Fall 2021

ECON 5301 F – Industrial Organization I Department of Economics Carleton University

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Please note that tests and examinations in this course will use e-proctoring services provided by Scheduling and Examination Services; you can find more information here and here. Please also note that students are required to have webcans.

1 Course Information

Instructor: Konstantinos Metaxoglou

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Phone: 613-520-2600 (EXT. 3755)

E-mail and website: https://brightspace.carleton.ca
Lectures: Tuesday, 2:35pm-5:25pm (via Zoom)
Office hours: Tuesday, 8:30am-9:30am (via Zoom)

2 Course Description

We will examine theories pertaining to industrial organization (IO) and their application in empirical studies. The course will also introduce students to empirical methods in IO and competition policy.

3 References

There is no required textbook for this course. I provide below useful references for Industrial Organization, Econometrics, Numerical Methods/Optimization, and Writing.

3.1 Industrial Organization

1. P. Belleflamme and M. Peitz (2015), "Industrial Organization: Markets and Strategies," 2nd Edition, Cambridge University Press.

- 2. D.W. Carlton and J.M. Perloff (2005), "Modern Industrial Organization," 4th Edition, Pearson.
- 3. J. Church and R. Ware, "Industrial Organization: A Strategic Approach," Boston: Irwin McGraw-Hill 1999, available online at http://homepages.ucalgary.ca/~jrchurch/page4/page4.html
- 4. P. Davis and E. Garces (2009), "Quantitative Techniques for Competition and Antitrust Analysis," Princeton University Press.
- 5. S. Martin (2010), "Industrial Organization in Context," Oxford University Press.
- 6. S. Martin (2001), "Advanced Industrial Economics," 2nd Edition, Oxford University Press.
- 7. M. Motta (2003), "Competition Policy: Theory and Practice," Cambridge University Press.
- 8. L. Pepall, D.J. Richards and G. Norman (2014), "Industrial Organization: Contemporary Theory and Empirical Applications," 5th Edition, Willey.
- 9. J.M. Perloff, L.S. Karp and A. Goal (2007), "Estimating Market Power and Strategies," Cambridge University Press.
- 10. J. Tirole (1988), "Theory of Industrial Organization," MIT Press.
- 11. X. Vives (2001), "Oligopoly Pricing: Old Ideas and New Tools," MIT press.
- 12. Handbook of Antitrust Economics, P. Buccirossi (ed.), 2008, MIT press.
- 13. Handbook of Industrial Organization, Vol. 1–3, North-Holland.

3.2 Econometrics

- 1. J. Angrist and J.S. Pischke (2009), "Mostly Harmless Econometrics," Princeton University Press. See also http://www.mostlyharmlesseconometrics.com/.
- 2. J. Angrist and J.S. Pischke (2015), "Mastering Metrics," Princeton University Press. See also http://www.http://masteringmetrics.com/.
- 3. A.C. Cameron and P.K. Trivedi (2005), "Microeconometrics: Methods and Applications," Cambridge University Press. See also http://cameron.econ.ucdavis.edu/mmabook/mma.html.
- 4. A.C. Cameron and P.K. Trivedi (2010), "Microeconometrics Using Stata," Revised Edition, Cambridge University Press. See also http://cameron.econ.ucdavis.edu/musbook/mus.html.
- 5. J.H. Stock and M.W. Watson (2011), "Introduction to Econometrics," 3rd Edition, Pearson.
- 6. K. Train (2009), "Discrete Choice Methods with Simulation," 2nd Edition, Cambridge University Press. See also http://eml.berkeley.edu/books/choice2.html.

- 7. J.M. Wooldridge (2008), "Econometric Analysis of Cross Section and Panel Data," 2nd Edition, MIT Press.
- 8. J.M. Wooldridge (2013), "Introductory Econometrics: A Modern Approach," 5th Edition, South-Western.
- 9. Handbook of Econometrics, Vol. 1–6, North-Holland. Selected chapters.

3.3 Numerical Methods/Optimization

- 1. K.L. Judd (1998), "Numerical Methods in Economics," MIT Press.
- 2. M.J. Miranda and P.L. Fackler (2002), "Applied Computational Economics and Finance," MIT Press. See also http://www4.ncsu.edu/~pfackler/compecon/.
- 3. J. Nocedal and S.J. Wright (2006), "Numerical Optimization," Second Edition, Springer.
- 4. W.H. Press et al. (2007), "Numerical Recipes: The Art of Scientific Computing," Third Edition, Cambridge University Press. See also http://numerical.recipes/.
- 5. W.Y. Yang et al. (2005), "Applied Numerical Methods Using MATLAB," Willey.

3.4 Writing

- 1. The Chicago Manual of Style, 16th Edition, Chicago University Press. Also available online through the university's library.
- 2. J.H. Cochrane (2005), "Writing Tips for Ph.D. Students," University of Chicago.
- 3. P. Dudenhefer (2009), "A Guide to Writing in Economics," Duke University.
- 4. R. Neugeboren and M. Jacobson (2005), "Writing Economics," Harvard University.
- 5. D.M. McCloksey (2000), "Economical Writing," 2nd Edition, Waveland Press.

4 Course Delivery

The lectures will be delivered synchronously via Zoom during the scheduled time. Please note that the lectures will NOT be recorded.

5 Lecture Topics

The list of topics below is tentative. The topics covered and papers discussed may change during the term depending on how the class evolves. A reading list, which includes additional references, is available in the end of the outline. T: Theory, E: Empirical, P: Papers discussed.

- T: Belleflamme and Peitz Ch.2
- E: Introduction to empirical IO
- P: AngPis2010, EinLev2010, KniMet2016, NevWhi2010

Topic 2

- T: Belleflamme and Peitz Ch.3
- E: Empirical methods for estimating market power
- P: Bre1987, GenMul1998, Nev2001, DelWar2012, DelSco2016

Topic 3

- T: Belleflamme and Peitz Ch.4
- E: Estimating models of entry
- P: BerRei2007, BerWal1999, Ber1992, EllMis2011

Topic 4

- T: Belleflamme and Peitz Ch.6
- E: Estimating demand models in practice
- P: Ber1994, BLP1995, ConGor2020, KniMet2014, Nev2000a

Topic 5

- T: Belleflamme and Peitz Ch.14
- E: Empirical methods for analyzing colluion/cartel damages
- P: ACEX2021, ByrDeRoos2013, IgaSug2021, Por1983

- T: Belleflamme and Peitz Ch.15
- E: Merger simulation in practice
- P: AshHos2010, BjoVer2016, Nev2000b, WeiHos2013

- T: Belleflamme and Peitz Ch.17
- E: Empirical methods for analyzing vertical relationships
- P: BreVer2006, Has2004, HorSyv2007, Saa2005

6 Evaluation

Each student's grade will be calculated using the following instruments and weights:

Instrument	Weight
Four assignments (7.5% each)	30%
Presentation	10%
Paper summary	10%
Critical assessment	10%
Final comprehensive exam	40%
Total	100%

Assignments: They must be typed and submitted in PDF format via Brightspace on the due date prior to the beginning of the lecture. Please follow the convention Last Name-First Name.pdf (e.g., Metaxoglou-Konstantinos.pdf) to name the files you upload. You must provide a cover page with your information that you will be able to download from Brightspace. The assignments will contain several questions and will have both a theoretical and an empirical component. I will not accept late assignments. The tentative due dates are: Sep-28, Oct-19, Nov-16, Dec-07.

Presentation: You will consult with me about an empirical IO paper that you will present via Zoom on one of the following two dates: Oct-12 and Nov-02. The length of your presentation will depend on the total number of students. You will be randomly assigned to present on one of the two dates. You will need to submit your presentation in PDF format via Brightspace on the day of the presentation prior to the beginning of the lecture. Please follow the convention Last Name-First Name.pdf to name the file you upload.

Paper Summary: You will consult with me about an empirical IO paper for which you will submit a 1-page typed summary in PDF format via Brightspace no later than the date of the last class. Please follow the convention Last Name-First Name.pdf to name the file you upload.

Critical Assessment: You will consult with me about an empirical IO paper for which you will write a critical assessment similar to a referee report for an academic journal no later than the date of the last class. Your assessment should be typed and submitted in PDF format via Brightspace. Please follow the convention Last Name-First Name.pdf to name the file you upload.

Final comprehensive examination: The 3-hour final examination will be online and it will take place during the formal examination period at a time set by the university. The final exam will be subject to e-proctoring. Students who do not write the final examination due to circumstances beyond their control may apply to write a deferred final examination. In order to write a deferred final examination, students must contact the Registrar's Office (for further details, see Section 4.3 of the Academic Regulations of the University in the 2021-2022 Undergraduate Calendar). In the event that a student writes a deferred examination, the deferred examination will carry the same weight as the final examination in determining the course grade.

Note: Submissions of assignments, presentations, summaries, and critical assessments, that are either late or do not comply with the directions above, will NOT be accepted. Please plan accordingly.

7 Regrading

Students seeking reappraisal of their grades should contact the instructor within a week after they receive their grades. Students are required to send an e-mail to the instructor with the subject "ECON 5301-REQUEST FOR REGRADING" explaining the reason(s) for requesting a reappraisal of their grades.

Note: Reappraisals that do not conform to this standard will not be considered.

8 Plagiarism

Please be aware that plagiarism is a serious offense at Carleton and should be recognized and avoided. For further information on how to do so, please see "Pammett on Plagiarism and Paraphrasing" at www.carleton.ca/economics/courses/writing-preliminaries.

9 Requests for Academic Accommodation

You may need special arrangements to meet your academic obligations during the term. For an accommodation request, the processes are as follows:

Pregnancy obligation

Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website at carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf.

Religious obligation

Please contact your instructor with any requests for academic accommodation during the first

two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website at carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf.

Academic Accommodations for Students with Disabilities

If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or pmc@carleton.ca for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. For additional details, see carleton.ca/pmc.

Survivors of Sexual Violence

As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and is survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit carleton.ca/sexual-violence-support.

Accommodation for Student Activities

Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more information, see https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf.

For more information on academic accommodation, please contact the departmental administrator or visit students.carleton.ca/course-outline.

10 Reading List

- [1] V. Aguirregabiria and M.Slade. 2017. "Empirical Models of Firms and Industries," *Canadian Journal of Economics*, 50, 1445–1488. **AguSla2017**
- [2] D. Ackerberg, C.L. Benkard, S. Berry, and A. Pakes. 2007. "Econometric Tools for Analyzing Market Outcomes," *Handbook of Econometrics*, 6A (63), 4171–4276. **Acketal2005**
- [3] J.D. Angrist and J-S. Pischke. 2010. "The Credibility Revolution in Empirical Economics: How Better Research Design is Taking the Con out of Econometrics," *Journal of Economic Perspectives*, 24, 3–30. **AngPis2010**

- [4] L. Einav and J. Levin. 2010. "Empirical Industrial Organization: A Progress Report," *Journal of Economic Perspectives*, 24(2), 145–162. EinLev2010
- [5] L. Kaplow and C. Shapiro. 2007. "Antitrust," Handbook of Industrial Organization, 2(15), 1073– 1225. KapSha2007
- [6] C.R. Knittel and K. Metaxoglou. 2016. "Working with Data: Two Empiricists' Experience," *Journal of Econometric Methods*, Forthcoming. **KniMet2016**.
- [7] C.R. Knittel and K. Metaxoglou. 2014. "Estimation of Random-Coefficient Demand Models," *Review of Economics and Statistics*, 96(1), 34–59. **KniMet2014**
- [8] M. Manzon and J. Manez. 2016. "Production Function Estimation in Stata Using the Ackerberg-Caves-Frazer Method," *Stata Journal*, 16(4), 900–916. **ManMan2016**
- [9] W.K. Newey and D. McFadden. 1994. "Large Sample Estimation and Hypothesis Testing," *Handbook of Econometrics*, 4(36), 2111–2245. **NewMcf1994**
- [10] A. Nevo and M.D. Whinston. 2010. "Taking the Dogma out of Econometrics: Structural Modeling and Credible Inference," *Journal of Economic Perspectives*, 24(2), 69–82. **NevWhi2010**
- [11] P. Reiss and F.A. Wolak. 2007. "Structural Econometric Modeling: Rationales and Examples from Industrial Organization," *Handbook of Econometrics*, 6A (64), 4277–4415. **ReiWol2007**
- [12] P. Rey and J. Tirole. 2007. "A Primer on Foreclosure," *Handbook of Industrial Organization*, 3 (33), 2145–2220. **ReyTir2007**
- [13] C. Shapiro. 1989. "Theories of Oligopoly Behavior," *Handbook of Industrial Organization*, 1 (6), 329–414. **Sha1989**
- [14] M.D. Whinston. 2007. "Antitrust Policy Toward Horizontal Mergers," Handbook of Industrial Organization, 3 (36), 2369–2440. Whi2007

- [1] T.F. Bresnahan. 1987. "Competition and Collusion in the American Automobile Industry: The 1955 Price War," *Journal of Industrial Economics*, 35(4), 457–482. **Bre1987**
- [2] K. Clay and W. Troesken. 2003. "Further Tests of Static Oligopoly Models: Whiskey, 1882-1898," *Journal of Industrial Economics*, 51(2), 151–166. **ClaTro2003**
- [3] J. De Loecker and P.T. Scott. "Estimating Market Power: Evidence from the US Brewing Industry" NBER Working Paper 22957. **DelSco2016**
- [4] J. De Loecker and J. Eeckhout and G. Unger. 2020. "The Rise of Market Power and the Macroeconomic Implications," *Quarterly Journal of Economics*, 135(2), 561–644. **DEU2020**
- [5] J. De Loecker and F. Warzynski. 2012. "Markups and Firm-Level Export Status," *American Economic Review*, 102(6), 2437–2471. **DelWar2012**

- [6] D. Genesove and W.P. Mullin. 1998. "Testing Static Oligopoly Models: Conduct and Cost in the Sugar Industry, 1890-1914," *Rand Journal of Economics*, 29(2), 355–377. **GenMul1998**
- [7] B. Hershbein and C. Macaluso and C. Yeh. "Monopsony in the U.S. Labor Market," Working Paper. **HMY2020**
- [8] D. Kim and C.R. Knittel. 2006. "Biases in Static Oligopoly Models? Evidence from the California Electricity Market," *Journal of Industrial Economics*, 54(4), 451–470. **KimKni2006**
- [9] M. Morlacco. "Market Power in Input Markets: Theory and Evidence from French Manufacturing," *Working Paper*. **Mor2020**
- [10] A. Nevo. 2001. "Measuring Market Power in the Ready-to-Eat Cereal Industry," *Econometrica*, 69(2), 307–342. **Nev2001**
- [11] D. Raval. "Testing the Production Approach to Markup Estimation," Working Paper. Rav2020
- [12] C. Rojas. 2008. "Price Competition in U.S. Brewing," *Journal of Industrial Economics*, 56(1), 1–31. **Roj2008**
- [13] M. Rubens. "Market Structure, Oligopoly Power, and Productivity," Working Paper. Rub2021
- [14] M. E. Slade. 2004. "Market Power and Joint Dominance in U.K. Brewing," *Journal of Industrial Economics*, 52(1), 133–163. **Sla2004**

- [1] S.T. Berry. 1992. "Estimation of a Model of Entry in the Airline Industry," *Econometrica*, 60(4), 889–917. **Ber1992**
- [2] S.T. Berry and P. Reiss. 2007. "Empirical Models of entry and Market Structure," *Handbook of Industrial Organization*, 3 (29), 1845–1886. **BerRei2007**
- [3] S.T. Berry and J. Waldfogel. 1999. "Free Entry and Social Inefficiency in Radio Broadcasting," *Rand Journal of Economics*, 30(3), 397–420. **BerWal1999**
- [4] T.F. Bresnahan and P.C. Reiss. 1991. "Entry and Competition in Concentrated Markets," *Journal of Political Economy*, 99(5), 977–1009. **BreRei1991**
- [5] B.J. Bronnenberg and S.K.Dhar and J.P. Dube. 2009. "Entry and Competition in Concentrated Markets," *Journal of Political Economy*, 117(1), 87–115. BDB2009
- [6] T.F. Bresnahan and P.C.Reiss. 1990. "Entry in Monopoly Markets," *The Review of Economic Studies*, 57(4), 531–553. **BreRei1990**
- [7] F. Ciliberto and E. Tamer. 2009. "Market Structure and Multiple Equilibria in airline markets," *Econometrica*, 77(6), 1791–1828. **CilTam2009**
- [8] P.B. Ellickson and S.Misra. 2011. "Estimating Discrete Games," *Marketing Science*, 30(6), 997–1010. **EllMis2011**

- [9] M.J. Mazzeo. 2002. "Product Choice and Oligopoly Market Structure," Rand Journal of Economics, 33(2), 221–242. Maz2002
- [10] K. Seim. 2006. "An Empirical Model of Firm Entry with Endogenous Product-Type Choices," *Rand Journal of Economics*, 37(3), 619–640. **Sei2006**
- [11] E. Tamer. 2003. "Incomplete Simultaneous Discrete Response Model with Multiple Equilibria," *Review of Economic Studies*, 70(1), 147–165. **Tam2003**

- [1] S.T. Berry. 1994. "Estimating Discrete-Choice Models of Product Differentiation," *Rand Journal of Economics*, 25(2), 242-262. **Ber1994**
- [2] S.T. Berry and J. Levinsohn and A. Pakes. 1995. "Automobile Prices in Market Equilibrium," *Econometrica*, 63(4), 841-890. **BLP1995**
- [3] S.T. Berry and J. Levinsohn and A. Pakes. 1999. "Voluntary Export Restraints on Automobiles: Evaluating a Trade Policy," *American Economic Review*, 89(3), 400-430. **BLP1999**
- [4] C. Conlon and G. Gortmaker. "Best practices for differentiated products demand estimation with PyBLP," *Rand*, 51, 1108-1161. **ConGor2020**
- [5] J.P. Dube and J.T. Fox and C.L. Shu. 2012. "Improving the Numerical Performance of Static and Dynamic Aggregate Discrete Choice Random Coefficients Demand Estimation," *Econometrica*, 80, 2231-2267. **DFS2012**
- [6] J. Hausman and G. Leonard and J.D. Zona. 1994. "Competitive Analysis with Differentiated Products," *Annales d'Economie et de Statistique*, 34, 159-180. **HLZ1994**
- [7] A. Nevo. 2000. "A Practitioner's Guide to Estimation of Random-Coefficients Logit Models of Demand," *Journal of Economics & Management Strategy*, 9(4), 513–548. **Nev2000a**

- [1] S. Assad and R. Clark and D. Ershov and L. Xu. 2021. "Algorithmic Pricing and Competition: Empirical Evidence from the German Retail Gasoline Market," *Working Paper*. **ACEX2021**
- [2] D.P. Byrne and N. DeRoos. 2019. "Learning to Coordinate: A Study in Retail Gasoline," *American Economic Review*, 109(2), 591–619. **ByrDeRoos2013**
- [3] F.C. Ciliberto and J.W. Williams. 2014. "Learning to Coordinate: A Study in Retail Gasoline," *Rand Journal of Economics*, 45(4), 764–791. CilWil2014
- [4] R. Clark and J.F. Houde. 2013. "Collusion with Asymmetric Retailers: Evidence from a Gasoline Price-Fixing Case," *AEJ Microeconomics*, 5(3), 97–123. **ClaHou2013**
- [5] G. Ellison. 1994. "Theories of Cartel Stability and the Joint Executive Committee," Rand Journal of Economics, 25(1), 37–57. Ell1994

- [6] E.J. Green and R.H. Porter. 1984. "Noncooperative Collusion under Imperfect Price Information," *Rand Journal of Economics*, 52(1), 87–100. **GrePor1984**
- [7] M. Igami and T. Sugaya. 2021. "Measuring the Incentive to Collude: The Vitamin Cartels, 1990–1999," *Review of Economic Studies, forthcoming*. **IgaSug2021**
- [8] J.J. Rotemberg and G. Saloner. 1986. "A Supergame-Theoretic Model of Price Wars During Booms," *American Economic Review*, 76(3), 390–407. **RotSal1986**
- [9] R.H. Porter and J.D. Zona. 1999. "Ohio School Milk Markets: An Analysis of Bidding," *Rand Journal of Economics*, 30(2), 263–288. **PorZon1999**
- [10] R.H. Porter. 1983. "A Study of Cartel Stability: The Joint Executive Committee, 1880-1896," *The Bell Journal of Economics*, 14(2), 301–314. **Por1983**

- [1] O. Ashenfelter and D. Hosken. 2010. "The Effect of Mergers on Consumer Prices: Evidence from Five Mergers on the Enforcement Margin," *Journal of Law & Economics*, 53(3), 417–466. **AshHos2010**
- [2] J. Björnerstedt and F. Verboven. 2016. "Does Merger Simulation Work? Evidence from the Swedish Analgesics Market," *American Economic Journal: Applied Economics*, 8(3), 125–164. **BjoVer2016**
- [3] O. Budzinski and I. Ruhmer. 2009. "Merger Simulation in Competition Policy: A Survey," Journal of Competition Law & Economics, 6(2), 277–319. BudRuh2009
- [4] M. Ivaldi and F. Verboven. 2005. "Quantifying the Effects from Horizontal Mergers in European Competition Policy," *International Journal of Industrial Organization*, 23, 669–691. **IvaVer2005**
- [5] A. Nevo. 2000. "Mergers with Differentiated Products: The Case of the Ready-to-Eat Cereal Industry," *Rand Journal of Economics*, 31(3), 395–421. **Nev2000b**
- [6] M. C. Weinberg and D. Hosken. 2013. "Evidence on the Accuracy of Merger Simulations," *The Review of Economics and Statistics*, 95(5), 1584–1600. **WeiHos2013**

- [1] E. Atalay and A. Hortacsu and C. Syverson. 2014. "Vertical Integration and Input Flows," *American Economic Review*, 104(4), 1120–1148. **Ask2015**
- [2] J. Asker. 2016. "Diagnosing Foreclosure due to Exclusive Dealing," *Journal of Industrial Economics*, 64(3), 375–410. **Ask2015**
- [3] R. Brenkers and F. Verboven. 2006. "Liberalizing a Distribution System: The European Car Market," *Journal of the European Economic Association*,, 4(1), 216–251. **BreVer2006**

- [4] J. A. Chevalier and F. M. Scott Morton. 2008. "State Casket Sales Restrictions: A Pointless Undertaking?," *Journal of Law & Economics*,, 51(1), 1–23. **CheSco2008**
- [5] T. Chipty. 2001. "Vertical Integration, Market Foreclosure, and Consumer Welfare in the Cable Television Industry," *American Economic Review*, 91(3), 428–453. Chi2001
- [6] J. Hastings. 2004. "Vertical Relationships and Competition in Retail Gasoline Markets: Empirical Evidence from Contract Changes in Southern California," American Economic Review, 94, 317-328. Has2004
- [7] A. Hortaçsu and C. Syverson. 2007. "Cementing Relationships: Vertical Integration, Foreclosure, Productivity, and Prices," *Journal of Political Economy*, 115(2), 250–301. **HorSyv2007**
- [8] T.R. Saas. 2005. "The Competitive Effects of Exclusive Dealing: Evidence from the U.S. beer industry," *International Journal of Industrial Organization*, 100, 1277–1279. **Saa2005**