

Preface

The topic for this volume is classical oligopoly theory as it took shape around 1940. In the 100 years after Augustin Cournot first formulated the oligopoly problem in 1838, many intriguing developments of the theory were suggested. For a long period after 1940 many of these were left as loose ends. Oligopoly was a candidate for the application of game theory, so it came under the spell of the probabilistic optimum and equilibrium settings of the latter.

As a consequence, the deterministic dynamic aspects disappeared from the agenda until 1976, when David Rand suggested that oligopoly could be a candidate from economics for the application of the new dynamics based on topology and numerical methods that had been growing for quite a while, and had given exciting new perspectives on issues such morphogenesis in plants, the stability of the solar system, or prediction in meteorology.

After this beginning, the study of nonlinear dynamic systems in economics has been a fast-growing field, and oligopoly theory has been a substantial part of it, exploring many new and varied ideas. However, the researchers, often of an interdisciplinary origin, have been more interested in exploring analogies to models from other sciences known to produce spectacular results, than in exploring the actually existent heritage on the topic from economics proper. Main stream economists offered no competition as their interest was in perfect markets, optimal structures, equilibrium and stability, rather than in imperfections, multistability, and dynamics.

As a consequence the rich heritage from around 1940 was left as loose ends, so the present author feels it is worthwhile to reconsider and concentrate just on these loose ends in the light of the new dynamics.

Names that recur frequently in the sequel are von Stackelberg, Robinson, Palander, Hotelling, Wald, Lerner and Singer, in contributions that are sadly neglected.

The present book draws on numerous papers by its author with collaborators with provenance from the field of mathematics, whose work has been

indispensable for the results. Even if the present author alone is responsible for the formulation of the models, the interaction with professional mathematicians was indispensable for finding out which problems are possible to analyse and which are just too complicated; and which problems are likely to produce interesting results and which just result in trivialities. Such interaction back and forth, helps the economist to develop the model formulation.

The author wants to thank several of these collaborators, above all, Prof. *Laura Gardini*, Urbino, Profs. *Manuel Rùiz* and *José Cànovas*, Cartagena, Drs. *Iryna Sushko* and *Anastasiia Panchuk*, Kiev, Prof. *Anna Agliari*, Milano, and Dr. *Fabio Tramontana*, Ancona. Given the published articles focus on mathematics, with sometimes much too little economics intuition to explain the models, the present volume concentrates on economics, and aims at the traditional economist style of presentation, including interpretations of intermediate results whenever this is possible, rather than the Lemma, Theorem, Q.E.D. style.

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