

Pedro M. Ferreira

Ph.D. Candidate, Engineering and Public Policy (EPP) Department, Carnegie Mellon University (CMU)
5000 Forbes Avenue, 129 Baker Hall, Pittsburgh, PA, 15213, USA

Email: pferreira@cmu.edu; Webpage: www.andrew.cmu.edu/~pferreir Office: +1-412-2685609

EDUCATION

- Presently **Carnegie Mellon University (CMU)**, Pittsburgh, PA, USA
Fields of Study: Telecommunications Policy and Management, Game Theory and Econometrics
Advisor: Prof. Marvin Sirbu (EPP and the Graduate School of Industrial Administration)
Expected title: "Interconnected Communication Networks Provisioned Selfishly"
- 06/2002 **Massachusetts Institute of Technology (MIT)**, Cambridge, MA, USA
Master of Science in Technology and Policy, Engineering Systems Division
Master of Science in Electrical Engineering and Computer Science
Thesis: "Implications of Decreasing Bandwidth Price for the Structure of the Internet"
Main Supervisor: Dr. David D. Clark, Laboratory for Computer Science, MIT
- 09/1999 **Instituto Superior Tecnico (IST), Technical University of Lisbon**, Lisbon, Portugal
Master of Science in Engineering Policy and Management of Technology, thesis developed at
Lyndon B. Johnson School of Public Affairs, University of Texas (UT), Austin, TX, USA
Thesis: "A Sectoral Analysis of Wage Inequality Growth in OECD countries"
- 07/1998 **School of Computer Science for Industry, University of Tours**, Paris, France
Degree extension on Evolutionary Computation and Artificial Intelligence
- 09/1996 **Instituto Superior Tecnico, Technical University of Lisbon**, Lisbon, Portugal
Undergraduate 5-year diploma in Information Systems and Computer Science
-

RESEARCH EXPERIENCE

- 01/2001 – 06/2002 **MIT Program on Internet & Telecoms Convergence, MIT**
Research Assistant. Main projects: cost modeling of optical backbones with Wavelength Division Multiplexing and associated bandwidth trading markets
- 03/1999 – 03/2000 **University of Texas Inequality Project, UT**
Associate Researcher. Main projects: Analysis of the relationship between inequality and technology in OECD countries; detailed analysis of inequality growth in the US
- 02/1999 – 08/1999 **Innovation, Creativity and Capital Institute, UT**
Visiting Scholar: research on entrepreneurship and innovation for inclusive regional development, with focus on research parks and new technology-based firms
- 01/1998 – present **Center for Innovation, Technology and Policy Research, IST**
Associate Researcher. Main projects: Analysis of patterns of technology diffusion and its relationship to wage inequality, with particular focus on ICTs
- 09/1996 – 02/1999 **Laboratory for Dynamic Systems and Biomedical Engineering, IST**
Researcher. Setup of a lab for research in biomedicine and evolutionary computation. Research on Genetic Algorithms, Neural and Bayesian Networks
-

TEACHING EXPERIENCE

- 01/2003 – present **Center for Innovation, Technology and Policy Research, IST**
Instructor and Supervisor: leading instructor for the graduate level course on Telecommunications Policy and Management; Co-supervisor for several students developing MSc theses on fiber/broadband to the home and wireless technologies
- 01/2001 – 06/2002 **Engineering Systems Division, MIT**
Teaching Assistant: course on Telecom Modeling and Policy Analysis for Prof. Lee McKnight (2 yrs, offered jointly to MIT, Harvard and Tufts University students)
- 09/1998 – 08/1999 **ANFEI – Siemens Training School**
Lecturer (1 yr) for the following courses: Linear Algebra, Calculus I and II
- 09/1995 – 08/1999 **Mathematics Department, Instituto Superior Tecnico**
Instructor (5 yrs) for the following courses: Linear Algebra, Calculus I, II, III and IV

RESEARCH INTERESTS Management of Information Systems and Internet Service Providers; Public Policy for the Telecommunications sector. Emphasis on the use of Game Theory frameworks and Econometric tools to study the structure and evolution of the industry

TEACHING INTERESTS Management of Information Systems, Telecommunications Modeling and Policy, Communication Systems, Technology and Science Policy

PROFESSIONAL EXPERIENCE

06/2000 – 09/2000 **Bell Labs, Lucent Technologies**, Murray Hill, NJ, USA
Internship with the Technology Management & Economics Group: Consultant in the field of optical technologies and backbone design and provisioning

01/1995 – 01/1998 **Junitec – Junior Enterprise of Instituto Superior Tecnico**
Programmer (2yr): database design and warehousing; hypermedia applications
President (2yr): responsible for the business strategy of the firm and public relations

01/1993 – 09/1995 **Institute for Engineering Systems and Computers**, Instituto Superior Tecnico
Programmer: in the field of distributed systems and automated control

SCHOLARSHIPS AND AWARDS

08/2002 **Doctoral Fellowship**, Engineering and Public Policy Department, CMU (1 yr)
01/2002 **Doctoral Scholarship**, Caloust Gulbenkian Foundation (3 yrs)
09/1999 **Doctoral Scholarship**, Portuguese Ministry for Science and Technology (4 yrs)
03/1999 **Master Scholarship**, Luso-American Development Foundation (1/2 yr)
09/1996 **Senior Research Fellowship** from PRAXIS XII program (2 yrs)
09/1995 **Junior Research Fellowship** from PRODEP program (1 yr)

11/1997 **Galileo S&T Contest III**, 1st Place award, “Aquatic Monitoring System”, Coimbra, Portugal
12/1996 **Galileo S&T Contest II**, 1st Place award, “Integrated Security System”, Braga, Portugal
11/1996 **1st European Junior Challenge**, 1st Place award, “Successful Enterprises – Case Study”, Milan, Italy
11/1994 **3rd Challengers Trophy**, 1st Team-place award, “University-Enterprise linkage

STUDENT GOVERNMENT

1999 **Treasurer**, Portuguese Students Association at MIT (PSA)
2000 **Vice-President**, Portuguese Students Association at MIT (PSA)
2001 **Vice-President**, Portuguese-American Post-Graduate Society (PAPS)
2002 **President**, Portuguese-American Post-Graduate Society (PAPS)

ORGANIZATION OF CONFERENCES & EVENTS

01/1998 **1st Junitec Technological Fair and Workshop**: “Media Intensive Software at the turn of the Century”, Instituto Superior Tecnico, Lisbon, Portugal, January 25-26

01/2002 **3rd PAPS FORUM**: “On the Contribution of the Portuguese Post-Graduate Community for the Development of Portugal”, University of North Carolina at Chapel Hill and Duke University, NC, US, January 18-20

01/2003 **4th PAPS FORUM**: “Dare to be an Entrepreneur: Venturing Ideas Across the Atlantic”, New Jersey Performing Arts Center, Newark, NJ, US, January 30-31

LANGUAGES

Portuguese Native language
English Fluent (lived in the US for 5 years)
French Basic Knowledge (5 years formal learning)
Spanish Basic Knowledge (reading and conversation)

LIST OF DOCTORAL COURSEWORK

SOCIAL SCIENCES CONCENTRATION

HAK.A111	Microeconomic Theory I	Economics Department	Harvard	Prof. Jerry Green
HAK.A112	Microeconomic Theory II	Economics Department	Harvard	Prof. Jerry Green
HAK.Q295	Science, Tech. and Economic Growth	Kennedy School of Govt.	Harvard	Prof. Frederic Scherer
18.441	Statistical Inference	Mathematics Department	MIT	Prof. Michael Hardy
14.381	Statistics for Economics	Economics Department	MIT	Prof. Guido Kuersteiner
14.382	Econometrics I	Economics Department	MIT	Prof. Jerry Hausman
14.383	Econometrics II	Economics Department	MIT	Prof. Jerry Hausman
15.011	Economic Analysis for Business Decisions	Sloan School of Mgt.	MIT	Prof. Henry Jacob
15.784	System Dynamics for Business Policy	Sloan School of Mgt.	MIT	Prof. John Sterman

TELECOMMUNICATIONS CONCENTRATION

19.712	TelecomTechnology, Policy and Management	ECE Department	CMU	Prof. Marvin Sirbu
6.961	Introduction to Research in EECS	EECS Department	MIT	Dr. David Clark
6.899	Computer Networks	EECS Department	MIT	Prof. Hari Balakrishnan
6.263	Data Communication Networks	EECS Department	MIT	Prof. Dimitri Bertsekas
15.020	Competition in Telecommunications	Sloan School of Mgt.	MIT	Prof. Jerry Hausman
ESD.127	TelecomModeling and Policy Analysis	Eng. Systems Division	MIT	Prof. Lee McKnight
ESD.91	Internship Seminar in Engineering Systems	Eng. Systems Division	Bell Labs	Dr. Steve Lanning

POLICY/ENGINEERING SYSTEMS CONCENTRATION

ESD.801	Leadership for Policy	Eng. Systems Division	MIT	Dr. Richard Tabors
ESD.11	Proseminar in Technology Policy	Eng. Systems Division	MIT	Dr. Richard Tabors
ESD.83	Research Seminar in Engineering Systems	Eng. Systems Division	MIT	Prof. David Mindell
ESD.132	Law, Technology and Public Policy	Eng. Systems Division	MIT	Prof. Nicolas Ashford
19.701	Intro to Theory and Practice of Policy Analysis	EPP Department	CMU	Prof. Granger Morgan
19.705	Workshop on Applied Policy Analysis	EPP Department	CMU	Prof. Granger Morgan

GRADUATE THESES & DISSERTATION

Master of Science in Engineering Policy and Management of Technology, IST

Complete Title: **“Wage Inequality and Technology: Exploration Using the Theil Index and Industry Estimations of Technological Intensity”**. Committee members: Prof. Manuel Heitor, Director, Center for Innovation Technology and Policy Research, Instituto Superior Tecnico; Prof. Pedro Conceicao, Deputy Director, United Nations Development Program; Reader: Prof. James Galbraith, Dean, LBJ School of Public Affairs, University of Texas

Master of Science in Technology Policy + Master in Electrical Engineering and Computer Science, MIT

Complete Title: **“Implications of Decreasing Bandwidth Price on Allocating Traffic between Transit and Peering Agreements”**. Committee members: Dr. David Clark, Head of Advance Networks Architecture Group, Laboratory for Computer Science, MIT; Prof. John de Figueiredo, Sloan School of Management, MIT; Reader: Prof. Lee McKnight, School of Information Studies, Syracuse University

PhD in Engineering and Public Policy, CMU

Complete Title: **“Interconnected Communication Networks Provisioned Selfishly: Implications for Industry Structure and Public Policy”**. Committee members: Prof. Marvin Sirbu, Engineering and Public Policy Department, Graduate School of Industrial Administration, Carnegie Mellon University; Prof. Uday Rajan, Graduate School of Industrial Administration, Carnegie Mellon University; Reader: Prof. Francisco Veloso, Engineering and Public Policy Department, Carnegie Mellon University and Business and Economics School, Universidade Catolica Portuguesa, Portugal

ACADEMIC PUBLICATIONS

Forthcoming Publications

1. FERREIRA, P., MINDEL, J. and McKNIGHT, L., “*Why have Bandwidth Trading Markets not Matured? Analysis of Technological and Market Issues*”, International Journal of Technology, Policy and Management.

Publications

2. FERREIRA, P., LEHR, W. and McKNIGHT, L. (2002), “*Optical Networks and the Future of Broadband Services*”, Technological Forecasting and Social Change, Vol. 69, pp. 741-758, Elsevier, North-Holland.
3. CONCEICAO, P., FERREIRA, P. and GALBRAITH, J.K. (2000), “*Ungleichheit and Arbeitslosigkeit in Europa: Das Amerikanische Rezept*”, Berliner Debatte, Vol. 4/5, pp. 50-67, GSFP Forschung und Verlag.
4. CONCEICAO, P., FERREIRA, P. and GALBRAITH, J.K. (1999), “*Inequality and Unemployment in Europe: the American Cure*”, New Left Review, 237, September/October, pp.28-51.

Chapters in Books

5. CONCEIÇÃO, P., FERREIRA, P. and GALBRAITH, J.K. (2002), “*Inequality and Unemployment: a Reconsideration of the European Experience*”, in J. K. GALBRIATH and M. BERNER (eds.), Inequality and Industrial Change: A Global View, Cambridge University Press, Cambridge, UK

Proceedings of International Conferences (presenter is underlined)

6. FERREIRA, P. (2003), “*Selfish Provisioning of Communication Networks*”, contributed paper for the INFORMS Annual Meeting, October 19-22, Atlanta, Georgia, US
7. FERREIRA, P. and SIRBU, M. (2003), “*Interconnection Strategies for Internet Service Providers*”, Proceedings of the 7th Intl. Conference on Technology Policy and Innovation, EGADE, 10-13 June, Monterrey, Mexico.
8. CONCEICAO, P., FARIA, P., FERREIRA, P., PADILLA, B. and PRETO, M. (2003), “*Does Inequality Hinder the Diffusion of Technology? Preliminary Explorations*”, Proceedings of the 7th Intl. Conference on Technology Policy and Innovation, EGADE, 10-13 June, Monterrey, Mexico.
9. FERREIRA, P. (2002), “*Implications of Decreasing Bandwidth Price on Allocating Traffic between Transit and Peering*”, contributed paper for the INFORMS Annual Meeting, November 17-20, San Jose, California, US
10. FERREIRA, P. (2002), “*The Evolving Architecture of the Internet: Policy Issues Associated with Transitioning to a Competitive Environment*”, Proceedings of the 6th Intl. Conference on Technology Policy and Innovation, 12-15 August, Kansai, Japan.

11. FERREIRA, P., and McKNIGHT, L. (2001), "*Bandwidth trading markets as critical infrastructures for the development of the Telecommunications industry*", Proceedings of the 5th Intl. Conference on Technology Policy and Innovation, TU Delft, 26-29 June, Delft, Netherlands.
12. FERREIRA, P. (2000), "*Testing the scalability of DWDM networks*", Proceedings of the 4th Intl. Conference on Technology Policy and Innovation, Politecnica Universidade Catolica, 28-31 August, Curitiba, Brazil.
13. CONCEICAO, P., FERREIRA, P. and GALBRAITH, J.K. (1999), "*Update on the work by the UTIP on measuring inequality*", Proceedings of the 1st Intl. Conference on Macro-Dynamics of Inequality in the Industrialized and Developing Countries, The Jerome Levy Institute of Bard College, Annadale-on-the-Hudson, 28-29 October, NY, USA.
14. CONCEIÇÃO, P., FERREIRA, P. (1999), "*Exploring the potential of the Theil index*", Proceedings of the 3^d Intl. Conference on Technology Policy and Innovation, LBJ School of Public Affairs, 1-2 September, Austin, Texas, USA.
15. FERREIRA, P., HEITOR, M. V. and SANTOS, F. (1998), "*Organizational Design for The Knowledge Economy*", Proceedings of the 2nd Intl. Conference on Technology Policy and Innovation, 3-5 August, Fundação Calouste Gulbenkian, Lisbon, Portugal.
16. FERREIRA, P., SILVA, T. and ROSA, A. (1997), "*Active Noise Control and Real Applications*", Proceedings of the 6th Intl. Conference on Tele-acoustics, 11-13 November, Oviedo University, Oviedo, Spain.

Portuguese Magazines

17. FERREIRA, P., SILVA, T. and ROSA, A. (1999), "*Active Noise Control and real-time Applications*", IST Science & Technology, No. 2, April, Instituto Superior Técnico, Lisbon, Portugal
18. FERREIRA, P. and SILVA, T. (1997), "*Communication via Internet for Disabled People*", 3^d Workshop on Biomedical Engineering, No. 3, March, Instituto Superior Técnico, Lisbon, Portugal

Invited Communications (presenter is underlined)

19. FERREIRA, P. and LEHR, W. (2000), "*New Access Technologies and Telecommunications Policy Implications*", Master Course in Engineering Policy and Technology Management, Instituto Superior Tecnico, October 20, Lisbon, Portugal.
20. FERREIRA, P. and McKNIGHT, L. (2000), "*DWDM Technologies, SLAs and Bandwidth Trading*", Series of Seminars in Technology Policy, Instituto Superior Tecnico, October 25-26, Lisbon, Portugal.
21. FERREIRA, P. (1999), "*Entrepreneurship and Inequality at the Dawn of the 21st Century*", 2nd Intl. Conference on Entrepreneurship and Society, Bogazici University, July 4-6, Istanbul, Turkey.
22. FERREIRA, P. (1998), "*University - Industry Partnerships: Challenges and Opportunities for the 21st Century*", 4th Series of Seminars in Teaching Computer Science, Instituto Superior Tecnico, July 22, Lisbon, Portugal.

23. FERREIRA, P., HEITOR, M.V. and VEDOVELLO, C. (1998), "*The role of universities in fostering regional development*," Series of Seminars in Education Policy, Instituto Politécnico de Setúbal, June 27, Lisbon, Portugal.
24. FERREIRA, P., (1996), "*Portuguese Junior Enterprises, evidence from Junitec*", 1st European Junior Challenge, Bocconi University, November 8-11, Milan, Italy.

ACADEMIC PUBLICATIONS CURRENTLY UNDER-REVIEW

- A. FERREIRA, P., "*Interconnection Strategies for Internet Service Providers: Implications of Decreasing Bandwidth Price on Allocating Internet Traffic between Transit and Peering Agreements*", Submitted to Telecommunications Policy, Elsevier