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PRESS RELEASE

The determinants of stock and bond return comovements

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Stock and bond returns in the US show an average correlation of about 19 percent in the post-1968 period. The substantial time variation the stock-bond return correlation displays is undoubtedly a more puzzling empirical phenomenon. Over our sample period, we identify one 5-year episode in which the stock-bond return correlation was as high as 75 percent, and one in which it dropped to lower than minus 60 percent. Without assessing what time variation in correlations a formal model of fundamentals can generate, it seems premature to call this substantial time variation inconsistent with rational asset pricing. For instance, much has been made of the negative correlation between stock and bond returns in recent times. However, the real economy and the inflation process have undergone some remarkable changes recently. In particular, it is well known that US output and inflation volatility have declined substantially since 1985. If stocks and bonds have similar exposures to these economic factors, their correlation should have decreased. It is also conceivable that these fundamental changes have affected risk aversion, a factor on which stocks and bonds may load with a different sign. While it remains difficult to think of economic factors that would cause a sudden and steep fall in stock-bond return correlations into negative territory, it remains useful to quantify how much of the correlation dynamics can be attributed to fundamentals. This is what this paper sets out to do by using a dynamic factor model with fundamental factors.

Importantly, we consider a large number of economic state variables, and a large number of model specifications, some with scant structural restrictions. Our economic state variables not only include interest rates, inflation, output and cash flow growth, but also a “fundamental” risk aversion measure and macro-economic uncertainty measures derived from survey data on inflation and GDP growth expectations. We specify a number of different dynamic state variable models to identify the economic factor shocks, including vector autoregressions (VARs) with state-dependent volatilities and regime-switching VARs. We consider non-structural versions of the state variable models and a model with structural restrictions inspired by recent standard New-Keynesian models. Time variation in stock and bond return correlations follows from either the heteroskedasticity present in the state variable model or, in some specifications, from time variation in factor exposures.

Yet, we fail to find a good match with stock-bond return correlations. However, a number of our models have a satisfactory fit with the unconditional correlation between stocks and bonds. Specifications including risk aversion or economic uncertainty measures substantially outperform models that do not, suggesting that common variation in risk premiums is an essential component in any stock-bond return correlation model. We also find that the performance of our fundamental models improves when factor shocks are ‘structurally’ identified by means of a New-Keynesian model. Not unlike the pattern observed in the data, our fundamental-based models do generate positive correlations until the end of the 1980s, and decreasing and even negative correlations afterwards. Using fundamentals only, however, our models are unable to match both the timing and the magnitude of the correlation movements.

In our last section, we examine some potential non-fundamental sources of these correlations. We find that the cross-residuals of our models load significantly on stock market uncertainty or volatility. While this may be a confirmation of the flight-to-safety phenomenon, it may also simply indicate that models that better explain the variability in the stock market may also help capture stock-bond return correlations. We also explored some liquidity factors. Liquidity factors are more and more often viewed as being of primary importance in asset pricing. Although we model correlations at the quarterly frequency, stock market illiquidity seems to have important explanatory power for the part of stock and bond return correlations not explained by our fundamental models. We suspect that a model which combines high-frequency liquidity factors with lower-frequency fundamental factors may be more successful at explaining stock and bond return correlation dynamics.