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PRESS RELEASE

The term structure of interest rates in a DSGE model

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The paper examines the origin and the size of the interest rate risk premium that is generated by an estimated DSGE model (the Smets-Wouters model). In so doing, the paper contributes to the recently developing macro-finance literature in which the yield curve is modelled in an internally-consistent way, meaning that the no-arbitrage restrictions between interest rates are respected, while the dynamics of the rates are jointly determined with the dynamics of the macro-economic variables. In this general equilibrium approach, the macro-consistency goes one step further and also implies that the risk premium in long term bonds is completely pinned down by the DSGE model. The risk premium becomes a function of the utility parameters (for instance the risk-aversion parameter) and of the stochastic structure that drives the consumption, investment and monetary policy behaviour in the macro-economy. No additional parameters or stochastic shocks are introduced for explaining the yield curve.

Overall the model produces a positive but very small risk premium, much smaller than what we expect from the stylised facts. The calibration exercises in the paper indicate that there are several ways to produce larger risk premiums: one way is to have higher prices for risk through a higher risk aversion or habit persistence but the overall dynamics in the macro-variables do not support these parameter values, a second approach is to exclude the inflation objective shock as this shock contributes negatively to the risk premiums. Moreover the risk premiums are also sensitive to the monetary policy rule. In the final section the model is re-estimated under the restriction that the implied average term premium should be closer to the observed premium. It turns out that a less aggressive monetary policy is the most likely explanation for the relative large average risk premium that is observed over the last forty years. A less aggressive monetary policy makes the inflation and interest rate process much more persistent following all kinds of shocks, reinforces the positive covariance between consumption and bond prices and therefore drives the term premium up.