Giorgio Costa

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EDUCATION

Sep 2015 – Present	**Ph. D. Candidate in Operations Research**, University of Toronto Advisor: Professor Roy H. Kwon Thesis: Advances in risk parity portfolio optimization
Sep 2007 – May 2012	**B. Eng. Hons. in Mechanical Engineering**, McGill University Minor in Economics

RESEARCH INTERESTS

- Convex optimization
- Robust optimization
- Unsupervised Learning
- Distributed algorithms for non-convex problems
- Quantitative Finance
- Risk management

ACADEMIC EXPERIENCE

Journal Publications

- Costa, G. and Kwon, R. H. (in press). A regime-switching factor model for mean–variance optimization. *Journal of Risk*.
- Costa, G. and Kwon, R. H. (2019). Risk parity portfolio optimization under a Markov regime-switching framework. *Quantitative Finance*, 19(3), 453-471.
- Wu, D., Kwon, R. H., and Costa, G. (2017). A constrained cluster-based approach for tracking the S&P 500 index. *International Journal of Production Economics*, 193, 222-243.
- Kheiri, M., Paidoussis, M. P., Costa, G., and Amabili, M. (2014). Dynamics of a pipe conveying fluid flexibly restrained at the ends. *Journal of Fluids and Structures*, 49, 360-385.

Manuscript Preprints

- Costa, G. and Kwon, R. H. (2019). A robust framework for risk parity portfolios. Manuscript submitted for publication.
- Costa, G. and Kwon, R. H. (2019). Generalized risk parity portfolio optimization: an ADMM approach. Manuscript submitted for publication.

Presentations

- Costa, G. (2019, May). *Generalized Risk Parity Portfolio Optimization: An ADMM Approach*. CORS Annual Conference. Saskatoon, SK.
- Costa, G. (2018, November). *A Regime-Switching Framework for Portfolio Optimization*. Presentation at the 4th Industrial-Academic Workshop on Optimization and Artificial Intelligence in Finance at The Fields Institute. Toronto, ON.
- Costa, G. (2018, November). *A Regime-Switching Framework for Portfolio Optimization*. Presentation for the University of Toronto Operations Research Group. Toronto, ON.
- Costa, G. (2018, January). *Hidden Markov Model for Risk Parity Optimization*. Presentation at the Master of Mathematical Finance Symposium 2018. Blue Mountain, ON.

Academic Service

Sep 2017 – Present	**Reviewer**, The Engineering Economist Journal

HONOURS AND AWARDS

Sep 2019 – Aug 2020	**Ontario Graduate Scholarship**, Scholarship (Accepted)
Sep 2016 – Aug 2020	**Department of Mechanical and Industrial Engineering**, Fellowship
Sep 2018 – Aug 2019	**Ontario Graduate Scholarship**, Scholarship
Sep 2017 – Aug 2018	**Queen Elizabeth II Graduate Scholarship in Science and Technology**, Scholarship
Sep 2016 – Aug 2018	**Mitacs Accelerate**, Research grant
Sep 2010 – Apr 2012	**MEES (Quebec) International Fee Exemption**, Scholarship

TEACHING EXPERIENCE

Period	**September 2016 – Present**	Location	**Toronto, ON**
Institution	**University of Toronto**		

Course Instructor, Department of Electrical and Computer Engineering

Fall	2019	ECE302	– Probability and Applications

Course Instructor, Department of Mechanical and Industrial Engineering

Winter	2019, 2018	MIE377	– Financial Optimization Models
Fall	2018	MIE375	– Financial Engineering

Teaching Assistant, Master of Mathematical Finance Program

Summer	2019, 2018, 2017	MMF1921	– Operations Research
Fall	2018	MMF2000	– Risk Management
Summer	2018, 2017		

Teaching Assistant, Department of Mechanical and Industrial Engineering

Fall	2019	MIE479	– Capstone Design
Fall	2016	MIE1621	– Non-Linear Optimization

Period	**September 2015 – June 2017**	Location	**Toronto, ON**
Organization	**Pathways to Education – Regent Park**		

Volunteer Tutor, Mathematics and Physics

- Tutor for at-risk high school students in a priority-neighborhood in Toronto.

PROFESSIONAL EXPERIENCE

Period	**October 2016 – September 2018**	Location	**Toronto, ON**
Employer	**Toronto–Dominion Bank**		

Oct 2017 – Sep 2018/
Oct 2016 – Mar 2017

Senior Risk Analyst, TD Wealth Credit and Market Risk

- Received a Mitacs Accelerate research grant to conduct quantitative research.
- Performed quantitative and statistical analysis of large financial data sets.
- Developed mathematical models for risk management.
- Prepared formal documentation for model validation.
- Successfully validated a proposed market risk model for equities.

Apr 2017 – Sep 2017

Research Associate, TD Securities Capital Markets Risk Management

- Performed investigations in Value-at-Risk (VaR) breaches for the bank's portfolios.
- Modelled interest rate shocks under a negative rate environment for VaR calibration.
- Performed other quantitative research tasks as required.

Period	**July 2012 – August 2015**	Location	**Toronto, ON /**
Employer	**Amec Foster Wheeler plc**		**Buchanan, Liberia**

Sep 2014 – Aug 2015

Project Engineer-in-Training

Project: Rainy River

- Coordinated deliverables between the engineering and project control departments.
- Evaluated equipment tender bids and provided technical recommendations.

Mar 2014 – Aug 2014

Field Engineer, On-site at Buchanan, Liberia

Project: Liberia Western Range Iron Ore – Phase II

- Performed project management duties for a large construction project.
- Supervised construction and scheduling of project activities.
- Coordinated between the engineering and construction management teams.

Jul 2012 – Feb 2014

Mechanical Engineer-in-Training

Projects: Liberia Western Range Iron Ore – Phase II, Belle Plaine, Copper Cliff

- Prepared and checked engineering calculations and technical drawings.
- Prepared computational fluid-flow models and stress analysis of piping systems.