Seminar
ECON4271
March 2018

Exercise 3: Alternative presentation of the Lorenz curve

(i) Explain how the information content of the Lorenz curve can be given an alternative presentation and interpretation which is consistent with the notion of inequality captured by the Lorenz curve.

(ii) The alternative representation of the Lorenz curve, called the scaled conditional mean curve (the M-curve), shows to possess several attractive properties. Explain these properties.

Exercise 4: Choosing measures of inequality for empirical applications

(i) Provide a justification for why the moments of the M-curve can be considered to form a family of inequality measures that uniquely determines the M-curve and the Lorenz curve.

(ii) The standard approach in empirical work is to employ the Gini coefficient in combination with measures from the Atkinson family and/or the Theil family. Explain why it is hard to justify such an approach.

(iii) Provide arguments for why it might be attractive to employ the three first moments of the M-curve to summarize inequality exhibited by an income distribution.

(iv) Let C_1, C_2 and C_3 denote the three first moments of the M-curve. Show that these three measures can be given the following expressions in terms of the distribution function F:

$$C_1 = \frac{1}{\mu}\int_0^\infty F(x)\log F(x)dx\,, \quad C_2 = G = \frac{1}{\mu}\int_0^\infty F(x)(1-F(x))dx\,, \quad C_3 = \frac{1}{2\mu}\int F(x)(1-F^2(x))dx\,.$$

(v) Show that C_1, C_2 and C_3 can be given explicit expressions in terms of social welfare and that the associated social welfare functions can be decomposed with regard to the mean and (in)equality.