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). Generalized risk parity portfolio optimization: an ADMM approach. Manuscript submitted for publication.
- Costa, G. and Kwon, R. H. (2018). A robust framework for risk parity portfolios. 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
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

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

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 develop a novel equity risk model to measure the propensity of stocks to suffer from price shocks. This model applies machine learning principles while retaining interpretability, and leverages large financial data sets. After preparing all pertinent documentation, the model successfully underwent the TD validation process. Other responsibilities included quantitative research and statistical analysis of large financial data sets.

Apr 2017 – Sep 2017 **Research Associate**, TD Securities, Capital Markets Risk Management

A second project involved modelling of interest rate shocks under a negative rate environment. This model is to be used within the Monte Carlo simulation framework to measure the Value-at-Risk of the bank's portfolios.

Period **July 2012 – August 2015** Location **Oakville, ON / Buchanan, Liberia**
Employer **Wood plc**

Sep 2014 – Aug 2015 **Project Engineer-in-Training**

Project: Rainy River

Coordinated the preparation of deliverables between the engineering, scheduling, and cost 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-scale 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.