

5.- General Assumptions

- This chapter describes some assumptions about behavior that will be maintained throughout the course:
- **Rationality:** Players are assumed to maximize their expected payoff given a set of well-defined beliefs. More basically, rational players never play dominated strategies (which we will define in the next chapter).
- **Definition of common knowledge:** A fact “F” is common knowledge if all players know “F”, they all know that they all know “F”, they all know that they all know that they all know “F”, and so on ad-infinitum.
- We will maintain throughout the course that **the structure of the game is common knowledge among the players.**

- Note that both rationality and common knowledge of the game impose nontrivial assumptions on how mathematically sophisticated players are assumed to be.
- Modern branches of economic theory (such as Behavioral Economics) focus on decision-making theories where these assumptions can be relaxed.
- Given these two maintained assumptions, the rest of the course will characterize **solution concepts** (theories about how games *should* be played).
- The two main solution concepts to be studied are those of **rationalizability** and the (stronger) notion of **Nash equilibrium**. We will study each one carefully later on.

- **Decision-making processes are independent:**
Another assumption we will maintain in every noncooperative game we study is that the decision-making process of each player is independent of those of every other player.
- This rules out theories that presuppose some abstract form of correlation between the decisions of different players.