

## AFRICAN ECONOMIC RESEARCH CONSORTIUM

# Collaborative PhD Programme in Economics for Sub-Saharan Africa COMPREHENSIVE EXAMINATIONS IN CORE AND ELECTIVE FIELDS FEBRUARY 14 – MARCH 6, 2018

# **HEALTH ECONOMICS**

Time: 08:00 – 11:00 GMT	Date: Tuesday, February 27, 2018
<b>INSTRUCTIONS:</b>	

Answer a total of FOUR questions: ONE question from Section A, ONE question from Section B, and TWO questions from Section C, ONE of which MUST be EITHER question 5 or 6.

The sections are weighted as indicated on the paper.

# **SECTION A: (15%)**

Answer only ONE Question from this Section

# **Question 1**

<b>(a)</b>	What is health and how is it measured?	(12 marks)
(b)	Explain the difference between HIV prevalence and HIV incidence.	(3 marks)

#### **Question 2**

<b>(a)</b>	Briefly, document your experience during the last time you visited a health		
		(5 marks)	
(b)	Explain any three ways of measuring the quantity of healthcare.	(5 marks)	
(c)	Using real-life examples, explain any five domains of quality of healthcare.	(5 marks)	



#### **SECTION B: (25%)** Answer only ONE Question from this Section

# **Question 3**

Santerre and Bennett (1992) estimated the short-run total variable cost function for a sample of 55 for-profit hospitals in Texas (t-statistics are in parentheses below the estimated coefficients).

 $\ln \text{STVC} = 1.31 + 0.47 \ln q + 0.80 \ln w + 0.73 \ln \text{QUALITY} \\ (0.69) \quad (3.31) \quad (4.42) \quad (2.58) \\ + 0.11 \ln \text{CASEMIX} + 0.29 \ln k + 0.07 \ln \text{DOC} \\ (1.48) \quad (3.16) \quad (0.88) \\ + \text{Other factors}$ 

Adj. 
$$R^2 = .95$$
  
 $N = 55$ 

where STVC = short-run total variable cost, q = a measure of output (total inpatient days), w = average wage rate or price of labor, QUALITY = a measure of quality (number of accreditations), CASEMIX = an indicator of patient case-mix (number of services), k = a measure of capital (beds), and DOC = number of admitting physicians. All variables are expressed as natural logarithms (ln).

- (a) Comment on the claim that the constant term shows the short-run total variable cost (in dollars) when all the explanatory variables in the model are equal to zero. (2 marks)
- (b) How much of the variation in STVC is explained by the explanatory variables? How do you know that? (4 marks)
- (c) Which of the estimated coefficients are not statistically significant? Explain.

(4 marks)

- (d) Does the estimated coefficient on output represent short-run economies or diseconomies of scale? Explain. (4 marks)
- (e) What are the expected signs of the coefficient estimates on w, QUALITY, and CASEMIX? Explain. (4 marks)
- (f) Provide an economic interpretation of the magnitude of the estimated coefficient on w. (3 marks)
- (g) What do the estimated coefficients on k and DOC suggest about the amount of capital and physicians at the representative hospital? (4 marks)



#### **Question 4**

- (a) Using a well-labelled diagram, demonstrate how illness affects the equilibrium position of an optimizing consumer. (10 marks)
- (b) Using a well-explained illustration, demonstrate the impact of the imposition of user charges for medical services/health care on the equilibrium position of a consumer.

(10 marks)

(c) With examples, explain any three effects of imposition of user fees for medical care. (5 marks)

#### **SECTION C: (60%)**

# Answer TWO Questions from this Section;

#### AT LEAST one of which must be Either Question 5 or 6

## Question 5

- (a) Briefly, present the Grossman model of demand for medical care. (20 marks)
- (b) Given what you now know about health and demand for healthcare, explain any five adjustments you would make to Grossman model to reflect the realities of demand for health and healthcare in the 21<sup>st</sup> Century. (5 marks)
- (c) The Efficiency-Wage Hypothesis, in part, posits that a higher wage can increase workers' food consumption, and thereby cause them to be better nourished and more productive. Graphically, analyze the effect of a wage reduction on the optimal health stock in the Grossman model. (5 marks)

# **Question 6**

The models of de Walque (2002) and Froelich and Vazquez-Alvarez (2007) are concerned with health effects of policies at the household level. In these models, the treatments are approximated by some policy shocks or changes in socio-economic conditions.

- (a) Assume you are interested in the effect of education on HIV-status, why would you need to also condition HIV status on other covariates? Suggest and justify an adequate modelling strategy. (5 marks)
- (b) Assume you have cross-sectional data to estimate the specification proposed in (a). Comment on potential endogeneity problems associated with your estimates. How would you correct for such problems? (5 marks)



- (c) de Walque (2002) sought to understand the effect of information campaigns on HIV-status and the effect of education on such status once the information campaign has had an effect. Explain the identification problem faced by de Walque (2002) and the solution to this problem.
  (10 marks)
- (d) In Froelich and Vazquez-Alvarez (2007), the main issue was to understand the effect of self-reported HIV-knowledge on HIV-status using a representative household survey from Kenya. Explain the identification problem faced by the authors and the solution they provided. (10 marks)

#### **Question 7**

- (a) Frick and Chernew (2009) have examined the welfare consequences of moral hazard and suggested that, in many cases, the additional consumption associated with health insurance could be welfare-enhancing. This arises because conditions for Pareto efficiency fail to hold in the market for medical care, thereby making the theory of the second best useful. Illustrate how insurance-induced consumption improves welfare. (10 marks)
- (b) Using real-life examples you are familiar with, explain the following Doctor-Patient relationships: -

	(i).	Default	(3 marks)
	(ii).	Consumerist	(3 marks)
	(iii).	Paternalistic	(3 marks)
	(iv).	Mutuality	(3 marks)
(c)	Using	g an illustration, explain the Supplier-Induced Demand Hypothesis	(8 marks)

#### **Question 8**

Several countries are increasingly relying on immigration as a means of coping with domestic shortages of healthcare professionals. This trend has led to concerns that in many of the source countries, especially within Africa, the outflow of healthcare professionals is affecting their health systems.

- (a) What are the economic and non-economic factors that determine the migration of healthcare professionals? (10 marks)
- (b) What are the impacts of migration of healthcare professionals on Africa's health systems? (10 marks)
- (c) Outline workable strategies for managing migration of sub-Saharan African healthcare professionals in the context of globalization. (10 marks)