Banks and the Macroeconomic Transmission of Interest Rate Risk*

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Abstract

I study the role of financial intermediaries in the transmission of interest rate risk. I develop a quantitative model where banks can invest in assets of different duration and choose optimally their exposure to interest rate fluctuations. I embed this portfolio problem in a heterogeneous-banks framework with financial frictions and endogenous default. The model predicts that in periods of loose monetary policy banks face weaker financial constraints. As a result, they become more tolerant of interest rate risk and invest more extensively in long-duration assets. However, when the economy undergoes a sudden monetary tightening, this portfolio shift amplifies contractions in asset prices, credit and output. I calibrate the model to match aggregate and cross-sectional patterns in banks' duration profile. In terms of untargeted moments, I show that consistent with the data the model features (a) a negative aggregate co-movement between maturity mismatch and interest rates, and (b) a negative cross-sectional correlation between maturity mismatch and bank leverage. A quantitative application to the 2022 monetary tightening shows that a lengthening of duration in periods of low interest rates gives rise to significant financial amplification. A liquidity requirement that restricts banks' investment in long-term assets makes the economy less vulnerable to sudden interest rate raises.

Keywords: Macroprudential policies, capital controls, inefficient borrowing, collateral constraints, financial crises, sudden stops.

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