

# On the relationship between changes in stock prices and bond yields in the G7 countries: Wavelet analysis

Sangbae Kim<sup>a</sup>, Francis In<sup>b,\*</sup>

<sup>a</sup> *School of Business Administration, Kyungpook National University, Sankyuk-dong, Puk-ku, Daegu 702-701, Republic of Korea*

<sup>b</sup> *Department of Accounting and Finance, Monash University, Clayton, Melbourne, Vic. 3168, Australia*

Received 26 July 2005; accepted 23 October 2005

Available online 5 December 2005

---

## Abstract

The purpose of this paper is to shed a new perspective on the relationship between changes in stock prices and bond yields in the G7 countries. Theoretical studies argue that this relationship may be negative or positive. To investigate the relationship, we model a newly developed time-series technique: wavelet correlation analysis. The key empirical results show that the correlation between changes in stock prices and bond yields can differ from country to country and can also depend on the time scale. Furthermore, wavelet analysis reveals that changes in stock prices and bond yields do not move together in most G7 countries, except in Japan.

© 2005 Elsevier B.V. All rights reserved.

*JEL classification:* G12; G15

*Keywords:* Stock prices; Bond yields; Long-run relationship; Short-run relationship; Wavelet correlation analysis

---

## 1. Introduction

The movements of real stock prices and interest rates are important for institutional and individual investors in the management of their portfolios. Many investors use a tactical asset allocation strategy whereby they shift their investments between stocks and interest rates in different anticipated capital market conditions. If stock prices and bond prices move together, this tactical strategy

---

\* Corresponding author. Tel.: +61 3 9905 1561; fax: +61 3 9905 5475.

*E-mail addresses:* [sbkim@mail.knu.ac.kr](mailto:sbkim@mail.knu.ac.kr) (S. Kim), [Francis.In@BusEco.monash.edu.au](mailto:Francis.In@BusEco.monash.edu.au) (F. In).

is not a good general strategy. The importance of the relationship between stock and interest rates has led to it being studied in two ways. First are studies that examine the relationship between short-run stock returns and short-term interest rates (Fama and Schwert, 1977; Campbell, 1987; Breen et al., 1989; Ferson, 1989, among others). These studies find that short-term interest rates have a power to forecast short-term stock returns and short-term risk premiums. For example, Campbell (1987) uses the short-end of the yield curve to predict monthly excess stock returns. He finds that the spread of the 2-month and 6-month bills over the 1-month bill has a predictive power. The drawback of this approach is that it only considers short-term interest rates, ignoring information on long-term interest rates.

The second approach is to use the term spread (difference between long-term and short-term interest rates) to forecast stock returns or stock risk premiums. This approach includes the studies of Fama and French (1989), Fama (1990), Schwert (1990), Shiller and Beltratti (1992), Campbell and Ammer (1993) and In et al. (2003).<sup>1</sup> For example, Campbell and Ammer (1993) examine the predictive power of term spreads to forecast short-horizon stock returns with a linear vector-autoregressive (VAR) approach. They find that real interest rates have very little impact on stock returns. Another example is the study of Shiller and Beltratti (1992). They examine the relationship between changes in stock prices and the changes in long-term interest rates using a simple rational expectations present-value model and find that the relationship between changes in stock prices and bond yields is more negative than expected.

In this paper, we focus on the relationship between changes in stock prices and long-term bond yields, particularly in the G7 countries. Since stocks are considered to be a long-term investment, we are interested in the multiscale relationship between changes in stock prices and bond yields for two reasons. First, from a practical point of view, many investors hold stocks over long periods. Therefore, it is important to know the manner in which changes in stock prices move with changes in long-term bond yields as the holding horizons increases. Second, the relationship between changes in stock prices and bond yields at long horizons is of particular interest given that at short horizons, the true long-run relationship could be obscured by short-term noise, which might derive, for instance, from agents trading for portfolio rebalance or unexpected immediate consumption needs (Harrison and Zhang, 1999).

The main purpose of this paper is to examine the relationship between changes in stock prices and long-term bond yields in both the short run and long run. To investigate the relationship, we adopt a newly developed time-series technique: wavelet correlation analysis. Wavelet analysis possesses the ability to perform non-parametric estimations of highly complex structures without knowing the underlying functional form (Ramsey, 1999). The major aspects of wavelet analysis are the ability to handle non-stationary data, localization in time, and the resolution of the signal in terms of the time scale of analysis (Gençay et al., 2002a). Among these aspects, the most important property is decomposition by time scale. Economic and financial systems, like many other systems, contain variables that operate on a variety of time scales simultaneously, so that the relationships between variables may well differ across time scales (Ramsey, 1999).

Wavelet analysis has been adopted in few studies in the finance literature. To the best of our knowledge, applications include examination of the following: foreign exchange data using waveform dictionaries (Ramsey and Zhang, 1997); decomposition of economic relationships of expenditure and income (Ramsey and Lampart, 1998a,b); the multiscale hedge ratio (In and Kim,

---

<sup>1</sup> Engsted and Tanggaard (2001) also examine the comovement between Danish stock and bond markets using the same model as Shiller and Beltratti (1992) and Campbell and Ammer (1993).

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات