

Homework Assignment 4. Due: Thursday, February 17.

1. (2 points) Consider the following net benefits (measured in billions of dollars) that will result from the passage of two legislative bills, X and Y:

Voter	Issue X	Issue Y
A	6	-3
B	-1	5
C	-2	-3

- Is there a logrolling opportunity present in this situation? What are the potential gains to voters? Explain why logrolling may enhance the wellbeing of the society.
2. (2 points) Suppose that Jim's utility depends on his income (I_J) only and is given by the following function $U_J(I_J) = 3I_J - 0.25I_J^2$. The marginal utility is then given by $MU_J = 3 - 0.5I_J$. Helen's utility also depends on her income (I_H) only in the following way $U_H(I_H) = I_H$. The corresponding marginal utility is given by $MU_H = 1$. What is the socially optimal income distribution in this two-person economy under the utilitarian social welfare function $W_1 = U_J + U_H$ and with total income being equal to \$15. What is social welfare function is given by $W_2 = \min(U_J, U_H)$?
3. (3 points) Al consumes two goods – Housing (H) and 'all Other goods' (O). His utility function is given by $U = H^{1/3}O^{2/3}$ (so that Al's optimal consumption of housing can be computed according to the following demand function $H^* = 1/3(I/P_H)$, and Al's consumption of all other goods is derived according to $O^* = 2/3(I/P_O)$). The price of housing is $P_H = \$2$, the price of all other goods is $P_O = \$1$. Al's current income is $I = \$240$.
- What is the optimal consumption of housing and all other goods? What is the resulting utility?
 - Now suppose that in addition to his earned income, Al is also receiving support from the government, which amounts to \$120 in cash. How much housing and all other goods is Al going to consume? How much utility does Al get from it?
 - Now suppose instead of giving Al cash, government is giving him a housing subsidy worth \$120. This housing subsidy cannot be resold and used in any way other than acquiring housing services. How much housing and all other goods is Al going to consume? What is Al's utility in this case?
 - Which type of support (cash or subsidy) would Al prefer to have? Who can gain from the government giving out support to needy citizens in the form of subsidy as opposed to cash? Explain how this special interest group can persuade politicians to distribute aid in the form of subsidies?
4. (1 point) How would you feel about a policy that would raise someone else's income without lowering yours? Are you any worse off?

5. (2 points) List all the requirements of the Arrow's Impossibility Theorem and briefly explain what each means.