

Written Exam at the Department of Economics winter 2019-20

Political Economics

Final Exam

13 January 2020

(3-hour closed book exam)

Answers only in English.

This exam question consists of 5 pages in total

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- contact an invigilator who will show you how to register and submit a blank exam paper.
- leave the examination.
- contact your GP and submit a medical report to the Faculty of Social Sciences no later than five (5) days from the date of the exam.

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You cheat at an exam, if during the exam, you:

- Make use of exam aids that are not allowed
- Communicate with or otherwise receive help from other people
- Copy other people's texts without making use of quotation marks and source referencing, so that it may appear to be your own text
- Use the ideas or thoughts of others without making use of source referencing, so it may appear to be your own idea or your thoughts
- Or if you otherwise violate the rules that apply to the exam

Instructions

This exam set consists of three problems with one or more questions. Answer all problems and questions. Each question has a suggested length, written in parentheses at the end the question. You may use these suggestions as a guide on how to prioritize your time; there is no penalty for writing more than indicated in the suggestions. But shorter answers may also suffice.

Problem 1

Imagine an economy where citizens live in N equal-sized electoral districts, where N is some odd number. The population in each district is normalized to 1, so that the total population is N .

There are two types of citizens in the economy: Blue collar and white collar. Blue collar citizens earn income y_B , whereas white-collar citizens earn $y_W > y_B$. The distribution of citizens is such that blue-collar citizens are in the majority in $N_B \geq \frac{N+1}{2}$ districts, while the remaining districts have a majority of white-collar citizens. Let \bar{y} denote the average income level in the economy across all districts.

Citizens of both types derive utility from private consumption as well as from government spending in their own district. In particular, a citizen of type i living in district n has preferences expressed by the utility function

$$u_{in} = 2c_i^{\frac{1}{2}} + \alpha g_n, \quad i = B, W, \quad n = 1, \dots, N$$

where c^i is private consumption for a citizen of type i , g_n is the amount of government resources spent in district n , and α is a taste parameter.

Government spending is financed by a proportional income tax on all citizens. Let τ denote the tax rate, which is the same for everyone. Further, let $g = \sum_{n=1}^N g_n$ denote the total amount of government spending in the economy.

To decide on the levels of taxation and government spending, the citizens in each district elect one representative to a central legislative body, from now on referred to as "the legislature". Like other citizens, these representatives can either be blue-collar or white-collar citizens, and their preferences are just like those of other citizens of the same type. Once in office, legislators act according to these personal preferences; it is not possible for them to commit to promises made during the electoral campaign, and voters know this.

Legislators decide on the tax rate by simple majority rule, i.e. by voting on all possible pairs of policy alternatives until a clear winner is found.

1A. Assume, for now, that the constitution dictates that government spending must be distributed equally across the N districts. Write down the government budget constraint as well as the private budget constraints and indirect utility functions for both types of citizens under this requirement. Use the results to derive the bliss points for τ for both types, and comment briefly on the difference between them. (Suggested length: 10-15 lines)

The government budget constraint is $\tau N \bar{y} = g$. With equal distribution of spending across districts, we then get $g_n = \frac{g}{N} = \tau \bar{y}$.

The private budget constraint for a citizen of type i is $c_i = (1 - \tau)y_i$, $i = B, W$. Inserting these constraints in the utility function gives the following indirect utility function:

$$u_n^i = 2((1 - \tau)y_i)^{\frac{1}{2}} + \alpha\tau\bar{y}$$

Taking the derivative wrt. τ , setting it equal to zero and rearranging then gives the bliss point for a type i citizen:

$$\tau_i^* = 1 - \frac{y_i}{(\alpha\bar{y})^2}$$

The preferred tax rate is decreasing in private income. This is because a higher private income raises the marginal cost of taxation in terms of foregone private consumption, while the marginal benefit in the form of higher government spending only depends on average income in the economy. Since white-collar citizens have higher income than blue-collar citizens, the former will prefer a lower tax rate than the latter.

1B. With the distribution of government spending across districts constitutionally decided, the only job for the legislature is to decide how much to tax and spend in total. What is the outcome of the legislative process under these assumptions, and how does it depend on the number of blue-collar legislators relative to the number of white-collar legislators? (*Suggested length: 5-10 lines*)

Total spending and the tax rate are linked one-to-one through the government budget constraint. With the distribution of government spending fixed by the constitution, this means that the relevant policy space is one-dimensional. Moreover, legislators – like all other citizens – have single-peaked preferences, so the median voter theorem applies, and the policy preferred by the median legislator is a Condorcet winner. Under the simple majority voting procedure, this will be the outcome of the legislative process. Thus, the legislature will adopt the tax rate τ_B^* if there are more blue-collar legislators than white-collar legislators, and τ_W^* in the opposite case.

1C. Still under the assumptions in 1A and 1B, explain how many blue-collar workers and how many white-collar workers voters will elect for the legislature. What is the equilibrium policy outcome under these assumptions? (*Suggested length: 5-10 lines*)

Since legislators cannot commit to campaign promises, such promises play no role in the model. Voters thus anticipate that legislators will vote according to their own preferences. Under the current assumptions, blue-collar voters therefore prefer a blue-collar legislator, and white-collar voters prefer a white-collar legislator. Since blue-collar voters are in the majority in $N_B \geq \frac{N+1}{2}$ districts, there will be N_B blue-collar legislators and $N - N_B$ white-collar legislators. The former will be in the majority, so from the answers in 1A and 1B, the equilibrium tax rate will be $\tau_B^* = 1 - \frac{y_B}{(\alpha\bar{y})^2}$.

We now abandon the assumption that the constitution dictates the distribution of government spending across districts. For the remaining part of this problem, assume instead that the members of the legislature decide this through multilateral bargaining, after they have decided on a tax rate. In particular, assume the following procedure:

1. *The members of the legislature decide on the tax rate τ through simple majority voting, comparing all possible pairs of policy alternatives until a clear winner is found.*
2. *A single legislator is recognized as the proposer and proposes how total government spending should be distributed across districts, subject to the balanced budget constraint and the decision made in step 1.*

3. The legislature votes on the proposal. If a majority is in favor, the proposal passes and is implemented. If a majority votes against it, it fails, and a status quo policy of equal spending in all districts is implemented.

1D. Consider the problem facing the legislator who gets recognized as the proposer: What is the best proposal that this legislator can make (as seen from his/her own point of view), given the procedure described above? In particular, what level of government spending should the proposer propose for his/her own district? And how does the answer depend on the level of the tax rate chosen in step 1? (Suggested length: 5-10 lines)

(Hint: Start at step 3 in the procedure described above and find out how much government spending a non-proposer would demand for her own district in order to vote for the proposal. Then think about how many legislators need to support the proposal for it to pass, and combine these answers to figure out how much the proposer must propose to spend in other districts. The tax rate is decided in step 1, so you should treat this as exogenously given at this stage).

If the proposal fails, government spending will be $\tau\bar{y}$ in all districts. Thus, a non-proposer must be offered at least as much in order to support the proposal. To pass, the proposal must receive support from at least $\frac{N+1}{2}$ legislators, so the best thing the proposer can do is to offer exactly $\tau\bar{y}$ to $\frac{N-1}{2}$ other legislators, which leaves $N\tau\bar{y} - \frac{\tau\bar{y}(N-1)}{2} = \frac{\tau\bar{y}(N+1)}{2}$ to be spent in her own district.

A higher tax rate means that more revenue is available, and the proposer can therefore afford to spend more, including in her own district.

1E. Assume first that (1) all legislators have the same probability of being recognized as proposer, and (2) conditional on not being recognized, a legislator is included in the minimal winning coalition with probability one half. Derive the *expected* level of government spending in each district as a function of the tax rate τ under these assumptions. Does the expected level of government spending in a district depend on the type of the legislator who represents it? (Suggested length: 3-5 lines)

The probability of being recognized as a proposer is $\frac{1}{N}$, so the unconditional probability of being included in the minimal winning coalition is $\frac{1}{2}(1 - \frac{1}{N})$. Using the results from 1D, the expected level of spending in any district is therefore $E(g_n) = \frac{1}{N} \frac{\tau\bar{y}(N+1)}{2} + \frac{1}{2}(1 - \frac{1}{N}) \tau\bar{y} = \tau\bar{y}$. It does not matter whether the district's representative is blue-collar or white-collar.

1F. Based on your answer in 1E, discuss how the introduction of the legislative bargaining procedure changes the decision problem facing voters compared to the situation where the constitution dictates an equal distribution of government spending across districts. Should we expect this change in the rules of the political process to affect (a) the composition of the legislature, and (b) the level of taxation and total government spending? Why / why not? (Suggested length: 5-10 lines)

The expected level of government spending is exactly the same level as under the constitutional rule. Therefore, the introduction of legislative bargaining does not change the decision problem facing voters: Legislators will vote in the same way as before when deciding the tax rate, and the level of government spending in a district will be the same (in expectation), no matter what type of legislator represents it. Blue-collar citizens are thus better off voting for blue-collar legislators, and white collar are better off voting for white-collar legislators. The composition of the legislature does

not change, and neither do the tax rate and total government spending. In the terminology of Matozzi and Snowberg, we are in a *fully representative equilibrium*.

(Note: The introduction of the legislative bargaining game does mean that there is now uncertainty about the level of government spending in each district, as the proposer and the members of the coalition are selected randomly. However, since utility is linear in government spending, this makes no difference for the decisions of legislators or voters (assuming they are expected utility maximizers). Students don't need to mention this in their answers.)

1G. Assume now that white-collar legislators are better educated and have better connections and superior oratorical skills compared to blue-collar legislators. For these reasons, white-collar legislators have a higher probability of being recognized as the proposer than blue-collar legislators. Discuss how this change in assumptions affects the answers to the questions raised in 1E and 1F (no derivations are necessary). In particular, explain the trade-off now facing blue-collar voters when they decide whom to elect for the legislature. (*Suggested length: 15-25 lines*)

Because the proposer can ensure more spending in her district than anyone else, the expected level of government spending in a district is now higher if the district is represented by a white-collar legislator rather than a blue-collar legislator.

This introduces a competence-representation trade-off for blue-collar voters: On one hand, a blue-collar legislator shares their preferences for the overall level of taxation and will vote accordingly in the legislature. On the other hand, a white-collar legislator has a better bargaining position and will – in expectation – deliver a higher level of government spending in the district.

The result is that some districts with a majority of blue-collar voters may opt for electing a white-collar legislator. Hence, the composition of the legislature shifts towards more white-collar legislators.

The excellent answer may go into a little more detail about this last point, and also discuss the implications for the equilibrium tax rate:

First, if white-collar legislators' bargaining strength advantage is sufficiently high, we may end up in *fully unrepresentative equilibrium* in which all districts elect white-collar legislators. The equilibrium tax rate will then be τ_W^* , i.e. lower than in the simple case with constitutionally mandated equal distribution.

Second, if the difference in bargaining strength between white-collar and blue-collar legislators is moderate, we may end up in a *somewhat unrepresentative equilibrium* in which just enough blue-collar legislators are elected to make up a majority in the legislature, while *some* blue-collar districts elect white-collar representatives. In this case, the tax rate is decided by the preferences of the blue-collar legislators. They will now prefer a lower tax than in the baseline situation with equal spending, however. The reason is that these legislators realize that they are badly positioned in the subsequent bargaining game. They therefore (rationally) expect a smaller share of the tax revenue to come their way, so taxation becomes less attractive to them.

Problem 2

The table below is cut out from Table 2 in the paper by Fernando Ferreira and Joseph Gyourko titled “Do political parties matter? Evidence from U.S. cities”, published in *The Quarterly Journal of Economics* in February 2009.

The paper focuses on a number of political-economic outcomes in American cities. The table reports coefficients from OLS and RD regressions of the dependent variables indicated in the table on an indicator variable for whether the mayor in the city is a Democrat. All dependent variables are transformed to log scales.

| Dependent variables | % diff. between Dem and Rep mayors | | | |
|---|------------------------------------|---------------------------|--------------------|---------------------|
| | OLS uncond. (2) | OLS conditional (3) | RD cubic (4) | RD linear (5) |
| ⋮ | | | | |
| Total revenues per capita (\$) | 0.129 (0.029) | 0.058 (0.022) | -0.016 (0.022) | -0.014 (0.013) |
| Total taxes per capita (\$) | 0.160 (0.033) | 0.091 (0.024) | -0.013 (0.021) | 0.008 (0.012) |
| Total expenditures per capita (\$) | 0.131 (0.029) | 0.060 (0.022) | -0.009 (0.021) | -0.015 (0.013) |
| Total employment per 1,000 residents | 0.169 (0.035) | 0.087 (0.028) | 0.017 (0.016) | 0.014 (0.011) |

2A. Column (2) in the table reports results from an OLS regression with no control variables. Briefly explain what the coefficients in this column show. Is it reasonable to interpret these coefficients as estimates of the causal effect of having a Democratic mayor on the size of government in the city? Why / why not? (*Suggested length: 10-15 lines*)

The OLS regression with no controls simply reports the difference in means of the dependent variables between cities with Democratic mayors vs. those with non-Democratic mayors. The raw estimates show that, among the cities in this sample, those with Democratic mayors collect more revenue and taxes per capita (diff. of 13% and 16%, respectively), have higher expenditure per capita (13% diff.), and employ more people per 1,000 residents (17% difference).

One cannot interpret these differences as causal effects of having a Democratic mayor. The reason is that there are many potential confounders that could affect both the demand for local government spending as well as the success of Democratic candidates. Hence, it is plausible that cities with Democratic mayors would have had higher spending and taxation, on average, than cities with Republican mayors, even if they had not had Democratic mayors. In other words, the simple OLS regression is likely to suffer from selection bias.

2B. Columns (4) and (5) report results from regression discontinuity analyses. Briefly explain what the central idea behind this research design is in this particular context, and why it may give a more reasonable estimate of the causal effect than the simple OLS regression used in column (2). (*Suggested length: 5-10 lines*)

The regression discontinuity design builds on the idea that there is some level of randomness in the outcome variable, in this case the outcome of the election for mayor. Because of that, the outcome of elections that were close, i.e. where the Democrats just barely lost or just barely won, are “as good as random”, and comparisons between Democratic and non-Democratic cities within this group are plausibly free of selection bias. By estimating the size of the “jump” in the outcome variables at a win margin of zero, the RD estimators essentially build on exactly this type of comparisons, so they are more likely to produce plausible estimates of the causal effects of having a Democratic mayor than OLS.

2C. Based on the evidence presented in the table, what would you conclude about the importance of local election outcomes for the size of government in U.S. cities? Do you think this conclusion generalizes to cities in other countries? Why / why not? (*Suggested length: 10-15 lines*)

The RD estimates of the causal effect of having a Democratic mayor on the levels of local government revenue, expenditure and employment are all statistically insignificant, suggesting that the differences between Democratic-led and Republican-led cities in the raw data are completely driven by selection bias. The results therefore suggest that the outcome of local elections for mayor has no impact on the size of the local government.

One has to be very careful extrapolating these results to other countries, however, as there may be problems with external validity. Using RD methods very similar to those used in the paper by Ferreira and Gyourko, Pettersson-Lidbom (2008) studies the impact of local election outcomes on the size of government and level of redistribution in Swedish municipalities and finds significant effect, with left-wing governments spending 2-3% more than right-wing governments. Thus, it appears that the answer to the question about the importance of local election outcomes for the size of city governments depends on the setting, including the country.

Problem 3

The table below is a cut-out from a paper by Alberto Alesina and George-Marios Angeletos titled “Fairness and Redistribution”, *American Economic Review*, vol 95 no. 4. It reports results from a linear regression using individual-level data from the World Value Survey, a global survey with respondents from more than 100 countries. The dependent variable is a binary indicator for whether the respondent classifies himself/herself as being on the left of the political spectrum. The explanatory variable in the top row is a dummy variable taking the value one if the respondent believes that income is mostly determined by luck. In addition to those shown in the cut-out, an extensive list of individual- and country level explanatory variables are included on the right-hand side in each regression.

TABLE 2—THE EFFECT OF THE BELIEF THAT LUCK DETERMINES INCOME ON INDIVIDUAL POLITICAL ORIENTATION

| Dependent variable: Being left on the political spectrum | | | |
|--|---------------------|---------------------------|---------------------------|
| | 1 | 2 | 3 |
| Individual belief that luck determines income | | 0.541*** (3.69) | 0.607*** (3.78) |
| Gini coefficient | | | -0.627*** (1.93) |
| ⋮ | ⋮ | ⋮ | ⋮ |
| Constant | 0.347*** (16.15) | 0.045 (0.62) | 0.218 (1.64) |
| Observations | 20269 | 16478 | 14998 |
| R-squared | 0.03 | 0.03 | 0.04 |

Sources: The dependent variable is constructed using data from the *World Value Survey*. It is a 0-to-1 indicator for whether the respondent classifies himself/herself as being on the left of the political spectrum. The question is formulated as follows: “In political matters, people talk of left and right. How would you place your views on this scale, generally speaking?” The respondent is given a scale 1 to 10, 1 being the most leftist. We classified leftist anyone who answered with a score of 5 or below. All other individual characteristics are also from *World Value Survey*. We report OLS estimates, with *t* statistics in parentheses (* significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent).

3A. Explain what the concept “reciprocal altruism” means and how it may relate to the question of whether people support redistributive policies targeted towards the poor in society. Based on the theory and empirical evidence you have seen in the course, and on the information shown in the table above, discuss whether this concept can help explain why there is less redistribution in the United States than in most Western European countries. (*Suggested length: 20-30 lines*)

Reciprocal altruism (as used in the social sciences) refers to the idea that people feel altruistic toward those who treat them well and vengeful toward those who treat them badly. In a welfare context, reciprocal altruism may imply that people will oppose welfare if they believe welfare recipients (i.e. the poor) are taking advantage of them, but support it if they believe the poor are just unlucky.

The evidence presented in the table from the Alesina and Angeletos paper is consistent with this hypothesis: Controlling for a range of other characteristics, people who believe that luck determines income are significantly more likely to self-identify as being on the left on the political spectrum, a characteristic strongly associated with support for redistributive policies targeted towards the poor. Further, Alesina, Glaeser and Sacerdote (2001) and Alesina, Stantcheva and Teso (2018) present evidence that the belief that income and poverty are determined by luck is much more widespread in Western Europe than in the United States, whereas Americans are more likely than Europeans to believe that lack of personal effort is the main reason for being poor. These observations suggest that reciprocal altruism, combined with a difference in beliefs about the causes of poverty, is part of the explanation of the lower level of redistribution in the United States compared to Western Europe.

The excellent answer may add some remarks on where these differences in beliefs may come from, and whether the observed correlation between beliefs about the causes of poverty and preferences for redistribution reflects a causal relationship: Alesina, Stantcheva and Teso (2018) show that beliefs about the level of *intergenerational income mobility* correlate with beliefs about the causes of poverty *and* with preferences for redistribution. Since Americans are more optimistic about income mobility than Europeans, this could be the driver behind the observed differences. Whether perceptions about income mobility have a *causal effect* on preferences for redistribution is a somewhat open question, however: Using an experimental survey design, the same authors find that making respondents less optimistic about intergenerational income mobility increases support for redistributive policies among those who are on the left of the political spectrum, but not among those on the right.