FRANCISCO MARTÍNEZ C.

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Degrees

Ph.D. and M.A. in Transport Economics (1991, 1988) at the University of Leeds, U.K., and the Engineering Degree at University of Chile (1984).

Appointments:

Current (2017)

- Full Professor of the Department of Civil Engineering at the University of Chile.
- Senior Researcher of the Millennium Institute for Complex Engineering Systems.
- Advisor to the Rector of the University of Chile

Previous

- Head of Higher Education Division, Ministry of Education, Chile (2014-2016), in charge of the Higher Education Reform in Chile. Advisor to the Chilean Ministry of Education (2016).
- Vice-rector of Economic Affairs and Institutional Management, University of Chile (2013-2014).
- Member of the University Senate of the University of Chile (2010-2012).
- Advisor to the University of Chile's Rectorate on education policies (2006-2010).

Teaching and Research interests:

Teaching: Transport Systems Analysis, Urban Economics and Land Use and Transport Modeling

Research interests on urban systems topics: Urban Economics, Location Equilibrium of Activities, Transport and Urban Dynamics, Urban Scale Laws, focusing on economic equilibrium and mathematic models. He also works on issues of Economic Equity developing the concept of Equilibrium with Consumption Rights.

Software development: Author of MUSSA (Land Use Model of Santiago) www.mussa.cl distributed worldwide as CUBE LAND www.citilabs.cl. Full applications in Santiago (Chile), Minneapolis-St. Paul (USA), Paris (France), Berlin (Germany). Project Partner of SinMobility project, Singapore MIT Alliance for Research and Technology (SMART) Future Urban Mobility (FM) Integrated Research Group.

Current Research Projects

- Theory of microeconomic foundations of scale laws in urban systems dynamics.
- Development of the Microsimulation Land Use model
- Development of the land use equilibrium model CUBE LAND 2.0.
- An integrated Land Use and Transport equilibrium model for cities MITUS.
- Development of a model to assess the Optimal Urban Land Use and Transport Policies, including pricing, taxing and regulation policies.
- Econometric methods to calibrate large scale discrete choice models with constrained behavior.
- General equilibrium model of the urban system: integrating the real estate, labor, goods, and transport markets.
- A multi scales model –on space, time and agents- of the urban system.
- Consumption rights, with application to equity distribution of wealth and caps on road congestion.

Research Grants

- Millennium Institute for Complex Engineering Systems, granted by Ministry of Economics, Chile. Key research member.
- Basal Program FBO-16, granted by CONICYT. Key research member.
- More that ten research grants from the Chilean Research Agency Conict
- Risk Habitat Megacity Project, Helmholz Society, Germany, Chilean team leader researcher.
- MIT-Singapore SimMobility Project, Associate researcher of Land Models.

PUBLICATIONS

Books Editor

Hansjürgens, B., D Heinrichs, F Martínez (editors). “Risk Habitat Megacity”, Springer, 230 pages, http://dx.doi.org/10.1007/978-3-642-11544-8, 2011.

Martínez F. (editor). **150 Años Ingeniería Civil – Universidad de Chile**. Chile, 203 pages, 2003.

Martínez F. (editor). **Actas del 7° Congreso Chileno de Ingeniería de Transporte**. Santiago, Chile, 698 pages, 1995.

Books Chapters

Martínez, F.J. y P. Donoso. (2010). The MUSSA II Land use auction equilibrium model. In **Residential Location Choice: Models and Applications,** Eds. J. Preston, D. Simmonds and F. Pagliara, Chapter 4, Springer.

Martínez, F. (2007). Towards a Land Use and Transport Interaction Framework. In **Handbooks in Transport – Handbook I: Transport Modelling**, 2nd edition. D. Hensher and K. Button (eds), Elsevier Science Ltd., Elsevier Science Ltd., Amsterdam, 181-201.

Martínez, F.J. (2003). Location Externalities: Effects on Modelling, Infraestructure Provision and Optimal Planning. **Handbooks in Transport - Handbook 4: Transport and the Environment**, Hensher and K. Button (eds), Elsevier Science Ltd. Chapter 25, pags. 463-480.

Martínez, F. (2002). Towards a Microeconomic Framework for Travel Behaviour and Land Use Interactions. **In Perpetual Motion: Travel Behaviour Research Opportunities and Application Changes**, H. Mahamasani (ed), Elsevier Science Ltd. Pergamon, Amsterdam, Chapter 12, 261-276.

Martínez, F. y Donoso, P. (2001). Modeling Land Use Planning Effects: Zone Regulations and Subsidies. In **Travel Behaviour Research, The Leading Edge**. D. Hensher (ed.), Pergamon-Elsevier, 647-658.

Elliason, J. y Martínez, F. (2001). Interfaces Between Location, Land Use and Travel Decisions. In **Travel Behaviour Research, The Leading Edge**. D. Hensher (ed.), Pergamon-Elsevier, 327-336.

Martínez, F. (2000). Towards a Land Use and Transport Interaction Framework. En **Handbooks in Transport – Handbook I: Transport Modelling**, D. Hensher and K. Button (eds), Elsevier Science Ltd., 145-164.

O'Ryan, R, Martínez, F. y Larraguibel, L. (1996). A Neural Network Approach to Evaluating Urban Policies: The case of Santiago, Chile. En **Urban Transport and the Environment II**, Baldasano, Recio y Sucharov (eds.). Computational Mechanics Publications, Southampton, UK, 127-139.

Martínez, F. (1995) Analysis of Urban Environmental Policies Assisted by Behavioral Modelling. En **Transport, Land Use and the Environment**, Y. Hayashi y J. Roy, Kluwer (eds.), 233-257.

International Journals

Martínez, F. (2016). Cities' power law: the stochastic scaling factor. **Environment and Planning B 43(2)** 257-275.

López, H., Martínez, F., Cortés, C. (2016). Microeconomic model of residential location incorporating life cycle and social expectations. **Computers, Environment and Urban Systems 55**, 33-43.

López, H., Martínez, F. Cortés, C. (2015). A time-hierarchical microeconomic model of activities. **Transportation** (DOI 10.1007/s11116-014-9530-9).

Justen, A., Martínez, F.J., Cortés, C.E. (2013). The use of space–time constraints for the selection of discretionary activity locations. **Journal of Transport Geography 33**, 146-152.

Martínez, F., Pagliara, F., Tramontano, A. (2013). Hedonic value of accessibility on residential properties: random bidding foundation and application to new rail track. **Ingegneria Ferroviaria** 1049-1061.

Castro M., Martínez F., Munizaga M. (2012) Estimation of a constrained multinomial logit model. **Transportation** DOI 10.1007/s11116-012-9435-4.

Araya, F., Dell, R., Donoso, P., Marianov, V., Martinez,. F., Weintraub,. A. (2012). **International Transactions in Operation Research19,** 695–710. DOI: 10.1111/j.1475-3995.2012.00843.x

Tamblay L., Martínez F., Weintraub A. (2011). School locations and vacancies: a contrained logit equilibrium model. **Environment and Planning A 43(8),** 1853-1874.

Hervé-Beloso, C., Martínez, F., Rivera, J. (2011) Walrasian prices in a market with consumption rights. **Economic Theory**. DOI 10.1007/s00199-011-0635-5.

Bravo, M., Briceño, L., Cominetti, R., Cortés, C., Martínez, F. (2010). An integrated behavioral model of the land-use and transport systems with network congestion and location externalities. **Transport Research Part B,** 44(4), 584-596.

Martínez F., Aguila F., Hurtubia R. (2009). The Constrained Multinomial Logit Model: A Semi-Compensatory Choice Model. **Transportation Research Part B 43**, 365-377.

Gac, I., F. Martínez, A. Weintraub. (2009) A deterministic linear optimization model for allocating schools to zones. **Journal of Operation Research Soc. 60-7**, 895-905.

Briceño, L., Cominetti, R., Cortés, C., y Martínez, F.J. (2008). An Integrated Behavioral Model of Land Use and Transport System: a Hyper-Network Equilibrium Approach. **Networks and Spatial Economics 8** (2-3), 201-224**.**

Martínez F., Rivera, J. (2008). Redistribución de la Riqueza, Usando Derechos de Consumo: El caso igualitario. **Trimestre Económico** 75, pp. 135-144.

Martínez F., Henríquez, R. (2007). The RB&SM Model: A Random Bidding and Supply Land Use Model. **Transportation Research B**, 41(6), 632-651.

Donoso, P., Martínez, F., Zegras, C., (2006). The Kyoto Protocol and Sustainable Cities: The Potential Use of the Clean Development Mechanism in Structuring Cities for Carbon-Efficient Transport. **Transportation Research Board, Nº1983,** 158-166.

Martínez, F., Hurtubia, R. (2006). Dynamic model for the simulation of equilibrium states in the land use market. **Networks and Spatial Economics**, **6,** 55-73.

Martínez, F., Roy, J. (2004). A Model for Residential Supply. **Annals of Regional Science, 38** (3), 531-550.

Pérez, P., Martínez, F., Ortúzar, J. (2003). Microeconomic Formulation and Estimation of a Residential Location Choice Model: Implications for the Value of Time. **Journal of Regional Science, 43**(4), 771-789.

Martínez, F. (2000). Land-Use/Transport/Planning in Hong-Kong: The End of an Era. Book review in **Transport Reviews 20(3),** 384.

Martínez, F., Araya, C. (2000). Transport and Land-Use Benefits under Location Externalities. **Environment and Planning A, 32** (9), pp 1521-1709.

Martínez, F., Araya, C. (2000). Note on Trip Benefits in Spatial Interaction Models. **Journal of Regional Science 40(4)**, 789-796.

Jara-Díaz, S.R., Martínez, F. (1999). On the specification of indirect utility and willingness to pay for discrete residential location models. **Journal of Regional Science, 39** (4), 675-688.

Ortúzar, J. D., Martínez, F., Varela F.J. (1999). Stated preferences in modeling accessibility. **International Planning Studies, 15** (1), pp. 65-85.

Martínez, F.J. (1996). MUSSA: A Land Use Model for Santiago City. **Transportation Research Record 1552: Transportation Planning and Land Use at State, Regional and Local Levels,** 126-134**.**

Martínez, F. (1995). Access, The Economic Link in Transport-Land Use Interaction. **Transportation Research B 29**(6), 457-471.*

Martínez, F. (1992). The Bid Choice Land-Use Model - An Integrated Economic Framework. **Environment and Planning A, 24**, 871-885.

APPENDIX: PROJECTS OF THE LAND USE AND TRANSPORT LAB.

The team F. Martínez and P. Donoso lead the Land Use and Transport Laboratory (LABTUS) at the University of Chile, which has developed several applied research projects, for example:

Project title:	"Diseño y aplicación de un sistema de información geográfica para la educación rural"
Major tasks performed:	Development of an optimization model for allocating rural schools in Chile.
Duration:	2008 - 2009
Amount:	US$ 160.000 approximately.
Client:	Ministry of Education, Government of Chile

Project title:	"Análisis, Desarrollo y Evaluación de Proyectos Urbanos, III Etapa"
Major tasks performed:	Assessment of land use effects originated by the new public transport system in Santiago of Chile (TRANSANTIAGO). Application of the land use model MUSSA and the transport model ESTRAUS
Duration:	2005 - 2008
Amount:	US$ 295.000 approximately.
Client:	Ministry of Planning and Cooperation, Government of Chile

Project title:	"Análisis Políticas de Usos de Suelo, II Etapa"
Major tasks performed:	Improvement, technical support and license management of the land-use modeling software MUSSA. Design and conduction of training workshops in MUSSA.
Duration:	2002 - 2007
Amount:	US$ 392.000 approximately.
Client:	Ministry of Planning and Cooperation, Government of Chile

Project title:	"Análisis y Actualización de Datos Asociados a Usos de Suelo"
Major tasks performed:	Development of non residential real estate inventory in Santiago of Chile. Development of GIS system for managing and analyzing this data base.
Duration:	2001 - 2006

Amount:	US$ 739.000 approximately.
Client:	Ministry of Planning and Cooperation, Government of Chile

Project title:	“Análisis y Desarrollo Evaluación Sistema de Transporte Interurbano, XV Etapa”
Major tasks performed:	Development of a Web- based geographic information system for managing and analyzing national transport surveys and vehicular flows measurements in Chile.
Duration:	2001 - 2006
Amount:	US$ 756.000 approximately.
Client:	Ministry of Planning and Cooperation, Government of Chile

Project title:	“Location Efficiency & Transit-Oriented Development: A Potential CDM Option in Santiago de Chile”
Major tasks performed:	Development of a vehicular emission minimization model by reallocating urban activities
Duration:	2004
Amount:	US$ 58.200 approximately.
Client:	Ministry of Planning and Cooperation, Government of Chile

Project title:	“Estado de las Ciudades Chilenas: sistema de seguimiento a la gestión del desarrollo urbano en las ciudades del país”
Major tasks performed:	Development of Web- based geographic information system for managing and analyzing urban indicators of large and middle size chilean cities
Duration:	2004
Amount:	US$ 81.400 approximately.
Client:	Ministry of Housing and Urbanism, Government of Chile

Project title:	“Repoblamiento e Intensificación del Uso de Suelo Urbano en el Anillo Central Metropolitano”
Major tasks performed:	Assesment of the potential impact on reducing vehicular emissions of relocating activities in the central area of Santiago (Chile). Application of the land use model MUSSA, the transport model ESTRAUS and motor vehicle emission model MODEM.
Duration:	2002
Amount:	US$ 43.800 approximately.

Client:	Worl Bank – Ministry of Planning and Cooperation of Chile – Ministry of Housing and Urbanism of Chile.

Project title:	“Análisis y Desarrollo Marcha Blanca de Estudios Metodológicos”
Major tasks performed:	
Duration:	2002
Amount:	US$ 287.000 approximately.
Client:	Ministry of Planning and Cooperation, Government of Chile.

Project title:	“Análisis Modificación programa TRANSYT 8S”
Major tasks performed:	
Duration:	2001 - 2002
Amount:	US$ 202.000 approximately.
Client:	Ministry of Planning and Cooperation, Government of Chile.

Project title:	“Actualización del Modelo de Cálculo de Emisiones Vehiculares”
Major tasks performed:	Development of new capabilities of the vehicular emission model MODEM.
Duration:	2001
Amount:	US$ 30.000 approximately.
Client:	Ministry of Planning and Cooperation, Government of Chile.

Project title:	“Análisis Económico-Ambiental de Planes de Desarrollo de Sistema de Transporte Urbano”
Major tasks performed:	Improvement of motor vehicle emission model MODEM. Development of computational module MODEC for assessing the impact of motor vehicle emissions.
Duration:	2001
Amount:	US$ 20.000 approximately.
Client:	Ministry of Planning and Cooperation, Government of Chile.

Project title:	“Análisis Políticas de Usos de Suelo”
Major tasks performed:	Development of the first version of the land use model MUSSA. Application of this model to Santiago city in Chile.

Duration:	1997 - 2000
Amount:	US$ 748.400 approximately.
Client:	Ministry of Planning and Cooperation, Government of Chile.

Project title:	“Análisis del Sistema de Usos de Suelo”
Major tasks performed:	Design of the land use model MUSSA. Development of prototype software of this model.
Duration:	1993 - 1996
Amount:	US$ 270.000 approximately.
Client:	Ministry of Planning and Cooperation, Government of Chile.