Written Exam at the Department of Economics winter 2016-17

Political economics

Final Exam

Date

Solutions

Problem 1.

The main equation in models of calculus of voting is:

$$pB + D > C$$

where

- p is the probability that the vote is pivotal.
- B is the difference in utility from the candidates' attributes or policy stances.
- D is the direct benefit from voting.
- C is the cost of voting.

We can further break down the direct benefit from voting as:

$$D = U(D_I, D_E)$$

where

- U is citizen's utility from voting given D_I and D_E.
- D_I is intrinsic benefits from voting.
- D_E is extrinsic benefits from voting.

Each of the three papers mentioned in the question show evidence of how different elements in this equation affect the decision to vote. The paper by Gerber et al. analyzes how making citizens aware that they have a civic duty (D_I) to vote influences voting behavior. The paper also studies how social pressure to vote (D_E) - where social pressure is mainly your neighbours knowing whether you voted or not - affects the voting decision. The results show that both civic duty and social pressure increase turnout, with the latter having much larger effects.

The paper by Braconnier et al. shows how a costly registration procedure (C) reduces voting, particularly for individuals in risk of social exclusion.

Finally, the paper by Bursztyn et al. shows how the intrinsic utility derived from political expression (D_I), or ideology in their paper, plays a role in voting. They also explore how ideological expression responds to financial and social incentives.

Problem 2.

The three graphs on the left show that politicians in all parties come disproportionately from the top part of the income distribution, although more so in the Conservatives than in the Social Democrats or the Center party. In the three graphs on the right, however, we see that each party represents different levels of earnings in society. High-income earners are over-represented among fathers of Conservative politicians, middle-income earners among fathers of Social Democrats, and low-income earners among Center party politicians' fathers.

Thus, the figure makes clear that different parties tend to represent different parts of the parental income distribution, suggesting that the party system in Sweden is able to represent individuals with different social backgrounds. Regarding meritocracy, the figure suggests that the system is also meritocratic within each socioeconomic class, selecting politicians among the most able individuals within their class (under the assumption that income is a good proxy for ability).

Problem 3.

a. The main aspects of an event study are the following:

1. Define the event of interest (in this case, the enactment of term limits in different countries) and identify the period over which the bond spreads of the countries will be examined. In the following figure, 0 refers to the day in which the event happens (change of term-limit).
2. Determine selection criteria for the inclusion of a given country in a study.
3. Measure the normal return. A sensible approach to measure normal return in this case is the factor model. Then, measure the abnormal return.

The most important details of the time line is to define the estimation and event windows. The following figure gives an example:

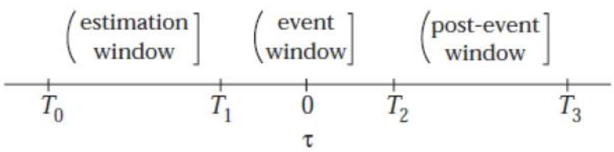

Figure 1. Time line for an event study.

A very general formulation of the model that we would estimate is:

$$Y_{it} = f(X_{it}\beta) + \epsilon_{it}$$

where Y_{it} is the bond spread for country *i* in period t. Following the figure above, we would estimate this model using data from before the event, or from what we refer as the estimation window. A potential functional form for f is:

$$f(X_{it}\beta) = \alpha_i + \beta_i X_{it}$$

X_{it} are country specific factors that help explain the outcome variable. In this case, X_{it} could be a country's fiscal position, trade balance, unemployment and other macroeconomic and financial indicators. We would assume the errors to be:

$$\epsilon_{it} \sim N(0, \sigma^2)$$

Once we have the estimate, we can compute abnormal returns in the event window:

$$\widehat{AR}_{it} = Y_{it} - f\left(X_{it}\hat{\beta}\right)$$

Then, we can finally compute the cumulative abnormal returns (CAR): the sum of abnormal returns over the event window.

$$C\hat{A}R_i = \sum_{t=\tau_1+1}^{\tau_2} \widehat{AR}_{it}$$

We need standard errors to do inference: $\sigma^2(\widehat{AR}_{it})$). The formula for calculating these depends on the method used. Note that in an event-study we implement a statistical model to fit the behavior of Y_{it} in the estimation window. Then, we use this model to predict or project what the behavior would have been during the event window if the event had not happened. Thus, the main assumption is that the model does a good job in predicting behavior of Y_{it} out-of-sample, that is, during the event window.

b. Besley and Case look at the effects of enacting term limits for governors in states of the US. They find that after passing term limits, the governor who is in office just before the term limit becomes binding is more likely to increase taxation and public spending. The authors argue that this is the result of governors no longer caring about their reputation (or not so much, at least), since they will not be running for the office again.

Thus, if the investors in bonds think that introducing term limits will make a country more likely to increase public spending and taxation, and if they think that such behavior harms a country's economic performance and credit worthiness, they will be less likely to buy the bonds of this country, thus increasing the spread at which the bond is traded. This could help explain why we observe a positive effect of term limits on the bond spread.

Problem 4

The regressions reported in Table 4 suggest a rather large effect of knowledge about inequality on perceptions about its importance and seriousness: For example, the results in the first column show an increase of 10 percentage points in the share of respondents who answer that inequality is a very serious problem when respondents are given the informational treatment. Compared to the 29% of respondents in the control group who answer yes to this question, this is a substantial effect.

The results in Table 5 show that the effect on policy preferences are generally much smaller. For example, support for increasing taxes on millionaires and raising the minimum wage only increase about 5 and 3 percentage points, respectively, while there is no statistically significant effect on the share of respondents indicating that they intend to vote for the Democratic candidate in the next presidential election. Thus, the results are quite different compared to those reported in Table 4.

(It can be noted that there is in fact a strong impact on support for increasing the estate tax, which goes up by a 36 percentage points, a very large effect. But this is the exception, rather than the rule, and students don't have to mention this).

A potential explanation for these differences is that knowledge about the level of income inequality promotes the view that it is a serious problem, but it also erodes trust in the government's capability of solving the problem. This is consistent with the result reported in column 6 of Table 5, which shows a small but statistically significant decrease in the share of respondents who say they have trust in their government to do what is the right most of the time. Mistrust in the government may reduce support for inequality-reducing policies involving government intervention, thus cancelling any increase in support for such policies generated by a greater concern about inequality. Kuziemko et al. further explore this hypothesis and find that informational treatments that reduce respondents' trust in government, while keeping attitudes about inequality fixed, do in fact reduce support for redistributive policies.

Problem 5

a. Substituting $m = 1 - c$ from the government budget constraint into the utility function directly gives the following indirect utility function for citizens in group *j*:

$$W_j(c) = 1 - c - a_j\left(\frac{3}{2} - c\right)^2$$

The preferred level of clean-tech spending for citizens in group *j* is the level that maximizes $W_j(c)$. The first-order condition for this maximization problem is

$$-1 + 2a_j\left(\frac{3}{2} - c_j^*\right) = 0 \;\; \leftrightarrow \;\; c_j^* = \frac{3}{2} - \frac{1}{2a_j}$$

Since $W_j(c)$ is concave, the first-order condition is a necessary and sufficient condition for an interior optimum. Inserting the values for a_j given in the text then gives $c_1^* = 0$, $c_2^* = \frac{3}{4}$, and $c_3^* = 1$.

b. This is an example of pure majority rule. Since preferences are single-peaked, we can apply the median voter theorem: The policy preferred by the voter whose bliss point is median among all the bliss points is a Condorcet winner and the unique equilibrium outcome of the voting process. In this case, the median voter is a citizen in group 2, so the equilibrium outcome is $c = c_2^* = \frac{3}{4}$.

c. These variables capture voter *i*'s preference for candidate B over candidate A based on non-policy related traits that the candidates cannot easily change. For example, it may be that candidate B is more famous, more articulate, better looking, or has a different ideology or moral character than candidate A, and that voters prefer voting for candidate B for these reasons. Voter *i*'s total non-policy related preference for candidate B is the sum $\gamma_{ij} + \lambda$. This consists of two parts: λ is common to all voters and captures the average preference for candidate B. γ_{ij} is voter i's idiosyncratic preference for candidate B, capturing the idea that voters do not evaluate the non-policy related traits in the same way. If the sum of these two variables is positive, it means that voter *i* is in some cases willing to vote for candidate B, even if she prefers candidate A's policy proposal.

The value of *X* affects the distribution of λ: A higher value of *X* shifts the entire distribution to the right, thus increasing the expected value of λ, and therefore also of $\gamma_{ij} + \lambda$. When *X* is positive, it therefore means that candidate B is a priori expected to be more popular than candidate A based on their non-policy related traits. So *X* captures what the candidates already know about their relative personal attractiveness in the eyes of voters. For example, if they know a priori that candidate B is perceived as morally superior to candidate A, we would expect *X* to be positive. In that case, both candidates will expect an electoral advantage to candidate B in the form of a positive realization of his/her average popularity, λ.

d. Citizen *i* in group *j* is indifferent between voting for candidate A and candidate B when

$$W_j(c^A) = W_j(c^B) + \gamma_{ij} + \lambda \quad \leftrightarrow \quad \gamma_{ij} = W_j(c^A) - W_j(c^B) - \lambda \equiv \bar{\gamma}_j$$

Citizens with $\gamma_{ij} < \bar{\gamma}_j$ will vote for candidate A. Using the properties of the uniform distribution, we can then write the vote share of candidate A in group *j* as

$$\pi_j^A = \left(\bar{\gamma}_j + \frac{1}{2\kappa_j}\right)\kappa_j = \frac{1}{2} + \bar{\gamma}_j\kappa_j = \frac{1}{2} + (W_j(c^A) - W_j(c^B) - \lambda)\kappa_j$$

e. The aggregate vote share for candidate A is $\frac{1}{3}\sum_{j=1}^{3}\pi_j^A = \sum_j(\frac{1}{2} + \left(W_j(c^A) - W_j(c^B) - \lambda\right)\kappa_j)$. Note that this is stochastic because it depends on the value of λ. Candidate A wins if he/she obtains a vote share above 0.5. The probability that this happens is

$$p^A = pr\left[\frac{1}{3}\sum_{j=1}^{3}\left(\frac{1}{2} + \left(W_j(c^A) - W_j(c^B) - \lambda\right)\kappa_j\right) > \frac{1}{2}\right]$$

$$= pr\left[\lambda < \frac{1}{\bar{\kappa}}\sum_{j=1}^{3}\left(\left(W_j(c^A) - W_j(c^B)\right)\kappa_j\right)\right]$$

$$= \frac{1}{2} - X\eta + \frac{\eta}{\bar{\kappa}}\sum_{j=1}^{3}(W_j(c^A) - W_j(c^B))\kappa_j)$$

where $\bar{\kappa} \equiv \sum_j \kappa_j$ is the sum of the κ_j across the three groups.

A higher value of *X* lowers the probability that candidate A wins the election, irrespective of the policy proposals c^A and c^B. This is because a higher value of *X* means that candidate *B* is a priori more popular, so that more voters will be willing to vote for him/her regardless of what the two candidates propose in terms of policy.

The first-order condition for maximizing the candidate A's probability of winning wrt. c^A , given c^B, is:

$$\sum_{j=1}^{3} W_j'(c^A)\kappa_j = 0$$

where $W_j'(c^A) = -1 + 2a^j\left(\frac{3}{2} - c^A\right)$ is the derivative of $W_j(c)$ evaluated at c^A.

The probability of winning for candidate B is $1 - p^A$. Going through the same steps as for A gives the FOC:

$$\sum_{j=1}^{3} W_j'(c^B)\kappa_j = 0$$

Note that *X* does not enter in any of these first-order conditions, so their solutions do not depend on its value: A higher value of *X* means that candidate B is a priori more popular, thus increasing the probability that candidate B wins, but it does not change the marginal *change* in this probability when the candidates change their policy platforms, which is what matters. Thus, as seen from the point of view of candidate A, a higher value of *X* means that it is a priori less likely that she/he will win, but the policy that maximizes this probability is unchanged.

f. This information suggests that $\kappa_1 > \kappa_2 > \kappa_3$. The parameter κ_j captures the dispersion of non-policy related preferences in group *j*: A low value of κ_j means that there are many citizens with strong non-policy related preferences. For such citizens, the candidates' policy proposals carry little weight in comparison with their personal traits, in the sense that the difference in utility derived from their policy proposals must be very large for them to swing their vote away from the candidate they prefer based on personal traits. This fits with the description of citizens in group 3 given in the text, suggesting that κ_3 is small. In contrast, a high value of κ_j means that citizens are concentrated around a neutral position on non-policy related issues, such that even small differences in policy proposals may induce them to vote for the candidate with the least attractive personal traits. This fits with the description of citizens in group 1, suggesting a high value of κ_1.

g. Inserting the expression for $W_j'(c^A)$ in the FOC for candidate A gives

$$\leftrightarrow \sum_{j=1}^{3}\left(-1 + 2a_j\left(\frac{3}{2} - c^A\right)\right)\kappa_j = 0 \quad \leftrightarrow \quad \left(\frac{3}{2} - c^A\right)\sum_{j=1}^{3} 2a_j\kappa_j = \bar{\kappa} \quad \leftrightarrow \quad c^A = \frac{3}{2} - \frac{\bar{\kappa}}{\sum_{j=1}^{3} 2a_j\kappa_j}$$

With $\kappa_1 = 3,\ \kappa_2 = 2,\ \kappa_3 = 1$, and the values of the a_j given above, we then get $c^A = \frac{3}{2} - \frac{6}{\frac{20}{3}} = \frac{3}{5}$.

By symmetry, candidate B will propose the exact same policy, so $c^A = c^B = \frac{3}{5}$ is the unique equilibrium.

Comparing this with the answer to question b shows that the equilibrium value of clean-tech spending is lower than under pure majority rule. So even though the median voter's preferred policy is a Condorcet winner, we get a different equilibrium outcome under this type of electoral competition. In general, the introduction of the second dimension represented by γ_{ij} and λ implies that voting behavior does not follow deterministically from policy preferences. So the fact that the median voter supports a given candidate no longer guarantees that this candidate has the support of a majority of voters, and seeking the support of the median voter is therefore not necessarily a vote-maximizing strategy.

Instead, candidates choose policy proposals so as to maximize a weighted average of voter utility. The weight attached to each group of voters depends on κ_j, the density in the distribution of γ_{ij}. As explained above, a low value of κ_j means that citizens in group *j* are dispersed in their non-policy-related preferences for the candidates: Some of them have a strong preference for candidate A, others have a strong preference for candidate B, and only few of them will swing their vote from one candidate to the other in response to a change in the policy proposals. If κ_j is high, on the other hand, voters in group *j* are concentrated around a "neutral" stance when evaluating the two candidates, and they will respond strongly to changes in policy proposals. An office-motivated candidate will place a larger weight on the preferences of the politically responsive groups when choosing which policy to propose, since the gain in votes of targeting policy towards these groups is higher than for non-responsive groups.

In the present case, group 1 is the most responsive to policy changes (less dispersed in non-policy preferences), while group 3 is least responsive. This implies that candidates will place a higher weight on the preferences of citizens in group 1, and a lower weight on the preferences of citizens in group 3. The result is a lower level of clean-tech spending than in the case of direct democracy. If we had assumed $\kappa_1 < \kappa_2 < \kappa_3$, the situation would be the opposite: Citizens in group 3 would now be the most responsive to changes in policy, while citizens in group 3 would be least responsive. The result would be *more* clean-tech spending than in the case of direct democracy, as the political candidates would cater to the preferences of citizens in group 3.