Bernardo Kulnig Pagnoncelli
Associate Professor at Universidad Adolfo Ibáñez, Santiago, Chile
Business School — Work: +56 2 2331-1155
Diagonal Las Torres 2640, oficina 533-C — Mobile: +56 9 6847-2930
Santiago, Chile.
E-mail: bernardo.pagnoncelli@uai.cl
Home Page: http://bernardokp.uai.cl/

Personal Information

Date of birth: December 25th 1980

Citizenship: Brazilian and Italian

Education

- **Pontifical Catholic University of Rio de Janeiro (PUC-Rio)** — Brazil
  Research Scholar at Georgia Tech for one year, 2007
  Ph.D., Applied Mathematics, 2009.

- **Pontifical Catholic University of Rio de Janeiro (PUC-Rio)** — Brazil
  M.Sc., Applied Mathematics, 2004

- **Pontifical Catholic University of Rio de Janeiro (PUC-Rio)** — Brazil
  B.S., Pure Mathematics, 2002

Work history

- Visiting Professor at Northwestern University IEMS Department, 2018-2019.

- Associate Professor at Universidad Adolfo Ibáñez, Business School, Santiago, Chile.
  2015 - present.

- Assistant Professor at Universidad Adolfo Ibáñez, Business School, Santiago, Chile.
  2009 - 2014.

Publications

- **A scenario generation scheme for two stage risk averse stochastic programming**
  S. Arpon, T. Homem-de-Mello, B.K. Pagnoncelli.
  Accepted at Mathematical Programming, 2018.

- **A two-step hybrid investment strategy for pension funds**.
  B.K. Pagnoncelli, G. Denis and A. Cifuentes.
  North American Journal of Economics and Finance, Vol. 42, pp 574-583, 2017.

- **A risk averse approach to the optimal capacity problem in the airline cargo industry**.
  B.K. Pagnoncelli, M. Wada and F. Delgado.
  Journal of the Operational Research Society, Vol. 68(6), pp 643-651, 2017.

- **The optimal harvesting problem under price uncertainty: the risk averse case**
  A. Piazza and B.K. Pagnoncelli
  Annals of Operations Research, Vol. 258 (2), pp 479502, 2017.

- **Credit-Risk Behavior of Homogeneous Portfolios: A Theoretical Result with Surprising Practical Implications**.
  B.K. Pagnoncelli, F. Hawas and A. Cifuentes.
  Journal of Structured Finance, 22(2), pp 7-15, 2016.

- **Risk aversion in multistage stochastic programming: a modeling and algorithmic perspective**
  T. Homem-de-Mello and B.K. Pagnoncelli
  European Journal of Operational Research, 249(1), pp 188-199, 2016.

- **Chance-constrained problems and rare events: an importance sampling approach**
  J. Barrera, T. Homem-de-Mello, E. Moreno, B.K. Pagnoncelli, G. Canessa
  Mathematical Programming, 157(1), pp 153-189, 2015.

- **The stochastic Mitra-Wan forestry model: risk neutral and risk averse cases**
  A. Piazza and B.K. Pagnoncelli
  Journal of Economics, 115(2), pp. 175-194, 2015.

- **Credit risk assessment of fixed income portfolios using explicit expressions**
  A. Cifuentes and B.K. Pagnoncelli
  Finance Research Letters, 11(3), pp. 224-230, 2014.

- **Demistifying credit risk derivatives and securitization: introducing the basic ideas to undergraduates**
  B.K. Pagnoncelli and A. Cifuentes
  Journal of Derivatives, 22(2), pp. 110-118, 2014.

- **The optimal harvesting problem under price uncertainty**
  A. Piazza and B.K. Pagnoncelli
  Annals of Operations Research, 217(1), pp 425-445, 2014.

- **Risk-return trade-off with the scenario approach in practice: a case study in portfolio selection**
  B.K. Pagnoncelli, D. Reich and M.C. Campi.
  Journal of Optimization Theory and Applications 155(2), pp 707-722, 2012.

- **A provisioning problem with stochastic payments**
  B.K. Pagnoncelli and S. Vanduffel
  European Journal of Operational Research, 221(2), pp 445-453, 2012.

- **Computational study of a chance-constrained portfolio problem**
  B.K. Pagnoncelli, S. Ahmed and A. Shapiro
  Journal of Optimization Theory and Applications, 142(2), pp 399-416, 2009.

- **Transaction costs in collective investments (in Portuguese)**
  A. Azevedo, B.K. Pagnoncelli, C. Tomei
  Revista Brasileira de Economia, 63(4), pp 261-270, 2009.

- **Random linear systems (in Portuguese)**
  B.K. Pagnoncelli, C.F.B. Palmeira and H. Lopes
  Matemática Universitária, 45, pp 44-50, 2009.

- B.K. Pagnoncelli
  Sample average approximation for chance-constrained programming
  PhD thesis, 2009.

- **Cournot equilibrium: modern techniques applied to an old problem**
  B.K. Pagnoncelli, C.F.B. Palmeira, M.A.K. Schnoor and R. Cayres
  Journal of Interdisciplinary Mathematics, 11(5), pp 601-616, 2008.

Ongoing work

- **Competition and coalition for smart energy supply**
  H. Le Cadre, T. Homem-de-Mello, B.K. Pagnoncelli
  Under review, 2nd round, 2017.

- **An algorithm for binary chance-constrained programming**
  G. Canessa, L. Ntaimo and B.K. Pagnoncelli.
  Under review, 2017.

- **A proximal ADMM algorithm for two-stage stochastic programming problems**
  S. Arpon, T. Homem-de-Mello, B.K. Pagnoncelli.
  Under review, 2nd round, 2017.

- **A multistage stochastic programming model for air cargo assignment under capacity uncertainty**
  R. Trincado, B.K. Pagnoncelli and F. Delgado.
  Under review, 2017.

- **A constraint-free Investment Strategy for pension funds**
  T. Gutiérrez, B.K. Pagnoncelli, D. Valldão, A. Cifuentes and A. Street.
  In preparation, 2017.

- **Risk averse two stage stochastic programming using stochastic decomposition**
  P. Parab, L. Ntaimo, B.K. Pagnoncelli.
  In preparation, 2017.

- **Risk averse multistage stochastic programming with expected conditional risk-measures**
  M. Khatami, L. Ntaimo, B.K. Pagnoncelli.
  In preparation, 2017.

- **An algorithm for the optimization of a deposit with two minerals.**
  G. Jiangyue, L. Ntaimo, A. Piazza, B.K. Pagnoncelli.
  In preparation, 2017.

- **Regularized pension fund optimization with risk constraints**
  F. del Canto, A. Cifuentes, B.K. Pagnoncelli.
  In preparation, 2017.

- **The consequences of portfolio constraints in DC pension funds: the Chilean experience**
  H. Schelchter, A. Cifuentes, B.K. Pagnoncelli.
  In preparation, 2017.

- **Solving Life-cycle problems in discrete time with portfolio constraints**
  J. Garcia, B.K. Pagnoncelli, T. Homem-de-Mello, P. Castañeda.
  In preparation, 2017.

- **Lane's algorithm from a different viewpoint**
  M. Goycoolea, A. Piazza, P. Lamas and B.K. Pagnoncelli.
  In preparation, 2017.

- **Microgrid energy management with renewables and storage**
  B.K. Pagnoncelli, R. Carrasco, , M. Carrasco, T. Homem-de-Mello and V. Foucher.
  In preparation, 2017.

Conference Proceedings

- B.K. Pagnoncelli, P. Lamas, M. Goycoolea, A. Piazza. **Revisiting Lane's model: an optimization approach**
  Geomin/Mineplanning 2017

- B.K. Pagnoncelli, S. Ahmed and A. Shapiro
  Computational study of a chance constrained portfolio selection problem
  XIV CLAIO, Cartagena, Colombia, 2008.

- B.K. Pagnoncelli, H.J. Bortolossi and C. Tomei
  A geometric approach to hydrothermal scheduling with variable production coefficient
  5th ICDSA, Morehouse College, Atlanta, GA, USA, 2007.

- B.K. Pagnoncelli and H.J Bortolossi
  Introduction to choice under uncertainty (in Portuguese)
  III Bi-Annual meeting of Brazilian Mathematical Society, UFG, Goiânia, GO, Brazil, 2006.

- B.K. Pagnoncelli and C.F.B. Palmeira
  Discrete dynamics applied to economics (in Portuguese)
  III Bi-Annual meeting of Brazilian Mathematical Society, UFG, Goiânia, GO, Brazil, 2006.

- B.K. Pagnoncelli, G. Enciso, D. Schmidt, S. Bayram, A. DeWitt, H. Fernando, J.A.S. Hameed and J. Kao
  Data to knowledge in pharmaceutical research
  Mathematical Modelling in Industry Workshop, IMA, University of Minnesota, MN, USA 2004

- B.K. Pagnoncelli and H.J. Bortolossi
  Interior point methods and the hydrothermal scheduling problem
  Scientific Initiation yearly proceedings, PUC-Rio, 2002

Thesis

- B.K. Pagnoncelli
  Applications of the tensor product in numerical analysis
  Ph.D. thesis, 2009.

- B.K. Pagnoncelli
  Applications of the tensor product in numerical analysis
  Masters Dissertation (in Portuguese), 2006.

Consulting and Business

- 40-hour course at Petrobras on Stochastic Programming, with T. Homem-de-Mello, 2014.

- Founder and Creative Director of GameLab, a company that produces digital games for the classroom, 2013-2016. The company won $90,000 USD in seed fund from the Chilean government, and the games have been used in several Universities all over the world.

Press

- GameLab
  - El Mostrador newspaper, November the 13th, 2015.
  - El Mercurio newspaper, November the 4th 2015 and January the 26th, 2015.
  - Estrategia newspaper, March 10th, 2014.
  - CNN Chile, 2-minute program on GameLab.
  - PITCH (Shark Tank type of program). GameLab was one of the 24 out of 180 companies selected to pitch on TV for a group of 4 investors in a 3-minute pitch.

- Research and opinion pieces:
  - Challenges in Air Cargo transportation (in Spanish), with F. Delgado, Logistec Magazine, 2017.
  - Pulso newspaper - 1 page article about my research with A. Cifuentes on default correlation. (March 11th, 2014)
  - “Competitive Simulations: game on”. 1000-words article in OR/MS with A. Seidmann, August 2015.

Presentations and courses

- **Pension Fund Workshop, Santiago, Chile, 2018**
  A two-step hybrid investment strategy for pension funds
  30-minute presentation

- **OPTIMA, Viña del Mar, Chile, 2017**
  A two-step hybrid investment strategy for pension funds
  20-minute presentation

- **INFORMS, Houston, United States, 2017**
  IIS branch-and-cut algorithm for binary chance-constrained problems
  20-minute presentation

- **CLAIO, Santiago, Chile, 2016**
  A multistage stochastic programming model for air cargo assignment under capacity uncertainty
  20-minute presentation

- **XIV ICSP, Búzios, Brazil, 2016**
  Microgrid energy management with renewables and storage
  25-minute presentation

- **UAI Seminar, Santiago, Chile, 2016**
  An investment strategy for pension funds
  50-minute presentation (invited speaker)

- **AASS Workshop, IMPA, Rio de Janeiro, Brazil, 2016**
  Multistage Stochastic Programming: A Modeling and Algorithmic Perspective
  30-minute presentation (invited speaker)

- **CMM seminar, Santiago, Chile, 2016**
  An investment strategy for pension funds
  30-minute presentation (invited speaker)

- **22nd ISMP, Pittsburgh, United States, 2015**
  Risk Aversion in Multistage Stochastic Programming: A Modeling and Algorithmic Perspective
  30-minute presentation

- **SESO, Paris, France, 2015**
  Microgrid Energy Management with Renewables and Storage
  45-minute presentation

- **INFORMS Student Chapter at Texas A&M, College Station, United States, 2015**
  From two stage to multistage risk averse stochastic programming
  50-minute presentation

- **INFORMS, San Francisco, United States, 2014**
  A Risk-Averse Multistage Stochastic Programming Model in Forestry
  20-minute presentation

- **SP XIII, Bergamo, Italy, 2013**
  Constraint removal in practice: a case study in portfolio selection theory
  20-minute presentation

- **21st ISMP, Berlin, Germany, 2012**
  The optimal harvesting problem under risk aversion
  20-minute presentation

- **SP XII, Halifax, Canada 2010.**
  Risk-return trade-off with the scenario approach
  20-minute presentation

- **The 7th Conference on Multivariate Distributions with Applications, Maresias, Brazil, 2010.**

A joint hurdle-race problem
20-minute presentation

- **EURO XXIV, Lisbon, Portugal, 2010**
  Stochastic project scheduling: a financial viewpoint for the gate setting problem
  20-minute presentation
- **20th ISMP, Chicago, United States, 2009**
  The joint hurdle-race problem
  20-minute presentation
- **24th IFIP, Buenos Aires, Argentina, 2009**
  Sample average approximation for chance constrained programming
  20-minute presentation
- **XIV CLAIO, Cartagena, Colombia, 2008**
  Computational study of a chance constrained portfolio selection problem
  20-minute presentation
- **Invited talk at Universidad Adolfo Ibáñez, August 2008.**
  A chance constrained portfolio problem. 1 hour talk.
- **XI Symposium of Operational Research and Logistics of the Brazilian Navy, Rio de Janeiro, August 2008**
  Introduction to Stochastic Programming
  8 hour short course (with H.J. Bortolossi)
- **Graduate Course in the Department of Mathematics, PUC-Rio, March 2008-June 2008:**
  Introduction to Stochastic Programming
  Joint Lecturer (with H.J. Bortolossi and C. Tomei)
- **Graduate students' colloquium, Department of Mathematics, PUC-Rio, March 2008**
  Chance-constrained programming and a portfolio selection problem
  1 hour talk
- **Georgia Tech DOS Seminar, January 2008:**
  Computational study of a portfolio Selection Problem
  1 hour talk
- **5th ICDSA, May 2007:**
  A geometric approach to hydrothermal scheduling with variable production coefficient
  30 minute presentation
- **FUNENSEG series of talks: December 2008**
  Stochastic programming and applications.
  1 hour talk.
- **Actuarial Institute of PUC-Rio, January 2007:**
  Introduction to stochastic programming
  Short course, 4 classes of 90 minutes

- **III Bi-Annual meeting of the Brazilian Mathematical Society, November 2006:**
  Introduction to choice under uncertainty
  Short course, 4 classes of 90 minutes
- **III Bi-Annual meeting of the Brazilian Mathematical Society, November 2006:**
  Discrete dynamics applied to economics
  Short course, 4 classes of 90 minutes
- **Graduate Course in the Department of Mathematics, PUC-Rio, March-June 2006:**
  Introduction to Stochastic Programming
  Joint Lecturer (with H.J. Bortolossi)
- **Graduate students' colloquium, Department of Physics, PUC-Rio 2006**
  Random linear systems
  1 hour talk
- **Seminars of the Industrial Engineering Department, PUC-Rio, 2006:**
  Option pricing by simulation, with Renato A. Costa
  1 hour talk
- **Students Colloquium at the Department of Mathematics, PUC-Rio, 2004:**
  How to win on tennis
  1 hour talk
- **Scientific Initiation Program from CNPq, PUC-Rio, 2002:**
  Interior Point Methods and the Hydrothermal Scheduling problem
  20 minute talk

Grants

- **Petrobras R&D fund**: Production maximization of oil in off-shore platforms that use gas-lift. (2018-2020). Principal Investigator ($300k USD)
- **Fondecyt 1170178**: Investment Strategies And Risk-Control Methods For Pension Funds: An Optimization-Based Approach (2017-2021). Principal Investigator ($150k USD).
- **Project Anillo ACT-1407**: Large scale optimization and uncertainty: Challenges in Strategic Mine Planning. An interdisciplinary approach (2016-2019) (Associate researcher) ($800k USD).
- **Fondecyt 11130056**: Multistage stochastic optimization applied to finance and mining (2013-2016). Principal Investigator ($70k USD).
- **IROE - Initiative de Recherche Optimisation et Energie**: OGRE: Optimization, Games and Renewable Energy, France, 2017. Associate researcher ($5k USD).
- **IROE - Initiative de Recherche Optimisation et Energie**: Centralized versus Decentralized Energy Management in a Stochastic Setting, France, 2014-2016. Project Director ($20k USD).
- **Fondecyt 1120244**: Models and Strategies for Multi-Stage Stochastic Programs with Risk Control (2012-2016). Associate researcher ($100k USD).

- **PGMO - Programme Gaspard Monge pour L'Optimisation et la recherche oprationnelle**: LASON: Latin America Stochastic Optimization Network, France, 2013-2014. Project Director ($20k USD).
- **PGMO - Programme Gaspard Monge pour L'Optimisation et la recherche oprationnelle**: LASON: Latin America Stochastic Optimization Network, France, 2012-2013. Project Director ($20k USD).
- **Project Anillo ACT-88**: Mathematical Modeling for Industrial and Management Science Applications: An Interdisciplinary Approach. (2011-2013) (Associate researcher) ($710k USD).
- **Programa Basal**: Centro de Modelamiento Matemático (CMM). University of Chile. 2009-2016. External Associate ($7000k USD)

Awards and Honors

- Patrick and Amy McCarter Fellow in Residence at IEMS, Northwestern University.
USD 52k stipend, 2018-2019.
- Best Professor Award in the MBA International Program, Universidad Adolfo Ibáñez, 2016.
- Best Researcher Award, Universidad Adolfo Ibáñez, 2015.
- Reimagine Education Awards - category Presence Learning. GameLab, shortlisted, 2015.
- Fellowship at the Ph.D. program at the Department of Mathematics of PUC-Rio provided by FUNENSEG (private actuarial institution), 2005-2009.
- Fellowship from a Brazilian Governmental Agency (CAPES) to spend 1 year as an exchange Ph.D. student at the ISYE Department at Georgia Tech, including health and travel expenses, 2007.

Service

- Area head, Operations group, Universidad Adolfo Ibáñez, 2015-present.
- I have been a reviewer for the following journals: Mathematical Programming, European Journal of Operational Research (EJOR), Journal of Mathematical Analysis and Applications (JMAA), Journal of Optimization Theory and Applications (JOTA), Computational Optimization and Application (COAP), Canadian Journal of Forestry Research (CJFR), INFORMS Journal on Computing (IJOC), OR Spectrum.
- Co-organizer, with T. Homem-de-Mello, of the Simulation Optimization workshop, held at Viña del Mar, Chile, 2013.
- Organizer of the Students' Colloquium from 2003-2006 at PUC-Rio.
- Co-organizer (with L.J. Díaz) of the 2004 Oktobermat, a series of lectures at the Department of Mathematics.

Skills

Languages :

- Portuguese (native language).
- English (fluent).
- Spanish (fluent).
- French (understands well, reads well, writes fairly well, speaks fairly well).

Software and languages: Maple (advanced), MatLab (advanced), LaTeX(advanced), GAMS (advanced), AMPL (intermediate), Rapidminer (intermediate), Java (beginner), R (beginner) and Windows.

References

Teaching references:

- Alvaro Espejo, Business School, Universidad Adolfo Ibáñez, Santiago, Chile.
  e-mail: alvaro.espejo@uai.cl
- Marcos Goycoolea (Research Director), Business School, Universidad Adolfo Ibáñez, Santiago, Chile.
  e-mail: marcos.goycoolea@uai.cl
- Diego Bravo (Former Teaching Innovation Director), Business School, Universidad Adolfo Ibáñez, Santiago, Chile.
  e-mail: diego.bravo@uai.cl

Research references:

- Tito Homem-de-Mello, Business School, Universidad Adolfo Ibáñez, Santiago, Chile.
  e-mail: tito.hmello@uai.cl
- Lewis Ntaimo, Texas A&M University, Industrial Systems and Engineering, College Station, U.S.
  e-mail: ntaimo@tamu.edu
- Arturo Cifuentes, Columbia University and Pontificia Universidad Catolica, Finance and Public policy (CLAPES-UC), Chile and United States.
  e-mail: ac4170@columbia.edu.
- Shabbir Ahmed, Georgia Tech, H. Milton Stewart School of Industrial and Systems Engineering, Atlanta, U.S.
  e-mail: sahmed@isye.gatech.edu
- Alexander Shapiro, Georgia Tech, H. Milton Stewart School of Industrial and Systems Engineering, Atlanta, U.S.
  e-mail: ashapiro@isye.gatech.edu