Guidelines Exam ECON4624, Fall 2019

Question 1. Tax Evasion (33%)

a. The figure shows two log-linear Engel curves, one for self-employed households and one for wage earners. The intercept difference, γ, between these two curves reflects the degree of income underreporting among the self-employed. The extent of underreporting is given by the difference in income for the same level of consumption. To obtain regression results on may estimate. The approach to obtain an estimate of the tax evasion is:

Food consumption, $c = \ln C^F$

Disposable income, $y = \ln Y^D$

Estimation of $c_{it} = X_i \alpha + \beta y_{it} + \gamma SE_{it} + \varepsilon_{it}$,

where i denotes household i, subscript t denotes year t, X_i,

SE_{it} is a dummy variable for self-employed households.

The fraction of true income reported by the self-employed

is identified by $\hat{\kappa} = \exp\left(\dfrac{-\hat{\gamma}}{\hat{\beta}}\right)$

The amount underreported: $1 - \hat{\kappa}$

Alternatively, one can present the results in terms of k, the figure we must multiply observed income with, in order to obtain "true" income. This is the way of Pissarides and Weber (1989) define the tax evasion by the self-employed: k=exp(γ/β).

The paper by Engstrom and Hagen discuss the use of permanent income instead of yearly income (y), and use of instruments because of endogeneity. Such discussions give extra points.

b. Data are used from the Survey of Household Expenditures are used. The students may also speculate on using other data, for example donations. Such speculations should be valued.

Question 2. Labour supply effects (33%)

a. Why do Eissa and Hoynes (2004) expect that the EITC lead to traditional welfare-type work disincentives for married women? (hint: EITC is based on family income)

Eissa and Hoynes (2004) base their expectations on a sequential, two-earner model in which the primary earner—the husband—makes his work decision independent of the secondary earner. The second mover (the wife) then makes her labour supply decision by maximizing utility, considering primary earner's earnings and other-household unearned income as exogenously given. It follows from this type of model the wife's labour supply has no effect on the husband's decision, but the husband's labour supply affects the wife's decision (through family income). The empirical findings support this «traditional» model of family labour supply.
Consider for instance, a family where the husband is working. If the wife is not working, the family qualify for EITC, but if she starts working their family earnings will exceed the income threshold of full eligibility, such that the EITC will be phased out. Thus, the participation tax rate is high for the wife and creates a disincentive to participate in the labour market, just as the disincentives to work created by a traditional welfare program.
Thus, economic theory suggests that EITC is likely to promote labour market participation for single parents and for primary earner (the family qualifies for EITC when having positive family earnings). Whereas it is likely to reduce participation in the labour market for the secondary earner in couple-households.

b. Describe the difference-in-difference method they use given that they have access to data from repeated cross-sections. Preferably set up the regression that they use in the identification. How do you interpret their difference-in-difference estimates (in yellow frame)?

The DD-estimator compares the change in outcome between a treated group and an untreated group (the control group).
Eissa and Hoynes (2004) examines the labour force participation of married couples to the 1993 EITC expansions. The regression is as follows,

$$y_{it} = \gamma \delta_{gt} + \eta_g + \eta_t + X_{it}\theta + \epsilon_{it}$$

y labor force participation, η_g a fixed (group) effect; η_t a common time effect; δ_{gt} the interaction between fixed group and time effect; X observable characteristics, γ DD-estimate of interest

The DD-estimates provided in Table 3 is equivalent to computing (after reform - before reform) outcomes for treatment group (couples with children) – (after reform-before reform) outcomes for the control group (couples without children). Families with more than one child is treated more intensely (see panel A), and it is therefore expected to find larger treatment effect for this group.

The DD estimates suggest that participation of women with one child fell by 2.1 percentage points because of the EITC reform. For women with two or more children participation fell by 5.1 percentage points (both effects relatively to the control group of women without children).
The difference-in-difference estimates suggest that married men are more likely to be employed because of the EITC expansion (although not statistically significant), see Panel C.

c. What are the assumptions on the counterfactual? Do you think the assumptions are credible?

Assumption: In absence of treatment, the treatment groups would have the same trend in participation over time as the control group. This means that in absence of the EITC reform married women with children would have increased their labour supply participation by 2.3 percentage points (equal to married women without children).
There might be several reasons why the trends in participation for single women may differ from trends in participation for married women. The parallel trend assumption could be tested by looking at whether parallel trend assumption holds in previous periods.

Question 3 (Elasticity of taxable income, 33%)

3. Feldstein table

This is a very simple question where the student is asked to demonstrate how the derivation of the ETI works.

4. ETI regression

a. The student should define the variables, z is income, 1-τ is the net-of-tax rate, clarify the time span. May use cross-sectional data, but the standard method is to use panel data.

b. There is an obvious endogeneity problem in this set-up, which is addressed by instrumenting the net-of-tax rate. This is usually done by obtaining an instrument for the tax change, based on calculating the tax change from first year income only.

c. Given the econometric challenge, and the use of the particular instrument, given under b, there will be mean reversion. This is a challenging question, but they they have been introduced to three methods (last part of the equations below) to control for this: A&C is simply adding pre-reform income, G&S is pre-reform income in splines, whereas Kopczuk is also bringing in income from an earlier period.

Auten and Carroll (1999): $\log\left(\frac{x_{i,t+3}}{x_{it}}\right) = \alpha_t + \beta \log\left(\frac{1-\tau_{i,t+3}}{1-\tau_{it}}\right) + B_i'\theta + M_{it}'\eta +$

$$\rho \log x_{it} + \varepsilon_{it}$$

Gruber and Saez (2002): $\log\left(\frac{x_{i,t+3}}{x_{it}}\right) = \alpha_t + \beta \log\left(\frac{1-\tau_{i,t+3}}{1-\tau_{it}}\right) + B_i'\theta + M_{it}'\eta +$

$$\mu Splines \log x_{it} + \varepsilon_{it}$$

Kopczuk (2005): $\log\left(\frac{x_{i,t+3}}{x_{it}}\right) = \alpha_t + \beta \log\left(\frac{1-\tau_{i,t+3}}{1-\tau_{it}}\right) + B_i'\theta + M_{it}'\eta + \phi Splines \log x_{it} +$

$$\pi Splines \log\left(\frac{x_{i,t-1}}{x_{it}}\right) + \varepsilon_{it} ,$$