

THE UNIVERSITY OF MARYLAND  
COLLEGE PARK MARYLAND

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**ECONOMICS 662**

September 1, 2015

Office Hours: Thursday 12:30-2:00.

**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.  
R. Schmalensee and R.D. Willig (eds.), *Handbook of Industrial Organization*,  
Amsterdam: North-Holland, 1989.  
Gellhorn, E. and W. Kovacic. *Antitrust Law and Economics in a Nutshell*. Fourth Edition,  
West Group. 1994.

**EVALUATION:**

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:

Comcast/Time Warner  
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).

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.

Fudenberg, D. and J. Tirole, "Perfect Bayesian Equilibrium and Sequential Equilibrium," *Journal of Economic Theory* 53 (1991), 236-260.

Tirole: Chapter 11

Fudenberg and Tirole, in HIO, Chapter 5.

Kreps and Wilson, ASequential 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

\*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](http://faculty.som.yale.edu/barrynalebuff/CompetingAgainstBundles_Incentives2000.pdf)

### 2.2 Monopoly: Price Discrimination

#### 2.2a) General Discussions:

\*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.

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

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

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

#### 2.2b) Specific Examples:

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. Ordober. "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:

- \*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:

- 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

\*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://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.

Reynolds, R. and B. Snapp, “The Economic Effects of Partial Equity Interests and Joint

## 4. DYNAMIC OLIGOPOLY

### 4.1 Dynamic Oligopoly -- Theory and Framework

\*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.

Riordan, M. “Imperfect Information and Dynamic Conjectural Variations”, *Rand J Econ.* 16 1 (1985): 41-50.

Shapiro, C. “Theories of Oligopoly Behaviour”. *HIO*, Section 4.

### 4.2 Dynamic Oligopoly -- Examples

#### 4.2a) General Applications:

\*Tirole: Chapters 8,9

Fershtman, C., and K. Judd. “Equilibrium Incentives in Oligopoly”, *American Economic Review* 77 5 (1987): 927-940.

Brander, J., and B. Spencer. “Export Subsidies and International Market Share Rivalry”, *JIE* 18, 1/2 (1985): 83-100.

Krugman, P., “Import Protection as Export Promotion”, in Kierzkowski, H. *Monopolistic Competition and International Trade*, Oxford: Clarendon Press, 1984. pp. 180-193.

Fudenberg, D., and J. Tirole. “Capital as a Commitment: Strategic Investment to Deter Mobility”, *JET* 31,2 (1983): 227-250.

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/>)

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:

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.

Gilbert, R., "Mobility Barriers and the Value of Incumbency", in *HIO*.

Ghemawat, P., and B. Nalebuff. "Exit", *RJE* 16,2 (1985): 184-194.

Gilbert, R., and X. Vives. "Entry Deterrence and the Free Rider Problem", *REStud.* 53,1 (1986): 71-83.

Harrington, J., "Limit Pricing when the Potential Entrant is Uncertain of its Cost Function", *Econometrica* 54,2 (1986): 429-437.

\*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.

##### 4.3b) Legal Issues:

Bolton, Patrick, Joseph Brodley and M. Riordan. "Predatory Pricing: Strategic Theory and legal Policy." *Georgetown Law Journal*, 88 (2000).

Klevorick, A. "The Current State of the Law and Economics of Predatory Pricing". *American Economic Review, Papers and Proceedings*, 83 2. (1993).

Milgrom, P. and John Roberts. "New Theories of Predatory Pricing." In Bonanno, G. and D. Brandolini, *Industrial Structure in the New Industrial Economics*. Oxford, 1990.

## 5. REPEATED OLIGOPOLY: COLLUSION

\*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., "Optimal Cartel Trigger Price Strategies", *JET* 29 2 (1983): 313-338.

\*Porter, R., "A Study of Cartel Stability: The Joint Executive Committee 1880-1886", *BellJE* 14,2 (1983): 301-314.

Abreu, D., D. Pearce, and E. Stacchetti. "Optimal Cartel Equilibria with Imperfect Monitoring", *JET* 39 1 (1986): 251-269.

Rotemberg, J., and G. Saloner. "A Supergame-Theoretic Model of Price Wars During Booms", *American Economic Review* 76 3 (1986): 390-407.

## 6. INDUSTRIAL ORGANIZATION IN COMPETITIVE ECONOMIES

\*Tirole: Introduction

\*Schmalensee, R. "Interindustry Studies of Structure and Performance", in R. Schmalensee and R.D. Willig (eds.), *Handbook of Industrial Organization*, Amsterdam: North-Holland, 1989.

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

Katz, M. Vertical Contractual Relations. In *Handbook of Industrial Economics*, Vol. 1, Edited by R. Schmalensee and R.D. Willig. Elsevier Science Publishers, 1989. Pp. 655-721.

McAfee, R.P. and M. Schwartz. "Opportunism in Multilateral Vertical Contracting:



- Nondiscrimination, Exclusivity and Uniformity.” *American Economic Review* 84 (1994).
- Krattenmaker, T. and S.Salop. “Raising Rivals= Costs to Achieve Power over Price”, *The Yale Law Journal*, Vol. 96, No. 2 (1986): 209-293.
- Riordan, M. “Anticompetitive Vertical Integration by a Dominant Firm”, *American Economic Review*, 88 5 (1998): 1232-1248.
- 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.
- \*Odoover, 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. 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.

## 9. 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.

## 10. ECONOMICS OF TWO-SIDED MARKETS

- 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.

## 11. PRICE DISCRIMINATION AND IMPERFECT COMPETITION

- \*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.