

Econ 230B
Spring 2021

FINAL EXAM: Solutions

The average grade for the final exam is 57.5 (out of 70 points) The average grade (out of 100) including all assignments is 83.6. There are 4A+, 5A, 2A-, 7B+, 1B, 1B-

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. Taxes cannot have a very large impact on labor supply of prime age workers because France has much higher taxes than the US and yet about the same work rate among prime age workers.

Solution: True that France has much higher taxes than the US and yet about the same work rate among prime age workers. This is suggestive that taxes do not have a large impact along the extensive margin but it does prove it for sure. For example, maybe France has higher labor force participation of women because it has more extensive public child care and pre-kindergarten schooling than the US. It is also still possible that taxes could have an impact on the intensive margin so just this simple piece of evidence is not conclusive.

2. The efficiency costs of the EITC is increasing overtime as more and more individuals figure out how to game the EITC.

Solution: True: Chetty-Friedman-Saez AER'13 show that cheating of the EITC using self-employment income to maximizing the EITC refund has grown overtime. In turn, wage responses have also significant in places with a lot of cheating. This suggests that the efficiency costs of the EITC (due to behavioral responses) increase overtime as information about the structure of the EITC diffuses.

3. In the standard life cycle economic model, there is no need for a public retirement program like social security.

Solution: True: this is largely true as rational individual should in principle save for retirement on their own. Even in a standard model though, there might be value to

provide a mandatory annuitization of life time savings (to overcome adverse selection). There can also be distributive motives to have a social security program.

4. In the US, the elderly used to work more when there was no social security program. Therefore, the premise that people cannot work in old age and need retirement benefits is wrong.

Solution: True that the elderly used to work a lot more in the late 19th century than today (see slide from the Blundell handbook chapter). However, this does not mean that they could still support themselves as ability to work declines in old age. Hence, this does not imply that the elderly do not need retirement support.

5. Preferential tax systems for highly skilled foreign immigrants have a large positive effect on immigration and hence are desirable even if society cares about redistribution.

Solution: True/False: True that preferential tax systems can sometimes have a large effect (study on Denmark by Kleven et al.) so they are desirable for tax revenue reasons from a 1 country perspective. However, from a multi-country perspective, they create harmful competition.

6. International tax competition generally leads countries to cut their corporate income tax rate below what would maximize welfare, and each country would benefit from a coordinated increase in corporate tax rates.

Solution: True that tax competition puts downward pressure on corporate tax rates. However this does not necessarily imply that each country would benefit from a coordinated increase in corporate tax rates – for capital exporters, theoretical predictions are ambiguous. See Keen and Konrad Handdbook chapter.

7. If people care about the bequests they leave to their children, then the optimal bequest tax rate is below the revenue-maximizing rate.

Solution: Mostly true, although this depends on how much wealth mobility there is: if zero-bequest receivers die with 0 wealth (= perfect intergenerational wealth persistence), then the optimal bequest rate (that maximizes the meritocratic Rawlsian SWF) is the revenue maximizing rate. See Piketty-Saez 2012.

8. Corporate tax avoidance would disappear if the corporate income tax was integrated with the individual income tax (i.e., corporate taxes paid reduced dividend taxes owed at the shareholder level).

Solution: Somewhat wrong. Corporate integration can reduce incentives for firms to seek low taxes (because low corporate taxes paid mean more taxes owed by shareholders). However, to the extent that corporations do not distribute all their earnings, and that this deferral is valuable to shareholders, there are still incentives for corporate tax avoidance in an integrated system.

9. Third-party information reporting is the main determinant of tax compliance.

Solution: True, see Kleven et al. (2011). However third-party reporting may not be enough to ensure full compliance, for instance the reported information may be inaccurate (eg, international third-party reporting).

10. Standard economic models imply that capital taxes fully fall on labor.

Solution: Wrong. The extent to which capital taxes fall on labor depends on the elasticity of capital supply, the elasticity of labor supply, and the elasticity of substitution between capital and labor.

PROBLEM (30 points):

The Biden administration proposed in April 2021 to increase the tax rate on realized capital gains from the current preferential tax rate of 20% to the normal top tax rate of 39.6% (for taxpayers with income above \$1 million). This was also part of Biden's campaign platform. Let us assume that the likelihood that congress will pass such a bill and increase capital gains tax rates in 2022+ is 50%.

a (4 pts). Explain what behavioral responses in terms of realized capital gains we are likely to see in 2020 (the election year), 2021 (this year), and 2022 (the first year the new tax is implemented if the reform passes). For year 2022, explain the behavioral response that happens if the reform passes and separately if the reform fails to pass. Is there empirical evidence backing this up based on previous US tax changes?

Solution: Surge in realized capital gains among the rich in 2020 (after the election results became clear) and 2021 in anticipation of higher rates in 2022. Then in 2022 depressed realized capital gains if the reform passes (if it does not, capital gains in 2022 may not be depressed that much). Empirical evidence shows such surge effects in 1986 and 2012 years before the tax rate

on realized capital gains went up (see slide in class notes of share of top .1% income earners split into ordinary vs. capital gains).

b (3 pts). Let us denote by e the elasticity of realized capital gains with respect to the net-of-tax rate (one minus the marginal tax rate). This means that realized capital gains take the form $KG = KG_0 \cdot (1 - \tau)^e$ where τ is the marginal tax rate and KG_0 the level of realized capital gains if there were no taxes at all on them. What is the tax rate τ^* that maximizes capital gains tax revenue $\tau \cdot KG$?

Solution: $\max_{\tau} \tau \cdot (1 - \tau)^e$ implies $\tau^* = 1/(1 + e)$.

c. (3 pts) Government agencies scoring tax reform proposals assume that the elasticity e is equal to 2.5. Assume that the reform increases τ from $\tau_1 = 20\%$ to $\tau_2 = 39.6\%$. Does the reform raises capital gains tax revenue? Is the reform desirable in this narrow context?

Solution: The reform loses revenue as $\tau_1 \cdot (1 - \tau_1)^e = .114$ and $\tau_2 \cdot (1 - \tau_2)^e = .112$. $\tau^* = 1/(1 + e) = 28.6\%$ so the proposed tax rate is significantly above the revenue maximizing rate. This makes the reform undesirable. High tax rates on very elastic bases is bad tax policy.

d. (4 pts) Biden also proposed to tax unrealized capital gains at death (instead of the current system that provides a step-up of basis to inheritors free of tax and hence exempts from taxation all unrealized capital gains at death). Explain informally why such a reform could reduce the elasticity e . Suppose the elasticity is reduced down to $e = 1.5$. What is the new revenue maximizing tax rate and is the Biden reform desirable in this alternative context?

Solution: Tax unrealized capital gains at death means that the rich cannot avoid taxes forever by postponing realizations. Therefore, this reduces the incentive to postpone taxes and hence makes the elasticity smaller. However, a weakness is that the rich may hope that a future Republican administration would repeal the tax at death. Hence, it is probable that the reduction in the elasticity e is not very large. With $e = 1.5$, $\tau^* = 40\%$ so that the Biden proposed rate is almost exactly the revenue maximizing rate making the policy optimal if the goal is to maximize tax revenue extracted from the rich (a social objective where the social marginal value of income for the rich is zero).

e. (4pts) The Biden administration proposal increases the tax rate on capital gains only on taxpayers with an income of \$1 million or more. Let us assume (unrealistically) that the

\$1 million threshold is based on income excluding realized capital gains and that such income is completely inelastic to taxes. Somebody with income (excluding capital gains) below \$1 million pays a tax rate $\tau_1 = 20\%$ on all his or her capital gains while somebody with income (excluding capital gains) above \$1 million pays a tax rate $\tau_2 = 39.6\%$ on all his or her capital gains. Explain how you could use this set-up to estimate the elasticity e using a Regression Discontinuity Design.

Solution: This is a standard RD design where you can plot by bin of income excluding realized capital gains, the average realized capital gains. In 2022 (when the reform kicks in), there should be a discontinuity at the \$1m threshold. Realized capital gains jump down by a multiplicative factor $((1 - \tau_2)/(1 - \tau_1))^e$ at the threshold allowing you to recover e .

f. (4 pts) Let us assume again (unrealistically) that the \$1 million threshold is based on income excluding realized capital gains but assume now that such income excluding realized capital gains responds to tax incentives. In this context, would the naive RD method from question e. lead to an overestimate or an underestimate of the true elasticity e of realized capital gains?

Solution: In this case, people slightly above the threshold will move below the threshold particularly those with lots of realized capital gains who get to win the most from getting below the threshold. Therefore, we expect excess realized capital gains below the threshold and even more depressed realized capital gains above the threshold. Therefore, the discontinuity at the threshold is going to be bigger than in e., and hence estimating e using the method in e. would exaggerate the true elasticity e .

g. (4 pts) Explain whether you could overcome the problem in f. by doing a fuzzy RDD based on income excluding capital gains in year 2021 (the year before the reform kicks in).

Solution: Income excluding capital gains in 2021 (call this z_{2021}) should not be affected by the reform because it is irrelevant to the tax burden. If z_{2021} is highly correlated with z_{2022} (individual by individual), then using z_{2021} can be used to do a fuzzy RD. Taxpayers are binned by z_{2021} . For each bin, compute the likelihood to have z_{2022} above \$1m, call this p_{2022} . This first stage should be increasing sharply around the \$1m discontinuity. Then for each bin, compute average realized capital gains in 2021 and 2022, call these cg_{2021} and cg_{2022} . In principle, we should have something like: cg_{2022}/cg_{2021} proportional to $p_{2022} \cdot ((1 - \tau_2)/(1 - \tau_1))^e$ so that e can in principle be teased out.

This is not a perfect method but could help identify e . In the extreme case where income in 2021 is the perfect proxy for income in 2022 (absent the tax change) and the method from e. carries over unchanged. If income in 2021 is only weakly correlated with income in 2022 when the RD will be very fuzzy and it will be challenging to tease out e .

h. (4 pts) How could you test compellingly whether you are in situation e. vs. situation f.?

Solution: There is a notch in tax liability at the \$1m threshold (for taxpayers with realized capital gains). Taxpayers above the threshold have a strong incentive to reduce their income to be below the threshold. Hence, we should observe bunching just below the threshold and a gap in the density just above the threshold. This is a notch design (Kleven-Waseem). Note that this notch design can be used to estimate how income excluding realized capital gains responds to tax incentives but it cannot be used to estimate directly the elasticity e of realized capital gains.