AS/ECON 4080MW Assignment 2

due : Wed. March 13, before class

All 5 questions count equally.

1. Suppose each legislator in a legislature had the same preferences, represented by the utility function

$$u(g, x_i) = f(g) + x_i$$

where g was the level of government spending, and x_i was the net–of–tax income of residents of the legislator's district. (The function $f(g)$ is increasing, with $f''(g) < 0$.)

The before–tax income y_i in each district differs across districts, with $y_1 < y_2 < \cdots < y_N$, where N is the number of districts. N is an odd number. $Nf'(y_1 + y_2 + \cdots + y_N) < 1$.

Total taxes collected must equal the level g of government spending.

Each legislator is free to propose a new piece of legislation whenver she wants. A piece of legislation specifies the level g of government spending, and also the taxes t_i which will be levied in each legislative district. Taxes can vary among districts. The total tax revenue collected from all districts must cover the cost g of the government spending. Legislation is decided by pairwise majority rule.

Legislators each want the highest possible level of utility for their district, $f(g) + (y_i - t_i)$.

What will happen in the legislature?

2. What would happen in the legislature described in question 1 if government spending had to be financed by equal taxes in each district, $t_i = \frac{g}{N}$? (Except for the restriction on taxes, everything else is exactly as in queston 1.)

3. What would happen in the legislature described in question 1 if government spending had to be financed by a proportional income tax in each district, $t_i = ty_i$, with $\sum t_i = g$? (Except for the restriction on taxes, everything else is exactly as in queston 1.)

4. A 3–person committee must choose one of three mutually exclusive alternatives a, b, and c. Alternative a is the current policy. The rules of the committee are as follows : person 1 gets to propose a policy ; this policy is voted on by the three–member committee (using majority rule). Then person 2 gets to propose a policy, which is voted on (against the winner of the previous vote) by the committee. Finally person 3 gets to propose a policy which is put to a vote against the winner of the previous vote. The winner of this third and final vote is the policy chosen. (If she wishes to, a person can choose not to propose an alternative to the current status quo when it is her turn to propose a policy.)

Person 1 prefers a to b to c ; person 2 prefers b to c to a ; person 3 prefers c to a to b.

What is the likely outcome if each committee member behaves strategically in choosing what to propose, and in voting?

5. Suppose that the senior administrators in a government department could propose a "take it or leave it" budget to their legislature : they propose a level of service Q, and a budget level of B dollars, and the legislators can either approve or reject the proposal. If the proposal is rejected, then the department gets last year's budget (and must provide last year's level of service).

The proposal (Q, B) must be feasible : that is, B must be at least as large as the cost of providing a service level Q. (Assume that last year's budget exactly covered the cost of last year's level of service.)

If the senior administrators want a budget as large as possible, what will they propose? How will their proposal vary with the level of the previous year's budget?