

Air Transport Economics

Course title – Intitulé du cours	Air Transport Economics
Level / Semester – Niveau /semestre	M2/S2
School – Composante	Ecole d'Economie de Toulouse
Teacher – Enseignant responsable	Christian BONTEMPS
Other teacher(s) – Autre(s) enseignant(s)	Estelle MALAVOLTI
Other teacher(s) – Autre(s) enseignant(s)	
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Lecture Hours – Volume Horaire CM	30
TA Hours – Volume horaire TD	
TP Hours – Volume horaire TP	
Course Language – Langue du cours	English
TA and/or TP Language – Langue des TD et/ou TP	

Teaching staff contacts – Coordonnées de l'équipe pédagogique :

Christian Bontemps, email: christian.bontemps@tse-fr.eu, Office hours to be determined.
Preferred mean of interaction: meeting by appointment. Pr. Bontemps teaches the second part.

Estelle Malavolti, email: estelle.malavolti@tse-fr.eu, Office hours to be determined. Pr. Malavolti teaches the first part.

Course Objectives – Objectifs du cours :

After the course, the students should be able to:

- Describe the current challenges in air transport,
- Choose relevant models of industrial organization to analyze the sector,
- Comment on the assumptions behind the models and the results, using their knowledge of the markets,
- Present and critique relevant research papers.

Session planning – Planification des séances :

After a presentation of the market and a strategic analysis of the sector, relevant models of Industrial Organization will be presented, based on research papers. Another part is devoted to the study of demand modeling and estimation in IO applied to the air transport industry.

The first part of the course is dedicated to the analysis of different IO models relevant for the sector. The main interest is to analyze the sector of the air transport and to propose relevant models to understand the main evolutions that could occur. For instance, we will work on how to answer to the question of modelling horizontal agreements such as code-sharing agreements between airlines. Another example is to know how models of coopetition could apply to the strategic interest for an

airline of being partner in an alliance. The final objective of this part of the course is to be able to anticipate the evolution of the competition and strategic interactions to a modification of the regulation and/or the intervention of a competition authority.

The second part of the course is devoted to the study of demand modeling in IO with specific applications to the airline markets, entry models and some small insights on network models. Beyond academic careers, there are clear policy issues and commercial implications. In addition to the economics discipline, estimating demand, understanding product positioning, pricing and use of product information, merger analysis, reputation and the other topics that we cover are central concerns in the literatures on marketing, strategy and information systems. In this part, some particular attention is paid on the econometrics background and students should be able after these lectures to handle a complete empirical analysis on their favorite software.

The third part of the course consists into presentations by external professors and/or professionnals, whose research or work is applied to economics of air transport.

The evaluation consists into a report on a project that includes an empirical part (45%), performed in groups and a research question (1h30 exam, 45%). The last 10% come from the participation (mandatory).

This course is organized by faculty members from the French Civil Aviation University (Ecole Nationale de l'Aviation Civile).

The first seven weeks of class are structure according to one theme per week. The specific literature is given for each week.

Theme 1: Specificities of the Air transport sector or How to do applied research?

- how to characterize the activity?
- what are the relevant metrics (volume, financial)?
- what are the stakeholders and their interactions?

To synthetize, the students will work on the establishment of a Porter model (or 6 forces) for the air transport sector.

Corresponding literature references:

- [1] “The Global Airline Industry”, Belobaba, Odoni, Barnhart, 2009, Wiley.
- [2] “WATO”, IATA, 2018.

Theme 2: The vertical relationships in the air transport sector

- How do airlines adapt their strategies to the vertical production chain (suppliers/customers)?
- How to optimize the pricing strategies to heterogeneous demand? What is the use of revenue management in the air transport sector?
- Regulation for the environment impact.

Corresponding literature references:

- [1] «European Industrial Policy: the Airbus case», Neven and Seabright, Economic Policy, 21 (1995).
- [2] «Equilibrium price dispersion under demand uncertainty: the roles of costly capacity and market structure», J. Dana, Rand Journal of Economics, Vol 30 (4) 1999.

- [3] «Using yield management to shift demand when the peak period is unknown», J. Dana, *Rand Journal of Economics*, Vol 30 (3), 1999.
- [4] “Moral Hazard and Customer Loyalty Programs” Basso, Clement, Ross, *AEJ: Microeconomics*, 2009.
- [5]” Voluntary carbon offset and airline alliance”, Zheng, Ge, Fu, Jiang, 2019, *Transportation research Part B*.

Theme 3: Airlines and airports

- How do airlines and airports interact?
- Are airports playing a specific role in the air transport system?

Corresponding literature references:

- [1] “Limited Access to Airport Facilities and Market Power in the Airline Industry.”, Ciliberto and Jonathan , *The Journal of Law & Economics* 53 (2010): 467–495.
- [2] “Competition between multi-product airports”, Bracaglia, D’alfonso, Nastasi, 2014, *Economics of Transportation*.
- [3] “Price-cap regulation of congestion airports” Zhang and Yang, *journal of Regulatory Economics*, 2011.
- [4] “Privatization, regulation and airport pricing: an empirical analysis for Europe”, Bel and Fageda, *Journal of Regulatory Economics*, 2009.
- [5]”Platform pricing and consumer foresight: the case of airports“, Flores-Fillol, Iozzi, Valetti, *Journal of Economics and Management Strategy*, 2015.

Theme 4: Airlines strategies with respect to rivals

- Horizontal agreements and anti-trust immunity
- Competition, Pricing and entry

Corresponding literature references:

- [1] “A dynamic game of airline network competition: Hub-and-spoke networks and entry deterrence.”, Aguirregabiria and Chun-Yu Ho, *International Journal of Industrial Organization* 28 (2010): 377–382.
- [2] “Hubs and High Fares: Dominance and Market Power in the U.S. Airline Industry.”, Borenstein, *The RAND Journal of Economics* 20 (1989): 344–365.
- [3] “Rivalry between strategic alliances”, A. Zhang and Y. Zhang, *International Journal of Industrial Organization*, 24, 2006, pp. 287-301.
- [4] ”Domestic Airline Alliances and Consumer Welfare”, Armantier and Richard, 2005.
- [5] ”Hybrid cooperation agreements in networks: The case of the airline industry”, Fageda, Flores-Fillol, Theilen, 2019, *International Journal of Industrial Organization*.

Theme 5: Estimation of Demand for the Airline Industry

- Demand of differentiated products
- How to use a structural model for policy evaluation

- [1] Berry, S., 1990, “Airport presence as product differentiation”, *American Economic Review*, 80, 394-399.
- [2] Berry, S., 1994, “Estimating discrete-choice models of product differentiation”, *RAND Journal of Economics*, 25, 242-262.

- [3] Berry, S., Levinsohn, J., Pakes, A., 1995, “Automobile prices in market equilibrium”, *Econometrica*, 63, 841-890.
- [4] Berry, S., Carnall, M., Spiller, P., 2006, “Airline hubs: costs, markups and the implications of customer heterogeneity”, in: Lee, D. (Ed.), *Advances in Airline Economics. Vol. 1: Competition Policy and Antitrust*. Elsevier Press, Amsterdam, 183-214.
- [5] Berry, S., Jia, P., 2009, “Tracing the woes: an empirical analysis of the airline industry”, *American Economic Journals Microeconomics*, 2, 1-43.
- [6] McFadden D. and K. Train, 2000, “Mixed MNL Models for Discrete Response», *Journal of Applied Econometrics*, 15, 447-470.
- [7] Nevo, A., 2000, “Mergers with Differentiated Products: the Case of the Ready-to-Eat Cereal Industry», *RAND Journal of Economics*, 31, 395-421.

Theme 6: Empirical models of Market Structure

- How to estimate the level of competition when one does not observe price and quantities
- Introduction to the estimation of games with multiple equilibria

- [1] Berry, S., 1992, “Estimation of a model of entry in the airline industry”, *Econometrica*, **60**, 889-917.
- [2] Bontemps C. and R. Sampaio, 2020, “Entry games for the airline industry”, Working Paper, Toulouse School of Economics.
- [3] Ciliberto, F., Tamer, E., 2009, “Market structure and multiple equilibria in airline markets”, *Econometrica*, 77, 1791-1828.
- [4] Cleeren, K., Verboven, F., Dekimpe, M. G., and Gielens, K., 2010, “Intra-and interformat competition among discounters and supermarkets”, *Marketing science*, **29**, 456-473.
- [5] Dunn, A., 2008, “Do low-quality products affect high-quality entry? Multiproduct firms and nonstop entry in airline markets”, *International Journal of Industrial Organization*, **26**, 1074-1089.
- [6] Mazzeo, M.J., 2002, “Product Choice and Oligopoly Market Structure”, *Rand Journal of Economics*, **33**, 221-242.
- [7] Sampaio, R. M. B., 2011, “Competition Between Low-Cost Carriers and Traditional Airlines: An Empirical entry Model”, Working Paper, Toulouse School of Economics.

Theme 7: Network structure

- [1] Bontemps, C., Gualdani, C. and Remmy, K., 2020, “Price competition and endogenous product choice in networks: Evidence from the us airline industry”.
- [2] Jackson, M. O., 2010, “Social and economic networks”, Princeton university press.
- [3] Malavolti, E. and P. Lezard, 2020, “Connectivity measurements to assess regional development in Europe”, working paper.
- [4] Yuan, Z.; 2018, “Network competition in the airline industry: A framework for empirical policy analysis”, Available at SSRN 3246222 .

Distance learning – Enseignement à distance :

Distance learning can be provided when necessary by implementing, for example: / En cas de nécessité, un enseignement à distance sera assuré en mobilisant, par exemple :

The recent COVID crisis and its possible impact on our class will result in moving to online teaching if necessary, where virtual classrooms will be organized. Small assignments will be added each week to check that the different materials are well understood. Forums will be organized to exchange on the difficulties which may be faced when estimating the different models.