COLUMBIA THREADNEEDLE INVESTMENTS

Why correlations matter in 2022

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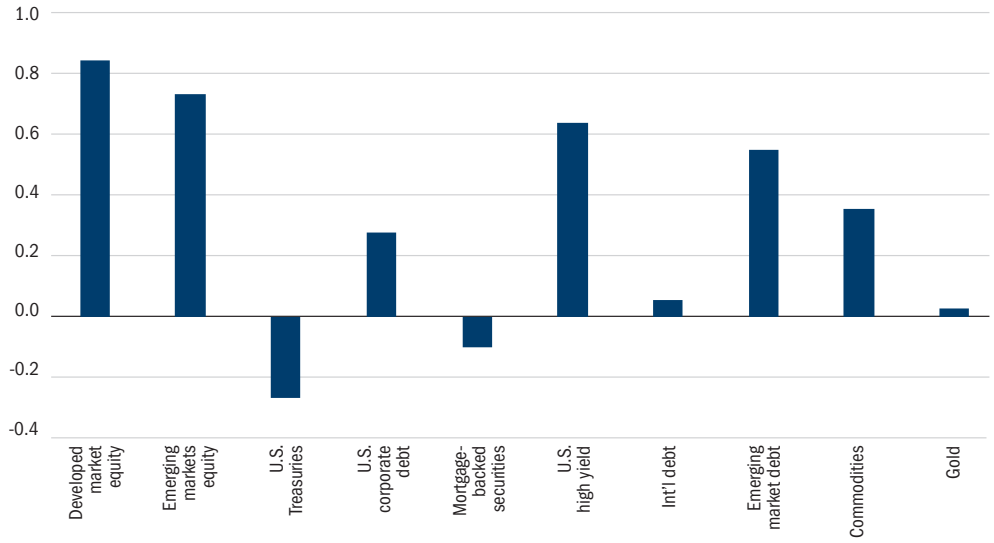
For those interested in asset allocation and portfolio construction, understanding correlations — the tendency of different types of investments to move together — and the environments that can impact them are essential questions.

There are certain words which are taboo in a conversation with investors. It is not because they are inappropriate, but because they start to go down a path of statistical science that many do not eagerly discuss. One of those words is correlation. For those interested in asset allocation and portfolio construction, however, understanding correlations — the tendency of different risk assets to move together — and the environments that can impact them are essential questions for portfolio managers.

In particular, understanding which asset classes may provide a hedge when risky assets are moving higher (risk on) or lower (risk off) is a key portfolio construction challenge and one that we think will be crucial to understand in 2022. Our goal is to show how these relationships can change dramatically, with the implication being that a strong asset allocation capability should be at the core of every portfolio.

Let's set the stage with a simple chart. We look at a handful of different representative indices of broad asset classes and compare their correlations with monthly S&P 500 returns over the last 25 years:

Exhibit 1: Regular correlations with S&P



Source: Columbia Threadneedle Investments. Based on correlation data for the period 12/31/89–09/30/21.
Please see endnotes for the indices used to represent asset classes.

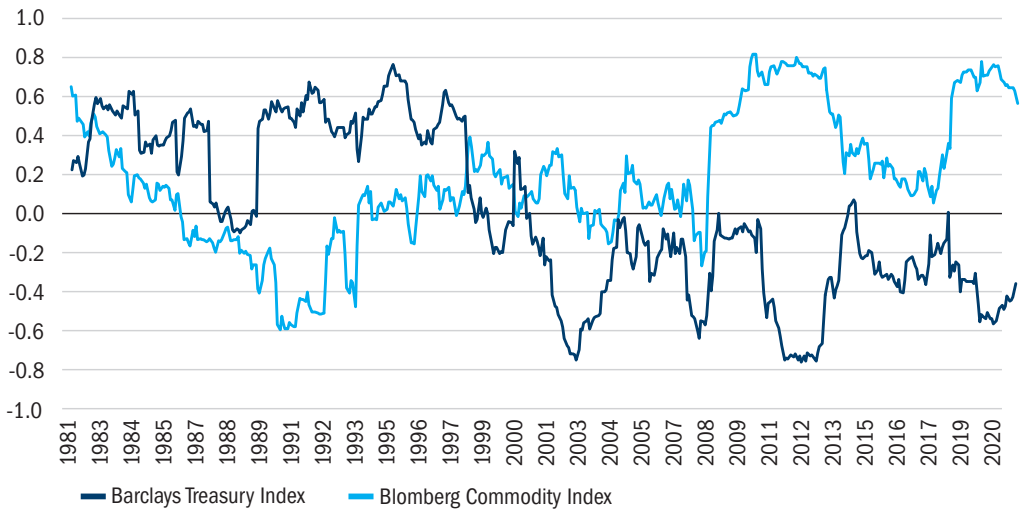
This chart should not come as a surprise to many investors:

- Equity markets tend to move together.
- Treasuries and equities have exhibited negative correlations over this period, leading to Treasuries widespread use as a hedge or "flight-to-quality" asset when equities drop.
- Credit markets, particularly lower quality markets such as high yield and emerging market debt, have moved in a similar direction as equities.
- Commodities overall have moved along with equity, although gold remains an asset class with its own dynamics.

If we stopped here, we would come to similar conclusions about "risk on" and "risk off" asset classes as many other analyses have shown.

However, correlations are unstable. As an example, if we carve out two key pairs — U.S. equities and Treasuries, and U.S. equities and commodities — we can see some evolving patterns over time:

Exhibit 2: 24m rolling correlation of S&P with ...



Source: Columbia Threadneedle Investments. Based on correlation data for the period 12/31/89–09/30/21. Please see endnotes for the indices used to represent asset classes.

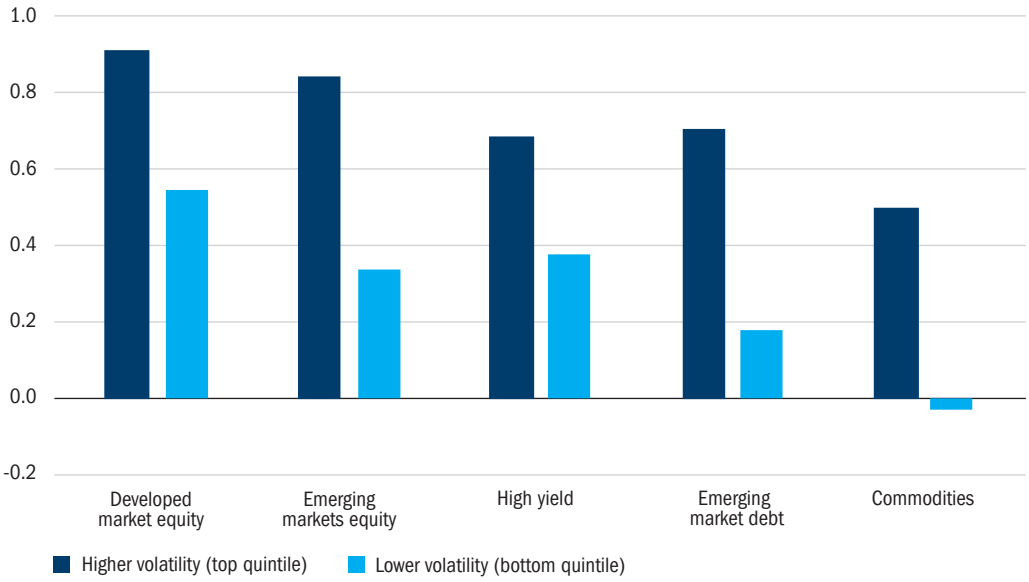
In the 1980s, Treasuries had a positive correlation with equities, moving alongside these risky assets; at the same time, commodities had a negative correlation with equities and could be relied upon as a hedge. But since the mid 1990s, Treasuries have become a negatively correlated asset. And in the period since the Great Financial Crisis, commodities have had a strong positive relationship with equities.

Perhaps describing correlations as "unstable" is enough to make a case for a refined approach to their application. But we can take this a step further by looking at the correlation patterns across different outside variables. We will look at three factors that are particularly topical as we enter 2022: (1) volatility, (2) inflation and (3) valuation to understand how correlations might behave depending on those factors.

Correlations in volatile markets

The essence of this analysis will be the same regardless of what the factor is — considering U.S. equity and Treasury correlations over the same 25 year period. We then look at an external factor, such as equity market volatility (as measured by standard deviation) observed over each month. We can bucket those volatilities into as many different groups as we want — here we use five equal quintiles. We can then observe the correlation patterns within each of those quintiles to examine any unique patterns. With 10 asset classes and five quintiles, there is a lot of data we can visualize, so we will focus on the relationships that appear to change the most over the different buckets:

Exhibit 3: Correlations with the S&P 500 change depending on market volatility



Source: Columbia Threadneedle Investments. Based on monthly standard deviation for the period 12/31/89–09/30/21. Please see endnotes for indices used to represent asset classes.

In looking at differing environments of market volatility, the most interesting relationships are across these "risk on" assets. There's a classic saying to the effect of, "In a time of crisis, all correlations go to 1." There are fundamental reasons this could be true, such as a liquidity squeeze if investors are indiscriminately selling their assets wherever and however they can. But that saying is hard to visualize in the context of a single correlation number across a long period. Here, we can see that correlations with U.S. equities are highest for each of these "risk on" assets when volatility is highest. And, in the case of the lowest market volatility bucket, the correlations drop considerably.

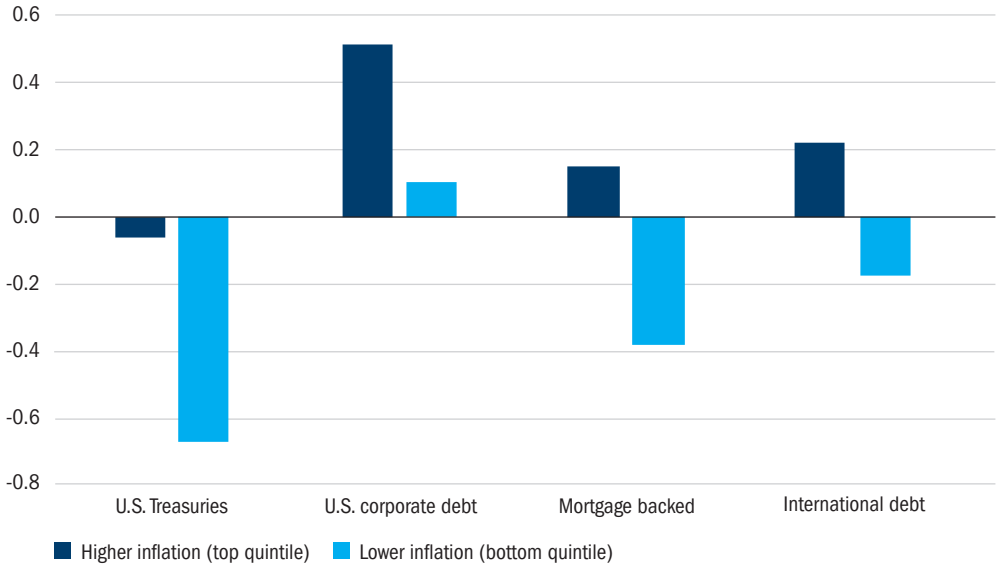
The asset allocation implications are critical. Consider the correlation of commodities and U.S. equities — in the highest volatility bucket, it's 0.50, and in the lowest bucket it's -0.03. An investor who chooses commodities for "diversification" purposes will have a very different experience in each of those two buckets. In the lowest volatility bucket, commodities are effectively moving to their own beat and can reduce risk while (hopefully) adding return. But in the highest volatility bucket, they are much less likely to provide ballast if equities are declining. Similar dynamics are true here across all of these assets to a lesser degree.

Correlations in inflation environments

Inflation has been top of mind for investors since mid-2021, as economies reopened and supply chains faltered. And heading into 2022, inflation is expected to be continue to be front-and-center as a consideration in asset allocation. One of the challenges with any conversation on "inflation" is what to use as a definition. There are slow moving inflation measures which respond to market data such as changes in energy prices (e.g., CPI). There are forward looking measures, called "breakevens", which can interpret expectations, and there are inflation surprise indexes that captures a typical market response when data is released — i.e., are inflation measures like CPI exceeding or falling short of market consensus?

As in our volatility analysis above, we can create five distinct categories of higher and lower inflation using inflation surprise data. And when we do, we see some huge changes in correlations between equities and various types of bonds.

Exhibit 4: Correlations with the S&P 500 change depending on the inflation environment

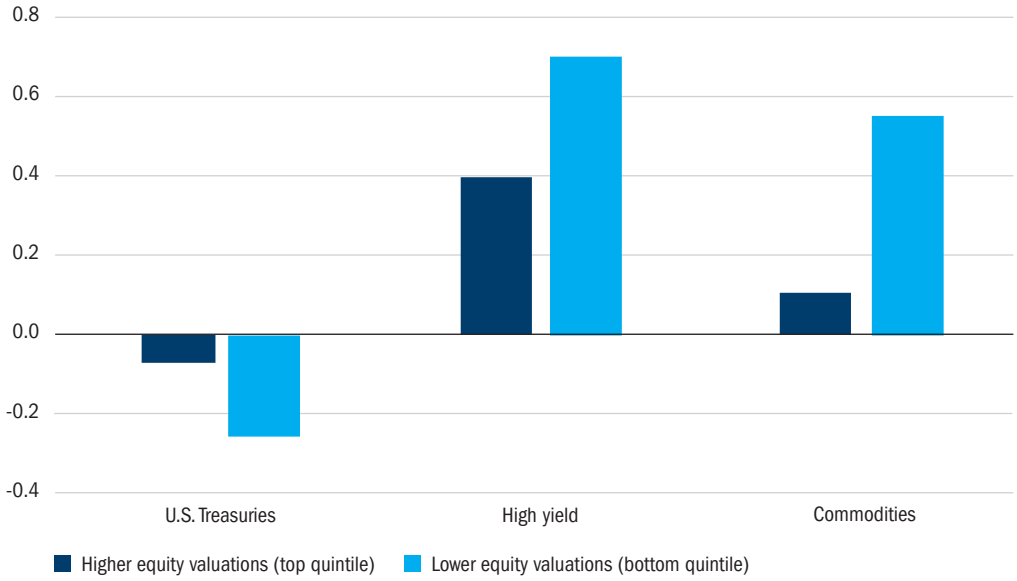


Source: Columbia Threadneedle Investments. Based on monthly inflation surprise data for the period 12/31/89–09/30/21. Please see endnotes for the indices used to represent asset classes.

Here, one can see a correlation of -0.06 between U.S. equities and Treasuries in the highest months of inflation surprise, and a correlation of -0.67 in the lowest months. Treasuries' role as a hedge in a portfolio can change considerably depending on the degree of inflation surprise in the market. Since so many asset allocation decisions are framed on exchanging stocks and bonds, these dynamics, as well, are critical to understand.

Correlations in valuation environments

Exhibit 5: Correlations with the S&P 500 change depending S&P 500 valuations



Source: Columbia Threadneedle Investments. Based on monthly P/E data for the period 12/31/89–09/30/21. Please see endnotes for indices used to represent asset classes.

One last topical discussion would be valuation. With U.S. equity markets near all-time highs, there is much attention on how markets behave at these lofty levels. Here, we can see a few key diverse dynamics. High-yield bond and commodity correlations with equities appear lower when valuations are high. And Treasury correlations appear closer to neutral in the bucket of highest valuation. Yet again, we can see meaningful shifts in correlation dynamics, in this case, depending on the valuation environment.

So what to do with all of this information? A set it and forget it asset allocation decision, such as a static 60% equity/40% fixed-income portfolio clearly has embedded flaws in protecting from loss given the unstable correlation relationships that we have shown above. In contrast, an active asset allocation approach, which adapts to different market environments, can adjust allocation decisions to the changing dynamics we have demonstrated above. For example, if we believe inflation surprise will continue into the next year, it has meaningful implications to the interactions of stocks and bonds in a portfolio. Model portfolios, in particular, can benefit from an understanding of these dynamics.

Clearly, these are complex relationships (our analysis does not even cover how correlations may be impacted in multivariable environments such as high inflation and high valuation). The impacts for portfolios can be meaningful, with widely varying outcomes for investors who have the means to conduct this type of analysis on an ongoing basis and those who do not. Heading into a year when volatility, inflation and valuation will continue to be top-of-mind for investors, we think that understanding how to respond to these dynamics will be an essential component of successful asset allocation.

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EAFE is represented by the **MSCI EAFE Index**, a measure of developed market equity.

EM Equity is represented by the **MSCI EM Index**, a measure of emerging market equity.

High yield is represented by the **Bloomberg U.S. Corporate High Yield Total Return Index**, a measure of the high yield market.

EM debt is represented by the **JPMorgan Emerging Market Bond Index**, a measure of the emerging market debt market.

Commodities are represented by the **Bloomberg Commodity Index**, a measure of the broad commodity market.

U.S. Treasuries are represented by the **Bloomberg U.S. Treasury Index**, a measure of U.S. Treasury market.

U.S. corporate debt is represented by the **Bloomberg U.S. Corporate Total Return Index**, a measure of the broad U.S. corporate bond market.

Mortgage backeds are represented by the **Bloomberg U.S. MBS Index**, a measure of the mortgage backed securities market

International debt is represented by the **FTSE World Government Bond Index**, a measure of the broad global sovereign debt market.

Gold is represented by XAU, the Gold Spot Price per troy ounce in USD.

Past performance does not guarantee future results. It is not possible to invest directly in an index.

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