Bank of England

Inflation thresholds and oil shock transmission in the UK: a self-exciting threshold VAR approach

Macro Technical Paper No. 8

July 2026

Andrew Gaffney, Katerina Petrova, Galina Potjagailo and Andrea Sisko

A series designed to document models, analysis and conceptual frameworks for monetary policy preparation – they are written by Bank staff to encourage feedback and foster continued model development.

Macro Technical Paper Series

Dr Bernanke's 2024 **Review** of the monetary policymaking processes at the Bank of England provided a number of constructive recommendations for reform which we are taking forward.

This included improving our model maintenance and development. Macroeconomic models and frameworks play an important role in the monetary policy process. To maximise the value of macroeconomic models, they must be well documented and continuously improved as time goes on.

This Macro Technical Paper (MTP) series is part of the Bank's response to Dr Bernanke's recommendations. These MTPs are authored by Bank staff, and are intended to document models, analysis, and conceptual frameworks that underpin monetary policy preparation. The models documented in the series will typically be used to assess the current state of the economy, forecast its future, and to simulate alternative paths and policy responses.

Importantly, while each MTP will provide insights about a particular model or modelling framework that is an 'input' to policy, no single model can possibly capture all the relevant features to perform even just one of those roles adequately. Models will inevitably have to be updated and will improve over time, including as they are adapted to different constellations of macroeconomic conditions. This is a natural part of real-time monetary policy making. So, inevitably, no MTP will provide definitive answers.

The Bank seeks to encourage an active and informed debate about its modelling frameworks. Publishing and discussing the analytical work undertaken to support its monetary policy choices is central to this ambition. These MTPs will support a culture of continuous learning in monetary policy making. As time goes on, Bank staff will update and upgrade models, drawing on insights from the frontier of the academic literature. Moreover, this transparency will encourage external engagement from experts to ensure our modelling tools remain fit for purpose.

Clare Lombardelli
Deputy Governor for Monetary Policy

Bank of England

Macro Technical Paper No. 8

Inflation thresholds and oil shock transmission in the UK: a self-exciting threshold VAR approach

Andrew Gaffney,[1] Katerina Petrova,[2] Galina Potjagailo[3] and Andrea Sisko[4]

Abstract

This paper identifies inflation thresholds and analyses state-dependent inflation dynamics in the UK using a Self-Exciting Threshold Vector Autoregression (SET-VAR). The model combines endogenous threshold estimation with regime-dependent shock transmission, providing a tractable tool for analysing non-linear inflation dynamics. We illustrate how the approach can be used to analyse the transmission of global oil supply shocks and conduct counterfactual simulations to quantify the role of expectations in amplifying inflationary effects. Further, within each identified inflation regime, we examine how shock transmission differs between periods of tight and slack labour markets. Using monthly UK data, we find that inflation dynamics change once year-on-year CPI inflation rises above thresholds of around 3.1% and 3.5% in samples beginning in 1989 and 1976, respectively. Oil price increases generated by adverse global oil supply news shocks have substantially larger and more persistent effects on UK CPI inflation in high-inflation regimes. Counterfactual analysis indicates that much of this amplification reflects second-round effects operating through household inflation expectations, with amplification strongest when elevated inflation coincides with tight labour markets.

Key words: Inflation, regime dependence, oil shocks, expectations.

JEL classification: E31, E37, C14, C53.

---

(1) Reserve Bank of Australia. Email: gaffneya@rba.gov.au. Andrew worked on this paper while employed at the Bank of England
(2) Ca' Foscari University. Email: katerina.st.petrova@gmail.com
(3) Bank of England. Email: galina.potjagailo@bankofengland.co.uk. Corresponding author.
(4) Bank of England. Email: andrea.sisko@bankofengland.co.uk

We are grateful for valuable comments and suggestions by Dario Bonciani, Robin Braun, Derrick Kanngiesser, Simon Lloyd, Andre Moreira, Adrian Paul, Sumer Singh, Ryland Thomas, Boromeus Wanengkirtyo, Tim Willems, Benjamin Wong, Jan Zacek, and internal seminar participants at the Bank of England. The views expressed in this paper are those of the authors and do not necessarily represent those of the Bank of England or any of its committees, nor of the Reserve Bank of Australia.

The Bank's macro technical paper series can be found at
www.bankofengland.co.uk/macro-technical-paper/macro-technical-papers

Bank of England, Threadneedle Street, London, EC2R 8AH
Email: enquiries@bankofengland.co.uk

ISSN 2978-3194 (online)

1 Introduction

While linear models provide useful and tractable benchmarks for monetary policy analysis, recent experience suggests that the effects of shocks can be state dependent. The inflation surge of 2022–23 provided a clear illustration. Sharp increases in energy prices following the pandemic and Russia's invasion of Ukraine were associated with much larger and more persistent inflationary effects than similar shocks observed during earlier periods of low and stable inflation. The combination of elevated inflation, more responsive inflation expectations, and exceptionally tight labour markets raises the possibility that inflation dynamics change during high-inflation regimes. Specifically, recent literature suggests that inflation dynamics change once inflation rises above certain thresholds (Pfäuti, 2026), and that non-linearities with regard to tight labour markets have mattered in the recent inflation episode (Bernanke and Blanchard, 2025).

For policymakers, this poses a practical question: how does the transmission of external inflationary shocks vary across inflation and labour market regimes, and what does this imply for inflation persistence and second-round effects? Addressing this question requires modelling tools that capture non-linear dynamics.

UK inflation threshold estimation and regime-dependent shock transmission. In this paper, we apply and extend the Self-Exciting Threshold Bayesian Vector Autoregression (SET-VAR) model of Gargiulo et al. (2026) to estimate UK inflation thresholds endogenously and capture dynamics that vary across high- and low-inflation regimes in a tractable way. The model uses a piecewise-linear specification, allowing relationships between variables to change once inflation crosses the estimated threshold while preserving the simplicity of a linear VAR within each regime.

For our application for the UK, we estimate a range of specifications estimated with monthly data over samples beginning in either 1989 or 1976. We rely on the oil supply news shock series of Känzig (2021) as an internal instrument for oil price changes due to supply news in global energy prices. We also incorporate survey measures of household inflation expectations and use counterfactual simulations, in which expectations are held fixed, to quantify the role of expectations in generating second-round effects that amplify inflation beyond the direct effects of the shock. An extended specification further distinguishes between periods of tight and slack labour markets, yielding four inflation–labour market regimes.

Our analysis delivers three main findings. First, inflation thresholds emerge consistently across specifications. In around two thirds of estimated models, the threshold separating low- and high-inflation regimes lies between 3% and 4%, with median estimates of 3.1% in post-1989 samples and 3.5% in samples extending back to the 1970s. These thresholds are estimated from the data jointly with the model and provide a useful benchmark for identifying periods characterised by different inflation dynamics.

Second, oil supply shocks have substantially larger and more persistent effects on inflation when inflation is above the estimated threshold. For example, a shock that raises oil prices by 10% increases UK CPI inflation by more than twice as much in high-inflation regimes as in low-inflation regimes. Counterfactual simulations indicate that much of this amplification reflects stronger second-round effects operating through more responsive household inflation expectations in the high-inflation regime. When expectations are held fixed, inflation responses become considerably more similar across regimes.

Third, inflation and labour market conditions interact in shaping the transmission of shocks. The strongest amplification occurs when elevated inflation coincides with tight labour markets. By contrast, periods characterised by high inflation but slack labour markets exhibit much weaker responses of both inflation and household inflation expectations. These findings suggest that labour market conditions alone cannot fully account for the stronger transmission observed in high-inflation environments. Rather, differences in the responsiveness of household inflation expectations appear to provide an important additional amplification channel.

Uses in practice. The SET-VAR has had a range of practical applications in assessing non-linear inflation dynamics at the Bank of England and has continued to evolve over successive policy rounds (Bank of England, 2025, 2026).

Specifically, it has provided policymakers and staff with estimates of threshold levels for CPI inflation (Pill, 2025; Greene, 2025; Mann, 2026), as well as a broader set of nominal indicators (Greene, 2026), above which inflation dynamics change. The generalised impulse responses quantify how global shocks propagate to UK inflation across the identified inflation regimes (Mann, 2025). More recently, our extension of the framework to four regimes, distinguishing not only between low- and high-inflation regimes but also between slack and tight labour markets, has informed a more nuanced assessment of state dependence by helping assess how the inflationary effects of the 2026 global oil price shock may differ from those observed during the exceptionally tight labour market conditions of 2022–23 (Bank of England, 2026).

The counterfactual simulations further isolate the contribution of specific propagation channels, in particular the role of household inflation expectations in amplifying the initial effects of shocks and generating second-round effects. This is a key policy question, given the need to assess whether greater inflation attentiveness among UK households and firms may lead to stronger second-round effects following repeated global supply shocks (Greene, 2026). Finally, the SET-VAR has served as a cross-check in Bank staff's forecast and scenario analysis by comparing how a given shock propagates under alternative inflation and labour market conditions and against scenario paths generated by other models. Future work could also explore its use in forecasting exercises.

We primarily use the model to analyse the transmission of global oil supply shocks, which are particularly relevant for the UK economy given its openness and the prominent role of recent energy price shocks. We have also explored the propagation of other global shocks, such as the global activity shock of Baumeister and Hamilton (2019). More generally, the model is readily applicable to other disturbances; for example, Gargiulo et al. (2026) study the transmission of US monetary policy shocks. And beyond inflation dynamics, the SET-VAR approach is more generally applicable to empirical questions in which the transmission of shocks may depend on the prevailing state of the economy.

A practical limitation is that reliable threshold estimation requires sufficiently long historical time series to ensure an adequate number of observations within each regime. The historical data extensions developed in this paper, together with externally identified oil supply shock series spanning several decades, make such analysis feasible for the UK and illustrate the data requirements for applying the model more broadly.

Related literature. The analysis is motivated by a growing literature suggesting that inflation may behave differently once it rises sufficiently above the central bank's target. A central mechanism proposed in this literature is inflation attentiveness. When inflation is low and stable, households and firms may rationally devote relatively little attention to inflation because the benefits of closely monitoring inflation developments are limited (Maćkowiak and Wiederholt, 2009; Maćkowiak et al., 2023). In such environments, inflation expectations tend to respond only weakly to incoming inflation news, limiting the scope for second-round effects. However, periods of persistently elevated inflation may induce agents to pay closer attention to inflation developments, making expectations more responsive to both realised inflation and inflationary shocks.

Recent empirical evidence suggests that such shifts in attentiveness may occur once inflation exceeds identifiable thresholds. Using measures based on the responsiveness of expectations to forecast errors and inflation-related search behaviour, Pfäuti (2026) finds evidence of a threshold near 3.9% for US PCE inflation since the early 1980s. Above this threshold, households appear to enter a high-attentiveness regime, updating their inflation expectations more strongly in response to realised inflation deviating from prior expectations. Similarly, using inflation-related search behaviour and social media mentions as measures of attentiveness, Korenok et al. (2026) estimate thresholds across a range of countries using a more recent sample beginning in the early 2000s. They find thresholds slightly above 2% for both the UK and the average country in their sample, although estimates vary across countries. These findings suggest that the relationship between inflation, expectations, and subsequent inflation dynamics may change once inflation rises beyond certain levels, providing an empirical motivation for estimating inflation thresholds endogenously.

Beyond inflation attentiveness, several additional mechanisms may reinforce threshold behaviour. Elevated inflation can increase the salience of price changes, making inflation expectations more responsive to incoming inflation news, particularly when shocks affect highly visible items such as food and energy prices (Anesti et al., 2025; Weber et al., 2025). At the same time, firms' pricing behaviour may become increasingly non-linear as cost shocks become larger, reflecting more frequent price adjustment and state-dependent pricing (Cavallo et al., 2024; Ascari and Haber, 2022; Blanco et al., 2024). Consistent with these mechanisms, recent evidence for the UK documents more convex pricing behaviour during the post-pandemic inflation surge (Bunn et al., 2024).

Labour market conditions provide an additional source of state dependence. Tight labour markets can strengthen the pass-through of cost shocks by supporting stronger wage growth and reducing firms' ability to absorb higher costs (Amiti et al., 2024; Lorenzoni and Werning, 2023; Bernanke and Blanchard, 2025). Inflationary shocks may therefore generate larger and more persistent effects when elevated inflation coincides with labour market tightness.

Our analysis also relates to a growing empirical literature on state-dependent shock propagation. Much of this literature focuses on monetary and fiscal policy shocks, with state dependence typically modelled over the business cycle using smooth-transition or interacted VARs and local projections (Auerbach and Gorodnichenko, 2012; Tenreyro and Thwaites, 2016). More recently, Ascari and Haber (2022) study monetary policy transmission across inflation regimes using smooth-transition local projections, while Gargiulo et al. (2026) employ the piecewise-linear SET-VAR framework that we apply and extend here. Both approaches allow dynamics to differ across regimes defined by endogenously estimated inflation thresholds, with transitions occurring either smoothly or discretely. Although the underlying dynamics may in reality evolve more continuously, threshold models provide a tractable approximation while yielding directly interpretable inflation levels at which shock transmission may change. Further, Bai et al. (2026) examine state dependence in monetary transmission during periods of supply-chain disruption using a piecewise-linear threshold VAR with an exogenous threshold variable.

Turning to global oil shocks, Pfäuti (2026) shows that, in univariate models estimating inflation attentiveness from household forecast errors, discrete thresholds provide a better fit to recent US inflation data than smooth-transition specifications. The estimated smoothness parameters are small, suggesting relatively sharp transitions between attentiveness regimes. He further finds that oil supply shocks have stronger effects in high-attentiveness regimes. Bullard et al. (2026) instead use a smooth-transition VAR for the US, with the dispersion of inflation expectations as the state variable, and find stronger transmission of oil supply shocks during periods of elevated expectations dispersion.

Contribution. Taken together, these strands of literature motivate an empirical approach that estimates inflation thresholds endogenously and allows the transmission of shocks to vary across regimes. By identifying thresholds jointly from the dynamics of a multivariate system, the SET-VAR model captures interactions between inflation, expectations, labour markets, and monetary policy that would be overlooked in single-equation approaches. We extend the framework to jointly consider inflation regimes and labour market slack as interacting sources of non-linearity. Unlike approaches in which regimes or thresholds are imposed ex ante or estimated separately, the SET-VAR jointly estimates the threshold and regime-dependent dynamics within a tractable piecewise-linear VAR. The resulting threshold regions provide intuitive markers for policy, while the multivariate framework allows analysis of regime-dependent shock transmission and the mechanisms underlying inflation persistence

The remainder of the paper is organised as follows. Section 2 describes the SET-VAR model and empirical specification. Section 3 presents the main results and policy applications. Section 4 concludes.

2 The Threshold VAR model for the UK

2.1 Model framework

We employ the Bayesian self-exciting Threshold VAR (SET-VAR) approach of Gargiulo et al. (2026). We provide only a brief description of the methodology below; full derivations, theoretical results, posterior expressions, and implementation details can be found in Gargiulo et al. (2026).

Following Gargiulo et al. (2026), we consider an M-dimensional SET-VAR of order p with k regimes, for endogenous variables y_t,

$$y_t = \sum_{i=1}^{k} \left(B_{0,i} + \sum_{j=1}^{p} B_{j,i} y_{t-j} + \Sigma_i^{1/2} \eta_t \right) \Psi_t^{(i)}(\gamma), \tag{1}$$

where $\eta_t | \mathcal{F}_{t-1} \sim \mathcal{N}(0, I_M)$. The regime-specific parameters are given by the intercept vector $B_{0,i}$, the autoregressive coefficient matrices $B_{j,i}$, and the covariance matrix Σ_i. The two regimes we consider in our setting are determined by a scalar state variable s_{t-d}, taken to be one of the endogenous variables at lag d, and a threshold parameter γ which partitions the sample according to

$$\Psi_t^{(1)}(\gamma) = \mathbb{I}(s_{t-d} \leq \gamma), \Psi_t^{(2)}(\gamma) = \mathbb{I}(s_{t-d} > \gamma).$$

When the state variable is itself a lagged variable of the VAR system with $d \leq p$, the threshold VAR model becomes a self-exciting threshold VAR. In our baseline specification, the state variable s_t is lagged year-on-year CPI inflation, such that regimes correspond to periods of relatively low versus high inflation.

The model is a piecewise-linear VAR in which both the autoregressive coefficients and the covariance matrix can differ across regimes, with regimes determined endogenously by the state variable. This piecewise-linear specification preserves the simplicity of the linear VAR model while allowing for nonlinear dynamics through regime switching. Additional details on the model specification, identification assumptions, and regularity conditions are provided in Gargiulo et al. (2026). Unlike conventional threshold VAR approaches, the methodology allows for regime dependence in both the conditional mean and the conditional covariance matrix, allowing volatility shifts to contribute to regime identification. Consequently, for identification of the threshold parameter, the approach exploits information contained in both first and second moments of the data. Furthermore, Gargiulo et al. (2026)'s approach allows for Bayesian estimation of the VAR parameters to be combined with a computationally efficient point estimation of the threshold γ, avoiding the costly MCMC procedures typically required in fully Bayesian threshold models.

Threshold estimation follows the Bayesian grid-search procedure proposed in Gargiulo et al. (2026). Specifically, the threshold is estimated as the maximizer of the posterior density evaluated over a grid of admissible values. For each candidate threshold, the posterior is maximised with respect to the regime-specific VAR parameters and covariance matrices. In contrast to standard threshold VAR approaches based on sum-of-squared-residual minimisation, this approach additionally exploits regime dependence in the conditional variance when estimating the threshold, which can improve identification in macroeconomic applications characterised by changes in volatility across regimes. The threshold estimate is then obtained as the value maximising the resulting posterior criteria over the grid. Since the threshold estimator is super-consistent (e.g. see Chan (1993); Gargiulo et al. (2026) for further discussion), uncertainty regarding the threshold does not affect first-order posterior inference on the VAR parameters, thereby providing a large sample justification for the conditional Bayesian analysis.

Conditional on the estimated threshold, posterior inference is standard and is conducted independently within each regime using the conjugate Normal–Wishart approach of Gargiulo et al. (2026). In particular, we follow their approach in employing a Minnesota prior for the VAR coefficients, which shrinks more distant lags towards zero, and a Wishart prior for the precision matrix. The resulting posterior distributions are available in closed form, allowing efficient posterior simulation without resorting to numerical optimization or MCMC methods. The complete posterior expressions and analytical derivations can be found in Gargiulo et al. (2026).

2.2 Empirical specification

To identify inflation thresholds and study the regime-dependent transmission of oil price shocks, we estimate a range of SET-VAR specifications using a proxy-VAR identification strategy. We focus on monthly data, while confirming the robustness of the main specifications using quarterly data.

The endogenous variables in the SET-VAR are given by

$$y_t = \left(shock_t,\ \Delta oil_t,\ \pi_t,\ expect_t^{hh},\ z_t\right)', \tag{2}$$

where $shock_t$ denotes the proxy variable as internal instrument—where we rely on the oil supply news shock series of Känzig (2021), Δoil_t the monthly growth rate of sterling-denominated Brent oil prices, π_t headline year-on-year UK CPI inflation, and $expect_t^{hh}$ one-year-ahead household inflation expectations from the Citi/YouGov survey. The vector z_t contains additional controls that vary across specifications. In the baseline specification, it consists solely of CPI energy inflation, π_t^{energy}, which captures the direct pass-through of oil price movements to household energy costs. This parsimonious specification allows us to focus on the transmission of oil shocks to inflation and expectations while preserving degrees of freedom, an important consideration given the potentially limited number of observations available within individual regimes.

In extended specifications, we include a broader set of variables to capture additional transmission channels and reduce potential omitted-variable bias. In particular, z_t additionally includes a measure of labour market slack, $slack_t$. We measure $slack_t$ either as deviations of the vacancy-to-unemployment ratio from a Bank of England staff trend estimate (the "v-u gap") (Stelmach et al., 2025)—a measure of cyclical labour market tightness—or as deviations of the unemployment rate from a Kalman-filtered trend estimate (the "unemployment gap"). Larger specifications further include Bank Rate r_t and the nominal effective exchange rate exr_t.[1] To investigate the mechanisms underlying second-round effects, we also estimate specifications in which z_t includes regular private-sector wage growth Δw_t, or services inflation π_t^{serv}. This allows us to assess whether stronger inflation expectations translate into higher wage growth and more persistent underlying inflation following oil price shocks.

We also estimate alternative specifications in which services inflation π_t^{serv}, food price inflation π_t^{food}, or wage growth Δw_t replace headline CPI inflation as the threshold variable. This allows us to assess whether estimated inflation thresholds—and the corresponding periods classified as high- and low-inflation regimes—differ across nominal indicators.

[1]As an alternative, we estimate specifications using either a shadow policy rate or a one-year government bond yield in place of Bank Rate, allowing for the effective lower bound and the effects of unconventional monetary policy–results remain robust.

We include $p = 12$ lags throughout with monthly data ($p = 4$ in specifications estimated on quarterly data). We use identical prior hyperparameters across regimes. For the VAR parameters, we adopt a relatively tight Minnesota-style prior with overall lag shrinkage of $\lambda = 0.4$ for specifications estimated over the shorter post-1989 sample and for the four-regime specification, to mitigate the more limited degrees of freedom arising from the shorter sample and fewer observations within each regime. For the longer sample beginning in 1976 with two regimes, we follow Gargiulo et al. (2026) and use a looser Minnesota prior with an overall shrinkage parameter of $\lambda = 1$, allowing greater flexibility in the estimated dynamics.

2.3 Data transformations and sample coverage

Inflation variables are expressed in year-on-year growth rates, as this yields more stable threshold estimates (Gargiulo et al., 2026), and aligns naturally with the horizon of household inflation expectations, and makes estimated thresholds directly interpretable in terms commonly monitored by policymakers. Oil prices instead enter in month-on-month growth rates to preserve the higher-frequency variation required for identification of structural oil shocks, although results remain qualitatively similar when oil prices are expressed in year-on-year terms. Table A1 in the Appendix documents the data series and sources and transformations.

Our baseline sample begins in 1989m1. We also consider a longer sample extending back to 1976m1, providing greater coverage of historical high-inflation episodes and improving the precision of regime-specific estimates, particularly in the larger specifications. Extending the sample requires historical series for several variables. We therefore construct spliced series for household inflation expectations, pay growth, and trade weights used to extend the sterling exchange rate index, drawing on Thomas and Dimsdale (2017) and Bordo et al. (2025).[2]

For specifications estimated over the longer sample, our preferred measure of labour market slack is the unemployment gap rather than the vacancy-to-unemployment gap. This reflects both the limited availability of historical vacancy trend estimates and the lower relevance of vacancy dynamics for measuring labour market slack during the 1970s and early 1980s.

The longer sample also includes a small number of observations associated with the exceptionally high inflation rates of the late 1970s and early 1980s, which have the

[2] The Citi/YouGov series is the measure of household inflation expectations used by the Bank of England in its Monetary Policy Reports, including in single-equation models of wage growth, but is only available from 2005 onwards. To extend the sample, we splice it with the historical household inflation expectations series constructed by Bordo et al. (2025). As this series is only available at quarterly frequency, we use the Chow–Lin (Chow and Lin, 1971) temporal disaggregation method to construct a monthly series, additionally drawing on monthly GfK survey measures of inflation expectations, available since 1985, as the higher frequency indicator.

potential to influence threshold estimation. In practice, however, the preferred extended SET-VAR specifications produce stable lower-threshold estimates of around 3.5% without introducing an additional extreme-inflation regime. Following Gargiulo et al. (2026), we nevertheless also explore specifications with a separate "extreme inflation" regime.[3]

2.4 Generalised impulse responses and counterfactuals

Because the SET-VAR is non-linear, we analyse shock transmission using Generalised Impulse Response Functions (GIRFs). GIRFs trace the effect of a hypothetical shock by comparing forecasts generated with and without the shock, conditional on the prevailing state of the economy, as captured by the full history of the system at the time the shock occurs (Koop et al., 1996). Unlike standard linear impulse responses, GIRFs allow regimes to evolve endogenously over the forecast horizon, so that shocks can move the economy across regimes as they propagate. Consequently, transmission may depend not only on the regime prevailing when the shock occurs, but also on the precise initial conditions and subsequent path of the economy through different regimes (Kilian and Lütkepohl, 2017).

We compute GIRFs for each historical observation, conditional on the full state vector and the prevailing regime, and then average the responses across observations belonging to the same estimated regime. This yields regime-specific average GIRFs that capture how shock transmission differs across inflation and labour market states.

To assess the importance of second-round effects across inflation regimes, we also compute counterfactual GIRFs in which household inflation expectations are held fixed. Following Wong (2015) and Antolin-Diaz et al. (2021), this is implemented through conditional forecasts that shut down the endogenous response of inflation expectations to the shock, while all other variables evolve according to the estimated SET-VAR dynamics. Because the model is state-dependent, the counterfactual is evaluated using the same estimated thresholds and regime-dependent coefficients as the baseline model. Regime transitions therefore continue to occur endogenously, but under a path in which expectations do not respond to the shock.[4] By holding expectations fixed, the exercise

[3]Restricting the search for the upper threshold to the highest 20–40% of candidate threshold values yields upper thresholds between roughly 14% and 17.5%, separating between 3 and 20 observations into a third regime. These specifications produce broadly similar results for the economically relevant low- and high-inflation regimes, but increase computational costs and the estimated upper threshold is somewhat sensitive to the prior range used for the grid search. We therefore focus on the more parsimonious two-regime specification. Nevertheless, introducing a third regime may still be useful when exploring threshold estimates that appear to be influenced by a small number of exceptionally high inflation observations, that can be more so the case in smaller VARs and longer samples.

[4]This approach does not require a particular structural model and can be implemented directly when computing GIRFs. An alternative is the approach of McKay and Wolf (2023), who address the Lucas critique by constructing a linear combination of policy shocks at date (0) that perturbs the current and expected future path of the policy instrument in the same way as the contemplated counterfactual rule, rather than imposing a new value of a single shock at each horizon. This imposes the counterfactual not

isolates the extent to which increases in expected inflation propagate through the economy and sustain inflationary pressures beyond the direct effects of the oil shock, thereby providing a measure of expectation-driven second-round effects across regimes.

3 Results

3.1 Inflation thresholds

We estimate 140 CPI-based SET-VARs that vary in sample period (beginning in either 1976 or 1989), data frequency (monthly or quarterly), lag structure, and variable inclusion. Figure 1 shows the distribution of estimated CPI inflation thresholds across specifications, grouped by sample period and the number of variables included. For each group, the horizontal summary at the top of the panel shows the full range (thin line), interquartile range (thick line), and median (dot). Additionally, Table 1 summarises the median and selected percentiles of estimated threshold values across specifications.

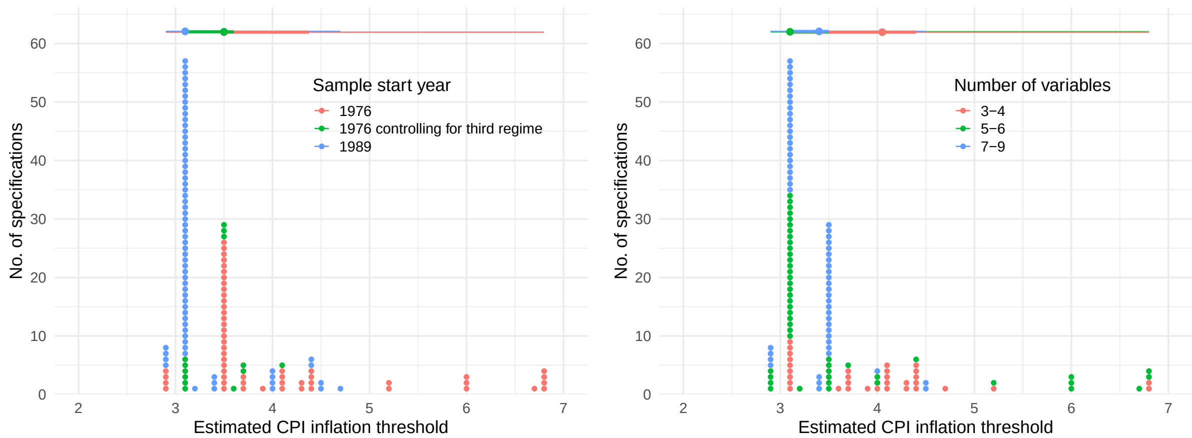


Figure 1: Distribution of threshold estimates across types of specifications.

Notes: The x-axis shows the estimated threshold, while the y-axis stacks dots representing specifications with the same threshold estimate. The left panel groups specifications estimated over the 1989 sample (blue) and the 1976 sample (red), with the latter further distinguishing specifications that include a third "extreme inflation" regime (green). The right panel groups specifications by the number of variables included in the SET-VAR. Horizontal summaries at the top of each group show the full range of estimates (thin line), the interquartile range (thick line), and the median (dot).

Estimated thresholds clearly cluster around 3% and 3.5%. For the post-1989 sample, 90% of estimated thresholds lie between 2.9% and 4.0%, with a median of 3.1%; more than 50 specifications produce this estimate. Extending the sample back to 1976 shifts the distribution modestly higher, with a median threshold of 3.5%—obtained in around 30 specifications—and a 95th percentile of 6.8%. Specifications that control for a larger number of variables, as well as those estimated over the post-1989 sample,

only ex post along the equilibrium path, but also ex ante in private-sector expectations. Their approach is more directly relevant for policy counterfactuals than to the exercise considered here, in which inflation expectations are held fixed. Nevertheless, it could be explored in future work, although its application would require several externally identified proxy series.

generally produce more stable threshold estimates close to the median, whereas smaller specifications with only 3–6 variables are more likely to yield outlier thresholds above 5%. For the 1976 sample, introducing a third "extreme inflation" regime stabilises the main threshold between 3.1% and 4.1%, although larger two-regime specifications over the same sample already produce thresholds within this range.

Table 1: Distribution of threshold estimates across SET-VAR specifications

State variable	Sample start	Number of specifications	5th percentile	25th percentile	Median estimate	75th percentile	95th percentile
CPI inflation	**1989**	70	2.9	3.1	**3.1**	3.1	4.0
	1976	70	3.0	3.5	**3.5**	4.3	6.8
Alternative state variables							
Food inflation	1989	36	3.9	4.5	5.2	5.8	5.9
Service inflation	1989	36	3.9	4.1	4.1	4.3	5.2
Wage growth	1989	36	3.8	4.1	4.6	4.6	4.8
	1976	20	3.8	4.3	4.7	4.9	6.3

Notes: The table reports the distribution of estimated threshold values across SET-VAR specifications using alternative inflation measures as threshold variables. Thresholds are estimated endogenously within each specification. Reported values correspond to the empirical distribution across alternative model specifications, sample periods, lag structures, and variable selections. All variables are expressed in year-on-year growth rates.

Figure 2 illustrates the resulting low- and high-inflation periods associated with the median inflation threshold of 3.5% estimated over the 1976 sample. It plots UK year-on-year CPI inflation and one-year household inflation expectations, with the shaded pink areas indicating periods in which CPI inflation exceeds the estimated threshold.

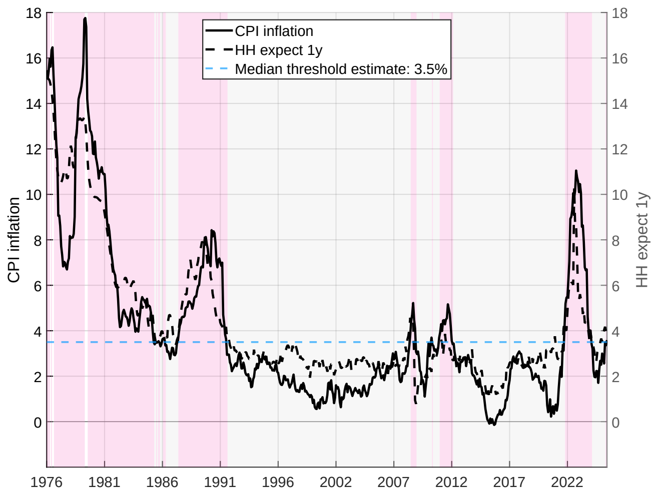


Figure 2: CPI inflation thresholds and identified high- and low-inflation regimes.
Notes: Pink-shaded areas indicate high-inflation regime, defined Year-on-year CPI inflation (solid black line) exceeding the inflation threshold of 3.5%. Horizontal red dotted lines indicate median threshold estimate and 90% range of threshold estimates. For comparison, Citi/YouGov 1-year ahead household inflation expectations shown in dashed black line.

To obtain broader evidence on thresholds across a range of nominal indicators, we also estimate more than 128 additional SET-VARs using alternative nominal variables as threshold variables, including wage growth, services inflation, and food price inflation, while keeping the remaining variables unchanged. As shown in the lower panel of Table 1, the corresponding threshold estimates are generally higher, consistent with the higher average growth rates of these series. Median threshold estimates are 4.6% for wage growth, 4.1% for services inflation, and above 5% for food inflation. Figure A1 in the Appendix illustrates these series and the resulting high- and low-inflation regimes. All indicators consistently identify high-inflation periods in the early 1990s, the post-GFC period, and the recent inflation surge, while elevated wage growth also characterises the late 1990s and early 2000s. Compared with Figure 2, headline CPI inflation typically crosses its estimated threshold earlier than the alternative indicators, providing a broader and more timely signal of transitions into high-inflation regimes.

3.2 Oil shock transmission across inflation regimes

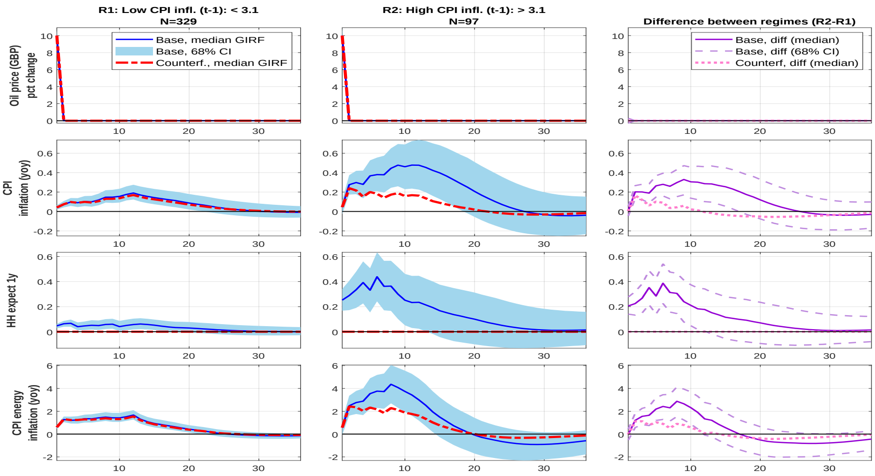
The estimated inflation threshold is not merely a statistical feature of the data; it marks a regime in which oil supply shocks propagate more strongly through UK inflation dynamics. Figure 3 illustrates this by tracing the effects of an oil supply news shock that permanently raises the level of oil prices by 10% across the low- and high-inflation regimes identified by the 3.1% estimated threshold in these SET-VAR specifications. Specifically, the shock generates a one-off increase in oil-price growth on impact, which subsequently reverts to zero, leaving the oil-price level permanently higher.[5] Blue lines and coloured areas show the median GIRFs and 68% credible bands. Red dashed lines report counterfactual GIRFs in which household inflation expectations are held fixed.

In the small SET-VAR specification (panel a), a 10% increase in oil prices raises year-on-year headline CPI inflation by almost 0.5 percentage points after around one year when inflation is above the estimated threshold, compared with around 0.2 percentage points when inflation is below it.[6] In both cases, the effect gradually dissipates after around two years, consistent with oil supply shocks affecting the price level rather than permanently altering inflation. The right-hand column shows differences across regimes, with inflation remaining significantly higher in the high-inflation regime for around 18 months following the shock. Household inflation expectations also respond much more strongly, rising by up to 0.4 percentage points and peaking after roughly six months, but move only modestly when inflation is below the threshold.

[5]Results remain qualitatively unchanged when allowing the effect of the shock on oil prices to gradually fade over time rather than assuming a permanent increase; note, however, that the persistence of the oil price response to the shock also differs in each regime; see Figure A4 in the Appendix. Results remain similar when using real rather than nominal oil prices, deflated by UK CPI inflation.

[6]A linear version of the model produces CPI inflation dynamics closer to those in the low-inflation regime, albeit somewhat larger, with an increase of up to 0.3 percentage points after 12 months (Figure A2 in the Appendix). It also features stronger second-round effects through inflation expectations and a more pronounced monetary policy response than the low-inflation regime, effectively averaging across regime-specific transmission mechanisms and failing to capture the amplification above the estimated inflation threshold.

(a) Small SET-VAR



(b) Extended SET-VAR

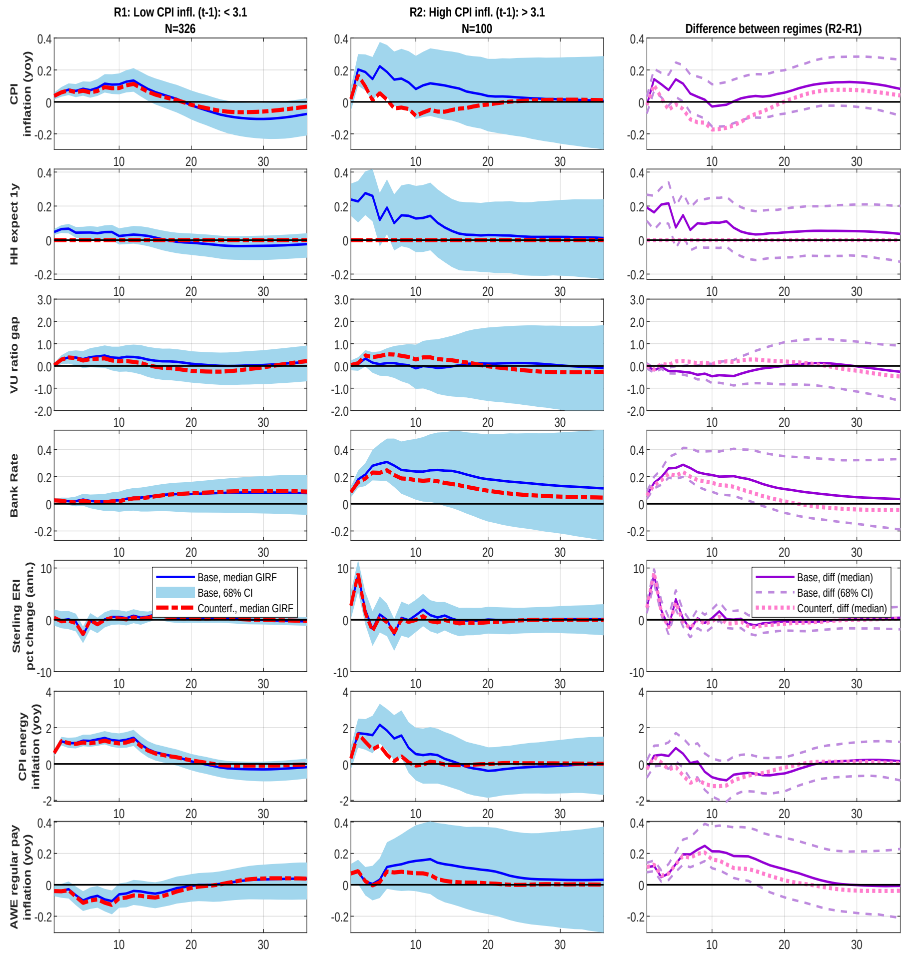


Figure 3: Effects of oil supply news shocks across inflation regimes, since 1989.

Notes: Estimation period 1989m1-2025m6. Generalised impulse responses. Generalised impulse responses to an oil supply news shock (Känzig, 2021) that leads to a 10% rise in oil prices. x-axis: months after shock. Endogenously estimated CPI inflation threshold: 3.1%, with varying VAR coefficients between regimes. GIRFs averaged across months by low/high inflation periods. Blue lines: median of 2,000 draws (purple: difference between regimes); blue shaded areas: 68% credible bands. Red dashed lines: counterfactual GIRFs with expectations held fixed. Expectations: 1-year-ahead household inflation (Citi/YouGov). Panel (a) reports GIRFs from the baseline small SET-VAR. Panel (b) reports GIRFs from the extended SET-VAR including additional macroeconomic controls.

The counterfactual GIRFs (red dashed lines) indicate that a substantial portion of the stronger inflation response in the high inflation regime is associated with the endogenous response of inflation expectations. When the response of the expectations series is held fixed, the inflation response in the high-inflation regime falls by more than half, while the low-inflation regime response remains closer to the baseline path. As a result, inflation responses across regimes become considerably more similar, particularly beyond the first six months. These findings point to a role for inflation expectations—and, potentially, shifts in inflation attentiveness—in shaping the transmission of oil supply shocks once inflation exceeds the estimated threshold.

Panel (b) reports results from an extended SET-VAR specification that additionally controls for monetary policy, the exchange rate, labour market conditions, and wage growth. Despite somewhat wider credible bands, reflecting the larger number of parameters estimated using the same sample, the main findings remain largely unchanged. Although the peak inflation response in the high-inflation regime is smaller—around 0.2 percentage points—inflation still rises significantly more than in the low-inflation regime over the first 6–9 months following the shock.

At the same time, monetary policy responds more strongly when inflation is elevated. Bank Rate increases by around 30 basis points six months after the shock in the high-inflation regime and remains around 10 basis points above baseline even three years later, whereas it does not respond significantly in the low-inflation regime. The somewhat smaller and less persistent difference in inflation responses across regimes than in the baseline SET-VAR is therefore consistent with stronger monetary policy partly offsetting the amplification that arises when inflation is high. Nevertheless, the qualitative pattern of stronger transmission in the high-inflation regime remains unchanged.[7]

The counterfactual GIRFs point to an important role for inflation expectations in explaining the regime-dependent amplification. In the high-inflation regime, holding expectations fixed substantially reduces both the magnitude and persistence of the CPI inflation response, with the effects of the oil price shock largely dissipating after around six months before turning slightly negative. A similar pattern emerges for wage growth: while the baseline response remains slightly positive even after three years, the counterfactual dissipates after around 15 months. These results suggest that inflation expectations play an important role in sustaining both price and wage pressures following oil price shocks in high-inflation environments.[8]

[7]Labour market tightness responds little to the shock and even increases slightly, although not significantly, suggesting only a limited link with global oil shocks in the post-1989 sample. Results are similar when using the unemployment gap as the measure of slack, with unemployment also falling slightly after the shock (Figure A5). By contrast, as discussed next, unemployment rises more clearly when the sample is extended back to 1976.

[8]CPI energy inflation also responds less in the counterfactual under the high-inflation regime. This is less intuitive economically, as energy prices should be broadly exogenous to household inflation expectations, but reflects that the SET-VAR models the joint dynamics of all endogenous variables. We

Finally, extending the sample back to 1976 yields broadly similar results (Figure 4). Inflation responses remain larger in the high-inflation regime for up to two years following the shock, and household inflation expectations continue to contribute to this amplification. In contrast to the post-1989 sample, however, unemployment rises more clearly after around one year in the high-inflation regime. When expectations are held fixed (red dashed lines), the inflation response in the high-inflation regime is reduced relative to the baseline model, but a non-negligible effect persists for up to two years. Only thereafter does the endogenous adjustment of expectations contribute to a noticeably faster decline in inflation. Similarly, while some second-round effects remain visible in wage growth during the third year after the shock, these effects are relatively modest. Overall, the gap between the baseline and counterfactual responses is more similar across inflation regimes than in the post-1989 sample, suggesting a somewhat smaller role for expectation-driven amplification over the longer sample period.

One interpretation is that short-term inflation expectations and attentiveness play a larger role in propagating shocks in recent decades, particularly under the inflation-targeting regime. This is consistent with evidence for the United States reported by Wong (2015), who finds a stronger role for inflation expectations in propagating shocks during more recent periods. By contrast, the persistence of inflation during the high-inflation episodes of the 1970s and early 1980s appears less closely linked to movements in short-term household inflation expectations alone, and may instead reflect broader de-anchoring of inflation expectations, institutional differences in wage-setting behaviour, or differences in the conduct of monetary policy. Consistent with the latter explanation, monetary policy in the longer-sample specification initially responds more strongly in the high-inflation regime, but this tightening persists for less than a year before giving way to monetary easing. This pattern may indicate that policy responded more strongly to deteriorating labour market conditions and rising unemployment than to the continued inflationary effects of the shock.

3.3 Joint state dependence with labour market conditions

3.3.1 Separating four regimes

The distinction between low- and high-inflation regimes may mask important interactions between inflation and labour market conditions. While elevated inflation can increase the persistence of shocks through expectations and second-round effects, labour market tightness may influence the extent to which firms pass higher costs into prices and

therefore also estimate a counterfactual that, in addition to holding expectations fixed, constrains the response of CPI energy inflation to match the baseline. Results are very similar (Figure A6 in the Appendix). If anything, the differences between the baseline and counterfactual responses of CPI inflation and wage growth become even more pronounced, suggesting that the weaker CPI energy response is a consequence of the altered expectations dynamics rather than a driver of the reduced inflation amplification.

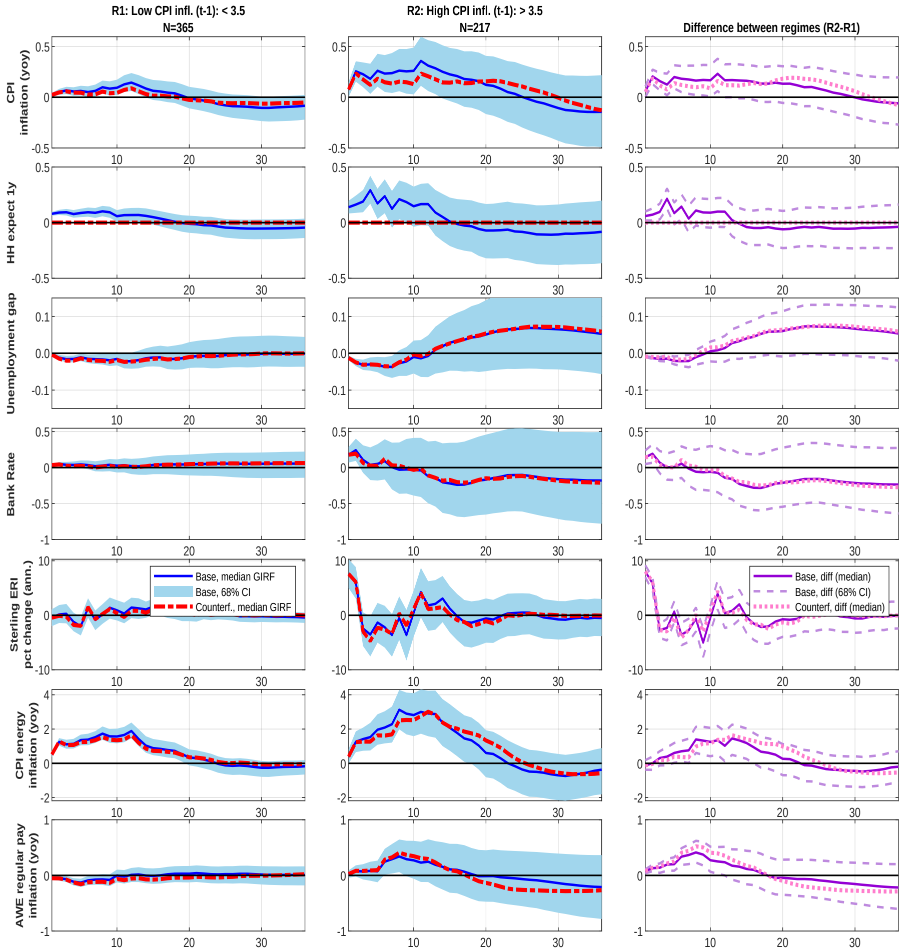


Figure 4: Effects of oil supply news shocks across inflation regimes, sample period starting in 1976

Notes: Estimation period 1976m1-2025m6. Generalised impulse responses to an oil supply news shock Känzig (2021) that leads to a 10% rise in oil prices. x-axis: months after shock. Endogenously estimated CPI inflation threshold: 3.5%, with varying VAR coefficients between regimes. GIRFs averaged across months by low/high inflation periods. An additional outlier regime separates a 3-month period of above 17% inflation in 1980, for which GIRFs are not computed. Blue line: median of 2,000 draws; shaded areas: 68% credible bands. Red dashed lines: counterfactual GIRFs with expectations held fixed.

workers seek compensation through wages. To examine how these two dimensions jointly shape the transmission of oil price shocks, we extend the SET-VAR to four regimes.

To do so, we retain CPI inflation as the sole endogenously estimated threshold variable, again yielding thresholds of 3.1% for the sample beginning in 1989 and 3.5% for the sample beginning in 1976. Within each inflation regime, observations are then further classified according to whether labour markets were tight or slack at the time of the shock. Specifically, slack is measured either by deviations of the vacancy-to-unemployment ratio from its trend—a measure of labour market tightness following Stelmach et al. (2025)—or by deviations of the unemployment rate from a Kalman-filtered trend. Positive unemployment gaps (or negative vacancy-to-unemployment gaps) indicate slack, and vice versa, so that a zero gap naturally separates tight from slack labour market conditions.[9]

[9]As a robustness check, we also estimated specifications using labour market slack as the sole thresh-

The resulting four regimes, together with the CPI inflation, household inflation expectations, and unemployment gap series, are shown in Figure 5. Episodes combining high inflation and tight labour markets (dark pink) are concentrated in 1978–80, 1988–91, 2008, and 2022–23. By contrast, high inflation combined with slack labour markets (light pink) is observed in 1977, 1981–86, and 1991–92—towards the end of the earlier inflation episode—as well as in 2010–11, when inflation remained elevated despite weak labour market conditions following the Global Financial Crisis. Low-inflation, tight-labour-market regimes (dark grey) are most evident during 1997–2007 and 2018–20, although the latter episode begins earlier, around 2015, when labour market slack is measured using the unemployment gap.

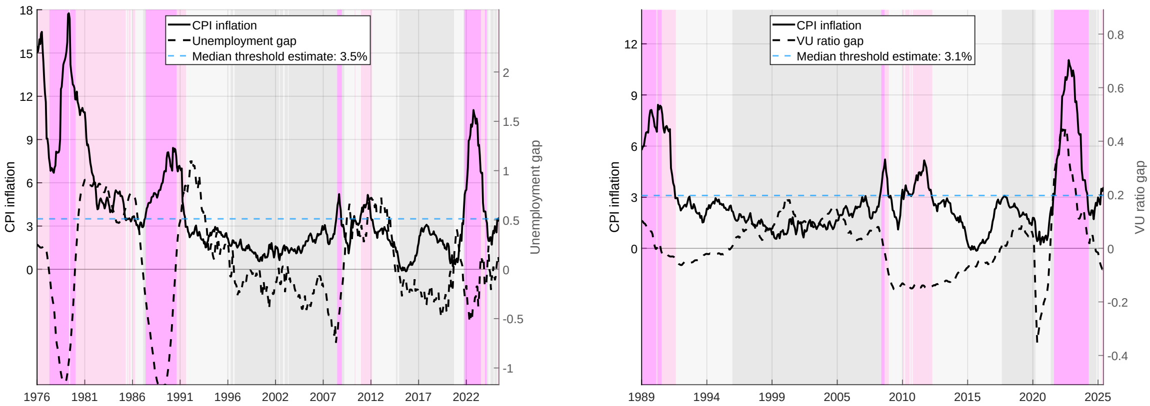


Figure 5: Inflation thresholds and resulting four inflation–labour market regimes.
Notes: Coloured areas indicate the four inflation–labour market regimes: low inflation–slack labour market (light grey), low inflation–tight labour market (dark grey), high inflation–slack labour market (light pink), and high inflation–tight labour market (dark pink). The left panel shows the sample beginning in 1976, where the unemployment gap (solid line, left axis) measures labour market slack and the estimated CPI inflation threshold is 3.5% (dashed line, right axis). The right panel shows the sample beginning in 1989, where the vacancy-to-unemployment (v-u) gap measures labour market slack and the estimated CPI inflation threshold is 3.1%.

3.3.2 Shock transmission across inflation–labour market regimes

Figure 6 examines the transmission of a 10% oil price increase generated by an adverse oil supply news shock following Känzig (2021) across the four inflation–labour market regimes. Panel (a) reports results from a small SET-VAR estimated over the post-1989 sample, using the vacancy-to-unemployment gap as the measure of labour market slack. Panel (b) reports results from the extended SET-VAR estimated over the longer sample beginning in 1976, which provides more observations in the two high-inflation regimes, additionally includes CPI energy inflation, Bank Rate, and the real effective exchange rate, replaces the labour market slack measure with the unemployment gap, and incorporates private-sector regular pay growth. This allows us to assess whether

old variable. The estimated threshold is close to zero (0.017 for the vacancy-to-unemployment gap), supporting the use of a zero threshold to distinguish between tight and slack labour market conditions.

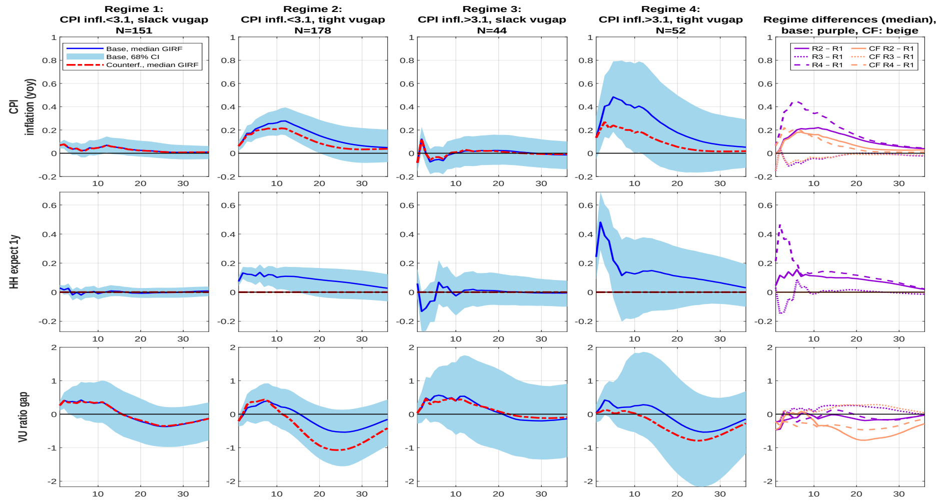
expectation-driven second-round effects in high-inflation or tight-labour-market regimes are subsequently reflected in wage dynamics.

The results suggest that periods of tight labour markets are associated with somewhat greater inflationary effects of oil supply shocks even when inflation is low. In the low-inflation regime, CPI inflation rises by up to around 0.25 percentage points when labour markets are tight (regime 2), compared with a more modest and short-lived response when labour markets are slack (regime 1). Household inflation expectations also increase somewhat more in regime 2. However, second-round effects remain limited, as evidenced by the relatively small difference between the baseline and counterfactual GIRFs in both low-inflation regimes. Consistent with this, specifications that use labour market slack as the sole threshold variable also indicate somewhat stronger transmission when labour markets are tight (Figure A3 in the Appendix).

Amplification becomes stronger when both inflation and labour market tightness are elevated. In regime 4, CPI inflation and household inflation expectations rise by around 0.5 percentage points and respond more rapidly than in the other regimes, although estimates are less precise. The expectations channel appears central to this amplification. Holding expectations fixed reduces the inflation response to less than half its baseline magnitude over horizons of roughly 3 to 24 months. Wage growth also rises persistently in this regime over the three-year horizon, whereas it remains broadly unchanged or even declines elsewhere. Expectations-driven second-round effects likewise appear important for wage dynamics. In the baseline GIRFs, wage growth remains elevated for several years after the shock, whereas in the counterfactual it returns to zero after around 18 months. This suggests that stronger inflation expectations contribute not only to more persistent inflation but also to more persistent wage pressures when inflation is high and labour markets are tight, consistent with heightened responsiveness of expectations feeding into wage-setting and stronger wage demands following inflationary shocks.

The right-most panel of Figure 6 illustrates these regime differences directly. The solid purple line captures the additional effect of tight labour markets within low-inflation periods (regime 2 relative to regime 1), while the dashed purple line shows the combined amplification when high inflation and tight labour markets coincide (regime 4 relative to regime 1). The fact that the dashed line lies well above the solid line indicates that elevated inflation provides an additional source of amplification beyond labour market conditions alone. Much of this additional amplification appears to operate through household inflation expectations, as regime differences become smaller or more short-lived in the corresponding counterfactual GIRFs. Notably, these stronger inflationary effects arise despite a more forceful monetary policy response. As shown in panel (b), the Bank Rate rises by around 25 basis points on impact in regime 4 and remains above baseline thereafter, yet inflation and inflation expectations still respond substantially more strongly than in the other regimes.

(a) Small SET-VAR, since 1989, v-u gap as slack variable



(b) Extended SET-VAR, since 1976, unemployment gap as slack variable

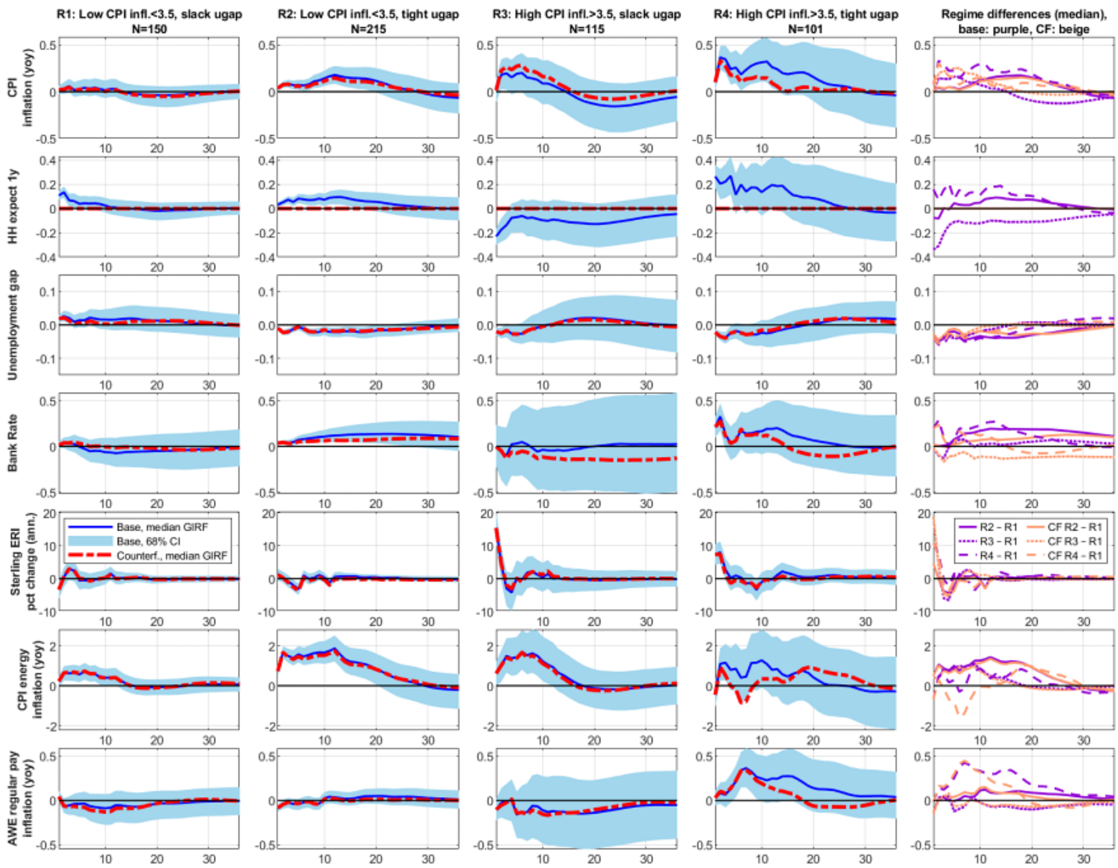


Figure 6: Effects of oil supply news shock across four regimes, by inflation threshold and labour market slack

Notes: Generalised impulse responses to an oil supply news shock following Känzig (2021) that raises the oil price by 10%. The SET-VAR estimates the inflation threshold, at 3.1% (1989 sample) or 3.5% (1976 sample), with observations further split by whether the labour market tightness gap is above or below zero. For the 1976 sample, an additional outlier regime separates a 3-month period of above 17% inflation in 1980, for which GIRFs are not computed. Columns 1–4 report regime-specific GIRFs. Blue lines show median responses across 2,000 posterior draws and shaded areas denote 68% credible intervals, red dashed line show counterfactual GIRFs. Column 5 reports differences relative to regime 1.

By contrast, when inflation is above its threshold but labour markets are slack (regime 3), the responses of both CPI inflation and household inflation expectations are small and statistically insignificant. While estimates are relatively imprecise owing to the limited number of observations associated with each regime, the results suggest that elevated inflation alone is not sufficient to generate sizeable second-round effects. Consistent with standard economic mechanisms, slack labour markets provide firms with greater scope to absorb cost pressures through weaker wage growth, reducing pass-through to prices and dampening workers' real-wage demands. Importantly, these results point to the role of prevailing labour market conditions at the time the shock occurs rather than to the subsequent response of labour market slack itself.[10]

An important feature of regime 3 is that household inflation expectations do not rise following the shock—in the longer sample they even decline slightly on impact, while in the shorter post-1989 sample they remain broadly unchanged. This stands in sharp contrast to regime 4 and suggests that the response of expectations may be as important as labour market conditions in determining whether oil price shocks generate persistent second-round effects. Historically, episodes characterised by high inflation and slack labour markets were not associated with a meaningful increase in inflation expectations, perhaps because households internalised weaker underlying economic conditions when forming their inflation outlooks. However, the stronger responsiveness of household inflation expectations in the UK observed during the recent inflation surge suggests that expectations formation may itself vary across episodes. Consistent with the attentiveness mechanisms highlighted by Pfäuti (2026) and Korenok et al. (2026), periods following sustained above-threshold inflation may be characterised by greater sensitivity of expectations to incoming inflationary shocks. If periods of elevated inflation leave households more attentive to inflation developments, the historical experience captured by regime 3 may understate the extent to which future oil price shocks propagate through expectations, even when labour market conditions are less conducive to amplification than in our high-inflation, tight-labour-market regime.

Taken together, the results suggest that the response of household inflation expectations plays an important role in shaping the transmission of oil price shocks. While elevated inflation and tight labour markets are associated with the strongest amplification, the contrast between regimes 3 and 4 indicates that differences in inflation expectations—and potentially in inflation attentiveness—are also a key factor. Histori-

[10]Labour market slack itself falls somewhat on impact across regimes 2, 3 and 4—in line with the finding already observed in the two-regime specification—and increases only slightly thereafter, with a delay of more than a year. This pattern likely reflects both the heterogeneous nature of the historical episodes used to identify the shock and the fact that UK labour market dynamics are influenced by a range of domestic factors that need not move systematically with global oil prices. As a result, labour market conditions appear only weakly linked to oil supply shocks in the short run, even when inflation responses differ markedly across regimes. The result persists when using the unemployment rate or v/u ration in levels rather than gaps, and when including additional controls such as average hours worked.

cally, episodes in which UK CPI inflation exceeded our estimated threshold but labour markets remained slack were not associated with a meaningful increase in inflation expectations following an oil price shock, whereas expectations responded strongly when elevated inflation coincided with tight labour markets. These findings suggest that the role of inflation expectations is regime-dependent, and this may be an important determinant of whether inflationary shocks generate persistent second-round effects.

4 Conclusion

This paper applies a self-exciting Threshold VAR (SET-VAR) to study the transmission of global oil price shocks to UK inflation. The model provides a tractable way of capturing regime-dependent inflation dynamics and estimating inflation thresholds endogenously. Across a wide range of specifications, we find that inflation dynamics change once CPI inflation rises above around 3–3.5%. In these high-inflation regimes, oil supply shocks generate substantially larger and more persistent increases in inflation than in low-inflation regimes.

Extending the model to distinguish between tight and slack labour markets suggests that elevated inflation alone is not sufficient to generate strong amplification. While these estimates have wider posterior bands, the largest and most persistent responses occur when high inflation coincides with labour market tightness, whereas episodes of high inflation and slack labour markets exhibit much weaker responses of both inflation and household inflation expectations. Together, these findings suggest that inflation and labour market conditions interact in shaping the transmission of external cost shocks, with the responsiveness of household inflation expectations acting as an important amplification mechanism.

Our counterfactual analysis, in which we hold household expectations fixed, identifies inflation expectations as an important propagation channel. In regimes where inflation responds most strongly, household inflation expectations also rise substantially, and holding expectations fixed removes a large share of the amplification. While labour market tightness appears to facilitate these second-round effects, the stronger expectations responses observed during the recent inflation surge suggest that the responsiveness of expectations may itself vary across episodes. If periods of elevated inflation leave households more attentive to inflation developments, future oil price shocks may propagate more strongly through expectations than implied by some historical episodes in our sample, even when labour market conditions are less supportive of amplification.

From a policy perspective, our approach provides a useful complement to linear forecasting and scenario-analysis tools. By allowing shock transmission to vary across inflation and labour market regimes, it can help policymakers assess whether incoming shocks are likely to generate stronger inflation persistence than implied by historical averages and quantify the contribution of inflation expectations to the propagation of inflationary shocks. Although the recent increase in oil prices following the war in Iran falls outside our sample period, owing to the lagged availability of the oil supply news shock measure, our findings nevertheless suggest that policymakers should assess such shocks not only in terms of their size, but also in light of the prevailing inflation environment, labour market conditions, and the responsiveness of inflation expectations when evaluating risks to the inflation outlook.

References

Amiti, M., Heise, S., Karahan, F., and Şahin, A. (2024). Inflation strikes back: The role of import competition and the labor market. *NBER Macroeconomics Annual*, 38(1):71–131.

Anesti, N., Esady, V., and Naylor, M. (2025). Food prices matter most: Sensitive household inflation expectations. Bank of England Staff Working Paper No. 1,125.

Antolin-Diaz, J., Petrella, I., and Rubio-Ramírez, J. F. (2021). Structural scenario analysis with SVARs. *Journal of Monetary Economics*, 117:798–815.

Ascari, G. and Haber, T. (2022). Non-linearities, state-dependent prices and the transmission mechanism of monetary policy. *The Economic Journal*, 132(641):37–57.

Auerbach, A. J. and Gorodnichenko, Y. (2012). Measuring the output responses to fiscal policy. *American Economic Journal: Economic Policy*, 4(2):1–27.

Bai, X., Fernández-Villaverde, J., Li, Y., and Zanetti, F. (2026). State dependence of monetary policy during global supply chain disruptions. National Bureau of Economic Research Working Paper No 35209.

Bank of England (2025). Monetary Policy Report. November 2025, Box C.

Bank of England (2026). Monetary Policy Report. April 2026, Box C.

Baumeister, C. and Hamilton, J. D. (2019). Structural interpretation of vector autoregressions with incomplete identification: Revisiting the role of oil supply and demand shocks. *American Economic Review*, 109(5):1873–1910.

Bernanke, B. and Blanchard, O. (2025). What caused the us pandemic-era inflation? *American Economic Journal: Macroeconomics*, 17(3):1–35.

Blanco, A., Boar, C., Jones, C. J., and Midrigan, V. (2024). The inflation accelerator. National Bureau of Economic Research Working Paper No 32531.

Bordo, M. D., Bush, O., and Thomas, R. (2025). "Muddling Through or Tunnelling Through?" UK Monetary and Fiscal Exceptionalism and the Great Inflation. National Bureau of Economic Research No 34063.

Bullard, J., Grimaud, A., Salle, I., and Vermandel, G. (2026). Soft landing and inflation scares. *Journal of Monetary Economics*, 157(103871).

Bunn, P., Anayi, L., Barnes, E., Bloom, N., Mizen, P., Thwaites, G., and Yotzov, I. (2024). How curvy is the Phillips curve? National Bureau of Economic Research Working Paper No 33234.

Cavallo, A., Lippi, F., and Miyahara, K. (2024). Large shocks travel fast. *American Economic Review: Insights*, 6(4):558–574.

Chan, K.-S. (1993). Consistency and limiting distribution of the least squares estimator of a threshold autoregressive model. *The Annals of Statistics*, pages 520–533.

Chow, G. C. and Lin, A.-l. (1971). Best linear unbiased interpolation, distribution, and extrapolation of time series by related series. *The Review of Economics and Statistics*, pages 372–375.

Gargiulo, V., Matthes, C., and Petrova, K. (2026). Monetary policy across inflation regimes. *European Economic Review*. Also available as FRBNY Staff Report No. 1083 (2024).

Greene, M. (2025). The supply side demands more attention. Speech given at the Adam Smith Business School, University of Glasgow, 24 September 2025.

Greene, M. (2026). Here we go again? Assessing the inflation risks of the recent energy shock. Speech given at University of Derby Business School, 02 June 2026.

Känzig, D. R. (2021). The macroeconomic effects of oil supply news: Evidence from opec announcements. *American Economic Review*, 111(4):1092–1125.

Kilian, L. and Lütkepohl, H. (2017). *Structural vector autoregressive analysis*. Cambridge University Press.

Koop, G., Pesaran, M. H., and Potter, S. M. (1996). Impulse response analysis in nonlinear multivariate models. *Journal of econometrics*, 74(1):119–147.

Korenok, O., Munro, D., and Chen, J. (2026). Inflation and attention thresholds. *Review of Economics and Statistics*, pages 1–9.

Lorenzoni, G. and Werning, I. (2023). Wage-price spirals. *Brookings Papers on Economic Activity*, 2023(2):317–367.

Maćkowiak, B., Matějka, F., and Wiederholt, M. (2023). Rational inattention: A review. *Journal of Economic Literature*, 61(1):226–273.

Maćkowiak, B. and Wiederholt, M. (2009). Optimal sticky prices under rational inattention. *American Economic Review*, 99(3):769–803.

Mann, C. L. (2025). Five 'C's for Central Bank Research. Speech given at The Future of Central Banking conference on the occasion of the 100th Anniversary, Banco de México, 26 August 2025.

Mann, C. L. (2026). Mixed signals, research findings, and policy judgements. Speech given at the Natixis CIB Private Debt Forum, 02 July 2026.

McKay, A. and Wolf, C. K. (2023). What can time-series regressions tell us about policy counterfactuals? *Econometrica*, 91(5):1695–1725.

Pfäuti, O. (2026). The inflation attention threshold and inflation surges. Manuscript. Conditionally accepted in American Economic Review.

Pill, H. (2025). The courage not to act. Remarks on the monetary policy outlook at a briefing hosted by Barclays, 20 May 2025.

Stelmach, M., Kensett, J., and Schnattinger, P. (2025). What can 40 years of data on vacancy advertising costs tell us about labour market equilibrium? Bank Underground, 6 March 2025, https://bankunderground.co.uk/2025/03/06/what-can-40-years-of-data-on-vacancy-advertising-costs-tell-us-about-labour-market-equilibrium/.

Tenreyro, S. and Thwaites, G. (2016). Pushing on a string: Us monetary policy is less powerful in recessions. *American Economic Journal: Macroeconomics*, 8(4):43–74.

Thomas, R. and Dimsdale, N. (2017). A millennium of UK data. Bank of England OBRA dataset, https://www.bankofengland.co.uk/statistics/research-datasets.

Weber, M., Candia, B., Afrouzi, H., Ropele, T., Lluberas, R., Frache, S., Meyer, B., Kumar, S., Gorodnichenko, Y., Georgarakos, D., et al. (2025). Tell Me Something I Don't Already Know: Learning in Low-and High-Inflation Settings. *Econometrica*, 93(1):229–264.

Wong, B. (2015). Do inflation expectations propagate the inflationary impact of real oil price shocks?: Evidence from the Michigan survey. *Journal of Money, Credit and Banking*, 47(8):1673–1689.

A Appendix

A.1 Data

Table A1: Data series, sources, transformations

Series	Source	Start	End	Trans.	Specification
Oil supply news shock	Känzig (2021)	Jan 1975	Jun 2025	0	Baseline
Oil price (GBP)	LSEG	Jan 1970	Apr 2026	2	Baseline
CPI	ONS	Jan 1961	Mar 2026	4	Baseline
Household inflation expectations (1-year ahead)	Citi/YouGov survey; Bordo et al. (2025), temporally disaggregated using historical GfK surveys	Jan 1961	Apr 2026	0	Baseline
CPI energy	ONS; OECD	Jan 1970	Mar 2026	4	Baseline
Unemployment gap	ONS; Bank calculations. u^* is a Kalman-filtered estimate by BoE staff, temporally disaggregated to monthly	Apr 1973	Dec 2025	6	Extended
Vacancy–unemployment ratio gap	ONS; v^* from Stelmach et al. (2025), temporally disaggregated to monthly	Jul 1987	Dec 2025	6	Extended
Bank Rate	Bank of England	Jan 1961	Apr 2026	5	Extended
Sterling ERI	LSEG; Thomas and Dimsdale (2017)	Jan 1961	Apr 2026	1	Extended
Average Weekly Earnings (AWE), regular pay	ONS; 3-month centred moving average of Thomas and Dimsdale (2017) total pay growth	Mar 1961	Feb 2026	4	Extended
CPI food	ONS	Jan 1988	Mar 2026	4	Alternative
CPI goods	ONS	Jan 1988	Mar 2026	4	Alternative
CPI services	ONS	Jan 1988	Mar 2026	4	Alternative
Unemployment rate	ONS	Mar 1971	Feb 2026	5	Alternative
Vacancy–unemployment ratio	ONS; Stelmach et al. (2025)	Mar 1971	Feb 2026	5	Alternative
1-year gilt yield	LSEG	Jan 1970	Apr 2026	5	Alternative
Shadow rate	Bank of England	Jan 1961	Apr 2026	5	Alternative
Global activity shock	Baumeister and Hamilton (2019)	Feb 1975	Sep 2025	0	Alternative

Notes: Transformation codes: (0) level; (1) log level; (2) monthly growth; (3) annualised monthly growth; (4) year-on-year growth; (5) rate; (6) deviation from trend. Temporal disaggregation of quarterly series follows the method of Chow and Lin (1971). Estimation samples differ slightly across specifications owing to data availability: series that start after 1976 were only used for shorter sample periods estimations since 1989.

A.2 Threshold estimates

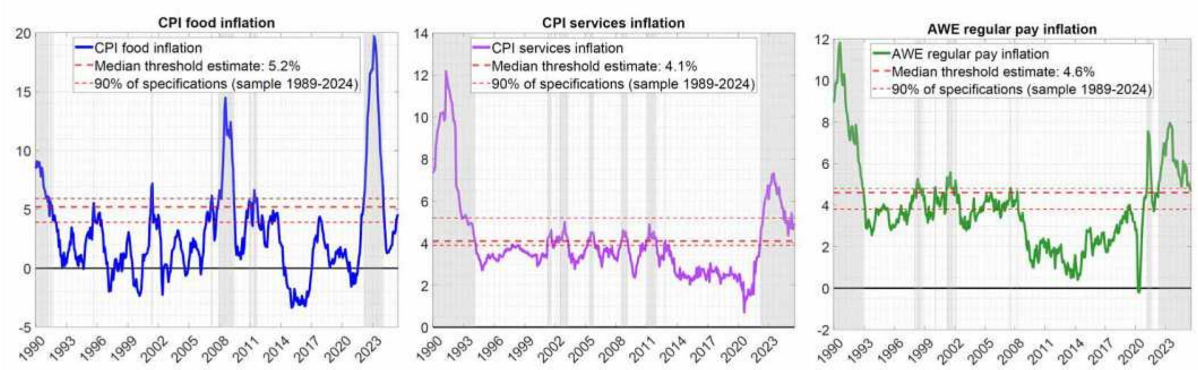


Figure A1: UK CPI food inflation, services inflation, and regular wage growth as alternative state variables: identified high inflation regimes.

Notes: Grey-shaded areas indicate high-inflation regime, defined as the respective nominal series, in year-on-year growth rates (solid black line), exceeding its respective median threshold estimate across 36 SET-VAR specifications. All specifications estimated over 1989m1-2024m12 sample period, including different number (4-9) of variables in the VAR - similar to the small and extended SET-VAR with headline inflation as state variable. Horizontal red dotted lines indicate median threshold estimate and 90% range of threshold estimates.

A.3 Shock transmission results

Linear BVAR

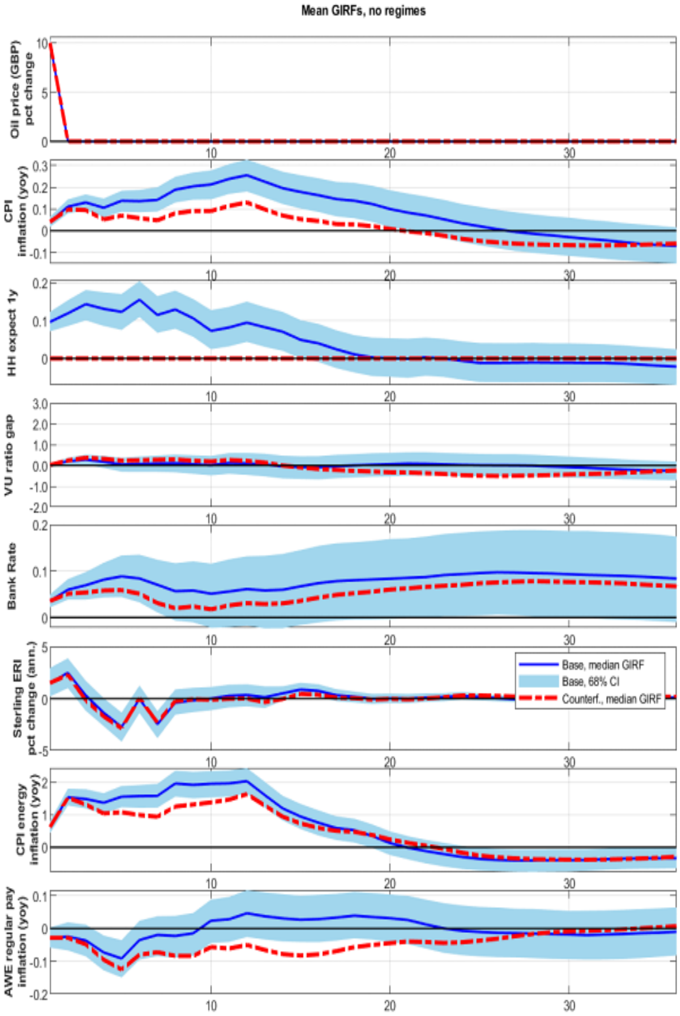


Figure A2: Effects of oil supply news shocks across inflation regimes, linear BVAR (no regimes, no threshold estimation)

Notes: Estimation period 1989m1-2025m6. Generalised impulse responses to an oil supply news shock (Känzig, 2021) that leads to a 10% rise in oil prices. x-axis: months after shock. Linear BVAR, i.e., single regime, no threshold estimation. See also notes to previous Figures.

State-dependence by labour market conditions, no inflation threshold

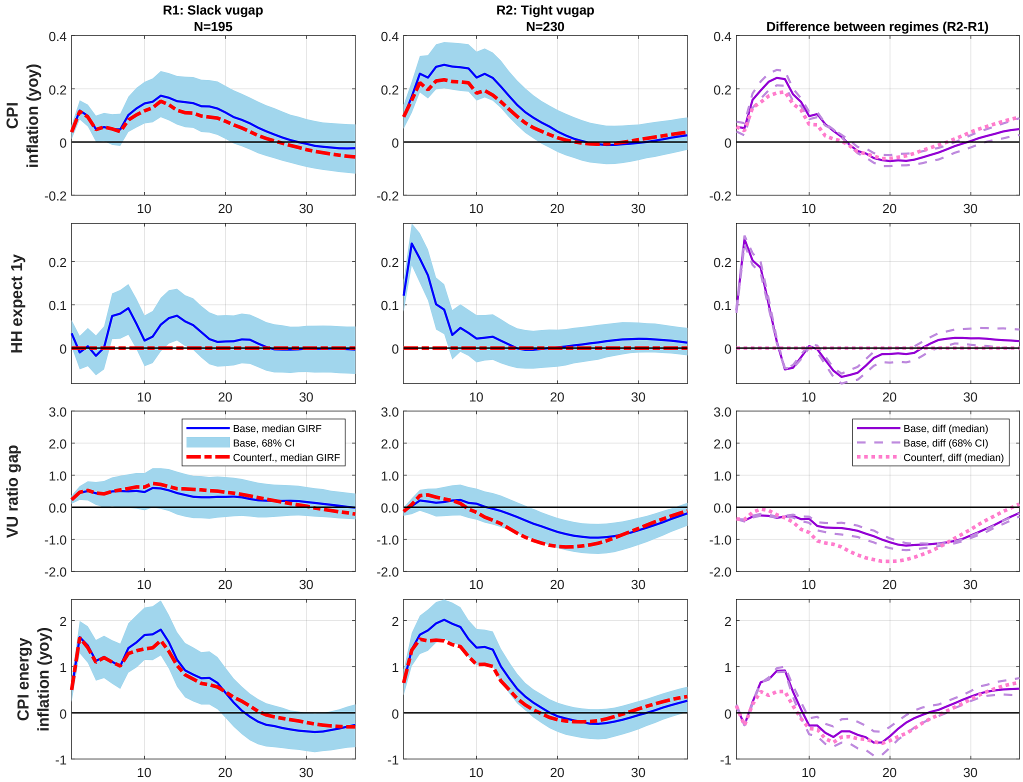


Figure A3: Effects of oil supply news shocks across inflation regimes, by labour-market conditions

Notes: Estimation period 1989m1-2025m6. Generalised impulse responses to an oil supply news shock (Känzig, 2021) that leads to a 10% rise in oil prices, which is allowed to dynamically propagate, rather than a one-off permanent rise. x-axis: months after shock. No threshold estimation. Instead, observations split by whether the labour market tightness gap is above or below zero during the month prior to the shock.

Dynamic adjustment of oil prices rather than permanent rise

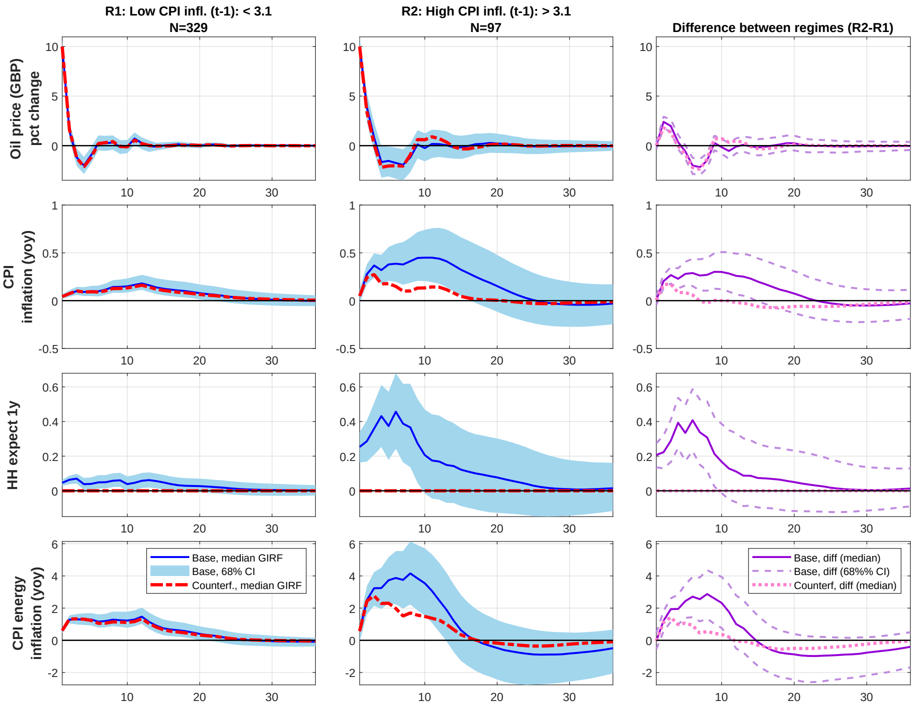


Figure A4: Effects of oil supply news shocks across inflation regimes, dynamic oil price adjustment

Notes: Estimation period 1989m1-2025m6. Generalised impulse responses to an oil supply news shock (Känzig, 2021) that leads to a 10% rise in oil prices, which is allowed to dynamically propagate, rather than a one-off permanent rise. x-axis: months after shock. Endogenously estimated CPI inflation threshold: 3.1%, with varying VAR coefficients between regimes. See also notes to previous Figures.

Using unemployment gap as slack measure in sample since 1989

(b) Extended SET-VAR

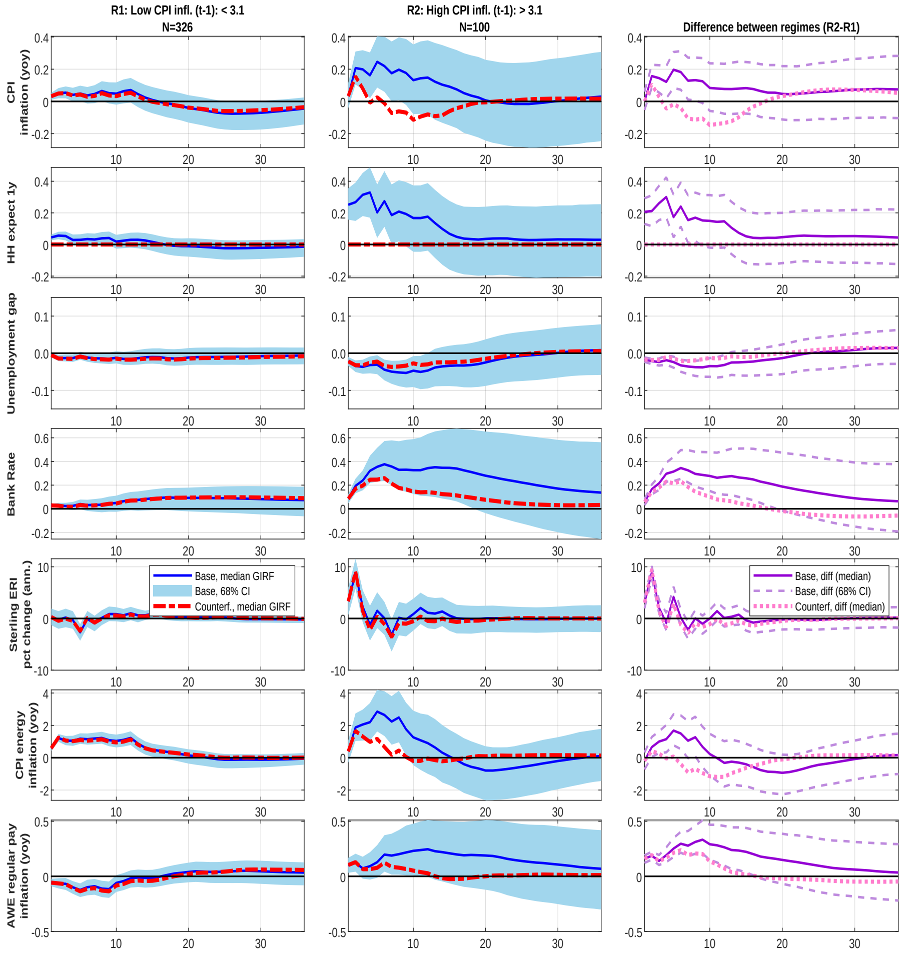
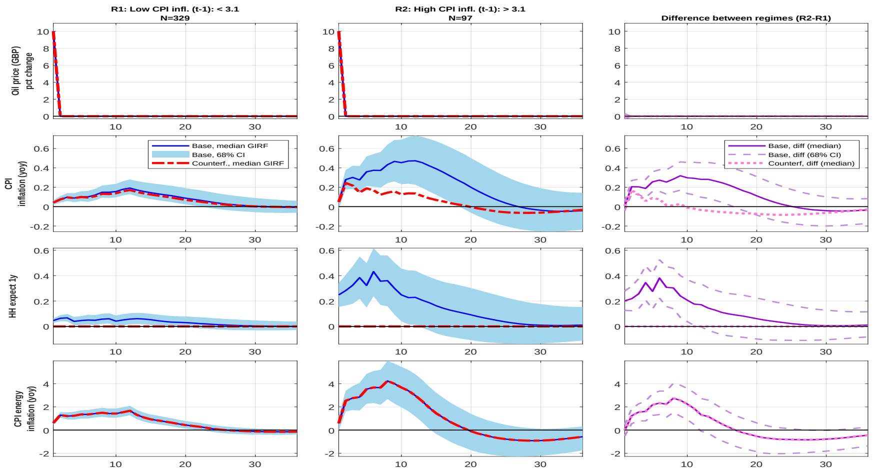


Figure A5: Effects of oil supply news shocks across inflation regimes, since 1989.

Notes: Estimation period 1989m1-2025m6. Generalised impulse responses. Generalised impulse responses to an oil supply news shock (Känzig, 2021) that leads to a 10% rise in oil prices. x-axis: months after shock. Endogenously estimated CPI inflation threshold: 3.1%, with varying VAR coefficients between regimes. GIRFs averaged across months by low/high inflation periods. Blue lines: median of 2,000 draws (purple: difference between regimes); blue shaded areas: 68% credible bands. Red dashed lines: counterfactual GIRFs with expectations held fixed. Expectations: 1-year-ahead household inflation (Citi/YouGov).

(a) Small SET-VAR



(b) Extended SET-VAR

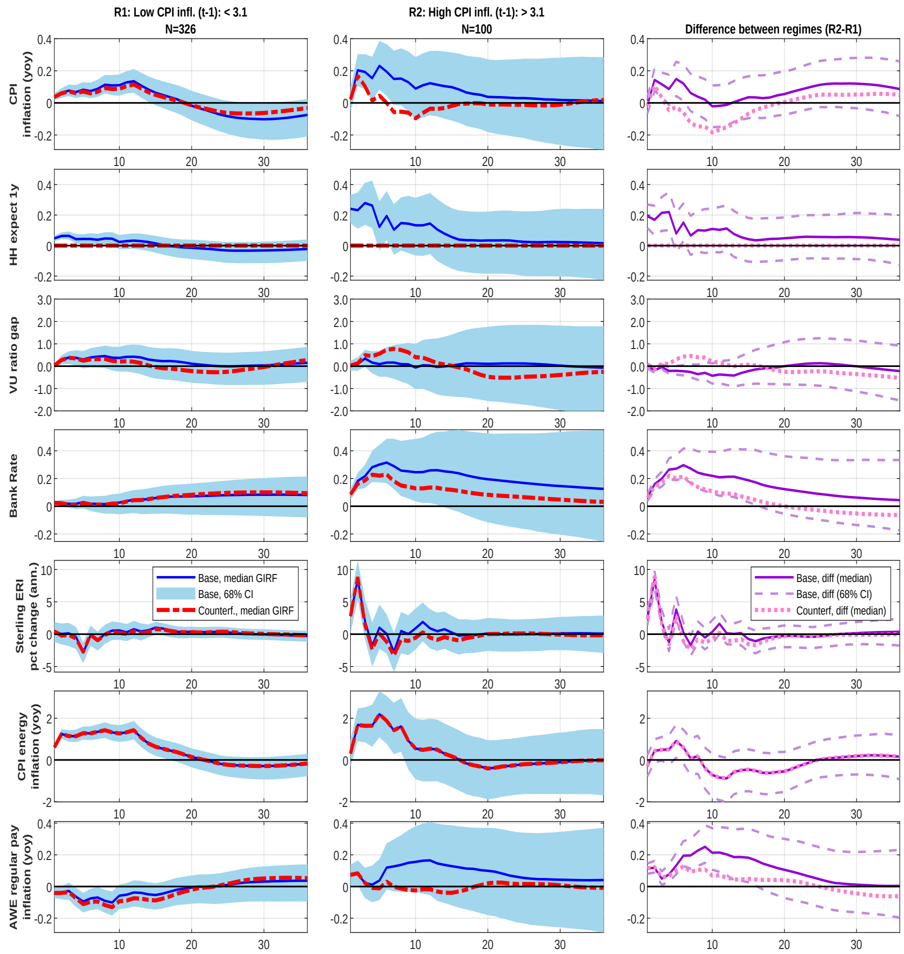


Figure A6: Effects of oil supply news shocks across inflation regimes, since 1989: counterfactual GIRFs with expectations held fixed and CPI energy inflation restricted to respond as in baseline

Notes: Estimation period 1989m1-2025m6. Generalised impulse responses. Generalised impulse responses to an oil supply news shock (Känzig, 2021) that leads to a 10% rise in oil prices. x-axis: months after shock. Endogenously estimated CPI inflation threshold: 3.1%, with varying VAR coefficients between regimes. GIRFs averaged across months by low/high inflation periods. Blue lines: median of 2,000 draws (purple: difference between regimes); blue shaded areas: 68% credible bands. Red dashed lines: counterfactual GIRFs with expectations held fixed, and with CPI energy inflation restricted to respond similarly to baseline. Expectations: 1-year-ahead household inflation (Citi/YouGov). Panel (a) reports GIRFs from the baseline small SET-VAR. Panel (b) reports GIRFs from the extended SET-VAR including additional macroeconomic controls.