

Meet our Quantitative Team

Quantitative investing is a sophisticated approach to investment management and security selection.

It often uses a combination of computer models, data analytics and professional judgement in the pursuit of excess returns (alpha) above a market benchmark (like the S&P 500 Index) while seeking to create an optimal portfolio that balances risk and return.

The Quantitative Team at TD Asset Management Inc. (TDAM) manages low volatility, passive strategies, dividend strategies and alpha strategies by combining the science of quantitative investment with the deep expertise of a broad portfolio management team.

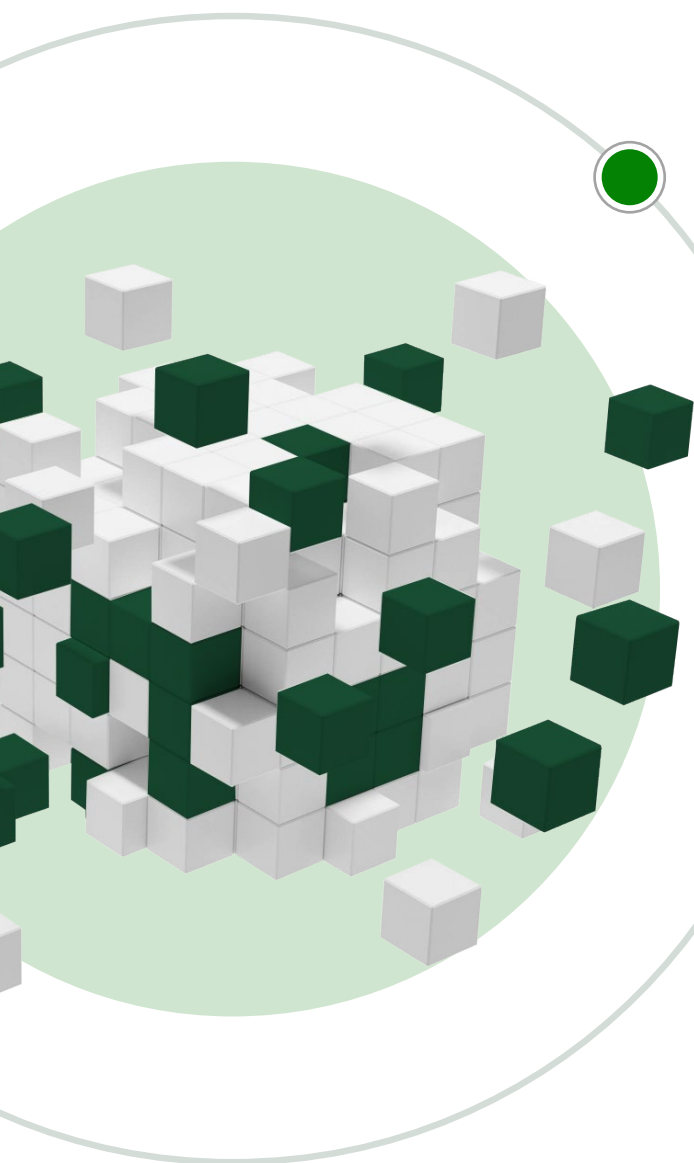


Advantages of Quantitative Investing

The TDAM Quantitative Team believes that utilizing a quantitative investment strategy can help maximize investment returns while reducing risk by incorporating algorithms and expertise in stock selection. Low volatility strategies consider the volatility of individual stocks and the correlation between stocks to help create low volatility portfolios.

Advantages include:

- Easily analyzes large amounts of data to exploit market inefficiencies
- Uses disciplined, highly repeatable systematic processes that avoids common biases in investment management such as loss aversion and herd behavior
- Continuously evaluates new technologies to improve decision making – for instance, currently researching how machine learning and artificial intelligence can help investment results



Quality Data

Ability to leverage large volumes of quality datapoints that can be used to determine what is market noise and what is valuable information.

Research Excellence

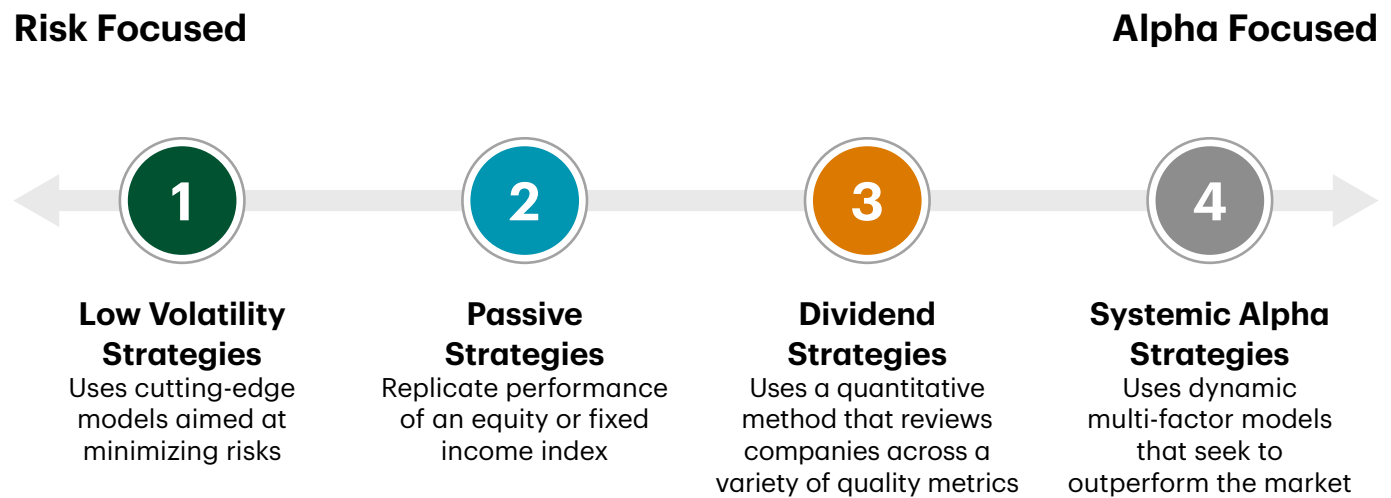
Continuously evaluating new technologies to improve decision making. Researching machine learning and artificial intelligence to improve investment results.

Proprietary Models

Quantitative models aimed at building optimal portfolios for a given specific objective and a desired level of risk:

- Alpha Models: Seek to identify stocks that will outperform or underperform the market.
- Risk Models: Create a low volatility portfolio or control active risk.
- Dividend Models: Build a portfolio of high-quality dividend paying stocks.

Our Quantitative Strategies:



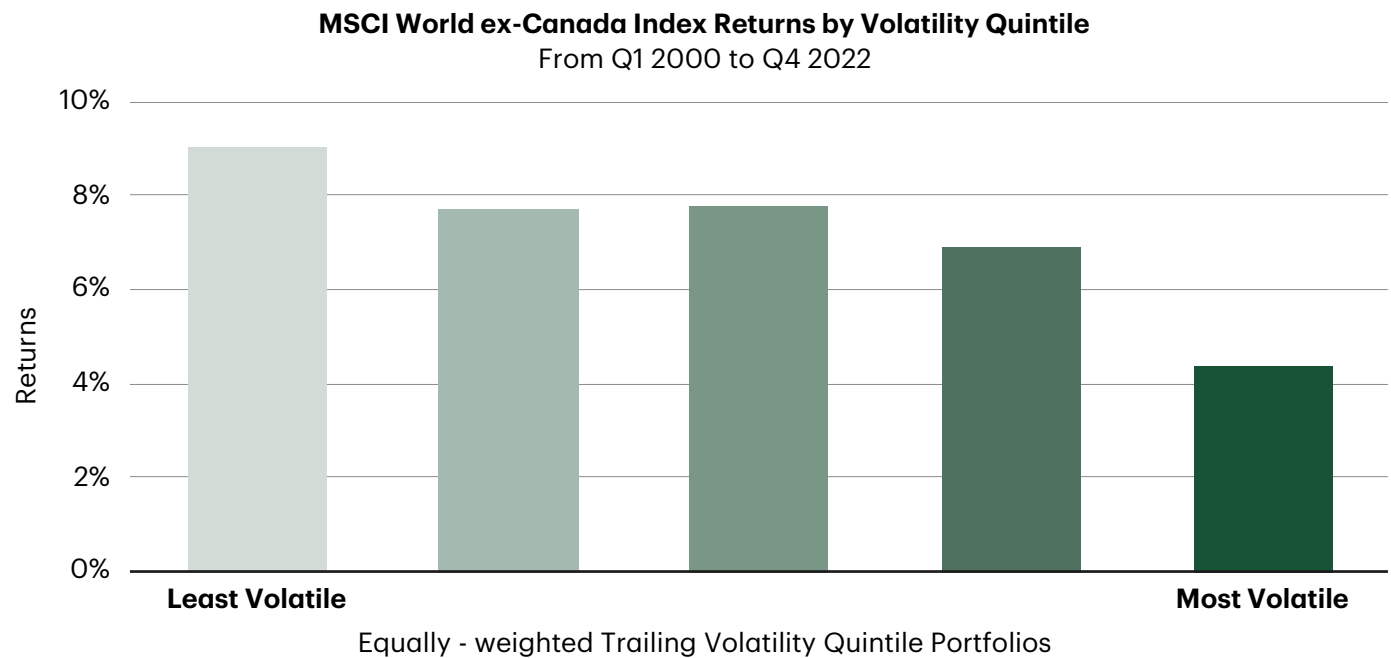
Quantitative Investing Features:

1

Low Volatility Strategies

- Uses proprietary risk models and advanced algorithms to create low-volatility portfolios which are designed to tackle measurable risk and foreseeable risks.
- These strategies are expected to outperform market indices in strong down markets and underperform in strong up markets. Expectations are that these strategies outperform more in down markets than they underperform in up markets, to generate better risk-adjusted returns than the market in the long run.

Lower Volatility Stocks Outperform Over Market Cycles



Source: TDAM, MSCI Inc. As of December 31, 2022.

2

Passive Strategies

- Replicate performance of a benchmark.
- Technology and proprietary software are employed to monitor risk and maintain tight alignment with index characteristics.
- Uses a dedicated team of specialists who ensure competitive pricing and access to liquidity.
- Offers low-cost solutions across fixed income and equity investments.

3

Dividend Strategies

- Focus on high-quality, dividend-paying companies which are highly profitable, have a record of dividend increases and are generating cash flows to pay their dividends.

Dividend Company Example



For Illustration Purposes
Source: TDAM. As of December 31, 2022.

Strategies

4

Systematic Alpha Strategies

- Looks to exploit market inefficiencies by dynamically investing in factors to generate consistent long-term outperformance.
- Identify factors that can lead to long-term outperformance and identify conditions under which certain factors should be emphasized or muted. While being style-agnostic over the long run, the strategy can vary in style and capitalization depending on what is currently trending in the market.

Alpha Strategies Avoid Focus on a Single Investing Style – No Style Always Outperforms

2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
US Quant Fd 47.8%	Low Volatility 27.0%	Momentum 31.1%	Small Cap 15.7%	Momentum 28.8%	Low Volatility 10.7%	Quality 32.1%	Growth 40.5%	US Quant Fd 30.4%	High Div Yld 3.2%
Small Cap 47.5%	High Div Yld 25.3%	Quality 28.4%	Value 12.8%	Growth 20.3%	Momentum 7.2%	Growth 30.7%	Momentum 27.3%	S&P 500 27.1%	Value 0.6%
Momentum 43.8%	Momentum 25.0%	Low Volatility 26.7%	High Div Yld 12.2%	Quality 17.7%	Growth 6.8%	US Quant Fd 26.6%	Quality 20.8%	Quality 26.5%	Low Volatility -2.6%
Quality 42.5%	US Quant Fd 24.8%	Growth 25.4%	US Quant Fd 8.0%	S&P 500 13.2%	High Div Yld 6.5%	S&P 500 24.1%	Small Cap 16.8%	Value 26.1%	US Quant Fd -5.4%
Growth 41.7%	Growth 24.7%	US Quant Fd 21.6%	S&P 500 7.4%	High Div Yld 11.7%	Quality 6.1%	Momentum 21.6%	S&P 500 15.7%	Growth 25.2%	Small Cap -11.1%
Value 41.2%	S&P 500 23.2%	S&P 500 20.8%	Low Volatility 6.8%	US Quant Fd 11.7%	S&P 500 3.6%	Low Volatility 21.5%	US Quant Fd 13.1%	High Div Yld 20.9%	Momentum -11.4%
S&P 500 40.4%	Value 22.4%	High Div Yld 20.8%	Quality 4.2%	Low Volatility 11.3%	Value 1.2%	Small Cap 20.9%	Low Volatility 3.9%	Low Volatility 20.0%	S&P 500 -12.6%
High Div Yld 37.5%	Quality 21.9%	Value 17.6%	Growth 2.8%	Small Cap 9.6%	US Quant Fd -0.7%	Value 19.4%	High Div Yld -0.1%	Small Cap 18.5%	Quality -17.0%
Low Volatility 33.7%	Small Cap 17.2%	Small Cap 15.6%	Momentum 1.5%	Value 7.8%	Small Cap -1.9%	High Div Yld 16.3%	Value -0.8%	Momentum 11.9%	Growth -27.0%

Source : TDAM, MSCI Inc. As of December 31, 2022. Quality is represented by the MSCI USA Quality TR (\$CAD), Momentum is represented by the MSCI USA Momentum TR (\$CAD), High Dividend Yield is represented by the MSCI USA High Dividend Yield TR (\$CAD), Low Volatility is represented by the MSCI USA Minimum Volatility TR (\$CAD), Value is represented by the MSCI USA Value TR (\$CAD), Growth is represented by the MSCI USA Growth TR (\$CAD), Small Cap is represented by the MSCI USA Small Cap TR (\$CAD), S&P 500 is represented by the S&P 500 TR Net (\$CAD).

Experience, depth and intelligence — meet our Quantitative Team leaders



Joined the firm: 2006

Began Career: 2006

Julien Palardy, CFA

Managing Director, Head of Quantitative and Passive Investing, TDAM

- Julien is the Head of Quantitative and Passive Investing, he oversees the modelling, research, and management of various Quantitative strategies
- He has co-managed the firm's Institutional Asset Allocation mandates, designed forecasting models for strategic and tactical asset allocation, built quantitative equity strategies for North American and Global long-only and North American market neutral funds, and built quantitative fixed income strategies for Canadian and global bond funds
- Julien holds a B.Sc. and an M.Sc. in Applied Financial Economics, both from HEC Montréal



Joined the firm: 2008

Began Career: 1993

Yuriy Bodjov, CFA

Vice President & Director, Lead of Quantitative Research, Quantitative Equity, TDAM

- Yuriy leads the Quantitative Equity research team where he directs the alpha and risk models research and the design of quantitative equity strategies
- He has extensive experience as a Portfolio Manager of U.S. and international equities as well as fixed income portfolios at prominent investment management firms
- Yuriy holds an M.Econ. from the University of National and World Economy in Sofia, Bulgaria, and an M.Sc. from the Université du Québec à Montréal

Quantitative



Joined the firm: 1999

Began Career: 1989

Miroslav Stankovic

Vice President & Director, Lead of Data Architecture, Quantitative Equity, TDAM

- Miroslav is the Lead of Data Architecture and Quantitative Equity
- He leads the team responsible for Software Development, Database Design, Programming and Data Integrity.
- Miroslav has an M.Sc. in Electrical Engineering from the University of Zagreb



Joined the firm: 2015

Began Career: 2007

Emin Baghramyan, CFA

Vice President & Director, Lead of Quantitative Portfolio Management, Quantitative Equity, TDAM

- Emin leads the Quantitative Equity portfolio management team and is the lead portfolio manager for all Low Volatility mandates
- He is also the macro strategist of the team and conducts various research projects related to monetary, fiscal, geopolitical and socio-demographic trends
- Emin holds a B. Econ. from Yerevan State University and an M.Sc. from John Molson School of Business at Concordia University



Joined the firm: 2015

Began Career: 1999

Laurie-Anne Davison, CFA, CAIA

Vice President & Director, Lead of Passive Investing, TDAM

- Laurie-Anne leads the integrated passive business and is the lead portfolio manager for all passive equity mandates
- She previously co-managed Quantitative Equity portfolios and was the lead portfolio manager of the U.S. and Canadian mandates. She continues to help manage the various quantitative ETF mandates
- Laurie-Anne holds a B.A. in Administrative and Commercial Studies, Finance and Economics from Western University and an M. Fin. from the Rotman School of Management at the University of Toronto



Joined the firm: 2016

Began Career: 2015

Kevin Holmes, CFA
Vice President, TDAM

- Kevin is the Lead Portfolio Manager for the systematic alpha mandates. He also co-leads the Low Volatility mandates and is a Portfolio Manager with the Quantitative Equity Team
- Prior to his current role, he was a Portfolio Manager with the Synthetics Team and a Sales & Trading Analyst with TD Securities
- Kevin holds a B.B.A. and a B.Sc. in Computer Science, both from Wilfrid Laurier University. Additionally, he holds a M.Sc. in Analytics from the Georgia Institute of Technology



Joined the firm: 2021

Began Career: 1994

Michael Formuziewich, CFA
Vice President, TDAM

- Michael is a Client Portfolio Manager with TD Asset Management's Fundamental and Quantitative Equities team, where he represents the firm's guiding principles, process, performance/attribution and portfolio positioning to internal and external client
- He also represents portfolio management on topics related to financial markets and the firm's investment capabilities with a primary focus on the firm's Fundamental and Quantitative Equity philosophy and process, as well as market and economic outlook
- Michael holds an Honours B.A. in Business Administration from Sir Wilfrid Laurier University



Joined the firm: 2017

Began Career: 2005

Lin Lin, CFA
Managing Director, Lead of TD Epoch Quantitative Research

- Lin is portfolio manager and a member of the Quantitative and Passive Investing team
- Prior to joining TD Epoch in 2017, Lin was a vice president and equity strategist on the Global Quantitative Research team at Morgan Stanley, where she helped launch their global quantitative product and published research on a variety of topics, including stock selection and ESG investing
- Before that, she was an assistant vice president and senior research analyst on the Quantitative Research and Portfolio Strategy team at Sanford C. Bernstein
- Lin has a B.A. in Economics from Nanjing University, and an M.A. in Economics from Duke University



Free yourself from day-to-day investment decisions and experience intelligence in action in your portfolio.

To find out more on alternative investment solutions from TDAM and how they may suit your portfolio, speak with your **investment professional**.

Connect with TD Asset Management



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