A Comparative Analysis of the Inflation Risk Premia in India versus the United Kingdom

Soumadeep Ghosh

Kolkata, India

Abstract

This paper presents a comparative analysis of the Inflation Risk Premia (IRP) in an emerging market (India) versus a developed market (United Kingdom). We explore the structural differences in sovereign bond markets, specifically contrasting the liquidity of the UK's Index-Linked Gilts against India's nascent inflation-indexed market. The study utilizes stylized facts and theoretical decompositions to illustrate how IRP behaves under different monetary policy frameworks - flexible inflation targeting by the Reserve Bank of India (RBI) and the established mandate of the Bank of England (BoE). Vector graphics are employed to visualize the decomposition of nominal yields and the distinct wedge components in both jurisdictions.

The paper ends with "The End"

Contents

List of Figures

1 Introduction

The decomposition of nominal government bond yields into real rates, expected inflation, and risk premia is central to modern monetary policy and asset pricing. Among these components, the Inflation Risk Premium (IRP) represents the compensation investors demand for bearing the uncertainty of future purchasing power erosion.

The comparison between India and the United Kingdom offers a unique dichotomy. The UK possesses one of the world's most developed markets for Index-Linked Gilts, allowing for the direct observation of Break-even Inflation rates. In contrast, India's bond market, while liquid in nominal terms, lacks a deep inflation-indexed segment, necessitating the use of Affine Term Structure Models and survey data to estimate IRP. This paper analyzes these differences, highlighting how inflation volatility and policy credibility influence the term structure of interest rates in both nations.

2 Methodology and Structural Framework

2.1 The Fisher Decomposition

The fundamental relationship governing nominal yields (y_t^n) can be expressed as an extended Fisher Equation:

$$y_t^n(\tau) = r_t^r(\tau) + \mathbb{E}_t[\pi_{t+\tau}] + \phi_t(\tau) + \lambda_t(\tau) \tag{1}$$

Where:

- $r_t^r(\tau)$ is the ex-ante real yield for maturity τ.
- $\mathbb{E}_t[\pi_{t+\tau}]$ is the expected average inflation over the horizon.
- $\phi_t(\tau)$ is the Inflation Risk Premium (IRP).
- $\lambda_t(\tau)$ represents liquidity and other residual premia.

2.2 UK Context: Market-Based Extraction

In the UK, the existence of liquid Index-Linked Gilts allows researchers to proxy expected inflation via the Break-even Inflation Rate (BEIR). However, the UK market faces a unique "wedge" due to the indexation to the Retail Prices Index (RPI) rather than the Consumer Prices Index (CPI), which is the Bank of England's target. Furthermore, during periods of stress, a liquidity premium on Gilts can distort the IRP calculation [3].

2.3 Indian Context: Model-Based Estimation

India's Inflation Indexed Bond (IIB) market is relatively illiquid. Consequently, IRP cannot be reliably extracted from market prices alone. Instead, economists employ Affine Term Structure Models or Dynamic Nelson-Siegel models, often augmenting them with survey data from the RBI's Survey of Professional Forecasters. Research suggests that the IRP in India is positive and time-varying, contributing significantly to the steepness of the yield curve during volatile periods [4].

3 Comparative Analysis

The magnitude and volatility of IRP differ significantly between the two jurisdictions.

- **United Kingdom:** The IRP has historically been contained, reflecting the credibility of the inflation-targeting framework. However, "inflation scares" (e.g., post-Brexit or 2022 energy crisis) cause spikes in the premium.
- **India:** The IRP accounts for a larger portion of the nominal yield. High historical inflation volatility and supply-side shocks (e.g., food and oil prices) cause investors to demand a higher "buffer" against inflation surprises.

3.1 Visualizing Yield Decomposition

Figure 1 illustrates the theoretical decomposition of the nominal yield curve for a generic emerging market like India, where the Risk Premium (Term Premium) plays a substantial role at the long end.

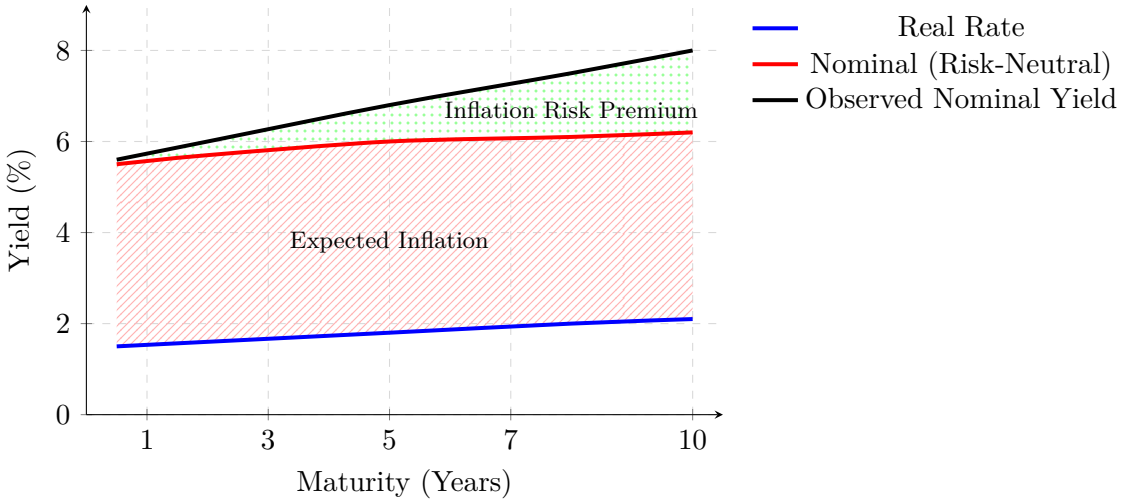

Figure 1: Stylized Decomposition of the 10-Year Yield Curve (Emerging Market Context).

The green dotted area represents the Inflation Risk Premium, which widens significantly with maturity.

3.2 Structural Wedge Comparison

The "wedge" between observed breakevens and true inflation expectations differs structurally. In the UK, the wedge is often technical (RPI vs CPI). In India, the wedge is informational and liquidity-driven. Figure 2 contrasts these dynamics.

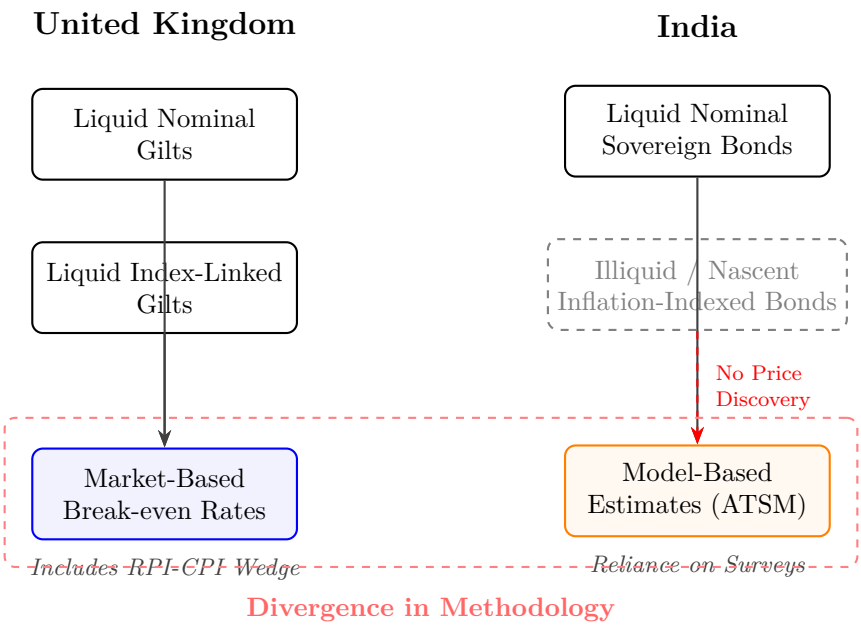

Figure 2: Structural Comparison of IRP Extraction.

The solid lines in the UK indicate direct market calculation, whereas the red dashed line in India indicates the lack of transmission from inflation-linked markets.

4 Graph of the Inflation Risk Premia

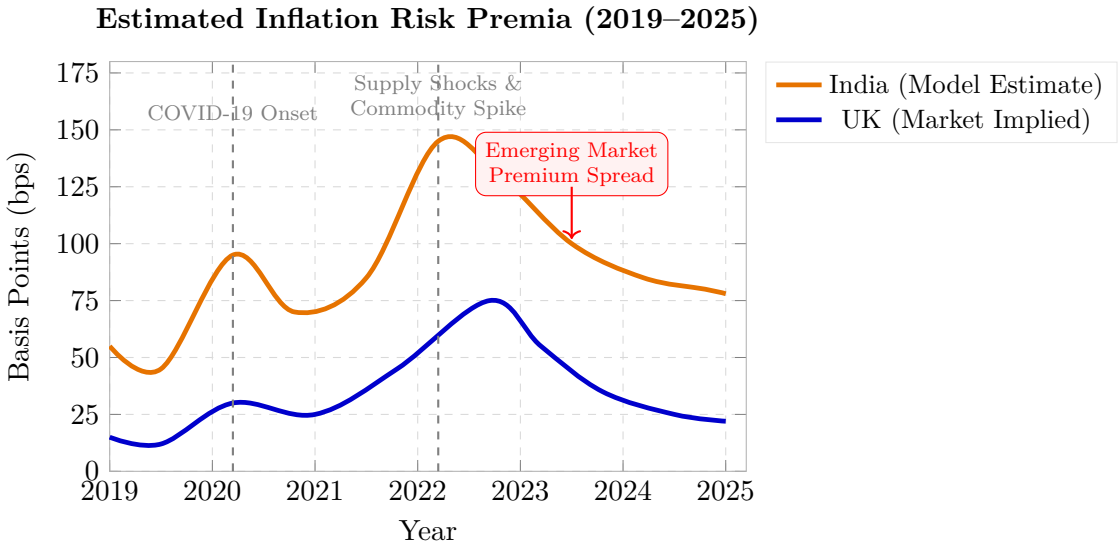

Figure 3: Graph of the Inflation Risk Premia.

5 Conclusion

The analysis reveals that while the United Kingdom benefits from a direct market mechanism to gauge inflation risk via Index-Linked Gilts, the resulting metrics are complicated by index mismatch (RPI vs CPI). India, lacking a liquid linker market, relies on econometric extraction, where results consistently show a higher IRP compared to developed markets. This higher

premium in India is a rational market response to historical inflation volatility and is a critical component of the term structure that policymakers at the Reserve Bank of India must monitor to maintain credibility.

References

[1] Ang, A., Bekaert, G., & Wei, M. (2008). The Term Structure of Real Rates and Expected Inflation. *Journal of Finance*, 63(2), 797-849.

[2] Bank of England. (2019). *Inflation Reports and Yield Curve Data*. London: Bank of England.

[3] Guimarães, R. (2014). Expectations, Risk Premia and the Information Content of Breakeven Inflation Rates. *Bank of England Working Paper No. 517*.

[4] Reserve Bank of India. (2021). Report on Currency and Finance: Reviewing the Monetary Policy Framework. Mumbai: RBI Press.

[5] Goyal, A., & Verma, S. (2017). Inflation Expectations and Monetary Policy in India. *Economic & Political Weekly*, 52(25).

[6] Joyce, M., Lildholdt, P., & Sorensen, S. (2010). Extracting Inflation Expectations and Inflation Risk Premia from the Term Structure: A Joint Model of the UK Nominal and Real Yield Curves. *Journal of Banking & Finance*, 34(2), 281-294.

Glossary

Affine Term Structure Models (ATSM)
: A class of financial models that express yields as linear (affine) functions of state variables. These are widely used by central banks (including the RBI) to decompose yield curves into real rates, expected inflation, and risk premia when market data is sparse.

Break-even Inflation
: The difference between the yield on a nominal bond and an inflation-linked bond of the same maturity. While often used as a proxy for expected inflation, it technically includes the inflation risk premium and can be distorted by liquidity differentials.

Fisher Equation
: The economic theory stating that the nominal interest rate is the sum of the real interest rate and the expected inflation rate. In modern finance, this is extended to include risk premia (term premia) to account for uncertainty.

Index-Linked Gilts
: The United Kingdom's sovereign inflation-indexed bonds. Unlike many other inflation-linked assets that track CPI, these are historically linked to the Retail Prices Index (RPI), creating a structural "wedge" when comparing them to inflation targets.

Inflation Risk Premium (IRP)
: The excess return that investors demand to hold nominal assets (which are exposed to purchasing power erosion) over real assets. It compensates investors for the *uncertainty* of future inflation, rather than the expected level of inflation itself.

The End