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The effects of different inflation risk premiums on interest rate spreads

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Abstract

This paper analyzes how the different types of inflation uncertainty affect a set of interest rate spreads for the UK. Three types of inflation uncertainty—structural uncertainty, impulse uncertainty, and steady-state inflation uncertainty—are defined and derived by using a time-varying parameter model with a GARCH specification. It is found that both the structural and steady-state inflation uncertainties increase interest rate spreads, while the empirical evidence for the impulse uncertainty is not conclusive.

1. Introduction

Analyzing interest rate spreads has always been popular among economists. While some academicians use spreads as an indicator of future economic performances (see, Bernanke [1], Stock and Watson [2], Friedman and Kuttner [3–5]), others try to explain the behavior of spreads themselves (see, Chapter 11 of Campbell et al. [6] and the references cited therein) often by testing the expectations hypothesis of the term structure of interest rates.

Although there are some empirical findings that are agreed upon, some studies find conflicting results about the dynamics of the term structure of interest rates (see, Campbell et al. [6] and Christiano et al. [7]). Fuhrer [8] and Chen [9] argue that

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the reason behind these mixed results stems from the fact that short-term interest rates are not volatile enough to explain long-term interest rates. Moreover, Balduzzi et al. [10] argue that longer-term rates are more heavily influenced by the persistent expectation for future target changes in short-term interest rates, possibly due to expected changes in monetary policy. Thus, the nature of the spreads or their predictive powers for the future economic performance might be influenced by different factors, which concern monetary policy makers. McCallum [11] and Walsh [12] discuss the effect of an exogenous rise in the risk premium on the interest rates, and Evans [13] and Chen [9] report that there is a time-varying inflation risk premium throughout the term structure of interest rates. Thus, uncertainty stemming from inflation is a well-recognized variable in the literature to explain the behavior of interest rates.

Some of the studies mentioned above suggest that inflation uncertainty is an indicator of interest rate spreads. One common factor in these studies is that they stop short of (1) identifying different sources of inflation uncertainty, and (2) observing the effects of these inflation uncertainties on interest rate spreads.[1] Evans [15] and Berument et al. [16] elaborate three types of inflation uncertainty: structural uncertainty, which arises from the instability of the relationship between current and lag values of inflation; impulse uncertainty, which arises from temporary shocks that hit the economy; and steady-state inflation uncertainty, which arises from the uncertainty on the level of long-run inflation. They show that the effects of these inflation uncertainties on inflation and interest rates can be different.

This study takes the above discussion as its starting point and analyzes the effects of different types of inflation uncertainty on interest rate spreads for the UK. The main reason for choosing UK is the availability of the vast literature devoted to inflation risk in the UK, pioneered by Engle [17]. In order to assess the different types of inflation uncertainty, a time-varying parameter model with a generalized autoregressive conditional heteroskedasticity (GARCH) specification is employed. Such a model allows us to identify different types of inflation uncertainty and observe their effects on interest rate spreads. Section 2 introduces the system of equations that is to be used in modeling the inflation uncertainty. Section 3 reports the estimates. Section 4 of the paper concludes that while the structural uncertainty and the steady-state uncertainty increase the interest rate spreads, the evidence on the effect of the impulse uncertainty on the interest rate spreads is not conclusive. These findings suggest that investors demand higher compensation to hold longer-term and less liquid bonds as the steady-state and the structural inflation uncertainty increase. On the other hand, the inflation uncertainty, which is caused by unexpected temporary shocks to inflation, does not have a uniform effect on the interest rate spreads.

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[1] To the best of our knowledge, Balaban [14] is the only study that decomposes inflation volatility; he decomposes the inflation volatility by considering its sub-indexes. However, this study is short of assessing the effect of sub-index volatility on the real economic performance.