

**Instructions:**

**First field: Answer I and II, and choose ONE among III, IV, or V. Time limit is 4.5 hours.**

**Second field: Answer I and II. Time limit is 3 hours.**

**Note: In all questions with subsections, answer all subsections; each subsection counts equally.**

**Question I:**

Develop a research design to evaluate the impact of an ongoing public program, policy, or institutional design; to compare the impact of program, policy, or institutional design alternatives; to examine cause (or causes) of policy or institutional choice by legislators, legislatures, bureaucrats or bureaus; or to examine reasons for the differential implementation of policy by bureaucrats or bureaus.

Choose any policy area that you are familiar with. The application **MUST** be theoretically non-trivial. For example, it should relate to important normative questions of designing institutions that are representative, accountable, effective and efficient, or to tradeoffs among those values. Or it could relate to theoretically important disputes (for example, about government or market failure, or about cooperation versus individual self-interest). Discuss the theory or theories that motivate the experimental or statistical model. Briefly describe the program or policy alternatives, or policy decisions, that you are examining, and discuss and justify the outcome measure(s) you will use. Based on theory, what do you expect to find? Why will your findings be theoretically important or an important contribution to current research? Cite relevant literature and previous findings.

Develop a feasible research design to estimate the parameters of your theoretical model. In your design, consider some of the problems you anticipate in making unbiased and efficient estimates, and suggest how you might go about coping with these problems. Include in your discussion the following items, as well as others you believe are pertinent:

- \*how you propose to collect data;
- \*problems of measurement;
- \*how you will analyze the data you collect;
- \*given your analytical strategy, what are the important threats to internal and statistical validity (that is, threats to getting BLU estimates and steps to minimize these threats)
- \*issues of external validity;
- \*how you will interpret the data you collect in light of the theory you are testing.

## Question II:

### II-1) Economics:

HIV/AIDS emerged as a public health issue in the early 1980's, and it is still on the policy agenda of many international governance organizations, nations, sub-national units of governance, and cities. There is still no cure for this disease, which, without expensive therapeutic drugs, results in death. Even with expensive treatment by drugs, morbidity (illness) follows, robbing those with the disease of the ability to work to their full potential. HIV/AIDS is still a worldwide threat; in 2007 there were 2.7 million new infections and 2 million AIDS-related deaths. The epidemic is particularly widespread in Sub-Saharan Africa, and it is thought that it contributes to other economic difficulties that that region already faces. Yet HIV/AIDS is not like TB, which used to be a well-known killer, or malaria or cholera, which are other dread diseases. TB, malaria, and cholera are not diseases caused by (risky) choice; in contrast, HIV/AIDS is (partly) caused by the choice to engage in risky sexual behavior. While there is no cure for HIV/AIDS, nor any vaccine, it is possible to reduce the risk of getting the disease.

From the point of view of efficiency, why should HIV/AIDS be, or not be, on the public agenda? What, if any, are the relevant market failures, and what, in theory, would be an optimal response? If there should be a public response, what unit of government would be the optimal responder? Why?

Use the theory of market efficiency and market failure to develop your response; use (and label) diagrams to help you explain your response.

### II-2) Statistics:

A recent study funded by the African Development Bank investigated whether governance plays any role in accounting for the prevalence of the HIV/AIDS epidemic. Using a sample of 90 countries worldwide, the results appear in Table 1 (on last page of the exam). The indicators for the quality of governance come from the World Bank; they are standardized scores, where higher values imply higher quality of governance. Each of the governance indicators are indexes. Each index is a summation of data from various national surveys of citizen's perceptions of various aspects of government that the World Bank, and many others, believes reflects what is widely believed to be effective governance. In this study, 3 (of 5) indicators are used; for the question, focus only on the rule of law indicator. Rule of law means that laws are enforced, and that they are enforced with relative impartiality for all citizens. HIV/AIDS prevalence is measured by the ratio of the percent with the disease to the percent without the disease. The statistics for that variable are in the table of descriptive statistics (last page of the exam). The descriptive statistics also define the other variables. In the regression, rather than use the prevalence ratio, the authors chose to use the log of the prevalence ratio.

Focus on the results in column 6 of the regression table below.

- a. What do the results in column 6 of the table tell you about the impact of governance on the prevalence of HIV/AIDS? What do the results tell you about the impact of

other factors on HIV/AIDS prevalence? What, if any, are the implications of the results for efforts to improve governance as a means of addressing disease (or, HIV/AIDS, in this particular case)?

- b. Do you believe the results reported in column 6 of the table below? Specifically, do you believe the parameter estimate for governance? The significance test result? Discuss how well or how poorly the model above meets the assumptions necessary for valid parameter estimates and hypothesis tests.
- c. How could you improve the model?

### II-3) Program Evaluation

Describe how a randomized field experiment might be used to examine the impact of free contraceptives on the incidence HIV/AIDS. What would the experiment look like? What statistical model would you use to estimate program impact? Then describe how a quasi-experimental design might be used to accomplish this same task. What type of quasi-experimental design would you use, and what statistical model would you use to estimate program impact? Briefly comment on the validity and feasibility of each design, and compare them to the likely validity and feasibility of your improved non-experimental model above, from II.2c. Based on your comments, which of the three approaches would you pick?

### III. Implementation

Several noted researchers have argued that the paradigmatic shift from government to governance means the “death knell” of the study of policy implementation as we have known it. Others have argued that the study of policy implementation has always been about governance, it just wasn’t called governance. Using as your analytical framework the fundamental questions that have been explored in the three generations of implementation research since Pressman and Wildavsky’s classic, *Implementation* (1973), assess the validity of these arguments. Is there something fundamentally different about the implementation and governance literatures? Are the questions explored different? Should they be different? Do the answers to what we think we know about implementation change?

### IV. Economics (and politics)

The economics of environmental regulation:

- a. Using sound economic reasoning, argue in favor of governmental regulations designed to decrease pollution. Complement your verbal argument with a diagram of the market for kilowatts of energy. Assume that the production of each kilowatt creates \$5 of damage to the environment. Clearly label the socially-optimal equilibrium quantity of kilowatts on the horizontal (x) axis as  $Q^S$ . Also label the equilibrium quantity in the absence of any governmental regulation (the private-market equilibrium) as  $Q^*$ . Comment on how, if at all,  $Q^*$  differs from  $Q^S$ .

- b. Explain why the socially-optimal level of pollution is unlikely to be zero, both graphically and intuitively. Place pollution on the x (horizontal) axis and costs of pollution abatement (in dollars) on the y (vertical) axis.
- c. Suppose that a group of renowned AU scientists reach the conclusion that Tenleyville can safely absorb \$5,000 of energy-related damage per year – anything more would create serious problems both in the long and short term. Because Tenleyville is home to 5 energy producers, Mayor Bloomfield decides that the fairest course of action is to assign a quota of 1,000 kilowatts per firm. Economically, under what conditions is this policy efficient? When is this policy inefficient? Explain intuitively, but be precise.
- d. Now suppose that the policy enacted in part c is, in fact, horribly inefficient. If Mayor Bloomfield hired you as his chief policy analyst, and asked you to devise an efficient solution – i.e., a policy that would push the economy towards the socially-optimal equilibrium, what would you suggest? (Hint – we know that each kilowatt produced creates exactly \$5 of harm to the environment).
- e. Which policy, (c) or (d), or the status quo (do nothing) is Mayor B, who seeks re-election next year, most likely to support? Briefly discuss why you think this is likely.

## V. Program Evaluation

A recent randomized field experiment (RFE) was conducted investigating the effect of one-on-one nutrition education on obesity prevention. Overweight patients visiting a community health center in Washington, DC were randomly assigned to private nutrition counseling compared to a group nutrition education class. Results from the study (n=200) suggest that those in private nutrition counseling were less likely to become obese. Weight was measured by a health professional before and after the intervention.

A group of researchers has decided to replicate this study using a quasi-experimental research design. They apply for funding from your organization and propose using a large, cross-sectional, nationally-representative data set of individuals that includes information on their participation in various types of nutrition education, weight, and obesity status. A rich set of demographic variables such as gender, marital status, and income are also in the data set. All data are self-reported. They plan to use a quasi-experimental design with a matched comparison group.

A reviewer of the proposal states “This study is not necessary. It does not add value over the results from the RFE.” Answer the following questions regarding this statement and the proposal. To answer the questions, you can make assumptions about both of the studies as long as you explicitly state them.

- 1) Describe some reasons why you agree with this critique.
- 2) Describe some reasons why you disagree with this critique.
- 3) Describe the criteria you would use to evaluate the research methodology of the proposal.

TABLES FOR QUESTION 2

Descriptive Statistics

REFERENCES

Table 7: Descriptive Statistics

Variables	Observ.	Mean	SD	Min	Max
HIV prevalence rate (15-49 years old)	90	2.953	6.125	0.081	33.385
Income Inequality (GINI)	90	42.197	9.141	26.806	74.328
GDP per capita (in PPP adjusted 2005 USD)	90	5935	6703	319	41478
Public health spending (share in GDP)	90	5.737	1.862	2.100	12.200
Population density (per sq. km)	90	176.848	670.556	1.630	6301.597
Television sets (%)	90	58.665	34.908	2.000	99.480
Contraceptive use prevalence	90	49.674	23.026	5.300	96.000
Female literacy rate (> 15 years)	90	72.547	25.791	15.084	99.760
Government effectiveness	90	0.139	1.018	-1.570	2.220
Control of corruption	90	0.134	1.029	-1.510	2.490
Rule of law	90	0.072	1.014	-1.700	2.050
Religious fractionalization	90	0.420	0.235	0.002	0.860

Table 1: OLS Regression of Logit of HIV prevalence rate

Dependant variable: Logit of HIV prevalence (15-49)	OLS Estimates					
	(1)	(2)	(3)	(4)	(5)	(6)
Government effectiveness	-0.619 (0.139)	-0.303 (0.128)				
Control of corruption			-0.549 (0.136)	-0.229 (0.119)		
Rule of law					-0.583 (0.130)	-0.222 (0.129)
Log of Income Inequality		2.720 (0.467)		2.580 (0.490)		2.586 (0.464)
Log of GDP per capita		0.106 (0.166)		0.166 (0.109)		0.135 (0.164)
Log of Public health spending		0.525 (0.323)		0.563 (0.327)		0.501 (0.320)
Population density		-0.032 (0.072)		-0.027 (0.079)		-0.020 (0.072)
Television sets (%)		-0.300 (0.157)		-0.359 (0.155)		-0.358 (0.155)
Contraceptive use prevalence		0.355 (0.334)		0.249 (0.324)		0.317 (0.335)
Female literacy rate		0.208 (0.302)		0.233 (0.304)		0.187 (0.310)
Religion Fractionalization		1.313 (0.609)		1.368 (0.600)		1.370 (0.620)
Sub-saharan Africa dummy		1.791 (0.481)		1.776 (0.490)		1.783 (0.485)
Constant	-4.818 (0.169)	-18.819 (2.009)		-18.398 (2.059)		-18.172 (1.904)
Joint sig. test of controls: <i>p</i> -value	0.000	0.000	0.000	0.000	0.000	0.000
# Observations	90	90	90	90	90	90
R-squared	0.140	0.761	0.112	0.755	0.123	0.754

All regressions are estimated with White's correction of heteroscedasticity. Robust Standard errors are in parentheses.