

Homework #3: Answer Key

Economics of Sport 229

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1. a. Your descriptions will vary across leagues.
- b. Obviously, the figures for your league will vary. However, the standard deviation of win % method calculates $[\sum(x - \bar{x})^2 / N]^{.5}$ where N is the *number of teams* in the league. Note: in Excel the command STDEV calculates the standard deviation for a sample which is $[\sum(x - \bar{x})^2 / N-1]^{.5}$. The standard deviation of win percentage is the standard deviation of a population. One can correct for this by taking the result of STDEV and multiplying by N-1 and then dividing by N or by using the Excel command STDEVP.

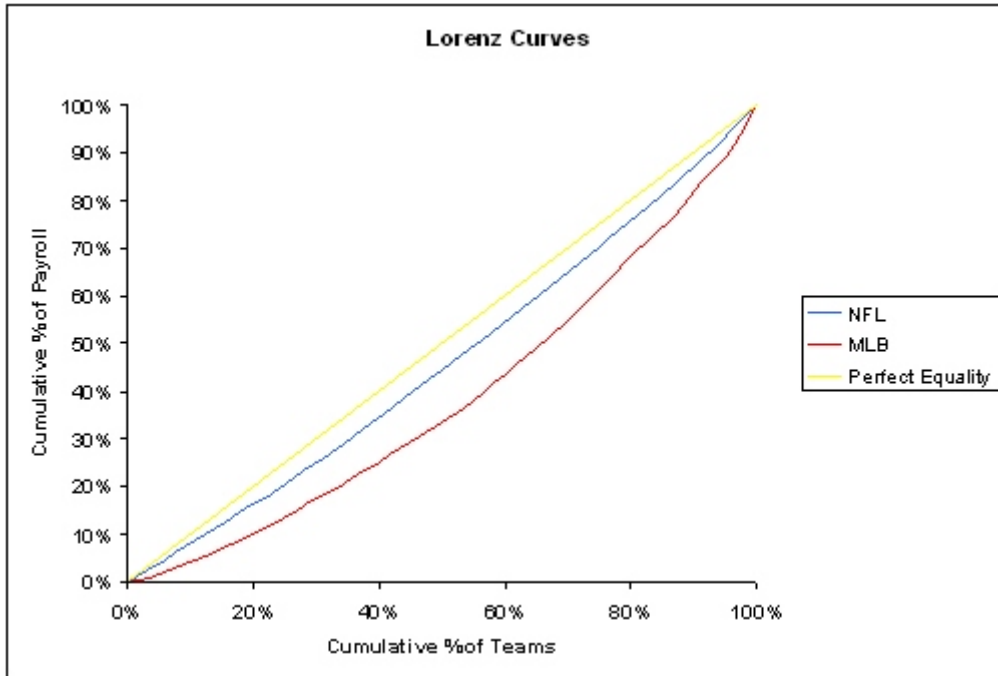
The idealized win % = $.5 / G^{.5}$ where G is the *number of games* each team plays in a season. The comparable number across leagues is the ratio of these two figures.

- c. The standard deviation of win percentage for MLB was 0.0562 in 2007 and 0.0671 in 2008. The idealized standard deviation of win percentage for MLB is $.5/162^{.5} = 0.0393$. Thus the win percentage ratio for MLB was 1.431 in 2007 and 1.706 in 2008.
- d. There are obviously many ways to do this. One can estimate competitive balance by examining two different seasons using regression, correlation, and rank correlation. Another measure of interseason balance is the HHI of championships. The figures for your league will vary by league and the method used.
- e. At least one measure of interseason balance is the HHI. Season the start of divisional play in 1995, for example, the NYY have won the World Series 4 times, the Marlins twice, Boston twice, and St. Louis, Chicago, Atlanta, Arizona, Anaheim, and Philadelphia once each. This gives an HHI of $4^2 + 2^2 + 2^2 + 1 + 1 + 1 + 1 + 1 + 1 + 1 = 30/14 = 2.14$.

The correlation of win % in MLB between 2007 and 2008 was 0.253. The correlation of the order in which teams finished (rank correlation) in 2007 and 2008 was 0.274.

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2. The fact that the MLB Lorenz curve lies below the NFL Lorenz curve indicates that salaries are less evenly distributed among teams in MLB than in the NFL.



3. You can run a correlation of win % and payroll by combining the data on the two Excel sheets and using the Excel command "correl".

The correlation between winning % and payroll is 0.322. This means that a higher payroll is associated with a higher win percentage. (For those of you who have had statistics, the relationship is significant at the 10% significance level. Using regression, we find that every \$10 million in payroll "bought" about 1 additional regular season win in 2008.)