Borradores de Economía - A robust model for the term structure of interest rates: some applications in Colombia

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Publication Date: Tuesday, 24 of October 2023 Abstract
This document presents a Gaussian Affine Term Structure Model (GATSM) of the zero-coupon public debt curve issued locally by the Colombian Government, adopting the methodological approach of Hamilton and Wu (2012) to solve the problems of identification and instability in the estimation of this family of models. Two empirical exercises are presented to highlight the relevance of this methodological approach. The first combines the GATSM structure with a Bayesian Averaging of Classical Estimates (BACE) approach to forecast the yield curve given a set of macroeconomic variables, thus offering a practical way to link a macroeconomic scenario to financial prices in a stress testing exercise. In particular, the document presents the connection with the Systemic Stress Model (SYSMO) of the Financial Stability Department of the Central Bank of Colombia. The second evaluates the effect of monetary policy surprises on sovereign bond yields on a comprehensive set of maturities in a parsimonious way allowed by the GATSM structure. We found an almost immediate, complete, and significant pass-through on the short end of the yield curve. These empirical applications reflect the flexibility of this approach as a tool to address studies that deepen the understanding of the dynamics of yield curves and macroeconomics, the valuation of financial instruments, and financial stability.

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