

Università Commerciale “Luigi Bocconi”  
PhD Program in Business Administration & Management

APPLIED BUSINESS ANALYSIS

Academic Year 2013-2014

**Instructors:** Alfonso Gambardella, Jay Horwitz

**STRUCTURE AND GOALS OF THE COURSE:** The goal of this course is to teach the students how to produce an empirical paper in business research using quantitative data. We cover some of the most widely used methodologies. The course will cover a (i) brief review of theory with an emphasis on intuition, (ii) applications of methods in published papers, and (iii) practical lessons for producing your own research.

**EXAM:** Take home practical applications of the topics studied in class. You will have from 9AM of May 30 to 11:59PM of May 31 to write the exam and email it back. The exam is open book but individual.

CLASSES / TOPICS

**CLASS 1 & 2: APRIL 7, 2014 (GAMBARDELLA)**

**1. Testing hypotheses using tables, figures, or stories**

- Kortum, S., and Lerner, J. (1999) “What is Behind the Recent Surge in Patenting”, *Research Policy*, 28: 1-22.
- Bresnahan, T. and Gambardella, A. (1998), “The Division of Inventive Labor and the Extent of the Market”, in Helpman, E. (ed.) *General Purpose Technologies and Economic Growth*, The MIT Press, Cambridge MA.

**2. Regressions that produce multiple correlations (no causality, but some attempts to identify with proxies or in more elaborate ways)**

- Arora, A. and Gambardella, A. (1994) “Evaluating Technological Information and Utilizing it,” *Journal of Economic Behavior and Organization* 24: 91-114.
- Bresnahan, T., Brynjolfsson, E. and Hitt, L. (2002) “Information Technology, Workplace Organization, and the Demand for Skilled Labor: Firm-Level Evidence,” *Quarterly Journal of Economics* CXVII, 339-376
- Bloom, N., Schankerman, M. and Van Reenen, J. (2013) “Identifying Technological Spillovers and Product Market Rivalry,” *Econometrica* 81 (4), 1347-1393, <http://www.stanford.edu/~nbloom/bsv.pdf>

**CLASS 3 & 4: APRIL 14, 2014 (GAMBARDELLA)**

**3. Causality**

**3.1 Theory**

- Ichino, A (2007) The Problem of Causality in Microeconomics, Slides 1-17 ([www2.dse.unibo.it/ichino/newcausa\\_1.pdf](http://www2.dse.unibo.it/ichino/newcausa_1.pdf))
- Imbens, G. (2014) “Instrumental Variables: An Econometricians’ Perspective,” NBER WP 19983 ([www.nber.org](http://www.nber.org))
- Bascle, G. (2008) “Controlling for Endogeneity with Instrumental Variables in Strategic Management Research,” *Strategic Organization* 6 (3), 285-327
- Wooldridge, J. (2001) Econometric Analysis of Cross Section and Panel Data, Chapters 5, 10, 11, 18

**3.2 Applications**

- Lerner, J. and Zhu, F. (2007) “What is the Impact of Software Patent Shift? Evidence from Lotus V. Borland,” *International Journal of Industrial Organization* 25 (3), 511-529.
- Guiso, L., Sapienza, P. and Zingales, L. (2009) “Cultural Biases in Economic Exchange,” *Quarterly Journal of Economics* CXXIV (3), 1095-1131
- Gibbons, C., Suarez, J. and Urbancic, M. (2011) “LATE for School: Instrumental Variables and the Returns to Education,” draft.

- Waldinger, F. (2010) “Quality Matters: The Expulsion of Professors and the Consequences for PhD Student Outcomes in Nazi Germany,” *Journal of Political Economy* 118 (4), 787-831.
- Stern, S. 2004. “Do Scientists Pay to Be Scientists?” *Management Science*, 50(6), 835-853.
- Jaffe, A., Trajtenberg, M. and Henderson, R. (1993) “Geographic Localization of Knowledge Spillovers as Evidenced by Patent Citations”, *Quarterly Journal of Economics* 108 (3), 577-598.
- Thompson, P. and Fox-Kean, M. (2005) “Patent Citations and the Geography of Knowledge Spillovers: A Reassessment”, *American Economic Review* 95 (1), 450-460.
- Thompson, P. (2006) “Patent Citations and the Geography of Knowledge Spillovers: Evidence from Inventor and Examiner-Added Citations” *Review of Economics and Statistics* 88 (2), 383-388.
- Bertrand, O. and Zuniga, P. (2006) “R&D and M&A: Are Cross-Border M&A Different?” *International Journal of Industrial Organization* 24, 401-423.

## **CLASS 5 & 6: APRIL 28, 2014 (GAMBARDELLA)**

### **4. Selection on observables: Propensity score, matching methods and synthetic controls**

#### **4.1 Theory**

- Wooldridge, J. (2001) *Econometric Analysis of Cross Section and Panel Data*, pages 603-621.

#### **4.2 Applications**

- Villalonga, B. (2004) “Does Diversification Cause the ‘Diversification Discount’?” *Financial Management* (Summer), 5-27.
- Azoulay P., Graff Z. J. Wang J. (2010), Superstar Extinction, *Quarterly Journal of Economics*, 125(2), pp. 549-589.
- Abadie, A. and Gardeazabal J. (2003). “The Economic Costs of Conflict: A Case Study of the Basque Country” *American Economic Review*, 93(1): 113–132.
- Abadie, A., A. Diamond, and J. Hainmueller (2010) “Synthetic Control Methods for Comparative Case Studies: Estimating the Effect of California’s Tobacco Control Program” *Journal of American Statistical Association*, 105: 493-505

## **CLASS 7 & 8: MAY 5, 2014 (GAMBARDELLA)**

### **5. Regression discontinuity**

#### **5.1 Theory**

- Imbens, G. W., and T. Lemieux (2008) “Regression discontinuity designs: A guide to practice.” *Journal of Econometrics* 142: 615-635.

#### **5.2 Applications**

- DiNardo, J. and D. S. Lee (2004) “Economic Impacts of New Unionization on Private Sector Employers: 1984-2001”, *Quarterly Journal of Economics*, 119(4), 1383-1441.

### **6. Scenarios and experiments**

- DiStefano, G., King, A. and G. Verona (2013) “Kitchen Confidential? Norms for the Use of Transferred Knowledge in Gourmet Cuisine,” *Strategic Management Journal*, forthcoming
- Bloom, N., Eifert, B., Mahajan, A., McKenzie, D., Roberts, J. (2013) “Does Management Matter? Evidence from India,” *Quarterly Journal of Economics*, 128 (1), 1-51 <http://www.stanford.edu/~nbloom/DMM.pdf>.
- Bandiera, O., Barankay, I. and Rasul, I. (2005) “Social Preferences and the Response to Incentives: Evidence from Personnel Data,” *Quarterly Journal of Economics*, 120 (3), 917-962,.

## CLASS 9 & 10: MAY 9, 2014 (HORWITZ)

### 7. “Good” practices for empirical research

#### 7.1 Instrumental variables practice and etiquette

- **Application:** Cutler, D. and E. Glaeser (1997) “Are Ghettos Good or Bad?” *Quarterly Journal of Economics*, 112: 827-872.
- **Replication:** Acemoglu, D., S. Johnson and J. Robinson (2001) “The Colonial Origins of Comparative Development: An Empirical Investigation” *American Economic Review*, 5:1369-1401.

#### 7.2 Panel data and fixed effects practice and etiquette

- **Application:** Card, D. (1992) “Using Regional Variation to Measure the Effect of the Federal Minimum Wage,” *Industrial and Labor Relations Review*, 46: 22-37.
- **Replication:** Autor, D. H. (2003) “Outsourcing at Will: The Contribution of Unjust Dismissal Doctrine to the Growth of Employment Outsourcing” *Journal of Labor Economics*, 21(1): 1-42.

## CLASS 11 & 12: MAY 12, 2014 (GAMBARDELLA)

### 8. Count and qualitative dependent variables (Poisson, Negative Binomial, Probit & Logit, including ordered, multinomial, and GEV)

#### 8.1 Theory

- Lecture notes and Wooldridge, Jeffrey M. 2002. *Econometric Analysis of Cross Section and Panel Data*. MIT Press: Boston. (Probit & logit 15.1-15.4; Multinomial & ordered models 15.9-15.10; Poisson & negative binomial 19.1-19.3)
- Hoetker, G. (2007) “The use of logit and probit models in strategic management research: Critical issues,” *Strategic Management Journal*, 28(4): 331-343.
- Greene, W. (2010), ‘Testing hypothesis about interaction terms in nonlinear models’, *Economics Letters*, 107: 291-296

#### 8.2 Applications

- Hausman, J., Hall, B. and Griliches, Z. (1984) “Econometric Models for Count Data with an Application to the Patent R&D Relationship,” *Econometrica* 52(4): 909-938.
- Henderson, R. and Cockburn, I. (1996) “Scale, Scope and Spillovers: The Determinants of Research Productivity in Drug Discovery,” *Rand Journal of Economics* 27(1): 32-59.
- Pisano, G. (1990) “The R&D Boundaries of the Firm: An Empirical Analysis”, *Administrative Science Quarterly*, 35: 153-176.
- Cassiman, B., Di Guardo, M. And Valentini, G. (2009) “Organizing Links with Science: Cooperate or Contract? A Project Level Analysis,” *Research Policy* 39: 882-892.
- Barkema, H. and Shvyrkov, O. (2007) “Does Top Management Team Diversity Promote or Hamper Foreign Expansion?” *Strategic Management Journal*, 28(7): 663-680.
- Bresnahan, T. and Reiss, P. (1991) “Entry and Competition in Concentrated Markets”, *Journal of Political Economy* 99(5): 977-1009.
- Cassiman, B. and Veugelers, R. (2006) “In Search of Complementarity in Innovation Strategy: Internal R&D and External Knowledge Acquisition”, *Management Science* 52 (1), 68-82.
- Giuri, P. and Mariani, M. (2013) “When Distance Disappears: Inventors, Education and the Locus of Knowledge Spillovers,” *Review of Economics and Statistics*, 95 (2): 449-463.
- Bresnahan, T., Stern, S. and Trajtenberg, M. (1997) “Market Segmentation and the Sources of Rent from Innovation: Personal Computers in the late 1980s,” *Rand Journal of Economics* 28(0): S17-S44.

## **CLASS 13 & 14: MAY 16, 2014 (HORWITZ)**

### ***7.3 Selection on observables practice and etiquette***

- ***Application:*** Azoulay, P., and Stuart, T., and Y. Wang (2012) "Matthew: Effect or Fable?" National Bureau of Economic Research, Working Paper Series, Paper No. 18625 (<http://www.nber.org/papers/w18625>)
- ***Replication:*** Dehejia, R. H., and Wahba, S. (1999) "Causal effects in non-experimental studies: Re-evaluating the evaluation of training programs," *Journal of the American Statistical Association*, 94(448):1053-1062

### ***7.4 Regression discontinuity design practice and etiquette***

- ***Applications***
  - Dal Bó, E. and Dal Bó, P. and J. Snyder (2009) "Political Dynasties," *Review of Economic Studies*, 76(1): 115-142
  - Card, David and Lara D. Shore-Sheppard Carlos Dobkin, and Nicole Maestas, "Does Medicare Save Lives?" *Quarterly Journal of Economics*, 2009, 124(2), 597-636.
- ***Replication:*** Lee, D. S. (2008) "Randomized Experiments from Non-random Selection in U.S. House Elections," *Journal of Econometrics*, 2008, 142(2): 675-697

## **CLASS 15 & 16: MAY 19, 2014 (GAMBARDELLA)**

### **9. Sample selection**

#### ***9.1 Theory***

- Lecture notes
- Maddala, G.S. (1983) Limited Dependent and Qualitative Variables in Econometrics, Cambridge University Press, Cambridge UK. [Tobit, pp.149-162; Truncated models & Stratification, pp.165-178; Two Stage Estimation Methods, pp.221-234; Stratification, pp.170-174]
- Amemya, T. (1985) Advanced Econometrics, Harvard University Press, Cambridge MA [Generalized tobit models, pp.383-402. See max likelihood function for simple sample selection, p.386]
- Hamilton, B. and Nickerson, J. (2003) "Correcting for Endogeneity in Strategic Management Research," *Strategic Organization* 1 (1), 51-78.

#### ***9.2 Applications***

- Vella, F. (1998) "Estimating Models with Sample Selection Bias: A Survey," *Journal of Human Resource*, XXXIII (1), 127-169.
- Shaver, M. (1998) "Accounting for Endogeneity When Assessing Strategy Performance: Does Entry Mode Choice Affect FDI Survival?" *Management Science* 44 (4), 571-585.
- Arora, A., Gambardella, A., Magazzini, L. and Pammolli, F. (2009) "A Breadth of Fresh Air: Firm Types, Scale, Scope, and Selection Effects in Drug Development", *Management Science* 55(10): 1638-1653.

## **CLASS 17: MAY 23, 2014 (HORWITZ)**

### **10. Extensions**

#### ***10.1 Survival models***

- Wooldridge, J. (2001), Econometric Analysis of Cross Section and Panel Data, Chapter 20.

#### ***10.2 Instrumental variables extensions***

- Heckman, J., S. Urzua and E. Vytlacil (2006) "Understanding Instrumental Variables in Models with Essential Heterogeneity," *Review of Economics and Statistics*, 88: 389-432.

- Heckman, J. (1991), "Identifying the Hand of Past: Distinguishing State Dependence from Heterogeneity" *American Economic Review*, 81(2): 75-99.
- Mullahy, J. (1997) "Instrumental-variable Estimation of Count Models: Applications to Models of Cigarette Smoking Behavior," *Review of Economics and Statistics*, 11:586-593.

### **10.3 Structural models**

- Heckman, J., and S. Urzua, (2009) "Comparing IV With Structural Models: What Simple IV Can and Cannot Identify," NBER Working Paper, # 14706.
- Reiss, Peter C., and Frank A. Wolak. 2007. "Structural Econometric Modeling: Rationales and Examples from Industrial Organization." in *Handbook of Econometrics*, Vol. 6A. Eds. James Heckman and Edward Leamer. Chapter 64, pp. 4277-4415.
- Berry, S., J Levinsohn and Ariel Pakes. 1995. "Automobile Prices in Market Equilibrium", *Econometrica*, 63(4): 841-890.

### **10.4 Event studies**

- MacKinlay, A. C. (1997) "Event Studies in Economics and Finance" *Journal of Economic Literature*, 35: 13-39.
- McWilliams A. and D. Siegel (1997) "Event Studies in Management Research: Theoretical and Empirical Issues" *Academy of Management Journal*, 40(3):626-657.
- Snowberg, E., J. Wolfers and E. Zitzewitz (2006) "Party Influence in Congress and the Economy" NBER Working Paper No. 12751.

### **10.5 Semi-parametric models**

- Abadie, A. (2005) "Semiparametric Difference-in-Differences Estimators" *Review of Economic Studies*, 72: 1-19.
- Yatchew, A. and J.A. No (2001) "Household gasoline demand in Canada" *Econometrica*, 69(6): 1697-1709

## **CLASS 18: MAY 23, 2014 (HORWITZ)**

### **11. Remainders & student applications**