

Problem Set 2

EC1410

Fall 2017

Please answer all questions. Partial credit is given for explaining your reasoning, even if you do not know the answer. Please explain all your reasoning in every question.

Problem 1: Essay on the Progressivity of the U.S. Tax and Transfer System

1 page, 30 points.

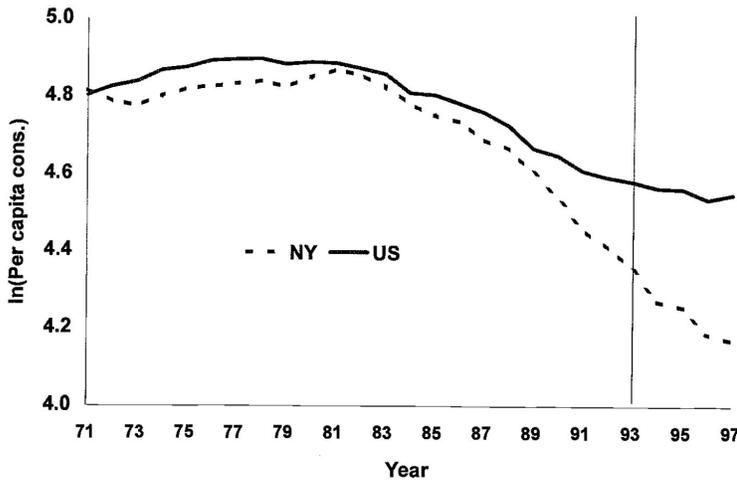
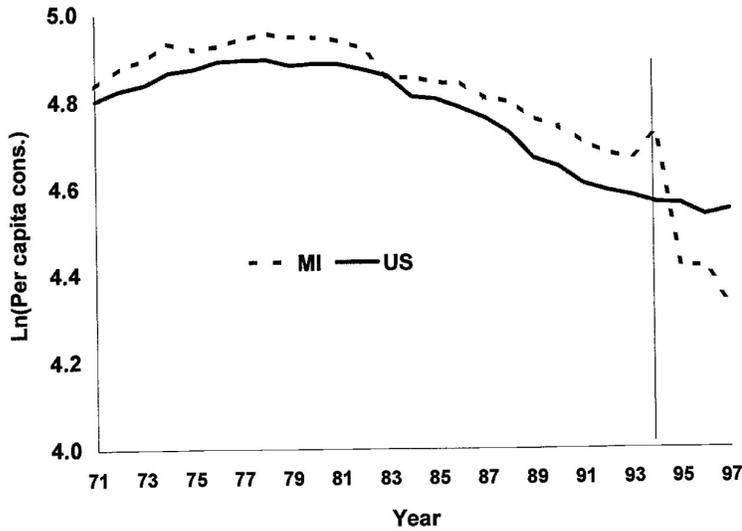
Essay: Has the progressivity of the U.S. Tax system increased or decreased over the past 30 years? What were the major reforms to the tax and transfer system and in what direction did they move the overall system. Please focus especially on the reform of the transfer system.

Problem 2: DD Strategy

(25 points, credit given for full explanations in addition to correct answers).

- (a) In 1994, Michigan raised taxes on cigarettes sold in Michigan. The governor wants to know how much this tax increase changed log per-capita cigarette purchases in Michigan. In 1992, Michigan's log per-capita consumption of cigarettes was 4.7. In 1996, Michigan's log per-capita consumption of cigarettes was 4.4. Is it correct to say that the effect of the tax is (4.7-4.4)?
- (b) Suppose you also know that in 1992, the U.S. average was 4.6. In 1996, the U.S. average was 4.5. What strategy could you use to estimate the impact of the cigarette tax? Do the calculation needed and please report to the governor that Michigan's cigarette tax reduced log per-capita cigarette purchases in Michigan by XX (you have to compute what XX is). (Ignore any impact of state taxes on the U.S. average. This problem is based on graphs from Evans, Ringel, Stech "Taxes and Public Policy to Discourage Smoking" Tax Policy and the Economy, volume 13).
- (c) In 1993, New York substantially raised taxes on cigarettes sold to consumers in New York. The governor of New York heard about your work for the Michigan governor and sends you a new report with the following graphs of annual data on log per-capita cigarette consumption by

state and also for the U.S. on average. She then asks you for a DD estimate of the impact of New York's tax change (except using years 1991 and 1995). Do you think this is a good idea? Why or why not? How do you feel about your method from point (b) now that you see the graph? Explain the general lesson here.



Problem 3: The Optimal Top Tax Rate

(25 points, credit given for full explanations in addition to correct answers).

- Suppose that the government decides to raise the maximal amount of revenues from earners with income above a given threshold z^* using a linear tax rate τ that applies to all earnings above z^* . Give an expression for these tax revenues. Define any variables you need.
- Derive the tax τ that maximizes these revenues. Explain what terms you define and try to derive an appealing tax formula.

- (c) What does the revenue maximizing top tax rate depend on? Please explain each term and explain how it affects the revenue maximizing top tax rate. What term captures the shape of the income distribution? Is the tax higher or lower if incomes are more concentrated at the top?
- (d) Now consider the revenue maximizing linear tax rate (for the whole distribution). Show that it is a special case of the problem you solved in (a). How do you get from the problem you solved in (a) to solving for the revenue maximizing linear tax rate? Without re-deriving anything, just using your results under the assumptions of this special case, show what the revenue maximizing linear rate is. Explain the terms.
- (e) How would you estimate the effects of the top tax rate on top incomes if you only had the time series data for one single country (e.g., the U.S.). How would you do it if you had international panel data on several countries over time? Discuss the shortcomings and assumptions needed for the validity of each approach.