C2C Jacob Lindell

M3/ OR 495

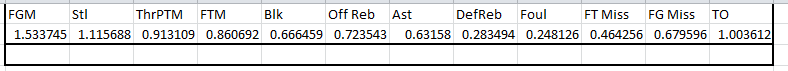
Major Pietz

HW2, Option 2

**Part 1**

The hardest part of this was to just try and figure out which of the stats within Hollinger’s PER equation were most important. At first, I attempted to write out the whole equation and see if anything cancelled, which was never going to happen. The next step was just stepping back and looking at all of the stats given within the HW2-1 Data and see what is most prevalent in a good player. The easiest ones were: Field Goals, Assists, Rebounds, Steals, Free Throws, Fouls, and Turnovers. From there, I decided that it was necessary for the big ones; Field Goals, Free Throws, to have their counterparts because if someone takes a lot of shots, Kobe Bryant, then they are likely to make a few every once in a while. I also thought that both Offensive Rebounds and Defensive Rebounds are important because if you look at Kevin Durant’s stats, for instance, he gets a lot of defensive rebounds, but barely had any offensive rebounds in comparison. Not all of the stats were positive, because some hurt the team; Foul, Free Throw Miss, Field Goal Miss, and Turnovers.

Once I had all of the stats I thought were necessary, it was important to figure out each stat was weighed. I put the new PER equation into the excel sheet, solved for the average and the variance between the new PER and the original PER, and that is where I started. I knew that the average of the PER was set to 15, so I did the same thing. I used solver to minimize the variance, with the weights as decision variables, and the only constraint I had was that the average was equal to 15. I got a variance of 0.197, which seemed to be very good considering the wide range of values that are possible. The weights are:



Now, I finally had the simplified Hollinger’s PER equation. I used this file in my R program because it would make it easier to make changes on the spreadsheet and R would then read that and change the formulas accordingly.

**Part 2**

All of the necessary information was given to us via the HW2-1 Data spreadsheet, so no data was needed to be gathered. I wanted to use a stat I saw online, the clutch stat, because I think that is very important to a player’s prowess, but it would have been hard to gather the data, get it in the name order that the given data was in, and then use it.

**Part 3**

See .csv file

**Part 4**

The variance between the PER and my new simplified PER was 0.19, which is very good since there are 355 data points, and they were on average only 0.19 off. The average was exactly 15, which is what the PER average was set to when Hollinger created the formula. The reason for the variance is obviously because I used 12 stats to encompass the entire efficiency of a player, while Hollinger’s equation uses over 20. This will obviously lead to some discrepancies, but considering the simplicity of my formula, the variance is very good. My PER equation is different because I took the extremely long and complex Hollinger’s PER formula, and simplified it to only 12 different variables and corresponding weights for those variables. This makes the concept of the PER much easier to understand, while still giving relatively the same result.