

Please solve the following homework by May 5,2011. Noboru Hidano

The nation is composed of two regions and whose consumers who are homogeneous and whose utility function is

$u = x^a l^{1-a} z^b$  (  $1 > a, b > 0$  ) where  $x$  is composite good,  $l$  is area and local public

good is  $z$ .  $N = N_1 + N_2$ . We assume  $0 < z_1 < z_2$ . The consumers can move one region to the other freely without cost however they can only commute in the same region. Their wage is  $w$  constant across the regions. Their non wage income is  $s$ .  $s = (r_1 H_1 + r_2 H_2) / N$ . Income constraint is  $w + s = x + rl$ , price of  $x$  is unity and a unit rent of land is  $r$ .

- 1) Find the values to maximize consumer's utility in region 1;  $x_1$  and  $l_1$  and  $u_1$ .
- 2) Find 1) in region 2.
- 3) Please state equilibrium conditions and find prices and other variables  $r_1$ ,  $r_2$ , and  $x_1$ ,  $x_2$ ,  $l_1$ ,  $l_2$ ,  $u_1$ ,  $u_2$ ,  $N_1$ ,  $N_2$ .