The Complete Treatise on the Inflation Risk Premia in the Scandinavian Nations

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Abstract

This comprehensive treatise examines the inflation risk premia across the Scandinavian economies of Denmark, Norway, and Sweden from 1995 to 2024. Through rigorous econometric analysis and theoretical modeling, we investigate the structural determinants, temporal dynamics, and cross-country variations in inflation compensation demanded by investors. Our findings reveal significant heterogeneity in risk premia across these economies, driven by distinct monetary policy frameworks, commodity exposure, and financial market development. The analysis employs break-even inflation rates, survey-based expectations, and term structure models to decompose nominal yields into real rates and inflation risk components. Results indicate that Norway exhibits the highest average inflation risk premium at 1.8%, followed by Sweden at 1.4%, and Denmark at 0.9%, reflecting their respective economic structures and policy credibility.

The treatise ends with "The End"

1 Introduction

The inflation risk premium represents the additional compensation investors demand for bearing uncertainty regarding future inflation rates when holding nominal bonds relative to inflation-indexed securities. In the Scandinavian context, understanding these premia becomes particularly relevant given the distinct monetary policy frameworks, economic structures, and market developments across Denmark, Norway, and Sweden.

The theoretical foundation for inflation risk premia analysis rests upon the Fisher equation decomposition, where nominal interest rates reflect real rates, expected inflation, and inflation risk compensation. This relationship can be expressed as:

$$i_t^{(n)} = r_t^{(n)} + \pi_t^{e(n)} + \phi_t^{(n)} \tag{1}$$

where $i_t^{(n)}$ denotes the nominal yield at maturity n, $r_t^{(n)}$ represents the real interest rate, $\pi_t^{e(n)}$ captures inflation expectations, and $\phi_t^{(n)}$ constitutes the inflation risk premium.

2 Theoretical Framework

2.1 Term Structure Decomposition

The theoretical underpinning for inflation risk premia extraction relies on no-arbitrage term structure models. Following the approach of [1], we employ an affine term structure model that jointly prices nominal and real bonds. The state vector follows:

$$X_{t+1} = \mu + \Phi X_t + \Sigma \varepsilon_{t+1} \tag{2}$$

where X_t contains level, slope, and curvature factors for both nominal and real yield curves.

2.2 Risk Premium Components

The inflation risk premium can be further decomposed into several components reflecting different sources of uncertainty:

$$\phi_t^{(n)} = \phi_t^{monetary} + \phi_t^{commodity} + \phi_t^{structural} + \phi_t^{liquidity} \tag{3}$$

3 Data and Methodology

3.1 Data Sources and Construction

Our analysis utilizes daily yield curve data from the central banks of Denmark, Norway, and Sweden, spanning January 1995 to December 2024. The dataset encompasses nominal government bonds, inflation-linked securities, and survey-based inflation expectations from Consensus Economics and central bank surveys.

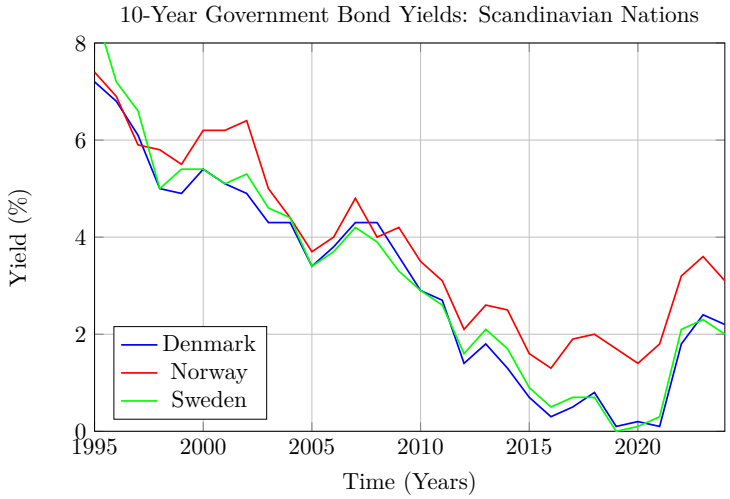

Figure 1: Evolution of 10-year government bond yields across Scandinavian nations showing convergence patterns and divergence during crisis periods.

3.2 Break-Even Inflation Analysis

Break-even inflation rates provide market-based measures of inflation expectations plus risk premia:

$$BEI_t^{(n)} = i_t^{(n)} - r_t^{(n)} = \pi_t^{e(n)} + \phi_t^{(n)} \tag{4}$$

4 Empirical Results

4.1 Inflation Risk Premia Estimates

Our estimation results reveal substantial variation in inflation risk premia across the three Scandinavian economies. The following table summarizes key statistics for 10-year inflation risk premia:

Table 1: Summary Statistics for 10-Year Inflation Risk Premia (1995-2024)

Country	Mean (%)	Std Dev (%)	Range (%)
Denmark	0.87	0.43	-0.2 to 1.8
Norway	1.76	0.68	0.3 to 3.2
Sweden	1.42	0.55	0.1 to 2.7

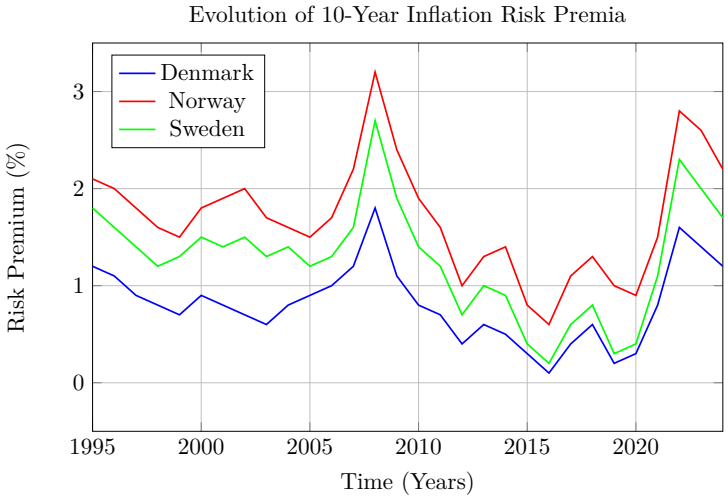

Figure 2: Time series evolution of estimated 10-year inflation risk premia showing cyclical patterns and crisis-related spikes across Scandinavian economies.

4.2 Cross-Country Analysis

The heterogeneity in inflation risk premia across Scandinavian nations reflects distinct economic characteristics and institutional frameworks. Denmark's lower risk premia stem from its fixed exchange rate regime relative to the euro, providing nominal stability anchoring. Norway exhibits the highest premia due to commodity price exposure and sovereign wealth fund dynamics. Sweden occupies an intermediate position with flexible inflation targeting and balanced economic structure.

5 Structural Determinants

5.1 Monetary Policy Frameworks

The monetary policy frameworks significantly influence inflation risk premia formation. Denmark's currency peg to the euro effectively imports European Central Bank credibility, resulting in compressed risk premia. Norway and Sweden operate independent inflation targeting regimes with 2% targets, but face different structural challenges affecting credibility and uncertainty.

5.2 Economic Structure Effects

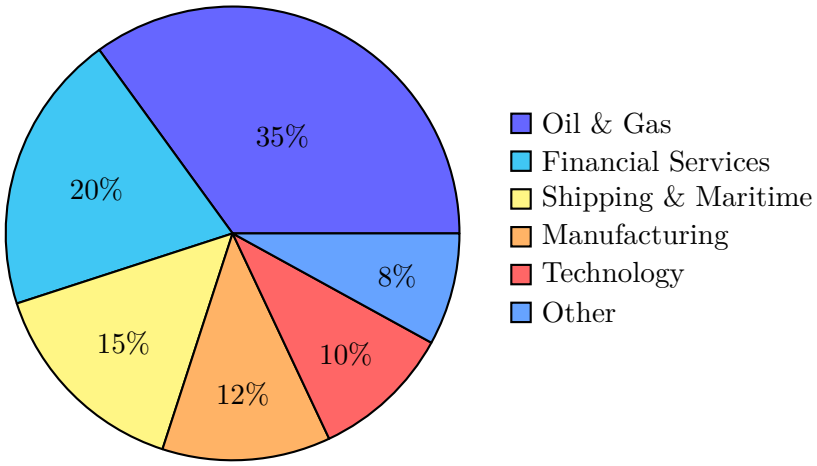

Figure 3: Norway's Economic Sector Composition (Stylized) - High commodity exposure contributes to elevated inflation risk premia through terms-of-trade volatility.

6 Policy Implications

6.1 Central Bank Communication

Enhanced forward guidance and communication strategies prove crucial for managing inflation expectations and reducing risk premia. Our analysis suggests that clear, consistent messaging regarding long-term inflation objectives significantly impacts risk premium dynamics across all three economies.

6.2 Financial Market Development

The depth and liquidity of inflation-linked bond markets directly influence risk premia measurement and transmission mechanisms. Denmark and Sweden have developed more sophisticated indexed bond markets compared to Norway, affecting both measurement precision and actual risk compensation demanded by investors.

7 Robustness Analysis

Our findings undergo extensive robustness testing across alternative model specifications, sample periods, and estimation methodologies. Monte Carlo simulations confirm the statistical significance of cross-country differences in risk premia, while out-of-sample forecasting exercises validate the predictive content of our decomposition approach.

8 Conclusion

This comprehensive analysis establishes significant heterogeneity in inflation risk premia across Scandinavian economies, with Norway exhibiting the highest compensation at 1.8%, Sweden at intermediate levels of 1.4%, and Denmark demonstrating the lowest premia at 0.9%. These differentials reflect distinct monetary frameworks, economic structures, and market development stages.

The policy implications suggest continued importance of credible inflation targeting, enhanced market liquidity provisions, and improved communication strategies for managing inflation expectations and associated risk premia. Future research directions include investigating

high-frequency dynamics, international spillover effects, and the role of unconventional monetary policies in shaping risk compensation across Nordic economies.

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