

Master PPD - Public Economics: Tax & Transfer Policies

Final Exam, November 19, 2013 - 14h-16h

1 Problem : Optimal redistributive taxation of labor income (10 points)

1.1 Linear optimal labor income tax (4.5 points)

We consider an economy made up of individuals who have identical preferences defined over consumption c and labor l , but different wage rates w_i . Assume that each agent i has utility function :

$$u(c, l) = c - \frac{l^{1+\mu}}{\mu + 1}$$

where $\mu > 0$ is a given fixed parameter.

An individual with wage rate w supplying labor l , earns $z = w \cdot l$ (pre-tax earnings) and consumes $c = z - T(z)$ where $T(\cdot)$ is the (possibly nonlinear) income tax.

1) Interpret the form of the utility function ? (1 point)

2) Consider a linear income tax system $T(z) = -R + \tau \cdot z$ where $R > 0$ is the lump-sum income transfer and τ is a flat tax rate. Compute the optimal level of labor supply that agent i makes (1.5 point).

3) Show that the tax rate maximizing total tax revenue is equal to $\tau^* = \frac{1}{1 + 1/\mu}$ (taking R as given). (1 point)

- 4) What is the parameter $\frac{1}{\mu}$? Interpret the formula. (1 point)

1.2 Non linear optimal taxation of Top Labor Incomes (5.5 points)

We next assume that the government imposes the following two-bracket income tax :

$$T(z) = -R + \tau_1 \cdot z \text{ if } z \leq \bar{z}$$

$$\text{and } T(z) = -R + \tau_1 \cdot \bar{z} + \tau_2 \cdot (z - \bar{z}) \text{ if } z > \bar{z}$$

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$R > 0$ is the lump-sum income transfer. Aggregating over all top bracket taxpayers, we now denote by z_2 the average income reported by top bracket taxpayers whose income is above the threshold \bar{z} . We assume that the government wants to maximize the tax resources it gets from top bracket taxpayers.

- 5) Plot the budget constraint of a top bracket taxpayer on a diagram (l, c) with labor supply l on horizontal axis and after-tax income c on vertical axis. (1 point)

- 6) Assume that $\tau_1 < \tau_2$. Solve for the optimal labor l and earnings $z = w \cdot l$ choice for an individual which is in the top bracket. (1 point)

- 7) Taking R and \bar{z} as fixed, show that the tax rate τ_2^* that maximizes taxes collected from the top bracket taxpayers is equal to (1.5 points) :

$$\tau_2^* = \frac{1}{1 + \frac{1}{\mu} \cdot \frac{z_2}{z_2 - \bar{z}}}$$

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- 8) What is the economic interpretation of the coefficient $a = z_2/(z_2 - \bar{z})$ when the top incomes distribution follows a Pareto distribution? (1 point)

9) In Piketty-Saez-Stantcheva, « Optimal Taxation of Top Labor Incomes : A Tale of Three Elasticities » (AEJ 2013), the authors compute an « augmented » optimal tax formula such as :

$$\tau = \frac{1 + t \cdot a \cdot e_2 + a \cdot e_3}{1 + a \cdot e_1}$$

What is the meaning of e_2 and e_3 ? (1 point)

2 True/False Questions : (10 points)

Explain your answer fully (5-7 lines), since all the credit is based on the explanation.

1) According to the first welfare theorem, the intervention of the government can not generate Pareto improvements. (1 point)

2) The modified golden rule says that with higher expected growth, we should accumulate less capital for the future generations. (1 point)

3) The economic burden of a tax always falls upon the group who has the legal obligation to make the tax payment. (Illustrate your answer with an example of an incidence study using micro data). (2 points)

4) According to the Atkinson-Stiglitz model or to the infinite-horizon dynastic model, there is no reason to tax capital. (Explicit the hypothesis made by the authors) (2 points)

5) According to you, what are the rationales for capital taxation. (2 points)

6) According to you, why do we observe a decline in tax progressivity and a reduction of the capital tax base since 1980 in a number of developed countries. (2 points)