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INDUSTRIAL ORGANISATION, IMPERFECT COMPETITION AND GAME THEORY

A Quest for Further Interaction

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A growing number of studies have been recently devoted to the conflictual and collusive aspects of the competitive process in our industrial economies. These aspects have been approached from various viewpoints, corresponding to different fields of research: namely, imperfect competition, industrial organisation and game theory. Cross-fertilisation between these disciplines has appeared to be very fruitful in these studies. However, need for further interaction is self-evident. Not only is there an increasing convergence on a common set of problems, but also an increasing convergence in methods and techniques. The number of papers which integrate the three approaches is growing from year to year. Although the proportions of the cocktail vary from one case to another according to the taste of the author, some unifying labels have been proposed to describe this evolution (*e.g.* New Industrial Organisation, Theoretical Industrial Organisation, . . .).

It is therefore an objective of the *European Economic Review* to begin here the publication of a series of special issues on the topic of 'Market Competition, Conflict and Collusion' by gathering the several approaches to this subject. This initiative is intended to reduce the still existing segmentation and to enhance cooperation and communication between the Theory of Imperfect Competition, Industrial Organisation and Game Theory.

The first three papers of this issue are concerned with market structure. Melvyn Fuss and Vinod Gupta use the duality between cost functions and production functions to estimate long-run average cost functions of several four-digit Canadian manufacturing industries. The authors generate two important measures of industrial structure: minimum efficient scale and relative cost disadvantage which, usually, are constructed on an 'ad hoc' basis. Partha Dasgupta and Joseph Stiglitz analyse the frequency with which technical innovations occur in a given industry, under alternative industrial structures, as well as the magnitude of such innovations when they do occur.

In particular, they discuss the conditions ensuring the existence of a steady state viewed as an intertemporal non-cooperative equilibrium. Among the conclusions the authors arrive at are: (a) that a monopolist, protected by entry barriers, engages in innovations less frequently than socially optimal, but that when it does, it undertakes more dramatic innovations; and (b) that a competitive industry engages in overly small innovations too frequently if the demand for its product is growing at a fast rate. Finally, Avner Shaked and John Sutton analyse a market for professional services in which consumers choose between the services of a professional group and those of a paraprofessional group offering a service of lower quality. Consumers are identical in preferences but are split into two income classes: 'rich' and 'poor' consumers. The 'viability' of the paraprofession is studied as a function of the degree of income differentiation. Sometimes increasing income differences reduces the viability of the paraprofession; over some alternative ranges of income differences, an increase in income heterogeneity enhances the viability of the paraprofession.

The game theoretic paper of Hervé Moulin, which formalises the notion of threat, is relevant to analyse some aspects of the firms strategies. The deterrence properties of various forms of threats lead him to a classification of two-person games. In particular, this classification enhances the difference between a duopoly situation in which there is competition for the first move and one in which there is competition for the second move. This analysis is first carried out in a general framework and then illustrated in a duopoly example with linear demand and a parametrised cost function. Another application of game-theoretic concepts is given by Louis Phlips and Jacques Thisse, who study the storage strategies of distributors, in a market with a single supplier. The application they have in mind is the Belgian nitrogen fertiliser market in which a single cartel announces each year a price schedule which is enforced during the coming twelve months. They propose to rationalise such price schedules, for finite horizon planning periods, under different assumptions concerning the demand on the final market.

Finally in his contribution Keith Cowling deals with the performance of a highly concentrated market structure, and the macroeconomic consequences of a high degree of monopoly power. In particular, the distribution of National Income between workers and capitalists is considered. He concludes that a declining share of profit is consistent with a rising degree of monopoly. This paper offers a new approach to the study of the capitalist industrial organisation leading to a growing oligopolistic structure.

We hope that this issue will succeed in stimulating interest in our proposal: further interaction