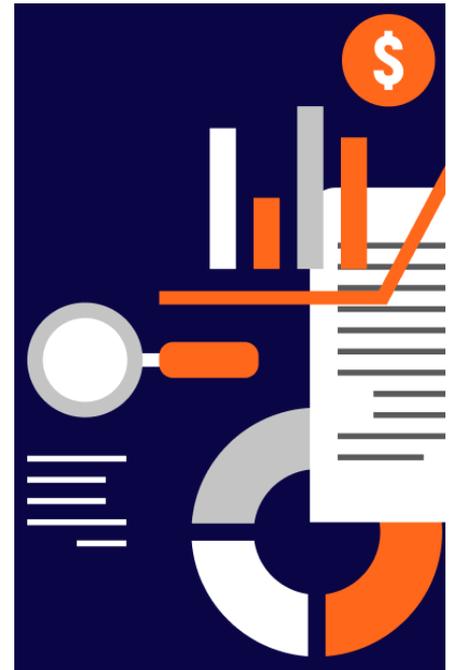


# MacroRisk Analytics: The Formula 1 of Risk Analysis



## MacroRisk Analytics: The Formula 1 of Risk Analysis



**Website** <https://www.macrorisk.com>

**Key dates:** Founded in 2009

**Clients:** Financial advisors, financial institutions

**Value proposition:** Risk-management platform, portfolio optimization

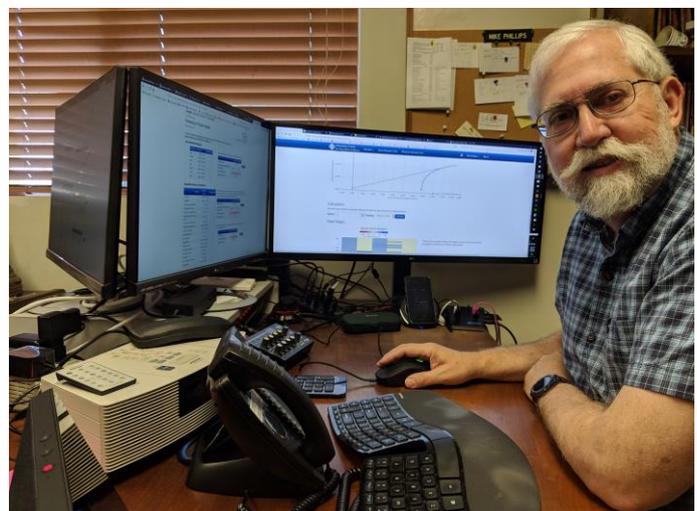
### Senior management

[Michael Phillips](#), Chief Scientist & CEO

MacroRisk Analytics offers a suite of statistically and scientifically tested tools for risk-tolerance profiling, portfolio optimization, and measuring the economy's influence on investment prices. The platform is based on years of academic research and positions itself as a way for advisors and financial professionals to analyze their portfolios for optimal positioning in the changing economy

I visited the MacroRisk office in California to learn more about the strong underpinning that makes the company one of the best in deep risk analytics.

Michael Phillips is an econometrician by trade and received his PhD from the University of California, San Diego. He entered the finance world as a finance professor looking to show his students and industry practitioners the practical side of academia. Dr. Phillips



*G. Michael Phillips, Ph.D. Chief Scientist & CEO*

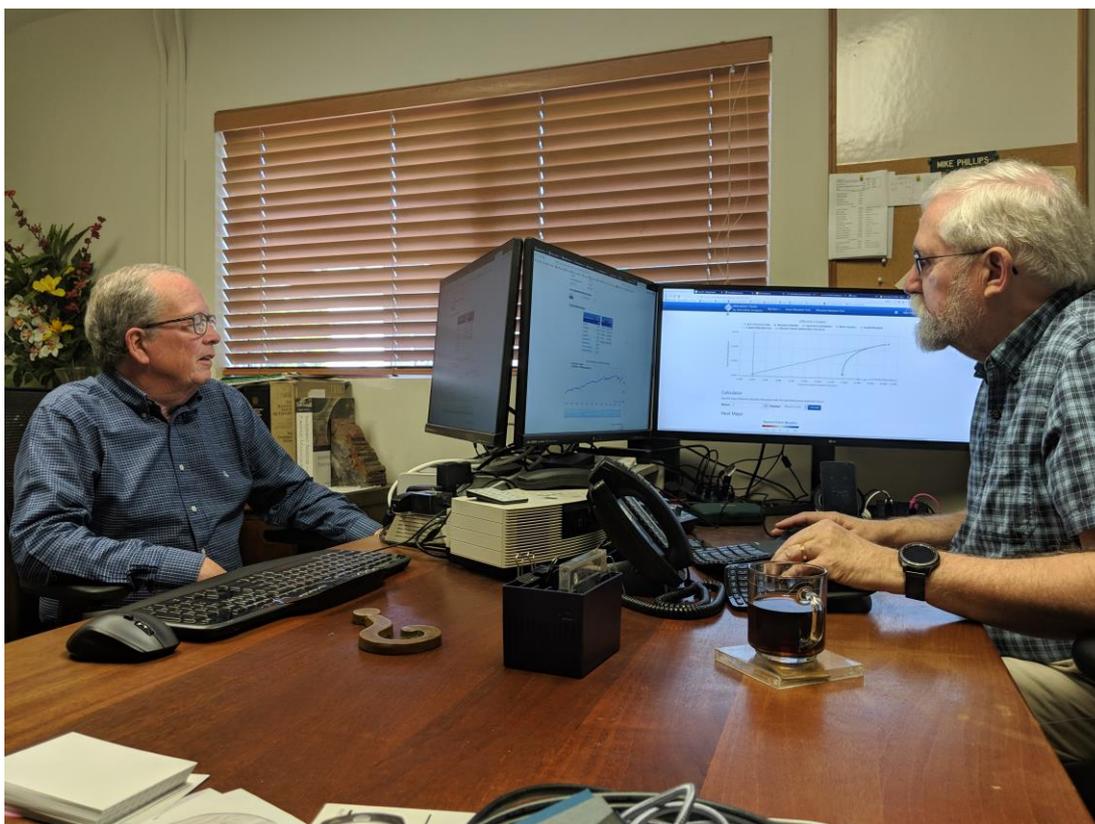
has previously worked for the U.S. Department of Commerce as an economist, and currently serves as a consultant to many corporations and financial institutions.

## The MacroRisk toolbox

MacroRisk was born out of the [academic research done by Michael and his colleagues](#). Luckily, they had the support and foresight to patent the technologies and approaches used in the platform. Currently, these couple dozen patents give them the protection to implement and build a quantitative platform within which to apply their discoveries, inventions, and extensions of modern finance.

“MacroRisk begins by taking an approach that looks at asset and portfolio value, rather than just the day-to-day change. We look at estimating intrinsic values of assets, [...] estimating values of portfolios, and relating those values to economic factors. We were the first tool, period, that consistently permitted scenario analysis, stress testing with economic scenarios and decomposition of portfolios into economic factors.”

The MacroRisk model revolves around 18 factors, specific macroeconomic indicators, that have been shown to have predictive value for a broad range of assets.

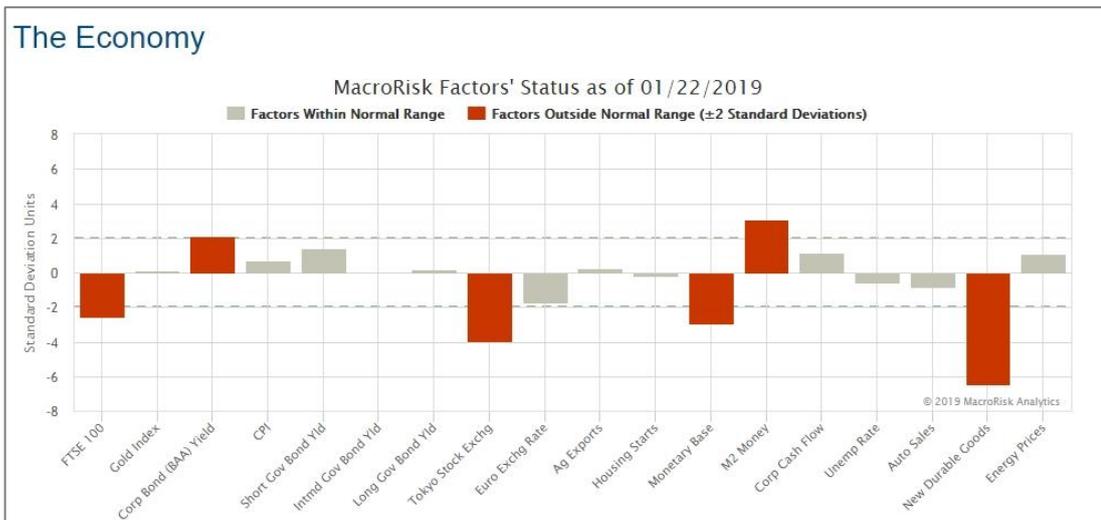


*Bill Jennings, Ph.D. Chief Investment Strategist and G. Michael Phillips, Ph.D. Chief Scientist & CEO*

These factors, collectively called the Eta® Factors by the platform, are as follows:

- FTSE 100
- Gold Index
- Corporate Bond (BAA) Yield
- Consumer Price Index
- Short-Term Government Bond Yield

- Intermediate-Term Government Bond Yield
- Long-Term Government Bond Yield
- Tokyo Stock Exchange Index
- Euro Exchange Rate
- Agricultural Exports
- Housing Starts
- Monetary Base
- M2 Money Supply
- Corporate Cash Flow
- Unemployment Rate
- Auto Sales
- New Durable Goods Orders
- Energy Prices



“These factors give us a better way to look at diversification. We can diversify on the basis of individual assets. We can do black swan optimization and put together portfolios to smooth out the exposure to all 18 [factors] and therefore reduce the downside risk from economic shocks to your portfolio.”

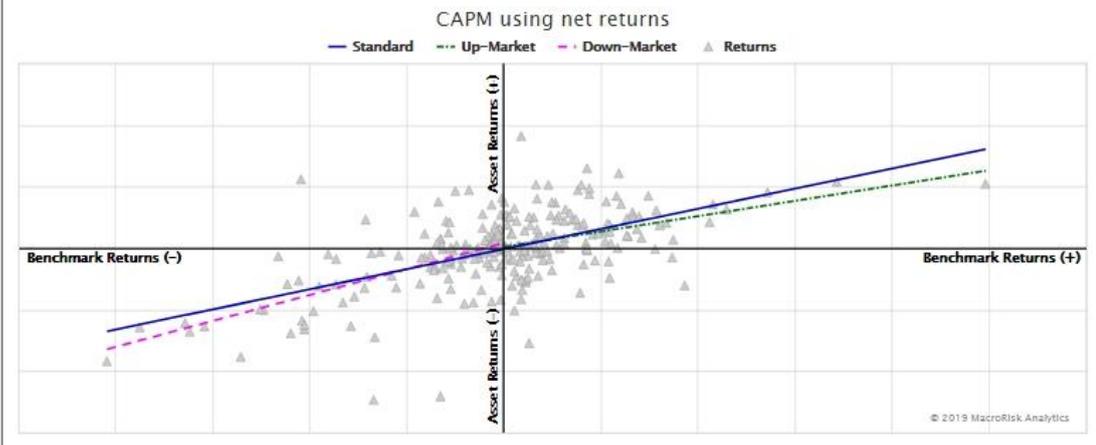


## Beta+ Report

CAPM Statistic	Standard	Up-Market	Down-Market
Alpha	-0.0819	0.1556	0.7391
Beta	0.8188	0.6224	1.0549
CAPM R <sup>2</sup>	0.3499	0.1325	0.3467
Correlation	0.5915	0.3640	0.5888
Tracking Error	0.1984	0.1871	0.2073

LMT Ratios	
Sharpe Ratio (Riskless Rate)	-0.5454
Sharpe Ratio (Market)	-0.3776
Sortino Ratio	-0.4683
Treynor Ratio	-0.1621
Return to Risk Ratio	-0.5454
Return to Downside Risk Ratio	-0.4683

Other Statistics	LMT	SPX
Annualized Ret.	-15.03%	-7.07%
TT Month Ret.	-15.02%	-7.06%
Mean Ret.	-13.24%	-5.75%
Median Ret.	0.00%	1.46%
Std. Dev	0.2428	0.1759
Upper SemiDev	0.2076	0.1679
Lower SemiDev	0.2628	0.1964



Michael said that the software includes a wide range of econometrics and analytics tools built into families of reports. These reports are based on portfolios, buylists, benchmark lists, factor lists, custom economic profiles, custom economic statuses, and value scenarios.

Additionally, there are various ways to look at performance over time and returns, and compare and correlate different stocks. The platform also has powerful screening tools that show the assets that are screened, the portfolio-optimization tools, and the risk-tolerance tools.

Print Screen Criteria										
Show 10 entries										
Name	Symbol	Market	Type	MacroRisk Level	Economic Climate Rating	Eta <sup>®</sup> Profile	Eta <sup>®</sup> Confidence	Eta <sup>®</sup> Value at Risk	Standard Beta	Up-Market Beta
Teucrium Sugar Fund ETV	CANE	NYSE Arca	Exchange-Traded Fund		★★★★★		10	10%	0.050	0.085
VanEck Vect Steel ETF	SLX	NYSE Arca	Exchange-Traded Fund		★★★★★		10	7%	1.132	1.025
First Trust China AlphaDEX Fund	FCA	NASDAQ	Exchange-Traded Fund		★★★★★		10	7%	0.662	0.504
Invesco China Technology ETF	CQQQ	NYSE Arca	Exchange-Traded Fund		★★★★★		10	9%	1.230	1.060
KraneShares CSI China Internet ETF	KWEB	NYSE Arca	Exchange-Traded Fund		★★★★★		10	10%	1.276	0.965
ProShares Ultrashort FTSE China 50	FXP	NYSE Arca	Exchange-Traded Fund		★★★★★		10	11%	-1.906	-1.820
ProShares UltraShort MSCI Emerging Market	EEV	NYSE Arca	Exchange-Traded Fund		★★★★★		10	10%	-1.859	-1.735
Invesco DWA Healthcare Momentum ETF	PTH	NASDAQ	Exchange-Traded Fund		★★★★★		10	8%	1.353	1.297

## Major integrations

MacroRisk is part of the **TD Ameritrade** platform and is also integrated with **Thomson Reuters**, **Capital IQ**, and **FactSet**. The company also works closely with **FI360** and other professional associations. It created Risk Tolerance Correspondence scores in collaboration with **FinaMetrica**. For data acquisition, MacroRisk primarily relies on **CSI**, **IHS market**, **NASDAQ**, and various governmental agencies.

After acquiring the massive amount of data at market close, the MacroRisk platform analyzes and calculates all the risk models. These models use econometrics, artificial intelligence (AI), and machine learning algorithms to update the platform on a daily basis.



*Timothy Sargent, Cloud Engineer*

## The best tools for the job

Michael explained that their aim has always been to implement as many open-source solutions as possible. Granted, to customize and optimize their solution they have relied on proprietary programming using the best languages and tools for the application. MacroRisk uses **C++**, **Python**, **R**, and **Ruby on Rails**. In addition to **PostgreSQL**, Michael mentioned that they use other, more exotic database systems depending on the geographical location of the market. For the type of large-scale data science and AI applications MacroRisk is running, **Microsoft Azure Cloud** offers the best solution.

Michael is a strong proponent of Python and R, specifically for the integrability and open-source nature of these languages, and believes that people looking to get into the finance and data analytics fields should have at least one under their belt.

*“We are fully fluent in R and Python. I [...] recommend that most of my finance majors [...] learn Python. [...] someone who wants to be a data analytics person, [such as] my doctoral students in that area, [should] learn R. One of my graduate students who's working at the moment is finishing her master's degree and I've made sure that she becomes fluent in R.”*

## Company structure

MacroRisk is a 15-strong team of full-time and part-time employees that includes college professors, an algorithmist, coders, and a sales team. Michael said that the company essentially runs itself, and the current focus is on expanding capabilities and developing a product that enables people to make investments without having an understanding of the deep complexity of the platform.

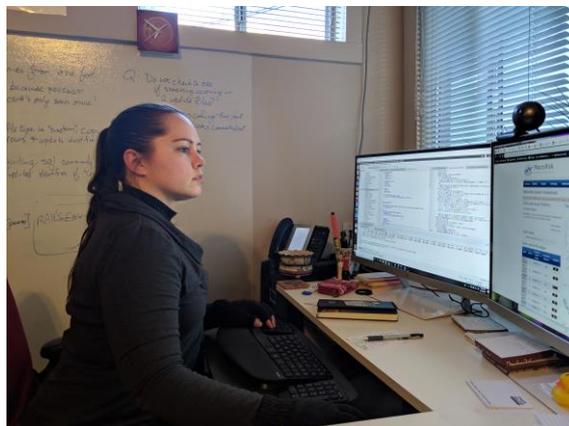
## A MacroRisk API on the horizon

Currently, Michael and his team are looking into creating an API that will make data, as well as useful tools such as analytics, optimization, and basic reporting on performance, available to clients. For general benchmarking and portfolio construction, the MacroRisk

platform could be used to power a robo-advisor and it could easily provide analysis for the most complicated hedge funds.

“Our whole structure is set so that virtually anything you see on the website or any of our data or any of our reports we could provide on an API basis. We designed this to be able to be quickly integrated with almost anybody.”

Michael stated that they are capable of completing easy integration with almost any other system in a matter of days. The most common integrations are “The Economy Matters”® reports, for use by robo-advisors and financial information services such as Capital IQ and FactSet. These reports show what in the economy is going to impact the value of a particular stock, and what advisors should focus on in order to mitigate risks.



*Sarah Campbell, Senior Software Engineer*

“We would love to have more robo relationships. We would love to have more API data-feed relationships. We would love to have more of our tools being utilized and frankly we have an interest in seeing if we can find someone who is better at marketing than we are. While we are tremendous at the science and the development, we are not as skilled at the marketing and business development as we would like to be.”

## WealthTech Club takeaways

MacroRisk is unlike most platforms due to the sheer number and depth of the analytics and tools available to its subscribers. The complexity of the platform might be a downside and possibly a turnoff for advisors who are looking for a simpler interface; indeed, the MacroRisk team has taken on board such feedback from its subscribers and now plans to simplify certain aspects of the software to make it more attractive to a broad variety of clients, including launching several focused websites such as AllocationTools.com. When (not “if”) MacroRisk accomplishes and leverages this, it will be extremely beneficial for wealth managers and advisors.



Written by Vasyi Soloshchuk, CEO and co-owner at [INSART](#), FinTech & Java engineering company. Vasyi is also the author of [WealthTech Club](#), which conducts research into Fortune and Startup Robo-advisor and Wealth Management companies in terms of the technology ecosystem.