Essays on Bond Yields

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Declaration

The work in this thesis is my own except where otherwise stated.

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Vijay Austin Murik
For my parents
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Abstract

This doctoral dissertation comprises three essays which study the determinants of bond yields.

The dissertation is organised around the idea that bond yields can be partitioned into a risky component which prices for the risk of illiquidity and default; and a risk-free component which prices for investors’ time preferences, and expected monetary policy movements (Homer and Leibowitz, 2004). The first essay considers the liquidity and credit premia in supranational, semi-government and agency bond yields; term premia in sovereign bond yields and their relation to the economy constitute the focus of the second essay; and the third essay is devoted to an inquiry into the nature of expectations of future monetary policy movements in bond yields.

The first essay presents a new method for consistent cross-sectional pricing of all traded bonds in the fixed income market. By applying thin plate regression splines (Wood, 2003) to bootstrapped zero coupon bond yields (Hagan and West, 2006), the method decomposes traded yields into a risk free component plus premia for credit and liquidity risks, where the decomposition is consistent with the market valuations and underlying cash flows of the bonds. We apply the framework to end of quarter yield data from 2008 to 2011 on Australian dollar denominated semi-government, supranational and agency bonds, and find that the surface provides an excellent fit to the underlying zero coupon yield curves. Further, the decomposition of selected yield time series and cross sections demonstrate how credit premia increased for Australian semi-government, supranational and agency bonds through the Global Financial Crisis, but were counterbalanced by liquidity discounts as investors sought safe haven securities.
The second essay designs conditional tests for the liquidity preference hypothesis, which predicts monotonicity in term premia. Drawing on the excess return forecasting literature (Cochrane and Piazzesi, 2005; Ludvigson and Ng, 2009), the tests are conditioned on information from macroeconomic variables and the current yield curve. Specifically, a filter is constructed to use this conditioning information set in new versions of the Wolak test (Boudoukh et al., 1999a) and Monotonicity Relation test (Patton and Timmermann, 2010) for the liquidity preference hypothesis. Consistent with the literature, our tests conclude that raw, unconditional term premia in U.S. Treasury bills between 1965 and 2001 do not increase monotonically. However, we find that the tests indicate term premia in Treasury bills do increase monotonically when the sample term premia are conditioned on the excess return forecasting factors. This confirms the explanatory power of the excess return forecasting factors, and also suggests that conditioning information should be used in applying inequality constraints tests to determine whether the liquidity preference hypothesis holds empirically.

The third essay evaluates the accuracy of the fixed income market in pricing for future movements in monetary policy. By generalising the approach in Gürkaynak et al. (2007) and Goodhart and Lim (2011), we compare yields and forward rates implied by market pricing on various fixed income securities to averages of the cash rate over corresponding periods with an ordinary least squares regression model. Where the market pricing is subject to risk premia, instrumental variables are used to strip away the effects of the risk premia as if they were measurement errors. When we apply our framework to Australian fixed income pricing from 2004 to 2010, we find that, consistent with findings in the extant literature, the market is quite effective in forecasting cash rate movements over horizons of up to six months. Beyond that horizon, the presence of risk premia diminishes to a large extent the signal on expectations in market pricing, but our instrumental variables framework suggests nonetheless that there is important information in fixed income market pricing regarding expected cash rate movements over the one to three year horizon.