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Term structure transmission of monetary policy

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Abstract

Under bond rate transmission of monetary policy, standard restrictions on policy responses to obtain determinate inflation need not apply. In periods of passive policy, bond rates may exhibit stable responses to inflation if future policy is anticipated to be active, or if time-varying term premiums incorporate inflation-dependent risk pricing. We derive a generalized Taylor Principle that requires a lower bound to the *average anticipated path* of forward rate responses to inflation. We also present a no-arbitrage term structure model with horizon-dependent policy and time-varying term premiums to explain mechanics and provide empirical results supporting these channels.

JEL Classification: E3; E5; N1

Keywords: Asymmetric information; No-arbitrage term structure; The Great Inflation; The Taylor Principle; Determinacy of inflation; Horizon-dependent expectations

1. Introduction

> "Monetary policy works largely through indirect channels—in particular, by influencing private sector expectations and thus long-term interest rates." Bernanke (2004)
>
> "Financial markets are the channel through which our policy affects the economy, and asset prices contain valuable information about investors' expectations for the course of policy, economic activity, and inflation, as well as the risks about those expectations." Kohn (2005)

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Most studies of monetary policy focus on the policy interest rate, typically a very short-term rate, such as an overnight rate. However, as suggested by the above quotations, longer-term bond rates are essential conduits for the transmission of monetary policy. As bond rates contain bond trader expectations of future policy rates, not recent policy rates, monetary policy effectiveness depends on the policy perceptions of the bond market. The connection of these perceptions to announced or recently observed policy is not fully understood. Thus, for instance, it is not known whether the parameterization of an invariant policy rate reaction function provides sufficient information for evaluating the effectiveness of monetary policy.

The importance of this issue is revealed by revisiting the literature investigating the Great Inflation. Clarida, Gali, and Gertler (2000), Lubik and Schorfheide (2004), and Kozicki and Tinsley (2007) provide empirical evidence that in the period before Paul Volcker was appointed Chairman of the Federal Open Market Committee (FOMC) of the Federal Reserve,[1] nominal policy rates exhibited a passive, or inelastic, response (i.e., less than one-for-one) with respect to inflation. However, in the broader context of bond rate transmission, it seems important to consider also the responsiveness of bond rates to inflation. To the best of our knowledge, such an analysis has not been done before. This missing feature of the literature implies important shortcomings in some interpretations of the Great Inflation. In particular, if the bond rate is the transmission channel for monetary policy, explanations that focus on the stability of a Taylor rule description of the policy rate or on central bank assumptions regarding natural rates are not sufficient to assess the stability of the economy and the determinacy of inflation.

Inflation determinacy imposes conditions on policy reaction functions. However these conditions may change if bond rates have a distinct influence on economic activity beyond the current policy rate and rational expectations of future policy rates based on the current policy reaction function. This paper argues that real-world features give bond rates such a distinct role. Thus, when introduced into structural models, these features will alter well-accepted determinacy conditions on monetary policy. Specifically, in some situations, passive current policy may be consistent with determinate inflation and the Taylor Principle may not be necessary for policy stability. Under bond rate transmission, real-world features that likely play a key role in assessing policy effectiveness include asymmetric information about policy goals, term premium sensitivity to inflation, and the responsiveness of the future *path* of the policy rate to inflation.[2]

Asymmetric information on the part of the private sector and the central bank is critical for understanding the relationship between short- and long-term interest rates—particularly in the 1980s (Dewachter & Lyrio, 2006b; Kozicki & Tinsley, 2001a, 2001b). Moreover, as shown by Kozicki and Tinsley (2005b) in an empirical model of the U.S. economy, asymmetric information about the inflation goal of policy also affects the transmission of monetary policy shocks.

The key role of *time-varying term premiums* for capturing time variation in yields has been emphasized in several studies including Shiller, Campbell, and Schoenholtz (1983), Duffee (2002), and Dai and Singleton (2002) among others. Other research, such as Ang and Piazzesi (2003), and Dewachter, Lyrio, and Maes (2006) relate yields to macro factors. However, in typical DSGE formats, the possibility of a distinct role for bond yields in explaining economic behaviour is generally not admitted. For instance, Rudebusch and Wu (in press), Hördahl, Tristani and Vestin (2006), and Dewachter and Lyrio (2006) use no-arbitrage term structure models and structural macroeconomic models to relate bond yields to macroeconomic variables through policy responses of

[1] The FOMC of the Federal Reserve is responsible for U.S. monetary policy.

[2] Term premium sensitivity to other macro variables and responsiveness of the future path of the policy rate to other macro variables may also be relevant.