Ejemplo 2 (Santi) slide 03 :

-Poker: In poker, players do not know what cards their opponents hold, and they must make decisions based on incomplete information. This creates objective uncertainty, as the outcome of the game is partially determined by factors outside of the players' control.

-Matching Pennies: In the matching pennies game, players simultaneously choose heads or tails. If the choices match, player 1 wins; if they do not, player 2 wins. Both players are uncertain about the other player's choice, creating objective uncertainty.

-Battle of the Sexes: In the battle of the sexes game, two players must choose whether to go to the opera or the football game. Each player has a preference, but they do not know the other player's preference. This creates objective uncertainty, as the outcome of the game depends on the players' unknown preferences.

-Bertrand Competition: In Bertrand competition, two firms must set prices for an identical product. Each firm is uncertain about the other firm's price, creating objective uncertainty.

-Chicken: In the chicken game, two players drive their cars towards each other, and the first player to swerve loses. Both players are uncertain about whether the other player will swerve, creating objective uncertainty.

Ejemplo slide 11: (Trini)

Let P(Ω) be the set containing all non-empty subsets of the set of states of the world Ω. An event S ∈ P(Ω) is a non-empty subset of Ω.

1) Let's say that the set of states of the world Ω represents the possible outcomes of a coin toss, where the coin can either land heads up or tails up. An example of an event S could be "the coin lands heads up".

In this case, S is a subset of Ω that contains only one element: the outcome where the coin lands heads up. So S would be represented as {H}, where H denotes the outcome of the coin landing heads up.

Another example of an event S could be "the coin lands tails up", which would be represented as {T}.

2) Let's consider a game where two players, Player A and Player B, simultaneously choose to either cooperate or defect. The set of states of the world Ω would then contain all possible combinations of Player A's and Player B's choices, which can be represented as {C, D} × {C, D}, where C denotes cooperation and D denotes defection.

An example of an event S could be "both players cooperate". In this case, S would be a subset of Ω that contains only one element: the outcome where both players choose to cooperate, which can be represented as {(C, C)}.

Another example of an event S could be "at least one player defects". In this case, S would be a subset of Ω that contains all the outcomes where at least one player chooses to defect, which can be represented as {(C, D), (D, C), (D, D)}.

Slide 18 (Trini) Intuition:

Axiom 1.8 states that if an individual has preferences over two prospects A and B, and if a third prospect C is such that the individual is indifferent between A and C, and also indifferent between B and C, then the individual should be indifferent between A and B.

Intuitively, this axiom captures the idea that if an individual is equally satisfied with two prospects A and C, and also equally satisfied with two different prospects B and C, then the individual should be indifferent between A and B. In other words, if the individual's preferences are consistent and transitive, then their preferences over A and B should be determined solely by their relative desirability, independent of the presence of the third option C.

This axiom is important because it ensures that the individual's preferences are not influenced by irrelevant options. By ruling out the possibility of preference reversals, it helps to establish a clear and coherent set of preferences that can be used to make rational decisions in situations of uncertainty.

In practice, the subjective substitution axiom can be used to test the consistency of an individual's preferences by checking whether they satisfy this axiom. If an individual's preferences violate this axiom, then it may be necessary to revise their preferences or to investigate the reasons for the violation in order to make more rational decisions.

Ejemplo slide 24 (Valentin):

The utility function $u : X \times \Omega \rightarrow R$ assigns a real number $u(x,\omega)$ to each pair (x,ω) in the Cartesian product $X \times \Omega$, where $x \in X$ represents a particular outcome, and $\omega \in \Omega$ represents a particular state of the world. The value $u(x,\omega)$ represents the subjective "worth" or "value" of that outcome x in that state of the world ω, as judged by the decision maker.

For example, let's say you are trying to decide between two job offers: one is a high-paying job in a big city, and the other is a lower-paying job in a small town. You might use a utility function to help you decide, with **X = {Big City Job, Small Town Job}, and Ω = {Good Economy, Bad Economy}. Your utility function might assign higher utility values to the Big City Job in the Good Economy state, and lower utility values to the Small Town Job in the Bad Economy state, based on your personal preferences and values.**

Overall, utility functions are a useful tool for decision makers who need to make choices under uncertainty, by allowing them to assign numerical values to subjective preferences and evaluate the expected utility of different options.

u(x, ω) = {100, if x = Car A and ω = Sunny Day; 80, if x = Car B and ω = Sunny Day; 90, if x = Car A and ω = Rainy Day; 70, if x = Car B and ω = Rainy Day.}

The function allows you to evaluate the expected utility of each car under different weather conditions, and to make a rational decision based on your preferences and values.