

Econ 230B
Spring 2020

FINAL EXAM: 2 Hours

You can use class notes, internet and computer resources but you cannot communicate with others (honors system)

Questions: 40 points

Answer briefly all 10 true/false questions (4 pts each). Explain your answer fully, since all the credit is based on the explanation. For the answers, base your answers on the substance of what was discussed in class (over and above what you can find in the slides).

1. Optimal tax theory relies on utilitarianism but people's intuitive sense of fairness is not utilitarian. Therefore, optimal tax theory is not relevant.
2. Labor supply theory and changes in incentives do a pretty good job at explaining the labor force participation of single mothers in the US over the last four decades.
3. Series on pre-tax income shares are affected by tax evasion and avoidance so it is impossible to say much about the evolution of inequality.
4. Research of social security and retirement behavior shows that economic incentives are critical to keep elderly people working.
5. Denmark has a very progressive tax system but can still attract top talent from abroad by offering tax discounts on highly skilled immigrants. Therefore, mobility of top talent does not threaten tax progressivity.
6. Tax competition is particularly severe between sub-national governments. Therefore it is impossible for local governments to tax corporate profits.
7. If life expectancy rises, the annual flow of intergenerational wealth transmission necessarily becomes smaller.
8. International corporate tax competition would disappear if instead of having territorial corporate taxes, countries had worldwide corporate taxes.
9. Although there is no compelling empirical evidence on this issue, theoretically the top marginal income tax rate has a positive effect on tax evasion.

10. A progressive wealth tax serves no purpose if all wealth derives from life-cycle saving.

PROBLEM (30 points):

Consider an economy where the government sets a flat tax at rate τ on earnings to raise revenue. We assume that the economy is static: the total population remains constant and equal to N over years and there is no overall growth in earnings.

Individual i earns $z_i = z_i^0 \cdot (1 - \tau)^e$ where the tax rate is τ . z_i^0 is independent of taxation and is called potential income. e is a positive parameter equal for all individuals in the economy. The government wants to set τ so as to raise as much tax revenue as possible.

a) (4 pts) What is the parameter e ? Show that the tax rate maximizing total tax revenue is equal to $\tau^* = 1/(1 + e)$.

b) (4 pts) The government does not know e perfectly and thus requests the help of an economist to estimate e . The government can provide individual data on earnings for two consecutive years: year 1 and year 2. In year 1, the tax rate is τ_1 . In year 2, the tax rate is *decreased* to level τ_2 . Suppose that the government can provide you with two cross-section random samples of earnings of the same size n for each year. This is *not* panel data.

How would you proceed to estimate e from this data? Provide a formula for your estimate \hat{e} and a regression specification that would allow you to estimate e with standard errors.

c) (4 pts) Suppose now that the economy is experiencing exogenous economic growth from year to year at a constant rate $g > 0$. The population remains constant at N . How is the estimate \hat{e} biased because of growth? Suppose you know g , how would you correct \hat{e} to obtain a consistent estimate of e ? (provide an exact formula of this new estimate).

d) (4 pts) Suppose now that you do not know g but that the government gives you a new cross-section of data for year 0 in which the tax rate was equal to τ_1 as in year 1. Using data on year 0 and year 1, provide an estimate of g and the corresponding regression specification.

e) (4 pts) We now assume again that there is no growth. Suppose that the parameter e differs across individuals and is equal to e_i for individual i . Assume that there are N individuals in the economy. Individual i earns $z_i = (1 - \tau)^{e_i} z_i^0$. As above, z_i^0 is not affected by taxation.

As in question a), express the tax rate maximizing tax revenue τ^{**} as a function of the e_i and the realized incomes z_i . Show that the tax rate τ^{**} can be expressed as $\tau^{**} = 1/(1 + \bar{e})$

where \bar{e} is an average of the e_i 's with suitable weights. Give an analytic expression of these weights and provide an economic explanation.

f) (6 pts) Suppose now that the parameter e is the same for all individuals and that the government redistributes the tax collected as a lump-sum to all individuals. I note R this lump-sum which is equal to average taxes raised. Suppose that the level of this lump-sum R affects labor supply through income effects. More precisely, the earnings of individual i are given by $z_i = (1 - \tau)^e z_i^0(R)$. The potential income $z_i^0(R)$ now depends (negatively) on the lump-sum R .

Calculate the compensated elasticity and show that it is larger than e .

Suppose that the government still wants to set τ so as to raise as much taxes as possible in order to make the lump-sum R as big as possible. Should the government set the tax rate τ higher or lower than $\tau^* = 1/(1 + e)$ obtained in question a)?

g) (4 pts) Suppose now that the behavioral response to taxes comes entirely from tax avoidance and evasion, i.e., real earnings are z_i^0 no matter what the tax rate is but that individuals report only $z_i = z_i^0 \cdot (1 - \tau)^e$ when the tax rate is τ . Is the revenue maximizing tax rate still $1/(1 + e)$ (as in a)) under this scenario?