Using Fantasy Baseball Simulation to Teach Economic Concepts

Oskar Harmon University of Connecticut oskar.harmon@uconn.edu

Adam Patterson University of Connecticut adam.patterson@uconn.edu

Presented at the ASSA 2022 Annual Meeting
AEA-CEE Poster Session (A2) (Virtual)
Saturday, January 8, 2022 | 3:45 – 5:45 PM (EST)

1. INTRODUCTION

- Using ESPN Fantasy Baseball students draft players and a baseball season is simulated.

- To prepare for the player draft, students use the concept of marginal product to evaluate players and collect data to compare the predicted win contribution of players.

- The activity is used to teach economic concepts of
  - *marginal product and competitive balance*
  - *data literacy skills.*

- The activity is appropriate for upper-level courses in Economics

- The rest of the poster will explain how the instructor, in the role of Commissioner, can work within the platform to set up leagues and teams, and then conduct a live draft. ESPN

2. Use Marginal Product to Rank Players Pre-Draft

- Students are given data in an Excel sheet in which they are asked to estimate a regression with the following specification :

- $Player\ Total\ Points_i = b0 + b1\ Player\ AVG_i + b2\ Player\ HR_i$
        where i = each player

- The estimation yields the following coefficients: $Player\ Total\ Points_i$ = **-6.8 + 238** $Player\ AVG_i$ **+ 11.1** $Player\ HR_i$

- Instructions are then provided on how to collect past season baseball statistics from various websites. Using the fitted regression coefficients from the above equation, students will use gathered data to develop projected rankings of player

3.1 Using the LIVE Draft in ESPN

- **LEAGUE CREATION**
  - instructors sign up as Fantasy Baseball Commissioner
  - set up N-team leagues, with setting specifications,
  - specified for 8 batters and 4 pitchers
  - set homogenously by draft date and time.
  - send out corresponding email invites to student managers.

- **LIVE DRAFT**
  - Students sign in at the set draft time to use their optimal draft method.

3.2 LIVE Draft Screen in ESPN:

A is draft order
B players queued by student
C players available to draft
D players recently drafted
E Draft Wizard tool by ESPN

3.3 AGGREGATION OF RESULTS

- League Results can be stored in an Excel file provided by the authors.

- Simulated Season results are provided embedded in the file, however, instructors can run new simulations and easily integrate data.

- Final season results are calculated within the Excel file and distributed to students for evaluation on competitive balance.

4. EVALUATION OF COMPETITIVE BALANCE

- The final exercise instructs students how to calculate measures of competitive balance using the fantasy baseball league results.
- Competitive balance is competitive balance is calculated by total points earned per fantasy team
- The four competitive balance measures we use in this exercise are
  - Noll-Scully measure
  - Herfindahl measure of concentration
  - Gini Coefficient
  - Lorenz Curve

5.1 EXERCISE ON COMPETITIVE BALANCE

Students are distributed the following template:

ECON 2447 League A **A**

	Team	Points
1	Dummy2	3374.01
2	Dummy	3668.98
3	Bailey	3741
4	Storrs CT Jiangsu I	3796.99
5	Glizzy Gladiators	4135.01
6	Deng	4152.01
7	Patterson	4156
8	Cruz	4245.97
9	Efrat	4364.99
10	Dunhill	4456.01

B

Share %	Share	Squared
8%	8.42	70.83
9%	9.15	83.75
9%	9.33	87.07
9%	9.47	89.70
10%	10.31	106.38
10%	10.36	107.26
10%	10.37	107.46
11%	10.59	112.17
11%	10.89	118.54
11%	11.11	123.54

ECON 2447 League A **C**

Team	Points	% of Points	% of Teams	Cumulative % of Teams	Cumulative % of Points (A)	Perfect Equality	Area under the Lorenz Curve
	0	0	0	0	0	0	0
Dummy2	3374.01	0.08	0.10	0.10	0.08	0.10	0.0042
Dummy	3668.98	0.09	0.10	0.20	0.18	0.20	0.0130
Bailey	3741	0.09	0.10	0.30	0.27	0.30	0.0222
Storrs CT Jiangsu F	3796.99	0.09	0.10	0.40	0.36	0.40	0.0316
Glizzy Gladiators	4135.01	0.10	0.10	0.50	0.47	0.50	0.0415
Deng	4152.01	0.10	0.10	0.60	0.57	0.60	0.0519
Patterson	4156	0.10	0.10	0.70	0.67	0.70	0.0622
Cruz	4245.97	0.11	0.10	0.80	0.78	0.80	0.0727
Efrat	4364.99	0.11	0.10	0.90	0.89	0.90	0.0834
Dunhill	4456.01	0.11	0.10	1.00	1.00	1.00	0.0944

RESULTS **D**

Standard Deviation of Points	345.8	HHI	1007
Idealized Standard Deviation		Area A	0.023
COMPETITIVE BALANCE RATIO		GINI	0.045

Excel Functions: **E**
- Sort
- Mathematical Operators: +./,*
- Standard Deviation
- Chart

A) Students input this information of total points of each team ranking in ascending order,
The Template calculates:
B) provides calculations of the Herfindahl-Hirschman Index,
C) indicates information on the Lorenz Curve and Gini-Coefficient,
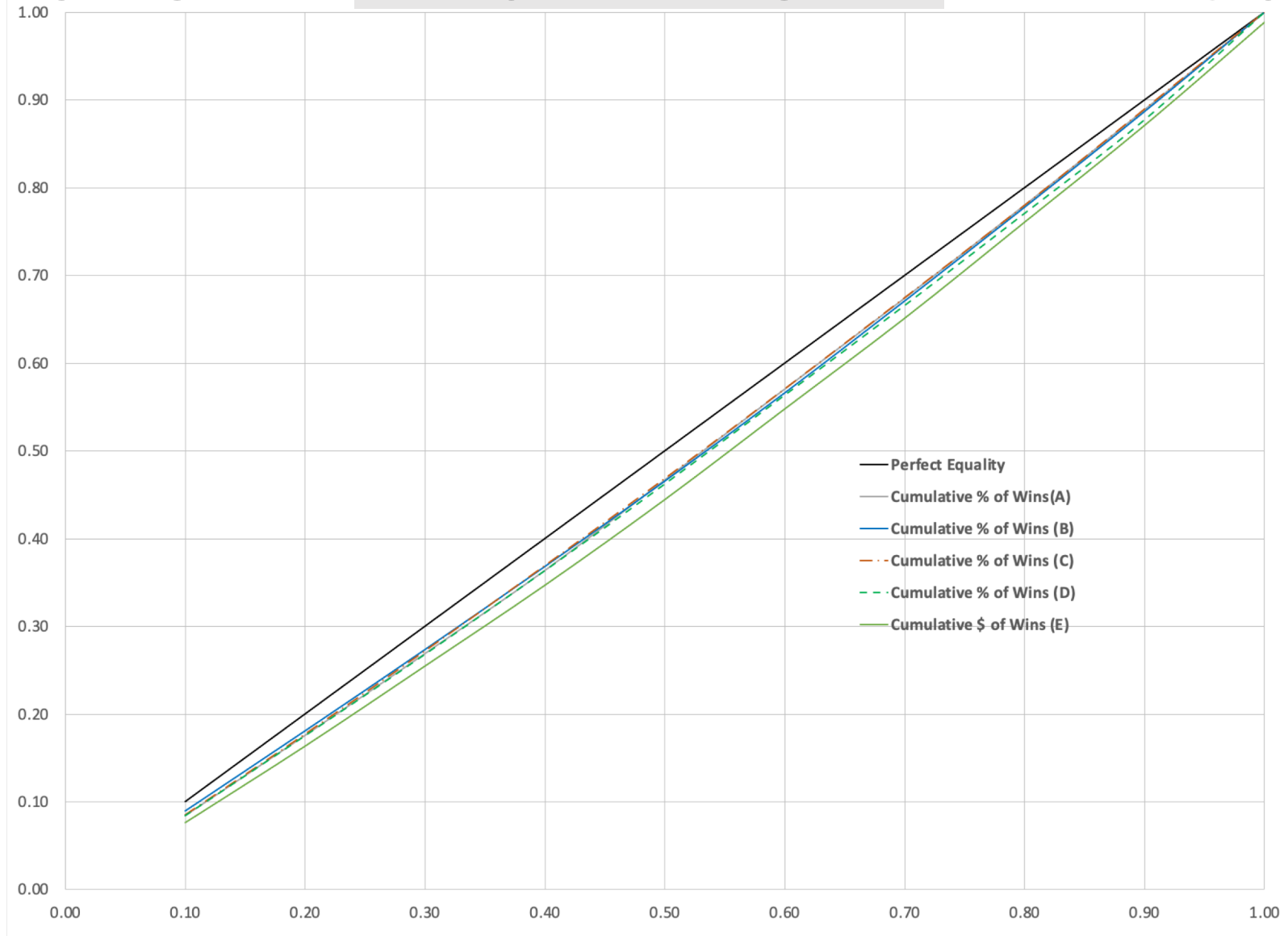**D**) represents a table for student to complete, and
E) denotes Excel functions used by students

5.2 EXERCISE ON COMPETITIVE BALANCE

- Students are introduced to a visual interpretation of the Competitive Balance in the form of a Lorenz Curve.

- Student managers create a Lorenz Curve for each league to compare the competitiveness within leagues.

- Next is a representation used by the student managers

5.3 LORENZ CURVE FOR ALL LEAGUES

Legend:
- Perfect Equality
- Cumulative % of Wins(A)
- Cumulative % of Wins (B)
- Cumulative % of Wins (C)
- Cumulative % of Wins (D)
- Cumulative $ of Wins (E)

6. REFERENCES

- Baird, K.E. 2005. Player markets, profits, and competitive balance: A classroom simulation exercise. Journal of Sports Economics, 6(3): 331–334

- Halliday, S. D. 2019. Data literacy in economic development. Journal of Economic Education 50 (3): 284–98.

- Hoyt, G. M., and K. McGoldrick. 2017, Promoting undergraduate research in economics. American Economic Review 107 (5): 655–59.

- Warren, R. G. 1997. Engaging students in active learning. About Campus 2(1): 16–20.

- Wooten, J. J., and D. R. White. 2018, An in-class experiment to teach marginal revenue product using the baseball labor