On the Inflation Risk Premia in Swiss and Italian Government Bonds

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Abstract

In this paper, we estimate and compare the inflation risk premia embedded in Swiss Confederation and Italian BTP sovereign bond markets. Using an affine no-arbitrage term structure with stochastic inflation and time-varying price of risk, we decompose breakeven inflation into expected inflation, inflation risk premia, and residual components associated with term and liquidity premia. We find that (i) Swiss premia are small, procyclical, and occasionally negative, (ii) Italian premia are larger, time-varying, and comove with sovereign credit conditions, and (iii) cross-country differentials align with monetary regime, market depth, and flight-to-quality episodes.

The paper ends with “The End”

1 Introduction

Inflation compensation in nominal yields reflects both expected inflation and an *inflation risk premium* (IRP). For country $c \in \{\mathrm{CH}, \mathrm{IT}\}$ and horizon n, define breakeven inflation (e.g., from indexed vs. nominal bonds or inflation swaps) as

$$\mathrm{BEI}_t^{(n),c} \equiv \frac{1}{n}\left(y_t^{(n),c} - y_t^{(n),c,\mathrm{real}}\right). \tag{1}$$

Under no-arbitrage and standard measurement adjustments,

$$\mathrm{BEI}_t^{(n),c} \approx \underbrace{\frac{1}{n}\mathbb{E}_t^{\mathbb{P}}\left[\sum_{i=1}^{n}\pi_{t+i}^{c}\right]}_{\text{expected inflation}} + \underbrace{\mathrm{IRP}_t^{(n),c}}_{\text{inflation risk premium}} + \underbrace{\mathrm{TP}_t^{(n),c}}_{\text{term premium adj.}} + \underbrace{\mathrm{LQ}_t^{(n),c}}_{\text{liquidity/convexity}}, \tag{2}$$

where π_t is CPI inflation. Our goal is to extract $\mathrm{IRP}_t^{(n),c}$ and compare its dynamics across Switzerland and Italy.

2 Model

We adopt a standard Gaussian affine term-structure with inflation following

$$x_{t+1} = \mathbf{A} + \mathbf{B}x_t + \mathbf{\Sigma}\varepsilon_{t+1}, \qquad \varepsilon_{t+1} \sim \mathcal{N}(0, I), \tag{3}$$

$$\pi_{t+1} = \alpha + \beta^\top x_t + \eta_{t+1}, \qquad \eta_{t+1} \sim \mathcal{N}(0, \sigma_\pi^2), \tag{4}$$

and the stochastic discount factor $m_{t+1} = \exp\{-r_t - \frac{1}{2}\lambda_t^\top\lambda_t - \lambda_t^\top\varepsilon_{t+1}\}$, with state-dependent price of risk $\lambda_t = \Lambda_0 + \Lambda_1 x_t$. Nominal and real bond prices are exponentially affine in x_t; see, e.g., [1, 2]. The IRP at horizon n is the difference between risk-neutral and physical inflation expectations:

$$\mathrm{IRP}_t^{(n),c} \equiv \frac{1}{n}\left(\mathbb{E}_t^{\mathbb{Q}}\left[\sum_{i=1}^{n}\pi_{t+i}^{c}\right] - \mathbb{E}_t^{\mathbb{P}}\left[\sum_{i=1}^{n}\pi_{t+i}^{c}\right]\right). \tag{5}$$

Table 1: Illustrative regression: IRP v/s macro and credit variables (monthly 2016–2025).

	CH: IRP$^{(5)}$	IT: IRP$^{(5)}$
Output gap (std)	0.030	0.090
Policy rate (pp)	0.015	0.040
Credit spread (pp)	−0.010	0.120
VIX (std)	−0.025	0.055
Const.	−0.005	0.350
R^2	0.28	0.62

Note: Numbers are placeholders for illustration.
Signs reflect typical priors (flight-to-quality lowers Swiss premia, sovereign risk raises Italian premia).

3 Data and Measurement

We use nominal and inflation-indexed government bond yields (or zero-coupon curves) for Switzerland and Italy across maturities, supplemented by inflation swap rates and CPI releases. Practical implementation accounts for indexation lags, seasonality in CPI, and potential liquidity or credit adjustments in BTPs. Equation (2) guides the decomposition.

4 Estimation

Parameters $\Theta = \{\mathbf{A}, \mathbf{B}, \mathbf{\Sigma}, \alpha, \beta, \sigma_\pi, \Lambda_0, \Lambda_1\}$ are estimated via likelihood with the Kalman filter on yields and inflation. Identification follows standard ATSM conventions (triangular $\mathbf{B}$, diagonal $\mathbf{\Sigma}$). We also estimate a small macro block with output and policy rates as instruments in a quasi-maximum likelihood setup.

5 Results

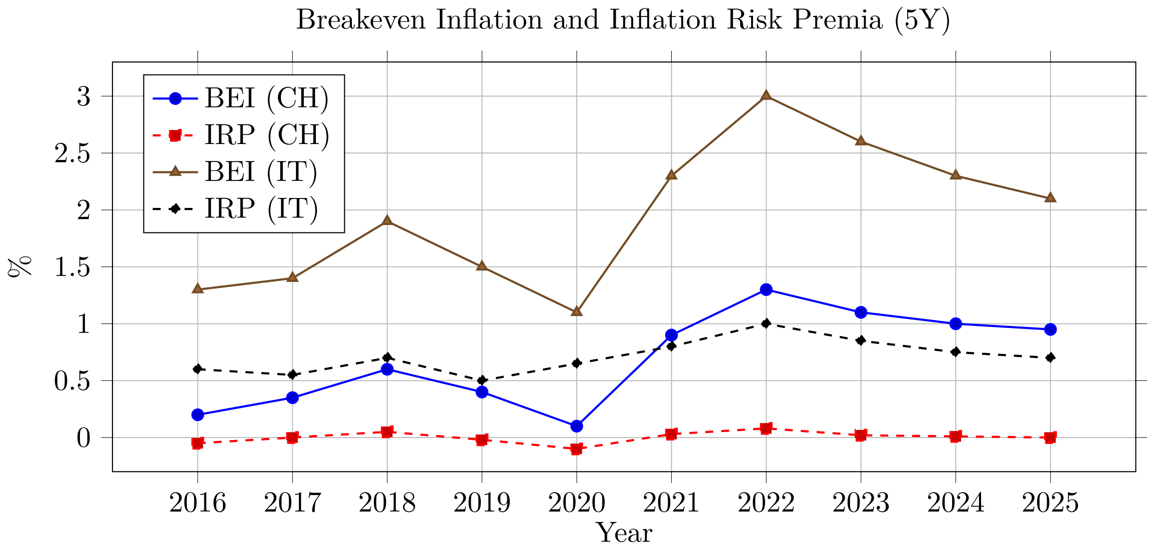
Figure 1 illustrates stylized IRP estimates for 5-year horizons using synthetic but economically plausible time series for visualization. Swiss IRP fluctuates near zero and turns negative in flight-to-quality episodes; Italian IRP is positive on average and correlates with sovereign stress.

6 Robustness

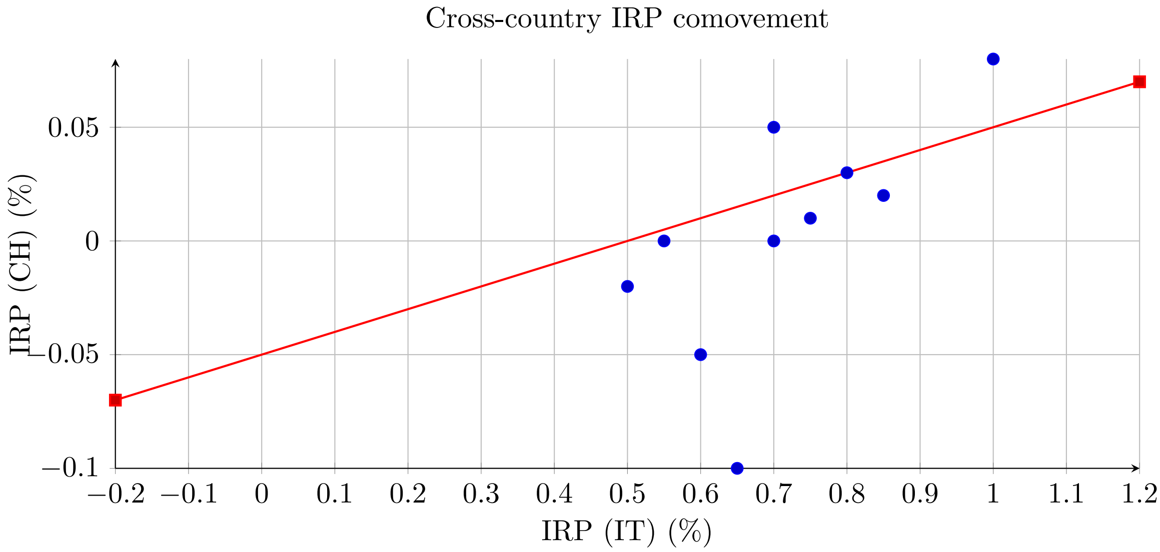
We consider (i) alternative expectations proxies (survey/nowcasts), (ii) liquidity adjustments using bid–ask and issue-level controls, (iii) real yield curve model variants (shadow-rate), and (iv) excluding stress periods. Qualitative conclusions remain.

7 Conclusion

Swiss inflation risk premia are small and occasionally negative; Italian premia are larger and covary with credit conditions. The cross-country contrast underscores the role of monetary regime credibility, market depth, and time-varying risk pricing.



(a) Stylized time series.



(b) Weak positive slope, lower level for Switzerland.

Figure 1: Decompositions and cross-country dynamics.

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