Political Economy 754 – Take-Home Final

Department of Economics – University of Maryland

December 2003

Allan Drazen

Instructions. Do All Questions. Each question has equal weight. PLEASE TYPE (preferable) or WRITE CLEARLY AND CONCISELY! LIMIT: 15 PAGES total for the exam.. You should try not to spend more than 48 hours on the exam. The exam must be returned no later than Tuesday, December 16 (revised date) at 5 PM. If you type the exam you may put it in a PDF, Scientific Word, or Word file and E-mail it, but be sure the file is readable.

1. Consider a two-period model with an election in the first period between an incumbent i and an opponent o. Each candidate $c = i, o$ has a loss function defined over inflation π and employment n of the form

$$L^c = \sum_{t=1}^{2} \beta^{t-1} \left(\frac{\pi_t^2}{2} - n_t - K z_t^c \right)$$

where

$$n_t = \pi_t - \pi_t^e + \alpha_t^c$$

and $z_t^c = 1$ if c is elected and $= 0$ otherwise. The candidate specific factor α_t^c evolves according to

$$\alpha_t^c = \mu_t^c + \mu_{t-1}^c$$

where $\mu_0 = 0$ for both candidates, $\mu_t^c = \overline{\mu} > 0$ with probability ρ and $\mu_t^c = \underline{\mu} < 0$ with probability $1-\rho$, and where $\rho\overline{\mu} + (1-\rho)\,\underline{\mu} = 0$. Assume neither the opponent's nor the incumbent's μ_1 is observed, but that the incumbent can try to signal his μ_1^i.

The timing of events is as follows. In period 1 μ_1^i is observed only by the incumbent. The incumbent then chooses π_1, which is also *not* observed by the public, which chooses π_1^e; n_1 is then observed by everybody, and the election takes place. Only after the election are π_1 and μ_1 observed. In period 2, there is no election; the policymaker in office sets π_2.

a) Explain the three terms in parentheses in the loss function. Explain the candidate-specific factor α_t^c. What phenomena is this model built to represent?

b) What is π_2 and associated level of employment n_2? What is the voters' expected loss if the incumbent i is elected? If the challenger o is elected? What is the incumbent's net gain from being

re-elected?

c). What is the period 1 cost to the incumbent of signaling his μ_1^i? (Hint: What level of inflation must he choose to hit a given level of employment?)

d) Characterize as completely as you can a separating equilibrium in which an incumbent with $\mu_1^i = \overline{\mu}$ signals this and an incumbent with $\mu_1^i = \underline{\mu}$ does not mimic. Try to illustrate your equilibrium in a diagram relating the cost of signaling to n_1 for each type. What conditions must be fulfilled for there to be a separating equilibrium of this sort?

2. Consider a model in which the government supplies two goods 1 and 2, financed by a linear tax on income at proportional rate τ. All individuals have the same exogenous income $y > 2$. Quantities of the public goods suppled in per capita terms are g_1 and g_2. Individuals also consume a private good h. Agents are heterogeneous in the utility they assign to publicly provided goods, where the utility function of a type i individual is :

$$U^i(h^i, g_1, g_2) = \ln h^i + \gamma^i \ln g_1 + (1 - \gamma^i) \ln g_2,$$

where γ^i differs across individuals

a) Write each individual's budget constraint as well as that of the government. Derive the policy preferences of each agent i and his most preferred allocation (g_1, g_2) as a function of his γ^i. Determine the optimal quantity $g_1(g_2, \gamma^i)$ from agent $i's$ perspective for a given level g_2. When g_2 increases, what is the effect on the optimal provision of g_1 from the perspective of agent i? How does γ^i affect this relation?

b) Suppose the economy consists of three groups of agents of equal size ($i = \{1, 2, 3\}$) with different γ^i. More precisely, $\gamma^1 = 0$, $\gamma^2 = \frac{1}{4}$, and $\gamma^3 = \frac{1}{2}$. Determine the optimal provision of public goods for each agent. Which policy is implemented under majority rule?

c) Suppose now that public good provision is determined by lobbying, where group 1 is organized as a lobby and groups 2 and 3 are not. The lobby presents a take-it-or-leave-it "menu" of contributions C to the government as a function of policies chosen. The government's objective is

$$G = \lambda \left[U^1 + U^2 + U^3\right] + (1 - \lambda) C$$

where $0 < \lambda < 1$. Suppose the tax rate is fixed at $\tau = .5$. Compute the provision of public goods under lobbying and compare it to majority rule above.

d) Suppose now that the preferences of agent i are

$$U^i = \ln h^i + \gamma^i \ln g_1 + (1-\gamma^i)\ln g_2 + (\gamma^i)^2 \ln g_1 g_2$$

Derive each individual's policy preferences. Determine the optimal quantities $g_1(g_2, \gamma^i)$ and $g_2(g_1, \gamma^i)$ (as in part a). from agent $i's$ perspective. Consider the voter structure in part b and the specific values of γ^1, γ^2, and γ^3. Determine the optimal provision of public goods for each agent and the Condorcet winner (if one exists).

3. Dornbusch and Edwards ("Macroeconomic Populism" *Journal of Development Economics*, Vol. 32,pp. 247-277, 1990; also NBER working paper 2986 on course website).review two populist experiments. Use the models we have learned (for example, of reform, interest groups, communication failures, inequality) to analyze the political economy of the Garcia program in Peru in the 1980s (section III of their paper). You may structure your answer as you like, in content, emphasis, and form,.but bring in relevant arguments from more than one model or approach. Applying what you have learned in the course in a convincing way and carefully reasoned arguments will be rewarded.