INDUSTRIAL ORGANIZATION II   (ECO 2901)

University of Toronto. Department of Economics. Spring 2012
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FINAL EXAM: April 16, 2012. From 9:00-12:00 (3 hours)

INSTRUCTIONS: The exam consists of three Problems. You have to answer all the questions. No study aids, including calculators, are allowed.

TOTAL MARKS = 100

PROBLEM 1 (40 points). Answer the following questions on the article *"Automobile Prices in Market Equilibrium,"* by Berry, Levinshon, and Pakes (*Econometrica*, 1995).

Question 1.1 (10 points). Write the regression equation that relates market shares with the average indirect utility of product j. Explain how to obtain this equation.

Question 1.2 (10 points). Under the assumption of Bertrand competition, obtain the equation that relates the equilibrium price-cost-margin of product j with demand and demand elasticities. For simplicity, assume that each firm produces a single product.

Question 1.3 (10 points). Describe the instrumental variables approach proposed by BLP to estimate demand and supply parameters. More specifically, explain: (a) moment conditions; (b) assumptions for the validity of instruments; (c) sample criterion function minimized by the estimator. You do not have to describe here the algorithm for the computation of the estimator.

Question 1.4 (10 points). Explain the main challenges in the computation of the estimator in Question 1.3. Describe the Nested Fixed Point algorithm in this model.

PROBLEM 2 (30 points). Answer the following questions on the article *"Measuring the Implications of Sales and Consumer Inventory Behavior,"* by Hendel and Nevo (*Econometrica*, 2006).

Question 2.1 (10 points). Explain why a static model that ignores dynamics in the demand of a storable good can provide biased estimates of long-run price elasticities of demand.

Question 2.2 (10 points). Suppose a simplified version of the model in Hendel and Nevo where the storable good is not differentiated (homogeneous product). Also, suppose that the dataset used by Hendel and Nevo included data on households' inventories of the product at the end of each month, e.g., every household participating in the survey should maintain a record of its inventory of laundry detergent at the last day of each month. Propose an approach to estimate the long-run price elasticity of demand using this model and these data.

Question 2.3 (10 points). Describe the complexities that product differentiation and unobserved household inventories incorporate in the estimation of long-run demand elasticities.

PROBLEM 3 (30 points). Answer the following questions on the article *"The Costs of Environmental Regulation in a Concentrated Industry,"* by Ryan (*Econometrica*, 2012).

Question 3.1 (10 points). Propose a Difference-in-Differences regression approach to evaluate the policy question in this paper. Describe the dependent and the explanatory variables of the equation(s), and the control and experimental groups. Discuss the relative merits and limitation of this approach relative to Ryan's approach.

Question 3.2 (20 points). Consider Ryan's approach to the estimation of the parameters in variable the variable cost function.

   (a) (5 points). Describe his assumption(s) about unobserved firm heterogeneity in marginal costs.
   (b) (5 points). Suppose that this maintained assumption(s) is not true. Which are the potential implications on the estimation of variable profits and on the policy evaluation?
   (c) (5 points). Propose a method to test this assumption.
   (d) (5 points). Propose a method that relaxes this assumption.