August 2009

THEORY OF THE BIG DANCE: THE PLAYOFF PAYOFF IN PRO SPORTS LEAGUES

John Vrooman
Vanderbilt University

> *The baseball season is structured to mock reason, because science doesn't work in the games that matter most.*
> *—Michael Lewis, author of Moneyball, a book about Billy Beane.*

> *My sh*t doesn't work in the playoffs. My job is to get us to the playoffs. What happens after that is f***ing luck.*
> *—Billy Beane, General Manager of Oakland Athletics.*

Introduction

Over the last decade there has been an academic revolution in professional sports leagues. The evaluation of talent between the lines has closely followed abstract notions that the worth of a player is equal to a magic metric of his marginal revenue product. The revolution began in Major League Baseball (MLB) with mid-market teams' need for efficient talent evaluation techniques in leagues dominated by large-market clubs. The most celebrated practitioner of scientific technique is Billy Beane, the general manager (GM) of the Oakland Athletics since 1998. Every MLB team now uses a unique blend of new-school "science" with old-school intuition in finding the economic measure of a ballplayer.

Recently the revolution has faltered for two reasons. First, it seems that the new science can be effective over regular seasons because the number of games reduces uncertainty of the expected result, but it does not always translate to the post-season. The new science is less effective during playoffs because outcomes inherit the randomness of shorter series and knockout tournaments. In his first five years (1999-2003) as GM of the A's Beane's record was 479-330 with a winning percentage of .592. The good news was that the Athletics made the playoffs four straight seasons 2000-03; the bad news was that they lost all four first round series 2-3. The second problem is that if a mid-market club develops a successful evaluation technique, large market clubs will soon copy it at a higher level. [1]

The peculiar economics of the playoffs in professional sports leagues has been neglected in sports economics (Whitney, 1988; Vrooman, 2007). This knowledge gap is surprising given the emotional and financial importance of the post-season to fans, players and teams. The purpose of this paper is to address the economic aspects of championship playoffs and the nexus of the regular season and the postseason (the two seasons) in the four major North American professional sports leagues and English Premier League (EPL).

The argument begins with the basic *QFV* model (Fort and Quirk 1995, Vrooman 1995) of professional sports leagues. *QFV* is then expanded to examine the feedback effect that the prize from playoffs may have on competitive imbalance during the regular season. The *champion effect* is the hypothesis that post-season revenue complicates competitive balance for the regular season (Vrooman 2007). The strength of the *champion effect* depends on the relative size of the post-season prize and its certainty, which depends on the formats of the two seasons. The *champion effect* is strongest when the two seasons are both long and the playoffs are seeded from the regular season. In this case the second season replicates the

[1] In Beane's second five years the Athletics record was 423-386 with a win percentage of .523. The good news was that the A's swept the Minnesota Twins in the 2006 first-round divisions series, the bad news was that they were then swept by the Detroit Tigers in the second round. They have since had two losing seasons 2007-08.

first. The connection is weakest when postseason results inherit the randomness of a short series. In this case "science doesn't work in the games that matter most." (Lewis, 2003)

After the theoretical propositions, the parameters of the *champion effect* are isolated and the playoff structures and payoffs to the teams and players are compared for each of the sports leagues. The paper concludes with an examination of the internal contradiction of the postseason. The leagues receive disproportionate revenue for playoff tournaments and yet the participating teams and players are rewarded the least for the games that matter most.

Open and Closed Case

The *champion effect* is a variant of *QFV* theory that assumes a simplified two-team league with twin profit functions:

$$\pi_1 = R_1\,[m_1, w_1\,(t_1\,,\,t_2)] - ct_1 \qquad\qquad \pi_2 = R_2\,[m_2, w_2\,(t_2\,,\,t_1)] - ct_2 \tag{1}$$

Team 1 revenue R_1 is a function of market size m_1 and win percent $w_1 = t_1/(\,t_1 + t_2)$, determined by its relative share t_1 of league talent T, where a zero-sum constraint requires $\partial w_2 / \partial w_1 = -1$. Team 1 sets payroll ct_1 by acquiring talent until the marginal revenue product of talent MRP_1 is equal to the cost per unit of talent c, which is the same for both teams.

$$MRP_1 = MR_1\,MP_1 = (\partial R_1/\partial w_1)(\partial w_1/\partial t_1) = c \tag{2}$$

Simultaneous profit maximization (mutual best response) for both teams requires:

$$MRP_1 = (\partial R_1/\partial w_1)(\partial w_1/\partial t_1) = c = MRP_2 \tag{3}$$

The win function $w_1 = t_1/(t_1 + t_2)$ yields the marginal product of talent (MP_1) for each team:

$$MP_1 = \partial w_1 / \partial t_1 = (t_2 - t_1\,\partial t_2 / \partial t_1)/(t_1 + t_2)^2 \tag{4}$$

In equilibrium, the *MRP* of talent for both teams equals their mutual cost per unit of talent:

$$MRP_1 = MR_1\,MP_1 = [\partial R_1/\partial w_1][(t_2 - t_1\,\partial t_2/\partial t_1)/T^2] = c = MRP_2 \tag{5}$$

In a *closed league* an inelastic supply of skilled talent T is fixed, and one team's talent gain is another team's zero-sum loss, such that $\partial t_2 / \partial t_1 = -1$. Substitution of $\partial t_2 / \partial t_1 = -1$ into (5) yields the equilibrium condition for simultaneous profit maximization in a closed league:

$$MR_1 = cT = MR_2 \tag{6}$$

By comparison, an *open league* faces an elastic supply of talent available at an exogenous wage rate c. In an open league, one team's talent acquisition has no effect on talent of its opponent, so $\partial t_1 / \partial t_2 = 0$. Substituting $\partial t_1 / \partial t_2 = 0$ into (5) yields the open league solution:

$$MR_1\,w_2 = cT = MR_2\,w_1 \tag{7}$$

The *Yankee paradox* is the empirical proposition that fans want their teams to win closely matched games instead of blowing out the opposition. In a sports league any team is only as strong as its weakest opponent. The *Yankee paradox* implies strictly concave revenue functions that dampen asymmetric revenue advantages of larger market clubs.

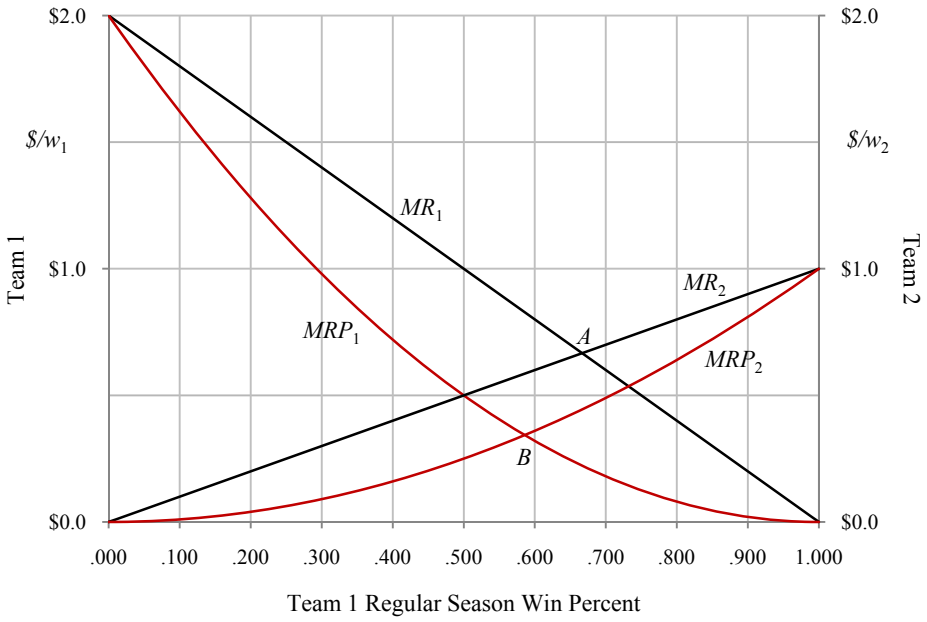

Figure 1. Open and Closed Case

Asymmetric large market of Team 1 $m_1 > m_2$ can be captured with a parameter $\sigma > 1$ that reflects $R_1 = \sigma R_2$. The *Yankee paradox* implies a parameter $\phi \in \{0,1\}$ that measures fan-preference for competitive balance $\phi < 1$. Interaction of large-market σ–advantage with the *Yankee paradox* can be shown for both open and closed profit-max leagues.

$$\pi_1 = \sigma[\phi w_1 + (1-\phi) w_1 w_2] - ct_1 \qquad \pi_2 = [\phi w_2 + (1-\phi) w_2 w_1] - ct_2 \tag{8}$$

Consider the *Yankee paradox* where $\phi = .5$, and the restriction $\partial w_2 / \partial w_1 = -1$ simplifies (8):

$$\pi_1 = \sigma(w_1 - .5w_1^2) - ct_1 \qquad \pi_2 = w_2 - .5w_2^2 - ct_2 \tag{9}$$

In a closed league (6) simultaneous profit maximization yields:

$$MR_1 = \sigma w_2 = cT^* = w_1 = MR_2 \tag{10}$$

The *closed league* has a competitive solution $w_1/w_2 = \sigma$ with respective winning percentages $w_1 = \sigma/(1+\sigma)$ and $w_2 = 1/(1+\sigma)$. By comparison the *open-league* solution is:

$$MR_1 w_2 = \sigma w_2^2 = c^*T = w_1^2 = MR_2 w_1 \tag{11}$$

An *open league* is more balanced $w_1/w_2 = \sigma^{1/2}$; where $w_1 = \sigma^{1/2}/(1+\sigma^{1/2})$, and $w_2 = 1/(1+\sigma^{1/2})$. The asymmetric large market advantage has been dampened twice, on the revenue side by the *Yankee paradox* and on the cost side by the diminishing marginal product of talent. Compare the closed market solution at *A* with the open market solution at *B* in Figure 1.

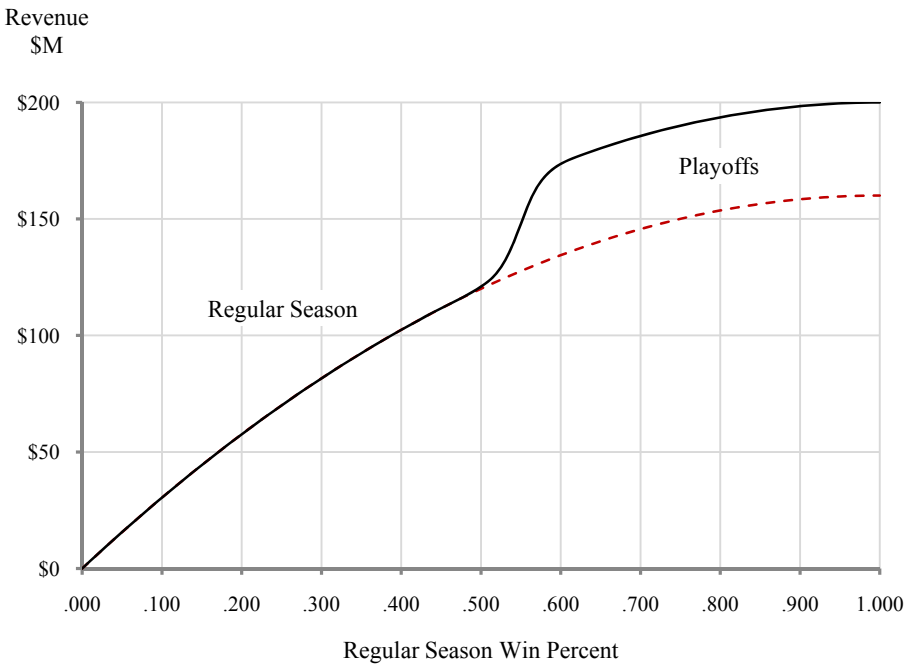

Figure 2. Champion Effect

Champion Effect

Post-season championship tournaments complicate the academic convenience of concave revenue functions, because the redoubled importance of winning counteracts the *Yankee paradox*. With an additional chance for post-season play, each team is built not only to win the regular season, but also to qualify for the post-season tournament. The *champion effect* is the polarizing feedback that the post-season may have on regular season competitive balance. The degree of revenue convexity caused by the *champion effect* depends on the size and certainty of the post-season prize compared to regular-season revenue.

The probability of team 1 making the post-season tournament θ_1 based on its regular-season performance w_1 is expressed as a logistic cumulative density function (*CDF),*

$$\theta_1 = 1/(1+ \exp [(\alpha + \beta w_1)], \tag{12}$$

where $\theta \in \{0,1\}$; $\alpha < 0$; $\beta > 0$. The league mean $\mu = -\alpha/\beta$ is the regular season win threshold where teams have a 50% chance of making the post-season. If δ is the ratio of the playoff prize to regular season revenue and $\omega_1 = w_1/(w_1+\mu)$ is the probability of playoff success against teams with an expected win percentage μ, then the combined two-season revenue function R_1* becomes complicated by convexity:

$$R_1^* = \sigma[\, w_1 - .5w_1^2 + \delta\theta(\omega_1 - .5\omega_1^2)] \tag{13}$$

The *champion effect* on combined regular and post-season revenue R_1*of team 1 is shown in Figure 2 hypothetically for $\sigma = 2$, $\mu = .550$ and $\delta = .5$.

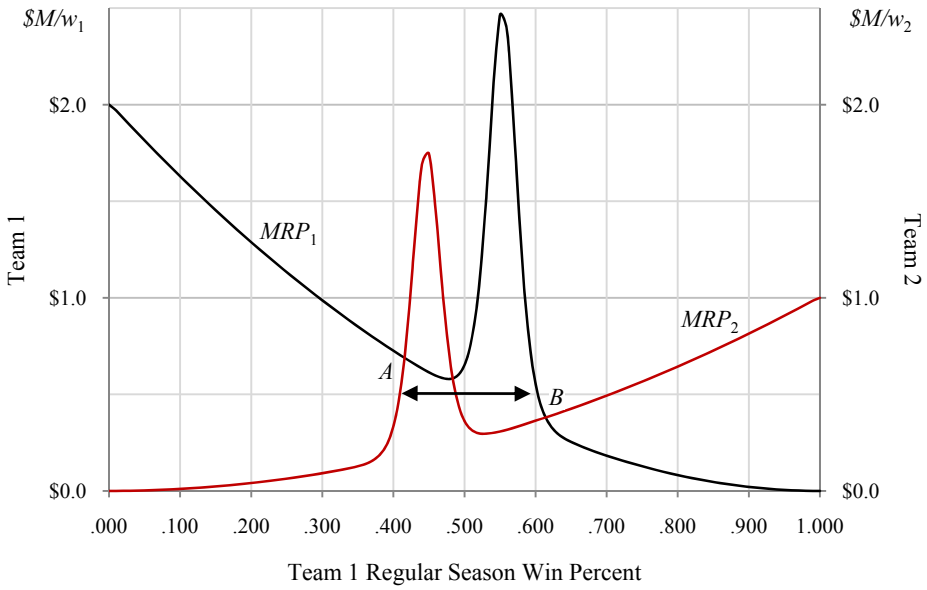

Figure 3. Trade Deadline/Transfer Window

The Edge

An important complication of the champion *effect* is that post-season revenue convexity introduces instability and polarization into the regular-season. Intuitively the *MRP*s of both teams reflect the probability distribution function (*PDF*) derivatives of the respective *CDFs*. The instability of the *champion effect* on the league solution is shown in Figure 3 for an open league with a playoff threshold $\mu = .550$. As either team approaches the playoff threshold at $\mu = .550$ the marginal revenue of winning each additional qualifying game explodes and creates dual solutions at *A* and *B*. These twin equilibria explain observed threshold behavior during inter-season and intra-season trade/transfer windows in North American and European sports leagues for teams on the edge of qualifying for the playoffs.[2]

It is clear that the *champion effect* in sports leagues not only depends on the relative size of the playoff payoff δ and the steepness of the threshold β, but also the relative position of the threshold μ and the resulting quality of the teams in the post-season tournament. In the NBA and NHL, for example, 16 of 30 teams in each league qualify for the playoffs. In this case the higher seeded teams should be more assured of success in the early rounds of the tournament, but this mutes the *champion effect* because the marginal revenue of a win is simultaneously higher for all teams when their *MRP*s all peak around .500. There will be several potential talent buyers at the mid-season trade window because the *MRP* of talent is higher for all teams around the .500 threshold, but there will be few talent sellers because the same is true for all teams regardless of market size. If both curves simultaneously peak at the $w = .500$ threshold for the NBA and NHL in Figure 3, then the *champion effect* becomes irrelevant and the league solution returns to the dominance of the large revenue team.

[2] Mid-season player movement is also a function of team specificity of talent (Vrooman 1996). If talent is team-specific moves are made between seasons, if players are interchangeable parts these moves are made mid-season.

Table 1. Playoff Probability Estimates

League	α	β	$\mu = \alpha/\beta$	N	R^2
Major League Baseball	-41.89 (5.19)	76.21 (9.49)	.550	414	.681
National Football League	-19.66 (2.36	34.94 (4.21)	.563	437	.738
National Basketball Association	-23.12 (3.11)	47.01 (6.22)	.492	407	.767
National Hockey League	-23.82 (2.75)	48.36 (5.51)	.493	369	.671
English Premier League UEFA Champions League	-26.28 (7.04)	42.15 (11.54)	.623	140	.808
English Premier League Relegation	-32.95 (10.31)	90.35 (28.21)	.365	140	.798

Standard errors in parentheses. All coefficients significant at .01

Inactivity in mid-season transfer windows could also occur in European leagues with multiple revenue convexities at lower winning percentages. Revenue convexities reflect the possibility of mid-level clubs qualifying for UEFA's consolation *Europa League* (UEFA Cup before 2009) and the threat of catastrophic relegation to a lower revenue league. These revenue convexities imply multiple kinks along revenue functions and coincidental *MRP* thresholds for winning and losing clubs. Top clubs on the edge of qualifying for UCL will find few transfer partners among lesser clubs on the edge of relegation to lower leagues.[3]

Logit regression estimates of the *champion effect* are compared in Table 1 and shown in Figure 4 for the four major North American Leagues during 1995-2008 and English Premier League (EPL) *champion and relegation effects* for 2003-08. The strength of the *champion effect* is directly related to the link between the regular season performance and qualification for post-season β and the asymmetry of the playoff threshold μ among teams (deviation of playoff-qualifying mean μ from regular season mean $w = .500$).

Based on these preliminary findings the best candidates for the *champion effect* are *MLB* and *EPL*. The β-qualifying effect stillmdepends the relation between regular season and post season success once a team has made the playoffs, and the μ-threshold effect still depends on the absence of additional revenue convexity kinks at lower levels regular season performance. In other words the *champion effect* could still be dampened in MLB by risk and uncertainty in playoff success and weakened in EPL by a *relegation effect* at w_2=.365, which is symmetrical (around $w_1 = w_2$=.500) with UCL threshold at w_1=.623.

Final Four

The connection between regular season and post season performance is a function of various regular and post season structures among the leagues. The strongest relationship between the two seasons would be long regular season and long seeded playoff among an inclusive pool of teams. In this case the risk of an early upset is minimized and the second season replicates the first. The weakest connection would involve a short playoff series or a one-game knock-out elimination series. A random playoff outcome reduces the *champion effect* because it introduces risk and uncertainty into pursuit of the playoff prize.

[3] EPL clubs on either UCL or relegation threshold can transfer players from lower revenue leagues. This polarizes talent among European football leagues and alters UCL prospects of Euro-league champions (Vrooman, 2007).

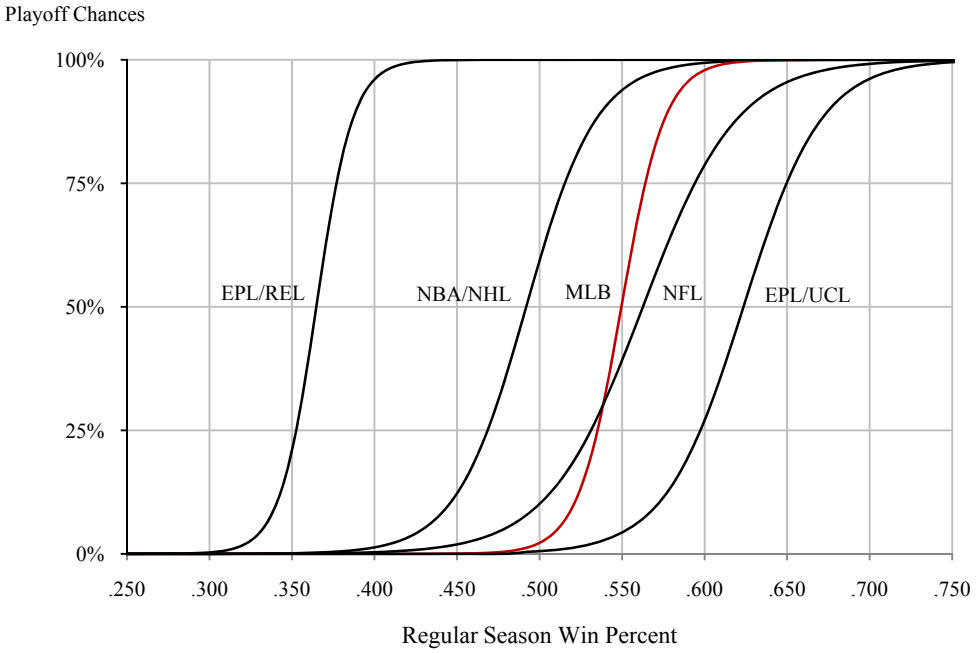

Figure 4. Playoff Probability CDFs

Playoff structures of the big four North American leagues are shown in Table 2 and EPL/UCL in Table 3. While all tournaments are seeded to ideally match the best teams in the finals, that prospect is diminished with fewer rounds (3) and shorter series (MLB's best 3 of 5 game series in round one) and the chances of a hot team knock-out in the case of the NFL's one-game playoffs.[4] These playoff designs introduce randomness and upset into the post seasons of MLB and NFL, whereas the stronger teams should prevail in the NBA, NHL and UCL. More than half of the teams qualify for the NBA and NHL playoffs which extend beyond the regular seasons. As UCL has evolved from an egalitarian knock-out tournament in 1993, the 32-team group stage has become a de facto Champions League. Beginning in 2010, 22 of 32 teams are directly pre-seeded from the elite European leagues to reduce the risk of their early knock-out. UEFA loads Champions League in favor of dominant teams to maximize TV revenue and pre-empt a breakaway European super-league [Vrooman, 2007].

Based on these configurations the playoffs in NBA, NHL and UCL should replicate the regular season and the two seasons in MLB and NFL should be tenuously connected. In results not shown here this is approximately true. Since 1995 the relation between the two seasons is the weakest in MLB and NFL and strongest in the NBA and NHL, but the connection is random in all leagues after the final four teams have been decided in the quarterfinals. The major difference is that the regular season is irrelevant after round two in MLB, round three in NFL, NBA and NHL and round four in the UCL.

[4] Top seeds for division winners create seeding problems in the playoffs for all leagues, because teams with lower records can qualify and be seeded higher than teams with better regular seasons. This seeding format introduces additional risk into the post-season tournament. In NFL playoffs in 2008 San Diego Chargers with 8-8 record were seeded 4th as AFC West Division winners, while New England Patriots missed the playoff at 11-5. This fueled proposals for NFL playoff expansion to 14 teams. In MLB playoffs 2006 St. Louis won the World Series with a regular season record of .519 (83 wins) that was lower than all other teams. As NL Central winner, the Cardinals entered the playoffs instead of the LA Dodgers with 88 wins (.543) who lost a regular season tie breaker to the San Diego Padres for the NL West. Since 2005, the NBA seeds the top 3 division winners and best non-division winner 1-4. Prior rule that seeded division winners 1-3 created 2005 controversy when best 2 teams in Western Conference Dallas Mavericks and San Antonio Spurs were in the same division and prematurely matched in second round.

Table 2. Postseason-Playoff Rules in North American Sports Leagues

League	MLB	NFL	NBA	NHL
Size/Season	30 teams, 2 leagues, 6 divisions, 162 games. 2007 revenue	32 teams, 2 conferences 8 divisions, 16 games	30 teams, 2 conferences, 6 divisions, 82 games.	30 teams, 2 conferences, 6 divisions, 82 games.
2007/08 Revenue	$6.08 billion league total $203 million team average	$6.54billion league total; $204 million team average	$3.57billion league total; $119 million team average	$2.6billion league total; $87 million team average
Mid-Season Deadline	Straight non-waiver trades July 31, 4pm EST; waiver trades August 31.	Tuesday following week 6 of regular season 4 pm EST	Second to last Thursday in February, 3 pm EST	40 days before end of regular season, 3 pm EST.
Playoffs	3 rounds, 8 teams, 2 wild cards.	4 rounds, 12 teams (4 byes)	4 rounds, 16 teams	4 rounds, 16 teams
Seeding	3 division winners get 3 top seeds by record in each league; best non-division winner is 4th wild card seed. Home field based on record. No home field for Wild-card.	4 division winners seeded 1-4 by record in each conference; best non-division winners 5-6 wild card seed. Home field based on seeding.	3 division winners best non-division winner seeded 1-4 by record in each conference; next best teams seed 5-8. Home court based on record.	3 division winners seeded 1-3 in each conference; best non-division winners seeded 4-8 in each conference. Home ice based on seeding.
Round 1	#1 v #4; #2 v #3 in best 3 of 5 division series in each league. 2-2-1 format. Wild card cannot play v. own division.	Seeds #1 & #2 have byes in Round 1. #3 v #8; #4 v #5 in each conference. Reseeded after Round 1.	#1 v #8, #2 v #7, #3 v #6, #4 v #5 in best of 7 series; 2-2-1-1-1 format. Not reseeded after Round 1.	#1 v #8, #2 v #7, #3 v #6, #4 v #5 in best 4 of 7 series; 2-2-1-1-1 format. Reseeded after Round 1.
Round 2	Two winners in each league play in best of 7 League Championship Series; 2-3-2 format	#1 seed v lowest seed, #2 seed v other team in each conference in Division Playoffs.	Winner #1 v #8 v winner #4 v #5; winner #2 v #7 v winner #3 v #6 best of 7 series. 2-2-1-1-1 format	Top remaining seed v lowest seed, next seed v other team in each conference best of 7 series. 2-2-1-1-1 format
Round 3	World Series between League Champions, best of 7 games. 2-3-2 format. Home field to league all-star game winner.	Division Series winning teams play in American and National Football Conference Championship games.	Winning teams from each conference in best of 7 Championship series; 2-2-1-1-1 format	Winning teams each conference in best of 7 Championship series 2-2-1-1-1 format
Round 4	…	Super Bowl played between NFC AFC Champions on neutral site	Championship between Conference Champions in best of 7; 2-3-2 format; home court based on better record.	Stanley Cup between Conference Champions best of 7; 2-2-1-1-1 format; home ice based on better record.

Table 3. Playoff Rules in English Premier League/UEFA Champions League

EPL Size/Season	20 teams, 38-game season, bottom 3 teams relegated, replaced by 3 teams promoted from lower division.
2007/08 Revenue	$3.36 billion league total; $168 million team average
Transfer Windows	Winter transfer window: January 1-31, 17:00 GMT Summer transfer window; end of season through August 31, 17:00 BST
Group stage*	5 rounds, 32 teams.
Seeding**	EPL Champion, runner-up and N3 (after 2009) are directly seeded in UCL group stage. N4 is seeded in final playoff round. N5 and N6 are seeded in consolation Europa League (UEFA Cup before 2009).
Round 1	Group Stage: 32 teams are split into 8 groups of 4 teams, seeded with country protection by UEFA coefficient. 6 home and away matches played within groups. Top 2 from each group enter Round 2, 3rd place enters consolation Europa League Round of 32, 4th place eliminated.
Round 2	16 team knock out-phase. Group winners play other group runners-up (other than teams from own pool or nation) home and away matches winner based on total goals.
Round 3	Quarter final draw is un-seeded and open without country protection. Home and away legs with winner based on aggregate goals
Round 4	Semi-finals match 4 winners from Quarter finals same unseeded open draw as round 3, home and away legs winner based on total goals
Round 5	UEFA Champions League Finals is a single match at neutral site

* Staring in 2010 UCL has 3 qualifying rounds, a playoff round, a group stage, and 4 knockout rounds. 15 winners of qualifying rounds join automatic entrants from leagues 1-5 in 20-team playoff round. 10 winners of the playoff round face 22 (16 in 2009) automatic entrants in the 32-team group stage.
**Starting in 2010 the top three European leagues based on UEFA coefficients (England, Spain, Italy) each place 4 teams in UCL: 3 directly in 32-team group stage and 1 team in 20-team playoff round. The 4th-6th leagues (France, Germany and Russia in 2010) place 2 teams group stage and leagues 4-5 put 1 team in playoff round. Leagues 7-12 place1team in group stage. UCL Cup holder also placed in final 32.

While these results increase the risk and lower the expected payoff of the *champion effect* particularly for MLB, they also suggest an optimum playoff strategy for profit-maximizing owners. It is very difficult to buy a championship in all leagues. Championship teams should be built optimally to make the final four, semi-final round. In the case of MLB the magic number is μ=.550 in the regular season. Beyond the MLB threshold of 90 wins additional talent becomes redundant and the *MRP* of talent diminishes very rapidly. Beyond the final four in all leagues the remainder of the post season becomes a random walk.

The Prize

The strength of the *champion effect* obviously depends on the relative size δ of the post-season prize. Postseason playoff revenue distributions for the participating teams are summarized in Table 4 for all five leagues. In the NFL the playoffs and Super Bowl are a league-wide celebration of the regular season.[5] Media and gate revenue are divided evenly among the teams in the league while the home team keeps venue revenue. The NFL stipend paid to the playoff clubs barely covers traveling expenses for the games. The NFL playoffs are not a profitable proposition beyond the League Championships in Round 3.

[5] Participating Super Bowl teams split only 35% of Super Bowl tickets. The host team receives a 5% ticket share; the other 29 teams each receive 1.2%; and 25.2% goes to the league office for sponsors, charities and media.

Table 4. Team Postseason-Playoff Revenue Distribution

Major League Baseball

Games 1-3 Division Series and 1-4 League and Championship Series: 60% to players (80% before division play began in 1995), 1.6% to umpires and 38.4% to home teams. Games 4-5 of Division Series and 5-7 of Championship Series: home team gets all gate revenue players get zero. MLB Commissioner gets 15% of World Series gate.

National Football League

Gate and Media revenue divided evenly among 32 teams in league. Home team keeps venue revenue. League pays flat expense fee:

Expense Allowance	2004-05
Wild Card Round	$500,000
Division Round	$580,000
Championship Round	$960,000
Super Bowl Loser	$2,590,000
Super Bowl Winner	$3,500,000

National Basketball Association

NBA Commissioner takes 45% (compared 6% in regular season). Home team gets 55% unless series ends in odd number of games. Then NBA Commissioner gets 30%, home team 45% and visiting team 25%

National Hockey League

NHL takes 50% of playoff revenue of top 10 revenue clubs, 40% of middle 3rd revenue clubs and 30% of bottom 3rd of revenue clubs, which is redistributed as revenue sharing.

English Premier League/UEFA Champions League 2008-09	
UCL Participation premium (32 clubs)	$4,200,000
Match fee ($560,000 per match)	$3,360,000
Match winning bonus per win	$840,000
1st knockout round bonus (16 clubs)	$3,080,000
Quarter finals bonus (8 clubs)	$3,500,000
Semi finals bonus (4 clubs)	$4,200,000
Runners-up bonus	$5,600,000
Winner bonus	$9,800,000

The NBA Commissioner's office captures 45% of playoff revenue compared to 6% during the regular season. (About 20% of the NBA Commissioner proceeds are distributed as regular season rewards and the remaining 80% is used for post season player bonuses.) The home playoff team gets the remaining 55%, unless the series ends in an odd number of games, in which case the Commissioner gets 30%, the home team gets 45% and the visitor takes 25%. The share of the post season revenue taken by the NHL Commissioner depends on the regular season revenue of the clubs. The top third revenue clubs share 50% with the rest of the league as revenue sharing, the middle third shares 40% and the bottom third kicks in 30% of their respective home playoff revenue.[6] The proceeds are distributed as revenue sharing, and so a low-revenue club may have a cross-incentive not to make the playoffs.

The only significant direct championship revenue for the clubs occurs in MLB and UCL, where the postseason premium is significant. In MLB a mix of cross-incentives encourages players to end the playoff series with the minimum number of games, while the participating teams benefit if the series is extended to the maximum. Players receive 60% of the revenue from the minimum games required to win the series (games 1-3 in the division

[6] The indirect playoff incentive is to boost regular-season gate and venue revenue. This is particularly true for teams that have been absent from the playoffs. After the Chicago White Sox 2005 Championship season ticket sales increased from 11,000 to 21,000; 2006 runner-up Detroit Tigers increased season ticket sales from 9,000 to 19,000, and 2008 Champion Philadelphia Phillies from 20,400 season tickets to 24,200.

Table 5. EPL Big Four Revenues from UCL 2007-08

EPL Club	UCL TV Pool	Total UCL	EPL & UCL
Manchester United	$27,270,600	$60,030,600	$454,720,000
Chelsea	$23,205,000	$50,925,000	$376,460,000
Liverpool	$16,261,000	$37,541,000	$370,160,000
Arsenal	$14,567,000	$32,487,000	$295,260,000
Total EPL Big Four	$81,303,600	$180,983,600	$1,496,600,000
Total UCL/ EPL	$387,800,000	$819,840,000	$3,360,000,000

UEFA also distributed $124 million in UCL solidarity payments in 2008.
$1 = € .714

series and games 1-4 in the Championship series) and the home team gets 38.4% (1.6% goes to the umpires). The team share is lower in the World Series when the MLB Commissioner takes 15% of the gate off-the-top. Revenue from games 4-5 in the division series and games 5-7 in the Championship series goes to the home teams, and the players get nothing. In 2006 the World Champion St. Louis Cardinals and runner-up Detroit Tigers each received about $6.8 million and the Commissioner took $6.7 million, compared to the Cardinals players who received $20 million and Tigers players who got $13.3 million. In 2007 the MLB Champion Boston Red Sox received $8.7 million, including $7.4 million from a 7-game series with the Cleveland Indians, and the runner-up Colorado Rockies received only $3.2 million, because they swept both division and league championship series in the minimum number of games. By comparison the Red Sox players received $18.9 million and Rockies players were paid $12.6 million from the $52.46 million postseason players' pool.

The championship windfall is even greater for the EPL, where UCL TV rights fees are comparable to media rights fees in European domestic leagues. In 2008 UCL TV rights were $875 million per season: slightly more than French Ligue 1 $840 million and Italian Serie A $784 million, and second only to $1.3 billion for EPL.[7] The merit allocation of UCL media rights fees is shown in Table 4 (excluding match-day revenues), and the direct impact of UCL bonuses on the EPL Big Four clubs is summarized in Table 5.

In UCL 2008 three of the final four were EPL clubs. Liverpool ousted Arsenal in the quarterfinals, Chelsea defeated Liverpool in the semi-finals and Manchester United defeated Chelsea in an all-EPL final. In UCL 2009 all four again reached quarterfinals, where Chelsea defeated Liverpool to put three EPL clubs in the final four. In the last five seasons since 2004 the Big Four have all been in among the UCL 32-team group stage and at least one of them has been in the Final match. The Big Four EPL teams enjoy almost certain expectations of $50 million bonus that boosts their revenue by at least 12%.

At the other end of the table the threat of relegation creates a revenue convexity of greater relative magnitude. The cost of the drop is usually about $50 million in lost revenue. At the end of the 2009 season Newcastle United was relegated from the Premiership where its revenues were $175.8 million with a TV share of $69.3 million. Newcastle's TV money in the 1st division "Championship" will be about $20 million, including a TV half-share parachute of about $16 million. On the positive side the Championship-EPL promotion playoff is considered the richest single game in Europe with a prize of about $56 million.[8] Multiple revenue convexities exist at both ends of the table throughout European football.

[7] Other annual rights fees: NFL $3.735 billion, NBA $930 million, MLB $803 million, NHL $300 million. In Spanish La Liga, Barcelona and Real Madrid each paid annual rights fees over $210 million. This compares to the NFL team average of $116.7 million and New York Yankee implicit fees from YES network of about $145 million.
[8] The top two teams in the lower division are promoted to EPL. Third promotion spot is decided by a playoff among teams 3-6. The playoff final is considered "the richest game in the Europe." After winning the playoff in 2004, Crystal Palace increased revenue from $21 million to $73 million in 2005.

Table 6. CBA Specified Player Playoff Shares

Major League Baseball	Shares	Season	Player Pool
World Series winning team	36.00%	2003	$41,363,446
World Series losing team	24.00%	2004	$42,198,640
LCS losing teams (2)	24.00%	2005	$40,788,566
Division Series losers (4)	12.00%	2006	$55,602,044
Division runners up (4)	4.00%	2007	$52,459,391
National Football League			
Player Bonus per Game	2007-08	2009-10	2011-12
Wild Card Round (8)	$18,000	$19,000	$20,000
Division Round (8)	$20,000	$21,000	$22,000
Championship Round (4)	$37,500	$38,000	$40,000
Super Bowl Loser	$40,000	$42,000	$44,000
Super Bowl Winner	$78,000	$83,000	$88,000
National Basketball Association		Season	Player Pool
Regular Season Awards	20.73%	2002-03	$8,750,000
1st round (16)	23.88%	2003-04	$8,875,000
Conference semis (8)	14.20%	2004-05	$9,500,000
Conference finals (4)	11.74%	2005-07	$10,000,000
Losing team finals (1)	11.73%	2007-09	$11,000,000
Winning team finals (1)	17.70%	2009-12	$12,000,000
National Hockey League			Per Player
President's Trophy	3.85%	$250,000	$10,000
1st round losers (8)	15.38%	$1,000,000	$5,000
2nd round losers (4)	15.38%	$1,000,000	$10,000
Conference runner-up (2)	19.23%	$1,250,000	$25,000
Stanley Cup runner up (1)	17.31%	$1,125,000	$45,000
Stanley Cup Winner (1)	28.85%	$1,875,000	$75,000
Total Pool 2006-11		$6,500,000	

MLB team shares are determined by CBA rule based on highest round reached and player shares are awarded by vote on each team. NFL per game salaries are determined by CBA rule and players are paid for each game played. NBA team shares and total pool are determined by CBA rule and players are paid for each round played. NHL shares and $6.5 million pool (2006-11) are determined by CBA rule and players are paid based on final round reached.

The Ring

Perhaps the most intriguing aspect of the *champion effect* comes on the cost side. Post-season revenue convexities occur after players have completed their regular-season contract years. So unless players have post-season performance bonuses in their contracts, the marginal cost of playoff talent approaches zero. Postseason player compensation is paid in the form league merit bonuses previously specified by collective bargaining agreements (CBAs) in the respective leagues. As shown in Table 6 the most lucrative North American playoff bonuses are found in MLB where the size of the player pool is a straight 60 percent of the revenue received in the minimum number of games in each series. MLB team shares are predetermined and player shares are determined by player vote after the World Series.

All other player pools are arbitrarily determined. The NFL has specified the individual player bonuses for each game played in the playoffs through 2012. Although the NBA front office gets 45% of playoff revenue, the CBA has already specified the size of player pool through 2012, and team merit-shares are a fixed proportion for each round. Both NFL and NBA bonuses are paid per round/game played. The NHL has arbitrarily specified the same $6.5 million pool for each year of the current CBA through 2011. The absolute size of the team merit share is also predetermined and paid based on the highest round reached.

Table 7. Estimated Player Distributions in 2008 Playoff Finals

	MLB	NFL	NBA	NHL
Playoff Pool	$51,159,328	$30,740,000	$11,000,000	$6,500,000
Finals Winning Team	$18,417,358	$7,181,500	$2,630,520	$1,875,000
Finals Losing Team	$12,278,239	$6,227,500	$1,972,710	$1,125,000
Finals Winning Player	$351,504	$135,500	$175,368	$75,000
Finals Losing Player	$223,390	$117,500	$131,514	$45,000
Average Season Salary	$2,926,000	$1,750,000	$5,356,000	$1,907,000
Winning Player per Game	$25,107	$45,167	$6,745	$3,409
Losing Player per game	$13,962	$29,375	$6,263	$2,250
Season Salary per Game	$18,062	$109,375	$65,317	$23,256

Games played in 2008 Finals: MLB Philadelphia 14, Tampa Bay 16; NFL Pittsburgh 3, Arizona 4; NBA Boston 26, Los Angeles 21; NHL Detroit 22, Pittsburgh 20. MLB player pool is actual and distributions are determined by team postseason vote. NFL player share is known and team share is estimated based on roster size of 53. NBA and NHL player share estimated from actual team share based on playoff roster sizes of NBA 15 and NHL 25.

Estimates of the respective playoff pools and player bonuses for league champions and runners up are compared to regular season per-game average salaries in Table 7 for the four North American Leagues.[9] MLB is the only league where the postseason bonus comes close to the regular season per game salary. World Series winners and losers receive twice the bonus as Super Bowl winners and losers and ten times the stipend paid to NHL players. The MLB average per game salary of $18,062 in 2008 lies between the $25,107 bonus received by the Champion Philadelphia Phillies and the $13,962 paid to runner-up Tampa Bay Rays. The $45,000 per game bonus for the NFL Super Bowl Champion Steelers was less than half of the $109,000 per-game regular-season salary for the average NFL player. Playoff bonuses in the NBA and the NHL are insignificant compared to MLB and NFL and amount to only ten percent of the per-game average for their regular seasons.

The important point here is that by their nature playoffs are the joint production of monopsony leagues. If post-season bonuses are not directly paid by participating clubs, then the marginal cost of talent is zero and token bonuses suggest that the leagues are exploiting championship talent. The trophy ring awarded to league champions and runners up (as conference champions) is a possible exception. In all leagues the design and cost of the ring are decided by individual clubs, but the NFL underwrites 150 rings at $5,000 each for the Super Bowl winner and 150 rings at $2,500 for the loser. The bad news is that players are paid the least for games that generate the most revenue. The good news is that reducing the playoffs to the "quest for the ring" may elevate postseason competition to its purest form.

Two Seasons

In spite of different variations in playoff formats the role of dominant teams is remarkably similar in all leagues including EPL. As shown in Table 8 all leagues have had one dominant dynasty with a second challenger over the last 14 seasons. In MLB the New York Yankees won four championships in six appearances and Atlanta Braves took one championship in three attempts. In the NHL the Detroit Red Wings held four championships in six tries and the New Jersey Devils won three of four Stanley Cup appearances. In the NBA the Los Angeles Lakers mini-dynasty also took four of six Championship tries and the San Antonio Spurs were four for four. In the NFL the New England Patriots have won four of five Super Bowls during the salary cap era, and the Pittsburgh Steelers won two of three.

[9] UCL bonuses are paid by EPL teams. In 2008 season EPL and UCL Champion Manchester United players each received about $425,000 for winning the double. Chelsea player bonuses could have been $1 million for the double. Players for Hull City each received a bonus of about $125,000 for avoiding relegation by one point in 2009.

Table 8. North American Championship Distributions 1995-2009

Club	Champ	Finals	Club	Champ	Finals
Major League Baseball			*National Football League*		
New York Yankees	4	6	New England Patriots	3	5
Atlanta Braves	1	3	Pittsburgh Steelers	2	3
Boston Red Sox	2	2	Denver Broncos	2	2
Florida Marlins	2	2	New York Giants	1	2
St. Louis Cardinals	1	2	St. Louis Rams	1	2
Cleveland Indians	0	2	Green Bay Packers	1	2
Four Teams	1	1	Four Teams	1	1
Seven Teams	0	1	Eight Teams	0	1
Number of Different Clubs	9	17	Number of Clubs	10	18
National Basketball Association			*National Hockey League*		
Los Angeles Lakers	4	6	Detroit Red Wings	4	6
San Antonio Spurs	4	4	New Jersey Devils	3	4
Chicago Bulls	3	3	Colorado Avalanche	2	2
Detroit Pistons	1	2	Pittsburgh Penguins	1	2
Utah Jazz	0	2	Anaheim Ducks	1	2
New Jersey Nets	0	2	Carolina Hurricane	1	2
Boston Celtics	1	1	Dallas Stars	1	2
Miami Heat	1	1	Tampa Lightning	1	1
Seven Teams	0	1	Seven Teams	0	1
Number of Clubs	6	15	Number of Clubs	8	15

MLB and NFL 1995-2008; NBA 1996-2009 and NHL 1995-2009 excluding lockout playoffs 2005.

The distribution of championships among other clubs is similar between MLB and NFL. Since MLB began division play in 1995, 17 different teams have played in the World Series and 9 different teams have won the MLB World Championship. Nine of the last 28 participants and four of the 14 winners have been wild card teams. Eight of the last nine World Series have involved a wild card. During the salary cap era in the NFL, 18 different teams have played in the Super Bowl and 10 different teams have won the Championship. Only four of the last 28 teams and three of the 14 winners have been wild card teams. The NFL has engineered regular-season parity through the salary cap and revenue sharing, but seeding and first round byes have reduced added chaos of wild card teams in the playoffs.

There are also similarities between the Championship distributions of the NBA and NHL, where fewer teams have played and won the league championships than MLB and the NFL. The similarity is that 15 different teams have played in the Championship finals in each league. The difference is that the NBA has only had only 5 different Champions in 14 seasons (including 4 non-division winners) while the NHL has had eight (including 5 non-division winners). The NBA has strategically engineered dynasties and team continuity through a soft salary cap that allows a team to exceed the cap to resign its own free agents.[10] This strategy has been followed throughout the playoff structure.[11] Only six different clubs have won the NBA Championship during the 26 years of the soft salary cap.[12]

By comparison in Table 9, UEFA Champions League final match has also had 15 different participants over the 14 year period 1996-2009 and 8 different Champions. Real Madrid has won the Championship match 3 times in 3 appearances; Manchester United and

[10] In an attempt to keep star players with their original clubs, the NBA granted the "Larry Bird" exception in 1984-85 for clubs to exceed the "soft cap" to resign their own free agents. Now there are nine exceptions to the soft cap.
[11] Based on autoregressive measures of season to season continuity, EPL is the most deterministic league followed by NBA (after soft cap 1984) and NHL (before hard cap 2005). The NFL is the most random league (since hard cap 1994) and MLB has shown moderate competitive balance since the 1994-95 strike. (Vrooman 2007, 2009)
[12] NBA Champions in salary cap era: Los Angeles Lakers 7; Chicago Bulls 6; San Antonio Spurs 4; Boston Celtics 3; Detroit Pistons 3; Houston Rockets 2 and Miami Heat 1.

Table 9. Championship Distributions EPL and UCL 1996-2009

UCL Club	League	Champ	Total	EPL Club	Champ	2nd	3rd
Real Madrid	ESP	3	3	Manchester United	9	2	3
Manchester United	ENG	2	3	Arsenal	3	5	2
AC Milan	ITA	2	3	Chelsea	2	3	2
Barcelona	ESP	2	2	Liverpool	0	2	5
Juventus	ITA	1	4	Newcastle United	0	2	1
Liverpool	ENG	1	2	Leeds United	0	0	1
Bayern München	GER	1	2	Different Clubs	3	5	6
Porto	POR	1	1				
Borussia Dortmund	GER	1	1				
Valencia	ESP	0	2				
Five clubs	…	0	1				
Different Clubs		8	15				

Chelsea bought by Russian Oil Man Roman Abramowich in 2003; Manchester United purchased by Malcolm Glazer owner of NFL Tampa Buccaneers in 2005; Liverpool bought by American Tom Hicks owner of MLB Texas Rangers and NHL Dallas Stars and George Gillett former owner of NHL Montreal Canadiens in 2007. Leeds United relegated 2004; Newcastle United relegated 2009.

AC Milan are 2 for 3; and Barcelona is 2 for 2. The competitive imbalance of EPL is also shown in Table 9 where there have been only three champions over the last 14 seasons. Manchester United has won nine championships, Arsenal has taken 3 and Chelsea has won twice. Liverpool has mastered the second season, but not the first by being one for two in UCL finals without winning the Premiership. Leeds United and Newcastle United, the only clubs to rival the Big 4, have since been relegated to the lower division "championship."

Prime Time

In sports media rights contracts broadcast networks are largely concerned with advertising revenue from more lucrative playoff seasons. As a result regular season games are being siphoned to cable regional sports networks (RSN) and league-owned networks. About 80% percent of advertising revenue from NFL broadcasts comes from the regular season compared to the other leagues, where networks receive over 80% of ad revenues from the postseason. The contradiction is that leagues stand to make the most TV money from dominant teams in the playoffs, while they try to make outcomes the most balanced.

Siphoning of sports media rights is profitable because regular and post-season fan bases are not the same. Regionalization of the regular season isolates and price discriminates against the die-hard local fan on local cable or RSNs, while post-season national broadcasts must appeal to the general interest fan. The playoff structure for each league is an important factor in determining post-season TV ratings and size of the playoff prize. The question arises whether competitively balanced post-season finals are well received by the national fan base. Nielsen TV ratings for the championship finals are compared in Table 10 for MLB and NFL and Table 11 for NBA and NHL since 1995, when division play began in MLB.

Given media fragmentation and proliferation of cable and satellite platforms, it is difficult to compare diluted ratings numbers over time, but there are still a few observations that can be made. MLB ratings have fallen since play resumed after the 1994-95 strike. The halving of ratings from 19.5 to 8.4, audience share from 33% to 14% and number of viewers from 29 million to 13.6 million coincides with increased post-season competitive balance. The sharpest drop occurs in the 2005 World Series between the seldom seen Chicago White Sox and Houston Astros. The New York Yankees are the missing ingredient from all lower rated series. The Yankees were eliminated in the first round American League Division Series (ALDS) in 2005, 2006, 2007, and did not qualify for 2009 playoffs. The absence of the Bronx Bombers coincides precisely with the slide in World Series ratings 2005-09.

Table 10. Nielsen TV Ratings for Championship Finals

Year	Teams	Network	Games	Rating	Share	Viewers (K)
Major League Baseball						
2008	Philadelphia v. Tampa Bay*	FOX	5	8.4	14	13,635
2007	Boston v. Colorado*	FOX	4	10.6	18	17,123
2006	St. Louis v. Detroit*	FOX	5	10.1	17	15,812
2005	Chicago v. Houston*	FOX	4	11.1	19	17,162
2004	Boston* v. St. Louis	FOX	4	15.8	25	25,390
2003	Florida* v. New York (A)	FOX	6	13.9	25	20,142
2002	Anaheim* v. San Francisco	FOX	7	11.9	20	19,261
2001	Arizona v. New York (A)	FOX	7	15.7	25	24,528
2000	New York (A) v. New York (N)*	FOX	5	12.4	21	18,081
1999	New York (A) v. Atlanta	NBC	4	16.0	26	23,731
1998	New York (A) v. San Diego	FOX	4	14.1	24	20,340
1997	Florida* v. Cleveland	NBC	7	16.8	29	24,790
1996	New York (A) v. Atlanta	FOX	6	17.4	29	25,220
1995†	Atlanta v. Cleveland	ABC/NBC	6	19.5	33	28,970
National Football League						
2008	Pittsburgh v. Arizona	FOX	1	42.0	64	98,732
2007	New York (N)* v. New England	FOX	1	43.1	65	97,448
2006	Indianapolis v. Chicago	CBS	1	42.6	64	93,184
2005	Pittsburgh v. Seattle	ABC	1	41.6	62	90,745
2004	New England v. Philadelphia	FOX	1	41.1	62	86,072
2003	New England v. Carolina	CBS	1	41.4	63	89,795
2002†	Tampa Bay v. Oakland	ABC	1	40.7	61	88,637
2001	New England v. St. Louis	FOX	1	40.4	61	86,801
2000	Baltimore* v. New York (N)	CBS	1	40.4	61	84,335
1999	St. Louis v. Tennessee*	ABC	1	43.3	63	88,465
1998	Denver v. Atlanta	FOX	1	40.2	61	83,720
1997	Denver* v. Green Bay	NBC	1	44.5	67	90,000
1996	Green Bay v. New England	FOX	1	43.3	65	87,870
1995	Dallas v. Pittsburgh	NBC	1	46.0	68	94,080

†MLB went from 4 to 6 divisions in 1995 expansion to 28 teams and; NFL from 6 to 8 divisions in 2002 expansion to 32 teams.
* Wild card teams or non-division winners.
Source: Nielsen Media Research

Ratings in the NFL Super Bowl are stronger than the other leagues partially because it is one final game played on its own weekend in an entertainment vacuum. Other league ratings are averages of all network and cable games often competing with other leagues.[13] Total viewership of MLB World Series (even in four games) is actually greater than the average NFL Super Bowl until the early exits of the Yankees after 2004.

Until the last two Super Bowls (2007-08 seasons) the MLB World Series and NBA Championship Series have both run neck and neck with the NFL in terms of total advertising revenues. In 2006 for example, NFL total playoff ad revenues were $423 million compared to $424 million for the NBA and $382 million for MLB. The five-game 2006 World Series earned $160.8 million in advertising money for FOX, compared to Super Bowl XLI that took in $151.5 million for CBS. This was in spite of the celebrated cost of Super Bowl ads. In 2006 a 30-second Super Bowl spot ran about $2.4 million compared to $400,000 for MLB's World Series and $360,000 per spot for the NBA. In addition to its overall strength, Super Bowl shows significantly higher TV ratings for former dynasties in the Dallas Cowboys, Pittsburgh Steelers and recently the New England Patriots. This translates into higher advertising rates and revenues. After the 2008 season, Super-Bowl XLIII advertising revenues topped $200 million with a rate of $3 million per 30-second spot.

[13] Nielsen ratings for NCAA D1 Football Championship game have also been consistent from 17.4 for Tennessee-Florida State in 1999 to 17.4 for LSU-Ohio State in 2008, while the ratings for the NCAA Basketball Final have fallen from a recent high of 22.7 in 1992 for Duke-Michigan to 10.8 for North Carolina Michigan State in 2009.

Table 11. Nielsen TV Ratings for Championship Finals

Year	Teams	Network	Games	Rating	Share	Viewers
National Basketball Association						
2009	Los Angeles Lakers v. Orlando	ABC	5	8.4	15	14,347
2008	Boston v. Los Angeles Lakers	ABC	6	9.3	17	14,941
2007	San Antonio* v. Cleveland*	ABC	4	6.2	11	9,289
2006	Miami v. Dallas*	ABC	6	8.5	15	12,972
2005†	San Antonio v. Detroit	ABC	7	8.2	15	12,544
2004	Detroit* v. Los Angeles Lakers	ABC	5	11.5	20	17,942
2003	San Antonio v. New Jersey	ABC	6	6.5	12	9,864
2002	Los Angeles Lakers* v. New Jersey	NBC	4	10.2	19	15,678
2001	Los Angeles Lakers v. Philadelphia	NBC	5	12.1	23	18,996
2000	Los Angeles Lakers v. Indiana	NBC	6	11.6	21	17,402
1999	San Antonio* v. New York*	NBC	5	11.3	21	16,014
1998	Chicago v. Utah	NBC	6	18.7	33	29,040
1997	Chicago v. Utah	NBC	6	16.8	30	25,586
1996	Chicago v. Seattle	NBC	6	16.7	31	24,858
National Hockey League						
2009	Pittsburgh* v. Detroit	NBC/VS	7	2.7	5	4,780
2008	Detroit v. Pittsburgh	NBC/VS	6	2.6	5	4,479
2007	Anaheim v. Ottawa *	NBC/VS	5	1.2	2	1,764
2006	Carolina v. Edmonton*	NBC/OLN	7	1.8	3	2,834
2004	Tampa Bay v. Calgary*	ABC/ESPN	7	2.2	4	3,286
2003	New Jersey v. Anaheim*	ABC/ESPN	7	2.4	4	3,627
2002	Detroit v. Carolina	ABC	3/5	3.6	7	5,768
2001	Colorado v. New Jersey	ABC	5/7	3.3	6	5,058
2000	New Jersey* v. Dallas	ABC	4/6	3.7	8	5,511
1999†	Dallas v. Buffalo*	FOX	3/6	3.4	6	4,873
1998	Detroit* v. Washington	FOX	1/4	3.3	6	4,830
1997	Detroit* v. Philadelphia	FOX	1/4	4.0	8	6,370
1996	Colorado v. Florida*	FOX	2/4	3.6	7	5,090
1995	New Jersey* v. Detroit	FOX	2/4	3.4	8	5,210

† NBA went from 4 to 6 divisions in 2005 expansion to 30 teams and NHL from 4 to 6 divisions in 1999 expansion to 30 teams.
* Wild card teams or non-division winners.
Source: Nielsen Media Research

The NBA has strategically protected team continuity and marketed individual player matchups for national media appeal, since the imposition of the soft salary cap in 1984. Compare the ratings bonanza of Michael Jordan and Chicago Bulls dynasty against Karl Malone and the Utah Jazz with the low ratings for the mid-market San Antonio Spurs v. unfamiliar New Jersey Nets or Cleveland Cavaliers. NBA TV ratings were cut in half after the demise of Jordan's Bulls. The Los Angeles Lakers and Kobe Bryant have provided a significant boost, but not at the same level as former dynasties. A six or seven game Los Angeles Lakers series still has the same total number of viewers as an average Super Bowl.

Recent ratings for the NHL in 2009 have returned to pre-lockout (2004-05) levels. Stanley Cup Game 7 was the most watched NHL game since 1973 with a 4.3 rating, 8% share and 8 million viewers on NBC. The primary reason was the familiarity of hockey fans with the decade-dominant Detroit Red Wings re-matched with the promising talent of the Pittsburgh Penguins. Competitive balance is not found or sought in European football where imbalance and polarization are the accepted norm. The 2009 Champions League final match between England's Manchester United and Spain's Barcelona (each in its third appearance in 14 years) drew a 37.1% share with 45.3 million viewers in the home countries of the Big Five leagues. [14] If the Yankee paradox is an empirical question, the answer is that increased competitive balance not ready for prime time television in Europe or North America.

[14] In the 2009 final match Spain had a 62% share with 11.3 million viewers on Antena3; England had a 39% share with 9.6 million viewers on ITV1; Italy had 36% share with 9.63 viewers on RAI; Germany had 23% rating with 6.55 million viewers on Sat-1 and France had a 34% share with 8.25 million viewers on TF1.

Table 12. Preconditions for Champion Effect

	MLB	NFL	NBA	NHL	EPL
Size of the playoff prize	■	□	□	□	■
Regular season length	■	□	■	■	■
Post-season playoff length	□	□	■	■	■
Playoff threshold asymmetry	■	■	□	□	□
Champion effect	■	□	□	□	■

Conclusion

The *champion effect* occurs when the postseason playoffs adversely affect regular season competitive balance. The *champion effect* depends on four factors: 1. *size of playoff prize* relative to regular-season revenue; 2. *regular season length* in games played sufficient to reduce randomness and increase the MRP of talent at playoff threshold; 3. *playoff length* and seeding sufficient to replicate regular season; and 4. *playoff threshold asymmetry* sufficient for talent buyers to find talent sellers at the threshold. As shown in Table 12 none of the five leagues satisfies all four conditions. The most likely candidates for the c*hampion effect* are MLB and EPL, with reservations about the uncertainty of MLB's short playoffs and the symmetry of EPL/UCL qualification and relegation.

Two contradictions emerge about the playoffs. *Contradiction #1:* Sports leagues receive a lion's share of national media revenue from the playoffs and yet they redistribute the least revenue to participating teams and players. C*ontradiction #2:* National playoff fans prefer at least one dominant team in title games and yet American leagues design series to make the quality of playoff survivors uncertain. Evidence suggests an optimum level of competitive imbalance and that the pursuit of absolute playoff parity is self-defeating.

In MLB the short playoff system is designed to equalize playoff chances for mid-market clubs, but it also invites large-market teams spend to win in the regular season only to become ordinary in post-season chaos. Nine of the last 14 World Series winners have had fewer regular season wins than their opponents. The St. Louis Cardinals lost the World Series in 2004 with 105 wins but then won the World Series in 2006 with 83regular-season wins, the fewest in World Series history. If the two seasons are disconnected, then evidence suggests that the optimum strategy in MLB is to aim for the playoff threshold of 90 wins (.556), and then suffer the slings and arrows of the outrageous playoffs.

In the end *Moneyball* science is not new or revolutionary. Winning during the regular season is talent driven because good and bad luck usually even out. Winning in the postseason is riskier business because of random elements inherent in short series. All four of Billy Beane's Oakland Athletics postseason losses came in game 5 of American League Division Series to teams with lower regular season records. Old-school manager Bobby Cox led the Atlanta Braves to 14 consecutive division titles (1991-2005) based on the old saw that "offense sells tickets and defense wins championships." After the Braves won only one World Series (1995) in five appearances, Cox agreed that "the playoffs are a crapshoot."

Old-school intuition yields the same results as new-school science because defense has less variance, and consistency is the key to surviving the playoffs. The old-school axiom that "good defense never sleeps" is true for each dynasty in all leagues. It is also true for wild-card teams that make unexpected runs through the playoff maze. In the 2005 "Miracle of Istanbul" Liverpool played through qualifying rounds to win Champions League based on defense, but the same club finished fifth in the EPL based on offensive mediocrity. Defense is also why the wild-card New York Giants have "11 straight on the road" engraved on their 2008 Super Bowl Ring. During the regular season it is certainly better to be good than lucky, but in the playoffs it is probably better to be lucky than good.

References

Fort, R. and Quirk, J. (1995), Cross-subsidization, Incentives, and Outcomes in Professional Team Sports Leagues. *Journal of Economic Literature*, September 1995, 1265-99.

Lewis, M. (2003), *Moneyball: The Art of Winning an Unfair Game.* Norton, New York.

Vrooman, J. (1995). General Theory of Professional Sports Leagues. *Southern Economic Journal,* 61(4), 971-90.

Vrooman, J. (1996), Baseball Player's Labor Market Reconsidered*, Southern Economic Journal,* 63(2), 339-60.

Vrooman, J. (2007). Theory of the Beautiful Game: The Unification of European Football. *Scottish Journal of Political Economy,* 54(3), 314-54.

Vrooman, J. (2009). Theory of the Perfect Game: Competitive Balance in Monopoly Sports Leagues, *Review of Industrial Organization*, 34(1), 5-44.

Whitney, J. (1988). Winning Games versus Winning Championships: The Economics of Fan Interest and Team Performance. *Economic Inquiry*. 26(4), 703-24.