To be Corrected

AFRICAN ECONOMIC RESEARCH CONSORTIUM

Collaborative Masters Programme in Economics for Anglophone Africa (Except Nigeria)

JOINT FACILITY FOR ELECTIVES (JFE) 2009

JUNE – OCTOBER

HEALTH ECONOMICS I

First Semester: Final Examination

Duration: 3 Hours **Date: Monday, August 10, 2009**

INSTRUCTIONS:

This Examination Paper has Two Sections.

Answer **ALL** questions in **SECTION A** and **ANY THREE** questions in **SECTION B**.

SECTION A:

ANSWER ALL QUESTIONS in This Section. This Section Carries 25 marks. All Questions Carry Equal Marks.

Question 1

Economists draw indifference curves for health and other goods that reveal a philosophy that health is not of infinite value in comparison to other goods in life. Briefly discuss this statement. **[5 marks]**

Question 2

Briefly illustrate the Grossman Marginal Efficiency of Investment hypothesis with respect to education. **[5 marks]**

Question 3

A market intervention that reduces the price of health care to zero might still be insufficient to meet need. Briefly demonstrate and explain this statement. **[5 marks]**

Question 4

Distinguish between ex-ante moral hazard and ex-post moral hazard in health insurance markets. **[5 marks]**

Question 5

Governments require that all medical practitioners are licensed. Show the economic welfare loss that is associated with licensure. **[5 marks]**

SECTION B: (Longer-Explanation Questions)

Answer ANY THREE Questions in this Section. The Section Carries 75 marks in Total. All Questions Carry Equal Marks.

Question 6

(a) Using the four quadrant diagram for demand for health discussed in class, generate a demand curve for health care. Describe the role each quadrant is playing to the model. **[10 marks]**

(b) Bob has an income of \$22,500. Bob faces a probability of 25% of suffering from a terrible disease which would require him to spend \$12,500 on treatment. Available insurance coverage for this disease will cost Bob a total of \$4,000 in premium. Assume that Bob has a utility function written as $U = Y^{0.5}$.

(i) What is Bob's risk premium? **[5 marks]**

(ii) What is Bob's maximum willingness to pay for health insurance cover? Will Bob buy insurance at the premium of \$4,000? Explain your answer. **[10 marks]**

Question 7

(a) Economic epidemiological models have suggested that under certain conditions, mandatory vaccination or public-subsidized vaccination programs can be less effective at raising total demand. Illustrate this phenomenon with a basic economic model of demand for vaccinations. **[15 marks]**

(b) Mention any policies economic and public health experts recommend for increasing demand for public health services in developing countries. **[5 marks]**

(c) Briefly discuss the four leading causes of childhood mortality in developing countries. **[5 marks]**

Question 8

Consider a simple McGuire-Pauly type economic model of Supplier-Induced demand for caesarian deliveries as opposed to normal deliveries among physicians who are paid on a fee-for service basis. The model highlights the effect of changes in the fee differential between normal and caesarian delivery denoted by m, on treatment intensity, i.

The model postulates a separable utility function in income (Y) and total inducement (I) as give by,

$$U = U(Y) + U(I)$$

where,

$$Y = BY_N + B(a(i))m$$

$$I = Bi$$

and where,

$a(i)$ is the share of total deliveries that are by caesarean section, and is a function of i the inducement per birth.

Y_N is income from a normal delivery

m is the difference in income to physician between a caesarean section and a normal delivery, and is a non-negative number.

B is the number of births.

We make the standard assumptions on the physician's utility function:

$$\frac{\partial U}{\partial Y} > 0, \frac{\partial U}{\partial I} < 0, \frac{\partial^2 U}{\partial Y^2} < 0, \frac{\partial^2 U}{\partial I^2} < 0$$

These conditions indicate that physicians derive positive utility at a declining rate from income but also derive disutility from inducing demand for caesarian deliveries, also at a decreasing rate.

Further assume that $\frac{\partial a}{\partial i} > 0, \frac{\partial^2 a}{\partial i^2} = 0$

(i) Determine that at the optimum, when the first-order conditions for utility maximization are fulfilled, the prediction for the effect of m on the propensity to induce caesarian deliveries i is ambiguous. **[15 marks]**

(ii) Hypothesize the conditions under which an increase in m will have positive effect on i. **[5 marks]**

(iii) Mention any policy instruments to deal with SID. **[5 marks]**

Question 9

(a) Economic theory predicts that complete insurance cover will lead to a disincentive to invest in prevention a phenomenon called ex ante moral hazard. Use a simple two-health state expected utility framework to derive the conditions under which this prediction holds. **[20 marks]**

(b) Mention some of the common policy instruments that are used by insurance companies to curb moral hazard. **[5 marks]**

Question 10

(a) Consider a mixed provider payment scheme that pays a fixed amount, denoted by a, plus a portion of per case treated given by b. Thus, the provider's revenue function is given by,

$R(q) = a + bC(q)$

Assume that the provider's utility function depends on net revenue and patient benefits. Make appropriate assumptions about the marginal utility with respect to both net revenue and patient benefits.

Further assume that the provider faces a linear cost function, $C(q) = cq$

(i) Demonstrate how such a mixed payment system can be calibrated to achieve first best outcomes for service quantity and economic cost. **[15 marks]**

(ii) Why do economists argue that incentives for technical efficiency are higher under a prospective payment system than under a retrospective (cost) reimbursement system? **[5 marks]**

(b) Discuss the rationale of managed care in health care and the problems it is intended to address. **[5 marks]**

-END-