

Introduction to Game Theory*

Price Theory II

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1 Introduction to Game Theory

Previously, we have considered the rational decision maker. Game Theory focuses on the strategic decision maker. Broadly speaking, a decision maker is faced with a choice of between several alternatives based on her beliefs about the state of the world. Thusly, we define the utility of a decision maker (DM) as the real valued outcome of a choice and state. Formally,

$$C = \{\text{Choice Alts.}\}$$

$$S = \{\text{States of the World}\}$$

$$u : C \times S \rightarrow \mathbb{R}$$

Then, $c \in C, s \in S$ we have $u(c, s) \in \mathbb{R}$.

Now consider that the our belief of what the state of the world is a probability. That is, we believe with some amount of certainty that world is such. Then,

$$\Delta(S) = \{\text{Probability Distribution of } S\} = \{q \in \mathbb{R}^S \mid q(s) \geq 0, \sum_{s \in S} q_s = 1\}$$

It is worth noting that at the moment we suppose that S and C are finite.¹ Furthermore, we borrow some notation from Myerson (1997) in that for $s \in S$ we let $[s]$ denote the probability that the state of the world is s .

*This note follows the exposition given in Roger Myerson's Price Theory II course at the University of Chicago. For educational purposes only. Any mistakes are mine and mine alone. Please send any corrections to aboyarsky@uchicago.edu

¹Most economic games are finite, this is not necessarily so of all games. However, we do insist upon this simplifying assumption.