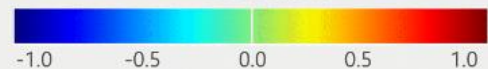


THE NEED FOR DYNAMIC DIVERSIFICATION

The market environment during 2022 highlighted many uncertainties and the importance of "expecting the unexpected." Here, we show how market conditions and correlations can evolve rapidly. As market dynamics continually change, strategies that can dynamically manage portfolio risk and diversification when market correlations increase will continue to be important when constructing a portfolio resilient to changing market conditions.

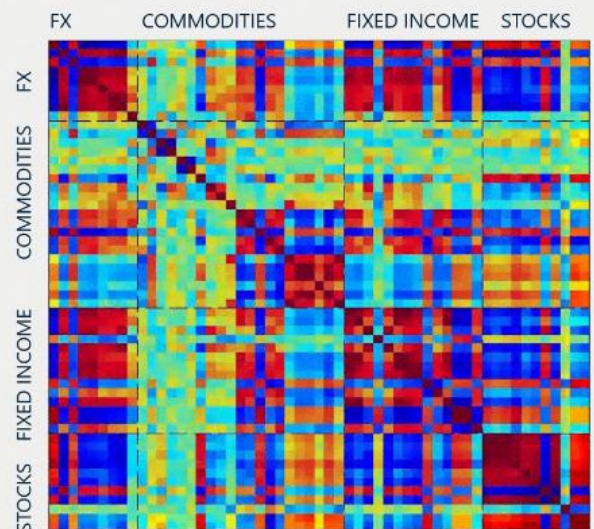
10/27/2022

Correlation



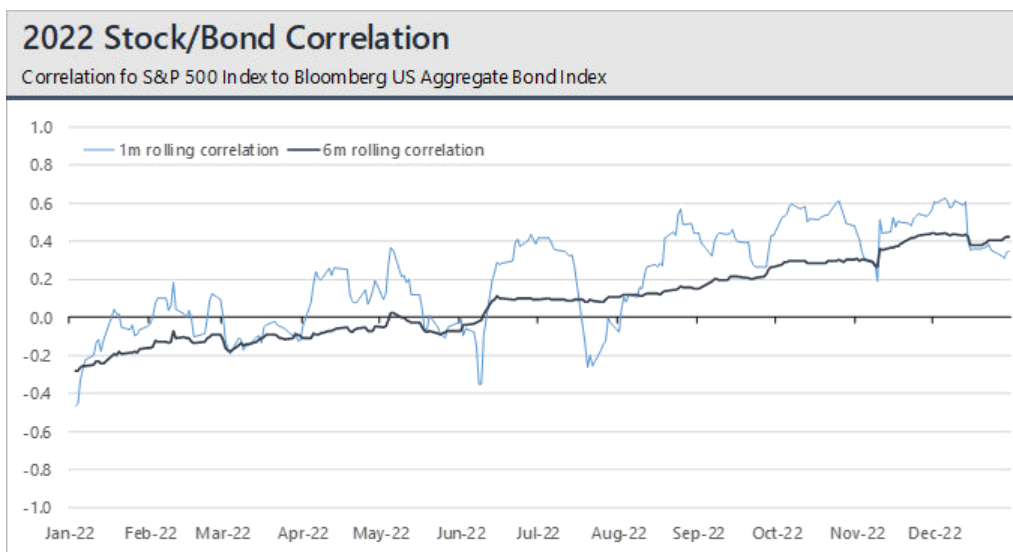
Market Correlations

Graham Position Correlations



Above, we show the evolution of short-term market correlations over the course of 2022 for 55 of the most liquid markets traded by Graham's quantitative strategies. We contrast this with the pair-wise correlations of the underlying positions held by Graham's Quant Macro strategy, which actively seeks to maintain a diversified portfolio across all market conditions. Here, we see that even in the face of a highly correlated market environment (left, shown as orange and red in the heat map), with active risk management and thoughtful portfolio construction, we can diversify exposure and maintain low to negative correlations across the portfolio (right, shown as green and blue in the heatmap). Note that position correlations vary by fund.

Correlations are not static and can significantly change the risk profile of a portfolio. Sharp changes can be missed by relying purely on longer-term correlations. For example, as shown below, in H1 2022 bonds were often positively correlated to equities when longer-term correlation measures would suggest they were negatively correlated. As correlations shift and markets do not necessarily behave independently of one another, material diversification can be difficult to achieve without active risk management and thoughtful portfolio construction. Incorporating a range of mathematical and statistical techniques to create reliable shorter-term estimates of correlation (and volatility) can help to manage risk under these circumstances.



Graham's Approach

Graham's strategies use an active approach to diversification to strategically manage risk in a wide range of market conditions. The application of a disciplined risk management process is a cornerstone of the firm's overall investment philosophy and a key consideration in the firm's multi-strategy approach to portfolio construction.

Our quantitative strategies continuously monitor correlation and volatility across markets traded to maintain a balanced portfolio at all times. Graham's proprietary quantitative portfolio construction process utilizes short-term cross correlations of markets and sectors to actively diversify exposure and control portfolio risk. We use a range of advanced statistical techniques that allow for stable estimates of covariance with a short lookback window, with the goal dynamic risk management vis-à-vis more accurate estimates of contemporary market volatility and correlation. This is particularly beneficial in markets where correlation and volatility are themselves prone to shorter-term changes.

Meanwhile, Graham's discretionary portfolio managers trade tactically and have the ability to react dynamically to sharp market moves, with the goal of capturing long-term thematic opportunities while mitigating the risk of short-term market disruptors. Risk is reviewed in real-time in the context of prevailing market conditions. For example, in the lead up to Brexit, the range of potential market outcomes were vast and varied. Graham's portfolio managers followed the market developments, shifting underlying themes or instruments traded to express their views. Graham's Risk Committee, which meets daily to review a variety of quantitative and qualitative measures, analyzed various proprietary measures of Brexit preparedness, including a set of stress tests customized for a range of Brexit scenarios, as well as correlation analysis, PM liquidity surveys, position concentration, and VaR analysis, among other measures reviewed daily. Firm-mandated risk limits on discretionary strategies include volatility targets, strict drawdown limits, and customized stress test and position limits for specific strategies.

Graham's Approach (cont'd)

The unique synergies between Graham's quantitative and discretionary businesses allow the firm to actively manage risk on a multi-dimensional scale across all our offerings. Daily Investment Committee meetings, real-time risk and performance monitoring, and a leading technology and operational infrastructure enable a powerful combination of human expertise and innovative, repeatable investment processes to help navigate changing market conditions.

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Source of data: Graham Capital Management ("Graham"), unless otherwise stated

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