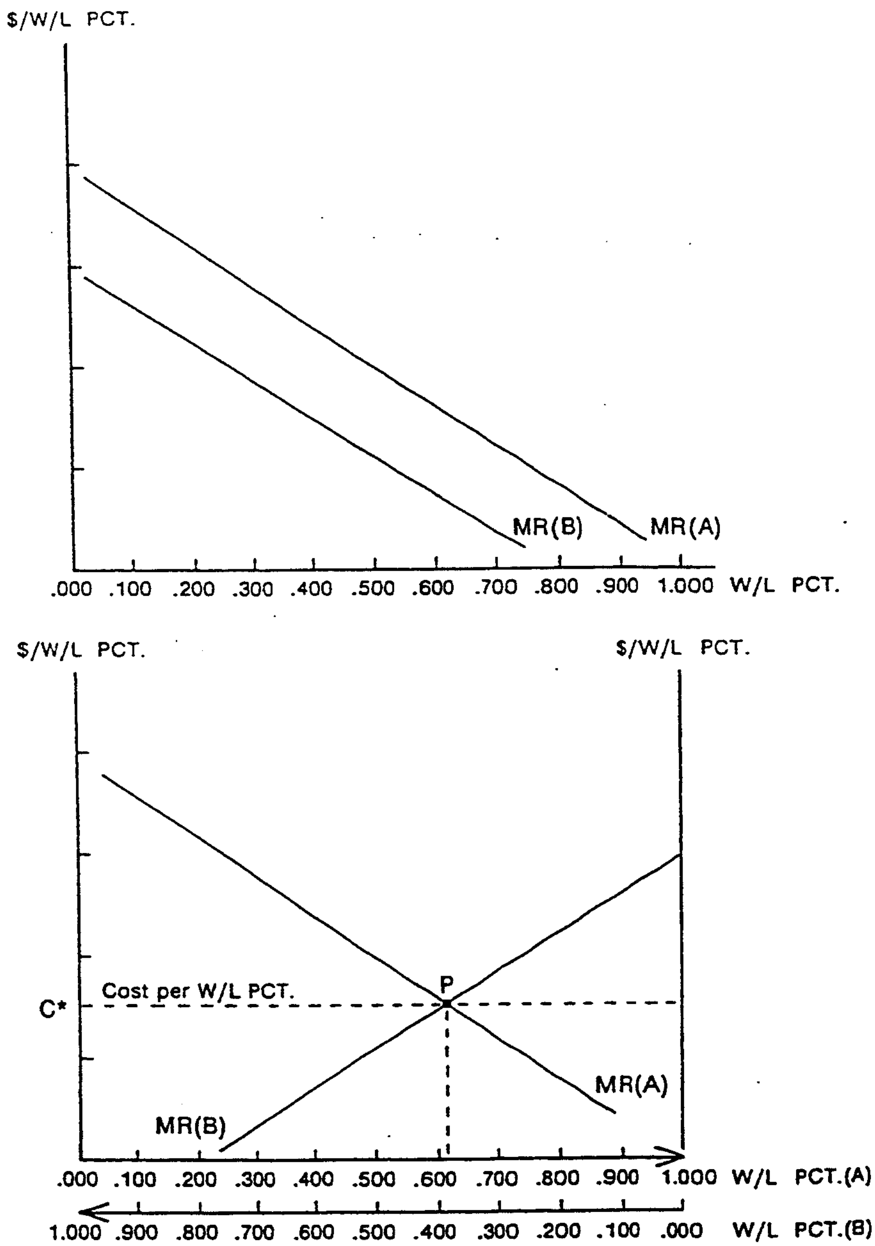

Figure 7.8 League Equilibrium: Competitive Labor Market

the *MR* curve for a team tells us the increase in revenue for the team that occurs if the team increases its W/L percentage by one point. *MR* is positive, but it falls as the W/L percentage increases—each additional W/L percentage increases revenue, by smaller and smaller increments. Again we have the *MR* curve for the stronger-drawing team, team A, lying above the *MR* curve for the weak-drawing team, team B, for every W/L percentage—winning another game adds more to revenue in the strong-drawing area than it does in the weak-drawing area, for the same W/L percentage.

The lower panel of Figure 7.8 plots the two *MR* curves on a diagram where the W/L percentage for team A reads from left to right, and the W/L percentage for team B reads from right to left, so that the *MR* curve for team B is now an upward sloping curve. We consider the case where there is unrestricted free agency and both owners act to maximize profits for their teams. The result will be a bidding up of player salaries and bonuses to the point where an additional W/L percentage point will cost each team C^* dollars, as indicated along the vertical axis, with team A ending up with a W/L percentage of roughly .615, and team B with a W/L percentage of roughly .385; that is, market equilibrium under unrestricted free agency will occur at the point *P* where the two *MR* curves cross.

Why is this? First, with unrestricted free agency, both teams will face the same market cost per unit of playing strength, and hence the same cost (C^*) to increase the team's W/L percentage by one point. Profit maximization implies that each team will add playing strength (W/L percentage points) to the point where the added revenue to the team from an additional W/L percentage point (*MR*) equals the increase in cost (C^*) to attain that. Thus when each team is maximizing profits and the player market is cleared, both teams end up with the same value of *MR*, which in turn is equal to C^*. Moreover, the W/L percentages chosen by the two teams also clearly must satisfy the condition that when we add the two W/L percentages up, they add up to unity. The only point in the lower diagram where these conditions are satisfied is *P*; hence, the point *P* defines an equilibrium for the league under unrestricted free agency.

What happens when we introduce gate and TV revenue sharing into the picture? Figure 7.9 shows the impact of sharing rules in the case of a 60–40 home-visitor sharing arrangement, as in the gate-sharing rules of the NFL. In general, consider a sharing arrangement under which the home team receives *a* percent of gate and TV revenues, and the visitor receives $(1 - a)$ percent, where *a* is some number between .5 and 1. Let $R(A)$ denote gate and TV revenue at *A*, and let $R(B)$ denote gate and TV revenue at *B*. $R^*(A)$ is revenue to team A under the gate-sharing

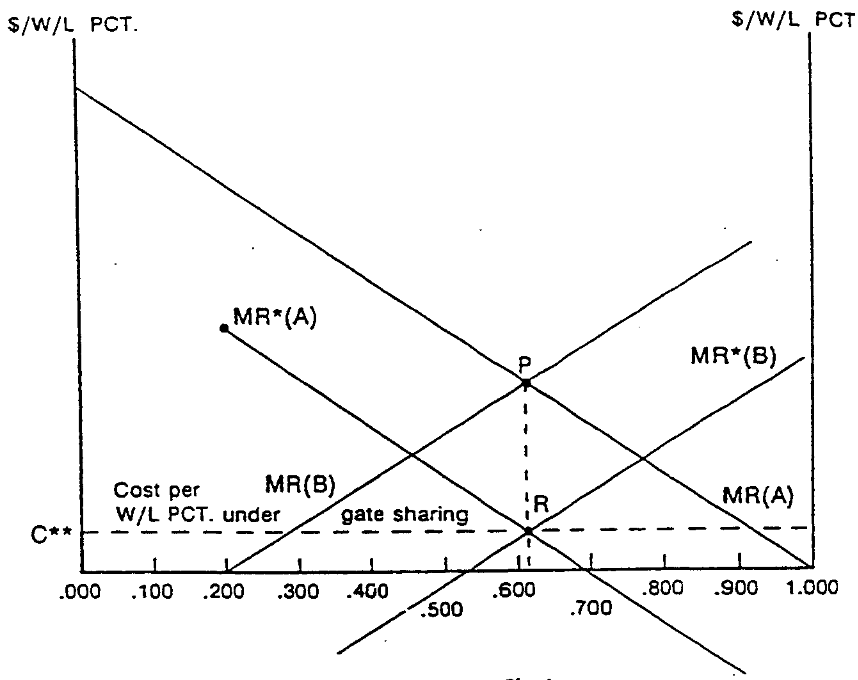

Figure 7.9 League Equilibrium: 60–40 Revenue Sharing

arrangement, and $R^*(B)$ is revenue to team B under gate-sharing. Then we have

$$R^*(A) = aR(A) + (1 - a)R(B),$$

and

$$R^*(B) = aR(B) + (1 - a)R(A).$$

Under gate sharing, marginal revenue for team A, $MR^*(A)$, is the increase in revenue to team A when its W/L percentage increases by one point. Note that in our two-team league, an increase of one point in team A's W/L percentage means that team B's W/L percentage must decrease by one point; and similarly for team B's marginal revenue, $MR^*(B)$. Thus

$$MR^*(A) = aMR(A) - (1 - a)MR(B),$$

and

$$MR^*(B) = aMR(B) - (1 - a)MR(A).$$

In Figure 7.9, $MR^*(A)$ and $MR^*(B)$ are graphed for the case of a 60–40 gate and TV split, with the two curves crossing at the point R, directly below P. At a league equilibrium with profit maximization, $MR^*(A) = MR^*(B)$ = cost per W/L percentage point, with the W/L percentages for the two teams summing to unity. But from the expressions for $MR^*(A)$ and $MR^*(B)$ above, it can be seen that $MR^*(A) = MR^*(B)$ if and only if $MR(A) = MR(B)$. This means that introducing gate sharing leads to the same condition that held earlier; gate sharing has no effect on the distribution of playing strengths between the two clubs. Once again, as shown in Figure 7.9, team A ends up with a W/L percentage of .615 and team B ends up with .385.

So long as teams take into account in their decisionmaking the effects not only on their home gate receipts and TV revenues, but also on their revenues as a visiting team, then the W/L percentages under profit maximization and a free competitive labor market are the same whatever are the sharing rules. And what determines the W/L percentages and hence the degree of imbalance in playing strengths among teams is the disparity in team *MR* curves based on home gate and TV revenues only, and not the $(1 - a)$ percent of receipts that is given to the visiting team.

The fact that the two MR^* curves cross in Figure 7.9 at the point *R* below the crossing of the *MR* curves at *P* has some important implications. What this says is that at a league equilibrium under gate sharing, increasing a team's W/L percentage by one point is less valuable to the team than when there is no gate sharing. One reason for this is that the increase in home game revenues that results from adding a W/L percentage point is offset in part by the decrease in revenues that a team earns on the road, because its opponent will draw less with a lower W/L percentage. But if a one-point increase in the W/L percentage is worth less to teams under gate sharing, this means in turn that the salaries and bonuses that teams are willing to pay players will be less under gate sharing than when there is no gate sharing. From the point of view of profits, winning is less important under gate sharing than it is when a team's revenues come only from its home game receipts. In Figure 7.9, the market-clearing cost per W/L percentage point is C^{**}, less than C^*, the cost per W/L percentage point when there is no gate sharing. In fact, with 60–40 gate sharing as in Figure 7.9, C^{**} is only about 20 percent as large as C^*.

There is one important caveat to the conclusion that gate sharing has no effect on the degree of competitive balance in a league. Gate sharing shifts income from strong-drawing teams to weak-drawing teams, and, as we have seen, it reduces the market-clearing cost of players to teams, so it shifts income from players to owners. In the absence of gate sharing, it might be the case that some weak-drawing teams could find themselves losing money. An example is the Green Bay Packers, a small-town team that has survived in large part because of NFL gate and TV revenue sharing (and it also helps that the team is organized as a nonprofit community enterprise). So gate sharing does play a potentially important role in enabling weak-drawing franchises to survive, even though it does not affect the distribution of playing strengths among league teams that survive.

As expected, the league equilibrium under unrestricted free agency involves an imbalance of playing strengths; the strong drawing team, team A, ends up with a better team (a .615 W/L percentage in Figure 7.8 or 7.9) than the weak-drawing team (a .385 W/L percentage). This is the element of truth in the argument by owners—given that franchises are located in areas with differing drawing potential, profit incentives operating in a free competitive labor market will lead to a situation in which, on average, strong-drawing areas have strong teams, and weak drawing areas have weak teams.

However, this is still a far cry from a situation in which competitive imbalance is so extreme that only the strong-drawing team can survive, or that the league is doomed to extinction. As we have already seen, all five team sports leagues have long histories characterized by a considerable degree of competitive imbalance, even when operating under restrictions on player mobility, and they have survived. In fact, one conclusion that comes out of our analysis is that there is a limit to how many star players even a strong-drawing team would want to hire under unrestricted free agency, because, beyond the point *P* in Figure 7.8 where *MR* equals C^*, each increase in the W/L percentage adds more to the team's cost than it does to the team's revenue (*MR*) so that profits fall if the team attempts to increase its W/L percentage beyond the point *P*. This is the built-in limit on competitive imbalance in a league operating under unrestricted free agency, arising simply from profit incentives.

Market Equilibrium under a Player Reservation System

But does the degree of competitive imbalance that occurs under free agency as pictured in Figure 7.8 exceed the acceptable level of competitive balance that leagues have attained historically under their player reservation systems? In fact, what we will show is that the profit incentives associated with a player reservation system lead to precisely the same outcome in terms of W/L percentages for teams as under unrestricted free agency so long as teams are free to sell players for cash to one another.

Figure 7.10 presents the case where a player reservation system is in place, but teams are free to buy and sell players among themselves. Once again, for simplicity, we look at the case where there is no revenue sharing, but the conclusions we reach hold as well in the revenue-sharing case. In Figure 7.10, suppose that the operation of the free agent draft and waiver rules produces a situation in which, initially, teams A and B have the same playing strength (both teams have W/L percentages equal to .500). Note that at a W/L percentage of .500 for each team, $MR(A) = MR''$ is greater than $MR(B) = MR'$. This means that an additional W/L percentage point is worth more to team A than to team B. Team A would be willing to pay anything up to MR'' for an additional W/L percentage point, and team B should be willing to sell the players to provide that at any price more than MR'. Both teams are more profitable, if team B sells players to team A.

This situation continues to exist so long as players are distributed between the two teams so that $MR(A)$ is greater than $MR(B)$. With each owner acting to maximize his or her team's profits, player sales for cash will continue between the two teams until all profitable opportunites have been exhausted. These opportunities are exhausted only when $MR(A)$ is brought into equality with $MR(B)$, which occurs at the point

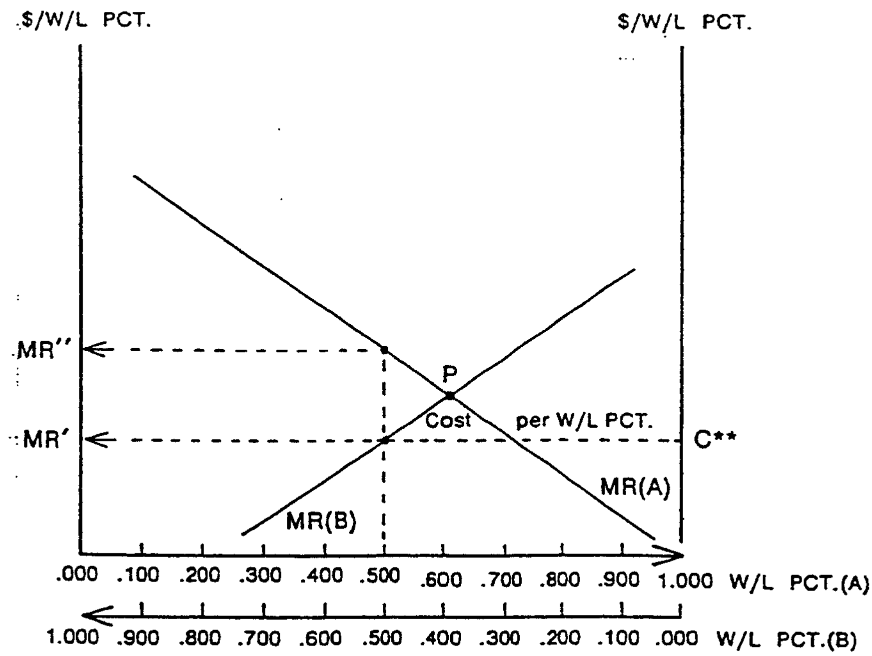

Figure 7.10 Incentives for Player Sales under the Reserve-Option Clause

P. What we can conclude, then, is that so long as there are no restrictions on the sale of players for cash in a league, profit incentives will generate precisely the same distribution of playing strengths in a league under a player reservation system as under unrestricted free agency. In effect, if profit incentives are fully exploited under a reservation system, player sales will completely offset any equalizing effects of such devices as the free agent draft or the waiver system. With unrestricted sales of players for cash among the owners of a league, a player reservation system has no effect at all on competitive balance in a league, which will be the same under a reservation system as it is under unrestricted free agency, given profit-maximizing behavior by team owners. This can be viewed as an application of the Coase theorem, which states that the allocation of resources in a society is independent of the assignment of property rights in the society, except for income effects (see Coase 1960).

Revenue sharing under a reservation system with unrestricted player sales moves the *MR* curves of the team down, but does not change the equilibrium W/L percentages of team A or team B. The closer the league sharing rules are to equal sharing, the less important winning is to the profitability of a team, just as in the case of unrestricted free agency. Revenue sharing under a reservation system thus also has the effect of reducing salaries and bonuses paid to players, again as in the case of unrestricted free agency.

Qualifications

There are some caveats to the conclusion that the distribution of playing strengths among teams is the same under unrestricted free agency as under a player reservation system with unrestricted sales of players. The player reservation system, including the college or rookie free agent draft, performs somewhat the same functions that revenue sharing does, in that it lowers salaries and bonuses paid to players (by restricting their bargaining rights), and it redistributes income from strong- to weak-drawing teams through the cash that is received by weak-drawing teams in their player sales to strong-drawing teams. Under unrestricted free agency, some weak-drawing teams might go under without the subsidies they receive from their sales of players. An example in point is the St. Louis Browns in the early post-World War II years, when the team was kept afloat almost exclusively by sales of players to other teams. If a change were to be made in a league from a player reservation system to free agency, it might be necessary to introduce more equal revenue sharing (that is, subsidization of weak-drawing teams by strong-drawing teams) if all teams were to remain profitable after the change.

A second caveat is that team owners are not always concerned only with the profits that they can earn from their teams. There have been well known instances of "sportsmen owners" in the history of baseball, as noted earlier, including especially Phil Wrigley, who insisted on playing daytime baseball in Wrigley Park during his years of ownership of the team, despite the sacrifice of profits involved. Tom Yawkey invested large sums during the 1930s and 1940s in players for the Red Sox, to buy a winner for Boston. Recently, Eddie DeBartolo, Jr., the wealthy owner of the 49ers, has been in the spotlight, because of his lavish spending on salaries and other expenses, which resulted in four Super Bowl championships between 1982 and 1990. Dabscheck (1975), Schofield (1982), Sloane (1971), and Vamplew (1982) have presented convincing evidence that in English, Scottish, and Australian football and cricket, the profit maximization model is inapplicable, and certainly some of their comments can be taken to apply to American sports as well. Davenport (1969) emphasizes the incentive to win as motivation for owners, above and beyond profit considerations. Brower (1977), Cairnes, Jennett, and Sloane (1986), Daly and Moore (1981), and Neale (1964) all raise questions concerning aspects of the profit maximization model of team ownership.

There is no question but that owners are typically highly competitive individuals who enjoy winning intensely. There also is no question but that owners also prefer to make more profits than less. Profit maximization is of course an idealized concept that is only approximated in practice. As was pointed out in the discussion of franchise prices in Chapter 2, however, professional team sports has become such an expensive business to enter that even wealthy owners must take the bottom line seriously. Ultimately, the proof is in the pudding—either the profit-oriented model produces good predictive results or it doesn't. We will look at some of these results below.

Sales of Players for Cash—Qualifications to the Theory

One final qualification to our theoretical conclusions is that leagues have formal and informal restrictions on the sale of players for cash. In June 1976, Charles O. Finley announced the sale of three of his Oakland A's players—Joe Rudi, Rollie Fingers, and Vida Blue. Rudi and Fingers were to be sold to the Red Sox for a combined total of $2 million, and

Blue was to go to the Yankees for $1.5 million. This was during an era when an outstanding Oakland team wasn't drawing all that well:

	Oakland AL West Standing		Oakland Attendance No.	AL (12-team) Rank
1970	second	(89–73 .549)	778,355	9
1971	first	(101–60 .627)	914,993	7
1972	first[a]	(93–62 .600)	921,323	5
1973	first[a]	(94–68 .580)	1,000,763	8
1974	first[a]	(90–72 .556)	845,683	11
1975	first	(98–64 .605)	1,075,518	6
1976	second	(87–74 .540)	780,593	11

[a]Won World Series.

Charlie Finley might have been one of the world's greatest insurance salesmen, but he seemed to have had no flair at all for establishing rapport with the fans of his sports teams, the Athletics (in Kansas City or Oakland), the NHL California Golden Seals, and the ABA Memphis Tams. In Oakland, Finley was understandably frustrated with a situation in which his team was winning big and couldn't draw. It was widely believed that the Bay Area could only support one baseball team (San Francisco was drawing badly at the time as well). Finley made attempts to find a buyer to move the A's, but several were reportedly scared off by the threat of an antitrust suit by the city of Oakland. It was in these circumstances that Finley decided to sell his star players, as Connie Mack had done 45 years earlier.

Three days after Finley announced the player sale, Bowie Kuhn, then the commissioner of baseball, issued an order disapproving the sale "as inconsistent with the best interest of baseball, the integrity of the game, and the maintenance of public confidence in it." This was the first case in baseball history of a player sale that was disapproved when no other baseball rule was violated. Finley sued, and lost in the trial court, where it was ruled that the owners had vested almost unlimited powers in the Commissioner to determine that actions were "not in the best interest of baseball," so long as procedural due process strictures were followed. The appeals court affirmed the ruling of the trial court (*Finley v. Kuhn*, 569 F.2d 527 (1978)). The player sales were revoked, and Finley sold the team several years thereafter to new owners who agreed to keep the team in Oakland. Since that time, it is understood that the Commissioner will review all sales of players for cash, above some threshold amount.

Baseball has a history of famous sales of players for cash, dating back to the sensational sale of "King" Kelly to Boston by Chicago for $10,000 after the 1886 World Series. These include, of course, the sale of Babe Ruth by the Red Sox to the Yankees in 1920, Clark Griffith's sale of his son-in-law, Joe Cronin, to the Red Sox in 1935, the $150,000 paid by the Cubs for the Cardinals' sore-armed Dizzy Dean in 1938, and Connie Mack's dismantling of his two Philadelphia championship teams. Branch Rickey made a career of selling players for cash during his years with the Cardinals, and later with the Dodgers, after developing the farm system as a source of talent for his clubs.

Accurate data on the extent of player sales for cash in baseball and the other sports do not exist. However, in the 1952 report of the Celler Committee, data are presented on player acquisition costs for major league teams for six years—1929, 1933, 1939, 1943, 1946, and 1950. Assuming that these years are typical for the period 1920–1950, and adjusting for assumed interleague sales, the relation between player sales and profits of teams appears in Table 7.13.

These data indicate that player sales were an important element in business operations for most teams during this period, and that, generally speaking, the flow of players was from weak drawing, low-profit, small-city teams to strong-drawing, big-profit, big-city teams, as the theory suggests. The teams with the largest purchases of players were the Giants, the Cubs, the Yankees, and, of course, Tom Yawkey's Red Sox. Rickey's Cardinals and Dodgers were sellers of players, as expected, but, excluding these, it was the weak teams—the Browns, the Braves, the Phillies, the Athletics—who were the big sellers of players.

Other data indicate that an estimated 90 percent of the profits of the Cardinals over the 1920–1950 period came from player sales, and the Browns earned $1.3 million from sales between 1947 and 1951, an amount in excess of total profits for the club over the 1920–1950 period.

In recent years, sales of players for cash in baseball have been rare events. The rarity of sales over his term in office might have led Commissioner Kuhn to refer to the Finley sale in somewhat overblown fashion as "unparalleled in the history of the game" and an act that "threatened so seriously to unbalance the competitive balance of baseball" in his decision. At least one sportswriter has claimed that the "Oakland sales . . . [were] reversing a 'no sale' policy which went unwritten among major league owners for the last twenty years [prior to 1976]" (quoted in Daly and Moore 1981).

Several factors were at work in the post-World War II period to limit or eliminate cash sales of players in all pro sports leagues. Under Bill

Table 7.13
Hypothetical Intraleague Player Purchases, Baseball, 1920–1950
(thousands of dollars)

Team	Profits	Hypothetical Net Intraleague Player Purchases
AMERICAN LEAGUE		
New York	8,497	1,585
Detroit	4,702	660
Cleveland	3,670	750
Washington	2,746	−650
Chicago	1,347	−880
Philadelphia	1,091	−1,445
St. Louis	1,088	−2,330
Boston	−2,075	2,295
NATIONAL LEAGUE		
St. Louis	5,962	−3,390
Brooklyn	3,944	−825
Pittsburgh	3,213	690
Chicago	2,920	1,835
New York	2,892	2,930
Cincinnati	1,571	−85
Philadelphia	−13	−630
Boston	−295	−535

Source: El Hodiri and Quirk 1974, 53.
Note: Negative purchases are sales.

Veeck's tax shelter, invented in 1949 (see Chapter 3), there are incentives to overvalue player contracts at the time of purchase of a team. This made it very inconvenient to have comparative data available for perusal by the IRS and the courts on actual cash sales in the player market as a basis for lowering player valuations. Since every owner will be a seller of his team at some point in time, this provided incentives for all owners to avoid cash sales.

Okner (1974b) has pointed out a second factor, namely, the capital gains tax. When a player is sold for cash, the team is charged a capital gains tax on the difference between the sale price of the player and his depreciated book value. In making roster adjustments, a team can avoid the capital gains tax by trading players for players rather than selling players for cash and then using the cash to buy another player. An even more efficient way of making trades is by using draft choices, which give the team receiving a draft choice the option of choosing the kind of player it most needs. This alternative has been available to NFL teams since 1936, and became an option for baseball teams after the rookie free agent draft was introduced in 1964.

Many of the cash sales in the pre-World War II days were by cash-strapped owners barely hanging on in marginal markets. In the post-World War II days, an alternative was available, namely, moving the franchise to a new location, and many teams took advantage of this. Together with the Veeck tax shelter, this meant that sales of teams and moves of teams have replaced sales of players in the more recent period.

In the early days of the NFL, the amounts of money involved were a lot less, but there were some famous sales comparable to those in baseball. One of the first sales occurred in 1922, when the Bears bought Ed Healy from the Rock Island Independents for $100. Four years later, George Halas paid $3,500 for the Cardinals' Paddy Driscoll. In 1949, Halas sold Bobby Layne to Ted Collins' Yanks team for $50,000, and lived to regret it, never really finding an adequate replacement for Sid Luckman at quarterback for the Bears. The era of cash sales in the NFL seems to have ended sometime in the 1950s. The only sale of a player for cash since that time that comes to mind is the purchase of an over-the-hill Johnny Unitas from the Colts by the Chargers in 1973. It appears that there has been a gentlemen's agreement in the NFL, at least since that time, not to engage in sales of players for cash.

A league operating under a reverse-order-of-finish draft, and one in which the only player transactions allowed were trades of players for players, would generate equal competitive balance among league teams. However, trading players for draft choices acts as a close substitute for cash sales, and has similar effects in fostering competitive imbalance in a league. Draft choices are valuable to owners because the team has certain built-in advantages in bargaining with draftees, whio usually have very limited financial resources and limited knowledge of the player market as well. This provides teams with the opportunity to sign rookie players at salaries closer to their reservation wages than in the case of veteran players so that, on average, draft choices generate extra profits for owners and, in that sense, produce payoffs similar to those from cash sales. The long-term gentlemen's agreement in the NFL to avoid cash sales of players has played a role in the NFL's record as the league with the most competitive balance, but the active market in draft choices in the league offsets this in part. The league's scheduling policy (strong teams against strong teams, and weak teams against weak teams) has been another important factor for competitive balance in the NFL since the policy began in 1977.

Free Agency in Baseball and Basketball—Empirical Results

If microeconomic theory does not offer any grounds for arguing the case for retention of the reserve-option clause to preserve competitive balance in team sports leagues, there still remain the actual results from operation of something approaching free competitive labor markets in baseball and basketball since the mid-1970s. If the owners' position is valid, we should see some evidence of a significant decline in competitive balance in the AL, NL, and NBA, resulting from the introduction of free agency in those leagues. In contrast, the results based on microeconomic theory argue that free agency will not have any effect on the degree of competitive balance. We will use the various measures of competitive balance that have been introduced earlier to provide before-and-after comparisons for each of the leagues. We begin with baseball.

Free agency began in baseball in 1976, following decisions by an arbitrator that any player playing out his option for one year became a free agent. While there have been various modifications of this in the labor contracts that have been negotiated since that time, still the period from 1976 represents a significant break from the pre-1976 period, when a strict interpretation of the reserve clause was enforced in baseball.

In Table 7.14, a comparison is made between the 14-year period preceding free agency (1963–1976) and the 14-year period following free agency (1977–1990), by use of the four measures of competitive balance discussed earlier. For the AL, the average range is slightly larger in the the post-free agency period (249 versus 241), but there are basically no changes in the average standard deviation, excess tail frequencies, or concentration of pennant winners. In particular, the Gini coefficient of concentration of pennant winners drops from .400 in the pre-free agency period to .392 in the post-free agency period, a slight increase in competitive balance. For all practical purposes, the two periods are indistinguishable. For the NL, all measures of competitive balance show moves in the direction of more competitive balance under free agency, with the Gini coefficient of concentration of pennant winners falling from .415 in the pre-free agency period to .372 in the post-free agency period, again, an increase in competitive balance. More to the point, running a *t*-test on the difference between the average standard deviation in the pre-free agency period and that in the post-free agency period leads to the conclusion that there is no significant difference either for the AL or NL. It would be difficult indeed to argue with the conclusion that the experience of baseball since 1976 looks almost exactly like the prediction of microeconomic theory, that is, no change in competitive bal-

Table 7.14
Competitive Balance: Baseball, Pre- and Post-Free Agency

	Pre-Free Agency (1963–1976)		Post-Free Agency (1977–1990)	
AVERAGE RANGE OF W/L PERCENTAGE				
AL	241		249	
NL	251		.211	
AVERAGE STANDARD DEVIATION OF W/L PERCENTAGE				
AL	71		70	
NL	66		64	
EXCESS TAIL FREQUENCIES				
AL				
Outside two standard deviations	24.4		23.5	
Outside three standard deviations	11.4		10.9	
NL				
Outside two standard deviations	23.1		21.0	
Outside three standard deviations	12.5		6.9	
CONCENTRATION OF PENNANT WINNERS				
AL	Bal	4	NY, Oak	3
	NY, Oak	3	Bal, KC	2
	Bos	2	Bos, Det, Mil, Min	1
	Det, Min	1		
NL	Cin, LA	4	LA	4
	StL	3	StL	3
	NY	2	Phi	2
	Pit	1	Cin, NY, Pit, SD, SF	1

Sources: As in table 7.1.

ance due to free agency, and bears no resemblance at all to the forecasts of owners that free agency would have a devastating deleterious effect on competitive balance.

Turning to basketball, there are many more problems present in making comparisons over time than in the case of baseball. League expansion and contraction, the battle between the ABA and NBA, and important innovations in labor-management agreements, such as the salary cap, are among the factors that can affect an evaluation of free agency in NBA basketball. As Noll (1989) points out, basketball effectively operated as a monopsony (monopoly on the demand side of the labor market) from 1950 to 1966, when the ABA entered the picture, introducing competitive elements into the labor market in basketball. Those competitive elements have been continued by the free agency agreements that have been concluded between the players and owners since the NBA-ABA merger in 1976. Thus a natural breaking point in evaluating the effect of a competitive labor market on competitive balance in NBA basketball is 1966. Table 7.15 presents the four measures of competitive balance for the NBA for the 1950–1966 period and the 1967–1990 period.

The average range is about 25 percent higher in the "mostly competitive" period (1967–1990) that it was in the "mostly monopsonistic" period (1950–1966). Unquestionably, this reflects the effects of more or less continuous expansion all during the "mostly competitive" period, because, as we have seen earlier, NBA expansion teams tend to be woefully weak during the first few years of operation, which directly impacts the range, of course. The standard deviation of the W/L percentage also increased during the "mostly competitive" period, but by a much more modest amount. The *t*-test yields no significant difference between the average standard deviation in the two periods. The same applies to the ratio of the actual average standard deviation to the ideal-

Table 7.15
Competitive Balance: NBA Basketball, "Mostly Monopsony" Period and "Mostly Competitive" Period

	Mostly Monopsony (1951–1966)			*Mostly Competitive (1967–1990)*		
Average range of W/L percentage	418			526		
Average standard deviation of W/L percentages	131			142		
Idealized standard deviation	55			55		
Ratio: actual/idealized	2.30			2.58		
Excess tail frequencies						
Outside two standard deviations	42.4			42.4		
Outside three standard deviations	24.7			24.2		
Concentration of championships	Bos	9	(53%)	Bos	7	(29%)
	Mpls	3	(18%)	LA	6	(25%)
	Phil	2	(12%)	Det, NY	2	(8%)
	Roch, StL, Syr	1	(17%)	GSt, Mil, Phil, Port, Sea, Wash	1	25%

Sources: As in table 7.1.

ized standard deviation, that is, there is no significant difference at either the 1 percent or 5 percent level of confidence between the ratios in the two periods. Excess tail frequencies are almost identical between the two periods. So far as concentration of championship winners is concerned, the dominance of Boston (53 percent) in the 1950–1966 period has been replaced by the dominance of Boston and the Lakers (combined 54 percent) in the post-1966 period. Once again, there is no indication of a noticeable shift in the concentration of league champions between the two periods. The Gini coefficient of concentration of league champions drops from .648 in the "mostly monopsonistic" period to .592 in the "mostly competitive" period, an increase in competitive balance.

Figures 7.11, 7.12, and 7.13 plot "before" and "after" distributions of W/L percentages for the AL, NL, and NBA. The pre-free agency distributions are the solid curves, and the post-free agency distributions are the dotted curves. It is clear that none of the distributions show any significant differences between pre- and post-free agency.

Revenue Sharing and a Salary Cap

It also is of interest to see what the impact is on competitive balance and on player income of an NBA-style labor agreement in which players are guaranteed a certain percent of gross league revenues, and salary caps (maximum payroll limits) are imposed on teams. In Figure 7.14, the implications of an NBA-style contract in a two-team league can be seen.

In the figure, C^* represents the cost per W/L percentage point (a proxy for average player salary) under unrestricted free agency. As we have seen, under unrestricted free agency with profit-maximizing teams, team A, located in the strong-drawing market, ends up with a stronger team (higher W/L percentage) than team B, located in the weak-drawing market.

When owners agree to revenue sharing and salary caps, presumably the reason they do so is because they feel that this arrangement will enable them to reduce their player costs to below those that would prevail under unrestricted free agency. In Figure 7.14, the average salary under revenue sharing and a salary cap is shown as C^{**}, below C^*.

In an NBA-style plan, there is supposed to be unrestricted bidding for players by teams, subject only to the constraint that no team's total payroll can exceed the salary cap. If all teams end up spending an amount equal to the salary cap, then, assuming all teams have equally astute general managers and coaches, the league would end up with all teams' having roughly the same playing strength. In Figure 7.14, teams A and B would end up at the point P, with W/L percentages of .500 each,

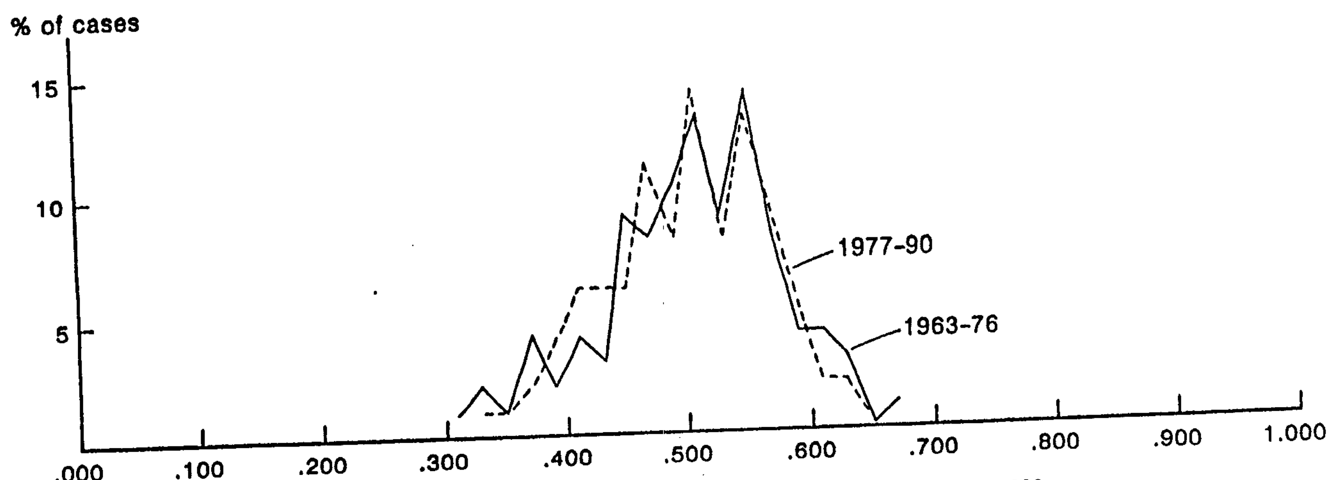

Figure 7.11 National League W/L Percentages, 1963–1976 vs. 1977–1990

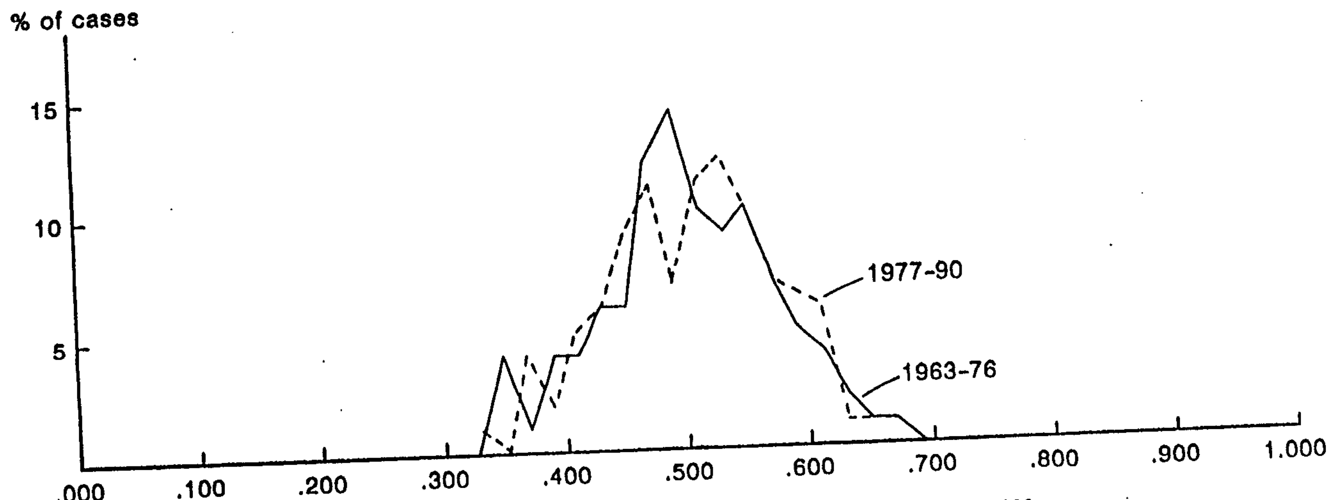

Figure 7.12 American League W/L Percentages, 1963–1976 vs. 1977–1990

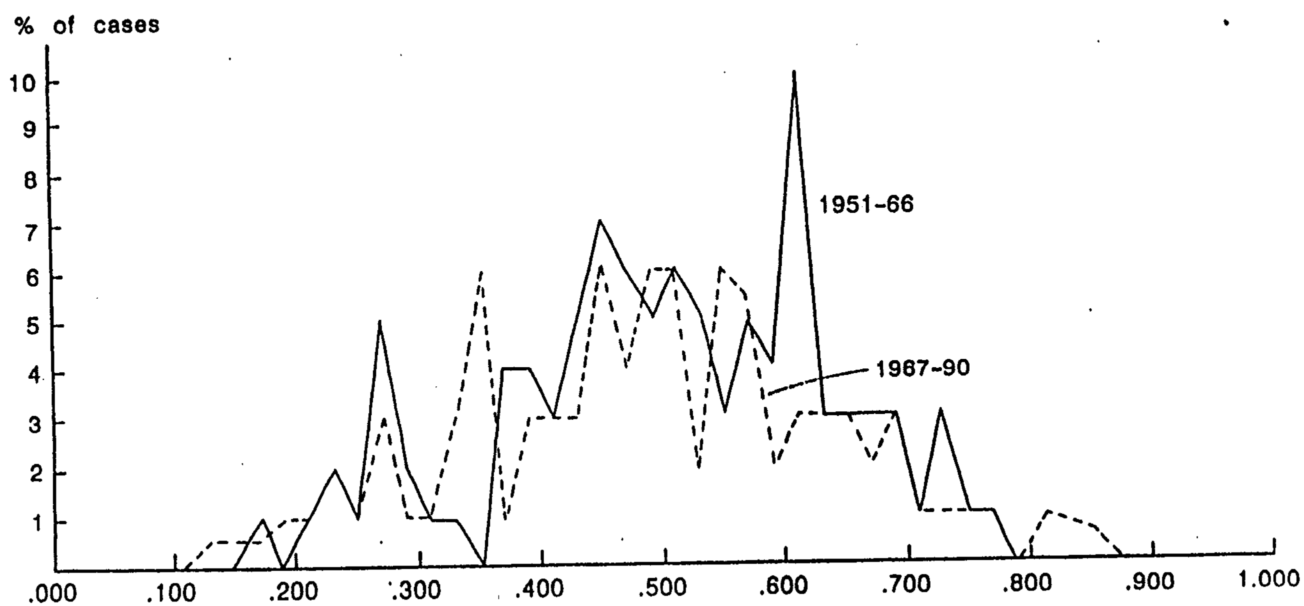

Figure 7.13 NBA W/L Percentages, 1951-1966 vs. 1967-1990

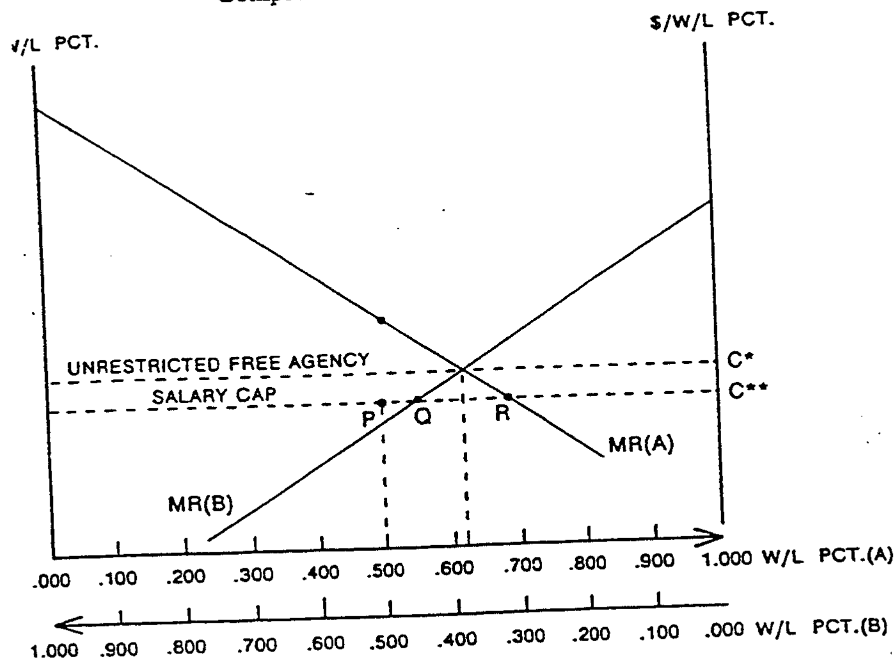

Figure 7.14 Salary Cap and Revenue Sharing

and spending the same amount on players. The salary cap will have solved the competitive balance problem.

There are some potential difficulties with this, however. To begin with, given a cost per W/L percentage point (player salary) of C^{**}, team A, the team in the strong-drawing area, maximizes its profits not at *P*, but at *R*, where $MR(A) = C^{**}$. If team A were free to hire talent, not subject to the salary cap, it could increase its profits by hiring more talent. Team B, the team in the weak-drawing area, increases its profits by hiring *less* playing talent than at *P*, that is, by moving to *Q*, where $MR(B) = C^{**}$. In the NBA scheme, the negative incentives for teams in the weak-drawing areas are taken care of, in part at least, by imposing a salary (payroll) minimum as well as a salary cap, forcing such teams to spend more than can be justified in terms of profit incentives.

In any case, by introducing a salary cap, the league has also introduced a nontrivial enforcement problem for itself—monitoring the big-city teams to make sure they don't spend more than the cap, and making sure that small-city teams spend at least the salary minimum. There have been a number of disputes already concerning violations of the salary cap by big-city teams, and this has occurred during a period when grandfathering rules have worked to mitigate the impact of the cap on big-city teams. The enforcement problems are only going to get harder as the older players retire and the full impact of the salary cap rules begins to hit the dominant teams in the league. Moreover, because the salary minimum might actually push some small-city teams into the red, this leads to a need for subsidization of such teams by the rest of the leaguea, which is also a part of the NBA scheme.

One further problem with the salary cap should be pointed out. When, as in Figure 7.14, the effect of the salary cap and of revenue sharing is to change the allocation of players from that achieved under unrestricted free agency, this also has the effect of reducing total league revenue. It is easy to see this in the figure. Suppose both teams spend the salary cap, and end up with W/L percentages of .500. Given W/L percentages of .500, team A has a higher *MR* from adding a W/L percentage point than does team B. This means that increasing team A's W/L percentage by one point (decreasing team B's W/L percentage by a point), increases total league revenue, since team A gains more in revenue than team B loses. The fact that total league revenue is less under a salary cap than under unrestricted free agency should not be a matter of indifference to players, since their total (guaranteed) income is set at a fixed fraction of total league revenues.

An enforceable salary cap applied equally to all teams leads to competitive balance in a league. However, because the cap is not consistent with profit incentives for teams, there are enforcement problems for big-city teams, who have incentives to spend more than the cap, and for small-city teams, who have incentives to spend less than the cap. A cap acts to reduce the average salary of players relative to what they would earn under unrestricted free agency, and also acts to reduce total league revenues relative to what they would be under unrestricted free agency.

Finally, because players share in gross league revenues, this creates incentives for the league to shift revenues from the league to other entities. For example, if other NBA teams follow the Celtics' lead in purchasing their own TV stations, this can be used as a device for lowering team (and league) revenues through artifically low TV payments to the team, shifting revenue to the station. This lowers payments to players and increases income for owners, representing a potential enforcement problem for players. The ability of creative lawyers and accountants to find such shifting devices should not be underestimated.

Conclusions

Briefly, what we have seen in this chapter is that each of the five major team sports leagues operates with a significant degree of competitive imbalance, however this is measured. In most respects, the NFL comes off as the league with the most competitive balance, although even this falls far short of the ideal of equal playing strengths; and the NBA is the league with the least competitive balance. Over the past 20 or 30 years, there has been a trend toward more competitive balance in both baseball leagues, both absolutely and relative to the NFL, NBA, and NHL. The argument of owners that the reserve-option clause is needed for competitive balance is offered no support at all by microeconomic theory. Instead, that theory asserts that there will be the same degee of competitive balance in a league with a reserve-option clause and unrestricted sales of players as there would be in a league with a free competitive labor market. The evidence from free agency in baseball and basketball is consistent with microeconomic theory and not with the claims of owners—there are no indications that introducing competitive labor markets into baseball and basketball has had any measurable impact on competitive balance in those leagues.