

## Exam Econ 4624, fall 2017.

The exam contains two problems, each count 50%.

### Problem A

Consider an income tax scheme that taxes all income below and equal to 300.000 NOK at a 20% rate and all income above 300.000 NOK at a rate of 40%.

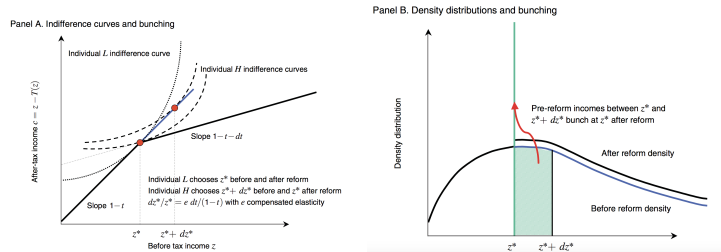
1. Draw the budget line.

EASY.

1. Explain how the distribution of tax payers around the kink can be used to estimate *ETI* (the elasticity of taxable income).

INTUITIVELY: IF THERE IS AN EXCESSIVE NUMBER OF TAX PAYERS AT THE KINK IT MUST BE BECAUSE INCOME EARNERS ADJUST THEIR TAXABLE INCOME (WORK HOURS, EVASION,..) TO THE NET OF TAX RATE INCOME. THE MORE EXCESS DENSITY OF INDIVIDUALS AT THE KINK THE MORE RESPONSIVE, ELASTIC, IS TAXABLE INCOME.

GRAPH: THEY SHOULD BE ABLE TO REPRODUCE SOME VERSION OF THE GRAPH THAT SAEZ HAS IN HIS PAPER AND USE THAT FIGURE TO ARGUE THAT THE EXCESSIVE MASS AT THE KINK CAPTURES ETI.



FORMALLY: GREAT IF THEY CAN USE THE QUASI-LINEAR AND ISOELASTIC UTILITY FUNCTION USED IN THE SAEZ PAPER TO FORMALLY SHOW THAT ETI CAN BE ESTIMATED AT THE KINK. BUT SHOULD NOT BE EXPECTED,

2. What identification assumption(s) does this method rely on?

THAT THE COUNTERFACTUAL DISTRIBUTION IS SMOOTH AROUND THE KINK.

3. Saez (2010) uses kinks in the budget line due to the earned income tax credit scheme to estimate the ETI for US tax payers. He finds that wage earners have a lower response than the self-employed. Why do you think that is the case?

BECAUSE IT IS HARD FOR THE WAGE EARNERS TO ADJUST THEIR TAXABLE INCOME (ADJUST WORK HOURS, ADJUST EVASION) SO THAT THEY LOCATE AT THE KINK.

### Problem B

In 2017 the Norwegian government introduced an extra payroll tax on firms that operate in the financial sector (firms selling financial services). Only firms with more than 70% of their activity in the financial sector were eligible for the tax.

Suppose you are asked to estimate the effect of this tax on wages in the financial sector.

1. Could the extra payroll tax affect other economic variables (think incidence)?

SURE, IT CAN AFFECT THE PRICES CUSTOMERS HAVE TO PAY FOR FINANCIAL SERVICES OR THE PROFITS THAT THE OWNERS OF THESE FIRMS EARN. BASICALLY, IF LABOUR SUPPLY IS ELASTIC IT MUST BE THE CUSTOMERS OR THE OWNERS WHO PAY THE TAX

2. Someone suggests that you can use a regression discontinuity design (RDD) to assess the effect of this tax. What is your response?

GOOD IDEA! BUT I WOULD BE A BIT WORRIED THAT THERE ARE TOO FEW FIRMS AROUND THE THRESHOLD.

3. If you use RDD, how would you proceed; what would you check and how would you estimate?

**CHECK:**

THE BALANCING OF CONFOUNDERS, SHOULD BE SMOOTH OVER THE THRESHOLD.

SHOW DENSITY AROUND THE THRESHOLD IN ORDER TO CHECK IF FIRMS CAN INFLUENCE IF THEY ARE TREATED OR NOT.

**ESTIMATE:**

IF THERE IS A LOT OF FIRMS AROUND THE THRESHOLD ONE COULD DO NON-PARAMETRIC TESTS (DIFFERENCES IN MEANS) ON BOTH SIDES. LESS DATA, RUN A SIMPLE LINEAR REGRESSION ON BOTH SIDE OF THE THRESHOLD TO SEE IF THE PREDICTED WAGE AT THE THRESHOLD IS DIFFERENT IF YOU COME FROM BELOW OR ABOVE THE 70% THRESHOLD. SOME DISCUSSION OF BANDWIDTH.

4. Suppose you find out that RDD is not working here. What alternative methods could you use to estimate the effect of the tax.

DO A DiD. THE RELEVANT COMPARISON GROUP IS A BIT UNCLEAR. MAYBE WAGES IN THE WHOLE ECONOMY, OR MAYBE WAGES FOR THOSE WHO SELL NON-FINANCIAL SERVICES. MUST CHECK COMMON TREND.