MICRO-ECONOMICS of INFORMATION-GAPS

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High profit is better than low profit, but the need for feasibility must temper the aspiration for reward. To achieve this balance we must model and manage our severely deficient information about, and understanding of, the processes we confront. We must also re-evaluate our concepts of rational decision-making. This talk presents a conceptual introduction to the info-gap approach to micro- economic decisions under severe uncertainty.

We begin with a simple example: a Cournot-like model of production decisions for a single commodity in an oligopolistic market. The example illustrates the general theorem (which will be presented but not proven) that decisions which are designed to maximize profit, will also have absolutely no robustness against uncertainty. The conclusion is that the firm should attempt to satisfice profit, rather than maximize it. This leaves an additional degree of freedom open, which can be used to augment robustness to uncertainty about the competitors' decisions.

After this brief motivation for info-gap decisions, we consider several fundamental issues in the micro-economics of severely deficient information.

We develop a theory of competitive partial equilibrium in which consumers and firms have severely deficient information about production costs. We use non- probabilistic info-gap models of uncertainty to represent this knowledge- deficiency. The analysis is based on the robustness functions for consumers and for firms, which express the degree of an agent's immunity to uncertainty of the cost functions, in decisions regarding consumption and production. Several propositions disclose trade-offs between robustness to uncertainty and the agent's aspiration for reward. Two additional propositions establish info-gap analogs of the neo-classical results which relate price to marginal cost and to marginal utility at competitive equilibrium. We discuss a Pareto-like efficiency which characterizes info-gap competitive equilibrium, and discuss some welfare implications. We demonstrate a "supply-side" feature of info-gap competitive equilibrium: the aspirations of firms, but not of consumers, directly influence price and aggregate consumption.

We will conclude with a brief mention of the info-gap treatment of consumer demand theory. This analysis preserves the phenomenological features of classical demand theory, without the assumptions of rational-choice theory: complete, transitive preferences on the options. The info-gap choice problems of robust satisficing (RSP) and opportune windfalling (OWP) correspond to the traditional problems of expenditure minimization (EMP) and utility maximization (UMP), respectively. The consumer choice resulting from the RSP is the analog of the Hicksian demand function, while the solution of the OWP is analogous to the Walrasian demand. Specifically, the RSP-solution is a wealth-compensated demand function which obeys Walras' law and the law of price-demand trade-off.