

Examen Econometric Methods and Models - Januari 2020

Deel 1:

4. (10 points) Consider the Probit model and let $E(Y|X) = \Phi(\alpha + \beta X)$. Let both Y and X to be binary variables that can take the values of 0 or 1. Let $\bar{Y}_{X=0} = 0.5$ and $\bar{Y}_{X=1} = 0.975$. Recall that the CDF of the Standard Normal distribution evaluated at 0 is 0.5 ($\Phi(0) = 0.5$) and evaluated at 1.96 is 0.975 ($\Phi(1.96) = 0.975$). Solve for α_{MLE} and β_{MLE} . Use the Probit model to predict what the $\Pr(Y|X = -1)$ would be. Does this differ from the prediction you would get using the linear probability model? Carefully motivate your answer.

1.

2. Wat is het beste voor unemployment: exponentiele of probit model

3. (10 points) Suppose I want to estimate the following model: $y_i = \beta x_i + u_i$. Explain what is the fundamental assumption I need to use the moment g^1 (such that $g^1(\beta) = \sum_i^N x_i(y_i - \beta x_i)$) to consistently estimate β using GMM estimation? Carefully motivate your answer.

3.

een vraag in deze richting, over een moment gegeven dat je moest zeggen of deze goed was.

4. de intuïtie van MLE en iets erbi

5. Suppose a model in which $y_i = 1$ if $y_i^* > 0$, and $y_i = 0$ otherwise, where $y_i^* = \alpha + \beta x_i + \mu_i + \varepsilon_i$. Additionally, assume that we know that ε and μ are independent and that ε is standard normally distributed ($\varepsilon \sim N(0, 1)$) and μ is normally distributed with mean 2 and variance 4 ($\mu \sim N(2, 4)$). If you had a sample of 1000 observations ($N=1000$) with values for y_i and x_i , would you be able to estimate α and β ? Carefully motivate your answer

6. (10 points) Suppose I want to regress y on x and a constant ($y = \alpha + \beta x + u$), but instead of having the variable x I have the variable $\hat{x}$ which is a noisy measure of x . Suppose that the true value of β is negative (for example $\beta = -3$). What would be the problem of estimating the following model: $y = \alpha + \beta \hat{x} + \psi$? Can this cause an endogeneity problem? Carefully motivate your answer.

6.

bijna exact dezelfde vraag

7. Assume that the true data generating process (the true model) is: $y = 5 + 3x + 4w + \varepsilon$. Suppose that we also know that $E(\varepsilon|x) = E(\varepsilon|w) = 0$, $\text{Cov}(x, w) = 5$, $\text{Var}(x) = 10$ and $\text{Var}(w) = 1$. What would be the estimate of the coefficient of the variable x if we regress y on a constant and the variable x via OLS if we have a very large sample?

Deel 2:

1. Dan een vraag over de rho differentiatie, welke assumpties voor als je γ_{t-2} wilt gebruiken en hoeveel momenten
2. een vraag over het verschil tussen DIF in DIF en de general model
3. je kreeg voor en na en control en treatment group en je moest beta schatten en zeggen of deze al dan niet consistent was
4. dan een sommatie: sommeren als errorterm niet geclusterd werd, dan over individual en over time. (bij A,B en $t=1,2$)
5. What is the problem with the presence of measurement error in panel data models? Carefully explain under which conditions fixed effects estimation can increase bias from measurement error.
6. dat het moeilijker of makkelijker is om IV toe te passen bij panel data dan cross sectional.
7. ??