Qi Macro Risk

2022

A key advance in factor investing

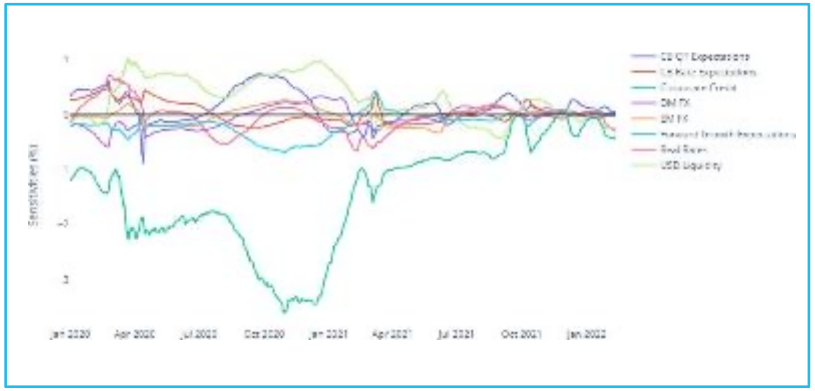
Factor investing has become increasingly popular over recent years.

More and more investors think of their portfolios in terms of the underlying features or factors that they own.

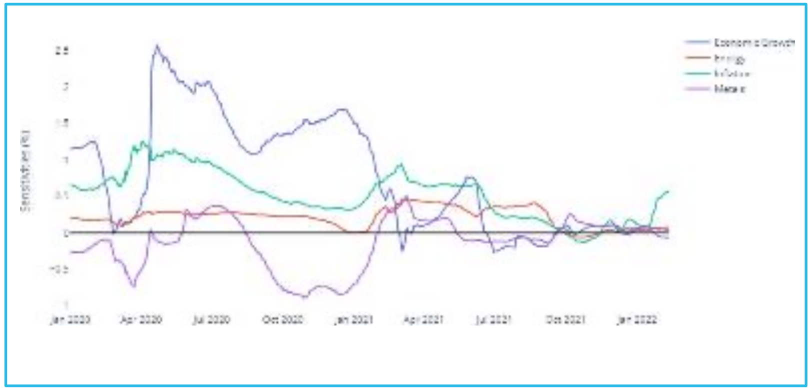
A portfolio can now be well described in terms of geographical, sector and style factor exposure.

The missing piece has always been **macro**: rigorous and comprehensive macro factor approach has been elusive, until now, spanning 3 main categories of macro.

S&P500 Sensitivity to Economic Fundamentals



S&P500 Sensitivity to Financial Conditions



S&P500 Sensitivity to Risk Appetite

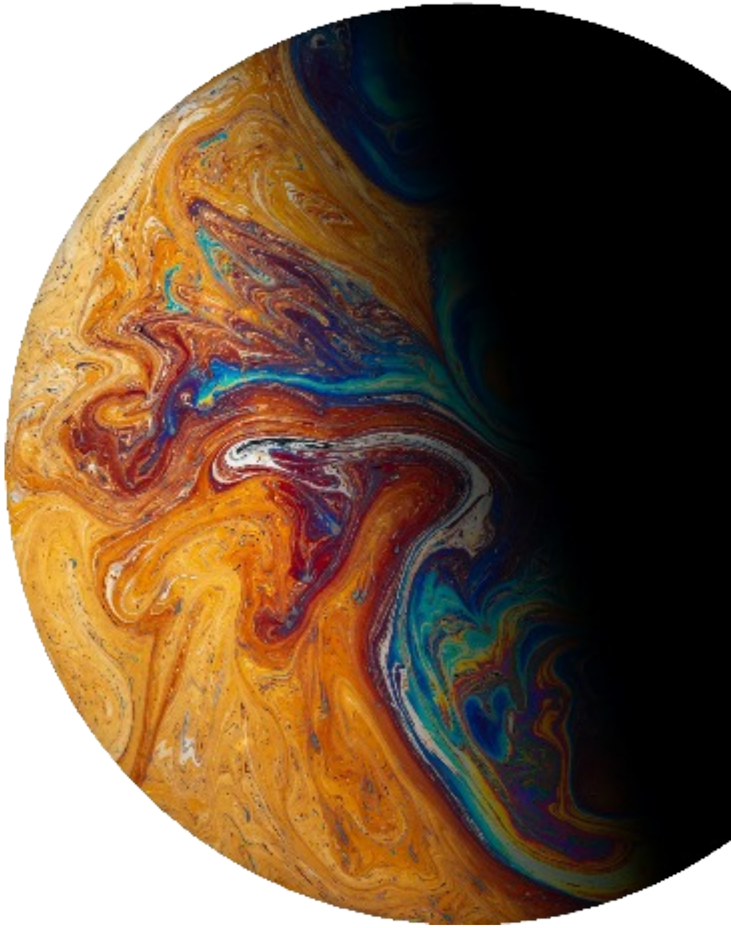
Solving the Macro Factor Puzzle

Data frequency has improved

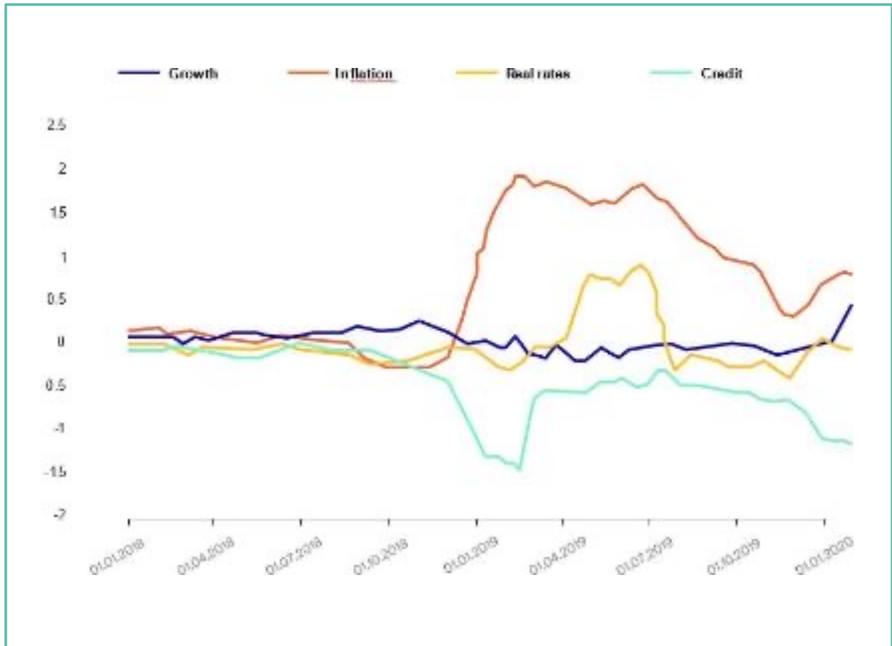
Important macro variables such as real GDP growth and inflation have been infrequent and have lags thus difficult to incorporate into any analytics. However, now daily real GDP estimates are available for 20 countries and update even intraday. Also, inflation expectations are now available from 1 yr to 10 yrs out.

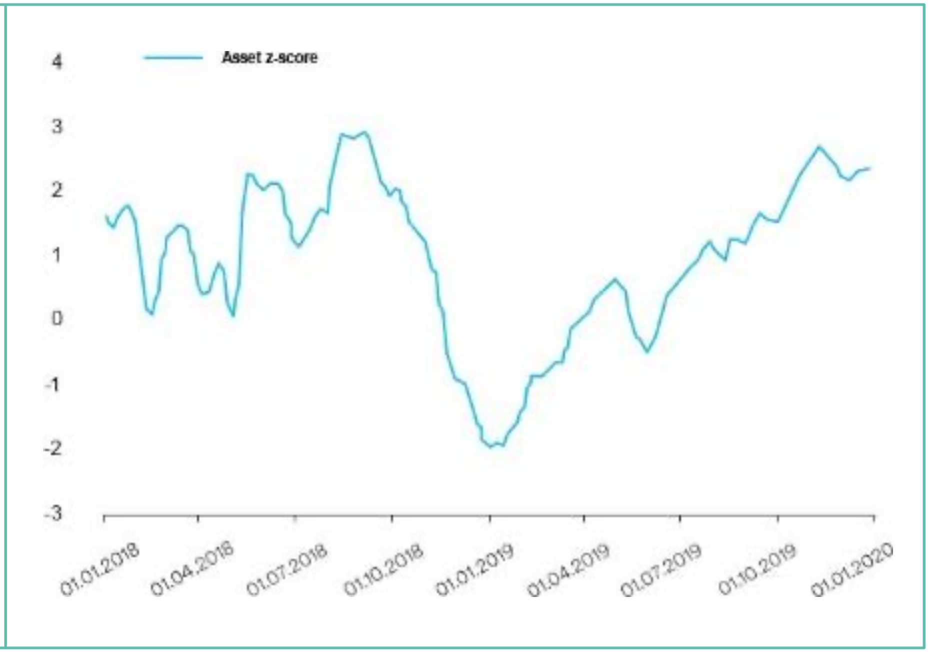
Dealing with negative values

Macro variables like real GDP and inflation present the issue of values that can swing from negative to positive. Therefore, normalizing data into % returns/changes doesn’t work with macro data sets. A different approach is used that coverts all data to 'z scores'.



Normalise the data





When running PCA and extracting signals, all data must be in the same units.
We normalise all the time series by de-trending & volatility adjusting by transforming data into z-scores. We do not use % returns.

Solving the Correlation problem

Macro factors can all be highly correlated.

This means that standard multiple regression approaches do not yield valid results.

Series are correlated, sometimes non-stationary, in different units and the data needs to be cleaned as it updates.

Some macro variables may also trend for long periods of time (the “non-stationarity”problem). The approach used to normalise also results in stationary time series. The bottom line is a rigorous methodology that draws on well known techniques to extract valid macro signal from all the noise.

Extract the signal

- Collapse overlapping, correlated data and remove redundancy.
- Reduce to 3 uncorrelated (“orthogonal”) Principal Components (PCs).
- 3 PCs capture circa 90% of the variation/information of the entire macro data set.
- This is the core macro signal over time.

Technology

Running all these calculations for thousands of instruments is only cost effective because modern cloud-based architectures allow cheap access to large amounts of processing power.

Technology has in this case unlocked real solutions for global investors.

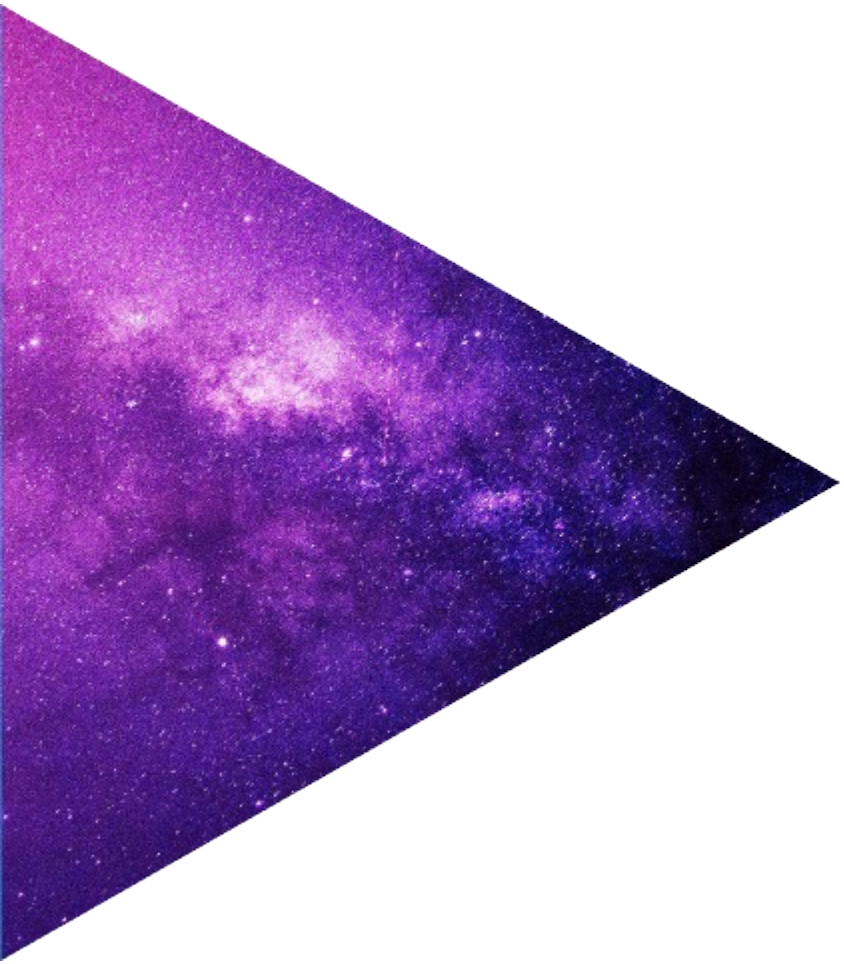
Benefits

A robust macro factor solution unlocks a number of benefits.

Investors have experienced major rotations, an enormous macro shock from Covid followed by an equally enormous policy response across both monetary and fiscal dimensions.

The impact on overall markets, sectors and indeed single stocks has been profound.

Given the early market moves in 2022, the unwinding of the Covid policy response, shifts in China and various growing imbalances, **macro looks set to be equally important in the years ahead.**



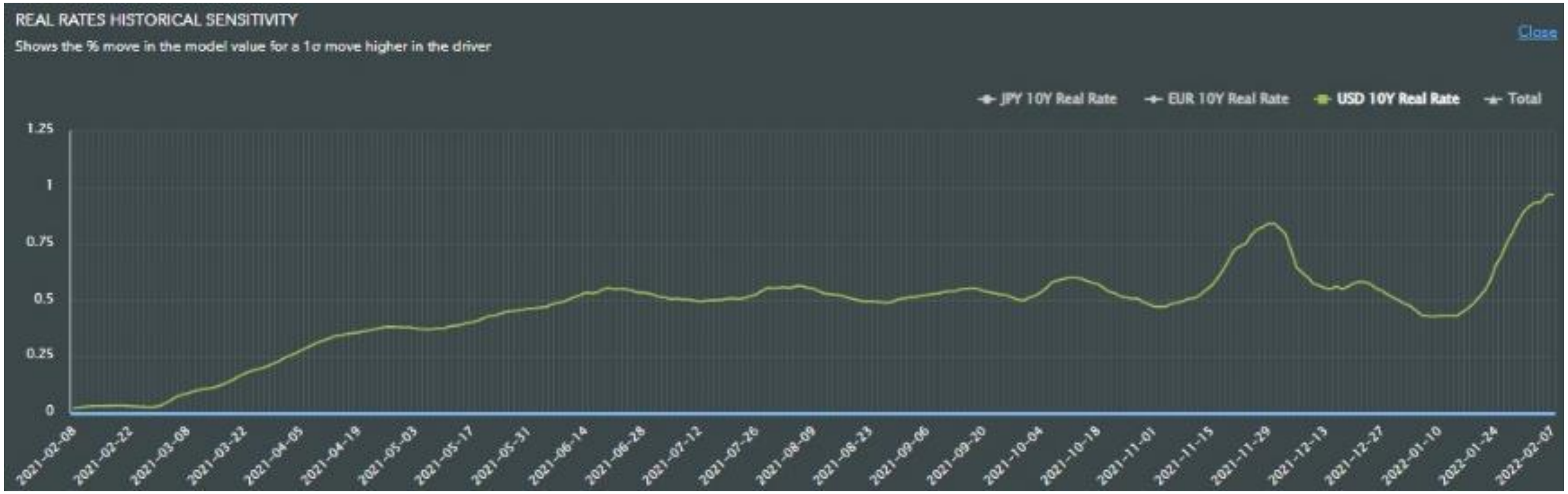
Equity rotation

Jan 2022 - Assess the direct impact of macro policy on your portfolio and on your style factor tilt

In Dec. 2021 and Jan. 2022 the sharp rotation from “growth” to “value” was driven by shifting Fed policy. The real underlying exposure was to real rates. Various sectors and stocks had different exposures.

Portfolio managers can now directly analyse their exposures to macro factors such as real GDP, inflation, real rates, Fed policy expectations, China stress, the US Dollar, energy prices and more.

This comes with full transparency over which stocks and sectors are contributing to the overall macro exposure.



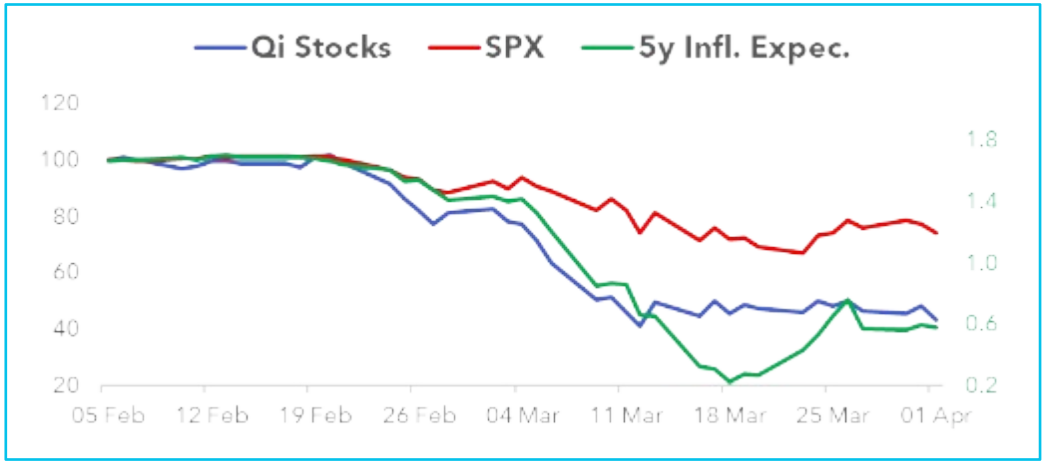
US large cap Value vs. Growth (VTV vs. VUG) - sensitivity to 10y US Real Yields

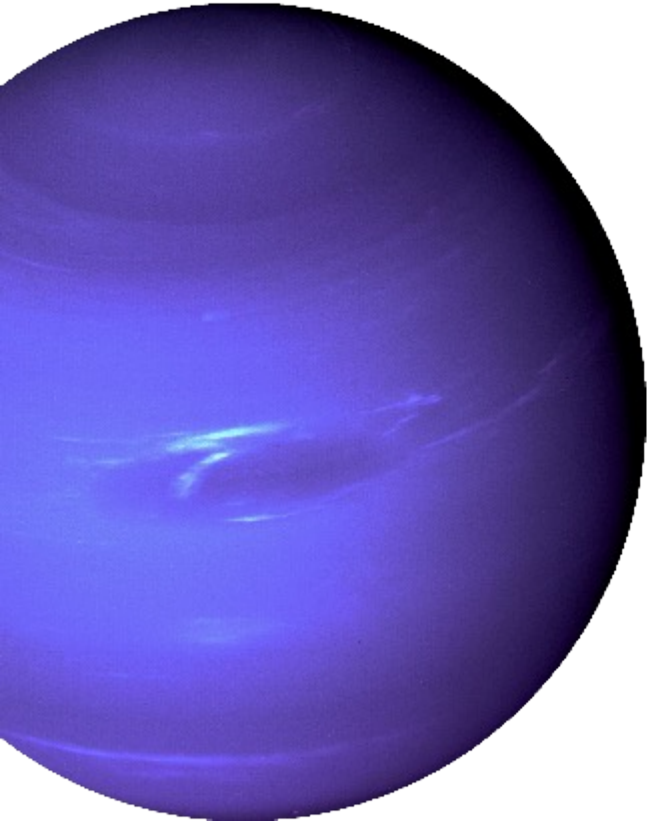
Trading a deflation shock

Feb. 2020 - Know your key macro exposure and identify your pain points

As the Covid crisis took hold in Feb. 2020, Qi users started to become concerned about a deflationary shock. Qi identified those stocks most exposed to falling US inflation expectations. On the 5th Feb. Qi identified the 10 S&P500 stocks with the highest sensitivity to US inflation.

By the 23rd March, the S&P500 index was down 23% while those 10 stocks were down on average 54% over the same period.



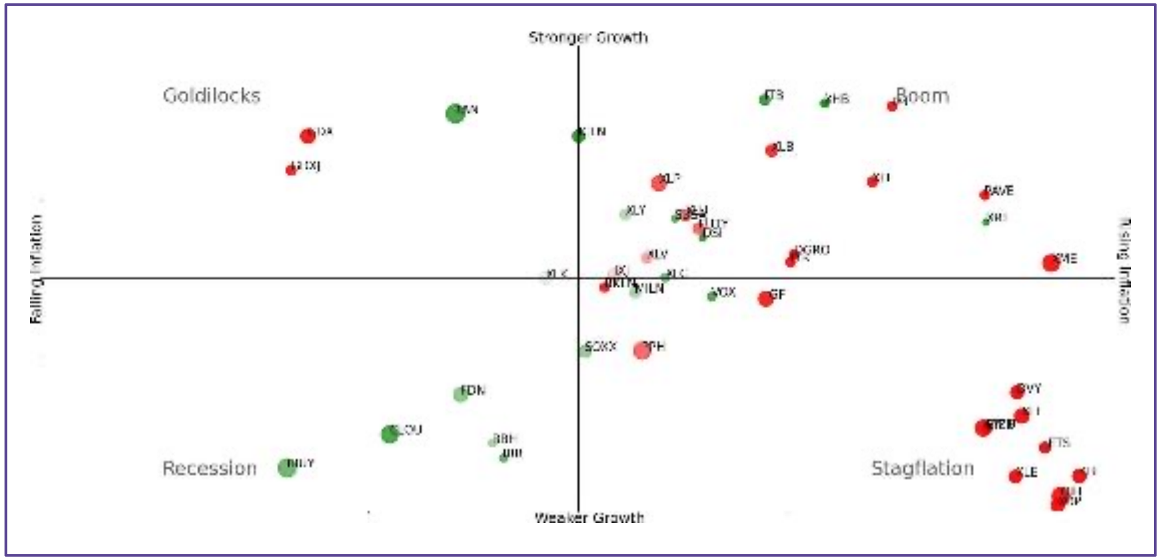


Use cases

Macro scenario analysis

It is straightforward to use Qi macro factor sensitivity data to run a scenario analysis on your portfolio.

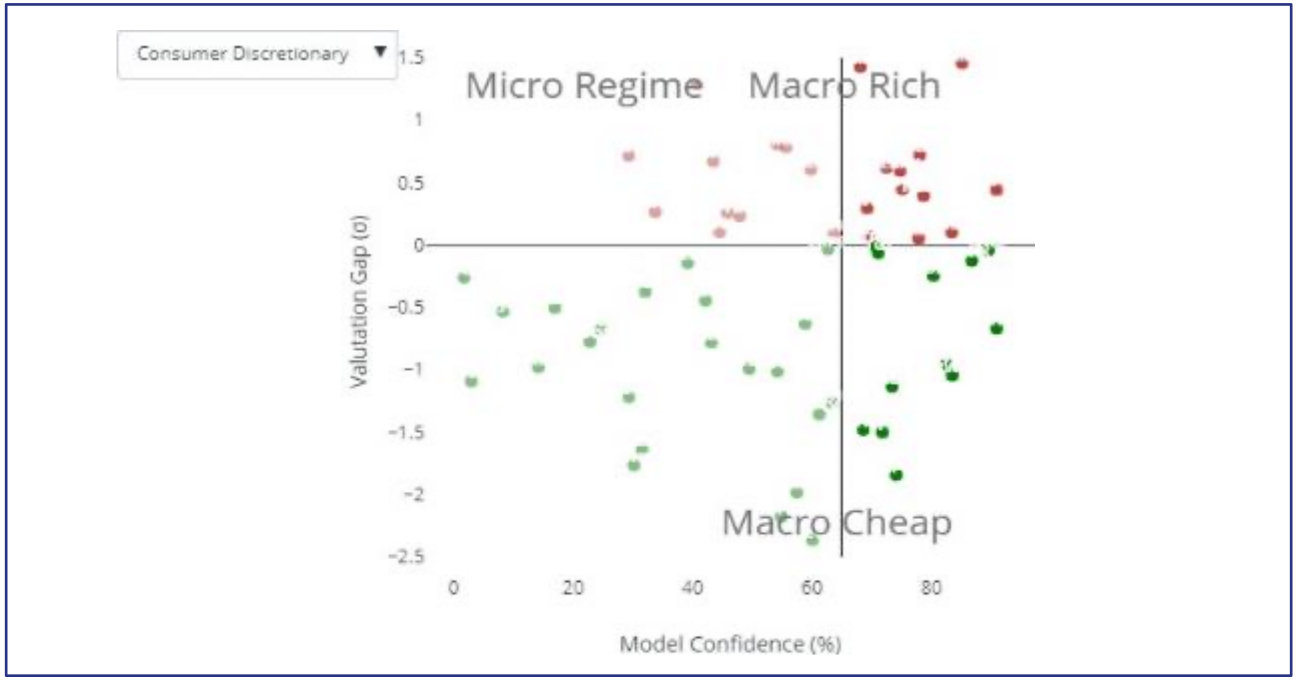
For example, what would be the expected outcome on your portfolio of a sharp move lower in US/global GDP growth but stubbornly high inflation (stagflation)? Which sectors and stocks would be most impacted?



Macro vs Micro

Qi measures the extent to which a stock/sector/ index or your entire portfolio is explained by micro/ idiosyncratic factors as opposed to macro factors.

Some sectors are more macro driven such as financials, utilities, energy/mining and industrials. For a large portfolio, diversification often means that what is left at overall portfolio level may well be a macro exposure. These features do shift gradually over time, but because Qi is adaptive and updates daily, you can always assess your current exposures.

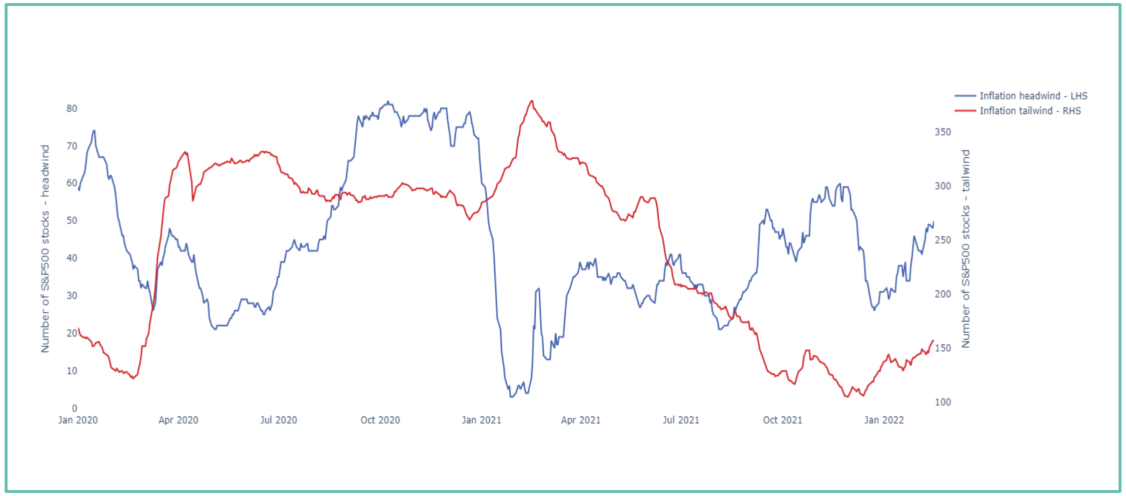


Stock Selection & Screening

If you have a list of stocks you like from a micro fundamental perspective, it may be useful to narrow down and potentially exclude those that might be highly macro driven.

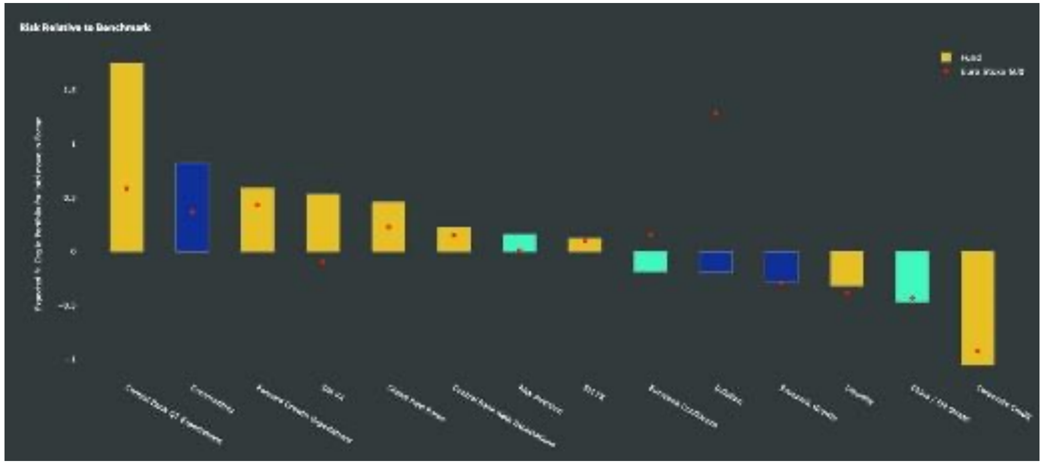
Alternatively, if you have a strong macro tilt and want to add that tilt to your portfolio, then you can screen for stocks with the macro features you want.

Track the S&P500 companies with positive sensitivity to US inflation expectations - see inflation as a tailwind, i.e. have pricing power, versus the headwind stocks who suffer in a rising inflation environment.



Overall risk monitoring and attribution

A monthly snapshot of your overall macro tilt and performance attribution over the last month/quarter can become part of your process and ensure you do not get blindsided by macro shifts.



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