QUANT IN THE 2020s: UPDATED METHODS FOR MODERN MARKETS

A look into how this popular and venerable alternative strategy is evolving with today's market infrastructure & dynamics

CANADIAN ASSOCIATION OF ALTERNATIVE STRATEGIES & ASSETS

About CAASA & This Paper

Inclusive, Active, and Pan-Alternative

The Canadian Association of Alternative Strategies & Assets (CAASA) was created in response to industry requests for a national group to represent the Canadian alternative investment participants, including investors, asset managers, and service providers. CAASA is inclusive in that it welcomes participation from all companies active in the space (375+ members in 2023) who might want to participate in committees and working groups — or simply attend member events — without their employer being a member of the association.

CAASA is very active, organizing numerous conferences, webinars, socials, and podcasts throughout the year. Pan-alternative, for CAASA, encompasses all alternative strategies and assets including hedge funds/alternative trading strategies, private and public real estate (funds and direct), private lending, private equity, infrastructure, development and project finance, digital assets/crypto-assets, weather derivatives and cat bonds, and all aspects of diligence, trading, structuring, dealing, and monitoring alternatives in a stand-alone portfolio and as part of a larger investment strategy.

As with all our papers, we use an external writer to draft it from interviews with participating members and it represents, in the end, our views and not necessarily that of every participating member.

For more information, please visit www.caasa.ca.

Table of Contents

Foreword

All investment asset classes, strategies, and sub-strategies cycle through periods of out-performance and lagging challenging periods. In many instances, this is due to market forces which simply make them inopportune for the time – in these cases, they will return to the leaderboard once the environment returns to their favour. Sometimes the market shifts or changes in a more fundamental manner; this necessitates a more forked decision tree: the manager might adjust their trading rules to fit the new paradigm (with an eye to returning to the 'old rules' once markets return to normal), they may change their approach without a thought to returning to the old ways, they may step out of the box (not trade) for a time until normalcy returns, or they may incorporate this new scenario in their models and continue to trade.

During the Great Financial Crisis (or GFC, c2008-2010), Quantitative Easing, low or Zero Interest Rate Policy, and other central bank interventions changed market dynamics for quant traders. Many produced excellent returns during that period while some struggled – and the bulk of them chose the mix of the last two options above: taking into account the new trading environment as they adjusted their models to take advantage of inefficiencies while eschewing certain markets that could not be effectively predicted.

Now, many years after the GFC, its effect are top of mind as quant managers continue to optimize their models to create value to their investors. This paper is designed to provide a briefing on the space as well as insight into how specific managers and investors employ these methods and managers.

James Burron, CAIA
Co-Founder & Partner, CAASA

Overview

Quantitative investment funds, or 'quant' funds, are funds that use pre-established rules, and data, to guide their investment decisions. The rules in question can be very simple. For example, an index fund, where assets are automatically bought and sold to track a given index, is a quantitative fund.

But they can also be very complex. They can take in every kind of financial data, from prices on public markets, to the prices of commodities, to inflation forecasts, to GPS tracking of ships, to industrial production forecasts. They can leverage complicated statistical analysis to detect patterns. They can execute investment strategies – whether it's trend following, or arbitrage, or any other – faster, and with more data, than any human being.

And they can be uncorrelated to the direction of the public markets, while providing an attractive risk-adjusted return.

These factors make them a very useful addition to any portfolio.

While quant funds started out as a niche investment approach, limited to high-net-worth individuals and family offices, they have since gone mainstream, seeing allocations from large institutions like pension funds.

And there is a very good reason for that. Quantitative funds are a strong investment approach in any environment, but they are especially strong in volatile and uncertain market conditions.

And in the Spring of 2023, it is exactly those conditions that should make any investor consider allocating to quant.
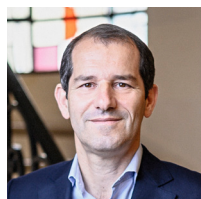
"You might be surprised that, on the long run, trend-following strategies have been generating equity-like returns with low correlation to traditional asset classes and less drawdowns. It's something that has been understood by sophisticated investors but, for some reason, is still very under-regarded by many."

Nicolas Gaussel
Chief Executive Officer
Metori Asset Management

Long volatility

Whether it's fear of contagion following the collapse of Silicon Valley Bank (SVB), persistently high interest rates, or a fear of recession, the market in 2023 is difficult to navigate. The public markets, in particular, have been very volatile, with multiple major dips since the beginning of the year.

This is, however, an ideal environment for a quantitative investment strategy.

Many leading quant funds employ a strategy called 'trend following', where the fund uses statistical analysis to determine the direction of a particular asset, taking a long position if the asset's price is trending upwards, and taking a short position if it is trending downwards.

The advantage here is obvious: in an extremely volatile market, there will be more 'trends' to follow, and a quantitative investment approach allows trends to be identified over an extremely broad range of liquid and tradeable assets, extracting every bit of alpha from every market swing.

The strength of quant in volatile markets is not just being demonstrated today. It has been demonstrated throughout recent history. In just the last few years, the markets have suffered from multiple periods of extreme volatility: the collapse of SVB in early 2023, the plunges following concerted central bank action to control inflation, the collapse and subsequent V-shaped recovery during the initial COVID lockdowns.

And it was demonstrated in the most volatile and uncertain market of all: the Great Financial Crisis (GFC) in the late '00s.

The GFC was, in many ways, quant's mainstream moment. Prior to the market crash, it was a niche strategy, primarily seeing allocations from progressive high-net-worth individuals and family offices. Large, risk-averse institutions like pension funds were aware of the strategy, but a conservative investment approach prevented them from allocating a substantial amount of capital to it. Like any new technology, quant had early adopters. Some progressive institutions were allocating to quant in the mid-2000s, but the approach's time had not yet arrived.

After the investment community saw how the strategy performed in 2008, interest and investment soared. The amount allocated to quant funds soared, with Assets Under Management (AUM) at one firm growing more than 400% between 2018 and 2023.

Moreover, the type of investor has changed. In place of the family office or a progressively wealthy individual, that same firm says it now has over half of its investors coming from the institutional space with substantial inflows of capital coming from retail investors, via mutual funds and liquid alts.

Inherent complexity

While every investor can benefit from an allocation to quant funds, it must be emphasized that they can be very complex. In order to invest responsibly, an investor must fully understand the product that they are investing in - not only its use in a portfolio, but its investment thesis, the sources of risk, and the sources of return.

Institutional investors, with teams of researchers, are well-equipped to make these investment decisions. Retail investors, even if they are sophisticated investors, are limited by the fact that they are a team of one. Retail investors should therefore think carefully before allocating to quant funds and should consult a trusted and experienced advisor before doing so.

"Typically, high interest rates are also a time of higher uncertainty in the market, and also a bit more risk. This also makes a diversified investment more interesting because, let's face it, for the past decade it was very difficult to beat the combination of S&P and bonds. With low interest rates, every macro event was just smothered under a ton of cash by the central banks. It is much more difficult to be a traditional-only investor in a higher uncertainty, higher interest rate era."

Yves Lempérière
Head of Predictor Alpha Research
Capital Fund Management
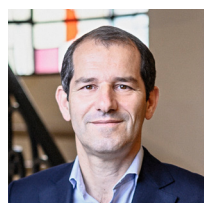
"I believe our product is an outstanding one, not only because of its performances but because we understand the nature of the premium. Like for equity this premium is persistent but does not prevent for drawdowns. Putting trend in a strategic allocation bucket is the best way to harvest it. Oppositely, a tactical / market-timing oriented approach is oftentimes deceptive: this explains why trend is probably more suitable for sophisticated investors."

Nicolas Gaussel
Chief Executive Officer
Metori Asset Management

"Our story goes back to 2009, when Air Canada hired a new team (that would become TCC) to implement an innovative investment strategy to address its large pension deficit. We started managing quant strategies to achieve a greater return per unit of risk than typical long-only portfolios: since then, the team has been responsible in part for the successful financial turnaround we know today. The key is understanding the benefits at the portfolio level and how to properly size it -every investor is different-"

Steven Guérin
Portfolio Manager, Absolute Return
Trans-Canada Capital

A shifting approach

Whether it's trend-following, arbitrage, or another approach, the strategies pursued by quant funds continue to deliver value. However, the way those funds approach those strategies has changed significantly.

Moore's Law is the observation that the number of transistors in an integrated circuit doubles every two years and with that comes a substantial increase in computing power. This increase in physical capacity is matched in the modern market by the advent of cloud computing services like Amazon's Amazon Web Services or Microsoft's Azure, which allow computing power to be rented, scaling up or scaling down a computing operation as necessary.

This astronomical increase in the amount of computing power has transformed the quantitative investment industry.

Where the industry previously ran on Microsoft Excel, operated by trained statisticians, today many leading quant funds implement Machine Learning, or Artificial Intelligence (AI), in their investment process.

AI and quant are a natural fit. Quant funds are profitable to the extent that they detect, and profit from, patterns of market data. AI, backed by a substantial amount of computing power, can process much, much more data than a human being can and identify patterns that no human could being to notice. Investment decisions can also be made at a much faster speed.

But as anyone who has used AI tools like ChatGPT or Midjourney can tell you, AI doesn't always get it right. The strength of an AI is directly linked to the strength of the statisticians who have built, and trained, the model.

Few, if any, quantitative funds operate as black boxes – that is, funds where the decisions are made purely by an algorithm. They require human guardrails to prevent mistakes. This is especially important when it comes to high-frequency trading, where a minor mistake can quickly have major consequences.

Quant funds mitigate this risk through 'back-tests'. Historical market data is relatively easy to come by. Quant researchers can therefore use this data to run simulations on their models, forming a hypothesis, testing it against real-world market data, measuring performance, and shifting the model to improve and optimize its performance.

It's this ability to back-test that gives quant funds an edge in financial crises. They can legitimately claim that their models are built to perform under stress, because that is the market data used to train them.

Increases in computing power have given rise to new algorithms, but it has also given rise to new sources of data. Natural Language Processing (NLP) has allowed quant funds to measure the sentiment of online conversation and media coverage and use it as an input for their models.

Like all other sources of data, filtering out a market signal from simply noise is critically important. This is especially necessary when the source of the data is online conversation, as much of the information available online is of dubious quality, and even good-quality information can have bias inadvertently creep into it.

One such bias is so-called 'entity bias'. AI scanning financial news for the past decade will develop a positive correlation between the world 'Apple', related sentiment, and good financial results. But this is not necessarily a predictor of future investment gains, as there is no guarantee that Apple will continue to perform positively forever.

Quant funds work to solve these problems through human intervention.

Back-tests are one way to solve this problem. It's possible to feed historical sentiment data to a model, see whether it predicted historical market outcomes, and, if necessary, adjust the model to perform better.

Past performance is not always a predictor of future success. But a systematic, scientific approach, where quant researchers formulate hypotheses, test them with historical data, and apply their observations to their algorithms, brings a rigor to the process that should put investors' minds at ease.

"I think machine learning and quant are a very natural fit. The whole of quant is about taking a task normally done by a human being and automate it. That's what we're trying to do – we're trying to write those algorithms, and machine learning gives you a set of very efficient tools to do exactly that. It could be detecting patterns, subtle correlations, non-linear behaviours in the market – and through this, you can learn all the relationships between other asset classes and the asset you're trading. And it can learn this in a way that no human being can do."

Yves Lempérière
Head of Predictor Alpha Research
Capital Fund Management

"To me, as an allocator, I need to know that the manager has the capability to generate a risk-return profile going forward. It's not just about going backward and looking at the manager's track record. It means being confident that the investment process is repeatable and sustainable. It means understanding the drivers of that risk-return profile so that I can make my own assessment of its suitability. If the manager is running a total black box, I won't be able to make that assessment."

Christophe L'Ahelec
Managing Director, Head of Public Markets
University Pension Plan Ontario

"As a systematic asset manager, you should acknowledge and embrace new technological developments, and understand how such developments may help contributing to your research process. AI is not a game changer in terms of how we do research. However, it does open up countless new possibilities to uncover potential market inefficiencies. It can be seen as just another exciting tool in our arsenal that allows to perform analyses that were impossible to event think about just 6-7 years ago. At the same time, AI comes with additional complexity, and complexity should always be minimized in the context of a systematic investment process.."

Nicolas Mirjolet
Chief Executive Officer
Quantica Capital AG

"Artificial intelligence is, as the name suggests, about trying to replicate human behaviour. Quantitative strategies have never been about trying to replicate human behaviour. They've been about doing things better, or at least differently, than people can do. … we're trying to build a strategy that can make money… [For example,] machine learning, which is a subset of AI, is about building processes that can learn from experience and adjust their behaviour as new information presents itself. For example, trend following had a great year in 2022 because there were lots of trends to follow, but this year, it's not been doing so well. So if you could build a process that could learn when it's a good environment and when it's not, that would be an advantage. But this isn't about trying to replicate human behaviour as such."

Edward Tricker
Chief Investment Officer, Quantitative Strategies
Graham Capital Management
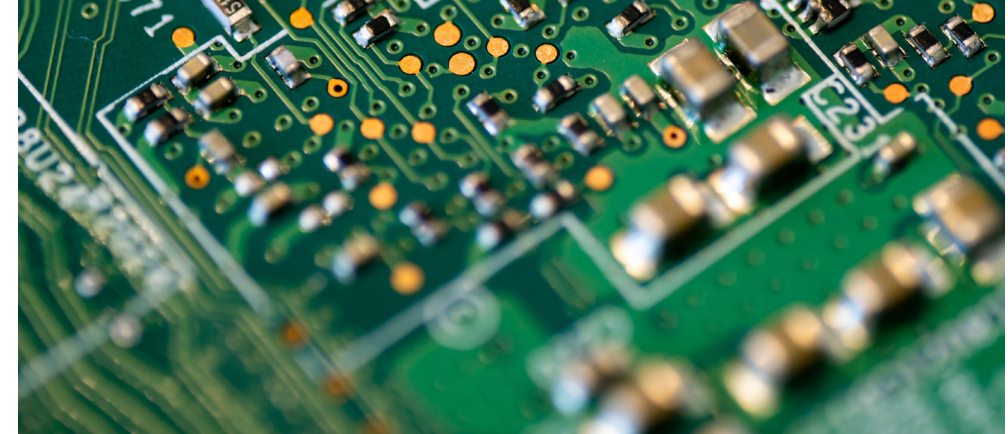
Man or machine?

The effectiveness of quantitative investment strategies, and the rise of AI, have often raised the question: what is the purpose of the human fund manager if algorithms are able to do a person's job effectively?

It is the same question that is asked in many other industries, from journalism to the arts to logistics, where properly trained AIs have demonstrated that they can approximate, if not exceed, human performance.

The answer, at least in the investment world, is that it's not one or the other. Value for investors is created by humans and AI working together. Most quant funds have some sort of investment thesis as the foundation of their algorithm. That thesis is developed by humans. The AI is trained and managed by humans. Hypotheses are formed by human researchers, and back-tests are run to confirm or falsify them.

AI may be able to simulate human behaviour, but in the end, it is not a replacement for a human being's training and judgement. It is a supplement to it.

"If we do a market sentiment analysis – millions of historical blog posts and news articles that we can analyze – to me, the average is pretty robust. To confirm that this isn't just spurious information, we back-test the sentiment signal and look for a good risk-reward profile across multiple markets. That gives us some structure around it, some confidence that it's not only noise we're extracting here but that there's real alpha."

Steven Guérin
Portfolio Manager, Absolute Return
Trans-Canada Capital

"Systematic strategies, historically, have tended to take something relatively simple with a relatively small edge, and then they've been deployed across a wide range of markets... In contrast, discretionary traders can't focus on 100 different opportunities at once, which means they typically have to bring a higher quality of alpha to bear when making a trading decision. Maybe that's more data or looking at a wider variety of data.... If you can get the breadth and the quality that a discretionary trader may have, combining it with the scalability and the rigor of a systematic approach, notable outcomes can be achieved. Combining those domain experts with quantitative people has led to some interesting results."

Edward Tricker
Chief Investment Officer, Quantitative Strategies
Graham Capital Management

What's next?

One of quant trading's great strengths is its ability to incorporate vast amounts of data from disparate sources into its decisions, and to trade across a huge number of asset classes. If quant trading has demonstrated strength in volatile markets in the past, there is a class of assets that may prove to be an excellent fit: cryptocurrency and digital assets.

Digital assets' volatility may scare off some investors, but it is this same volatility that makes it an excellent fit for quant funds, especially those pursuing a trend-following strategy. And, indeed, several quant funds are looking at crypto as a potential source of alpha in the future.

There are barriers to widespread adoption of crypto in the quant space. While some digital assets, like Bitcoin, are reasonably liquid, others are not. However, the speculative, roller-coaster nature of the markets make digital assets attractive for quant traders. Crypto currencies are not incorporated into all quant funds but they are certainly under consideration.

"I'm very bullish on systematic strategies for the next three to five years, because we are in a higher volatility environment now compared to the last decade, across countries and markets. There's also much more dispersion than there used to be from one country to another, and one region to another. Systematic investment allows you to process much more information at a much faster pace than discretionary, and because of the amount of information and data that is now available, I think that systematic investing is actually in a very good position to extract alpha from the market."

Christophe L'Ahelec
Managing Director, Head of Public Markets
University Pension Plan Ontario

"The essence of systematic investing has remained unchanged over time, despite all the technological advances. It is about identifying market inefficiencies in the past which will persist into the future. Unlimited computing power and storage capabilities will do nothing to change this and will not make the research process easier. The human touch and expertise remain front and centre and this is unlikely to change over the next decade."

Nicolas Mirjolet
Chief Executive Officer
Quantica Capital AG

**Read our other CAASA papers and primers, available at caasa.ca
under the Resources:Publications tab**

EMERGING ALTERNATIVES:
TODAY'S DIVERSIFIERS
& ALPHA PRODUCERS

A briefing on many types of alternative investments that can benefit investors

PATH THROUGH VOLATILITY:
RETAIL INVESTORS
AND ALTERNATIVE
INVESTMENTS

Part of our series to assist investors and their advisors in navigating turbulent markets with traditional wisdom and non-traditional investment opportunities.

INFLATION FIGHTERS:
PRIVATE LENDING

Part of our series to assist investors and their advisors in navigating turbulent markets with traditional wisdom and non-traditonal investment opportunities.

INFLATION FIGHTERS:
REAL ASSETS

Part of our series to assist investors and their advisors in navigating turbulent markets with traditional wisdom and non-traditonal investment opportunities.

DEMOCRATIZED
ALTERNATIVES: LIQUID
ALTERNATIVES IN THE
CANADIAN MARKET

An investor guide to these innovative strategies - now available to Canadian retail investors and their advisors.

CAASA ESG PAPER

A comprehensive guide to doing good and investing well for greatest effect on both fronts.

BLOCKCHAIN AND
CRYPTO-ASSETS
EXPLAINED

Your guide to these new technologies and methods of communication and transacting.

THE EVOLUTION OF QUANT

How these managers...

...are finding their place...

...in a dynamic global investment landscape.

PRIVATE EQUITY &
VENTURE CAPITAL
PRIMER

How fund managers, company management, and investors create new businesses and industries.