

INTERNATIONAL UNIVERSITY OF JAPAN
Public Management and Policy Analysis Program
Graduate School of International Relations

PHDC3501 (2 Credits)
Advanced Public Policy Modeling
Spring 2019

Midterm Exam (100 points)

Instruction: Download the exam template from the course Web page. You **MUST** ALWAYS show necessary computation and your reasoning as clearly as possible. This is an open-book and open-notebook exam. However, you may not communicate (including written, verbal, gestural, any other communication) with others during the exam. Submit your answer by email by 17:00; you are given four hours for this exam.

Question 1 (40 points) Nature of Policy Analysis. Wildavsky (2018) stated, “Policy analysis, however is one activity for which there can be no fixed program, for policy analysis is synonymous with creativity, which may be stimulated by theory and sharpened by practice, which can be learned but not taught” (pp. xxxiii-xxxiv). Explain why policy analysis can be learned but neither explained nor taught. First, you must explain the roles and fundamental natures of policy analysis, such as art and craft, that Wildavsky (2018) argued.

Question 2. (60 points) Policy Argument. Suppose you have a product mix LP problem (see the objective function and the fourth constraint below) whose Answer Report and Sensitivity Report are presented below. The unit of four decision variables is EA (each). The coefficients in the objective function are measured in \$1K=\$1,000. Decision makers are expected to pay/save \$12, \$5,000, \$200, and \$50 respectively whenever increasing/decreasing one unit of RHS of constraints 1-4. Due to the government regulation, R should not be below 140 (EA) in any circumstance. Your client is willing to invest \$600 (or sell some resources available) to adjust RHS of four constraints within allowable ranges or forcefully produce one unit of D (D=1) (his/her calculation is “Such a decision incurs efficiency loss but instead will bring me \$200K of political gain.”). Consider cash flow only (not asset) and no transaction cost of adding/selling resources (e.g., purchasing resources decreases cash). As a policy analyst, you are expected to review these five alternatives and then recommend only one that can maximize client’s benefit. Write a short policy proposal with policy claim (conclusion), information (analysis results), (possible) objection, and backing (see Dunn’s chapter); do NOT write a long memorandum with executive summary, introduction, and background. You must report the net marginal benefit of each alternative (net change from the current optimal solution). Think about how to persuade your client (who gave you only 5 minutes) effectively and “sell your argument” successfully. Note that your client is concerning about dramatic change in market price (coefficients in the objective function); if the change (+/-) is greater than \$5K, he/she will suspect the reliability of your policy argument.

$$\text{Max } P = 900M + 84B + 70R + 60D$$

$$R \geq 150 \text{ (fourth constraint)}$$

Target Cell (Max)

Cell	Name	Original Value	Final Value
\$H\$13	>=	0	48450

Adjustable Cells

Cell	Name	Original Value	Final Value
\$C\$13	M	0	25
\$D\$13	B	0	425
\$E\$13	R	0	150
\$F\$13	D	0	0

Constraints

Cell	Name	Cell Value	Formula	Status	Slack
\$G\$8	Constraints LHS	5000	\$G\$8<=\$I\$8	Binding	0
\$G\$9	LHS	1775	\$G\$9<=\$I\$9	Not Binding	25
\$G\$10	LHS	600	\$G\$10<=\$I\$10	Binding	0
\$G\$11	LHS	150	\$G\$11>=\$I\$11	Binding	0

Cell	Name	Final Value	Reduced Cost	Objective Coefficient	Allowable Increase	Allowable Decrease
\$C\$13	M	25	0	90	15	6
\$D\$13	B	425	0	84	6	12
\$E\$13	R	150	0	70	17	1E+30
\$F\$13	D	0	-45	60	45	1E+30

Cell	Name	Final Value	Shadow Price	Constraint R.H. Side	Allowable Increase	Allowable Decrease
\$G\$8	Constraints LHS	5000	3	5000	850	50
\$G\$9	LHS	1775	0	1800	1E+30	25
\$G\$10	LHS	600	60	600	3.571428571	85
\$G\$11	LHS	150	-17	150	50	150

End of the midterm exam.