Problem Set 2 (200 pts.)
Econ 350, Winter 2014
James Heckman
Due January 20, 2014
This draft, January 15, 2014

Questions

1. (50 pts.) Consider the two Mincer models of earnings (Heckman, Lochner, and Todd, 2006):

   a) Explain when the coefficient on schooling in an earnings equation is a rate of return and define "the" rate of return to schooling. (Give a precise economic interpretation to each "rate" you so define.) Explicitly compare the Mincer model "rate of return" to an internal rate of return and the rate of return that arises from a dynamic model with sequential revelation of information. Compare *ex ante* with *ex post* returns. Give conditions under which the measures of return are the same (pairwise and then all three). [Hint: See Heckman, Lochner, and Todd (2006) and Eisenhauer, Heckman, and Mosso (2013).]

   b) How would you adjust these formulae for uncertainty in the market rate of return on physical capital?

   c) Map the coefficient on work experience into a rate of return on post-school investment rates.

   d) Derive Mincer's model of the evolution of the variance of log earnings over the life cycle. Compare to the analyses of Hause (1980), MaCurdy (1982), Hryshko (2012), and Meghir and Pistaferri (2011), all on the

reading list. Show conditions under which the Mincer earnings function has a "U" shape variance over the life cycle. Explain how the Hause (1980) and MaCurdy (1982) models capture this and how the models of Hryshko (2012) and Meghir and Pistaferri (2011) also capture this feature. Is the "U" shape found in many studies?

2. The following questions pertain to "The Basic Economic Model of the Life Cycle Used and Extended Throughout this Course" on the reading list: `http://jenni.uchicago.edu/econ350/slides/Basic-Econ-Model_Econ350_SLIDES_2014-01-03a_akc.pdf`

   (a) (10 pts.) Answer question 1 (p. 12-14).

   (b) (10 pts.) Answer question 2 (p. 15).
   Hint: See MaCurdy (1981, JPE).

   (c) (15 pts.) Answer question 3 (p. 34-35).

3. (20 pts.) The literature on measuring trends in consumption in equality has considerable disagreements. The literature uses various measures of consumption (e.g. food expenditure, nondurable expenditure, etc.) Discuss the advantages and disadvantages of the different measures. Drawing on the papers on the reading list, answer the following questions.

   (a) Does consumption inequality track income inequality? (Answer this for the various measures of consumption and income inequality used in the literature.)

   (b) For both consumption and income what is the evidence about

(i) Nonresponse (and its trend)

(ii) Systematic bias in reporting income and consumption, overall and by component.

Answer for each demographic type and income category.

(c) How does measurement error affect the estimates reported in the literature? (Consider both classical and nonclassical errors and define these concepts.) What is the evidence on non-classical measurement error?

(d) How do your answers to (b) and (c) change the interpretation of the income inequality/consumption inequality data?

(e) How do alternative treatments of the price index affect measures of poverty, welfare, and the interpretation of trends in inequality and poverty over the past 40 years?

4. (20 pts) Evaluate the evidence that skill-biased technical change explains most of the rise in wage inequality in the U.S. in the past 30 years. Start with Lemieux (2006) on the reading list and also examine Eckstein and Nagypál (2004), Card and Lemieux (2001), Card and DiNardo (2002), Autor et al. (2008), and Bowlus and Robinson (2012). What is the evidence on the growth of workforce quality? When did the variance of wages begin to increase in the U.S.?

5. (25 pts) Evaluate the evidence for declining cohort quality in the U.S. workforce (start with MaCurdy and Mroz, 1995, and Card and Lemieux, 2001). How does each paper solve the age-period-cohort effect identification problem? (State clearly what the problem is and defensible solutions to it.)

Why does the resolution of the age-period-cohort problem matter?

6. (45 pts.) Compare the following models of the determination of earnings: (a) The Sattinger model (1979); (b) The Koopmans-Beckmann-Becker model; (c) The Gorman-Lancaster model; (d) The Roy Model of Earnings embedded in general equilibrium (Heckman, Lochner, and Taber, 1998).

   (i) For each model, how is earnings inequality determined?

   (ii) How would each model explain the rise in earnings inequality over the past 30 years?

   (iii) How consistent with the evidence is each model?

   (iv) Do we need skills in order to determine wages in the Koopmans-Beckmann model?

7. (5 pts.) Compare the Sattinger (1979) model with the Gabaix and Landier (2008) model of CEO compensation. What features, if any, do Gabaix and Landier add to Sattinger?

Question for Structural Problem Set: Second Steps of the Structural Estimation Project (This will count toward the 15 pt final grade.)

Based on the lectures by Philipp Eisenhauer and Jake Torcasso, discuss and evaluate the merits of the structural and reduced form approach to econometrics.

(a) What policy questions can be answered by the two approaches?

(b) Is there a difference in the underlying behavioral assumptions?

(c) Why are reduced form methods often considered more "credible"?

- How can structural econometricians increase the appeal of their approach?
- How can the performance of structural models be evaluated?

Hint: See the symposium in JEP 2010 (Angrist and Pischke, 2010 and commentators), Heckman (2010), Keane (2010a,b), and Imbens (2010). See also Heckman and Urzúa (2010).

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