

ECON-A4000 - Economics of Global Challenges

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Return method: through mycourses by the deadline

Problem Set 2: Question 2

I want add one question supporting the guest lecture material on bargaining over externalities. The point of the exercise is to demonstrate how the presence of the externality makes negotiations difficult.

Consider three tough and professional negotiators: Linh, Sammy, and Petra. We'll call them L, S, and P below.

1. L, S, and P are negotiating over joint production. If they are all three together producing, team LSP forms and the group receives 24 in total. But also smaller teams are possible. In team LS, only Linh and Sammy are together. LS gives 15 in total to Linh and Sammy. Similarly, in team SP, Sammy and Petra are together, and this gives 16. Finally, coalition LP gives 18 to Linh and Petra. Each individual alone can produce only 6.
 - In this situation, the large team LSP is likely to form. Can you provide the reasoning for this result? Hint: think about any given team of two persons and what this group could offer as compensation for the third party to join the group?
2. We will now add externalities to the above situation as follows: Any individual alone can get 9 if the two others form a group, while if all work individually then each person gets 6 as before. You can perhaps think that the two others are solving this problem set and third one is just observing them for the results, without putting in any effort. The large team still gets 24 in total but I change the numbers for the

smaller coalitions somewhat: LS can produce 12, SP can produce 13, and LP can produce 14.

- I would first like to invite you to verify that forming the large team is Pareto efficient outcome. Please verify and explain.
- Could you then explain why forming this large team is now more difficult? Think about incentives to leave the large team. Credit will be liberally given for progress toward a correct answer!

Note that although we discussed production the situation captures production of positive externalities more broadly (public goods, emission reductions benefitting all members of the society, etc.).