

THE UNIVERSITY OF MARYLAND
COLLEGE PARK MARYLAND

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ECONOMICS 662

August 27, 2018

Office Hours: Thursday 12:30-1:45.

COURSE OUTLINE AND READING LIST

REQUIRED TEXT:

J. Tirole, *The Theory of Industrial Organization*, Cambridge: MIT Press, 1988.
Vives, Xavier. *Oligopoly Pricing: Old Ideas and New Tools*. MIT Press. 1999.

OTHER USEFUL SOURCES:

Kwoka, John and L. White. *The Antitrust Revolution*. Oxford University Press. 2014.
Fudenberg, D. and J. Tirole. *Game Theory*. MIT Press. 1991.
F.M. Scherer, *Industrial Market Structure and Economic Performance*, 3rd Edition,
Houghton Mifflin, 1990.
Gellhorn, E. and W. Kovacic. *Antitrust Law and Economics in a Nutshell*. Fifth Edition,
West Group. 2004.

PREREQUISITES: ECON603 and ECON604.

EVALUATION:

Tydings 1108, T-Th: 11-12:30

A number of non-graded problem sets will be distributed for the students to try for themselves. The questions on the exam will be closely based on these problems, so I urge you to understand them as fully as possible. Grades will be based on one final exam (70%) which will be a take home exam given out on the final day of classes and due approximately three days later.

The remaining 30% will be assigned through an antitrust consultant project. I would like you to select a current or recent antitrust case, analyse the economic issues that relate to it and develop *a model* that either supports or defends a side in the case. Here are some recent cases that you might consider:

ATT/Time Warner INC
Comcast/Time Warner Cable
ATT/DirectTV
Burger King/ Tim Horton's
Fresh Fields/Wild Oats

Google/DoubleClick
Oracle/PeopleSoft merger
Lepages v. 3M
UPM/MacTac merger
GE/Honeywell
NBC/Comcast
USDOJ investigation of Verizon Wireless/SpectrumCo Arrangement
ATT/TMobile Merger
USDOJ versus Apple (Book publishers and Kindle)
XM/Sirius Merger
Live Nation/Ticket Master merger
US Airways/American Airlines Merger

You may also choose cases from recent news developments.. The emphasis is on model building. I want simple theoretical models that support an economic argument. You are responsible for finding any evidence you need to create a case though I am happy to help to extent possible. Given that information on various cases may be limited, I also am willing to allow some selective evidence creation. I will expand on this as the course proceeds (note: consultant creation of evidence is not a generally recognized best practice). **PLEASE consult with me no later than Thursday, Nov. 8 about your proposed topic.**

Alternatively, students may choose to write a *referee report project*. Each student will select a paper from the syllabus (to be selected with my consent). They will read it carefully and write a referee report on the paper as if it were presented to a journal for publication for the first time.

The report should be at least three and no more than five pages. A referee report should

- i) describe the issue and model addressed in the paper;
- ii) explain why the issue is interesting and important;
- iii) provide a critique of the weaknesses and strengths of the paper.

The report is to be typed up and submitted to me electronically. In addition, the student will construct a problem set question along with a solution to the problem that is based on the model in the paper.

1. TOOLS (Not covered in lectures)

*Vives, *Oligopoly Pricing*, Chapter 2.

*Fudenberg, D. and J. Tirole. *Game Theory*. Chapters 1,3,8.

Tirole: Chapter 11

Kreps and Wilson, A Sequential Equilibrium@, *Econometrica*, 50. Pp. 854-894.

Kreps, D., *A Course in Microeconomic Theory*, Princeton U.P., 1990. Chapters 11-13.

Debreu, G. *Theory of Value*, Yale University Press, 1959.

Varian, H. *Microeconomic Analysis*, Third Edition, W.W. Norton, 1992.

Dixit, A. *Optimization in Economic Theory*, Second Edition, Oxford University Press, 1990.

2 MONOPOLY

2.1 Monopoly: Introduction

<http://econ-server.umd.edu/~vincent/lectnotes/ioln1.pdf>

*Tirole: Chapter 1.

Nalebuff, Barry. "Competing Against Bundles", in *Incentives, Organization, and Public Economics*, edited by P. Hammond and G. Myles. Oxford: Oxford University Press, 2000.

http://faculty.som.yale.edu/barrynalebuff/CompetingAgainstBundles_Incentives2000.pdf

2.2 Monopoly: Price Discrimination

2.2a) General Discussions:

<http://econ-server.umd.edu/~vincent/lectnotes/ioln2.pdf>

*Tirole: Chapters 2.1, 2.2, 3.

Varian, H., "Price Discrimination", in *HIO*.

Mussa, M., and S. Rosen. "Monopoly and Product Quality", *Journal of Economic Theory* 18 2 (1978): 301-317.

Salop, S., "The Noisy Monopolist: Imperfect Information, Price Dispersion and Price Discrimination", *REStud.* 44 3 (1977): 393-406.

Katz, M. "The Welfare Effects of Third-Degree Price Discrimination in Intermediate Goods Markets", *American Economic Review* 77, 1, (1987): 154-167.

Nahata, B., K. Ostaszewski and P. Sahoo . "Direction of price changes in third-degree price discrimination" *American Economic Review* 80 (1990):1254-1258.

Varian, H. " Price Discrimination and Social Welfare", *American Economic Review* 75,4,(1985): 870-875.

*Schmalensee, R. " Output and Welfare Implications of Monopolistic Third Degree Price Discrimination" *American Economic Review* 71 1, (1981): 242-247.

Stole, Lars. "Price Discrimination and Imperfect competition." Draft (2006)

Schwartz, Marius . "The Perverse Effects of the Robinson-Patman Act", *Antitrust Bulletin*, Fall. 1986.

<http://faculty.chicagobooth.edu/lars.stole/papers/pdce.pdf>

2.2b) Specific Examples:

<http://econ-server.umd.edu/~vincent/lectnotes/ioln2a.pdf>

Ausubel, L., and R. Deneckere. "Durable Goods Monopoly with Incomplete Information", *REStud.* 59 4 (1992) 795-812.

- Bulow, J., "Durable-Goods Monopolists", *JPE* 90,2 (1982): 314-332.
- Conlisk, Gerstner and Sobel, "Cyclic Pricing by a Durable Goods Monopolist", *Quarterly Journal of Economics* 99: 489-505. 1984.
- Fudenberg, D. Levine, and J. Tirole, "Infinite Horizon Models of Bargaining with Incomplete Information", in *Game Theoretic Models of Bargaining*, (A.Roth ed.) pp. 73-98. Cambridge University Press, Cambridge, 1986.
- Gul, F. "Noncooperative Collusion in Durable Goods Oligopoly", *Rand J Econ.* 18 (1987): 248-254.
- **Gul, F., H. Sonnenschein, and R. Wilson. "Foundations of Dynamic Monopoly and the Coase Conjecture", *Journal of Economic Theory* 39 1 (1986): 155-190.
- Kolay, S., G. Shaffer and J. Ordovery. "All-Units Discounts in Retail Contracts" *Journal of Economics and Management Strategy*, 13 3 (2004).
- *Oi, W., "A Disneyland Dilemma: Two-Part Tariffs for a Mickey Mouse Monopoly", *Quarterly Journal of Economics* 85 1 (1971): 77-96.
- Stokey, N., "Rational Expectations and Durable Goods Pricing, *BellJE* 12,1 (1981): 112-28.
- Vincent, Daniel. "Bargaining with common values", *Journal of Economic Theory* 48 1 (1989): 47-62.

2.3 Monopoly: Product Choice and Product Differentiation

2.3a) Product Differentiation:

<http://econ-server.umd.edu/~vincent/lectnotes/ioln3.pdf>

*Tirole: Chapters 2.1, 2.2, 3.

* Caplin, A. and B. Nalebuff, "Aggregation and Imperfect Competition: On the Existence of Equilibrium", *Econometrica*, 59 1 (1991): 25-59.

Spence, M. "Product Selection, Fixed Costs, and Monopolistic Competition", *ReStud.* 43 (1976): 217-235.

Dixit, A. and J. Stiglitz. "Monopolistic Competition and Optimum Product Diversity", *American Economic Review* 67 3 (1977):297-308.

2.3b) Bundling:

<http://econ-server.umd.edu/~vincent/lectnotes/ioln4.pdf>

Adams, W.J. and J. Yellen, "Commodity Bundling and the Burden of Monopoly", *Quarterly Journal of Economics*, 90 (1976): 475-98.

Bakos, Yannis and Brynjolfsson, E. "Bundling Information Goods: Pricing, profits and Efficiency." *Management Science*, 45 12 (1999).

*Deskalakis, C., Deckelbaum, A. and C. Tzamos. "Strong Duality for a Multiple-Good Monopolist", (2014), <http://arxiv.org/pdf/1409.4150.pdf>.

*Manelli, A. and Daniel R. Vincent. "Optimal Bundling by A Multiproduct Monopolist", *Journal of Economic Theory*, 127 1 (2006):1-35.

*Manelli, A. and Daniel R. Vincent. "Multi-Dimensional Mechanism Design: Revenue Maximization and the Multiple-Good Monopolist", *Journal of Economic Theory*, 137 1 (2007):153-185.

Mathewson, F. and R. Winter. "Tying as a Response to Demand Uncertainty", *Rand J*

Econ. (1997): 566-582.

*McAfee, R.P., J. McMillan, and M. Whinston. "Multi-product Monopoly, Commodity Bundling and Correlation of Values", *Quarterly Journal of Economics*, 104 2 (1989): 371-383.

Stigler, G. J. "A Note on Block Booking". In G.J. Stigler (ed.) *The Organization of Industries*. Homewood, Ill.: Irwin.

3. OLIGOPOLY

3.1 Classical Oligopoly Theory

<http://econ-server.umd.edu/~vincent/lectnotes/ioln5.pdf>

*Tirole: Chapter 5

* Vives, *Oligopoly Pricing*, Chapters 4 and 5.

Shapiro, C., "Theories of Oligopoly Behavior", in *HIO*, Section 2.

Novshek, W., "On The Existence of Cournot Equilibrium", *REStud.* 52,1 (1985): 85-98.

Novshek, W., "Cournot Equilibrium with Free Entry", *REStud.* 47 (1980): 473-486.

Kreps, D., and J. Scheinkman. "Quantity Precommitment and Bertrand Competition Yield Cournot Outcomes", *BellJE* 14,2 (1983): 326-337.

Davidson, C., and R. Deneckere. "Long-run Competition in Capacity, Short-run Competition in Price, and the Cournot Model", *Rand J Econ.* 17 3 (1986): 404-415.

Klemperer, P.D., and M. Meyer. "Supply Function Equilibria in Oligopoly Under Uncertainty", *Econometrica* 57 6 (1989): 1243-1277.

Scherer: Chapters 6-7.

Vives, X., "On the Efficiency of Bertrand and Cournot Equilibria with Product Differentiation", *Journal of Economic Theory* 36 1 (1985): 166-175.

3.2 Oligopoly --Horizontal Mergers

<http://econ-server.umd.edu/~vincent/lectnotes/ioln6new.pdf>

* <http://ftc.gov/os/2010/08/100819hmg.pdf>

<http://www.ipwatchdog.com/2010/08/22/ftc-doj-revise-horizontal-merger-guidelines/id=12157/> (commentary)

*Salant, S., Switzer, S. and R.Reynolds. "Losses from Horizontal Merger: The Effects of an Exogenous Change in Industry Structure on Cournot-Nash Equilibrium", *Quarterly Journal of Economics*, XCVII 2 (1983): 185-199.

Porter, R. and M. Perry. "Oligopoly and the incentive for horizontal merger". *American Economic Review* 75 (1985): 219- 227.

McAfee, RP and M. Williams. "Horizontal mergers and antitrust policy". *Journal of Industrial Economics*. June 1992.

Farrell, J. and C. Shapiro. "Horizontal mergers: An equilibrium analysis". *American Economic Review* 80 1 (1990.): 107-126. (Plus comment and reply by Werden and Farrell and Shapiro, *American Economic Review* 81 4 (1991).)

Farrell, J. and C. Shapiro. "Asset Ownership and Market Structure in Oligopoly." *Rand J Econ.* 21 (1990).

- Farrell, J. and C. Shapiro. “Antitrust Evaluation of Horizontal Mergers”” *The B.E. Journal of Theoretical Economics* 10, 1 (2010).
<http://faculty.haas.berkeley.edu/shapiro/alternative.pdf>
- Farrell, J. and C. Shapiro. “Improving Critical Loss Analysis.” *Antitrust Source* (2008).
- Katz, M. and C Shapiro. “Critical Loss, Let’s Tell the Whole Story”, *Antitrust*, Spring 2003.
- Salinger, M. “The Meaning of ‘Upstream’ and ‘Downstream’ and the implications for Modeling Vertical Mergers.” *Journal of Industrial Economics* XXXVII, 4 (1989): 373-387.

3.3 Oligopoly –Logit and Multinomial Logit Models of Imperfect Competition

<http://econ-server.umd.edu/~vincent/lectnotes/ioln5b.pdf>

*Vives: Chapter 6.

- A. Caplin and B. Nalebuff, “Aggregation and Imperfect Competition: On the existence of equilibrium”, *Econometrica* 59,1(1991), pp 25-59.
- S. Anderson and A. DePalma, “Multiproduct Firms: A Nested Logit Approach”, *Journal of Industrial Economics*, XL, no. 3(1992), pp 261-276.
- Kononov and Z. Sandors, “On Price Equilibrium with Multi-Product Firms”, *Economic Theory* 44,2(2010), pp 271-292.

4. DYNAMIC OLIGOPOLY

4.1 Dynamic Oligopoly -- Theory and Framework

<http://econ-server.umd.edu/~vincent/lectnotes/ioln7.pdf>

*Tirole: Chapters 8,9.

- Bulow, J., J. Geanakoplos, and Klemperer, P., “Multimarket Oligopoly: Strategic Substitutes and Complements”, *JPE* 93,3 (1985): 488-511.
- Fudenberg, D., and J. Tirole. “The Fat-cat Effect, the Puppy-dog Ploy, and the Lean and Hungry Look”, *American Economic Review* 74 2 (1984): 361-366.

4.2 Dynamic Oligopoly -- Examples

4.2a) General Applications:

*Tirole: Chapters 8,9

- Matutes, C., and P. Regibeau. Mix and Match=: Product Compatibility Without Network Externalities”, *RJE* 19,2 (1988): 221-234.

4.2b) Bundling as Entry Deterrence:

(% denotes can be found at <http://www.econ.umd.edu/~vincent/foreclosure/>)

<http://econ-server.umd.edu/~vincent/lectnotes/ioln8b.pdf>

- Carbajo, J. De Meza, D. and D. Seidman.. “A Strategic Motivation for Commodity Bundling”. *Journal of Industrial Economics*, 38. (1990): 283-98.%
- Director, Aaron and . Levi.. Law and the Future: Trade regulation, *Northwestern University Law Review*, 51 (1956.): 281-96.

- Farrell, Joseph. "A Simple Price-Theory Model of Anti-competitive Exclusive Dealing." Mimeo. 2004%
- Greenlee, P. D. Reitman and D. Sibley. "An Antitrust Analysis of Bundled Loyalty Discounts". USDOJ, EAG 04-13 Discussion Paper. 2004.%
- Kolay, S. G. Shaffer and J. Ordovery. "All-Units Discounts in Retail Contracts" *Journal of Economics and Management Strategy*, 13,3. 2004.
- Mathewson, F. and R. Winter. "Tying as a Response to Demand Uncertainty", *Rand J Econ.* (1997): 566-582.
- Mills, David E. "Market Share Discounts", University of Virginia, mimeo, 2004.%
- Nalebuff, Barry. "Bundling as an Entry Barrier", *Quarterly Journal of Economics*, CXIX, No. 1. (2004): 159-188.
- Nalebuff, Barry. "Bundling as a way to leverage Monopoly", Yale School of Management, WP #36. 2004.%
- Nalebuff, Barry. "Exclusionary Bundling. Mimeo. 2004?%"
- Rasmusen, E. J. Ramseyer, and J Wiley. "Naked Exclusion", *American Economic Review*, 81 5 (1991): 1137-1145.
- Segal, I and M. Whinston, "Naked Exclusion: A Comment". *American Economic Review*, 90 1 (2000).
- Westport Taxi V. Westport Transit District, 664 A.2d (Conn 1995).
- *Whinston, M. "Tying, Foreclosure and Exclusion", *American Economic Review*, 80, no. 4, (1990): 838-859.

4.3 Dynamic Oligopoly -- An Application to Google-Yahoo!

Krishna, K. "Trade Restrictions as a Facilitating Device", *Journal of International Economics*, 1989.

4.4 Dynamic Oligopoly -- Entry, Exit and Predation

4.3a) Theory:

<http://econ-server.umd.edu/~vincent/lectnotes/ioln8new.pdf>

Cho, I-K., and D. Kreps. "Signaling Games and Stable Equilibria", *Quarterly Journal of Economics*, 102,2 (1987): 179-221.

Dixit, A., "A Model of Duopoly Suggesting a Theory of Entry Barriers", *BJE* 10,1 (1979): 20-32.

*Milgrom, P., and J. Roberts. "Limit Pricing and Entry Under Incomplete Information: An Equilibrium Analysis", *Econometrica* 50,2 (1982): 443-459.

Selten, R., "The Chain-store Paradox", *Theory and Decision* 9 (1978): 127-159.

5. REPEATED OLIGOPOLY: COLLUSION

<http://econ-server.umd.edu/~vincent/lectnotes/ioln9new.pdf>

*Tirole: Chapter 6.

Shapiro, C., "Theories of Oligopoly Behaviour", in *HIO*, Section 3.

- Friedman, J., "A Non-cooperative Equilibrium for Supergames", *REStud.* 38,1 (1971): 1-12.
- Abreu, D., "On the Theory of Infinitely Repeated Games With Discounting", *Econometrica* 56,2 (1988): 383-396.
- Fudenberg, D., and E. Maskin. "The Folk Theorem in Repeated Games with Discounting or with Incomplete Information", *Econometrica* 54,3 (1986): 533-554.
- Green, E. J. , and R. Porter. "Noncooperative Collusion Under Imperfect Price Information", *Econometrica* 52,1 (1984): 87-100.
- Porter, R., "A Study of Cartel Stability: The Joint Executive Committee 1880-1886", *BellJE* 14,2 (1983): 301-314.

6. INDUSTRIAL ORGANIZATION IN COMPETITIVE ECONOMIES

<http://econ-server.umd.edu/~vincent/lectnotes/ioln10new.pdf>

*Tirole: Introduction

Scherer. Chapter 1, Chapter 3.

Stigler, G. *The Organization of Industry*, Irwin, 1968.

Dunne, T., M. Roberts and L. Samuelson. "Pattern of Firm Entry and Exit in U.S. Manufacturing Industries", *Rand J Econ.* 19 4 (Winter,1988): 495-515.

_____, "The Growth and Failure of U.S. Manufacturing Plants", *Quarterly Journal of Economics* 104 4 (November 1989): 671-698.

**Jovanovic, B., "Selection and the Evolution of Industry", *Econometrica* 50,3 (May 1982): 649-670.

Hopenhayn, H., "Entry, Exit and Firm Dynamics in Long run Equilibrium", *Econometrica* 60,5 (September 1992): 1127-50.

Lucas, R., "On the Size Distribution of Firms", *BellJE* 9, (1978): 508-523.

7. VERTICAL RESTRAINTS: RAISING RIVALS COSTS

<http://econ-server.umd.edu/~vincent/lectnotes/ioln8b.pdf>

Rasmusen, E. J. Ramseyer, and J Wiley. "Naked Exclusion", *American Economic Review* 81 5 (1991): 1137-1145.

Segal, I and M. Whinston, "Naked Exclusion: A Comment". *American Economic Review* 90 1 (2000)

Aghion, P. and P. Bolton. "Contracts as Barriers to Entry", *American Economic Review* 77 3 (1987): 388-401.

Olover, J., Saloner, G. and S. Salop. "Equilibrium Vertical Foreclosure", *American Economic Review* 80 1 (1990): 127-142.

Reiffen, D. "Equilibrium Vertical Foreclosure: Comment", *American Economic Review* 82 3 (1992): 694-697.

Mathewson, F and R. Winter. "The Competitive Effects of Vertical Agreements: Comment", *American Economic Review* 77 5 (1987): 1057-1062.

8. MULTILATERAL BARGAINING: "Nash-in-Nash" Analysis

- Collard-Wexler, Alan, Gowrisankaran, G., and R. Lee., “Nash-in-Nash Bargaining: A Micro-foundation for Applied Work”, *Working Paper* (2016). Link.
- Chipty, T. and C.M. Snyder. “The Role of Firm Size in Bilateral Bargaining: A Study of the Cable Television Industry”, *ReStat*. 81(2) (1999): 326-340.
- Horn, H. and A. Wolinsky. “Bilateral Monopolies and Incentives for Merger”, *Rand Journal of Economics*., 19(3) (1988): 408-419.
- Rogerson, W.P. “Vertical Mergers in the Video Programming and Distribution Industry: The Case of Comcast-NBCU”, in *The Antitrust Revolution*, 7th Edition, e. by J. E. Kwoka and L. J. White. Oxford University Press. (2014).

9. ECONOMICS OF TWO-SIDED MARKETS

- <http://econ-server.umd.edu/~vincent/lectnotes/ioln12.pdf>
- Armstrong, Mark. “Competition in Two-Sided Markets”, *Rand J Econ*. 37(3) (2006): 539-570.
- Rochet, J.C and Jean Tirole. “Cooperation among competitors: Some economics of payment cards systems”, *Rand J. of Econ* 33(4), (2002): 539-570.
- Rochet, J.C and Jean Tirole. “Two-sided markets: A progress report”, *Rand J. of Econ* 37(3), (2006): 645-667.
- Rysman, Marc. “The economics of two-sided markets”, *Journal of Econ. Perspectives* 23 (3) (2009): 125-143.
- Schwarz, M. and D. Vincent., “The no-surcharge rule and buyer rebates: Vertical control by a payments network”, *Review of Network Econ* 5(1) (2006).
- Wright, J. “Optimal payment cards systems”, *Eur. Econ Review* 47,(2003): 587-612.

10. PRICE DISCRIMINATION AND IMPERFECT COMPETITION

- <http://econ-server.umd.edu/~vincent/lectnotes/ioln11.pdf>
- *Armstrong, M. and J. Vickers. “Competitive Nonlinear Pricing and Bundling” *Rand Journal* 77 1, (2010): 30-60.
- *Armstrong, M. and J. Vickers. “Competitive Price Discrimination” *Rand Journal* 32 4, (2001): 579-605.
- Gans, J. and S. King. “Paying for Loyalty: Product Bundling in Oligopoly”, *Journal of Industrial Economics*, 54 1, (2006):43-62.
- Stole, Lars. “Price Discrimination and Imperfect competition.” Draft (2006)
<http://faculty.chicagobooth.edu/lars.stole/papers/pdce.pdf>
- Thisse, J-F. and X. Vives “On the strategic choice of spatial price policy,” *American Economic Review* 78 (1988): 122-137.

11. NETWORK EFFECTS AND COMPATIBILITY

- Farrell, J., and G. Saloner. “Installed Base and Compatibility: Innovation, Product Preannouncements, and Predation”, *American Economic Review* 76 5 (1986):

940-955.

Farrell, J., H. Monroe and G. Saloner. "The Vertical Organization of Industry; Systems Competition versus Component Competition.", *JEMS* Vol. 7, no. 2, Summer 1998.

Farrell, J., and C. Shapiro. "Dynamic Competition with Switching Costs", *Rand J Econ.* 19 1 (1988): 123-137.

Katz, M., and C. Shapiro. "Network Externalities, Competition, and Compatibility", *American Economic Review* 75 3 (1985): 424-440.

Klemperer, P., "Markets with Consumer Switching Costs", *Quarterly Journal of Economics* 102,2 (1987): 375-394.

Klemperer, P., "The Competitiveness of Markets with Switching Costs", *Rand J Econ.* 18, no. 1 (Spring, 1987): 138-150.

_____, "Price Wars Caused By Switching Costs", *REStud.* 56,3 (1989): 405-420.

12. RESEARCH AND DEVELOPMENT

Reingenaum, J., "Dynamic Games of Innovation", *Journal of Economic Theory* (1981): 21-41.

*Tirole: Chapter 10.

Katz, M., and C. Shapiro. "On the Licensing of Innovations", *Rand J Econ.* 16 4 (1985): 504-520.

_____, "R&D Rivalry with Licensing or Imitation", *American Economic Review* 77 3 (1987): 403-420.

Fudenberg, D., R. Gilbert, J. Stiglitz, and J. Tirole. "Preemption, Leapfrogging and Competition in Patent Races", *European Economic Review* 22 (1983): 3-31.

Harris, C., and J. Vickers. "Perfect Equilibrium in a Model of a Race", *REStud.*, 52,2 (1985): 193-209.

Choi, J.P.. "Tying and Innovation: A Dynamic Analysis of Tying Arrangements", Mimeo May, 1998.