

Homework Assignment #1

Due February 11

1. All of your calculations in this problem should be done by hand – A calculator is fine, but don't use one of the programs on the web.
 - (a) Consider the weighted voting system $[8: 5, 3, 1, 1, 1]$. Calculate the Penrose measure of power and the Banzhaf power index for each voter.
 - (b) Now consider the system $[8:4,4, 1,1,1]$ where the first voter has transferred one 'vote' to the second voter. Perform the same calculations in this case.
 - (c) Compare the Penrose measure and Banzhaf index for each voter in the two different systems. Discuss any interesting observations you see. Explain why these occur.

2. In 1995, the Council of Ministers in the European Union used the Qualified Majority Voting scheme described in Table 2 of Felsenthal & Machover.

Analyze the impact on the individual nations and the system overall of decreasing the quota required for passage from 62 to 54.

You should be very thorough in your analysis, comparing and discussing both the change in power as applied to the individual nations and the structural impact on the system as measured by the sensitivity index S and resistance coefficient R .

Big Hint: Since this is a weighted system, it is fairly straightforward (although a bit tedious) to calculate the power indices by hand. You will almost certainly want to use the power calculators that are linked from the course webpage, such as `ipgenf` at the University of Warwick and the Mathematica worksheet that helps with calculating S and R .

3. Repeat # 2 analyzing the impact of increasing the quota from 62 to 70.