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Market Liquidity and Systemic Risk in Government Bond Markets: A Network Analysis and Agent-Based Model Approach

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Abstract

Recently, market liquidity in government bond markets has been attracting attention by market participants and central bankers since interest rate spikes have become frequent under unconventional monetary easing. We analyze network structures in the JGB (Japanese government bond) market using daily data from the BOJ-NET (the Bank of Japan Financial Network System). To our knowledge, this is the first network analysis on the government bond market. We studies how QQE (quantitative and qualitative monetary easing) has affected JGB market structure. We also conduct event studies for the spikes in interest rates (the shock after the introduction of QQE and the so-called VaR [Value at Risk] shock in 2003). In addition, we propose an agent-based model that accounts for the findings of the above event studies, and show that not only the capital adequacy of market participants but also the network structure are important for financial market stability.

Keywords: Market Liquidity; Government bond markets; Quantitative and Qualitative Easing; Network analysis; Systemic risk; Agent-based model
JEL classification: C58, G12, G18

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