Political Economics
Problem Set 2 - Complimentary

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Note

The solution to this problem set should be uploaded to Studentportalen no later than **December 5** at 24:00. Write your individual answers on computer and put your name at the top of the document. This problem set is about electoral competition. 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. **Electoral competition.** In a society of N individuals there are two political candidates, L (*Left*) and R (*Right*) that compete for office under a majority rule. Voters belong to three different groups: working-class, middle class and upper-class. The share of working class voters is assumed to be α, the share of middle-class voters is β and the share of upper-class voters is $1-\alpha-\beta$. Each voter $i \in \{1, ...N\}$ has quasi-linear utility function: $U_i = c_i + ln(G)$, where c_i is private consumption and G is a public good. The individual budget constraint is $c_i = (1-t)w_i$, where w_i represents individual income, and t is the tax rate. All voters belonging to a group have the same income. In particular, all individuals belonging to the working class have $w_i = 2$, all middle class voters have $w_i = 3$ and all upper class voters have $w_i = 6$. The sum of private income is 90 and the government budget constraint is $G = \sum_{i=1}^{N} tw_i$. The politicians propose t and G before the election, and must commit on their proposal. Also, candidates differ in popularity (assume for simplicity that is unrelated to t and G), and voters take this into account when deciding who to vote for. Thus, voters do not immediately change their vote from candidate L to candidate R if candidate L proposes a policy which yields a higher utility or viceversa, but the probability of voting for a certain candidate changes when proposed policies change. The probability that a working-class voter votes for the right-wing candidate can be characterized by the probabilistic function $p_w^R = F_w(U_w^R - U_w^L)$, where U_w^R is the utility that a working-class voter gets from the policy of party R and U_w^L is the utility that a working-class voter gets from the policy of party L. Analogously, middle class voters and upper class voters have probabilistic voting functions $p_m^R = F_m(U_m^R - U_m^L)$ and $p_u^R = F_u(U_u^R - U_u^L)$, where $\frac{\partial p_i^R}{\partial (U_i^R - U_i^L)} > 0 \ \forall i \in \{1, ...N\}$.

   (a) Which tax rate, t and level of public good G, will office motivated candidates propose prior to the election if commitment is possible?

   (b) Show analitically that the solution collapses to the one obtained by a Social planner that maximizes an utilitarian Social Welfare Function if and only if $F_w = F_m = F_u$.

   (c) Suppose instead that voters do not value ideologies. Solve for tax rate and the level of public good if $\alpha = 0.6$. Show analitically that your solution collapses to (a) if $F_w(U_w^R - U_w^L)$ is a discontinuous function that can only take values 0 or 1, while F_m and F_u are probabilistic continuous functions.

   (d) Suppose instead that R has utility function $U_R = -(t - \frac{1}{6})^2$ and L has utility function $U_L = -(t - \frac{2}{3})^2$, where again t represents the tax rate implemented by the winning candidate. All the other assumptions are the same of (c) the original problem. Discuss why your answer to (c) does not change.

(e) Discuss why your results in (d) are different compared to Alesina's model of candidates with policy preferences in light of the different underlying assumptions.