Exercise 2

Policymakers would like to have information on how tax payers respond to a planned reduction in marginal tax rates. You have access to individual income data for several years with a panel dimension (repeated observations for the same individual). Describe how you would design a research strategy in order to inform policymakers on the expected effects on income of their planned policy change. Discuss what types of responses that may be reflected in an observed change in income.

The so-called elasticity of taxable income approach (the ETI approach) represents a promising source of information, as it denotes a well-established procedure to rinse out the effects of taxes. Studies of the large and growing ETI literature exploit that tax reforms generate net-of-tax rate changes along the income scale, often resulting in substantial tax changes for some tax-payers, whereas others are more or less unaffected. Taxable income is used as the main measure of outcome in this literature, as it in principle captures all the public policy relevant behavioral responses of a reform (hours worked, effort, tax avoidance and evasion, change of job, income shifting, etc).

Panel data covering a period of net-of-tax rate variation across individuals and across time (often covering a tax reform) have been the main data source for the identification of responses in the empirical framework of the NTR approach. Taxable income for individual i at time t, q_{it}, is explained by a time-specific constant, κ_t, the net-of-tax rate, $\log(1-\tau_{it})$, unobserved heterogeneity μ_i and the remaining iid error term, ξ_{it},

$$\log q_{it} = \kappa_t + \lambda \log(1-\tau_{it}) + \mu_i + \xi_{it}.$$

The basic framework for identification in the NTR literature consists of various estimations of a first-differenced version of, using panel data for two periods,

$$\Delta \log q_i = \kappa + \lambda \Delta \log(1-\tau_i) + \Delta \xi_i.$$

The coefficient of interest, λ, measures the elasticity of income with respect to changes in the net-of-tax rate defined as $\dfrac{1-\tau}{q} \dfrac{\partial q}{\partial(1-\tau)}$. The reliability of results depends on carefully framed empirical designs for the identification of the key parameter, including controls for individual characteristics that might affect income growth. One obvious methodological identification challenge (w.r.t. λ) has been the endogeneity of the tax rate, which has led to using IV techniques. For instance, Feldstein (1995) employs the difference-in-differences estimator, and let the change in the net-of-tax rates and the allocation into groups (groups more or less treated by the US tax reform of 1986) be determined by pre-reform income levels. Many post-Feldstein studies employ a closely related exclusion restriction, namely the change in net-of-tax rates based on a fixed first period income as instrument in an IV regression; see Auten and Carroll (1999) and Gruber and Saez (2002). If one uses panel data, and a tax instrument based on pre-reform income, one (usually) needs to control for mean reversion. This can for example be done be adding in pre-reform income in the first-differenced equation separately.

   The NTR literature is related to methods commonly used in the "experimentalist" or "program evaluation" literature. However, the conventional identification technique of the NTR literature implies that one is far from an ideal randomized trial situation. Thus, the policy-makers must assess to what extent the results of the reform used to obtain an ETI estimate also is useful for the planned changes.