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A Model of the Convenience Yields in On-the-Run Treasuries

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Abstract

The convenience yield differential between on- and off-the-run Treasury securities with identical maturities has two components. A non-cyclical component may arise due to the higher illiquidity of off-the-run bonds. Also, trading in the market for the next issue often causes cyclical shortages of the on-the-runs. When this occurs, owners of the on-the-run bond can earn riskless profits by borrowing at a special repo rate while lending at the prevailing risk free market rate. This second component of the convenience yield, induced by the auction, is cyclical. We first show that special repo rates and the convenience yield are jointly cyclical over the auction cycle. The patterns are statistically significant and pervasive. Repo specials are highest around the announcement day and disappear by the issue day. The off- minus on-the-run yield spread is highest at the beginning of the cycle and collapses near its end, consistent with a decreasing present value of profits over a decreasing horizon. Second, we develop a first no-arbitrage continuous-time model, with both interest and special repo rates stochastic, that prices the on-the-run bonds that command this convenience yield. A simple implementation of the model can generate yields consistent with the evidence.

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