Stock-bond correlations: Are we at an inflection point?

Historical perspective

The correlation between U.S. equity prices and U.S. Treasury yields has fluctuated significantly over the last 60 years. From the mid-1960s to the late 1990s the correlation was mostly negative. Then it turned positive, and over the 10 years since the Great Recession this reversal has grown in strength and, at least until recently, in persistence.

So why have stock prices and bond yields been correlating positively on a sustained basis for the first time since the early 1960s? To answer the question we must consider what fundamental factors drive stock and bond prices and how new information interacts with the views of market participants about the likely path of those factors.

Theoretical background

A plausible narrative of the historical pattern of stock-bond correlation starts with the basic notion that both bond and stock prices represent the present value of future cash flows. For bonds (assuming Treasuries are default-proof), the cash flows are known in advance. For stocks the dividend stream is uncertain.

The price of a bond at \( t_0 \) will be a function of the real interest rate at \( t_0 \) plus the inflation expected at \( t_0 \) plus a term premium, and of any inflation surprise or shock to real interest between \( t_0 \) and \( t_1 \).

The price of an equity at \( t_1 \) will also be a function of the real interest rate plus inflation expected at \( t_0 \) plus, in this case, a risk premium, and of any inflation surprise or shock to real interest between \( t_0 \) and \( t_1 \). For prices of equities, given the nature of their cash flow, there is an additional factor: any dividend shocks between \( t_0 \) and \( t_1 \).

The pricing functions for both equities and bonds include components of the discount rate used at \( t_0 \) to calculate the present value of future cash flows. Thus for both asset classes, a higher real interest rate at \( t_0 \) and higher expected inflation at \( t_0 \) will act to lower prices, and vice versa. Moreover, the term-premium component of the discount rate — the compensation demanded by market participants for the risk that the nominal short rate over the remaining term of the bond will follow a path different from that expected — will be affected by changes in perceptions about that path. So uncertainty about the economic outlook can be expected to increase the co-movement of bond and stock prices.

Channels of transmission

Higher-than-expected inflation and higher-than-expected real interest \( t_1 \) will cause bond prices to fall, and vice versa. For an equity, however, higher-than-expected inflation affects more than one factor in its price. It suggests a higher nominal discount rate but possibly a larger flow of dividends, in which case there is ambiguity about which effect will dominate.

Finally, since dividend shocks affect equity prices but not bond prices, they may at times reduce the correlation between the two asset classes.

Differing views of the current economic environment may drive market participants to different interpretations of data and thus different conclusions about the fair value of an asset. In the wake of the Great Recession, for example, an upside inflation surprise accompanied by higher interest rates could be seen as good for equities if the dominant market interpretation was that...
the economy was doing better than expected. Conclusion: higher bond yields and higher stock prices. Back in the early 1980s, the investor interpretation would have been quite different. Investors took stronger-than-expected inflation as an indicator that the cold-turkey monetary-policy approach of Fed chair Paul Volcker would bring higher interest rates and deepen the recession. Conclusion: higher bond yields and lower stock prices.

Bottom line: For a comparable shock, different market environments may have different effects on the correlation of stock and bond prices. In this view, it is inflation uncertainty and investor assessment of information from unexpected shocks that will decide the major trend of the stock-bond correlation.

Changing combinations of growth and inflation

Building on this intuition, David and Veronesi (2013) use a general equilibrium model to show that “inflation news signal[s] either positive or negative future real economic growth depending on the times, thereby affecting the direction of stock-bond comovement.” In their model, market participants cannot directly observe the nature of the current “regime” — its characteristic inflation rate and growth rate. They must infer it from incoming data. Consequently, it is the time-varying signalling role of inflation that is the main driver of the co-movement of stock and bond returns. Another feature of their model is that volatility is endogenous and arises from learning about the regime. Moreover, stock valuation has an important effect on volatility. In their simulation, expected inflation explains more than 45% of the stock-bond total-return covariance.

In the first two charts, we periodized the last 60 years according to the regimes suggested by David and Veronesi, characterized by pairings of economic growth (low to high) and inflation environment (weak to high). Their model suggests that when the dominant view of market participants is that the current regime is one of low growth and low inflation, the correlation between stock prices and bond yields is likely to be positive. If, on the contrary, market participants believe they are in a regime of low growth and high inflation, the model suggests that the correlation will be negative. Around 1985, U.S. Treasury borrowing requirements were still quite large as a percentage of GDP and many bond investors were skeptical of the authorities’ longer-term resolve about keeping the lid on inflation. Uncertainty about inflation was palpable. The correlation between stock prices and bond yields fluctuated greatly in those years, as can be seen in the second chart with its higher-frequency data.

We also note that the correlation tends to swing significantly in the period just before, during and after a recession. Does that mean diversification opportunities are fewer when they are most needed? To answer this question, we looked at the last six such periods, calculating the total return of U.S. Treasuries maturing in 7 to 10 years from market close at the last month end before the start of the recession to the market close in the month the recession ended. We also calculated the percentage change of the S&P 500 price-only index. Our results (chart) show positive returns for Treasuries in recessions and, with one exception (1979-1980), significant underperformance of the S&P 500. So it can be said that Treasuries played their role in recessions.

What about the last 10 years? The average quarterly total return of the S&P 500 over the 10 years ending September 2018 was 11.97% annualized with a standard deviation of 15.49 percentage points. For 7- to 10-year Treasuries the average quarterly total return was only 3.76% with a standard deviation of 7.24 percentage points. A portfolio of 40% equities and 60% 7- to 10-year bonds, rebalanced quarterly, would have returned an average 7.54%, or 63% of the return of the equities,
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with a standard deviation of 4.88 points, or 30% of the volatility of equities. Not a bad combination for those who volatile returns are a source of anxiety.

What to expect next

Now that the Fed believes it has attained its dual objective of maximum employment and price stability, at a time when monetary policy remains accommodative and the labour market is tight, will market participants change their view of the regime in which they currently operate? Since 2014, the dominant theme has been that the economy was stuck in a period of secular stagnation (low growth, low inflation). Will trade tensions and mounting protectionism push the global economy into a state of lost opportunity, lower efficiency and underlying inflationary pressures? In other words, is the U.S. economy shifting into a period of slow growth and rising inflation? History suggests that such a regime will mean lower P/E ratios.

On the other hand, might the global economy be on the eve of a productivity shock driven by technological innovations such as robotics or AI? In that case the upcoming regime might be more comparable to that of the 1990s.

The monetary policy framework could change overtime. This could have implications for how stock-bond correlations will evolve in the longer run. Recently, both the FOMC and the Bank of Canada have said they were about to launch sweeping reviews of how monetary policy will operate in the future. BoC senior deputy governor Carolyn Wilkins has said the questions will range from which combination of monetary and fiscal policies will be best suited to address future challenges, to whether temporary price-level targeting is an alternative to inflation targeting when conventional policy is constrained by the lower bound. How these questions are answered will in the longer run have implications for the signalling role of inflation as the main driver of the co-movement of stocks and bonds.

After a decade of positive correlation between U.S. equity prices and U.S. Treasury yields, we might be at an inflection point. As in the past, markets will learn and make their calls as new information becomes available and participants become more confident about the regime in which they operate.

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