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Fall 2023  
ECON 5301 F – Industrial Organization I  
Department of Economics  
Carleton University

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## 1 Course Information

**Instructor:** Konstantinos Metaxoglou  
**Office:** D-893 LA  
**Phone:** 613-520-2600 (EXT. 3755)  
**E-mail and website:** <https://brightspace.carleton.ca>  
**Lectures:** Tuesday and Thursday, 8:35am–9:55am  
**Office hours:** TBA

**Course Location:** Log into Carleton Central to view the location on your timetable.

## 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 Learning Outcomes

The students are expected to develop understanding of basic theory and empirical methods in IO and competition policy.

## 4 References

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

## 4.1 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.ualgary.ca/~jrchurch/page4/page4.html>
4. P. Davis and E. Garces (2009), "Quantitative Techniques for Competition and Antitrust Analysis," Princeton University Press.
5. M. Motta (2003), "Competition Policy: Theory and Practice," Cambridge University Press.
6. L. Pepall, D.J. Richards and G. Norman (2014), "Industrial Organization: Contemporary Theory and Empirical Applications," 5th Edition, Wiley.
7. J.M. Perloff, L.S. Karp and A. Goal (2007), "Estimating Market Power and Strategies," Cambridge University Press.
8. J. Tirole (1988), "Theory of Industrial Organization," MIT Press.
9. X. Vives (2001), "Oligopoly Pricing: Old Ideas and New Tools," MIT press.
10. Handbook of Antitrust Economics, P. Buccirossi (ed.), 2008, MIT press.
11. Handbook of Industrial Organization, Vol. 1-3 , North-Holland.

## 4.2 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," Second Edition, Stata Press. See also <https://www.stata-press.com/books/microeconometrics-stata/>.
5. B.E. Hansen (2022), "Econometrics," Princeton University Press. See also <https://www.ssc.wisc.edu/~bhansen/econometrics/>.
6. J.H. Stock and M.W. Watson (2011), "Introduction to Econometrics," 3rd Edition, Pearson.

7. K. Train (2009), "Discrete Choice Methods with Simulation," 2nd Edition, Cambridge University Press. See also <http://eml.berkeley.edu/books/choice2.html>.
8. J.M. Wooldridge (2008), "Econometric Analysis of Cross Section and Panel Data," 2nd Edition, MIT Press.
9. J.M. Wooldridge (2013), "Introductory Econometrics: A Modern Approach," 5th Edition, South-Western.
10. Handbook of Econometrics, Vol. 1–6, North-Holland. *Selected chapters*.

### 4.3 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," Wiley.

### 4.4 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. McClockey (2000), "Economical Writing," 2nd Edition, Waveland Press.

## 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.

### Topic 1

- 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, BHKZ2021, DLW2012, DLEU2020, HMY2022, Nev2001,**

## 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 collusion/cartel damages
- P: **ACEX2021, ByrDeRoos2013, IgaSug2021, Por1983**

## Topic 6

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

## Topic 7

- 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 (8.75% each)	35%
Presentation	12.5%
Paper summary	12.5%
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. The tentative due dates are as follows: Sep-21, Oct-12, Nov-09, and Dec-07.

**Presentation:** You will consult with me about an empirical IO paper for which you will submit a 15-minute recorded presentation and slides. You will submit your *recorded presentation* in MP4 format and your slides in PDF format via Brightspace on Nov-16. Please follow the convention Last Name-First Name.pdf and Last Name-First Name.mp4 to name the files 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.

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

**Final comprehensive exam:** The 3-hour final exam will take place during the formal examination period at a time and location set by the university. Students who do not write the final exam due to circumstances beyond their control may apply to write a deferred final exam. In order to write a deferred final exam, students must contact the Registrar's Office. In the event that a student writes a deferred exam, the deferred exam will carry the same weight as the final exam in determining the course grade.

## 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

You are responsible for reading and knowing the information about plagiarism, Carleton University resources, and academic accommodations found [here](#).

## 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 [here](#).

### **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 [here](#).

### **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](mailto: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 [here](#).

### **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, see [here](#).

### **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 [here](#).

For more information on academic accommodation, please contact the departmental administrator or visit this [link](#).

## 10 Reading List

### Topic 1

- [1] V. Aguirregabiria and M. Slade. 2017. "Empirical Models of Firms and Industries," *Canadian Journal of Economics*, 50, 1445–1488. **AguSla2017**
- [2] D. Akerberg, 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] W.K. Newey and D. McFadden. 1994. "Large Sample Estimation and Hypothesis Testing," *Handbook of Econometrics*, 4(36), 2111–2245. **NewMcf1994**
- [9] 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**
- [10] P. Reiss and F.A. Wolak. 2007. "Structural Econometric Modeling: Rationales and Examples from Industrial Organization," *Handbook of Econometrics*, 6A (64), 4277–4415. **ReiWol2007**
- [11] P. Rey and J. Tirole. 2007. "A Primer on Foreclosure," *Handbook of Industrial Organization*, 3 (33), 2145–2220. **ReyTir2007**
- [12] M.D. Whinston. 2007. "Antitrust Policy Toward Horizontal Mergers," *Handbook of Industrial Organization*, 3 (36), 2369–2440. **Whi2007**

### Topic 2

- [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**
- S. Bond and A. Hashemi and G. Kaplan and P. Zoch. 2021. "Some unpleasant markup arithmetic: Production function elasticities and their estimation from production data," *Journal of Monetary Economics*, 121, 1–14. **BHKZ2021**
- [2] 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. **DLEU2020**
- [3] J. De Loecker and F. Warzynski. 2012. "Markups and Firm-Level Export Status," *American Economic Review*, 102(6), 2437–2471. **DLW2012**
- [4] M. De Ridder and B. Grassi and G. Morzenti. 2022. "The Hitchhiker's Guide to Markup Estimation," *Working paper*. **DRGM2022**
- [5] B. Hershbein and C. Macaluso and C. Yeh. 2022. "Monopsony in the U.S. Labor Market," *American Economic Review*, 112(7), 2099–2138. **HMY2022**
- [6] A. Nevo. 2001. "Measuring Market Power in the Ready-to-Eat Cereal Industry," *Econometrica*, 69(2), 307–342. **Nev2001**
- [7] D. Raval. "Testing the Production Approach to Markup Estimation," *Review of Economic Studies*, 2023(0), 1–20, **Rav2020**
- [8] M. Rubens. "Market Structure, Oligopoly Power, and Productivity," *American Economic Review Forthcoming*. **Rub2023**

### Topic 3

- [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. **BerRei1991**
- [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. **BerRei1990**



- [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. **ElMis2011**
- [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**

#### Topic 4

- [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 Journal of Economics*, 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**

#### Topic 5

- [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**

## Topic 6

- [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**

## Topic 7

- [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**