



MARCELO VILLENA, PhD

Professor of Economics and Finance

SANTA MARIA UNIVERSITY

Principal Economist

SCL ECONOMETRICS

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I. EDUCATION

University of Cambridge, Selwyn College

England

1997 – 2001 **Doctor of Philosophy (Ph.D.) Economics**
Thesis Title: "*On Production Structures in Long-term Macroeconomic Models*".

1997 **Master of Philosophy (M. Phil.) (by Research)**
Development & Environmental Economics

University of Leeds, Business School

England

1996 **Master of Arts (MA) in Economics and the Environment**

University of La Frontera

Chile

1991 - 1992 **Industrial Engineering minor Computer Science (I did 16 CS courses)**
2nd in Class, Highest Honors (Overall GPA: 6.2/7.0).

1987 - 1990 **Bachelor of Science in Industrial Engineering**
2nd highest score in PAA (Chilean SAT) at the Faculty of Engineering (average score 780/810)

II. HONORS & AWARDS

- ❑ Distinguished Teaching Award - MSc Industrial Engineering (course Industrial Organization), Adolfo Ibáñez University — 2021
- ❑ Distinguished Alumni Awards, Industrial Engineering School, University of La Frontera — 2019
- ❑ Best Researcher 2019 Faculty of Science and Engineering, Universidad Adolfo Ibáñez — 2019
- ❑ Distinguished Teaching Award - Master of Regulation (course Competition & Regulation), Adolfo Ibáñez University — 2018
- ❑ Best Research paper, track Economics & Finance, CLADEA California — 2017
- ❑ Best Researcher 2010 University, Universidad Adolfo Ibáñez — 2011
- ❑ Distinguished Teaching Award - Master of Economics, Adolfo Ibáñez University — 2009
- ❑ Chile Projects Award, Centre of Latin American Studies, University of Cambridge. Best Paper — 1999
- ❑ 1995-1998 National Scholarship Program for studying abroad (Doctoral Studies).
- ❑ 1987 Second highest score for admission to the School of Engineering at the Universidad de la Frontera, favored with a scholarship for one year. (Weighted Score 768 out of 810).
- ❑ 1987-1992 National Scholarship Program for undergraduate studies for high academic achievement.

III. ACADEMIC EXPERIENCE

Santa Maria University (USM)

Chile

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- 2021-present **Director MBA program**
<https://mba.usm.cl/en/>
- 2021-present **Professor of Economics and Finance**
www.usm.cl

Adolfo Ibáñez University (UAI)

Chile

-
- 2005-2020 **Professor of Economics and Finance**
- Member of the Committee of the **PhD in Finance** (Course: Time Series Econometrics STATA),
 - Member of the academic program of the **PhD in Management** (Former Member of the Committee) (Course: Advance Microeconomics),
 - Member of the academic program of the **PhD in Complex Systems** (Former Member of the Committee) (Course: Decisions Sciences, Data analysis and time series econometrics R, Python),
 - Member of the academic program of the **PhD in Industrial Engineering & Operation Research**,
 - Director and member of the academic program of the **MSc in Regulation** (Course: Antitrust Economics),
 - Director and member of the Committee of the **MSc in Financial Engineering** (Course: Time Series Econometrics),
 - Member of the Committee of the **MSc in Data Science** (Course: Time Series Econometrics),
 - Member of the Committee of the **MSc in Economics and Public Policy** (Course: Social Appraisal of Projects),

Teaching in different PhD and Master programs, and in **MBAs in several countries: Chile, Peru, Costa Rica (Course: Managerial Economics, more than 10 years)**.

2010-2019 **Vice-dean Faculty of Engineering and Sciences**

I was in charge of the academic and administrative affairs of a faculty of more than 130 people. During this period, I participated in the faculty hiring process and in its evaluation. I was in charge of the planning and implementation of the faculty labs (20 in total), and the national and international accreditation processes of the undergraduate (6 years CNA and ABET US) and postgraduates' programs. I also contributed actively to the design and implementation of most PhD (4) and Master programs (10), being the Director of the Postgraduate committee of the faculty.

2010-2019 **Director of the Master Program in Economic Regulation**

- ❑ Course in Regulation and Competition
- ❑ Participated actively in the development of its curriculum

IV. RESEARCH

Areas of interest:

- Industrial Organization and Game Theory.
- Data Science and Time Series Analysis.
- Finance and Quantitative Finance.
- Dynamic Optimization and Operation Research.
- Resources, Environmental Economics and Circular Economy.

Journal articles – *Work in progress*

- “**On the macroeconomic accounting of the circular economy**”, with Claudia Pabon to be submitted to Ecological Economics.
- “**On global and local advertising strategies: The dynamic monopoly case**”, with Mauricio Contreras, to be submitted to the Journal of Economic Dynamic and Control.
- “**Optimal labor contracts in the presence of corruption**”, with María José Quinteros to be submitted to Economic Letters.
- “**Energy-Capital substitution in the copper mining industry: The case of Chile, Australia, USA and Canada**”, with Fernando Greve to be submitted to Energy Economics.

Journal articles - *Submitted Publications*

- “**On the design and performance of the Chilean pension auction model**”, with Rodrigo Harrison, Marcela Parada-Contzen, submitted to Journal of Policy Modelling., **second round**.
- “**Price transmission in the pharmaceutical industry - The Case of Chile**”, with Rodrigo Harrison submitted to Health Economic.

Journal articles - *Publications*

- “**On the Dynamics and Stability of the Crime and Punishment Game**”, with María José Quinteros, Complexity, (2022).
- “**On the social discount rate for South American Countries**”, with Hugo Osorio, Applied Economics Letters, (2021).
- “**An evolutionary model of whistleblowing behavior in organizations**”, with María José Quinteros and Mauricio Villena in IMA Journal of Management Mathematics.(2021)
- “**Commodity price shocks and macroeconomic fluctuations in Suriname**”, with Xanegay Huur, Forthcoming in Resources Policy.
- “**Stylized Facts of the Chilean Bond Market**” Forthcoming in Estudios Públicos (Public Studies Journal).

- **“Computing the CEV option pricing formula using the semiclassical approximation of path integral”**, with Axel A. Araneda, Available online 7 November (2020), 113244, in Journal of Computational and Applied Mathematics.
- **“On the spatial dynamics of vaccination: A spatial SIRS-V model”**, with Eduardo González, Forthcoming in Computers & Mathematics with Applications.
- **"Comparative evaluation of wearable devices for measuring elevation gain in mountain physical activities"**, with Raimundo Sánchez Proc IMechE Part P: J Sports Engineering and Technology 1–8. IMechE (2020)
- **“Resonance phenomena in option pricing with arbitrage”**, with M Contreras, J Echeverría, and JP Peña, Physica A: Statistical Mechanics and its Applications 540, 123238, 2019:123238.
- **"Decentralized valorization of residual flows as an alternative to the traditional urban waste management system: The case of Peñalolén in Santiago de Chile."**, with de Kraker, J., Kujawa-Roeleveld, K., & Pabón-Pereira, C. Sustainability 11.22 (2019): 6206.
- **"On resource depletion and productivity: the case of the Chilean copper industry"**, with Fernando Greve, Resources Policy 59 (2018): 553-562.
- **“Global and local advertising strategies: a dynamic multi-market optimal control model”**, with Mauricio Contreras, Journal of Industrial & Management Optimization 15.3 (2019): 1017-1048.
- **“Impact of the Guaranteed Health Plan with a single community premium on the demand for private health insurance in Chile”**, with Eduardo Bitran, Fabián Duarte, and Dalila Fernandes, CEPAL Review N° 123 (2017), 225-244.
- **“Dynamic optimization and its relation to classical and quantum constrained systems”**, with Mauricio Contreras and Rely Pellicer, Physica A 479 (2017) 12–25.
- **“Dynamics and stability in retail competition”**, with Axel A. Araneda, Mathematics and Computers in Simulation 134 (2017) 37–53.
- **“On the strategic behavior of large investors: A mean-variance portfolio approach”**, with Lorenzo Reus, European Journal of Operational Research 254 (2016), 679-688.
- **“On the Solution of the Multi-Asset Black-Scholes Model: Correlations, Eigenvalues and Geometry”**, with Mauricio Contreras and Alejandro Llanquihuén, Journal of Mathematical Finance, 6 (2016), 562-579.
- **“Calibration and Simulation of Arbitrage Effects in a Non-Equilibrium Quantum Black-Scholes Model by Using Semi-Classical Methods”**, with Mauricio Contreras and Rely Pellicer, Journal of Mathematical Finance, 6 (2016), 541-561.
- **“Water management problems in the Copiapó Basin, Chile: markets, severe scarcity and the regulator”**, with Eduardo Bitran and Pedro Rivera, Water Policy 16 (2014) 844–863.
- **“¿Innovar para exportar o exportar para innovar? - Un análisis a nivel de rma de la industria manufacturera chilena, 1995-2010”** with Eduardo Bitran, Fernando Greve and Cristián González, Estudios Públicos (Public Studies Journal), 134 (otoño 2014), 109-130.

- **“Policy making for broadband adoption and usage in Chile through machine learning”**, with Gonzalo A. Ruz and Samuel Varas, *Expert Systems with Applications* 40 (2013) 6728–6734.
- **“Stability Analysis for Spatial Attrition with n Forces”**, with Eduardo González, *AIP Conference Proceedings* 1479, 1383 (2012).
- **“Spatial attrition modeling: Stability conditions for a 2D + t FD formulation”**, with Eduardo González, *Computers and Mathematics with Applications* 61 (2011) 3246–3257.
- **“Spatial Lanchester models”**, con Eduardo González, *European Journal of Operational Research* 210 (2011), 706-715.
- **“A quantum model of option pricing: When Black–Scholes meets Schrödinger and its semi-classical limit”**, with Mauricio Contreras and Rely Pellicer, *Physica A* 389 (2010) 5447–5459.
- **“Dynamic option pricing with endogenous stochastic arbitrage”**, with Mauricio Contreras and Rely Pellicer, *Physica A* 389 (2010) 3552–3564.
- **“El nuevo desafío de las concesiones de obras públicas en Chile. Hacia una mayor eficiencia y desarrollo institucional”**, with Eduardo Bitran, *Estudios Públicos*, N° 117 (verano 2010), 175-217.
- **“Economic Impact of the Open Skies Agreement Policy in Chile (Impacto Económico de la Política De Acuerdos De Cielos Abiertos En Chile)”**, with Rodrigo Harrison and Mauricio Villena, *Revista de Analisis Economico*, Vol. 23, No. 1 (2008), 107-149.
- **“La teoría de juegos evolutivos (TJE) y la economía evolutiva de Thorstein Veblen: ¿es Vebleniana la TJE?”**, with Mauricio G. Villena, *Cuadernos de Economía*, vol. XXIV No. 42 (2005), 13-48.
- **“Evolutionary Game Theory and Thorstein Veblen's Evolutionary Economics: Is EGT Veblenian?”**, with Mauricio G. Villena, *Journal of Economic Issues*, Vol. XXXVIII No.3 (2004), 585-610.
- **“Costs of greenhouse gas abatement: meta-analysis of post-SRES mitigation scenarios”**, with Terry Barker and Jonathan Köhler, *Environmental Economics and Policy Studies* (2002) 5: 135-166.

Selected Policy Papers

- Impact Evaluation of Chile's Foreign Trade on Employment in the Last 30 Years, in progress. SUBREI (Subsecretaría de relaciones económicas internacionales, Chilean Undersecretariat for international economic relations), Project Leader 2021.
- Review and update of the unit value of reactive power compensation and evaluation of an ancillary services market in the wholesale electricity market of Panama, Panama National Public Services Authority, Project Leader 2020.
- Methodology for estimating the penalty value for illegal Fishing and a proposal for Regulations according to Law No. 20.657, SUBPESCA (Undersecretariat for Fisheries - Ministry of Economy), Project Leader 2020.

- ❑ Private evaluation for the Santiago - San Antonio rail freight corridor, EPSA (Port Authority San Antonio), Project Leader 2020.
- ❑ Impact Evaluation of the Pandemic on Water Demand and Costs, SISS (Superintendence of Sanitary Services), Project Leader 2020.
- ❑ Forecasting of Fuel Demand (Diesel, Gasoline, LPG, Kerosene, Natural Gas, Petroleum), Energy Commission, CNE, Ministry of Energy Chile, 2019
- ❑ Evaluation Study of the Results and Impact of the Prochile Forestry Fund, Ministry of Foreign Affairs, General Directorate of International Economic Relations, Project Manager - Period 2014 - 2018, 2019.
- ❑ Potential Anticompetitive Effects of Mergers and Acquisitions, Indecopi, Peru, Project Manager - 2019.
- ❑ On the design and performance of the Chilean pension auction model, Technical note – Inter-American Development Bank – IADB, 2019.
- ❑ On adaptation to the restriction of water resources in Chile, ODEPA - Office of Agricultural Studies and Policies, Ministry of Agriculture, 2018.
- ❑ Towards modern contractual relationships in infrastructure works for public use, Working paper Series on Public Policy, Chilean Chamber of Construction, 2015.
- ❑ Analysis of Reimbursable Financial Contributions, Working paper Series on Public Policy, Chilean Chamber of Construction, 2015.
- ❑ Development of the renewable energy in Chile: Technical, regulatory and institutional challenges, with Carlos Silva, Working paper on Public Policy ESPACIO PÚBLICO, (2014).
- ❑ Measuring the impact of foreign direct investment on the Chilean economy, with Antonio Ansoleaga, Academic documents, Foreign Investment Committee, 2013.
- ❑ Impact Evaluation of the Food Programs of the JUNAEB, 2012, Ministry of Finance.
- ❑ On the evolution of Total Factor Productivity in Chile, with Igal Magendzo, CORFO (Chilean Development Agency, 2012.
- ❑ Assessing the environment for public-private partnerships in Latin America and the Caribbean, with Eduardo Bitran, Economist Intelligence Unit, The Economist, 2010.
- ❑ Innovate to compete, a guide of good practices, with Alfonso Gómez y Ariel Shilkrut, Confederation of production and trade (CPC), 2007.
- ❑ “Sustainable Impact Assessment (SIA) of the trade aspects of negotiations for an Association Agreement between the European Communities and Chile”, European Union, contributing author, December (2002).
- ❑ “IPCC WGIII Third Assessment Report - Chapter 9. Sector Costs and Co-Benefits of Mitigation”, contributing author, (2001).

- ❑ "Methodology of formulation and evaluation of intermediate road projects", Ministry of Planning, Chile, 1995. I identified this new category of public infrastructure projects and developed its methodology. Until today it is used, and projects have been implemented for millions of dollars in it.

Supervised PhD students

- ❑ Raimundo Sánchez - PhD in Engineering and Complex System, UAI, 2016 - Head of Operation Research Latam Airlines.
- ❑ Roberto Ortiz - PhD in Management, UAI, 2015 - Professor Department of Industrial Engineering Universidad Diego Portales.
- ❑ Hugo Osorio - PhD in Management, UAI, April 2017 - Professor Department of Commercial Engineering Universidad Santa María.
- ❑ Axel Araneda - PhD in Complex System Engineering, UAI, November 2017 - Postdoctoral at Frankfurt Institute for Advanced Studies FIAS.
- ❑ Richard Peña- PhD in Management, UAI, expected 2021.
- ❑ María José Quinteros - PhD in Complex System Engineering, UAI, 2021.
- ❑ Silvia Salinas - PhD in Complex System Engineering, UAI, expected 2023.
- ❑ Rafael Torres - PhD in Complex System Engineering, UAI, expected 2023.
- ❑ Álvaro Hernández - PhD in Complex System Engineering, UAI, expected in 2024.

Selected Research Projects

- ❑ 2016/2019 **Senior Researcher FONDEF project**: “Regional Impact Assessment Model (MEIR-ECOGEM) of public policies and sectoral investments in the economic, social and environmental fields”
- ❑ 2013/2016 **Responsible Fondecyt Research Project**, Engineering Area2, CONICYT, Chile. Project N°1131096: “Spatial Lanchester models: Applications to marketing, epidemiology and warfare”, (Con Eduardo González)
- ❑ 2004/2005 **Responsible Fondecyt Research Project**, Economy Area, CONICYT, Chile. Project N°1040355: “Forecasting the global economy using a dynamic general equilibrium model with flexible production structures”
- ❑ 1999 “Macroeconomic Modeling of Environmental Policy”, (with Dr. Terry Barker and Dr. Jonathan Köhler), **ESRC project, R000223024**, Department of Applied Economics, University of Cambridge

V. PROFESSIONAL EXPERIENCE

Ministry of Education

Chile

2019-present **Committee of Experts for the Regulation of Tariffs (as Economist).**
Part-time position as commissioner. Commission in charge of defining the university fee for undergraduate programs subjects to public subsidy.

Selected by a public and competitive contest by the Public Senior Management Committee.

Ministry of Planning

Chile

2011-2012 **Ministerial Advisory Commission on Public Investment**, created by the Ministry of Planning, now the Ministry of Social Development. Part-time position as commissioner. Advising the investment department, in charge of the economic evaluation of all the Chilean public investment on good practices in social appraisal, and the appraisal of complex, and huge investment plans and projects.

SCL Econometrics, Consultancy Firm

Chile

2001-present Partner & Senior Economist. Main fields: Financial Analysis, Econometrics Modelling, Economic Regulation, and Project Evaluation.

As an economist, more than 20 years of experience in consulting (at SCL Econometrics); More than hundred and fifty studies in the fields of applied economics and regulation, for national and international companies and public institutions.

Among the companies and institutions advised, the following stand out: the Inter-america Development Bank (IDB), OECD, World Bank, SERNAC (National Consumer Service), SQM, GLG, CNE, The Economist Intelligence Unit, UNDP, SCL, E-CL, SUBTEL (Undersecretary of Telecommunications), ENAP, CMET, USAID, Ministry of Finance (Chile), Ministry of Economy (Chile), Ministry of Foreign Affairs - Economic Office (Chile), FOSIS (Solidarity and Social Investment Fund), Albemarle, Metrogas, Port of Valparaiso, Port of San Antonio, European Union, CODELCO, CPC, TVN, Aguas Andinas, LATAM, JAC, Celulosa Arauco, Ministry of Economy (Bolivia), Ministry of Electricity and Renewable Energy (Ecuador), SISS (Superintendence of Sanitary Services), Entel, Movistar, Storbox, CORFO, Socovesa, VTR, CONAMA, PASO, Ministry of Energy, Watts, CChC, DIPRES, JAC, SCJ, EFE, Ministry of the Environment, Ministry of Labor, Ministry of Social Development, Ministry of Education, ALTA, Chilean Energy Efficiency Agency, Indecopi (Antitrust agency Perú), among others. See the annex for a full list of these studies.

Project Leader in most of these studies, frequently leading multidisciplinary teams. Expert in economic and regulation issues, presenter to various courts, including the competition court (TDLC), and Panel of Experts Electric Markets, among others.

Cambridge Econometrics

England

- 1998-1999 Consultant in Economic Forecasting. Main task includes:
- ❑ Modelling the E3 structures of Countries
 - ❑ Econometric modelling of time series.

Ministry of Planning, Department of Investment Analysis

Chile

- 1993 - 1995 Investment Analysts in charge of the Transport sector. Main tasks and responsibilities:
- ❑ National Coordinator of Investment in Transport Projects (supervising 13 people)
 - ❑ Inter-ministry Coordinator of Urban Transport Projects (supervising 6 people, from 6 different ministries)
 - ❑ Direct adviser of the Office of Budget, depending on the Ministry of Finance.
 - ❑ The economic analysis of governmental investments in infrastructure projects, especially the analysis of major urban road projects.
 - ❑ Cost-Benefit analysis of major infrastructure projects.

VI. SKILLS

Software

- ❑ **Statistical and Econometric Software:** Stata, EViews, Rats, Pc-Give, Limdep, SPSS, R
- ❑ **Programming Languages:** C, C ++, MATLAB, Java, Python, Turbo Pascal, Fortran, Cobol, Lisp

Languages

- ❑ **English: spoken and written.**
- ❑ **Spanish: native**

March 2023

Marcelo has participated in the following consultancy projects:

- 1 SUBPESCA (Undersecretariat for Fisheries - Ministry of Economy), **Evaluation of the impact generated by the public institutional framework for the promotion of artisanal fishing and small-scale aquaculture, Project Leader** 2023.
- 2 Ministry of Foreign Affairs, Under-Secretariat of International Economic Relations, **Impact of market measures applied to international maritime transportation, Project Leader** 2023.
- 3 Association of Electric Companies A G, **Economic Report - Review of Discount Rate for electricity distribution companies, Project Leader** 2022.
- 4 Ministry of the Environment, **Data Analysis for the State of the Environment Report 2022, Maintenance and Support of the National Environmental Information System (SINIA), Project Leader** 2022.
- 5 Danco (Logistic firm), **Damages Valuation Report, Danco Noviciado Project, Project Leader** 2022.
- 6 Office of Agrarian Studies and Policies (ODEPA), **Sustainable fertilization and integrated nutrient management, Project Leader** 2022.
- 7 Ministry of Foreign Affairs, Under-Secretariat of International Economic Relations, **Study on the Effects of Chile's Foreign Trade on Employment in the Last 30 Years, Project Leader** 2022.
- 8 SISS (Superintendence of Sanitary Services), **Sanitary Concessions Process Review, Project Leader** 2022.
- 9 SOCOFAR (Pharmacy) **Competition Report, Differential Treatment of Wholesale Drug Prices in Chile - Analysis and Proposals, Project Leader** 2022.
- 10 EPSA (Port Authority of San Antonio), **San Antonio Outer Harbor Social Assessment Update, Project Leader** 2021.
- 11 Antofagasta Minerals, **Copper mining rent in Chile, with Rodrigo Harrison Project Leader** 2021.
- 12 SUBPESCA (Undersecretariat for Fisheries - Ministry of Economy), **Methodology for estimating the penalty value for illegal Fishing and a proposal for Regulations according to Law No. 20.657, Project Leader** 2020.
- 13 EPSA, San Antonio Port Authority, **Private evaluation for the Santiago - San Antonio rail freight corridor, Project Leader** 2020.
- 14 SISS (Superintendence of Sanitary Services), **Impact Evaluation of the Pandemic on Water Demand and Costs, Project Leader** 2020.
- 15 National Public Services Authority, **Review and update of the unit value of reactive power compensation and evaluation of an ancillary services market in the wholesale electricity market of Panama, Project Leader** 2020.
- 16 SISS (Superintendence of Sanitary Services), **Study to Determine the Value of Water Rights of Aguas Andinas, Project Leader** 2020.
- 17 CORFO, **Economic Evaluation of Efficient Mining Contracts and Renegotiations, Project Leader** 2020.
- 18 PNUD – Ministerio de Energía Chile, **Preparation of an individualized national inventory of HFCs and their alternatives, in the mobile air conditioning, transport, refrigeration and supermarket sectors, 2020**
- 19 EPSA, San Antonio Port Authority, **Private Appraisal for the Santiago - San Antonio Rail Freight Corridor, , Project Leader** 2020.
- 20 ENEL, **Economic opinion on the acquisition of Chilquinta by ENEL, 2019**
- 21 ASILFA, **Analysis of the Competitive Situation of the Chilean Pharmaceutical Industry and the Implications to the Law on Drugs II, 2019**
- 22 Indecopi, Peru, (Antitrust Agency) **Potential Anticompetitive Effects of Mergers and Acquisitions, Project Leader** - 2019.

- 23 SERNAC (National Consumer Service), **Analysis and survey of improvements to the methodology and instruments used for project evaluation and verification of their results, Project Leader** - 2019
- 24 Indecopi, Peru (Antitrust Agency), **Study of the Industrial Organization of the International Maritime Cargo Transport Service, Project Leader** - 2019
- 25 Port of Iquique, **antitrust Study on the New Investment Initiatives of Port of Iquique, Project Leader** – 2019
- 26 **National Energy Commission**, Updating of Fuel Demand Projection Models (Diesel, Gasoline, LPG, Kerosene, Natural Gas, Oil – 2019
- 27 Ministry of Foreign Affairs, General Directorate of International Economic Relations, **Evaluation Study of the Results and Impact of the Prochile Agriculture Promotion Fund, Project Leader** - Period 2014 - 2018, 2019.
- 28 SCJ (Superintendency of Casinos and Gaming), **Design support implementation of operation permits, Project Leader** - 2018.
- 29 BBVA, **Economic analysis of the competition level on the conduct of bank states in the market for electronic transfer of funds between banks**, 2018
- 30 SUBPESCA (Undersecretariat for Fisheries - Ministry of Economy), **Economic and social evaluation of the performance of a management plan. a case study, common hake, Project Leader** - 2018
- 31 Albemarle, **Socioeconomic Impact Study associated with 2016-2018 Lithium Production investments, Project Leader** - 2018
- 32 Chilean Energy Efficiency Agency/EBP, **Study of Electric Mobility in Chile, Project Leader** - 2018.
- 33 SISS (Superintendence of Sanitary Services), **Study to Determine the Value of Water Rights of Aguas Andinas, Aguas Cordillera, Aguas Manquehue, SEMBCORP Aguas Chacabuco, SEMBCORP Aguas Lampa and SEMBCORP Aguas Santiago 2018-2019, Project Leader** - 2018-2019.
- 34 JUNAEB (National School Scholarship Program), **On the design of the auctions of food delivery at Chilean schools, Project Leader** -2018.
- 35 SCJ (Superintendency of Casinos and Gaming), **Consultancy for Data Processing for the Subsequent Technical Evaluation of Socioeconomic Factors in the Process of Granting Operating Permits for Gaming Casinos, Project Leader** - 2017.
- 36 Ministry of Finance/IDB, **Evaluation of the functioning of tenders as a mechanism for the allocation of the service of administration of individual capitalization accounts established in DL 3500 of 1980.**
- 37 Ministry of Energy / E2biz, **Elaboration of the Sustainability Plan for the Development of a Local Strategic Investment Market within the framework of the Energy Community Program**
- 38 Chileactores, **Economic Consulting on the Tariffs of Rights for Actors** - 2017.
- 39 Office of Agrarian Studies and Policies (ODEPA), **Study of Adaptation to Water Resources Restriction in Chile, Project Leader** -2017.
- 40 SISS (Superintendence of Sanitary Services), **Study on Updating the Methodology for the Valuation of Water Rights, Project Leader** - 2017.
- 41 Ministry of Labour, Directorate of Labour, **Economic Sector Study of the Supply of Critical Infrastructure: Electricity, Gas, Steam and Air Conditioning, Project Leader** - 2017.
- 42 Ministry of Labour, Directorate of Labour, **Economic Sector Study Water supply, wastewater disposal, waste management and decontamination, Project Leader** - 2017.
- 43 Metrogas (Gas Company), **Estimate of the Capital Cost Rate for Network Gas Distribution Companies, Project Leader** - 2017.

- 44 The Economist Intelligence Unit, **Ranking Public-Private Partnerships in Latin America and the Caribbean**, Lead Researcher - 2016.
- 45 JAC (Civil Aviation Board), **Study for the Promotion of Intraregional Aviation**, **Project Leader** - 2016.
- 46 Lota Protein, **Calculating the Value of Fishing Quotas**, with Rodrigo Harrison - 2016.
- 47 SISS (Superintendence of Sanitary Services), **Study of Economic Compensation for Infrastructure Fails**, **Project Leader** - 2016.
- 48 Prieto & Cia and Watt, **On the effects on competition levels of the acquisition of a company**, **Project Leader** - 2016.
- 49 Carey Abogados, **Retail Market Competition Analysis**, with Alejandro Jadresic - 2016.
- 50 Association of Electric Companies A G, **Conceptual Analysis of Regulated Rate of Return Schemes for the Electric Industry**, **Project Leader** - 2015.
- 51 SCJ (Superintendency of Casinos and Gaming), **"Determination of Minimum Economic Offer in the Bidding for Operation Permits of Gaming Casinos"**, **Project Leader** - 2015.
- 52 SERNAC (National Consumer Service), **"Estimation of the Demand and Future Flow of Products and Services"**, **Project Leader** - 2015.
- 53 Port of Valparaiso, **"Economic and Socio-cultural Impact Study of Port Activity"**, several surveys and economic models of the input-output type were developed to quantify the socio-economic impact of the various port activities in the city of Valparaiso, **Project Leader** - 2015.
- 54 SERNAC (National Consumer Service), **"Study of Industrial Organization for Major Non-Financial Markets"**, **Project Leader** - 2015.
- 55 Prieto & Cia, **Economic Analysis of the Contract between two Generating Companies**, with Alejandro Jadresic - 2015
- 56 National Energy Commission (CNE), **Econometric Analysis of the Retail Market for Fuel Sales in Service Stations**, **Project Leader** - 2015.
- 57 Ministry of Social Development, **Cost Analysis of Public Infrastructure Construction for the Regions of Antofagasta and Bio Bio**, **Project Leader** - 2015
- 58 GLG (Gerson Lehrman Group) **Economic Impact of Free Trade Agreements** - 2015.
- 59 Port of Valparaiso, **Economic and Socio-cultural Impact Study of the Port Activity**, **Project Leader** - 2015.
- 60 GLG (Gerson Lehrman Group) **Analysis of the Higher Education Sector in Chile** - 2015
- 61 Chilean Chamber of Construction (CCHC), **Analysis of Reimbursable Financial Contributions (AFR)**, **Project Leader** - 2015.
- 62 Chilean Energy Efficiency Agency, **Impact Evaluation of the Energy Efficiency Label for Light Vehicles in Chile**, **Project Leader** - 2014.
- 63 High Complexity Court, **Economic Advisor in Pharmacy Collusion Case**, Pro bono (with Rodrigo Harrison) - 2014.
- 64 Celulosa Arauco, **Supply and Demand Modelling of the Pallet Market in Japan**, **Project Leader** - 2014.
- 65 Chilean Chamber of Construction (CCHC), **Modern Contractual Relations in Infrastructure Works for Public Use**, **Project Leader** - 2014
- 66 Terminal Cerros de Valparaíso, **Economic Impact of the Terminal Cerros de Valparaíso (TCVAL)**, with Alejandro Jadresic, Project Manager - 2014
- 67 Prieto & Cia and Watt, **Economic Analysis of the Demand from FEDELECHE to Watt**, with Alejandro Jadresic, **Project Leader** - 2014.
- 68 VTR, **Economic Analysis and Alternatives to the Current VTR Radio Spectrum Concession**, with Rodrigo Harrison, **Project Leader** - 2014.

- 69 FOSIS (Solidarity and Social Investment Fund), **Evaluation of design and results of the microcredit support program (MAP), Project Leader** - 2014.
- 70 The Economist Intelligence Unit, **Ranking Public-Private Partnerships in Latin America and the Caribbean**, Senior Researcher, with Eduardo Bitrán - 2014.
- 71 ALTA (Latin American and Caribbean Air Transport Association), **Socio-Political Study of ICAO Economic Measures to the Air Industry**, with Wilfredo Yushimito, Carlos Silva, and Fernando Larraín - 2013.
- 72 iConstruye, **Price Forecasts for Houses and Apartments in the City of Santiago**, with the Center for Territorial Intelligence, with Nicole Norel, Adolfo Ibañez University, 2013.
- 73 Chilean Energy Efficiency Agency, **Design and Impact Assessment of the Energy Efficiency Label for Light Vehicles in Chile** (With Carlos Silva and AETS) - 2013.
- 74 Ministry of Transport and Telecommunications, Undersecretary of Telecommunications, **Economic expert SUBTEL in the Tariff Process of Mobile Telephony companies**, - - 2013.
- 75 UNDP, **Proposal and Calibration of Mechanism for Collecting Contributions to Public Space**, with the Center for Territorial Intelligence, with Nicole Norel, Adolfo Ibañez University, **Leader of Economic Analysis** - 2013.
- 76 Ministry of Electricity and Renewable Energy - Ecuador and IDB, **Study of Barriers and Instruments for the Promotion of Energy Efficiency**, Renewable Energy and Bioenergy in Ecuador, with Carlos Silva and AETS - 2013.
- 77 E-CL, **Valorisation of a gas pipeline: Distrinor S.A.**, with Alejandro Jadresic - 2013.
- 78 Ministry of Transport and Telecommunications, Undersecretary of Telecommunications, **Economic expert SUBTEL in the BTE of the Tariff Process of Mobile Telephony companies**, - - 2013.
- 79 Aguas Andinas, **Analysis of the Operational and Financial Performance of Aguas Andinas: 2000-2012** - 2013
- 80 CODELCO, **Study of Social and Economic Impact of Codelco Divisions**, with the Center for Territorial Intelligence, University Adolfo Ibañez, **Project Leader of the Economic part of the Project** - 2013
- 81 SUBTEL (Undersecretary of Telecommunications), **Operadores de Infraestructura de Telecomunicaciones y Masificación de la Banda Ancha en Chile: Propuestas de Reforma**, with Alejandro Jadresic, Ricardo Ramos. Eduardo Bitrán and Lucas Sierra, Adolfo Ibañez University, **Project Leader** - 2012.
- 82 Foreign Investment Committee, **On Impact of Foreign Direct Investment on the Chilean Economy, Project Leader** - 2012.
- 83 Ministry of Finance Chile, Budget Office, **JUNAEB's PAE Program Impact Evaluation, Project Leader** - 2012
- 84 SOCOVESA, **Determinants of Housing Prices in Chile: An econometric model of hedonic prices for middle-income houses in Santiago**, with Eduardo Bitrán, **Project Leader** - 2012.
- 85 Ministry of Public Works, **Study of Operational Demand Expansion of Los Andes Land Port General Director of Carabineros José Alejandro Bernales**, with Manuel Madrid and INECON - 2012.
- 86 Ministry of Economy and Public Finance Bolivia and European Union, **Training in International Finance to the Vice-Ministry of the Treasury and Public Credit**, with Mauricio Villena and Fernando Larraín - 2012.
- 87 Morales & Besa and Iron Mountain S.A. **"Investigation of possible restrictions to competition: Iron Mountain S.A. and Storbox S.A."**, with Rodrigo Harrison - 2012.
- 88 The Economist Intelligence Unit, **Ranking Public-Private Partnerships in Latin America and the Caribbean**, Lead Researcher, with Eduardo Bitrán - 2011.

- 89 SANITARY COMPANIES, **Economics of Non-Regulated Services**, with Alejandro Jadresic, Project Manager - 2012.
- 90 Ministry of the Environment, **Technical-Economic Analysis of Alternatives to the Use of Fire for the Management of Vegetal Forest Waste**, **Project Leader** - 2011.
- 91 CORFO (Corporación de Fomento a la Producción), **Towards a Productivity Indicator: Evolution of annual and quarterly aggregate TFP**, with Igal Magendzo - 2011.
- 92 CONAMA (National Environmental Commission), **Economic and Social Impact Analysis of the Emission Standard for the Regulation of Light Pollution**, with Eduardo Gonzalez, **Project Leader** - 2011
- 93 OECD, **Water Markets functioning in Chile: Scarcity and the Regulator**, with Eduardo Bitrán — 2011.
- 94 EMPRESA ELÉCTRICA, **Proposal for Electric Transmission Reform**, with Eduardo Bitrán and Carlos Silva - 2011.
- 95 TVN Televisión Nacional de Chile, **Analysis of the controversy raised by the inclusion of open television channels in VTR's programming**, Presentation as an expert in Competition, TVN-VTR Testimonial Audience, with Alejandro Jadresic - 2011.
- 96 CORFO (Corporación de Fomento a la Producción), **Market Performance Indicator for Financial Institutions (MFIs): CORFO Guarantee Investment and Working Capital**, Pro bono, **Project Leader**, - 2011.
- 97 ODEPA (Office of Agricultural Studies and Policies), **Design of Business Models for the Improvement of Marketing of Horticultural Products in Small and Medium-Sized Agricultural Producers**, **Project Leader** - 2011.
- 98 SUBPESCA (Undersecretariat for Fisheries - Ministry of Economy), **Diagnosis of Domestic Consumption of Fishery Products in Chile**, **Project Leader** - 2011.
- 99 Lota Protein, **Advisor for the study on the Optimal Allocation of Transferable Fishing Quotas** - 2011.
- 100 ZOFRI (Free Zone of the city of Iquique), **Strategy and Pricing Policies for the Free Zone of Iquique**, **Project Leader** - 2010.
- 101 SUBTEL (Undersecretary of Telecommunications), **Analysis of the Recommendations of the Antitrust Court for the Telecommunications Sector**, with Rodrigo Harrison - 2010.
- 102 The Economist Intelligence Unit, **Ranking Public-Private Partnerships in Latin America and the Caribbean**, **Lead Researcher**, with Eduardo Bitrán - 2009 and 2010.
- 103 INDAP (Institute of Agricultural Development - Ministry of Agriculture), **Evaluation of the Program of Business Management Centers**, **Project Leader** - 2010.
- 104 JAC (Junta de Aeronáutica Civil), **Analysis of the Efficiency of the Chilean Aeronautical Market**, **Project Leader** - 2009
- 105 Ministry of Finance (DIPRES), **Impact Evaluation of Program for Educational Professionals - Ministerio de Educación**, with Fernando Cartes - 2009.
- 106 Ministry of Economy, **Econometric Analysis of the V Innovation Survey**, **Project Leader** - 2009.
- 107 Superintendencia de Pensiones, **Statistical analysis of the unemployment insurance Database**, **Project Leader** - 2009.
- 108 PDUC Praderas y Urbana, **Consulting on Investment in macro infrastructure and its integration with urban roads**, with Alejandro Jadresic and Eduardo Bitrán - 2009.
- 109 JAC (Junta de Aeronáutica Civil), **Analysis of the Unilateral Opening of Cabotage in Chile**, **Project Leader** - 2009.
- 110 CPC, Confederación de la Producción y el Comercio, **Economic Impacts for Chile of Acquiring Greenhouse Gas Reduction Commitments**, **Project Leader**, with Carlos Silva - 2009.
- 111 HidroAysen, **Economic Evaluation of the Externalities Produced by the Aysén Hydroelectric Project: At the National and Regional Level**, **Project Leader**, with Carlos Silva - 2009.

- 112 Ministry of Economy, **Quantification of Scale Economies in the Water Sector, Project Leader** with Mauricio Villena - 2009
- 113 SUBTEL (Undersecretary of Telecommunications), **Proposals to strengthen the demand for broadband services in Chile, Project Leader** with Samuel Varas and Gonzalo Ruz - 2009.
- 114 SERNATUR (National Tourism Service - Ministry of Economy), **Impact Evaluation of the Program for the Application of Law No. 19.255, Promotion of Chilean Tourism Abroad, Project Leader** - 2009.
- 115 SCL Santiago Airport, **Strategic Consulting, Project Leader** - 2008.
- 116 Superintendencia de Valores y Seguros (SVS) **Study on the cost of intermediation and sale of annuities, Project Leader** - 2008.
- 117 JAC (Junta de Aeronáutica Civil), **Study of ticket prices in the air market**, with Mauricio Villena, **Project Leader** - 2008.
- 118 TVN Televisión Nacional de Chile, **Analysis of the Controversy Arising from the Inclusion of Open Television Channels in VTR's Programming**, with Alejandro Jadresic, **Project Leader** - 2011.
- 119 Ministry of Economy, **Analysis on the creation of new regulatory instruments to protect smaller companies against commercial abuses, Project Leader** with Mauricio Villena - 2008.
- 120 Ministry of Finance (DIPRES) **Consultant Evaluation of Government Programs (EPG), Energy Efficiency Country Program**, with Guillermo Donoso and Hector Kaschel, **Project Leader** - 2008.
- 121 Ministry of Economy, **Analysis of Competition Conditions in the Local Telephony Market, Project Leader**, to be submitted to the Court of Defense of Free Competition - 2008.
- 122 Instituto de Fomento Pesquero, **Economic Evaluation of the Acquisition of a Fishing Research Vessel, Project Leader** with Mauricio Villena - 2008
- 123 Prieto & Cia and Multinational Company, **Effects on competition of an eventual acquisition of a company in the Chilean gas sector**, with Alejandro Jadresic, Project Manager - 2008.
- 124 LAN Chile, **Allocation of Traffic Rights Santiago - Lima: An Economic Analysis, to be presented to the Tribunal for the Defense of Free Competition**, with Alejandro Jadresic - 2007.
- 125 ENTEL Chile, **Analysis of Fixed Telephony Tariffs Liberalization, to be presented to the Court of Defense of Free Competition, Project Leader**, with Leonidas Montes - 2007
- 126 JAC (Civil Aviation Board), Chile **Comparative Study of the Results of Liberal Air Agreements in Chile and the Region, Project Leader** - 2007
- 127 K pfer companies, industrial suppliers, **Innovation Management Evaluation Project Leader**, with Ariel Schilkrut and Alvaro Espejo - 2007
- 128 Movistar, **Cost-Benefit Analysis of a Class-Action for the Company Movistar**, was presented in court, project manager, with Rodrigo Harrison - 2006
- 129 Ministry of Finance (DIPRES), **Consultant Evaluation of Government Programs (EPG), TODOCHILE Program**, CORFO - 2006
- 130 CONAMA (National Commission for the Environment), **General Analysis of the Economic and Social Impact of the Redesign of the Operational Plan to Address Critical Episodes of Air Pollution by Particulate Breathing Material (PM10) in the Metropolitan Region, Project Leader** - 2006
- 131 Inter-American Development Bank (IDB), **Socioeconomic and Environmental Analysis for Ecuador, Economic Study Director**. The project is presented to the Council of Ministers in Ecuador - 2006.
- 132 SUBPESCA (Undersecretariat for Fisheries - Ministry of Economy), **An lisis del Impacto de la Pesca Deportiva en la Econom a**, with Mauricio Villena -2006.
- 133 SISS (Superintendence of Sanitary Services), **Tariff Study: Econometric Demand Estimation: various regions (ANSM, ESSBIO, Aguas del Valle), Project Leader** - 2005.

- 134 Ministry of Finance (DIPRES), **Consultant Evaluation of Government Programs (EPG), ISIDORA Program, Customs Service** - 2005.
- 135 CORFO (Corporación de Fomento a la Producción), Valuation and Management of Heritage Projects in Valparaíso, **Project Leader** - 2005.
- 136 USAID, **Demand Risks in Infrastructure Concession Projects: A Demand Estimate for the Amazonas Centro Project, Peru, Project Leader**, A stochastic risk model is developed for road projects in developing countries - 2005.
- 137 SISS (Superintendence of Sanitary Services), **Study of Unit Prices: An Econometric Approach: various regions, Project Leader** - 2005.
- 138 Ministry of Health, Economic Aspects of Public-Private Partnerships (PPPs). **Hospital Concessions in Chile: A Conceptual Application for the case of the Salvador Infante Hospital Complex** A theoretical model (contract theory) is developed to empirically analyse the incentives of different cases of hospital concessions, with Mauricio Villena - 2005.
- 139 ENAP (Empresa Nacional del Petróleo), **Economic Analysis of Hydrocarbon Sector Price Policies**, with Rodrigo Harrison - 2004.
- 140 Municipality of Puerto Natales, **Determination of Information and Short-term Alternatives to be Implemented for the Improvement of Economic Activity in the Commune of Natales, Project Leader** - 2004.
- 141 Ministry of Finance (DIPRES), **Consultant Evaluation of Government Programs (EPG), Road Conservation Program, Ministry of Public Works** - 2004.
- 142 CORFO, **The Economy of Historical Heritage: Towards an Efficient Management and Valuation of Heritage in Valparaíso, Project Leader** - 2004.
- 143 CONAMA (National Commission for the Environment), **Socio-Economic Analysis in the Management of Persistent Organic Pollutants (POPs), Project Leader** - 2004.
- 144 National watering commission, **Elaboration and econometric calibration of irrigation indicators based on the Integral Irrigation Information System, Project Leader** - 2003.
- 145 CMET S.A., **Tariff study to be presented to SUBTEL, Project Leader** - 2003.
- 146 Superintendencia de Servicios Sanitarios, Chile **Tariff Study V Region**, with Regulation & Markets G.C., **Project Leader** - 2003.
- 147 Chilesat, Chile **Analysis and projection of demand and determination of the capital cost rate of fixed telephony in Chile**, with Regulation & Markets G.C. - — 2003.
- 148 Ministry of Education, **Study on Legal Framework and Performance Conditions of Directors of Municipal Establishments and Heads of Municipal Education Departments, Project Leader** - 2002.
- 149 Inter-American Development Bank (IDB) and National Council for State Modernization (CONAM) of Ecuador, **International Consultancy for the Mid-term Evaluation of the Agreement to Support Private Investment in Infrastructure, signed between the Ecuadorian State and the IDB**. An economic evaluation was developed and using the logical framework methodology of the Ecuadorian concessions program, the results were organized and presented in a meeting with the main ministers of the area, in Quito Ecuador, with Fernando Cartes - 2002.
- 150 Ministry of Finance, **Chile Productivity and Competitiveness of the Dairy Sector in Chile: An Economic Analysis and Policy Definition**, An analysis of industrial organization and a model to analyse different strategies of the industry is developed, **Project Leader**, with Mauricio Villena The results are presented to the Undersecretary -2002.
- 151 European Union (Planistat Luxembourg) **Sustainability Impact Assessment (SIA) of the Trade Aspects of Negotiations for an Association Agreement between the European Commission and Chile**, A computable general equilibrium model is developed to analyse the economic, social and environmental impact of the free trade agreement between Chile and the European Union. The results were presented at the European Congress in Belgium - 2002.

- 152 Ministry of Education, **Evaluation of the Implementation and Operation Process of the Indigenous Fellowship Program, Project Leader**. An econometric analysis (with counterfactual scenario) is developed to measure the impact of the program, with Juan Lebert - 2002.
- 153 Ministry of Planning, Investment Department, Chile. **Social Evaluation of PPP Projects, Project Leader** - 2001.
- 154 Ministry of Education, **Evaluation of the Implementation of the First Cycle Basic Curriculum in the Schools of the Sixth Region**, with Juan Lebert - 2001