



# Macroeconomic announcements and asymmetric volatility in bond returns <sup>☆</sup>

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## Abstract

This study analyses the impact of macroeconomic news announcements on the conditional volatility of bond returns. Using daily returns on the 1, 3, 5 and 10 year US Treasury bonds, we find that announcement shocks have a strong impact on the dynamics of bond market volatility. Our results provide empirical evidence that the bond market incorporates the implications of macroeconomic announcement news faster than other information. Moreover, after distinguishing between types of macroeconomic announcements, releases of the employment situation and producer price index are especially influential at the intermediate and long end of the yield curve, while monetary policy seem to affect short-term bond volatility.

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## 1. Introduction

The efficient market hypothesis implies that price changes in bonds reflect the arrival and processing of relevant new information. While news itself is unpredictable, in turn making changes in bond returns prices unpredictable, the release dates of many macroeconomic announcements are known. On these pre-scheduled dates, information about macroeconomic fundamentals is released. Thus two types of news exist: scheduled and non-scheduled news. In this paper we focus on the scheduled news.

While firm-specific news is the main source of information in stock markets, in Treasury bond markets macroeconomic news is most important. Consequently, the effects of announcements are typically more pronounced on government backed securities than on equity (see, e.g., [McQueen and Roley, 1993](#)). Some recent studies examine the effects of macroeconomic news on Treasury bond volatility. [Jones et al. \(1998\)](#) and [Christiansen \(2000\)](#), for example, examine the response of producers price index (PPI) and employment (EMP) releases on Treasury bond market volatility. Their results indicate significant increases in bond market volatility on announcement days. This increase does not persist, as news is immediately incorporated in the prices.<sup>1</sup> [Li and Engle \(1998\)](#) study the effects of announcements of the producer price index, PPI, and employment situation on the volatility of the US Treasury bond futures. They find that announcement shocks are not persistent, but bond futures volatility responds asymmetrically to announcement shocks. [Piazzesi \(2005\)](#) shows that the announcements of the Federal Open Market Committee (FOMC) are important for bond market volatility. In the Federal Reserve's FOMC, which is the main policymaking body in the United States,<sup>2</sup> policy decisions are made involving the target level of the federal funds rate.

The asymmetric volatility effect, first noted by [Black \(1976\)](#), refers to the tendency that good and bad news in returns have a different impact on conditional volatility in stock markets. Several explanations for this phenomenon, which is especially apparent during volatile periods, are put forward. For example, [Black \(1976\)](#) and [Christie \(1982\)](#) argue that a drop in the value of the stock increases financial leverage, which makes the stock more risky and increases its volatility: the so-called leverage effect hypothesis. Alternatively, the asymmetric response to return shocks could simply reflect the presence of time-varying risk premia (see [Pindyck, 1984](#)). If volatility is priced, an anticipated increase in volatility would result in a higher required return, which would lead to stock price decline: the “volatility feedback” effect. Recently, [Cappiello et al. \(2003\)](#) and [De Goeij and Marquering \(2004\)](#) report asymmetries in bond return volatility. As financial leverage is not applicable to government bonds, the leverage argument cannot explain the asymmetry in Treasury bond volatility.

Unfortunately, most empirical work has studied each of the above phenomena—announcement effects and asymmetric volatility—in isolation. This is ultimately not satisfactory. First, as scheduled news differs from non-scheduled news, it is an interesting question to what extent investors anticipate to announced news. Moreover, it is interesting to compare how volatility responds towards scheduled and non-scheduled news. Second, it

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<sup>1</sup> [Ederington and Lee \(1993\)](#) and [Fleming and Remolona \(1999\)](#), for example, find that most bond prices response within one or 2 min to major macroeconomic announcements.

<sup>2</sup> The policy of the FOMC is to promote economic growth, full employment, stable prices, and a sustainable pattern of international trade and payments.

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