Florida International University

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ECO7116

Microeconomic Theory II

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***Course objectives***

In this course we will study non-cooperative game theory and apply it to model imperfectly competitive markets and the economics of information.

***Course Requirements***

Mid term exam (30%), Final exam (40%), Problem sets (30%)

***Books***

*Required:* Jean Tirole, 1989, *The theory of industrial organization* (MIT Press)

*Highly recommended*: Gibbons, 1992, *Game theory for applied economists* (Princeton University Press).

*Related books:*

Paul Belleflamme and Martin Peitz, 2015, *Industrial organization*, 2nd ed. (MIT Press). This book updates Tirole and contains empirical results.

Fudenberg and Tirole, 1990, *Game theory* (MIT); an advanced game theory textbook.

***Course outline and readings***

This syllabus is not a finished product. I may add more readings, depending on the progress we make.

**1. Game theory basics**

Required readings:

Tirole, Ch. 11, pp. 423 - 432

Recommended:

Rubinstein, 1995, John Nash: the master of economic modeling, *Scandinavian Journal of Economics*

Gul, 1997, A Nobel prize for game theorists: the contributions of Harsanyi, Nash and Selten, *Journal of Economic Perspectives*

Myerson, 1999, Nash equilibrium and the history of economic theory, *Journal of Economic Literature.*

Glicksberg, 1952, A further generalization of the Kakutani Fixed Point Theorem, with applications to Nash equilibrium points, *Proceedings of the American mathematical Society* 3

John Nash, 1951, Non-cooperative games, *Annals of Mathematics* 54, 286–295

# R. Selten, 1975, Reexamination of the perfectness concept for equilibrium points in extensive games,” *International Journal of Game Theory* 4, 25–55.

Chen, Friedman, Thisse, 1997, Boundedly rational Nash equilibrium: a probabilistic choice approach, *Games and Economic Behavior*

Empirical

Palacios-Huerta, I., 2003, Professionals play minimax, *Review of Economics Studies (RES)*

**2. Standard oligopoly models**

Required: Tirole ch. 5

Singh and Vives, 1984, Price and quantity competition in a differentiated duopoly, *Rand Journal of Economics*

Recommended

Dixit, 1986, Comparative statics for oligopoly, *International Economic Review*

Krishna, 1989, Trade restrictions as facilitating practices, *Journal of International Economics*

Andersson, Argenton and Weibull, 2014, Robustness to strategic uncertainty in price competition, *Games and Economic Behavior*

Salant et al., 1983, Losses from horizontal merger : the effects of an exogenous change in industry structure on Cournot-Nash equilibrium, QJE

Denecere, Davidson, 1985, Incentives to form coalitions with Bertrand competition, *Rand Journal of Economics*

**3. Product differentiation and non-price competition**

Required: Tirole, ch. 7.

Recommended:

Hotelling, 1929, Stability in competition, *Economic Journal.*

Salop, 1979, Monopolistic competition with outside goods, *Bell Jouornal of Economics*

d’Aspremont, Gabszewicz, Thisse, 1979, On Hotelling’s “Stability in competition,” *Econometrica*

Thisse, Vives, 1988, On the strategic choice of spatial price policy, AER

De Palma et al., 1988, The principle of minimum differentiation holds under sufficient heterogeneity, *Econometrica*

Irman, Thisse, 1998, Competition in multi-characteristics space: Hotelling was almost right, JET

Gabszewicz, Thisse, 1979, Price competition, quality and income disparities, JET

Gabszewicz, Thisse, On the nature of competition with differentiated products, *Economic Journal*

Grossman, Shapiro, 1984, Informative advertising with differentiated products, RES

Klemperer, 1987, Markets with consumer switching costs, QJE

Shaked, Sutton, 1982, Relaxing price competition through product differentiation, JIndE

Shaked, Sutton, 1983, Natural oligopolies, *Econometrica*

Cremer, Marchand, Thisse, 1989, The public firm as an instrument for regulating an oligopolistic market, *Oxford Economic Papers.*

Cremer, Marchand, Thisse, 1991, Mixed oligopoly with differentiated products, IJIO

**4. Entry deterrence and accommodation**

Required: Tirole, ch 8.

Recommended: theory

Dixit, 1980, The role of investment in entry deterrence, *Economic Journal*

Gabszewicz, Thisse, 1982, Entry (and exit) in a differentiated industry, JET

Amir and Stepanova, 2006, Second-mover advantage and price leadership in Bertrand duopoly, *Games and Economic Behavior*

Recommended: emprical

Pavan et. al., 2020, strategic entry and potential competition: evidence from compressed gas fuel retail, *International Journal of Industrial Organization*

**5. Research and development**

Required: Tirole, ch. 10

Dasgupta, Stiglitz, 1980, Uncertainty, industrial structure, and the speed of R&D, *Bell Journal of Economics*

Recommended

Dasgupta, Stiglitz, 1980, Uncertainty, industrial structure, and the speed of R&D, *Bell Journal of Economics*

d’Aspremont and Jacquemin, 1988, Cooperative and non-cooperative R&D with spillovers, *AER*

Gilbert, Newbery, 1982, Preemptive patenting and the persistence of monopoly, AER

Kamien et al., 1992, Research joint ventures and R&D cartels, AER

Lee, Wilde, 1980, Market structure and innovation: a reformulation, QJE

Lowry, 1979, Market structure and innovation, QJE

Reinganum, 1983, Uncertain innovation and the persistence of monopoly, AER

Miyagiwa and Wan, 2016, Innovation and the merger paradox, *Economics Letters*

**6. Timing games and technology adoption**

Required:

Hoppe, 2002, The timing of new technology adoption: theoretical models and empirical evidence, Manchester School

Further readings: applications

Bilodeau and Slivinski, 1996, Toilet cleaning and department chairing: volunteering a public service, *Journal of Public Economics*

Fudenberg and Tirole, 1985, Preemption and rent equalization in the adoption of new technology, *RES (\*)*

Ghamawat and Nalebuff, 1984, Exit, *RAND*

Katz and Shapiro, 1987, R&D rivalry with licensing or imitation, AER

Riordan, 1992, Regulation and preemptive technology adoption, Rand

Reinganum, 1981, On the diffusion of new technology: a game theoretic approach, RES

Ozdenoren, Hoppe-Wewetzer, and Katsenos, 2021, Experimentation, learning, and preemption, CEPR DP13484

Hoppe, 2000, Second-mover advantages in the strategy adoption of new technology under uncertainty, IJIO

Hoppe and Lehmann-Grube, Second-mover advantages in dynamic quality competition, JEMS

Milliou and Perakis, 2011, Timing of technology adoption and product market competition, IJIO

Smirnov and Wait, 2015, Innovation in a generalized timing game, IJIO

Miyagiwa and Wan, 2021,

Empirical

Lerner and Wulf, 2007, Innovation and incentives: evidence from corporate R&D, REStat.

**7. Repeated games and tacit collusion**

Required: Tirole, ch 6

Recommended: theory

Abreu, 1988, on the theory of infinitely repeated games with discounting, *Econometrica*,

Abreu, Dutta, and Smith, 1994, The Folk Theorem for repeated games: A NEU condition,” *Econometrica* 62, 939–948

Bloch, 1996, Sequential formation of coalitions in game with fixed payoff divisions, GAEB

Recommended: applications

Abreu, 1986, Extremal equilibria of oligopolistic supergames, *Journal of Economic Theory*

Rotemberg and Saloner, 1986, A supergame theoretic models of price wars during booms, AER

Green and Porter, 1984, Non-cooperative collusion under imperfect price information, *Eonometrica*

Bernheim and Whinston, 1990, Multimarket contact and collusive behavior, RAND Journal

Bernheim and Whinston, 1998, Exclusive dealings, JPE

**8: Static games of incomplete information**

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Required: Tirole, ch. 11, pp.432-436; ch. 9, pp. 362-364.

Recommended

Spulber, D. F., 1995, Bertrand competition when rivals’ costs are unknown, *Journal of Industrial Economics*

Fudenberg and Tirole, 1986, A theory of exit in duopoly, *Econometrica.*

Suggested: math

John C. Harsanyi, 1967, Games with Incomplete Information Played by ‘Bayesian’ Players, I-III,” *Management Science* 14, 159–182, 320–334, 486–502 (JSTOR)

John C. Harsanyi, “Games with randomly disturbed payoffs: a new rationale for mixed-strategy equilibrium points,” *International Journal of Game Theory* 2 (1973), 1-23

**9. Dynamic games of incomplete information**

Required: Tirole: ch. 11, pp. 436-453; ch. 9, pp. 365 ~

Recommended: theory

Fudenberg and Tirole, 1991, Perfect Bayesian equilibrium and sequential equilibrium, *JET*

Kreps and Wilson, 1982, Sequential equilibria, *Econometrica*

In-Koo Cho and David M. Kreps, 1987, “Signaling games and stable equilibria, *Quarterly Journal of Economics*

Jeffrey S. Banks and Joel Sobel, 1987, Equilibrium selection in signaling games, *Econometrica*

### Recommended: Applications

Milgrom and Roberts, 1982, Limit pricing and entry under incomplete information: an equilibrium analysis, *Econometrica*

Vesterlund, L., 2002, The informational value of sequential fundraising, *Journal of Public Economics*

Hoppe and Ozdenoren, 2005, Intermediation in innovation, IJIO

**10. Monopoly**

Required: Tirole, ch. 0, pp. 51-55, chaps 1-4.

Suggested:

Baron and Myerson, 1982, Regulating a monopoly with unknown costs, *Econometrica*

Musa and Rosen, 1978, Monopoly and quality, *Journal of Economic Theory*

**11. Networks**

Required: Tirole ch. 10 pp. 404~

Recommended

Economides 1996, The economics of networks, IJIO

Farrell and Saloner, 1985, Standardization, compatibility and. innovation, *Rand Journal of Economics*

Farrell and Saloner, 1986, Installed base and compatibility; innovation product preannouncement and predation, AER

Kats and Shaoiro, 1985, Network externalities, competition and compatibility, AER

Kats and Shaoiro, 1986, Technology adoption in the presence of network externalities, AER

**12. Market intermediation**

Recommended:

Spulber 1999, Market microstructure: intermediaries and the theory of the firm (Cambridge U)

Caillard and Julien, 2003, Chicken & egg: competition among intermediation service providers, *Rand Journal of Economics*

Armstrong, 2006, competition in two-sided markets, *Rand Journal of Economics*

Rochet and Tirole, 2006, Two-sided markets: a progress report, *Rand Journal of Economics*