
APPLIED BUSINESS STUDIES

Period: a.y. 2023/24 – II sem.

Class times: Room 101. 08:30-11:50

Instructor:

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Course description

This advanced econometrics course has three goals: a) learn the fundamentals of the theory of econometrics about: regression analysis, generalized least square estimators, instrumental variables, count dependent variables, qualitative dependent models, text analysis, and machine learning; b) learn a framework to specify econometric models to test theories; c) learn how to produce an empirical paper in business research building on a) and b). In my reading list I find that some older classical papers make very well the points that I want to highlight.

Course Material

The papers below that students can easily find online. There will be relevant material covered only in class.

Classes/Topics

Class 1-2 (Monday May 25 – 830:1150AM)

Review of econometrics theory: OLS, Maximum Likelihood, GLS, SURE, IV

- Class notes

Model specification: Interpretation of regression estimates

- Class notes

Model specification: Framework (I)

- Camuffo, A., Gambardella, A. and Pignataro, A. (2023) “Theory-Driven Strategic Management Decisions” CEPR DP 17664 v3, www.cepr.org

Class 3-4 (Monday April 8 – 830:1150AM)

Model specification: Framework (II)

- Camuffo, A., Gambardella, A. and Pignataro, A. (2023) “Theory-Driven

Strategic Management Decisions” CEPR DP 17664 v3, www.cepr.org

Model specification: Applications (testing theories using stories or tables)

- Greenstein, S. (2017) “The Reference War: Encyclopedia Britannica’s Decline and Encarta’s Emergence” *Strategic Management Journal* 38 (5), 995-1017.
- 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*, MIT Press, Cambridge.

Class 5-6 (Monday April 15 – 830:1150AM)

Model Specification: Practical session

- Students replicate existing studies or design their own research

Class 7-8 (Tuesday April 30 – 830:1150AM)

Testimony and the credibility of empirical research

- Bettis, R., Gambardella, A., Helfat, C., Mitchell, W. (2014) “Quantitative Empirical Analysis in Strategic Management” *Strategic Management Journal* 35 (7), 949-953.
- King, A., Goldfarb, B. and Simcoe, T. (2021) “Learning from Testimony on Quantitative Research in Management” *Academy of Management Review* 46 (3), 465-488. See also <https://www.youtube.com/watch?v=QQnyPRa7m2g>
- Class notes

Correlations – no causality

- 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* 117, 339-376.

Causality – Instruments

- Bascle, G. (2008) “Controlling for Endogeneity with Instrumental Variables in Strategic Management Research” *Strategic Organization* 6 (3), 285-327
- Bennis, M., Nielsen, K.M., Perez-Gonzalez, F. and Wolfenzon, D. (2007) “Inside the Family Firm: The Role of Families in Succession Decisions and Performance” *Quarterly Journal of Economics* 122 (2), 647-691.

Causality – fixed effects

- 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. (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.

Class 9-10 (Monday May 6 – 830:1150AM)

Causality – diff-in-diff

- Conti, R. (2014) “Do Non-Competition Agreements Lead Firms to Pursue Risky R&D Projects?” *Strategic Management Journal* 35 (8), 1230-1248.
- 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.

Causality – experiments

- Di Stefano, G., King, A. and G. Verona (2013) “Kitchen Confidential? Norms for the Use of Transferred Knowledge in Gourmet Cuisine” *Strategic Management Journal* 35 (11), 1645-1670
- 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, <https://people.stanford.edu/nbloom/research>
- 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 11-12 (Monday May 7 – 830:1150AM)

Review of econometric theory: Poisson, Negative Binomial, Probit & Logit (including ordered and multinomial), selection models

- Class notes

Applications

- Greene, W. (2010), “Testing hypothesis about interaction terms in nonlinear models” *Economics Letters* 107: 291-296
- 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.
- 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.
- Arend, R. and Amit, R. (2005) “Selection in Strategic Alliance Activity: Effects on Firm Performance in the Computing Industry” *European Management Journal* 23 (4), 361-385.

Class 13-14 (Monday May 13 – 830:1150AM)

Practical session (qualitative response models)

Class 15-16 (Tuesday May 14 – 830:1150AM)

Review of econometric theory: Regularization, cross-validation (random forest), text-analysis, machine learning

- Class notes
- Gentzkow, M., Kelly, B. and Taddy, M. (2019) “Text as Data” *Journal of Economic Literature* 57 (3), 535-574.
- Mullainathan, S. and Spiess, J. (2017) “Machine Learning: An Applied Econometrics Approach” *Journal of Economic Perspectives* 31 (2), 87-106

Applications: Text analysis

- Bandiera, O., Prat, A., Hansen, S. and Sadun, R. (2020) “CEO Behavior and Firm Performance” *Journal of Political Economy* 128 (4), 1325-1369.

Applications: Machine Learning and Econometrics

- Kleinberg, J., Lakkaraju, H., Leskovec, J., Ludwig, J. and Mullainathan, S. (2018) “Human Decisions and Machine Predictions” *Quarterly Journal of Economics* 133 (1), 237-293

Class 17-18 (Monday May 20 – 830:1150AM)

Practical session (text analysis, machine learning)

- Students replicate existing studies or design their own research

Assessment Methods

Take home practical applications of the topics studied in class. You will have from 9AM of May 27th to 11:59PM of May 28th to write the exam and email it to marialuisa.ambrosini@unibocconi.it & alfonso.gambardella@unibocconi.it. The exam is open book and should be performed by each student individually without any external communication.

Faculty Bio

Alfonso Gambardella obtained his PhD in 1991 from the Department of Economics of Stanford University. His work focuses on the economics and management of technological innovations and the technology strategies of firms. He was visiting professor in the Department of Economics, Stanford University (2003, 2005-6), and MIT’s Sloan School (2015-16). In 2013-2019 he was co-editor of the Strategic Management Journal, and is currently Department Editor of Business Strategy of Management Science. He is a Fellow of the Strategic Management Society and a member of the Center for Economic and Policy Research (CEPR), London. In 2015-16 he was Chair of the Business Policy and Strategy Division of the US Academy of Management, and in 2023 this Academy bestowed upon him the TIM Distinguished Scholar Award. He participated in numerous research projects of the European Commission and other research agencies. In 2021 he was awarded an ERC advanced grant on “A Scientific Approach to Innovation Management.” His website is <https://mgmt-tech.unibocconi.eu/people/alfonso-gambardella>.