

Review questions for EC782 midterm. Prof. Ellis

Midterm exam is rescheduled for **Monday March 24, 2014** in class 10:30-12:00 Room 546

The midterm will be for 1.5 hours and have two parts. In the first part, there will be five questions chosen from the following seven and you will be asked to answer **two**. In the second part there will be only one question, given below, and you will be asked to answer it. The actual wording and information requested may differ slightly from those shown here, or simplified. Short, well organized answers will be preferred to long, disorganized ones.

1. The Rand Health Insurance Experiment (HIE), conducted in the mid 1970's, remains the classic and largest controlled experiment done in the health services field. Key literatures include Manning et al (1987) and the new evaluation of the same data by Aron-Dine, Einav and Finkelstein (2013).

- a. Give three primary research questions that motivated the HIE.
- b. Describe briefly why a controlled experiment may be superior to using a natural experiment for answering these three questions.
- c. Summarize three criticisms or weaknesses of the HIE study design that made it less than an ideal controlled experiment.
- d. For ONE of the primary research questions you listed, summarize the main findings of the HIE analysis.
- e. For this same research question, describe a study that you could do that would address this question. Be sure to mention how your study would build upon or refine the findings of at least one other published study, giving the authorship and citation of that other study.

2. a) Why might supply side cost sharing be superior to demand side cost sharing?
- b) From the perspective of Ellis and McGuire (EM) (1986) what is a perfect agent? What payment system can achieve the first best if hospitals are perfect agents? Explain.
- c) In the EM terminology, what happens if hospitals become imperfect agents? How should the hospital payment system be modified in response to imperfect agency?
- d) Assume providers are perfect agents, so that $\alpha=1$. Examine the implications of average cost pricing where there are fixed costs. Suppose that the one good q has a fixed cost of F and a marginal cost of $c=1$ per unit, and that the provider payment is based on the average cost at some average amount q^0 . The provider can choose q that may differ from q^0 .
- e) Using insights from the literature on nonprofit firms, suggest one refinement to the hospital payment policy or hospital regulations that might be appropriate in response to **heterogeneity in need for medical care** in order to improve efficiency. You need not consider any market equilibrium effects on the nature of the equilibrium if you do not wish to.

3. Managed care is pervasive in US health care markets, although relatively rare in other countries still.

- a) What is managed care?
- b) Speculate on why managed care is more common in the USA. What problem or problems is it designed to fix? Describe an alternative approach used in at least one other country to solve these same problem(s).
- c) Explain carefully how selection complicates the assessment of the impact of managed care on total health care spending. Give an empirical example.
- d) We have studied several papers that touch on managed care. (Manning et al, 1987; Burgess, Carey and Young, 2005; Shen and Melnick, 2005; and Glied, 2000, more in health seminars) Summarize briefly what this literature says about the effectiveness of managed care in controlling costs or improving quality.

4. Answer the following questions, providing references from the literature where possible.
- List five (or more) properties of health care expenditure models that make OLS less than ideal for estimating models of health care spending.
 - Explain the estimation algorithm of the classic two-part log linear model used in the RAND health experiment. (Manning et al 1987, and Buntin and Zaslowsky, 2004).
 - Describe briefly one alternative **specification** for individual level spending that has been used more recently.
 - What models of individual health care costs are preferred by Andrew Jones (2010) and other econometricians?
- 5.
- Why is market concentration increasing in health care markets in the US? In which market(s) is this happening in?
 - Dunn and Shapiro (2012) develop a market level model of insurance and physician decisions about pricing and quantity. What are the three stages or periods in their model and what decisions are made in each?
 - What is the physician's entry decision model? Describe one change or extension you would make to this model.
 - How do they model the market determination of price and quantity? Describe one change or extension you would make to this model.
 - Summarize briefly the empirical findings of their paper.
6. Using the Finkelstein and Einav budget constraint representation of health care spending in which out of pocket spending (OOP) plus premium is a function of medical spending (M), draw the appropriate budget constraints for both of the following plans on one diagram. Assume an income of \$10,000. Be sure to label any intercepts, kinks, or intersections.
- Budget constraint corresponding to full insurance at a \$3000 premium. (Plan A).
 - Budget constraint with the following features. (Plan B)
 - \$2000 premium
 - There is no deductible.
 - 50% coverage until the consumer has spent \$2000 out of pocket on health care beyond the premium;
 - Full coverage above this point.
- Redrawing this diagram three times, once for each person, draw sets of indifference curves consistent with the following three people.
- Carol is healthy and chooses to buy \$500 of health care in both insurance plan A or B.
 - Donna has moderate health care needs and ex post is just indifferent between Plan A and Plan B.
 - Erica is very sick and buys \$8000 per year of health care in both Plan A and in Plan B.
 - Explain why you should or should not expect to observe consumers exactly spending \$2000 on health care in Plan B. Under what alternative richer models might this be observed?

7. Daniel Kahneman's book "Thinking, Fast and Slow" is a careful analysis of the insights from behavioral economics, and includes review of the concepts of
- i) Priming
 - ii) Framing
 - iii) Base rate neglect
 - iv) Cognitive ease
 - v) Anchors
 - vi) Availability bias
 - vii) Intuitive prediction
 - viii) Optimism bias
 - ix) Prospect theory
 - x) The Endowment effect
 - xi) The possibility effect
 - xii) The certainty effect
 - xiii) Overestimation and overweighting of rare events
 - xiv) Avoiding regret
 - xv) WYSIATI

(Even if you have not read the book, you can read about any of these concepts through articles on the web, including Wikipedia).

- a) Choose ONE of these topics and describe it briefly.
- b) Choose one (and only one) article from the course readings (or the BU/Harvard/MIT Health Economics Seminar) and describe the new insights from any one or more of the above topics on that paper. In short, describe the insights of behavioral economics to the article you have chosen. (You are not allowed to choose the article that you have already presented in the course.)

Part II. This question will definitely be on the midterm exam.

8. Consider the following two frameworks for consumer decisionmaking.

Exhibit 1 Two possible illness processes	
Model 1: Informed patient choice model: Model 2: uninformed patient choice	
1. Consumer chooses health plan k given health status θ_{t-1}	1. Consumer chooses health plan k given health status θ_{t-1}
2. Nature chooses health status θ_t	2. Consumer chooses provider j given plan k and health status θ_{t-1}
3. Provider chooses price P and offered and treatment intensity Q, given k and θ_t	3. Providers choose patient health status θ_t , Q price P given k and θ_{t-1}
4. Consumer chooses provider j knowing k, θ_t , P, Q	

a. Develop a simple model that allows you to compare the difference between these two decision processes. Be explicit about your assumptions about numbers of health plans and how they differ, states of the world, provider type, provider objectives, provider heterogeneity, and consumer attachment to a particular provider.

b) Describe how the predictions of these two frameworks differ based on your model.

c) Develop at least one empirical test to distinguish between these two models of behavior that you could test using claims data, and describe the specification that you would use to conduct this test. Assume that you have figured out how to calculate empirical counterparts of:

- plan k generosity, c_k
- health status θ_t and θ_{t-1}
- Provider pricing P
- provider treatment intensity Q

Key constraint: Assume empirically that you know something about the providers actually visited, but not about the choice set of all providers potentially visited by the consumer.