

Econ 230B
Spring 2024

FINAL EXAM: Solutions

The average grade for the final exam is 57.3 (out of 70 points). The average grade (out of 100) including all assignments is 86.1. The distribution of course grades is:
4 A+, 3 A, 3 A-, 4 B+, 2 B.

True/False Questions: 30 points

Answer all 10 questions (3 pts each). Explain your answer fully, since all the credit is based on the explanation.

Only short answers provided here. Full detailed in the class notes and relevant references.

1. The main reason behind the surge in labor force participation of single mothers in the US in the 1990s is the expansion of the Earned Income Tax Credit.

Solution: Uncertain: it is true that the surge in labor force participation of single mothers in the US in the 1990s coincided with the expansion of the Earned Income Tax Credit. But welfare reform also happened at the same time. The old literature believed that the EITC was the key element but recent work by Kleven (2019) has cast doubt on this: other EITC expansions did not increase LFP of single mothers. Hence, it is likely that a combination of EITC, welfare reform, and changes in social norms explain the surge in the LFP of single mothers.

2. If the elasticity of taxable income of upper income taxpayers with respect to the net-of-tax rate is high, the government should not impose a high top marginal income tax rate. to poor.

Solution: True if the elasticity is due to real labor supply responses (as the revenue maximizing tax rate at the top is given by $\tau = 1/(1 + a \cdot e)$ (Saez, Restud'01). However, a high taxable income elasticity is in general due to tax avoidance or evasion. By changing the definition of taxable income (broader base, fewer deductions, elimination of tax favored income items), it is possible to reduce the elasticity of taxable income and then increase the level of redistribution from rich to poor. Furthermore, if the elasticity is due to bargaining effects (as in Piketty-Saez-Stantcheva AEJ'14), then a high top tax rate is

actually desirable to prevent “over compensation” of top earners at the expense of bottom 99%.

3. The spikes in retirement at the regulatory ages of the German social security retirement system is evidence that many individuals do not follow the rational model of labor supply over the life-cycle.

Solution: True: the study by Seibold AER’21 shows striking evidence of large spikes at various regulatory ages of the German social security retirement system even when there are no financial incentives to bunch at such ages. Seibold suggests that social norms play a role which are not part of the rational model of labor supply over the life-cycle.

4. Realized capital gains are very sensitive to tax rates. Hence, they should face a low tax rate.

Solution: First part is true as there is strong evidence of intertemporal substitution: an expected tax increase leads to a surge in realizations before the tax increase happens (as seen in the US around the 1986 tax reform, the 2013 Obama tax increase, and most recently the failed Biden 2022 tax increase). However, this is a short-term response and what matters for tax policy is the long-term response, and the empirical evidence on long-term responses is not conclusive. Therefore, the evidence does not necessarily imply that capital gains should face a low tax rate.

5. If individuals with no earnings are considered as less deserving than average by society, then an EITC with negative marginal tax rates at the bottom of the income distribution would be optimal even in the traditional Mirrlees model of optimal taxation.

Solution: This is true. The optimal tax rate at the bottom in the Mirrlees model takes the form $T'(0) = (g_0 - 1)/(g_0 - 1 + e_0)$ with $e_0 > 0$ the elasticity of the fraction non-working wrt to $1 - T'(0)$ and g_0 the social marginal welfare weight on non workers. If individuals with no earnings are considered as less deserving than average by society, then $g_0 < 1$ and therefore $T'(0) < 0$. Note that this result does not require responses along the extensive margin as in Saez QJE’02 (with extensive margin responses, $T'(0) < 0$ can be obtained under weaker conditions: low income workers more deserving than average).

6. Having information on tax returns is sufficient to measure income and wealth inequalities.

Solution: True and False. Income tax returns are key to measure the distribution of taxable income. Tax returns can also be used to infer the distribution of wealth by using

the capitalization method. However, many components of labor or capital income are not taxable, or not reported in tax returns. One example is retained earnings: people may have incentives to keep money in their firm instead of paying out dividends. If we only have access to tax returns, we could under-estimate the income of individuals with lot of undistributed profits. Combining tax returns with aggregated information on unreported income in the economy can help to measure inequalities in a more exhaustive way.

7. U.S. states cannot increase tax revenues by raising the estate tax because all billionaires will move to states with no estate taxation.

Solution: Mostly False. Moretti and Wilson (2017) show evidence of migration responses to changes in estate taxation across U.S. states, but the implied semi elasticity of migration of billionaires is modest, and remains below one. Even after accounting for foregone estate tax and income tax revenues caused by migration responses to the estate tax, they show that all U.S. states would benefit from implementing an estate tax, with the exception of California.

8. Observing a large number of missing taxpayers at the wealth tax exemption threshold implies that the deadweight loss of wealth taxation is too high and that we should not have a wealth tax.

Solution: Mostly False. First part is true as large behavioral responses to the wealth tax exemption threshold imply large elasticities of reported wealth. However, those elasticities are not structural parameters, and can vary because of tax design. For instance, Garbinti et al. (2023) show that pure changes in wealth tax rates in France do not trigger large behavioral responses, while changes in reporting requirements do. Wealth tax exemption thresholds do not only trigger changes in tax rates, but also changes in reporting requirements and enforcement. Hence, misreporting observed around wealth tax exemption thresholds may be driven by low enforcement rather than true responses to the tax rate. Those distortions could be reduced by improving tax enforcement, for instance third-party reporting or pre-populated returns.

9. International tax competition generally leads countries to cut their income tax rate below what would maximize welfare.

Solution: True. In a closed economy, a given income tax reform $d\tau$ distorts labor supply choices but the total population of taxpayers at each ability level is fixed. In the presence of

tax competition, there is an additional deadweight loss of taxation coming from responses at the extensive margin: individuals can leave the country in response to a tax reform. This means that the total population of residents at each ability level becomes endogenous and affected by the tax rate. As a result, the welfare maximizing tax rate set by the government is always lower with tax competition as soon as the migration elasticity with respect to taxes is strictly greater than zero. Governments would like to set higher tax rates, but the existence of migration responses to taxation reduce their ability to do so in a world with no tax cooperation.

10. Preferential tax systems for highly skilled foreign immigrants or football players have a large positive effect on immigration, hence decreasing current tax rates on income would increase total tax revenues by attracting more highly paid workers in the destination country.

Solution: True/False: True that preferential tax systems can have a large effect (study on Denmark by Kleven et al., study on football players and Beckham law) and the migration elasticity of foreigners is around or above one. However, foreigners only represent a fraction of the total number of top taxpayers. If the government can perfectly discriminate between foreigners and domestic, then it is true that decreasing the tax rate on foreigners only will increase total tax revenues in the destination country as the migration elasticity of foreigners is above one. But if the tax rate is the same for both domestic and foreigners, the uniform elasticity is way below one, meaning that migration responses to a tax cut won't be large enough to compensate for the mechanical losses in tax revenues in the destination country.

PROBLEM (30 pts):

1. $U^w = \max_l wl(1-\tau) + R - l^{1+k}/(1+k) \Rightarrow w(1-\tau) = l^k \Rightarrow l = [w(1-\tau)]^{1/k}$ so $\varepsilon^u = \varepsilon^c = 1/k$ and $\eta = 0$. Let us denote by $e = 1/k$ the common uncompensated and compensated elasticity.

2. $R = \tau(1-\tau)^{1/k} \int w^{1+1/k} f(w) dw$ is a Laffer curve first increasing and then decreasing with τ .

3. The worst off individual has $w = 0$ and $U = R$. Hence Rawls maximizes R .

$\max_{\tau} R = \tau(1-\tau)^{1/k} \int w^{1+1/k} f(w) dw \Rightarrow \tau^* = k/(k+1) = 1/(1+e)$ the classic inverse elasticity rule.

4. Standard plot.

5. The budget has a kink generating bunching at \bar{z} .

Case 1 (exemption bracket): $w \leq \underline{w}$: $l = [w]^e$ with \underline{w} s.t. $\underline{w}^{1+e} = \bar{z}$

Case 2 (bunching at \bar{z}): $\underline{w} \leq w \leq \bar{w}$: $l = \bar{z}/w$

Case 3 (tax bracket): $w \leq \bar{w}$: $l = [w(1-\tau)]^e$ with \bar{w} s.t. $\bar{w}^{1+e}(1-\tau)^e = \bar{z}$

6-7. Amount of bunching is proportional to e

$$\frac{\bar{w}^{1+e}}{\underline{w}^{1+e}} = \left(\frac{1}{1-\tau} \right)^e$$

See Saez AEJ:EP'10 and class notes for details on estimation

8. (3 pts) Reform reduces earnings by $dz/z = -ed\tau/(1-\tau)$ (definition of the elasticity $e = 1/k$) and slightly increases bunching (as people very close to \bar{z} start bunching).

9. (3 pts) τ^* is lower than in question 3. because no tax is collected on the fraction of incomes exempt.

10. (3 pts) Find an expression for τ^* as a function of k , \bar{z} , and the average earnings of individuals above \bar{z} .

$\tau^* = 1/(1+a \cdot e)$ with $e = 1/k$ and $a = z^m/(z^m - \bar{z})$ as seen in the derivation of the optimal top tax rate in class.