GCM Samenvatting

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1 Preliminaries

1.1 Nash Equilibrium

Each player is choosing the best possible strategy given the strategies chosen by the other players.

$$s_i^* \in \underset{s_i}{\mathrm{argmax}} U_i(s_1^*, \cdots, s_i^*, \cdots, s_n^*), \forall i = 1, \cdots n. \tag{1}$$

There is $\in$ instead of $=$ since this Nash Equilibrium does not need to be unique.

1.2 Reaction functions

A reaction function (or best reply or best response function) gives the best action for a player given the actions of the other players. The Nash Equilibrium is where all reaction functions intersect.

1.3 Symmetry

When the game is symmetric, i.e. all players are in the same conditions, have the same reaction function etcetera, then the players are anonymous (They are indistinguishable from each other except for name or index). Then all players choose the same strategy s^* in the Nash Equilibrium.

1.4 Subgame perfect equilibrium

When players do not move simultaneously, i.e. the players move sequentially, we need to refine definition of Nash Equilibrium: the subgame perfect equilibrium requires that the strategy profile under consideration is not only the equilibrium for the entire game but also for each subgame. **