

# Aggregative Games: Markets and Contests:

This course focusses on two applications of aggregative games: Imperfect competition (emphasizing its welfare properties) and the theory of contests, that studies conflicts inside or among organizations. Parts denoted by an asterisk (\*) are optional and will be lectured only if time permits.

## GOALS:

The course has two goals: First, to provide an introduction to aggregative games. Second, to outline some possibilities of research.

## GRADING:

1. Assistance to all lectures and presentations is compulsory. Each lack of assistance rests one point to the final count.

2. I will give extra points for good questions. Silly comments will be disregarded with no punishment.

3. Each student must select a paper related with the topics covered in this course. I have veto power on which paper can be chosen, but other than that, students have complete freedom to choose. Presentations will be made at the end of the course, they will last an hour and will be graded between 0 and 10 points. Professional standards of presentation are expected.

4. Those who wish to increase their score can take a written exam with two questions. Each question asks for the presentation of a model and a description of its basic properties. Scores for each question range between minus one and three points. The student can choose the part or parts she/he will take

Questions on Imperfect Competition: Cournot model. Linear model of oligopoly with differentiated products. Spence-Dixit-Stiglitz model of monopolistic competition. Hotelling model. Salop model.

Questions on Contests: Symmetric contests under the Tullock and the Hirshleifer contest success functions. Asymmetric contests under the Tullock contest success function. The model of cooperative production.

## Introduction to Aggregative Games

**1. Introduction.** Aggregative games: Examples. Existence and uniqueness of Nash equilibrium of aggregative games. Comparative statics: global and local conditions.

Corchón, L. (2001). *Theories of Imperfectly Competitive Markets*. Springer-Verlag, 2<sup>nd</sup> edition. Chapter 1.

Cornes, R. and R. Hartley (2011). "Well-behaved Aggregative Games". WP.

## Welfare losses under Imperfect Competition

**2. Welfare Losses in Cournot Oligopoly.** Welfare losses for the linear model. More general demand. Welfare losses with fixed costs and heterogeneous firms. Effects of helping minor firms. Effects of concentration. Regulation with price caps. Welfare losses and the size of the economy.

Anderson, S.P. and R. Renault (2003). "Efficiency and Surplus Bounds in Cournot Competition". *Journal of Economic Theory* 113, 253-264.

Carvajal, A., R. Deb, J. Fenske and J. K.-H. Quah (2010). "A Revealed Preference Analysis of the Cournot Model". Mimeo. U. Oxford.

Corchón, L. (2001). *Theories of Imperfectly Competitive Markets*, op. cit. Chapter 3, Sections 1-4.

Corchón, L. (2008). "Welfare Losses under Cournot Competition". *International Journal of Industrial Organization* 26, 1120-1131.

Corchón, L. and F. Marcos (2010). "Price Regulation in Oligopoly". Working Paper 10-01 Dept. Economics, U. Carlos III.

**3. Welfare Losses in Oligopoly with Heterogeneous Goods.** Welfare losses in the linear model with identical firms: The role of markups and elasticities. Welfare losses with asymmetric firms: The role of concentration. Welfare losses and monopolistic competition: large economies and perfect competition.

Corchón, L. and G. Zudenkova (2009). "Computing Welfare Losses from Data under Imperfect Competition with Heterogeneous Goods". *International Journal of Industrial Organization* 27, 646-654.

Dixit, A. K. and J. E. Stiglitz (1977). "Monopolistic Competition and Optimum Product Diversity". *American Economic Review* 67, 297-308.

Spence, M. (1976). "Product Selection, Fixed Costs, and Monopolistic Competition". *Review of Economic Studies* 43, 217-235.

#### **4. Welfare Losses under Horizontal and Vertical Differentiation.**<sup>(\*)</sup>

Welfare losses in the Hotelling model. Welfare losses in the Salop circular model. Welfare losses under vertical differentiation.

D'Aspremont, C., Gabszewicz, J. J. and J.-F. Thisse (1979). "On Hotelling's Stability in Competition". *Econometrica* 47, 1145-1150.

Corchón, L. and G. Zudenkova (2010). "The Welfare Effects of Location and Quality in Oligopoly". WP 10-20, Dpt. Economics, U. Carlos III.

Economides, N. (1984). "The Principle of Minimum Differentiation Revisited". *European Economic Review* 24, 345-368.

Gabszewicz, J. J. and J.-F. Thisse (1979). "Price Competition, Quality and Income Disparities". *Journal of Economic Theory* 20, 340-359.

Salop, S. C. (1979). "Monopolistic Competition with Outside Goods". *Bell Journal of Economics* 10, 141-156.

**5. Dynamic Competition.** Supergames. The Folk Theorem. Dynamic games. Oligopolistic competition under the shadow of bankruptcy. Cooperation when agents might exit.

Beviá, C., L. Corchón and Y. Yasuda (2010). "Oligopolistic Equilibrium and Bankruptcy". Working Paper 11-10 Dept. Economics, U. Carlos III.

Fudenberg, D. and J. Tirole (1991). *Game Theory*, MIT Press.

Fujiwara-Greve, T. and Y. Yasuda (2011). "Repeated Cooperation with Outside Options". SSRN WP.

## Contests

**6. Contest Success Functions.** Definition of a contest. Workable contest success functions. The axiomatization by Skaperdas. The setting of a single decider: Non-cooperative foundations. Arbitration schemes.

Clark, D. and C. Riis (1998): "Contest Success Functions: An Extension". *Economic Theory*, 11, 201-204.

Corchón, L. (2007). "The Theory of Contests: a Survey". *Review of Economic Design* 11, 69–100.

Corchón, L. and M. Dahm (2010). "Foundations for Contest Success Functions". *Economic Theory*, 43, 1 81-98.

Skaperdas, S. (1996): "Contest Success Functions". *Economic Theory* 2, 283-290.

**7. Equilibrium and Comparative Statics of Contests.** Symmetric Contests: Existence of equilibrium, comparative statics and uniqueness. Asymmetric Contests: Basic properties in a special case.

Corchón, L. (2007). "The Theory of Contests: a Survey", op. cit.

Cornes, R., and R. Hartley (2005). "Asymmetric Contests with General Technologies." *Economic Theory*, 26, 4, 923-946.

Perez-Castrillo, D. and T. Verdier (1992): "A General Analysis of Rent-Seeking Games". *Public Choice*, 73, 335-50.

**8. Welfare Properties of Contests.** Welfare losses of monopoly and the Coase theorem in rent-seeking societies. The design of optimal contests. The case of cooperative production. Commitment problems.

Beviá, C. and L. Corchón (2009). "Cooperative Production and Efficiency". *Mathematical Social Sciences* 57, 2, 143-154.

Corchón, L. (2007). "The Theory of Contests: a Survey", op. cit.

Corchón, L. and M. Dahm (2011). "Welfare Maximizing Contest Success Functions when the Planner Cannot Commit". *Journal of Mathematical Economics* (forthcoming).

**9. Dynamic Contests<sup>(\*)</sup>.** Two stage contests. Incentives to precommitment. Who should play first? Grand Contests. Endogenous strength.

Baik, K. and J. Shogren (1992). "Strategic Behavior in Contests: Comment" *American Economic Review*, 82, 1, 359-362.

Corchón, L. and C. Beviá (2011). "Endogenous Strength in Conflicts". Working Paper 11-13 Dept. Economics, U. Carlos III.

Dixit, A. (1987). "Strategic Behavior in Contests". *American Economic Review*, 77, 5, 891-898.

Klumpp, T. and M. Polborn (2006). "Primaries and the New Hampshire Effect". *Journal of Public Economics* 90, 1073-1114.

Konrad, K. (2010). "Dynamic Contests". Discussion Paper SP II 2010 –10, Wissenschaftszentrum Berlin.

**10. War.** Rationalist explanations for wars. Consequences of wars. Are democracies more or less prone to wars than autocracies? How to avoid war.

Beviá, C. and L. Corchón (2010). "Peace Agreements without Commitment". *Games and Economic Behavior*, 68, 469–487.

Bueno de Mesquita, B., Smith, A., Siverson, R., and J. Morrow (2003). *The Logic of Political Survival*. The MIT Press.

Corchón, L. and A. Yildizparlak (2011). "Give Peace a Chance: The Effect of Incomplete and Imperfect Information on Mediation". Working Paper 11-14 Dept. Economics, U. Carlos III.

Garfinkel, M. and S. Skaperdas (2007). "Economics of Conflict: An Overview." T. Sandler and K. Hartley (ed.), *Handbook of Defense Economics*, N. Holland.

Jackson, M. and M. Morelli (2007). "Political Bias and War." *American Economic Review* 97, 4, 1353-1373.

Jackson, M. and M. Morelli (2009). "The Reasons for Wars. An Updated Survey". C. Coyne (ed.) *Handbook on the Political Economy of War*, Elgar.