Giorgio Costa

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EDUCATION

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

WORK EXPERIENCE

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

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 Summer	2018 2018, 2017	MMF2000 – Risk Management

Teaching Assistant, Department of Mechanical and Industrial Engineering

Fall	2016	MIE1621 – Non-Linear Optimization

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 / Buchanan, Liberia**
Employer	**Amec Foster Wheeler plc**		

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.

ACADEMIC PUBLICATIONS

Journal publications

- Costa, G. and Kwon, R. H. (2018). 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.

Preprints

- Costa, G. and Kwon, R. H. (2019a). A regime-switching framework for mean–variance optimization. Manuscript submitted for publication.
- Costa, G. and Kwon, R. H. (2019b). A robust framework for risk parity portfolios. Manuscript submitted for publication.
- Costa, G. and Kwon, R. H. (2019c). Generalized risk parity portfolio optimization: an ADMM approach. Manuscript submitted for publication.

ACADEMIC 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.

HONOURS AND AWARDS

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

EXTRACURRICULAR ACTIVITIES

Period	**September 2017 – Present**	Location	**Toronto, ON**
Organization	**The Engineering Economist Journal**		

Reviewer, Mathematical optimization

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

Tutor, Mathematics and Physics

- Tutor for at-risk high school students.

Period	**September 2015 – April 2016**	Location	**Toronto, ON**
Organization	**University of Toronto Consulting Association**		

Associate Consultant

- Served as a management consultant for a Toronto-based start-up company.

SKILLS

Programming	Julia, R, Python, LaTeX
Software	MS Office suite, Matlab, Wolfram Mathematica
Languages	English (fluent), Spanish (fluent)