

Is there excess comovement of bond yields between countries?

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Abstract

This paper examines the issues of excess volatility and excess comovement of interest rates among global bond markets. The base model of interest rate behavior is the expectations theory of the term structure. The empirical evidence presented in the paper indicates that 10-year government bond yields in five major markets—the United States, Japan, Germany, the United Kingdom and Canada—have in the past displayed both excess volatility and excess comovement relative to the base model. This suggests that term premia at the long end of the term structure are both time-varying and positively correlated across markets. © 2000 Elsevier Science Ltd. All rights reserved.

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1. Introduction

In early 1994 considerable differences existed between the cyclical position of the United States, where monetary policy was tightened in February, and those of Japan and Germany. However, long-term interest rates in the G-3 countries displayed a striking tendency to move together before, during and after 1994. The relatively high degree of comovement of long rates between these countries, coupled with the global nature of the 1994 bond market reversal, suggests that there may be an international

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component to bond yield fluctuations beyond that attributable to common movements in short-term interest rates and inflation.

The existence of an international component to risk premia might explain the apparent tendency of bond yields to covary excessively between markets. This paper investigates this possibility by examining the historical behavior of bond yields in five major markets—the United States, Japan, Germany, the United Kingdom and Canada. The base model of interest rate behavior is the expectations theory of the term structure. Most empirical investigations of interest rates which have taken the expectations theory of the term structure as the base model have focused on the US market and have come to the conclusion that long-term bond yields deviate from the predictions of the model.² A much smaller, but rapidly growing, literature tests the expectations theory with interest rate data for other countries. A recent example is the study by Hardouvelis (1994), which examines the behavior of 10-year government bond yields for G-7 countries. Hardouvelis concludes that bond yields in the majority of G-7 countries deviate from the predictions of the expectations theory.³

The main contribution of the present paper is an investigation of the comovements of bond yields between countries. With this goal in mind, the paper tests for excess volatility of interest rates and excess comovement of interest rates between countries by examining the behavior of long-term interest rates divided by their own 5-year moving average. The study of these stochastically detrended series allows for an investigation of the relatively high frequency movements in interest rates. Also, the use of detrended interest rate data implies that the present study is not as vulnerable to the criticism that the sample period is too short compared with studies that do not detrend.

The empirical results can be briefly summarized as follows. First, the restrictions that the expectations theory of the term structure imposes on the behavior of bond yields in groups of countries allow the rejection of the model at high levels of statistical significance in the case of every country examined. Thus, this paper provides evidence against the expectations theory as a model of the behavior of long-term government bond yields in global bond markets. Secondly, the empirical evidence suggests that term premia at the long end of the term structure are positively correlated across markets. This is consistent with the existence of an international component to global bond yield fluctuations beyond that attributable to common movements in short-term interest rates and inflation.

The rest of the paper is organized as follows. Section 2 develops a simple empirical framework which nests the expectations theory of the term structure, as it applies

² Kessel (1965) documents the failure of the pure expectations hypothesis while Shiller (1979), Shiller et al. (1983), Fama and Bliss (1987) and Campbell and Shiller (1991), among others, show that the expectations theory also fails when time-invariant, maturity-specific term premia are included in the model.

³ It is important to note that the empirical evidence also indicates that there is an important element of truth to the expectations theory at the long end of the term structure. This was observed in the context of the US market by Campbell and Shiller (1987) and Fama and Bliss (1987). Hardouvelis (1994) reaches a similar conclusion for other G-7 countries.

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