Revisiting Stock-Bond Correlation

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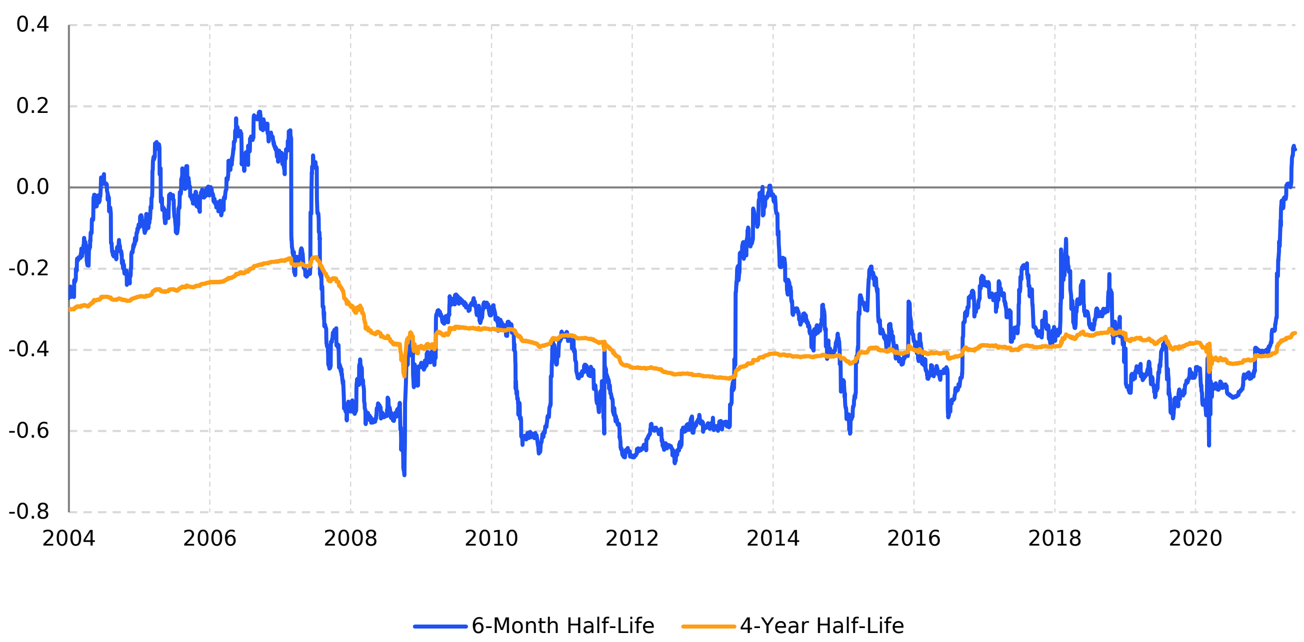
In light of market developments over the past few months, we wanted to share our latest thoughts on the hedging properties of U.S. Treasury securities, particularly in the context of our recent *Market Insights* papers that explored this topic.

In a January 2021 paper,[1] we noted that the hedging properties of Treasury securities held up well during the dramatic risk-off episode in 2020. In short, the safe haven status of Treasury securities was put to a major test, and it passed. We also shared our broader expectation that when the front end of the government yield curve is pressed against the effective lower bound, a viable hedging strategy for investors would involve moving further out the yield curve to allow scope for yields to decline. As we indicated in that paper, that view assumed the favorable negative correlation between equity and Treasury prices would remain intact.

More recently, however, we have seen a notable shift in this correlation: when measured over a short horizon, the correlation has increased sharply and has even changed signs. *Figure 1* presents the correlation of daily returns of the S&P 500® and daily returns of 10-year U.S. Treasury securities using two different lookback windows: a six-month half-life (blue line) and a four-year half-life (orange line).

Figure 1: Correlation of S&P 500® and U.S. 10-Year Treasury Returns



Note: The graph above reflects the D. E. Shaw group's determinations of rolling correlations over the period shown between (i) daily total returns of the S&P 500® and (ii) daily total returns of 10-year constant maturity U.S. Treasury securities. Such correlations were calculated after exponentially weighting each series with a half-life of six months or four years, as applicable, and a rolling window of twice the applicable half-life.

Sources: Bloomberg (S&P 500® data); Haver Analytics (U.S. Treasury data); the D. E. Shaw group. Applicable data are used with permission of Bloomberg.

[1] *Running Low: The 2020 Test for Bonds as Hedging Assets*, available here.

What Happened

The recent increase in the stock-bond return correlation evident in *Figure 1*, while not without precedent during the period shown,[2] has exceeded what many (including ourselves) anticipated. This move appears to be primarily related to shifts in the outlook for inflation, which falls within a set of potential scenarios that we contemplated in an earlier *Market Insights* paper.[3] As argued in that paper, we believe that the stock-bond correlation depends critically on the type of shocks hitting the economic system.

The negative correlation between equity and Treasury prices—in other words, the environment that delivers the effective hedging properties of Treasury securities—tends to persist when the most active shocks hitting the economic system are those associated with changes in the strength of economic growth or the risk appetite of investors. By way of contrast, when the shocks primarily affecting the system are driven by unstable inflation expectations or perceived shifts in the U.S. Federal Reserve's policy reaction function, the correlation tends to swing in the other direction, impairing Treasuries' hedging properties. We summarize these patterns as shown in *Table 1*.

Table 1: Four Scenarios for Stock-Bond Price Correlation

Scenario:	(1) Shift in Inflation Expectations	(2) Shift in Monetary Policy Reaction Function	(3) Shift in Expected Growth	(4) Shift in Investor Risk Appetite
Correlation:	Positive	Positive	Negative	Negative

Starting in the second half of 2020 and intensifying further in 2021, we have seen a notable shift toward scenarios (1) and (2). While it is the case that expectations for a strong economic recovery have built over this period, the key development in financial markets has been a surge in inflation and an upward shift in longer-term inflation expectations. Indeed, increases in both survey-based and market-based measures of inflation expectations were among the largest movements observed in two decades. Additionally, and overlapping with those shifts, markets appear to have priced in the perception of a more dovish Fed reaction function in light of its flexible average inflation targeting (FAIT) framework.

These developments appear to have fostered investor concern about high-inflation outcomes that could raise nominal yields and have detrimental effects on risky assets.

The Road Ahead

Do these recent shifts suggest that the hedging properties of government securities have disappeared for good? Not necessarily. The stock-bond price correlation may well remain near zero or even positive while inflation concerns persist. However, we believe the most likely outcome is that the hedging-friendly correlation properties of U.S. Treasuries will be restored over time.

That view stems from our belief that the Fed will use its policy tools to contain inflation over time and to keep inflation expectations from continuing to rise. In that case, the primary source of fluctuations in the market would again likely shift toward views on the strength of the economy and the risk preferences of investors, allowing the negative stock-bond correlation to reemerge. Moreover, if the level of yields moves higher in the interim, there will be greater scope for future downward rate moves and thus for the hedging properties of U.S. Treasuries to rebound.

[2] Indeed, as shown, we also witnessed a sharp rise in the correlation in 2013 during the "taper tantrum" episode, which was driven by a meaningful shift in investors' perceptions of the Federal Reserve's policy approach.

[3] *Positively Negative: Stock-Bond Correlation and its Implications for Investors*, available here.

Of course, these views rest importantly on the intent and ability of the Fed to keep inflation expectations near its inflation target. Should those expectations instead become unmoored, then the negative stock-bond correlation may not recover, which would have major consequences for risk premia, portfolio risk properties, and asset allocation. Thus, it will be critical for investors to pay close attention to the evolution of inflation expectations and its influence on the realized stock-bond correlation.

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