

For a formal definition we need a little bit more notation. Let s_{-i} be a combination of strategies of the other players except player i .

Then we can define a strategy profile as follows:

$$(s_{-i}, \tau_i) = \begin{cases} (\tau_1, s_2, \dots, s_n) & \text{if } i = 1 \\ (s_1, \dots, s_{i-1}, \tau_i, s_{i+1}, \dots, s_n) & \text{if } 1 < i < n \\ (s_1, \dots, s_{i-1}, \tau_n) & \text{if } i = n \end{cases}$$

where τ_i denotes the strategy of player i .

Definition: Let S_i be the set of pure strategies of player i and S be the set of pure strategy profiles. A pure strategy profile $s^* = (s_1^*, \dots, s_n^*) \in S$ is a pure strategy Nash equilibrium if for each player, $i = 1, \dots, n$, and every $s_i \in S_i$ we have $\pi_i(s^*) \geq \pi_i(s_{-i}^*, s_i)$; that is choosing s_i^* is at least as good as choosing any other s_i given that the other players choose s_{-i}^* .