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14.771 Development Economics: Microeconomic Issues and Policy Models
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14.771, Development Economics
Problem Set #4 - Besley and Kanbur (1988)

Question 1

Policy makers in country A are interested in implementing an infra-marginal subsidy via ration coupons (they buy m dollars of food at market prices). There are only two types of people in country A - the poor, who have income $y = p$ and the rich, who have income $y = r$ with $p < r$. There are λ_1 poor people and λ_2 rich people, with $\lambda_1 + \lambda_2 = 1$. Anyone in the country can obtain a ration card, but in order to do so, individuals must stand in line at the ration office, which takes time. Suppose that only a share β_1 of the poor are willing to stand in line (so the number of the poor willing to wait is $\beta_1 \lambda_1$) and a share β_2 of the rich will stand in line.

1. Using the framework (and notation) in Besley and Kanbur:
 - (a) Write the value of the poverty index, P_α
 - (b) Show how poverty is impacted when m is changed. Give some intuition for your result.

2. Now, assume that instead of two types, income is continuous, and distributed according to $f(y)$ (with cdf $F(y)$). As in the paper, country A's poverty line is z . Furthermore, all individuals have a utility cost of waiting in line, which (in money terms!) is proportional to their income - we write this as cy_i . Thus, an individual will wait in line for the ration card if $cy_i \leq m$. The government's budget states that it can only spend I on the ration, although the government has the ability to vary c as it likes (by, say, making lines longer or shorter - assume the government can do this costlessly).
 - (a) Write the government's budget constraint.
 - (b) Calculate $\frac{\partial m}{\partial c}$. Do you foresee any tradeoffs in varying c ?
 - (c) For the case with $\alpha = 1$, calculate P_1 , and $\frac{\partial}{\partial c} P_1$. Do not account for the waiting cost in your calculations. (Remember, this is a utility cost not reflected in income). Based on what you've calculated so far, can you give the government any bounds on how they should set c ?
 - (d) Do you think your results generalize to all P_α ? Why or why not?
 - (e) Now suppose the government is interested in the net-of-waiting-cost benefit to the ration program:
 1. What is the net of waiting cost transfer to individuals who get the ration?
 2. Again, calculate P_1 and $\frac{\partial}{\partial c} P_1$ using the net transfers - what is different now? Would this change the advice you were planning on giving to the government? Explain.

Question 2

Here, we'll think a little bit more about the "index of discouragement" result on pages 710/711. First, some background: in the public finance literature, a good deal of emphasis is placed on solving optimal tax problems. A classical example is optimal commodity taxation - there are n consumption goods, and the government would like to know how to set taxes in a way that satisfies the government budget constraint and maximizes consumer utility. When you solve out this problem, we get a "discouragement index" rather similar to (35) in the Besley and Kanbur article. The popular intuition driven by this index is that optimal commodity taxation should discourage less the consumption of goods that are heavily consumed by agents with high social marginal utilities of income (this conflates marginal utilities and Pareto weights) - i.e., these goods should be taxed less. Carefully study the equations on pages 710 and 711. Can you provide similar intuition for the discouragement index derived here?

Question 3

Recently the world price of basic commodities like rice have increased substantially. Suppose you are the government of a poor country and you are trying to decide if you should subsidize rice prices in your country. Analyze this problem using the framework given in the paper. Discuss what survey data you would need, and what analyses would run (be specific!) that would enable you to answer this question.

Question 4

Suppose two countries are considering implementing a rice ration system. They are completely identical, except in country A, the poor do not like rice and never eat it, while in country B, the poor love rice - it comprises 90% of their daily caloric intake. The rice market clears at the global price in both countries. Is the ration system more attractive in one country versus the other? Is there more information you'd like to have before giving a definitive answer? Explain and discuss different cases as necessary.

Question 5

Now, take a step back and think about the paper as a whole. The authors set out to provide microeconomic foundations for common food policies intended to reduce poverty. From a policy perspective, do you find their results useful? What do you see as key strengths and shortcomings of their approach?