

Econ 131
Spring 2019
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Problem Set 2

DUE DATE: April 3

Student Name:

Student ID:

GSI Name:

- **You must submit your solutions using this template.**
- **Although you may work in groups**, each student must submit individual sets of solutions. You must note the names other students that you worked with. Write their names here:

1. Essay

Read the following recent New York Times article discussing the consequences of the 2018 Trump corporate tax cut. Write a short essay [the essay has to fit in the page below] discussing what we learn from this article about the incidence of the corporate tax cut in light of what we discussed in class. Do you find the empirical facts laid out in the article conclusive? (Why or why not?).

NY Times link:

<https://nyti.ms/2DjpHXJ>

2. True/False Statements

Determine whether each statement is true, false, or uncertain and explain why. Answers with no explanation will receive no points.

- (a) Externalities can be resolved without government intervention.

FALSE in general. Externalities are a market failure that require govt intervention to get resolved. The influential analysis of Ronald Coase showed that, in theory, externalities can be resolved by first properly assigning property rights and second bargaining of the parties involved. In practice, for the reasons seen in class (costly bargaining, many agents involved, imperfect information), such bargaining cannot happen without coordination through government.

- (b) Under the new Trump tax reform, thanks to the minimum tax on foreign profits, US multinational corporations have no incentives to shift profits to tax havens anymore.

FALSE: The minimum tax rate on foreign profits is only 10.5% while the tax rate on US profits is 21%. Therefore, a US multinational is better off shifting profits away from the US toward a tax haven (or shifting profits away from a high tax country such as Germany toward a tax haven).

- (c) Inheritance taxes are desirable if people's motive for accumulating wealth is for their retirement.

TRUE: Inheritance taxes can reduce incentives to accumulate wealth only if people care about the bequests they leave to their children. If people accumulate wealth only for themselves, the tax after they die is irrelevant to their decision. The tax on inheritances reduces what children get and induces children to work more through income effects.

- (d) Evidence from the Israeli Kibbutz implies that redistribution does not hurt people's incentives to work.

UNCERTAIN: As discussed in class, the Kibbutz managed to have very strong redistribution while still motivating their members to work. However, while this might work at the scale of a small Kibbutz community (where everybody knows everybody and social sanctions on slackers can be effective), it is quite possible that, at the scale of a country, almost complete redistribution would reduce incentives to work (we've seen various examples in class that people's labor supply responds some to taxes).

- (e) If wealth comes primarily from life-cycle savings, there should be no tax on capital income.

TRUE: This is the Atkinson-Stiglitz result. However, it requires strong assumptions. In practice, if people have different returns on wealth or if labor income can be shifted into capital income, this result breaks down.

- (f) Tax havens lower taxes on the rich.

TRUE: The super wealthy use tax havens by putting their wealth in offshore accounts to evade taxes (see recent paper by Alstadsaeter-Johannesen-Zucman 19 linking data from HSBC leak of accounts to Norwegian tax data). Tax havens are also used by multinational corporations to shift profits away from high tax countries to avoid the corporate income tax (see Zucman JEP '14). To the extent that multinationals are owned by wealthy shareholders, this also lowers the tax rate on the rich.

3. Capital Income and Savings Taxation

Consider a 2 period model where individuals earn labor income $Y = 200$ from working in period 1 and do not work in period 2 (retirement). Individuals choose how much to consume in each period. Savings in period 1 earn an interest rate $r = 25\%$. Let C_1 denote consumption in period 1 and C_2 denote consumption in period 2. Suppose that individuals have a utility function $U = \ln C_1 + \ln C_2$.

- (a) Set up the individual's lifetime utility maximization problem and solve for the optimal C_1 , C_2 , and S in an economy without taxes.

Consumption in the second period is savings from the first period plus interest.

Savings is just income from the first period minus consumption during the first period:

$$C_2 = (200 - C_1)(1 + 0.25)$$

The utility maximization problem is $\max \ln C_1 + \ln C_2$ subject to the budget constraint.

When the budget constraint is incorporated into the expression for C_2 , as shown, the maximization problem is

$$\max \ln C_1 + \ln((200 - C_1)(1.25)) = \max \ln C_1 + \ln(250 - 1.25C_1).$$

Solving, the first-order condition is

$$\frac{1}{C_1} = \frac{1.25}{(250 - 1.25C_1)} \quad \text{or} \quad 250 - 1.25C_1 = 1.25C_1$$

Using the first-order condition, we get the following:

$$C_1 = 250/2.5 = 100.$$

$$C_1 = 100, \text{ so savings is } 200 - 100 = 100.$$

$$C_2 = S(1 + r) = 100(1.25) = 125.$$

Now assume that a comprehensive income tax $\tau = 20\%$ is imposed on both labor and savings income.

- (b) Find the optimal C_1 , C_2 , and S .

The 20% tax is imposed on the entire \$200 earned in the first period and on the interest earned from savings (rS). The budget constraint is now:

$$C_2 = (200(1 - 0.2) - C_1)(1 + 0.25(1 - 0.2)) = (160 - C_1)(1 + 0.2)$$

The new optimization problem is

$$\max \ln C_1 + \ln(160 - C_1)(1.2) = \max \ln C_1 + \ln(192 - 1.2C_1)$$

The first-order condition is $1/C_1 = 1.2/(192 - 1.2C_1)$

Using the first-order condition, we get

$$C_1 = 80$$

$$S = 160 - 80 = 80$$

$$C_2 = S(1 + (1 - \tau)r) = 80(1.2) = 96$$

- (c) Compare the ratio of consumption C_2/C_1 in (a) and (b). Does the comprehensive income tax distort consumption choices?

Under no taxation $C_2/C_1 = 1.25$ while under comprehensive taxation the ratio is $C_2/C_1 = 1.2$. Which means that this form of taxing income distorts individual's intertemporal consumption decisions.

- (d) How much revenue does the government collect from each individual under the comprehensive income tax system?

$$\text{Revenue} = \tau Y + \tau r S = 0.2(200) + 0.2(0.25 * 80) = 44$$

Suppose now that the government is considering switching to a system where only the labor income is taxed.

- (e) Find the labor income tax τ_L that would raise as much revenue as is collected under the comprehensive income tax system.

This new tax must collect \$44 from each individual. In other words, $\tau_L Y = 44$. Which implies that $\tau_L = 0.22$.

- (f) Find the optimal C_1 , C_2 , and S .

The 22% tax is imposed only on the entire \$200 earned in the first period. The budget constraint is now:

$$C_2 = (200(1 - 0.22) - C_1)(1 + 0.25) = (156 - C_1)(1 + 0.25)$$

The new optimization problem is

$$\max \ln C_1 + \ln(195 - C_1)(1.25) = \max \ln C_1 + \ln(195 - 1.25C_1)$$

The first-order condition is $1/C_1 = 1.25/(195 - 1.25C_1)$

Using the first-order condition, we get

$$C_1 = 78$$

$$S = 156 - 78 = 78$$

$$C_2 = S(1 + r) = 78(1.25) = 97.5$$

- (g) Compare the ratio of consumption C_2/C_1 in (a) and (f). Does the Labor income tax distort consumption choices?

Under no taxation and under labor taxation the ratio is $C_2/C_1 = 1.25$. Which means that just taxing the labor income doesn't distort individual's intertemporal consumption decisions.

Consider now that individuals have the opportunity of shifting half of their labor income into savings income.

- (h) How much revenue would be collected from each individual under the labor income taxation system?

$$\text{Revenue} = \tau_L \frac{Y}{2} = 0.22(100) = 22$$

- (i) Under this scenario which tax system would collect more revenue? Explain.

If individuals have the possibility of shifting labor income into savings income, a comprehensive tax system would be able to collect more revenue not only by directly taxing the shifted income but also by deterring income shifting.