

The Danish stock and bond markets: comovement, return predictability and variance decomposition

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Accepted 21 March 2001

Abstract

VAR models of the kind developed by Shiller and Beltratti [J. Monetary Econ. 30 (1992) 25] and Campbell and Ammer [J. Finance 48 (1993) 3] are used to analyze the Danish stock and bond markets and their comovement. In contrast to these papers, however, VAR parameter estimates are bias-adjusted and VAR generated statistics, including their standard errors and confidence intervals, are computed using bootstrap simulation. In addition, we modify the Campbell–Ammer variance decomposition such that it can handle returns from a long-term coupon bond. Some parts of the results for the Danish stock and bond markets are quite similar to the US results reported by Shiller and Beltratti and Campbell and Ammer, but other parts stand in sharp contrast to the results for the US. The most important differences between the US and Denmark are that in Denmark news about higher future inflation lead to an increase in expected future stock returns, and that excess stock return news and excess bond return news are negatively correlated. © 2001 Elsevier Science B.V. All rights reserved.

JEL classification: C32; G12

Keywords: VAR model; Present value relations; Return variance decomposition; Bias-correction; Bootstrapping

1. Introduction

It is widely documented that expected returns in financial markets vary over time, and that—especially long-horizon—returns contain a significant predictable

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component. The dividend–price ratio, in particular, has proven to be a good predictor of future stock returns, and the spread between long and short interest rates has shown clear predictive power for future bond returns (see Campbell et al., 1997, Chaps. 2, 7, and 10 for an up-to-date account on these findings).

Most studies have treated the stock and bond markets in isolation. However, an interesting question is to what extent stock and bond prices/returns move together over time, and whether expected returns on stocks and bonds respond to the same underlying information. Barsky (1989) analyzes in a theoretical setting, based on a standard consumption-based asset pricing model, the effects of changes in risk and real economic productivity growth on the joint behaviour of stock and bond prices. He concludes that these prices may or may not move together, depending on the degree of risk-aversion of agents. Bekaert and Grenadier (2000) develop a general multi-factor arbitrage-free model for stock and bond pricing, and they also show that stock and bond returns may or may not move together, depending on the parameterization of the model.

In an empirical setting, Shiller and Beltratti (1992) use vector autoregressions (VARs) to examine whether the positive correlation between stock and bond returns observed in long-term annual US and UK data (which is equivalent to a negative correlation between changes in stock prices and changes in long-term bond yields) can be explained in terms of simple rational expectations present value models, i.e. the expectations hypothesis for the term structure of interest rates and the dividend–ratio model for stock prices. They find that such simple models cannot explain the observed correlations. Campbell and Ammer (1993) undertake an analysis similar in spirit to the analysis in Shiller and Beltratti, but without imposing particular economic models on the data. Instead they develop, within a VAR framework, a variance decomposition for stock and bond returns, which enables them to decompose excess returns into news about future dividends, inflation, real interest rates, and excess returns. On post-war US data, they find that news about future excess stock returns account for most of the variation in excess stock returns, with news about future dividends and real interest rates being less important. On the other hand, the variance of excess bond returns is not mainly the result of news about future bond returns, but is instead mostly due to news about future inflation. These results help explain the quite low positive correlation of stock and bond returns observed in post-war US data.^{1,2}

¹ The correlation of innovations in monthly US excess stock and bond returns over the period 1952–1987 is 0.198 according to Campbell and Ammer. This is somewhat lower than the correlation of 0.366 reported by Shiller and Beltratti for annual excess stock and bond returns over the period 1948–1989.

² Patelis (1997) uses the Campbell–Ammer methodology to document that monetary policy variables are important predictors of stock returns, and that monetary policy shocks effect primarily expected returns with less effect on expected dividend growth and real interest rates.

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