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Monthly Trend Inflation Measurement at Sectoral Level

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The inflation surge that began in 2021 ignited the debate about whether this rise is persistent or temporary and whether it is broad-based or sector specific. These questions play a critical role in how monetary policymakers control inflation. Our main contribution is on estimating monthly trend inflation, separating persistent inflationary trends from transitory fluctuations, focusing on UK CPI data at the aggregate and sectoral level.

Our methodology builds on the Stock and Watson (2016, 2020) unobserved components stochastic volatility and outlier-adjust (UCSVO) model in two keyways. One, we estimate monthly rather than quarterly trend inflation for UK CPI, which provides more timely insights. The trend component from our estimated model smooths out fluctuations caused by transitory or seasonal factors in the data, capturing inflation persistence. Allowing for stochastic volatility of the trend directly influences how inflation persistence evolves over time. The model also automatically adjusts for outliers – this is helpful for data that shows large, infrequent spikes in inflation, particularly in sectoral components. Two, where previous studies primarily estimate headline inflation, we extend our analysis using the full sectoral composition of the CPI basket. We develop a monthly multivariate UCSVO framework to analyse sectoral inflation dynamics, allowing us to differentiate between broad-based and sector-specific persistence.

We use UK CPI data from the Office for National Statistics, covering 85 sub-sectors from January 2000 to December 2023. Inflation is measured monthly in percentage points at an annualised rate. At the aggregate level, we examine headline inflation, goods and services inflation. At the sectoral level, we aggregate the 85 sub-sectors into 31 broader categories representing goods and services sectors.

First, our analysis reveals that, until 2021, UK headline inflation remained stable around the 2% target with low volatility. After 2021, inflation grew increasingly persistent as significant shocks and heightened trend stochastic volatility shaped its trajectory, while transitory shocks amplified fluctuations. Aggregate goods inflation surged in late 2020, exhibiting higher trend volatility and greater persistence before declining in 2023. In contrast, aggregate services inflation stayed stable, rising only from 2021 with lower trend volatility, which indicates that inflation persistence in services remains moderate and more gradual compared to goods. Furthermore, one of our key contributions

to the existing literature is by incorporating a monthly seasonal component into the UCSVO model, representing a significant advancement in the accurate capture and analysis of inflation dynamics. This feature of the model shows to be particularly important across CPI sectors as the seasonality patterns exhibit substantial variation over time.

Second, using the multivariate model, we find that broad-based price changes across sectors facing economy-wide shocks largely drive the persistence in aggregate trend inflation. In the recent period, macroeconomic shocks have primarily influenced goods inflation, while some sector-specific shocks have affected services. However, when assessing the persistence of inflation in goods and services, we observe that the common component of the trend exerts greater influence on goods inflation, whereas the unique component of the trend, representing sector-specific price movements, plays a larger role in driving inflation persistence in services. The multivariate approach improves accuracy in identifying underlying inflationary pressures across sectors, by 50% in comparison the univariate model, and strengthens the understanding of inflation trends and their macroeconomic drivers.

Gaining better understanding of sectoral inflation dynamics helps policymakers make more informed judgments when forecasting inflation and setting monetary policy (Mann, 2024). Our results from the UCSVO model enable policymakers to assess underlying trend inflation and distinguish between persistent and transitory shocks driving headline inflation. Using the same model, our individual sectoral estimates of inflation trends and stochastic volatilities across 31 sectors offer valuable insights into headline CPI movements, clarifying the distinct dynamics of goods and services sectors inflation. Furthermore, the multivariate model, which incorporates sectoral dynamics, provides critical insights into the drivers of inflation persistence by differentiating between broad-based and sector-specific factors. This approach helps policymakers determine whether economy-wide shocks or sector-specific pressures drive inflation, allowing central banks to refine their monetary policy strategies for more targeted and effective responses to inflationary pressures.