

Public Economics Sample Final Exam

Roger D. Congleton, WVU

I. Basics (~ 40%):

1. Diagrams:

- a. Use marginal benefit curves and marginal cost curves to illustrate that a progressive tax system may induce poor tax payers to prefer fewer government services than rich taxpayers, even if government services are a normal good.
- b. Use the median voter's indifference curves and a budget constraint defined over education and highways to show that a conditional block grant for education and unconditional block grant can have the same effect on state expenditures.
- c. Use indifference curves and a budget constraint defined over income (or consumption) and leisure to show how a proportional income tax affects decisions to work.

2. Most public finance text books argue that lump sum taxes have no deadweight loss. Discuss circumstances under which a lump sum tax will have a deadweight loss.

3. Tiebout argued that a sufficiently competitive market for local government services forces each local government to provide the Pareto optimal level of public services for its residents. Briefly explain the Tiebout logic. Explain briefly all assumptions made.

4. "The existence of multiple taxing units always tends to reduce total government revenue." Explain or critique the above using one or more clearly specified theoretical frameworks.

5. If you compare tax rates on gasoline in such states as California, Connecticut and New York, you will see that they are about twice as high as tax rates in such states as Alaska Wyoming and New Jersey. What is the likely explanation for the variation in gasoline tax rates?

6. Suppose there are 21 voters, including yourself. You are narrowly self-interested, risk-neutral, and it costs you \$50 worth of time to vote. Candidate A is \$200 better for you than Candidate B, and people other than yourself vote for A with $p=.5$. Using the standard probability of decisiveness formula, calculate *your expected net benefit of voting*.

II. Problems and Puzzles (~ 60%) Answer 3 of the following 6 questions:

1. Analyze the privatization of Social Security—that is, the replacement of the current paygo system with a system of forced saving.
 - a. First, contrast the behavior of pre-retired persons under a system in which a person is required to purchase private annuities (as in Chile) with the current paygo system in the US.
 - b. Second, analyze whether requiring purchases of private annuities tends to generate greater economic growth than a paygo system.
 - c. Third, discuss how a transition to a forced savings program can be managed without significantly reducing benefits for those close to retirement. Discuss why this tends to be a normative and political problem for many privatization proposals.
2. One common property of the public pension and health policies of Western democracies, is that they all promise larger benefits to future generations than can be paid for under current tax laws.
 - a. Many public pension programs are financed with an earmarked flat tax on labor income. Is this efficient from an economic perspective? Why or why not?
 - b. To what extent should the promised payments to future retirees be regarded as part of the national debt?
 - c. Is the excess of future benefit levels relative to future taxes under existing laws consistent with either electoral or interest group models of fiscal policies? (Explain using a three generation overlapping generations model.)
3. Suppose that there are two regional governments in a given country. Both regional governments can invest in a local public good that improves the welfare of their residents. However, there are spillovers from their investment decisions. If region 1 provides the public good region 2 obtains some spillover benefits, and vice-versa. More precisely, let the local public good levels in region 1 be G_1 and that in region 2 be G_2 . Their respective welfare levels are assumed to be:

$$W_1 = 2(a G_1^{0.5} + b G_1^{.05} G_2^{.05}) - c$$

$$W_2 = 2(a G_2^{0.5} + b G_1^{.05} G_2^{.05}) - c \quad \text{where } a > 0 \text{ and } 0 < b < c.$$

- a. Find the Nash equilibrium levels of G_1 and G_2 when public investment decisions are taken simultaneously.
- b. What is the equilibrium welfare level in each region?
- c. Suppose that public investment decisions are centralized. What levels of G_1 and G_2 maximize total welfare? Compare with parts (a) and (b), and explain.
- d. Assume that the central government can impose a interregional Pigovian transfer scheme based on the public investment of each region. Find the optimal scheme. Compare with b and a.

4. Some economists (and politicians) have suggested switching from an income tax to a national sales tax or consumption tax.
 - a. Analyze the merits of this proposal with reference to economic theory.
 - b. Now consider the political economy of such tax choices. Are there circumstances under which there would be unanimous agreement for such a change occur? Majority agreement? Explain.
5. Within democracies, the median voter model can be used as a first approximation of government expenditures and taxation.
 - a. Explain the growth of government from the perspective of that model. Are there any conditions under which the government sector would stop growing or decrease in size?
 - b. What kinds of political failures on average grow less severe as the number of voters increases? More severe? Carefully explain your reasoning.
 - c. Why don't the presidential platforms of the Democrats and Republicans fully converge?
6. Barro argues that variation in the level of national debt can be explained as a method of smoothing intertemporal tax burdens in the context of an overlapping generations model.
 - a. Explain why tax payers might have an interest in smoothing their intertemporal tax burdens via government borrowing rather than through their own private borrowing.
 - b. Suppose that the real interest rate equals the long run growth rate of RGNP. Would a permanent increase in the real interest rate imply larger or smaller deficit levels?
 - c. For a variety of reasons, Eisner argues that the governments public debt numbers are inaccurate and over estimate the extent of the national debt. What effect, if any, would a permanent increase in RGNP growth rates have on the stock of national debt? Explain.