Political Economics
Problem Set 1

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November 13, 2019

Note

The solution to this problem set should be uploaded to Studentportalen no later than **November 20** at 24:00. Write your individual answers on computer and put your name at the top of the document. This problem set is about social choice, voting and legislative bargaining. Please carefully motivate your answers. For any questions concerning the exercises, send me an e-mail at davide.cipullo@nek.uu.se. My office is **E434** at the Department of Economics. Good luck!

1. **Social choice.** Answer to the next questions in one short paragraph each.

   (a) State the Arrow's impossibility theorem. Which axioms are not satisfied in majority voting?

   (b) Assume that preferences are single-peaked on a multidimensional policy space. Explain, if any, which assumptions of the Median Voter theorem are not fulfilled. If they are all fulfilled, motivate why.

   (c) Now assume that preferences are single-peaked on a single dimension policy space. Explain, if any, which assumptions of the Median Voter theorem are not fulfilled. If they are all fulfilled, motivate why.

   (d) Which of the Arrow's axiom are we restricting in (c)?

   (e) Carefully explain in words and graphically why the predictions of the median voter theorem rest on the assumption of single-peaked preferences.

2. **Voting.** Consider an economy of 5 individuals $i = \{1, ..., 5\}$ making decisions on how much to invest in public health-care provision. All individuals have the same quasi-linear utility function: $U_i(c_i, G) = c_i + ln(G)$ where c is a consumption (private) good, and G is the public good (health-care). The public good is financed through a proportional income tax t. Hence, the government budget constraint is $G = \sum_{i=1}^{5} tw_i$ while individual budget constraint is $c_i = (1-t)w_i \ \forall i \in \{1, ..., 5\}$. Wages are exogenously given: $w_i = i$.

   (a) Who is the median voter in this society? Do the assumptions of the Median Voter Theorem apply? Discuss.

   (b) What is the expenditure on health-care provision that the society will choose according to majority voting? What is the tax rate? Solve the model.

   (c) What would have been the expenditure in health-care provision and the tax rate in the case of a benevolent central planner that maximizes an utilitarian SWF? Solve the model.

   Suppose now that individuals have wage $w_i = i^2$. The government budget constraint, as well as individual preferences and the individual budget constraints are the same as before.

   (d) What level of expenditure in health-care provision and tax rate would a benevolent central planner that maximizes an utilitarian SWF choose? Solve the model. How does would it compare with the outcome from majority voting? Carefully explain in words the economic intuition.

3. **Legislative bargaining.** Consider the European Council, in which each country is represented by one member. After Brexit, the Council is now composed by 27 members. In the European Council, one of the members is the speaker and acts as agenda setter. Assume for the scope of the exercise that at each point in time all members have the same probability of becoming the new speaker. The speaker has the right of making a proposal about how to distribute European grants to each country. If the speaker's proposed distribution is voted down, then a new speaker is chosen at random among the members and and will propose a new allocation. The members of the Council will continue the bargaining game a finite number of times, until an agreement is made. Each member of the council has utility function $U_i = r_i$, where r_i represents the transfer that country represented by counselor i receives. The public budget constraint is $R = \sum_{i=1}^{27} r_i$, hence R is the total size of the European budget. Assume also that (i) if after the last stage no agreement has been made, all counselors get an exogenous payoff of zero; (2) that counselors discount future with a discount factor $\beta < 1$; (3) that every time one counselor is indifferent between supporting a proposal and voting against it, she will support the proposal.

(a) How would the distribution of spending look like in the last round of voting if the absolute majority of members must support the speaker's proposal to approve it? Motivate.

(b) Would your answer to (a) change in the case of a rule that requires that $\frac{2}{3}$ of the members vote in support for a proposal to be approved? What if, instead, we assume that unanimity is required?

(c) Consider now the first round. Determine the distribution of spending in the case one needs the absolute majority of members to support the speaker's proposal.

(d) How would your answer to (c) change in the case of a rule that requires that $\frac{2}{3}$ of the members vote in support for a proposal to be approved? What if, instead, we assume that unanimity is required?

(e) Discuss all your results in relation to agenda setting power, and highlights how it varies depending on the required majority. Limit your answer to half page.