

HOW TO PROTECT CAPITAL AT RISK WITH QUANTCUBE'S REAL-TIME MACROECONOMIC INDICATORS

Detecting a potential market crash is challenging. Since it often happens unexpectedly, it tends to catch even the most vigilant investors off guard. Contributing to this challenge is the reliance on official economic and financial market data for assessing current economic and market conditions. As official data is usually available on a monthly or quarterly basis with a significant time lag (from 2 weeks for US inflation to 3 months for GDP estimates), this data may not be capturing the current economic outlook or crucial turning points in the macroeconomic regime. Additionally, financial market data is not always aligned with the economic outlook as the data tends to be influenced by market expectations. This is particularly true when we try to detect reversals in macroeconomic trends. As a result, investors often suffer financial losses as they fail to anticipate such changes in time.

Real-Time Estimation of Macro Regimes and Risk-on/Risk-off modes

To help institutional investors navigate through economic

uncertainty, QuantCube provides daily indicators for key macroeconomic variables based on real-time alternative data processing:

- **QuantCube Leading GDP Nowcast** is an advanced measure of GDP updated daily by taking into account the real-time evolution of macro variables such as consumption, employment and international trade data at a country level.

- **QuantCube CPI Nowcast** measures the current Consumer Price Index in real-time at a country level by incorporating the price changes in specific sub-components such as Core Goods, Core Services and Energy & Food. The indicator is highly correlated with official data, and is available approximately a week ahead of consensus and two weeks ahead of official releases.

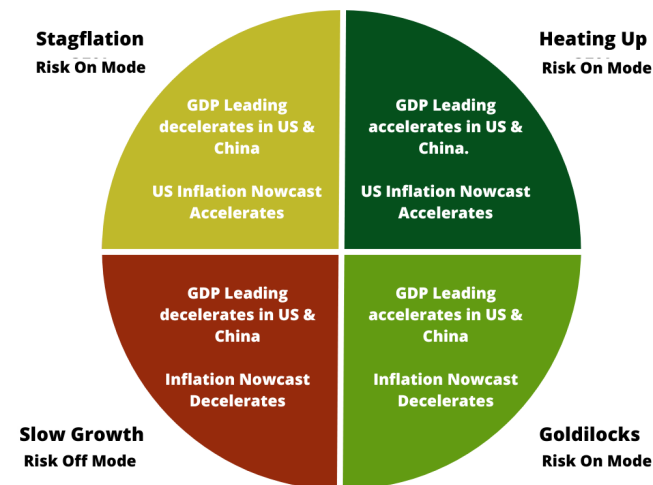
- **QuantCube International Trade Nowcast** leverages automatic identification system (AIS) data to estimate the level of international trade activities in real-time, especially for goods and commodities such as

Iron Ore, Oil, LNG and Coal.

- **QuantCube NO2 Pollution Nowcast** leverages satellite data analytics at a regional and city level to estimate the real-time trends in industrial activity for specific countries including China, Russia and India.

Based on the above nowcasting trends for GDP and the inflation outlook, we developed the QuantCube Dynamic Quadrant, a tool to identify four macroeconomic regimes in real-time: Heating Up, Goldilocks, Stagflation and Slow Growth. Exhibit 1 below describes the details of each economic regime.

Exhibit 1. QuantCube Dynamic Macro Regime Quadrant and associated Risk-on/Risk-off modes



Investors can use this tool to define risk-off and risk-on modes and identify potential market risk more effectively. The tool is particularly useful for

making timely and informed decision for several purposes including equity and asset allocation strategies, where cross-asset

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class allocations are required to mitigate the potential market risk. For example, if Leading GDPs in China and the US are both trending negative, and US inflation is also trending down, this is interpreted as a Slow Growth regime, or Risk-off mode where economic growth is slowing globally. The remaining three regimes are considered to be Risk-on mode.

Risk-off-Regime from 2016 to 2023

Exhibit 2 shows the S&P 500 Futures return since 2016 and the risk-off periods detected by the QuantCube Dynamic Quadrant. The S&P 500 Futures experienced sharp selloffs during the major market corrections in the past, including the China/US trade war in 2018, the spread of Covid-19 in 2020, and the Russian invasion of Ukraine with the consequent energy supply crisis in 2022. These significant market crises were detected successfully and in a timely way using our macro indicators.

Delivering Positive Returns with Short-Only Equity Strategy during Risk-off Regime

During periods of sluggish economic growth, the equity market often turns bearish, and its behavior becomes increasingly difficult to predict. Based exclusively on the high frequency Risk-off signals from the QuantCube Dynamic Quadrant analysis, we have tested a short-only strategy on the S&P 500 Equity Futures index. Exhibit 3 illustrates the back-testing results for this strategy, which initiates a shorting position in the S&P 500 Futures when the

market is expected to underperform, specifically, during periods of slowing GDP growth and US inflation. During other scenarios, i.e. Risk-on mode, no action is taken. This short-only equity strategy has delivered a significant cumulative return of 32.7% from 2016 to 2023, with a Sharpe Ratio of 0.38 over the period. In addition, the number of positive trades is greater than the number of negative trades with a 54.1% success rate. The positive trades also achieved higher average returns compared to the returns by the negative trades, +1.12% and -0.70% respectively.

Exhibit 2. S&P 500 Futures historical returns and risk-off periods signalled by QuantCube's macro data

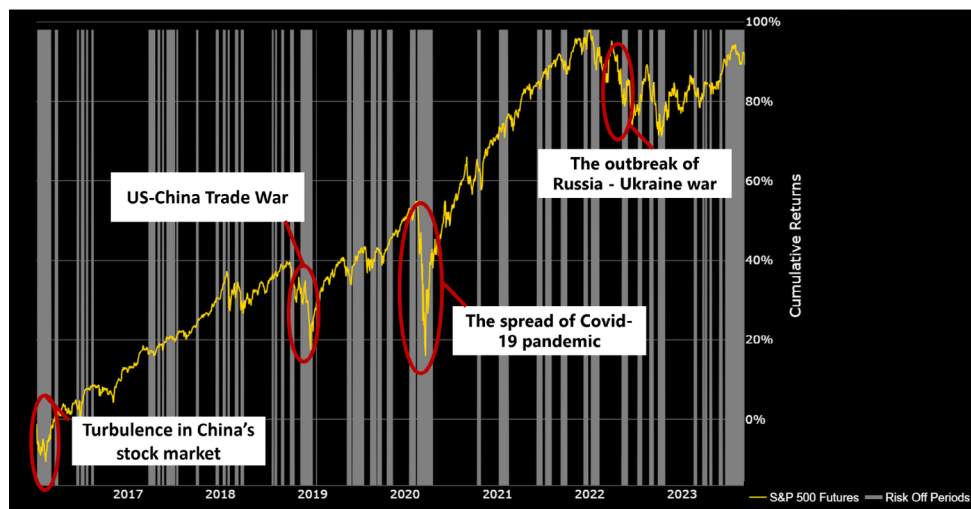


Exhibit 3. Cumulative returns for S&P 500 Futures active short-only equity strategy based on QuantCube Risk-off regime



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Table 1 below provides a summary of the annual returns of the S&P 500 Futures Index and the short-only strategy described above. Notably, when the S&P 500 Futures Index experienced significant

declines, i.e. in 2018 and 2022, the short-only strategy achieved substantial gains. Even during the periods of strong S&P 500 performance, the losses experienced by the strategy were limited.

Table 1. Annual returns comparison: S&P 500 Futures Index and QuantCube Short-Only strategy

Year	S&P 500 Futures	QuantCube Short-Only strategy
2016	13,8%	-4,0%
2017	20,1%	-1,6%
2018	-3,0%	13,7%
2019	28,2%	-6,5%
2020	22,8%	17,8%
2021	26,1%	0,7%
2022	-17,1%	12,9%
2023	30,3%	-3,7%

QuantCube Risk-on/Risk-off Regime for multiple investment applications

In the previous sections we discussed the use of macro nowcasts to control risk for active equity portfolios. However, real-time insights into future market directions are also relevant for other financial applications including:

- **Enhanced index investment strategies** for passive investors: the real-time data used to detect

potential shifts in macro regime can also provide passive investors an opportunity to automatically adjust their portfolio exposure. This can help passive investors to effectively capitalise on changing market conditions, therefore, enhancing the performance of index-based portfolios.

- **Long-short index strategy for active investors:** active investors can gain a significant advantage from promptly identifying regime

shifts and potential market crashes. By incorporating such insights into long-short index strategies, active investors can optimise their positions and maximise their returns, especially during bear markets and/or market correction periods.

In our view the ability to react promptly to changing market conditions using accurate and high frequency data is critical for optimising investment decisions, enhancing risk management, and more importantly, to stay ahead in today's dynamic financial landscape.

- **Tailored structured financial products:** real-time macroeconomic indicators and trends are valuable tools for designing structured products that are tailored to respond dynamically to changing economic conditions. These products could incorporate specific features that adjust their performance, payouts or the terms of investment based on the captured macroeconomic conditions. This will in turn help optimise the returns by benefiting from (or protecting against) potential economic fluctuations.

- **Risk management:** the real-time assessment of macro regime shifts is a powerful tool for asset managers to improve their risk management process. Risk managers can benefit from the timely detection of changes in market behaviour to pro-actively evaluate the risk exposures of their portfolio.

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COMPANY BACKGROUND

QuantCube analyses billions of alternative data points in real time, using artificial intelligence and big data analytics to deliver insights ahead of the market – giving users an edge in their investment strategies. Today we are the global leader in macroeconomic intelligence nowcasting and in pinpointing macro regime change.

Our vision is to become the standard point of reference for macroeconomic, sector, corporate and environmental intelligence. By delivering timely, comprehensive and actionable economic insights we empower users within financial institutions, corporates and public bodies to reach their financial performance and sustainability goals. Headquartered in Paris, QuantCube employs a diverse international team of economists, quant analysts and data scientists with expertise in multilingual NLP, deep learning and machine learning techniques. The company's shareholders include Moody's and Caisse des Dépôts and its R&D in computer vision has been partially funded by the European Space Agency (ESA) and French government space agency CNES.

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