The Market for Sharing Interest Rate Risk: Quantities and Asset Prices

Umang Khetan Jian Li Ioana Neamtu Ishita Sen

Motivation

The recent banking and pension market turmoil have led to discussions about interest rate risk mismatch across the financial system, and questions on the right policy approach to risk management. Much of this effort has focused on individual financial sectors. An important shortcoming of this sector-specific approach is that it does not account for externalities in markets where multiple sectors participate to share common risks. For example, a change in regulation for one institutional type, e.g., commercial banks, may affect the hedging costs and quantities of other types, e.g., pension funds or insurance companies, through the channel of asset prices. Quantifying these cross-sector spillovers requires an equilibrium framework that captures the joint dynamics of asset prices and quantities, and simultaneously accounts for demand and supply forces across the financial system.

We undertake this exercise for interest rate swaps. With an outstanding gross notional of $470 trillion and daily turnover of $4.5 trillion, swaps are economically important instruments through which financial and nonfinancial institutions mitigate their interest rate exposures. Despite its significance, however, relatively little is known about how demand- and supply-side forces collectively shape swap spreads and the channels through which shocks in one part of the market propagate to others. We use granular transaction-level data and calibrate an equilibrium model to shed light on these issues.

Data

We leverage confidential transaction-level data from the Bank of England that cover the near-universe of the UK interest rate swap market from December 2019 to June 2024. We observe both the stock of outstanding positions and the flow of new transactions across all market participants: banks, pension funds and insurers (PF&I), corporations, funds, and official institutions. The data include notionals, fixed rates, maturities, trade direction, currencies, and floating rate benchmarks. We construct precise measures of net positions and dollar durations, classify trades by maturity buckets, and estimate demand elasticities across participants. This allows us to capture the joint dynamics of prices and quantities in a way not previously feasible.

Findings

First, we document that PF&Is are natural counterparties to banks and corporations: PF&I receive fixed and buy duration, while banks and corporations pay fixed and sell duration. This cross-sector netting reduces dealers' aggregate net supply. However, swap demand is highly segmented by maturity. PF&I concentrate in long-tenor swaps, while banks and corporations hold short-to-intermediate tenor swaps. As a result, dealers absorb significant *maturity-specific* imbalances, exposing them to the risk that swap spreads diverge across maturities.

Second, we quantify the impact of these imbalances on equilibrium swap spreads by calibrating a preferred-habitat investors model. We show that demand imbalances are quantitatively more important in explaining the term structure of swap spreads than supply-side factors alone. Importantly, we find that swap spreads at the long end are sensitive to the demand imbalances at the short end, and vice versa. As input to our model, we estimate investors' demand elasticities using dealer-level portfolio compression to isolate exogenous shifts in supply.

Third, we conduct policy-relevant counterfactuals. We show that an increase in demand by one sector—such as PF&I—reduces the hedging costs faced by others—such as banks. These spillovers are more pronounced when demand elasticities are low and when imbalances originate in longer maturities, where dealers face higher risk. Our results suggest that regulations targeted at one sector can significantly alter hedging costs for others. They also shed light on cross-country differences in swap market structure. For example, economies with smaller PF&I sectors may exhibit more short-tenor imbalances, while differing mortgage or regulatory regimes can alter the hedging demand of banks. Our counterfactuals highlight how such variations in demand imbalances affect the distribution of investors' hedging costs.