

Assignment markets

Question 1 TTC is stable but not efficient

- (A) True
- (B) False

Question 2 If an allocation is in the core it may not be Pareto efficient.

- (A) True
- (B) False

Question 3 We consider 5 individuals, i_1, i_2, i_3, i_4 and i_5 , and 5 houses h_1, h_2, h_3, h_4 and h_5 . Agents' preferences are as follows:

i_1	i_2	i_3	i_4	i_5
h_3	h_5	h_3	h_5	h_4
h_5	h_1	h_4	h_1	h_1
h_1	h_3	h_2	h_2	h_2
h_4	h_2	h_1	h_3	h_5
h_2	h_4	h_5	h_4	h_3

1. Suppose that the individuals are ordered as follows: $i_1 \succ i_2 \succ i_3 \succ i_4 \succ i_5$. What is the assignment produced with the serial dictatorship (with this order)?
2. Suppose that for $j = 1, \dots, 5$, individual i_j owns house h_j .
Find an allocation that is in the core.
3. Can the core assignment be produced by the serial dictatorship for an order of agents?
Either show that it cannot be produced by the serial dictatorship or provide the order of agents for which the serial dictatorship produces this allocation.

Question 4 Consider any assignment problem with strict preferences) and private endowments (assume that there are as many objects as there are individuals, and each individual initially owns one object).

When running TTC let C_1, C_2, \dots be the cycles. That is, C_k is the set of individual involved in the k -th cycle. For simplicity you can assume that at each step there is only 1 cycle.

Show that for any order of individuals \succ that satisfy the following property the serial dictatorship gives the same outcome as the TTC algorithm: for any k, k' such that $k < k'$, and any $i \in C_k$ and $j \in C_{k'}$, $i \succ j$. If i and j belong to the same cycle then both $i \succ j$ and $j \succ i$ are acceptable orderings.