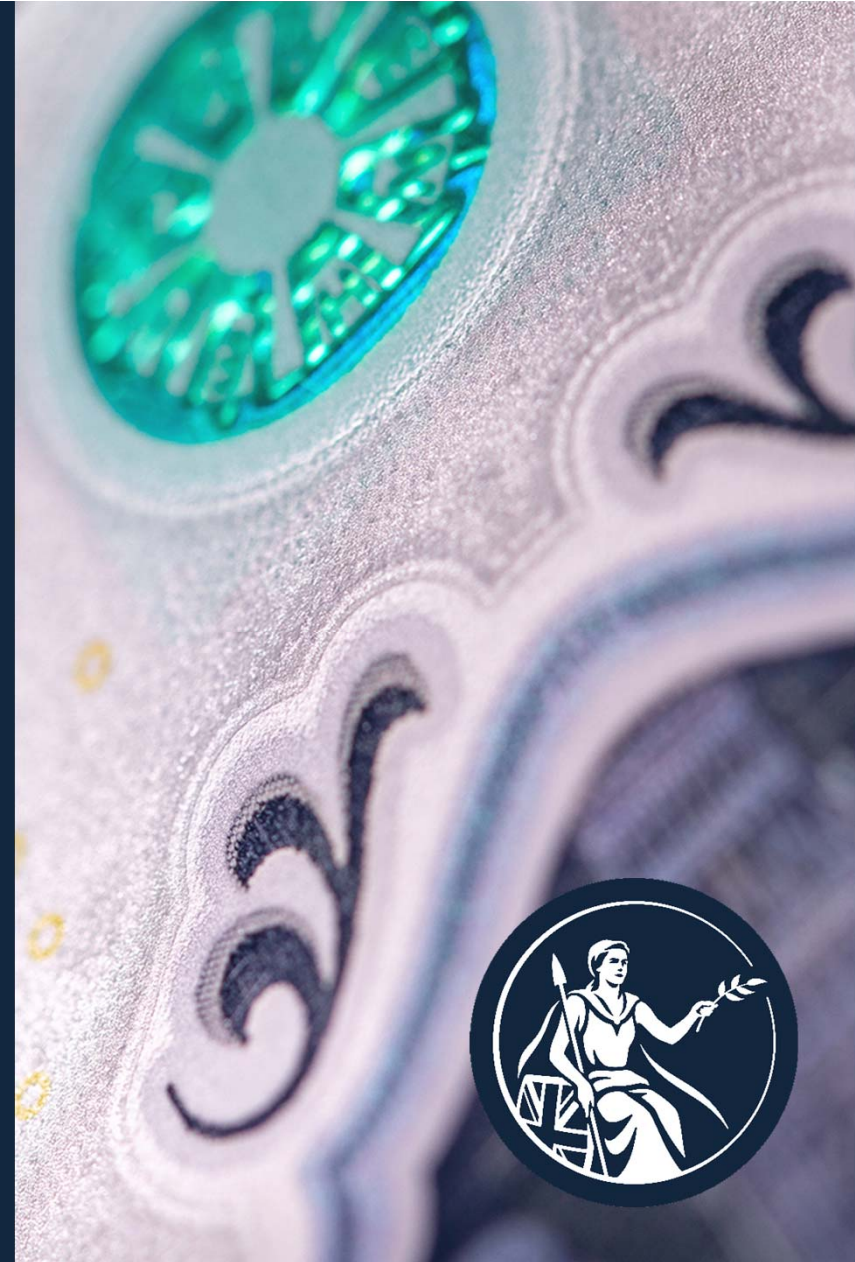**Bank of England**

Gauging (dis)inflationary pressures: comparing tools and current findings
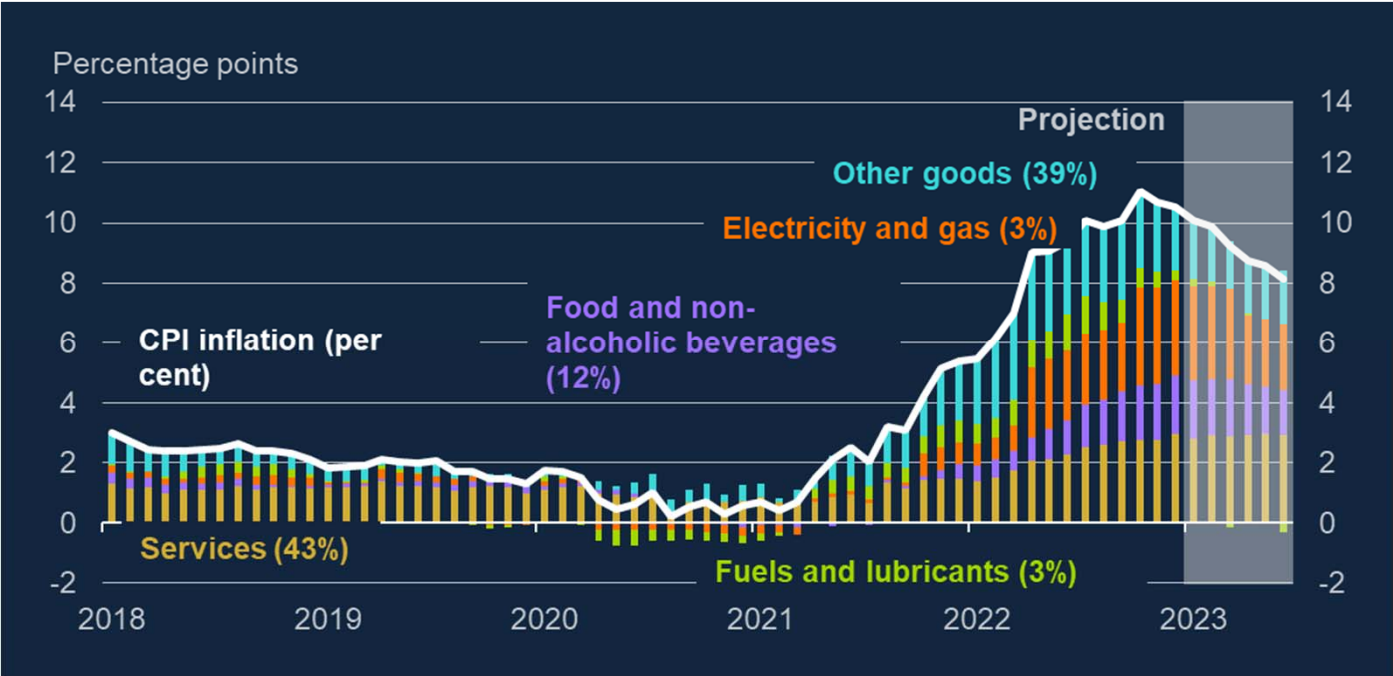
SUERF

February 2023

Emma Hatwell and Huw Pill
Monetary Analysis

Unobserved components (UC) models determine our bottom-up approach to short-term inflation forecasts

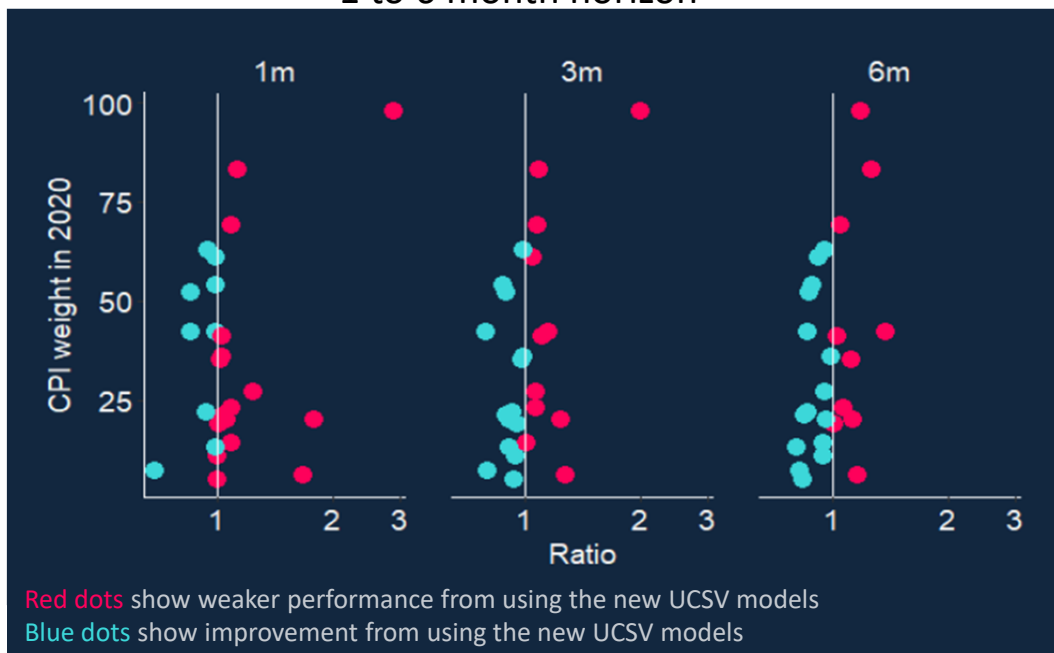CPI inflation rose to 11% in 2022 Q4, but is expected to fall back to 8% by 2023 Q2[1]

Sources: Bloomberg Finance L.P., Department for Business, Energy and Industrial Strategy, ONS and Bank calculations.

[1]Figures in parentheses are CPI basket weights in 2022. Data to December 2022. Bank staff projections from January to June 2023. Fuels and lubricants estimates use Department for Business, Energy and Industrial Strategy petrol price data for January 2023 and then are based on the sterling oil futures curve. Other goods is the difference between CPI inflation and the other contributions identified in the chart.

Utilise staff research to improve the accuracy of the models

1/3 to 2/3 of STIF components by weight were improved at the 1 to 6 month horizon[2,3]

Red dots show weaker performance from using the new UCSV models
Blue dots show improvement from using the new UCSV models

- UC model with stochastic volatility and automatic outlier adjustment
  - Stochastic volatility is useful as certain components experience periods of higher volatility
  - The outlier detection feature handles the one-off changes in volatility
  - The outlier detection feature is comparable to most recent developments in the literature during the Covid period that accounts for the fat-tails/ t-distribution

Sources: ONS and Bank calculations.

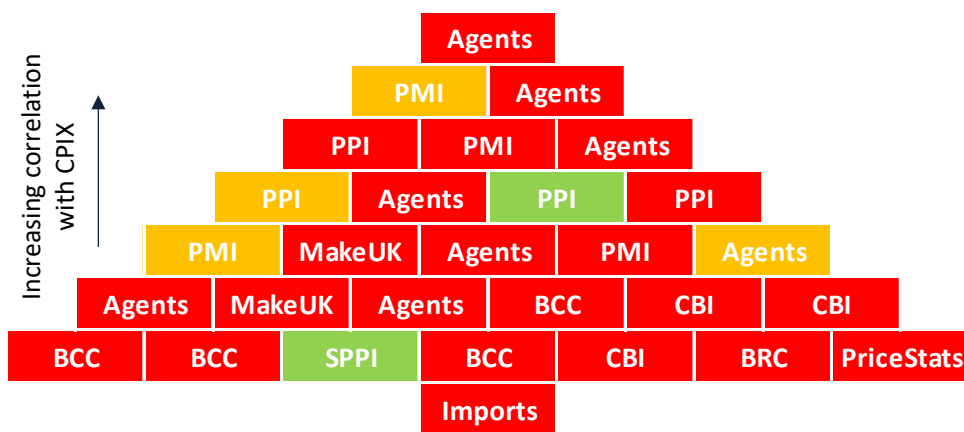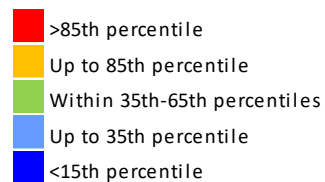[2] Component Level Short-Term Inflation Forecasting for the UK (Esady and Mate, mimeo)
[3] We exclude non-comparable components for our forecast comparison. These include petrol, utilities, education, financial services, other household goods and other household services. Actual STIF includes staff judgement which may have improved forecasting performance, so comparison not purely like-for-like

We use an indicator model as a top-down cross-check

We draw on a number of different indicators...

...which allow us to cross-check against our main forecast

Increasing correlation with CPIX →

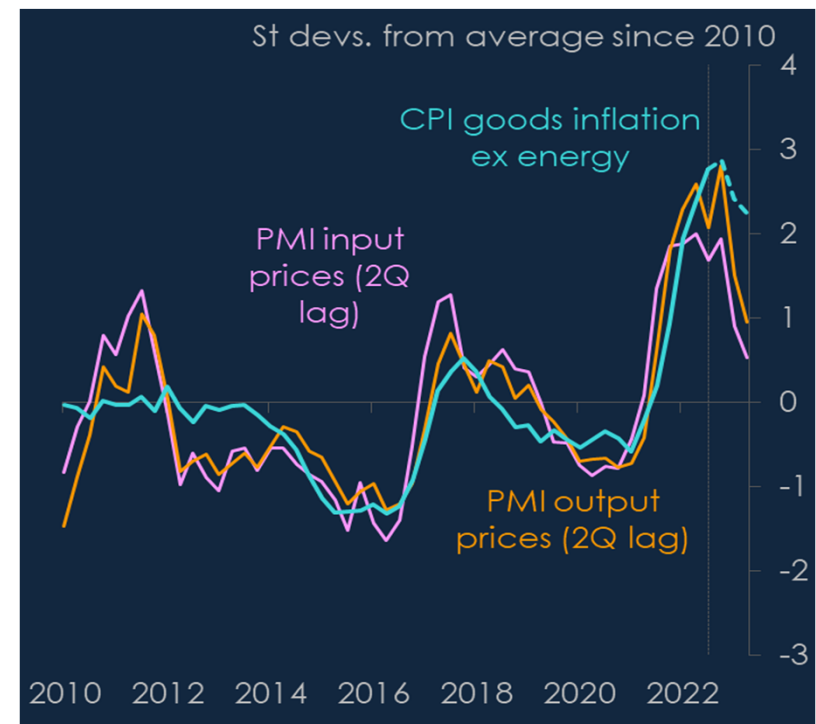|			Agents			
		PMI	Agents			
	PPI	PMI	Agents			
	PPI	Agents	PPI	PPI		
PMI	MakeUK	Agents	PMI	Agents		
Agents	MakeUK	Agents	BCC	CBI	CBI	
BCC	BCC	SPPI	BCC	CBI	BRC	PriceStats
		Imports				

Notes:
- *CPIX excludes energy, housing, education and financial services*
- *Text in squares indicates source of indicators; more than one indicator can be drawn from any single data source*

■ >85th percentile
■ Up to 85th percentile
■ Within 35th-65th percentiles
■ Up to 35th percentile
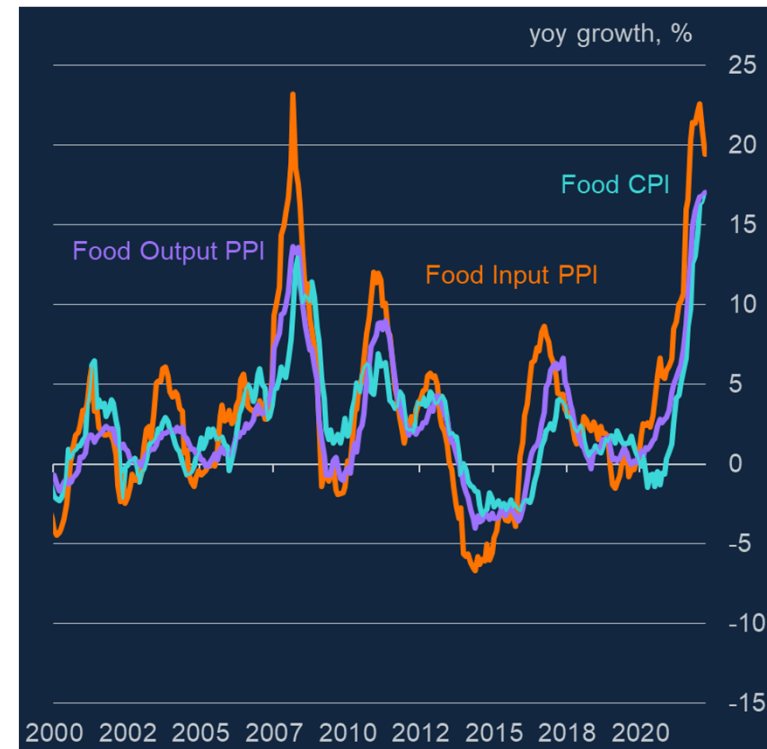■ <15th percentile

Sources: ONS, S&P Global/CIPS and Bank calculations.

Food price inflation has reached a 45-year high reflecting higher agricultural prices and producer input costs

Commodity prices and food PPIs remain elevated but are expected to slow

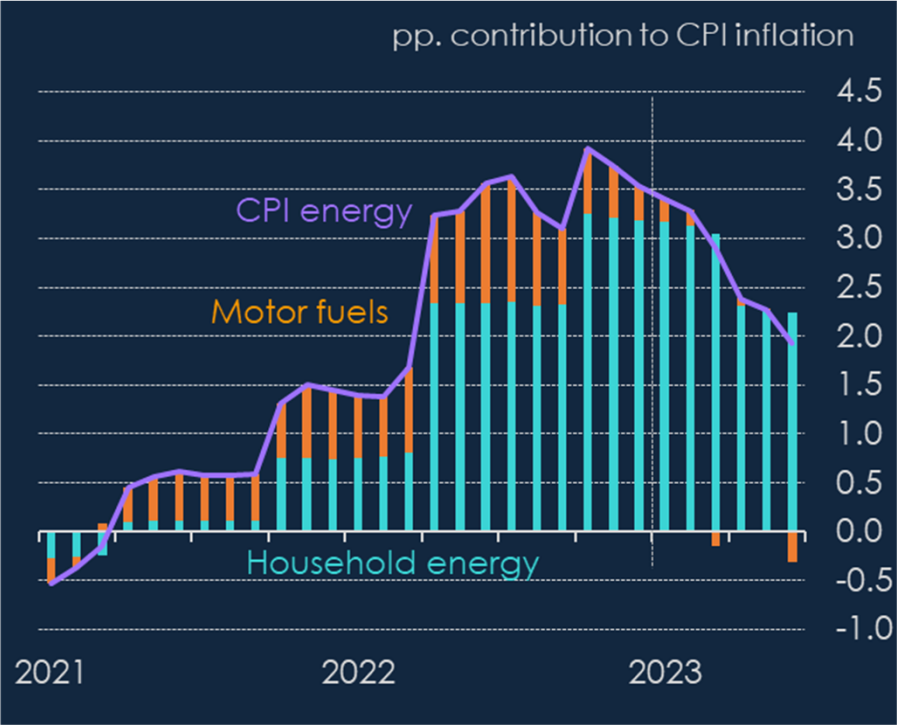Sources: S&P GSCI agriculture and livestock index spot and Bank Calculations.

Sources: ONS.

Energy prices have soared; we aim to capture both direct and indirect effects on CPI

Contributions from energy are expected to fall but remain high

As we also estimate the indirect effects of energy

pp. contribution to CPI inflation

- CPI energy
- Motor fuels
- Household energy

2021   2022   2023

4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0

Sources: Bloomberg Finance L.P., Department for Business, Energy and Industrial Strategy, ONS and Bank calculations.

Use Market curve for gas and oil to estimate coke and refined petroleum, electricity and gas price changes

No direct effect given price cap

Use I-O analysis to estimate indirect effects

CPA to COICOP converter CPI Weights

Convert into CPI

# We track measures of underlying inflation and higher frequency movements to assess the risk of inflation persistence

Underlying inflation model (UIM) captures
common movements between components[4]

High frequency measures help us to understand
changes in momentum

Sources: ONS and Bank calculations.
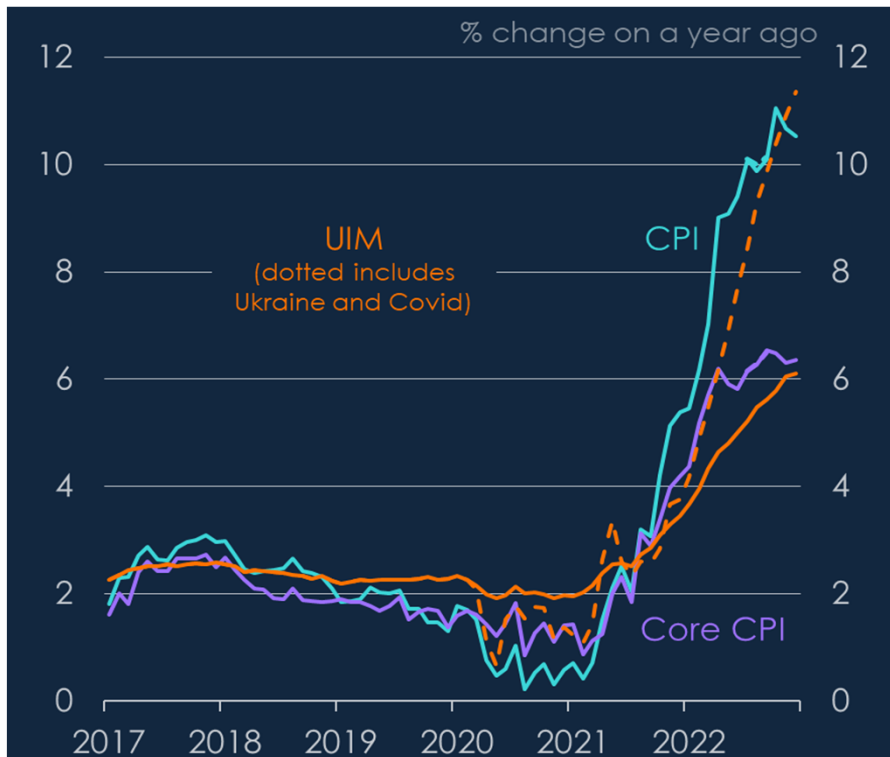
Sources: ONS and Bank calculations.

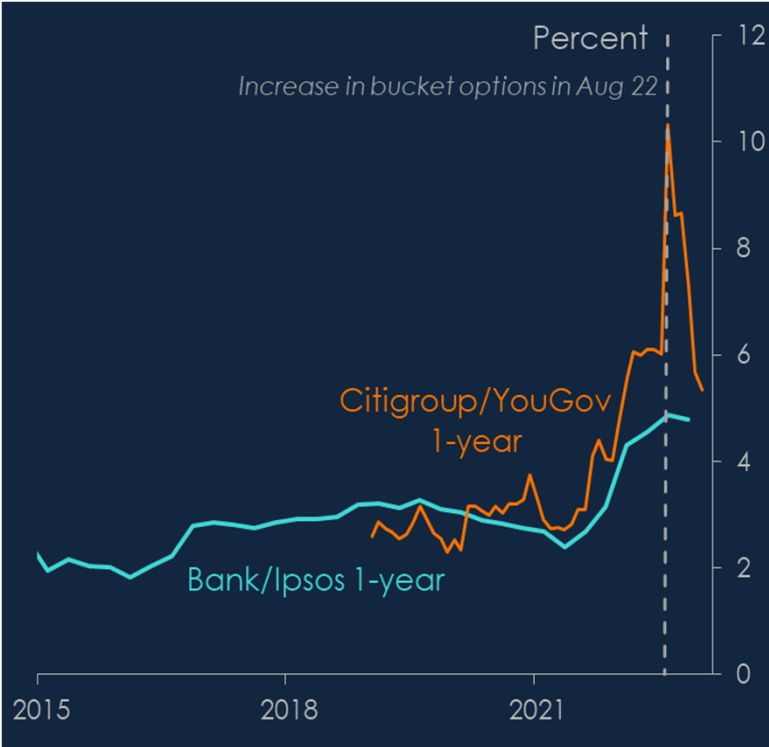[4]How broad-based is the increase in UK inflation? (G. Potjagailo, B.Wanengkirtyo and J. Lam, 2022) [link]
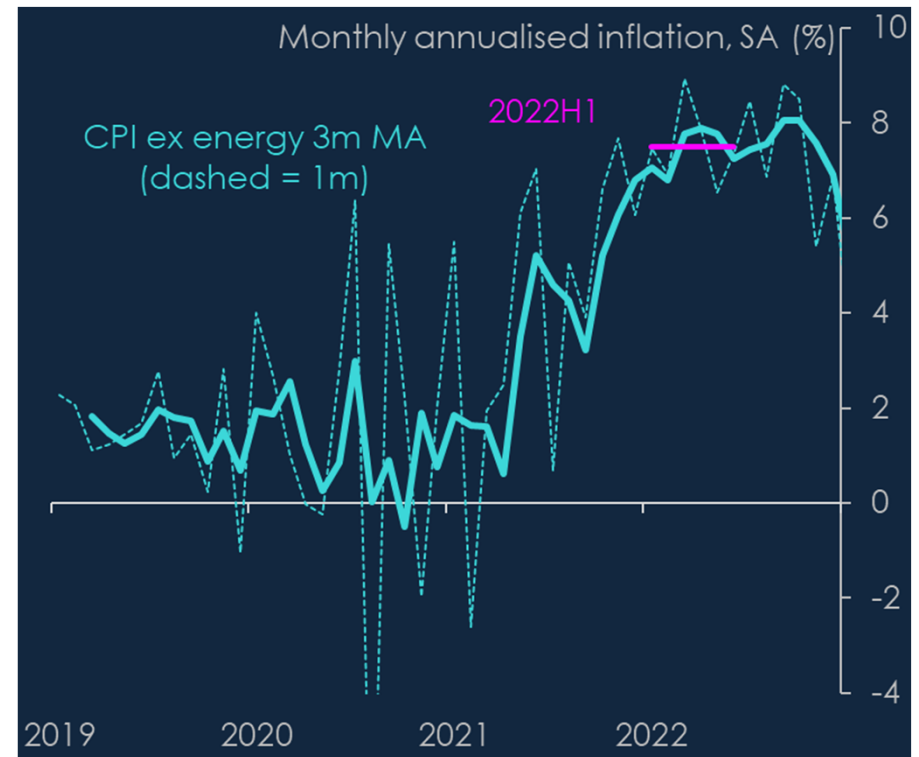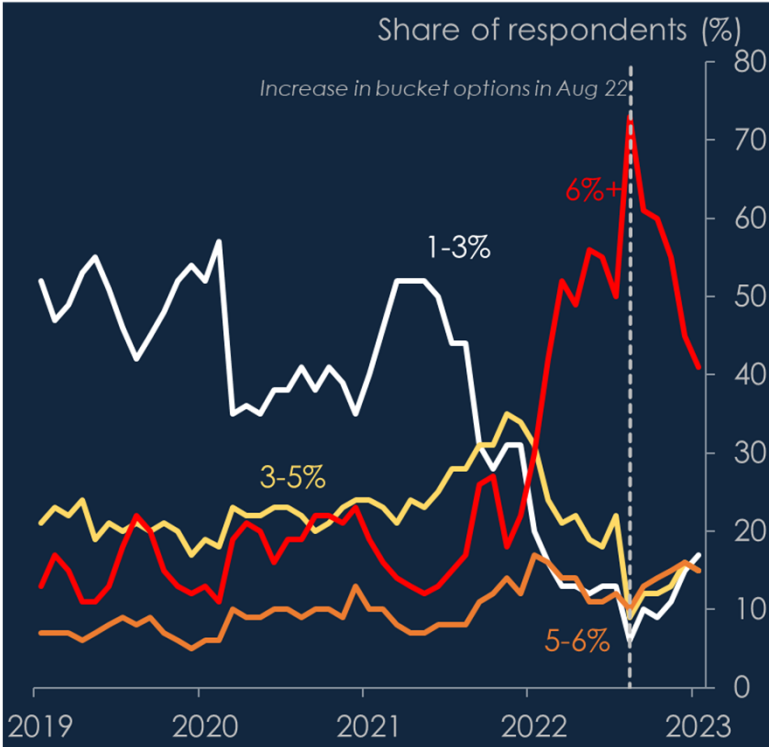
Households' inflation expectations have fallen, but remain elevated

Bank/Ipsos and Citigroup/YouGov one-year household inflation expectations

Sources: Inflation attitudes survey and Citigroup/YouGov and Bank calculations.
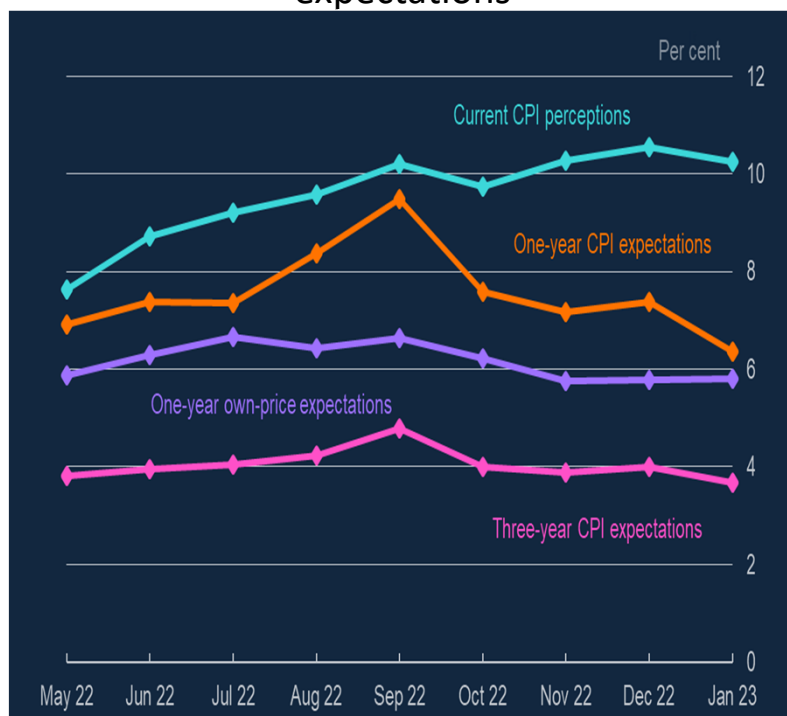
Citigroup/YouGov one-year ahead inflation expectations distribution

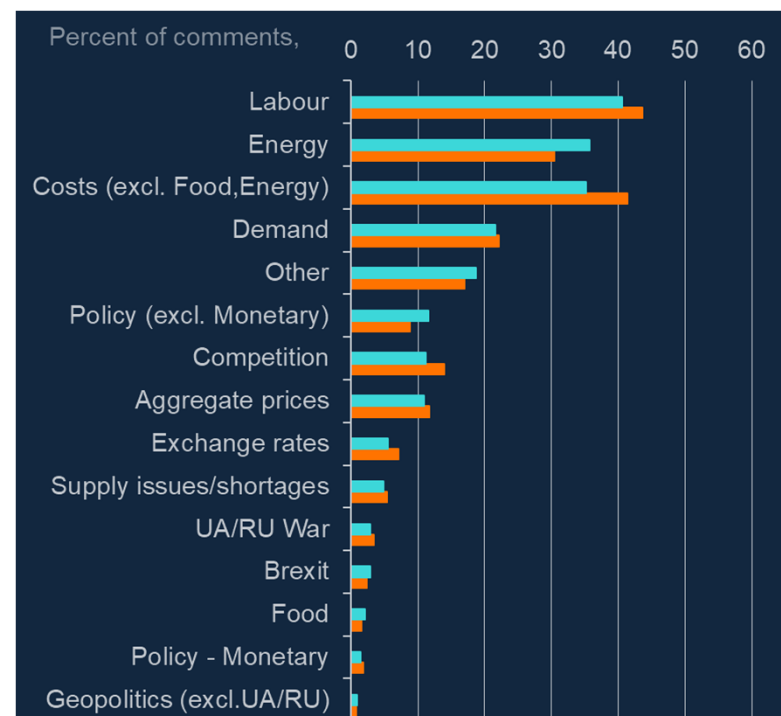Sources: Citigroup/YouGov and Bank calculations.

As DMP business inflation expectations also remain elevated

Decision Maker Panel CPI and own price expectations

Sources: DMP survey.

Decision Maker Panel text analysis[5,6]
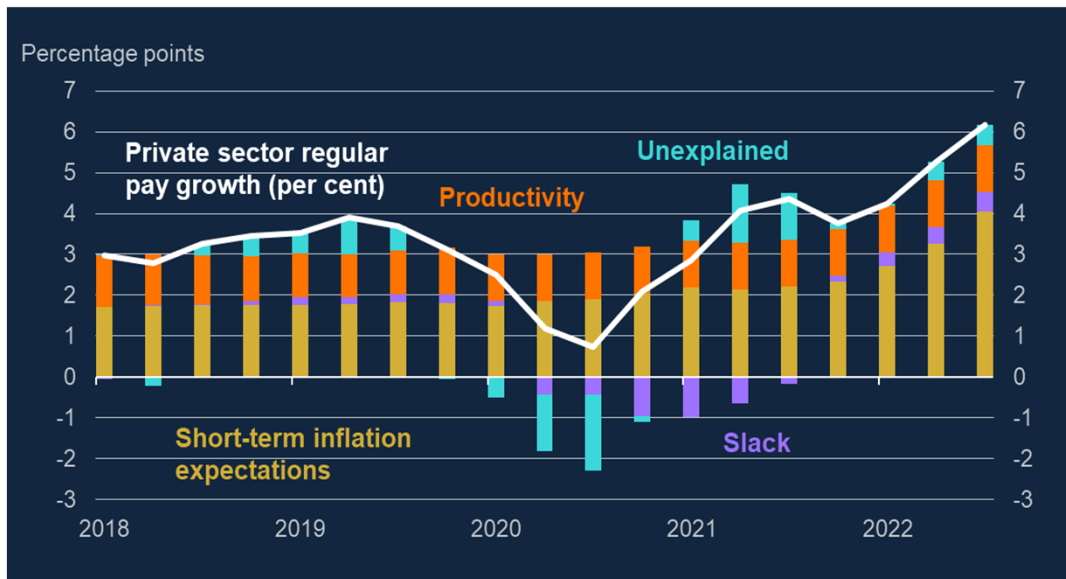

Sources: DMP survey and Bank calculations.

[5]Firm inflation expectations in quantitative and text data (G. Thwaites, I. Yotzov, Ö. Öztürk, P. Mizen, P. Bunn, N. Bloom, . Anayi, 2022) [link]
[6]Text analysis of reasons for firms' own price expectations in 12 months time, August to October DMP surveys. Data are for August-October 2022 period
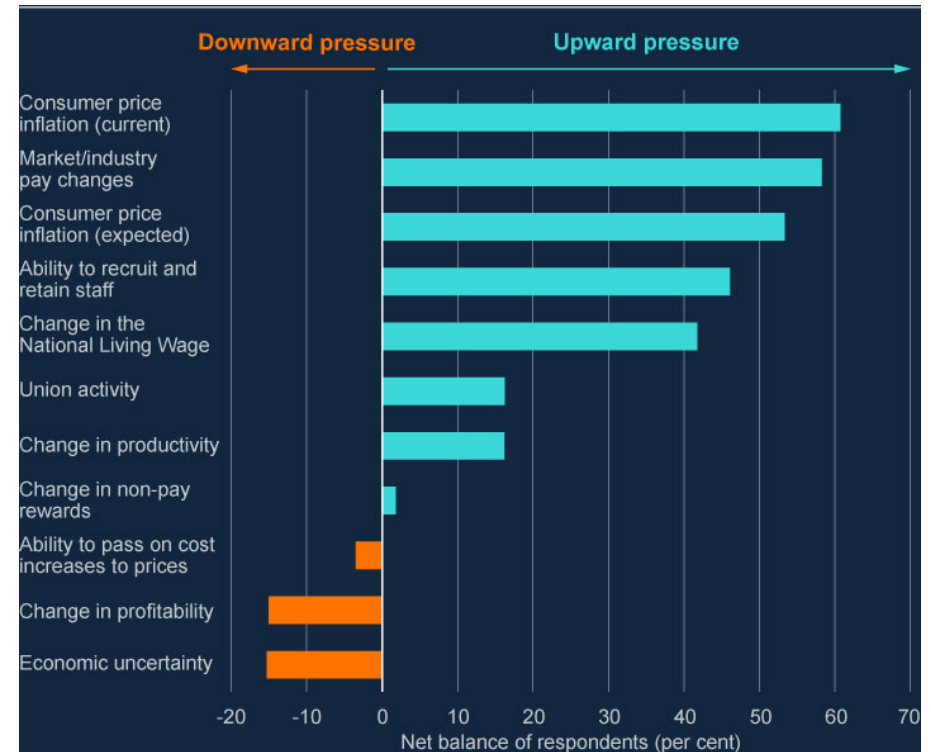
The high inflation environment is driving pay growth

Models show inflation expectations are the main contributor to pay growth…

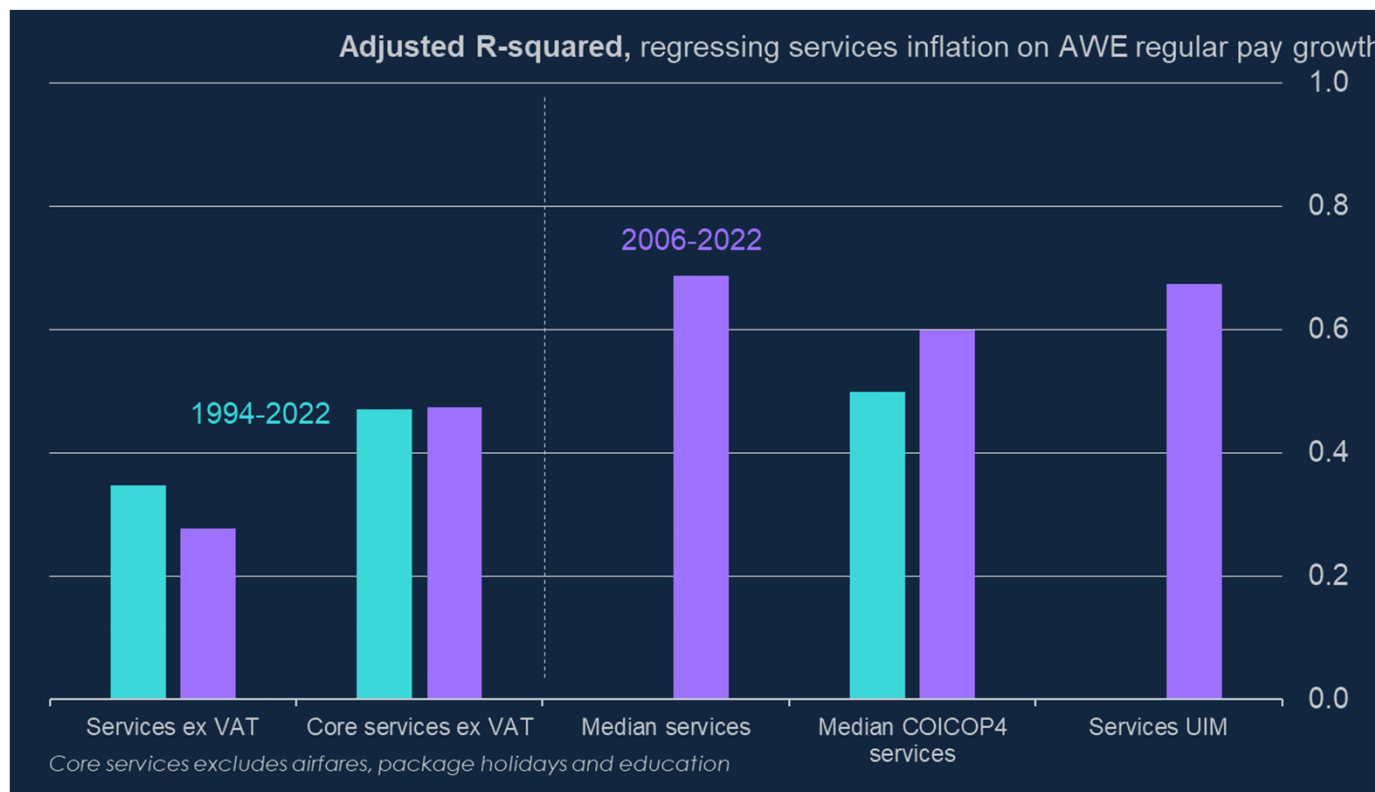…and results from our Agents' survey corroborate this story

Sources: ONS and Bank calculations.

Sources: DMP survey.

With pay contributing to underlying strength in services inflation

Median and underlying measures appear better correlated with pay than headline services

Sources: ONS and Bank calculations.