EFFECTS OF HIGH AND VOLATILE INFLATION: CHASING I*

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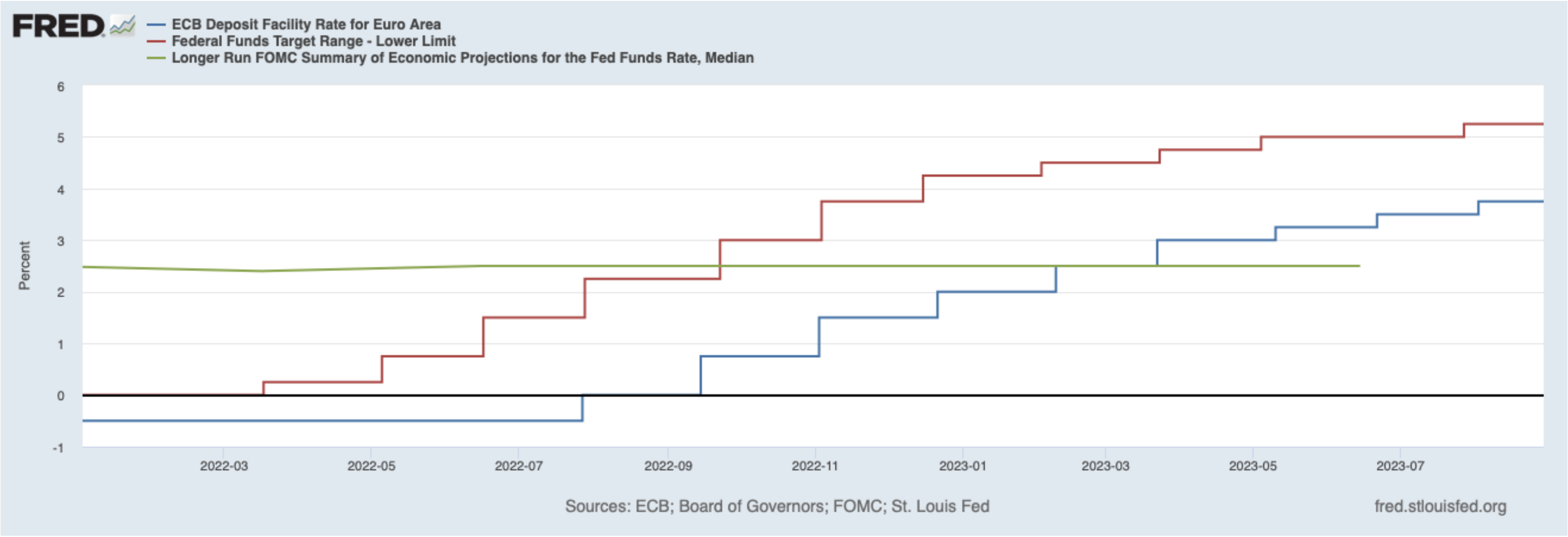
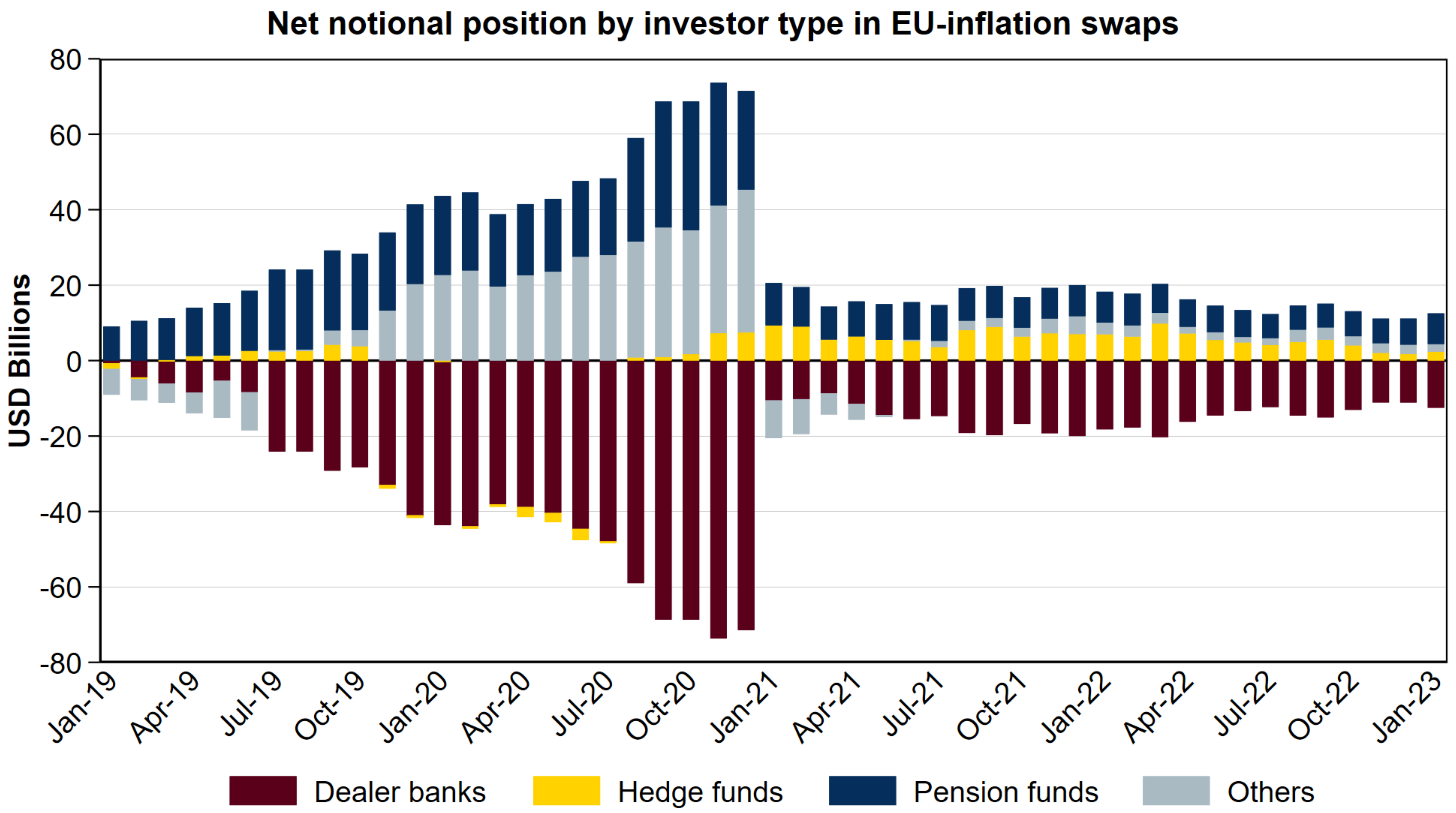
What pins down the long-run neutral rate?



Three components of i*:	r^*	+	π^*	+	rp	=	i^*
Pre-pandemic US estimates:	0.5	+	2	+	0	=	2.5
Pre-pandemic EZ estimates:	-0.5	+	2	+	0	=	1.5

Who has won and lost in financial markets?



Buy / sell an inflation swap contract if you want insurance

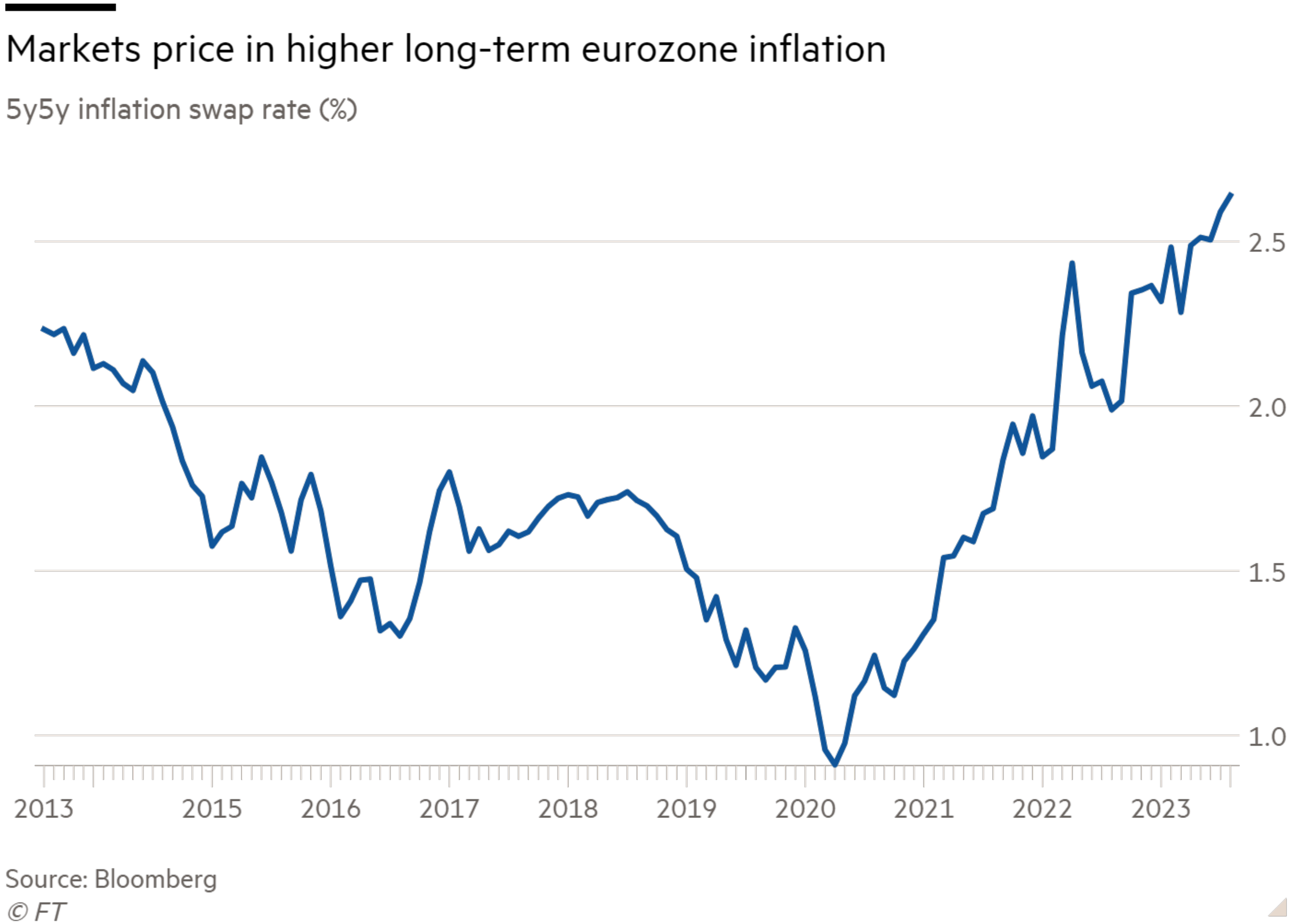
London repository data, break with Brexit

Dealer banks sold insurance, pensions funds bought it

And hedge funds were ahead of the change

Source: Bahaj, Czech, Ding, Reis (2023) The Market for Inflation Risk

Increase in 5y5y expected inflation in EA



From inflation swap contracts

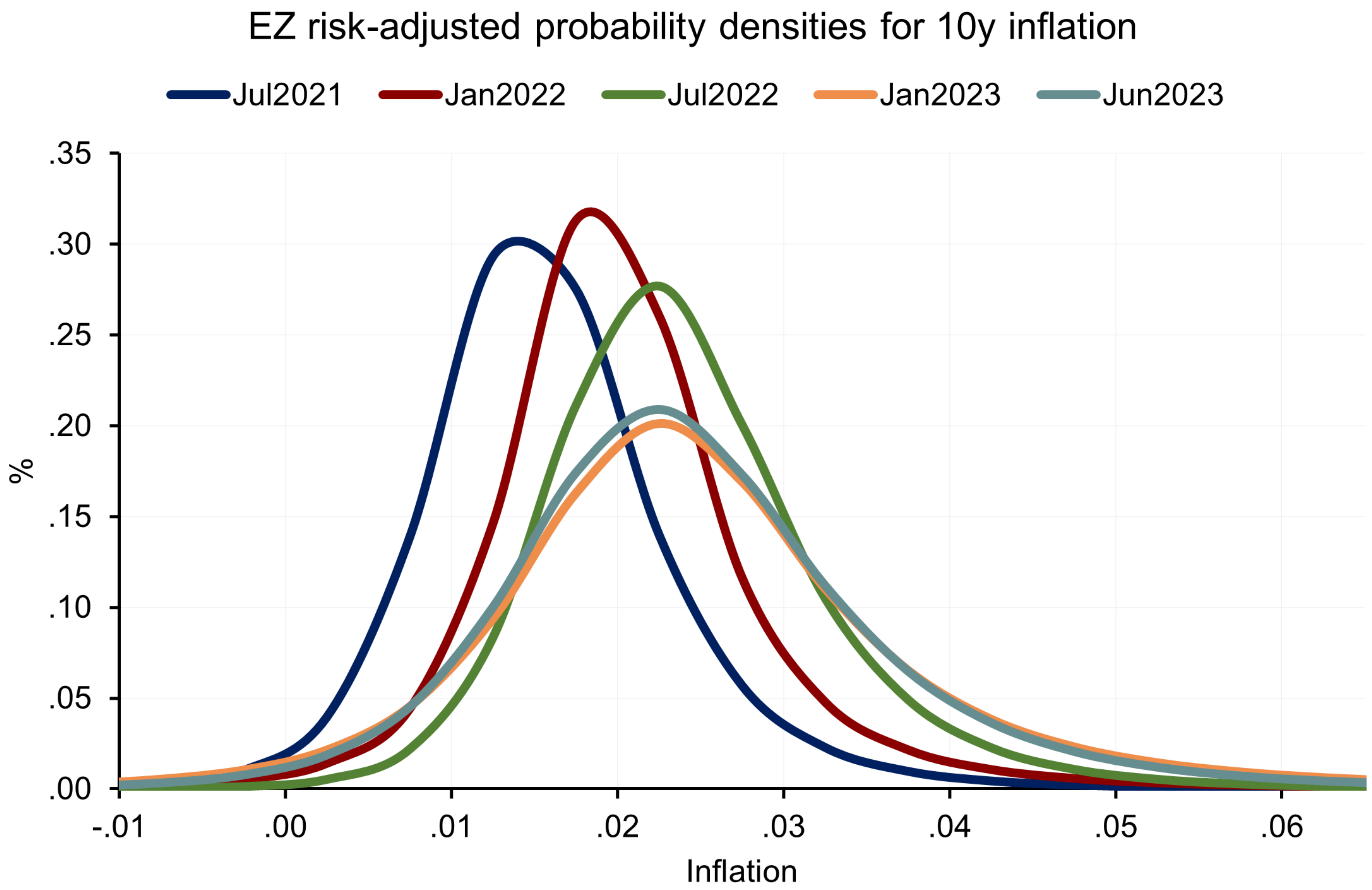
$$\pi^{10} - \pi^{5} = \pi^{5\text{-}5}$$

Definitely worrying, and starting to approach 3% as opposed to 2%

But cannot take these at face value.

What is driving that mean?

$$p_t(\pi_{T,T+H}) = \underbrace{n_t(\pi_{T,T+H})}_{\text{Options}} \times \underbrace{\left(e^{(\pi_{T,T+H}-\pi^e_{T,T+H})H}\right)}_{\text{Real}} \times \underbrace{\left(e^{-r_{T,T+H}H} m(\pi_{T,T+H})\right)}_{\text{Risk}}$$



From 10y options on the swap contracts

Clear break between mid 21 and mid 22

No real improvement in the last 6 months

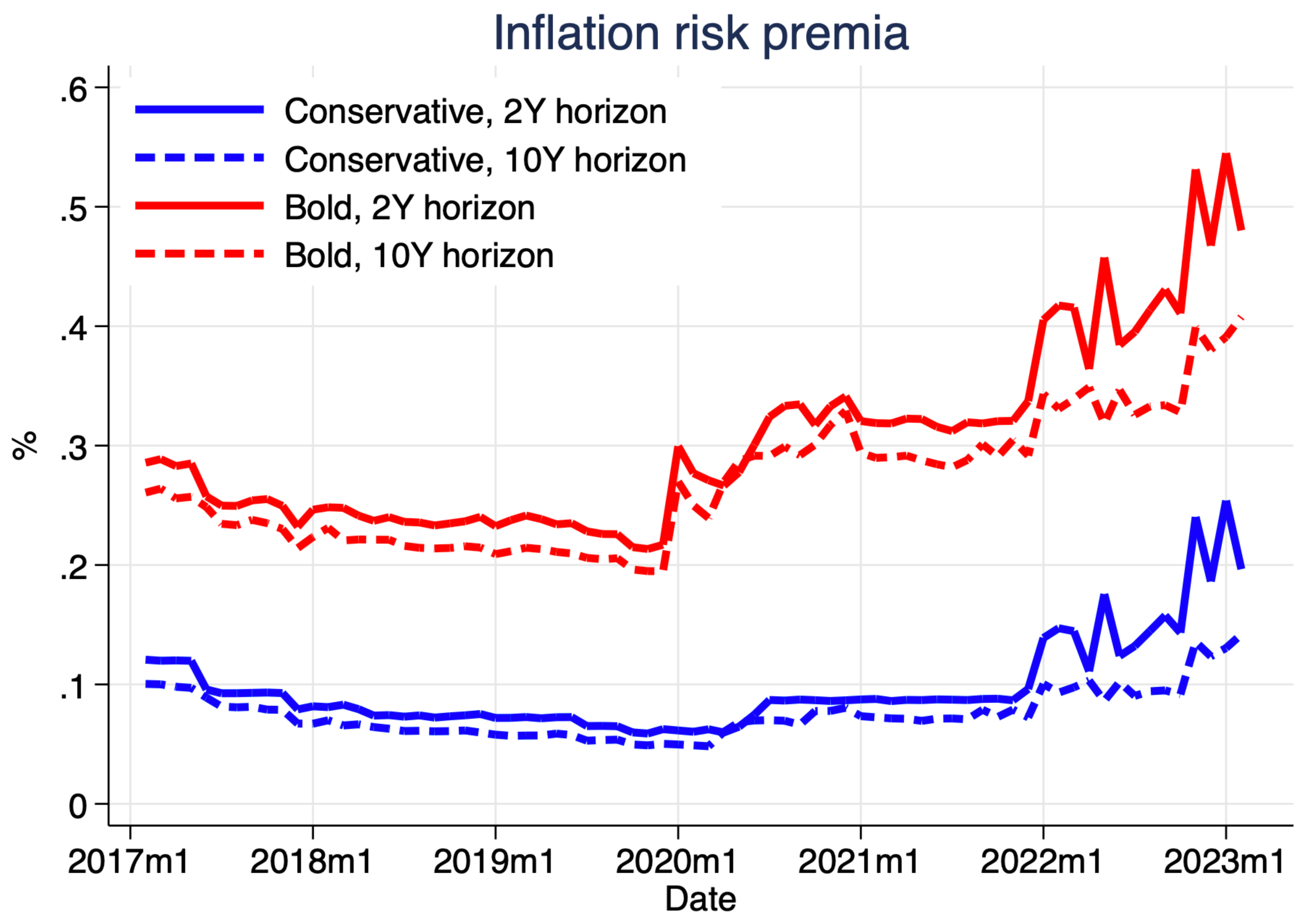
Right tail risk dominant force

Source: Hilscher, Raviv, Reis (2022) How Likely Is An Inflation Disaster?

Risk premia

$$\mathbb{E}_t\,\pi_{t+1} = \underbrace{\frac{R_{f,t}}{R_{\text{real},t}}}_{\text{breakeven inflation}} + \text{cov}_t^*\left(\pi_{t+1}, \frac{R_{t+1}}{R_{f,t}}\right)$$

$$\text{cov}_t^*\left(\pi_{t+1}, R_{t+1}/R_{f,t}\right) = \text{corr}_t^*\left(\pi_{t+1}, R_{t+1}/R_{f,t}\right)\sqrt{\text{var}_t^*\,\pi_{t+1}\,\text{var}_t^*(R_{t+1}/R_{f,t})}$$



Separating out the risk premia depends on your model of risk

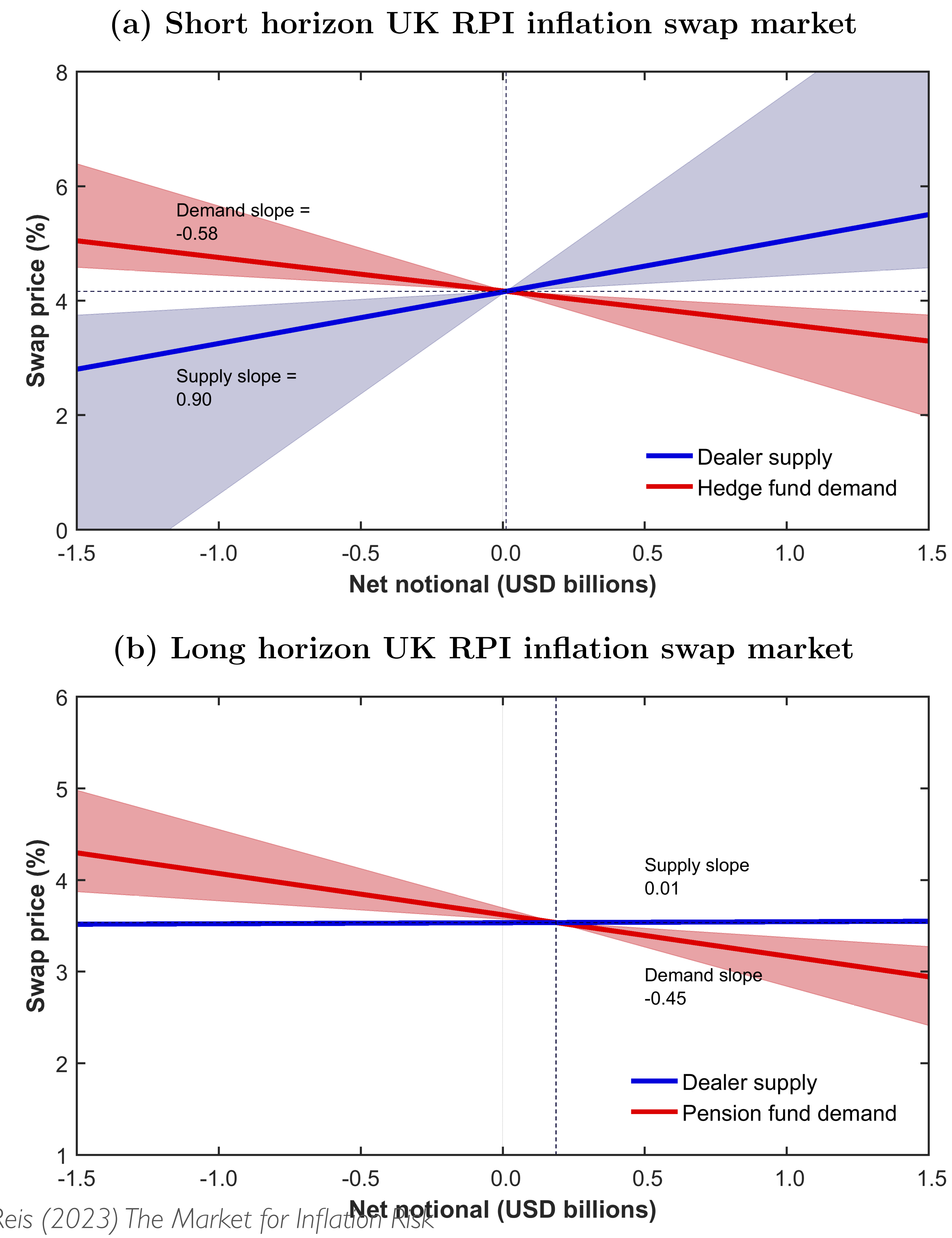
But can bound it. Because from the options know prices of pure inflation risk and of risk aversion

Higher by 0.1% to 0.25%

Source: Martin and Reis (in progress) Bounds on Inflation Risk Premia

Liquidity premia are large (UK data)

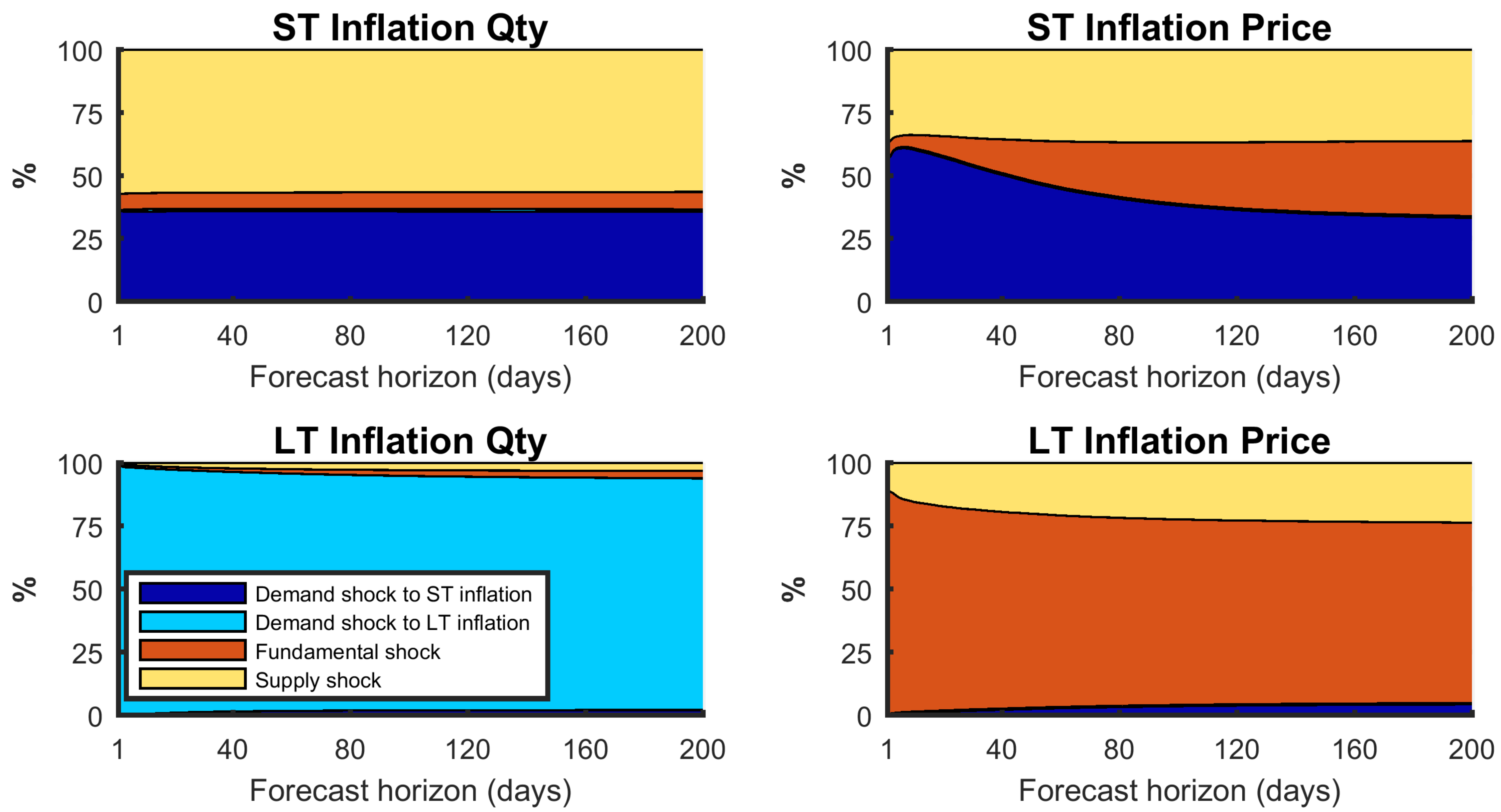
Figure 13 Estimated slopes of market demand and supply functions



Cannot take data at face value because supply and demand

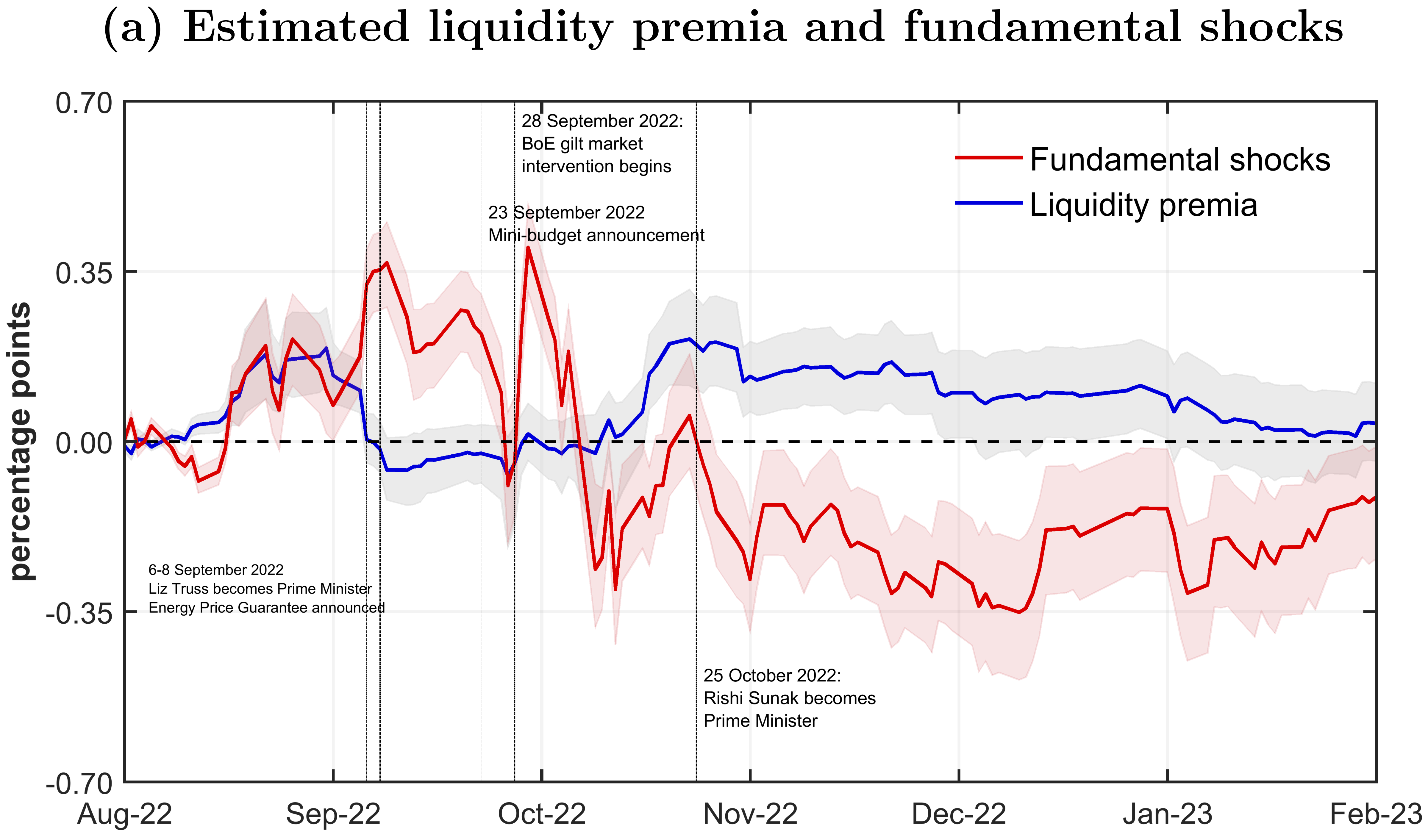
Especially true at shorter horizons

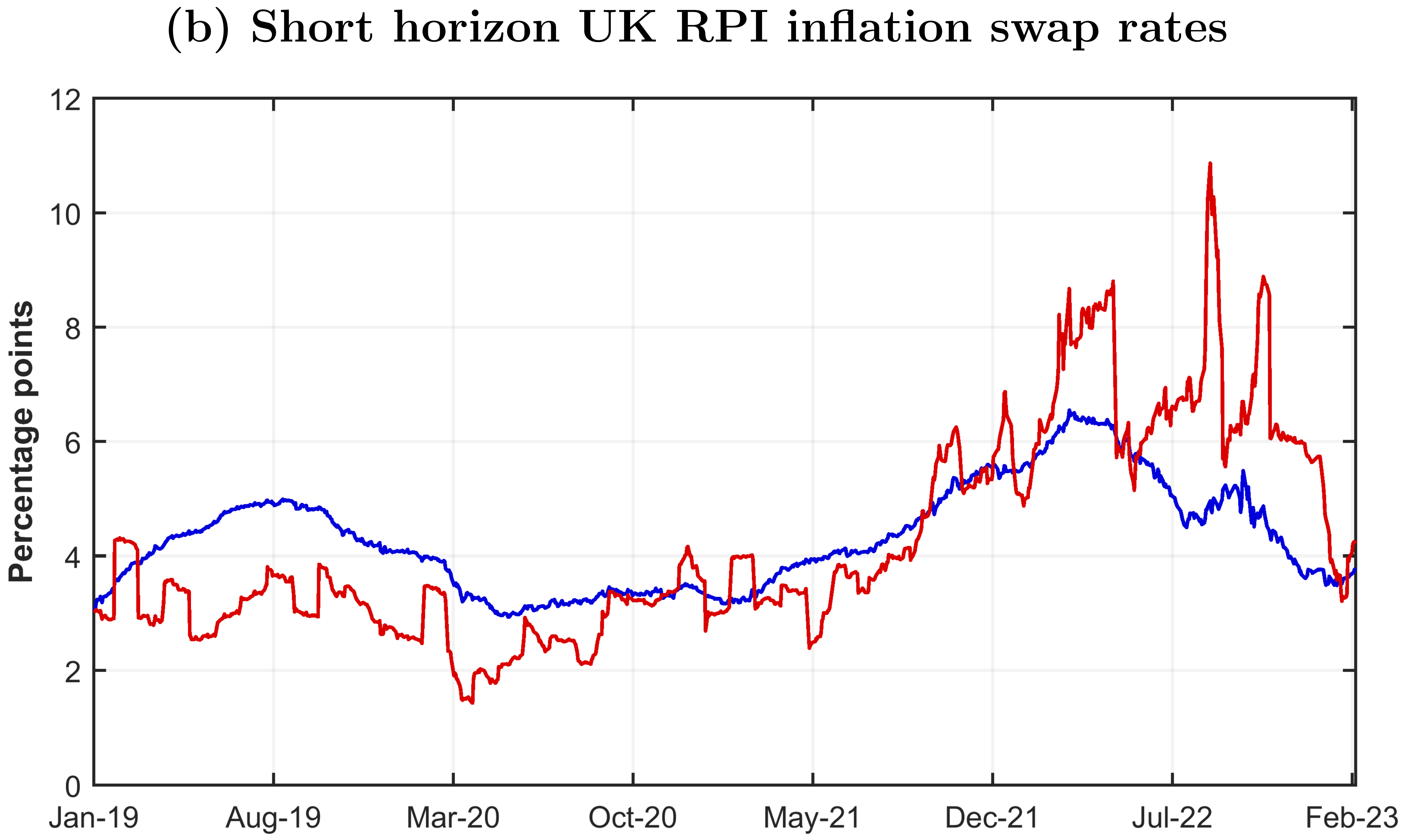
Figure 14 Forecast error variance decomposition



Source: Bahaj, Czech, Ding, Reis (2023) The Market for Inflation Risk

Liquidity premia and overshooting



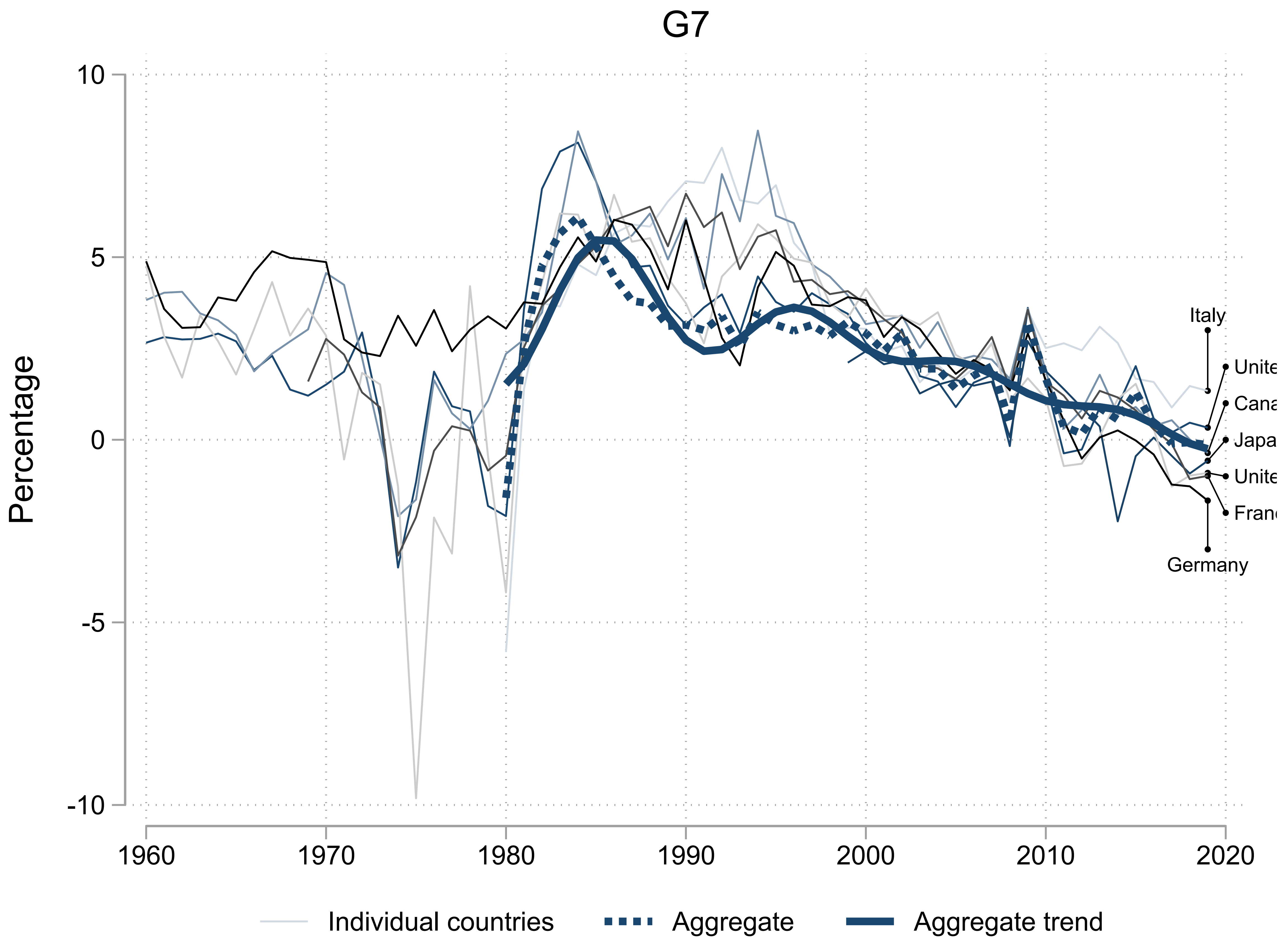


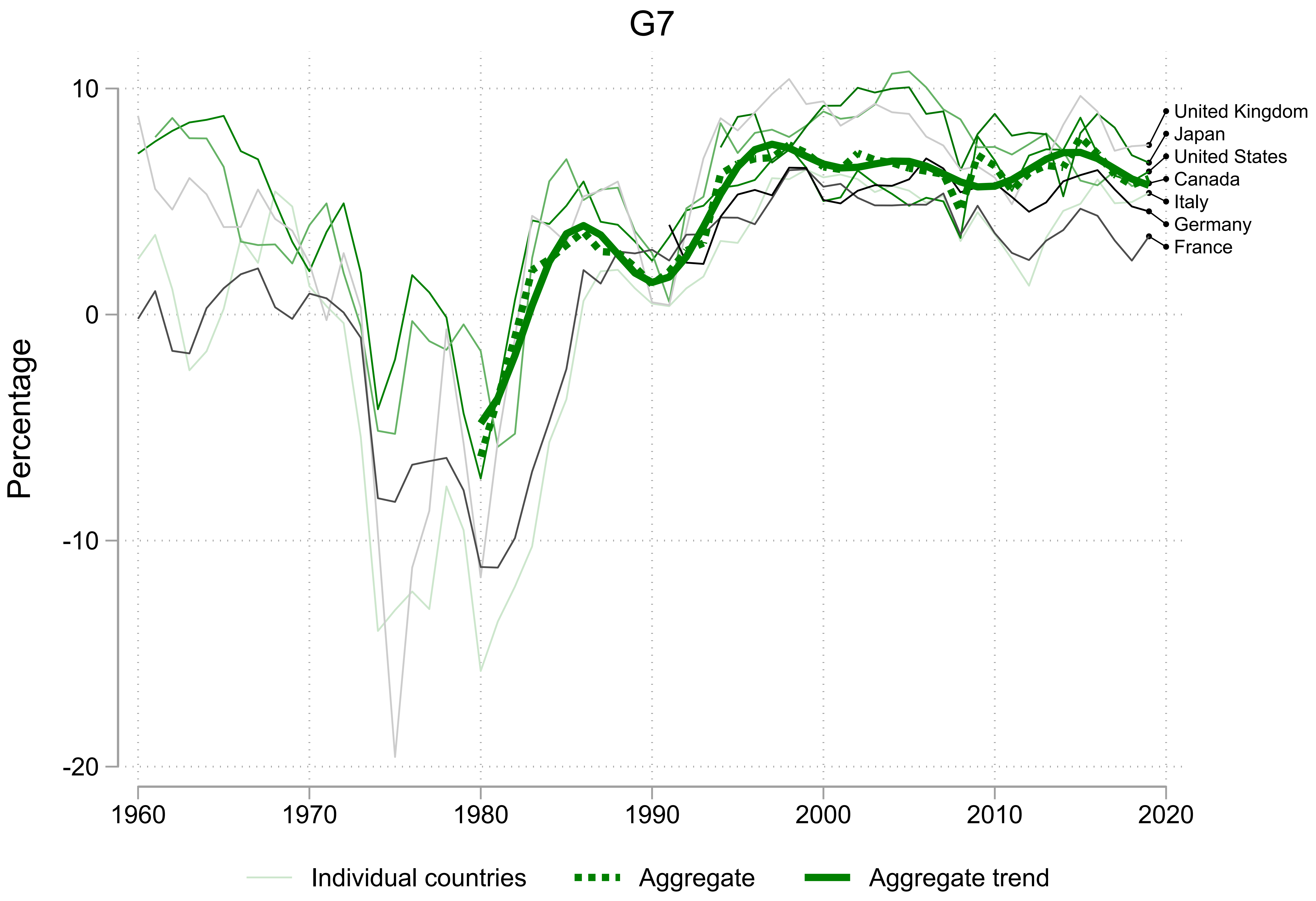
Autumn crisis in UK is a good illustration as it put stress on dealers

Identified using market segmentation between short and long horizon

Source: Bahaj, Czech, Ding, Reis (2023) The Market for Inflation Risk

The trend in r* was a trend in m*-r*



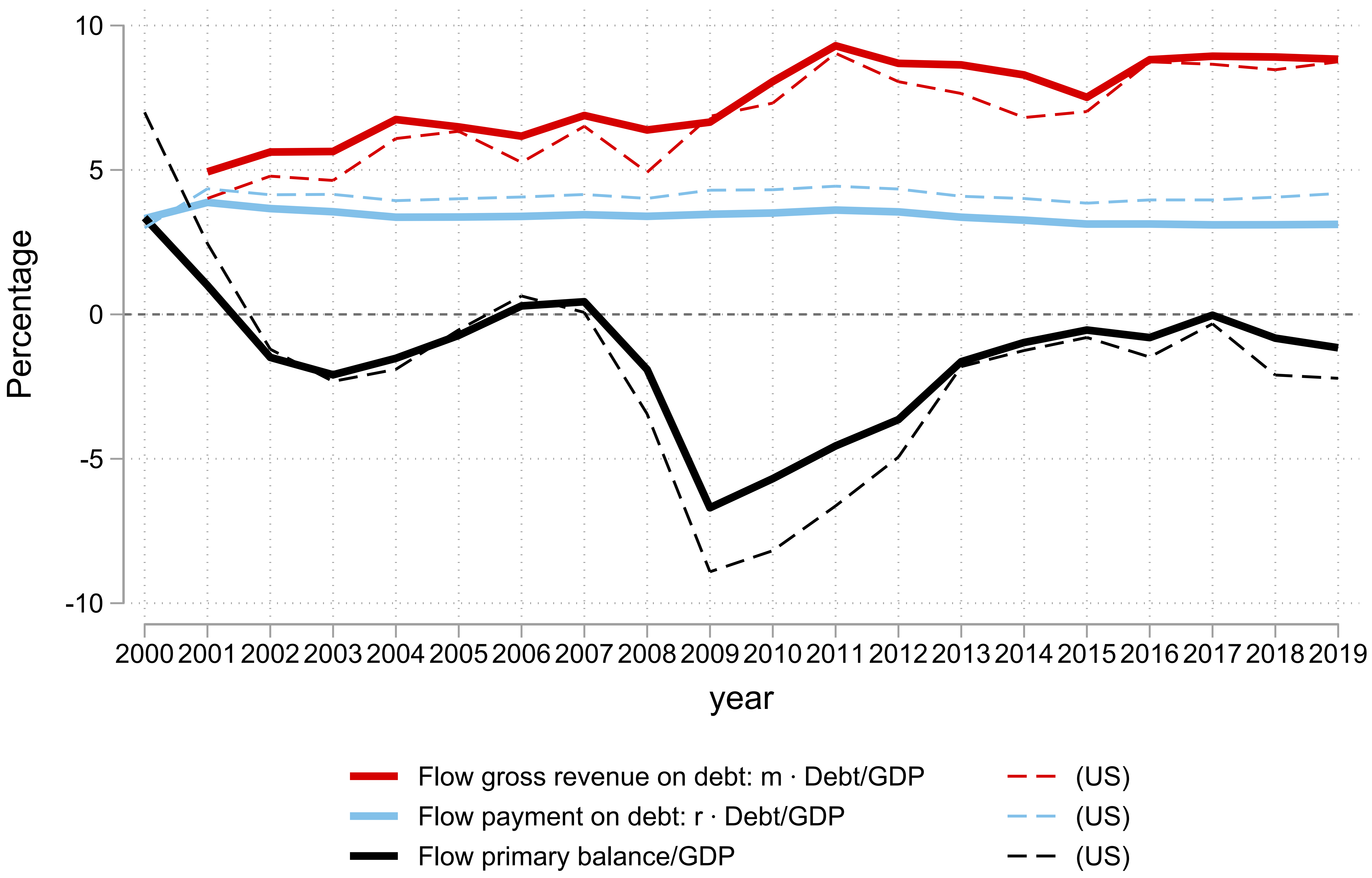


$$r^* = \frac{NOS}{p^k k} = \frac{py - wl - \delta p^k k}{p^k k}$$

Also see it in consumption wealth ratios, expected equity returns

Source: Reis (2022) Which r-star: public bonds or private investment

Who won and who lost? Government vs savers



Driven by an increase in

(i) geopolitics and the relative safety of government bonds,

(ii) post-GFC regulation and liquidity of government bonds,

(iii) safety and the great stagnation on private investment and austerity in public investment

Source: Reis (2022) Debt Revenue and Sustainability of Public Debt

But the new trends are:

(i) Geopolitics and the relative safety of government bonds,

Decline in savings from BRICS into Western government bonds

(ii) Post-GFC regulation and liquidity of government bonds,

Quantitative tightening, demographics starting to turn

(iii) Safety and the great stagnation on private investment and austerity in public investment

Large and ambitious public investments on both sides of the Atlantic

Starting to see concerns about sovereign debt crises given size of debt

Conclusion and monetary policy

What is the new Eurozone i*?

- Risk premium up by 0.10 - 0.25%
- Expected inflation up by 0.20 - 0.50%
- Return on government bonds up by 0.7 - 1.5%
- So between 1% - 2% higher.

Effects of high and volatile inflation

- Losers of tomorrow are winners of today: governments, pensions funds.
- Endogeneity: if ECB undertimates i*, set i low, make higher i* more likely.