Introduction: Competitive Balance

Module 1, Chapter 4

Chapter 4: Competitive Balance

Objectives:

- ❏ Define the competitive balance
- ❏ List measures of competitive balance
- ❏ Correcting the competitive imbalance
- ❏ Discuss the reasons behind the competitive imbalance

Competitive (Im)balance

- We have talked about teams being identical so far
  - Does this make sense in the real world?
- What are the biggest differences between teams?
- Leagues have the ability to regulate competitive balance if they so choose.
  - Which leagues do you think do this?

Competitive Imbalance

- When it is difficult for teams to change position in league standing from year to year, then we say that competitive imbalance exists.
- This happens for two reasons:
  - Exclusive Territory
  - Maximizing Profits through talent levels

Blue Ribbon Panel

- MLB Commissioner, Bud Selig, appointed a Blue Ribbon panel to investigate the issue of competitive imbalance in MLB and take corrective actions
- The Blue Ribbon panel worked out a definition of competitive balance: “In the context of baseball, proper competitive balance should be understood to exist when there are no clubs chronically weak because of MLB’s financial structural features”

What is the Competitive Balance?

- A competitive balance means that all teams are roughly equal in their ability, regardless of their financial status

Measures of Competitive Balance

Noll-Scully measure

- takes as a benchmark the performance that would occur if all teams were equal in strength.
- uses “standard deviation” of team winning percentages as a measure of variability of the team’s performance.

Benchmark standard deviation:

$$\sigma_I = \frac{0.50}{\sqrt{N}}$$

where N is the number of games that a team plays during the season. (in NFL σ_I=0.125; in MLB, σ_I=0.039, in NHL σ_I=0.055)

Actual standard deviation in a league:

$$\sigma_A = \left[\frac{1}{n}\sum_{i=1}^{n}(W_i - 0.5)^2\right]^{1/2}$$

where W is the team i’s winning percentage, n is the number of teams

Measures of Competitive Balance

Noll-Scully measure

- The closer to σ_I is each team's standard deviation, the more balanced the league.

  Hence: in a perfectly balanced league, $\sigma_A/\sigma_I = 1$

- Table 4.1 (textbook)
- What can you say about the competitive balance in the teams in the table?

League	2005	2009
NFL	1.69	1.61
MLB (NL)	1.38	1.74
MLB(AL)	2.05	1.91
NGL	1.98	1.54
NBA	2.45	2.95

Non-Scully measure: example

Look at the following winning percentages by NBA teams in 2016

Western Conference	Winning Percentage		Eastern Conference	Winning Percentage
Golden State	0.854		Cleveland	0.681
San Antonio	0.771		Boston	0.625
Houston	0.692		Toronto	0.612
LA	0.625		Washington	0.583
Utah	0.612		Atlanta	0.583
Memphis	0.580		Indiana	0.532
Oklahoma City	0.571		Chicago	0.49
Denver	0.447		Charlotte	0.469
Portland	0.440		Milwaukee	0.447
Minnesota	0.396		Detroit	0.438
Sacramento	0.388		NewYork	0.42
New Orleans	0.388		Miami	0.388
Dallas	0.375		Philaselphia	0.383
LA Lakers	0.333		Orlando	0.38
Phoenix	0.313		Brooklyn	0.188

Non-Scully measure: example

“Benchmark standard deviation” in NBA:

$$\sigma_I = \frac{0.50}{\sqrt{N}} = \frac{0.50}{\sqrt{82}} = 0.0552$$

where N=82 is the number of games that a team plays during the season

“Actual standard deviation” in the Western Conference:

$$\sigma_A = \left[\frac{1}{n}\sum_{i=1}^{n}(W_i - 0.5)^2\right]^{1/2} = \left[\frac{1}{15}\cdot\begin{pmatrix}(0.854-0.5)^2+(0.771-0.5)^2+(0.692-0.5)^2+\\(0.625-0.5)^2+(0.612-0.5)^2+(0.580-0.5)^2+\\(0.571-0.5)^2+(0.447-0.5)^2+(0.440-0.5)^2+\\(0.396-0.5)^2+(0.388-0.5)^2+(0.388-0.5)^2+\\(0.375-0.5)^2+(0.333-0.5)^2+(0.313-0.5)^2\end{pmatrix}\right]^{1/2} = 0.162$$

where W is the team i’s winning percentage, n is the number of teams

Non-Scully measure: example

“Non-Scully measure” in the Western Conference:

$$\sigma_A/\sigma_I = \frac{0.162}{0.0552} = 2.94$$

The same way, we can find the actual standard deviation for the Eastern Conference (0.12), and the Non-Scully Measure = 2.23

Which conference is more balanced?

- Answer: The Eastern Conference, since its Non-Scully measure is closer to 1.

Measures of Competitive Balance

Herfindahl-Hirschman Index (HHI)

- a well-known measure of industrial concentration, used to evaluate the competitiveness of industries for antitrust purposes

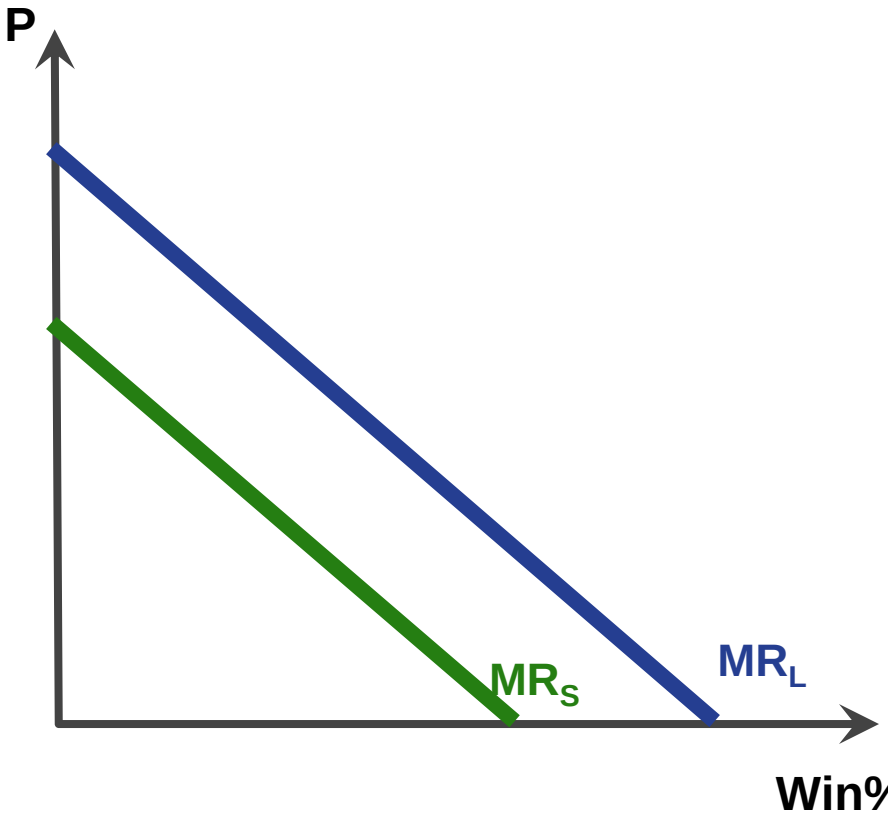
$$HHI = \sum_{i=1}^{n} \left(s^i\right)^2 \cdot 10{,}000$$

where s_i - share of firm i, n – number of firms.

- HHI in sports: we look at the concentration of championships over time
- E.g.: in 1980 – 2009, there were 30 championships. s_i is the number of championships won by team i divided by 30. Each team's share is squared and multiplied by 10,000. Then summing all numbers across all teams, we get HHI.
- **The lower HHI– the better competitive balance**

Competitive Imbalance

- We will model competitive imbalance with a two team league
  - No talent outside the league (no worldwide market for talent)
  - Must purchase talent from teams in league.



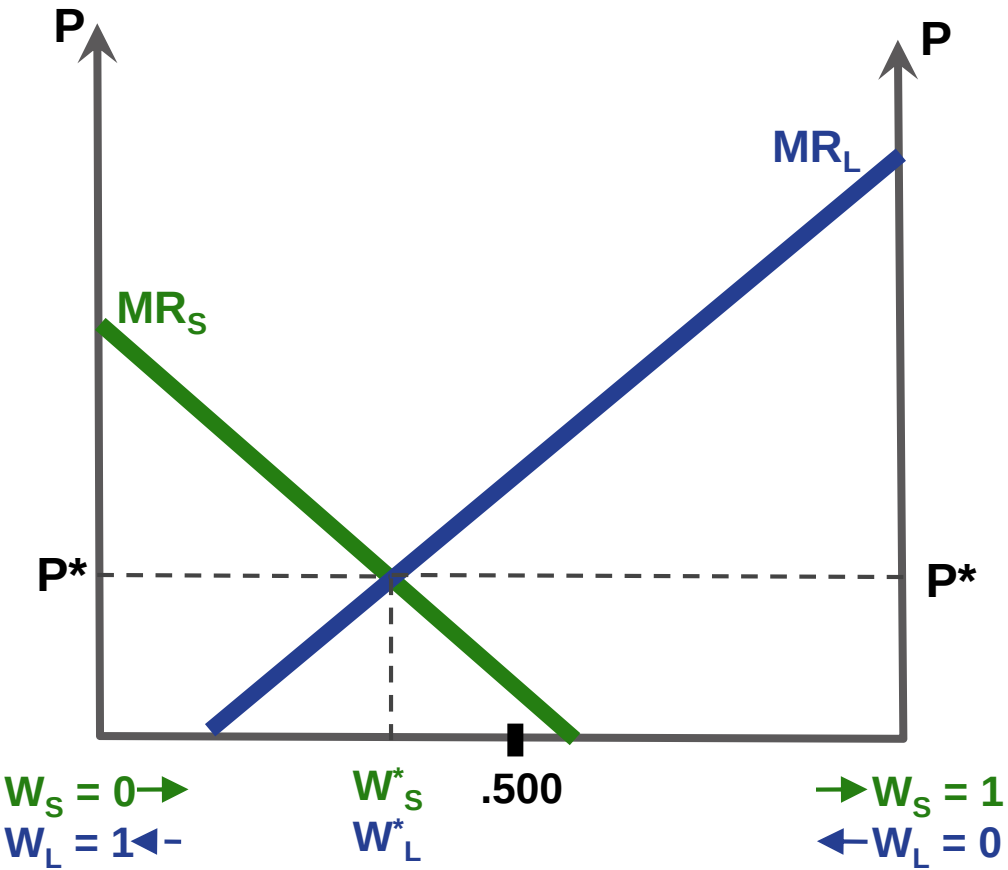
Revenue Imbalance

For every winning percentage (quality level), the **LM team** earns more revenue

Purposely exaggerated to show the outcomes of revenue imbalance

Assumes talent is fixed in the league

Where Does Competitive Imbalance Come From?



Revenue imbalance causes competitive imbalance

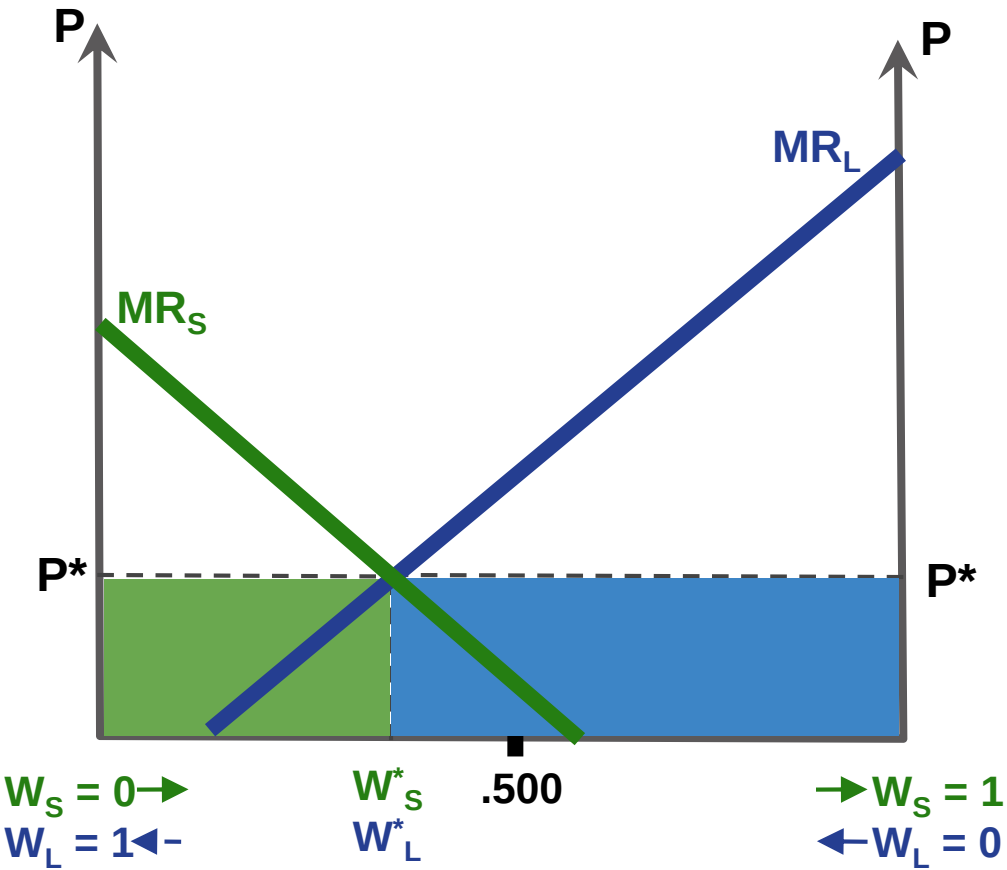
Average winning percentage:

$$\frac{1}{n}\sum_{i=1}^{n} w_i = .500$$

Sum of winning percentage:

$$\sum_{i=1}^{n} w_i = .500 \times n$$

Outcomes in a Simple 2-Team Model

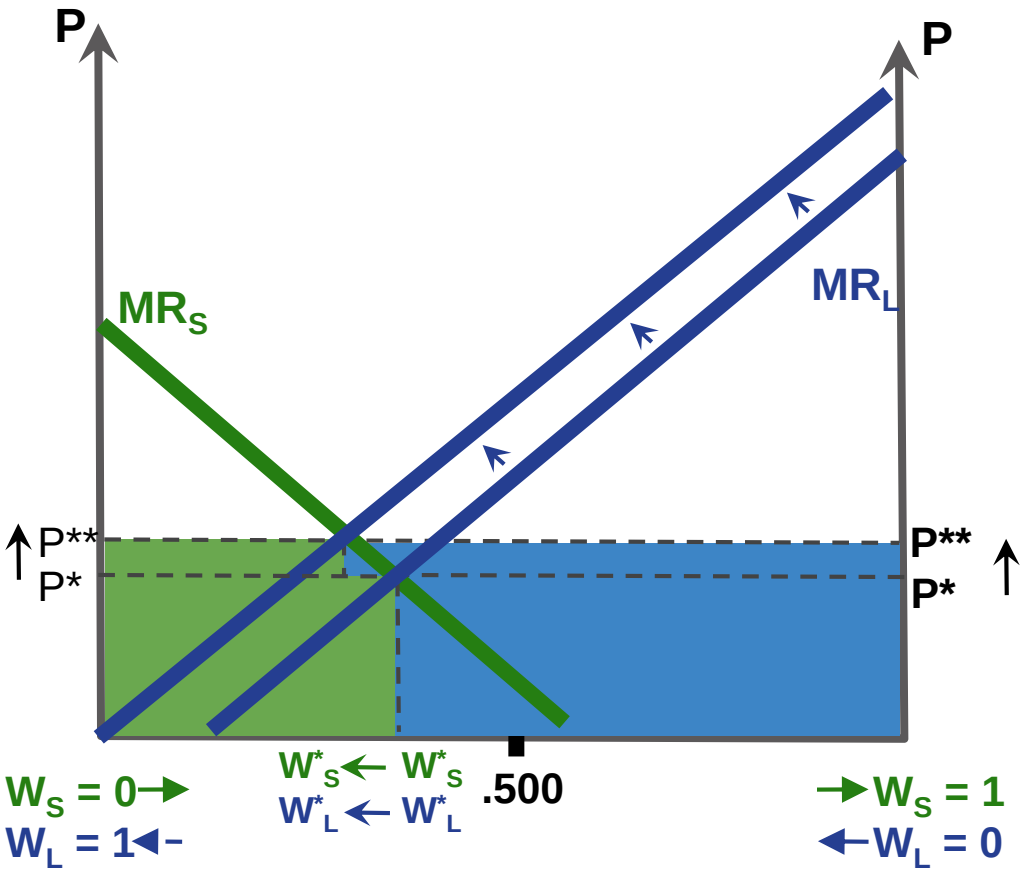


Marginal revenues are equal across teams
($MR^*_L = MR^*_S = P^*$)

Revenue imbalance causes competitive imbalance
($W_L > W_S$)

Revenue imbalance causes payroll imbalance
($W_L \times P^*) > (W_S \times P^*$)

Outcomes in a Simple 2-Team Model



Price of talent increases
(P* => P**)

W_L% increases

Total spending for **LM team** increases

Total spending for **SM team** may or may not increase

What happens if **MR_L** increases?

Imagine a large market owner (L) and a small market owner (S) face the following MR curves for their clubs:

$MR_L = 150 - 200W_L$

$MR_S = 100 - 120W_S$

Find equilibrium winning percentage for teams.

2 teams in the league:

$W_S + W_L = 1$

$MR_L = MR_S$

$150-200W_L = 100 - 120W_S$

$50 = 200W_L - 120W_S$

$W_L = 1 - W_S$

$50 = 200(1 - W_S) - 120W_S$

$50 = 200 - 200W_S - 120W_S$

$50 = 200 - 320W_S$

$320W_S = 150$

$W_S = 150/320$

$W_S = .46875$

$W_L = .53125$

A Numerical Look at Revenue Imbalance

[Fixing] Competitive Imbalance

1. Reverse-order Draft
2. National TV Revenue Sharing
3. Local Revenue Sharing
4. Pooled Gate Revenue Sharing
5. Luxury Tax
6. Salary Cap

Reserve Clause

- Reserve Clause was a contractual device that prevented players from moving to another team.
- Late 1800s: MLB incorporated the reserve clause into standard player contracts
- “It is further understood and agreed that the club shall have the right to “reserve” the said player for the season next enduing provided that the player shall not be reserved at a salary less than that being paid in the current season”

- Teams argued this helped competitive balance, since it led to financial stability of a team. Also the reserved clause prevvented a competitive offer – so the teams did not have to pay full market value to the player

Reserve Clause: Consequences

- Reserve Clause existed in MLB until 1975. Before that, it was challenged in courts, but baseball was mostly exempt from these challenges. In other leagues (NBA, NFL, NHL), Reserve Clause started dropping in 1950's, but full competition came much later (NBA: 1981, NHL: 1993, NFL: 1994)

- Reserve Clause transferred wealth from players to owners (No more bidding for the players)
- Reserve Clause transferred income from strong-market teams to weak-market teams (Improved financial stability but not competitive balance)

Free Agency

- Free Agency: every player is free to play for any club that will hire them.
- Free Agency remains limited in all sports.

Reverse Order Draft

- Reverse Order Draft: teams with the worst record during the previous season get to choose first in the draft.

  2016: NFL: The Tennessee Titans had the first pick, but swapped with LA

  MLB: The Phillies

  NBA: Philadelphia 76ers

  NHL: picks 1 – 14 were assigned through a lottery to the teams which did not make it to playoffs
- Problem: early-round picks often turn out mediocre (e.g. Peyton Manning and Ryan Leaf – top draft picks in 1998, different careers)
- Draft picks can be traded

Reverse Order Draft: Consequences

- Draft picks and players’ contracts can be traded. Thus talent goes to the club that can make the most profit out of it.

Revenue Sharing

- Teams in strong markets have more revenue than weak markets. Revenue sharing should help teams in weak markets and enable them to be more competitive
- Does that work?
- Not in profit-maximizing teams. Those teams will still choose the quality level that maximizes their profits. Thus revenue sharing means wins do not bring as much revenue to the winning team as before. Thus incentives to improve team quality are reduced
- May work in win-maximizing teams (E.g. in MLB franchise value comes from wins)

Revenue Sharing: Consequences

- Revenue sharing helps weaker teams achieve financial stability
- Revenue sharing may depress player salaries. It works as a tax, as the amount teams are willing to spend on player salaries falls with revenue sharing. Thus wealth is shifted from players to owners

Salary Caps and Luxury Taxes

- Salary caps - limit each club's ability to spend money on talent.
- Luxury taxes - a tax put on the aggregate payroll of a team to the extent to which it exceeds a predetermined guideline level

- Hard Salary Cap: NFL, NHL, MLS
  - NFL: $155.27 mln per team (2016), no cap on individual salaries
  - NHL: $73 mln (2016)
  - MLS: $3.845 per team, $480,625 for a player
- NBA: soft salary cap ($94 mln) + luxury tax ($113.3 mln)
- MLB: luxury tax. If a team exceeds the threshold ($189 mln), it must pay 17.5% of the amount they are over for the first time, 30% for the second consecutive year over, 40% for the third consecutive year over, and 50% for four or more consecutive years over the cap.

Luxury Taxes: Example

- The following are luxury tax thresholds in MLB in the recent years:

Year	MLB Luxury Tax Threshold
2012	178,000,000
2013	178,000,000
2014	189,000,000
2015	189,000,000
2016	189,000,000
2017	195,000,000
2018	197,000,000
2019	206,000,000

- Chicago Cubs' payroll in 2016 was $206,000,000. This was their first time exceeding the tax threshold. Thus, they paid 17.5% on the difference:
- Luxury Tax Bill (2016) = ($206,000,000 - $189,000,000)* 0.175 = 2,975,000

Luxury Taxes: Consequences

- Player talent costs more to teams that are over the tax threshold. These teams will forgo signing players that could improve performance
- Luxury tax may reduce player salaries

- Luxury tax should be very large to make an impact