

South African Reserve Bank Special Occasional Bulletin of Economic Notes

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South African Reserve Bank Special Economic Notes are a collection of descriptive and critical economic analyses with recommendations written for internal SARB discussion. They are written by staff members or fellows of the Economic Research Department and, on occasion, by consultants under the auspices of the SARB. They are released publicly on an occasional basis. This series features internal research on how oil price shocks generate second-round effects, with a specific focus on the 2026 oil price shock.

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Oil price shocks and inflation risks: evidence from South African market pricing

Palesa Mnguni and Luchelle Soobyah

Abstract

- Oil markets have experienced several major disruptions recently and this note assesses whether market-based inflation expectations price in the effects of these oil price shocks.
- Oil price shocks matter more for medium-term inflation pricing than for the longer-term inflation outlook, a finding that is consistent across the daily and monthly models.
- The response of medium-term inflation pricing is driven mainly by higher estimated inflation expectations, with a more limited contribution from the inflation risk premium.
- Although oil price shocks raise near- to medium-term inflation expectations, market pricing suggests that investors do not expect these shocks to lead to a persistent deterioration in the longer-term inflation outlook or a sustained broadening of inflationary pressures.

1. Introduction¹

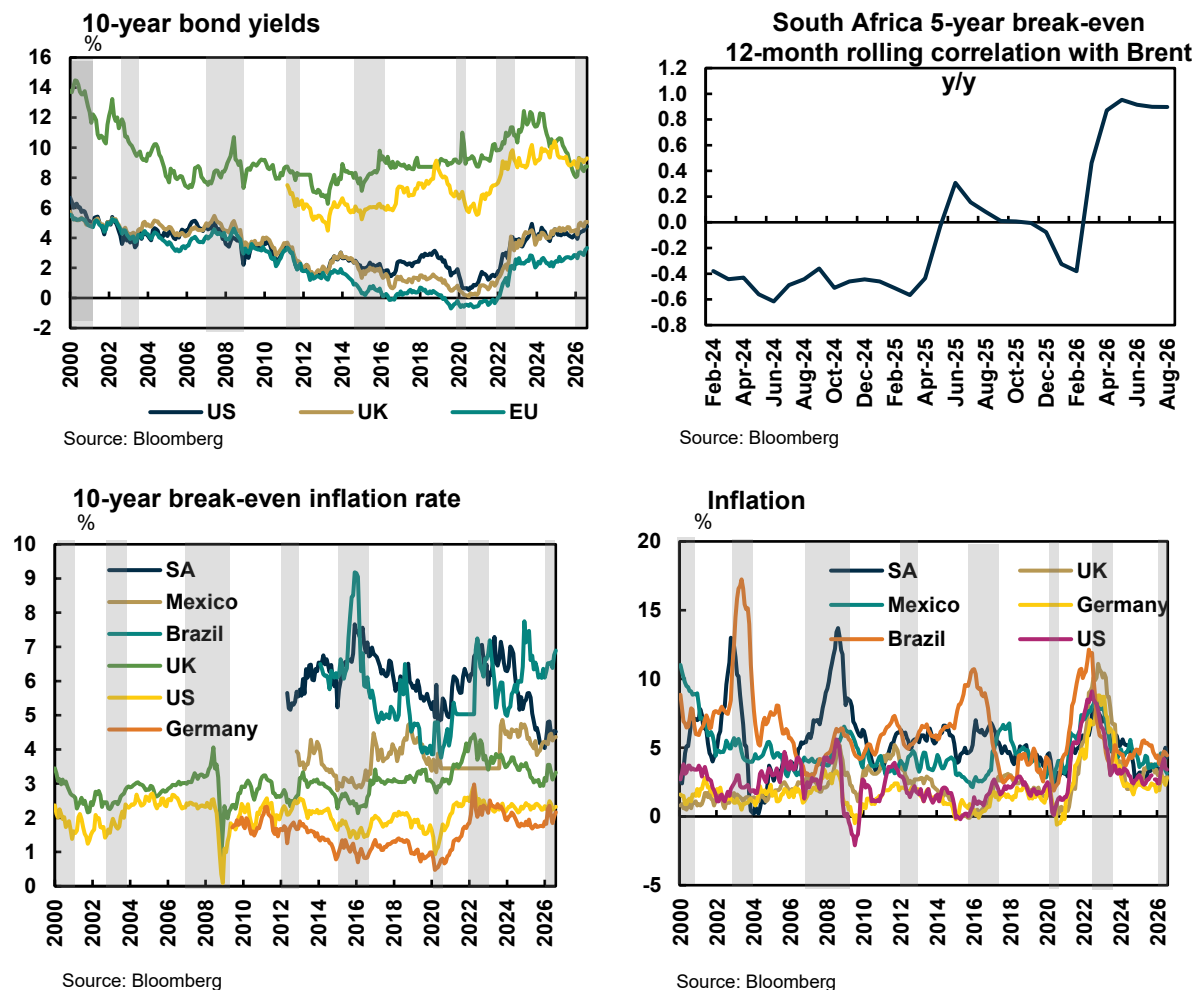
Oil shocks can lift inflation directly through fuel and transport costs. The bigger policy concern is whether they also trigger broader and more persistent price pressures. If markets expect higher energy costs to feed into wages and the prices of other goods and services, inflation expectations may rise and signal second-round effects. If expectations remain anchored, however, the shock is more likely to be seen as temporary.

Oil markets have experienced several major disruptions recently, including the post-pandemic rebound in demand, supply losses after Russia's invasion of Ukraine in 2022 and the escalation of the conflict involving the United States, Israel and Iran from February 2026, which disrupted shipping and oil flows through the Strait of Hormuz. These shocks pushed energy prices and inflation higher across advanced and emerging market economies, but their effects differed across countries and over time. In some cases, inflation expectations and long-term bond yields rose sharply (Figure 1). In others, market-based inflation compensation remained contained, reflecting confidence in central banks and the temporary nature of the shock.

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¹ The authors would like to thank Daron Hendriks for assistance with data and Rudi Steinbach, Jean-Francois Mercier and colleagues from the Economic Research Department for their valuable comments and suggestions.

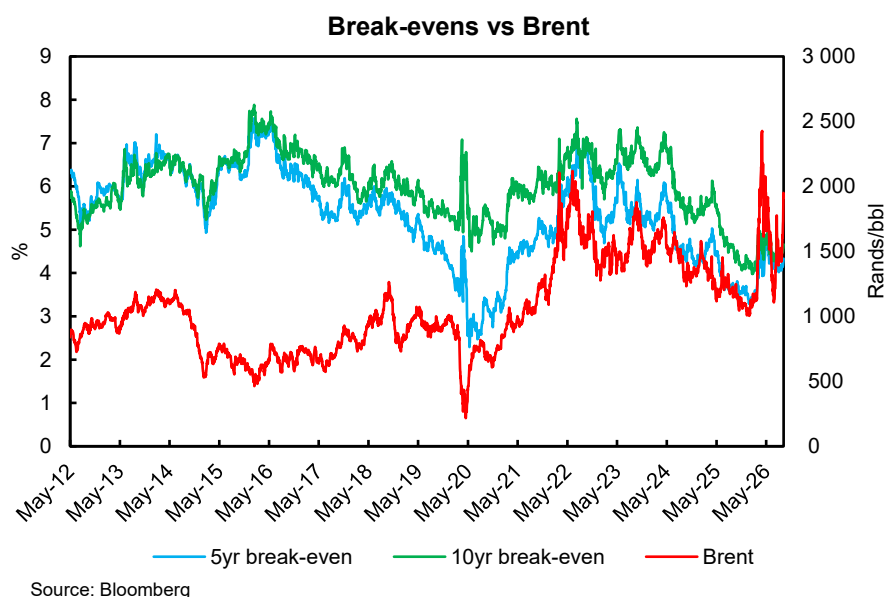
Figure 1: Trends in bond yields, inflation and break-even inflation rates²



Financial market measures offer a timely view of how investors assess these risks. Nominal bond yields, inflation swaps and break-even rates incorporate expectations about future inflation and monetary policy. They can therefore show whether markets expect an oil shock to fade or spread into wider price pressures, and whether central bank credibility is helping to keep expectations anchored. South African break-even rates have generally moved closely with Brent crude oil prices, although they diverged during 2015 to 2017, when rand depreciation and drought-related food-price pressures offset the disinflationary effect of lower oil prices. This is shown in Figure 2.

² Shaded areas indicate periods of oil price shocks. These include the 2000 oil price spike, 2002–2003 Venezuela strike/Iraq war, 2007–2008 global oil price surge and global financial crisis collapse, 2011 Libyan supply disruptions, 2014–16 oil glut, 2020 COVID-19/OPEC+ crash, 2022 Russia–Ukraine shock and 2026 US–Iran/Strait of Hormuz shock.

Figure 2: Break-even rates trend with Brent crude oil prices



For policymakers, the difference matters. A temporary rise in headline inflation may not require a monetary policy response if expectations remain stable. But a persistent increase in market-based expectations could indicate that markets perceive some inflation risk or inflation to rise due to higher energy costs feeding into wages, core inflation and longer-term price-setting. Market pricing of inflation expectations can therefore indicate whether markets view the shock as a once-off event or the start of a more persistent inflationary process.

This economic note assesses how South African market-based inflation compensation responds to unexpected oil price movements. It compares the response of five- and 10-year break-even inflation and separates estimated inflation expectations from inflation risk premia.³ The analysis therefore examines whether an unexpected oil price shock is associated with a change in the expected inflation outlook, with greater compensation for inflation uncertainty, or with both. The results show that oil shocks raise five-year break-evens through higher inflation expectations while 10-year break-evens remain broadly unchanged, consistent with the literature and suggesting that the inflation-targeting framework remains credible.

2. Literature review

A growing body of literature shows that oil shocks can move inflation expectations, but few studies look directly at what financial markets expect after these shocks.⁴ This distinction

³ The analysis focuses on the five-year break-even inflation rate because shorter-dated inflation-linked bonds are relatively illiquid in South Africa, making the two-year break-even a noisy and less reliable measure of market inflation expectations. As a result, the analysis cannot directly assess how markets price the immediate effects of oil shocks on near-term inflation and monetary policy expectations. Instead, the five-year break-even provides a cleaner measure of medium-term inflation compensation and is better suited to assessing whether markets expect higher oil prices to spill over into broader inflation dynamics, wages and price-setting behaviour. However, this may understate short-term repricing following an oil shock. To partly address this limitation, section 5 examines financial analysts' two-year-ahead inflation expectations from the Bureau for Economic Research's inflation expectations survey.

⁴ Most of the studies discussed here focus on the United States (US). Kilian and Zhou extend their analysis to the euro area, United Kingdom, Canada and Japan, while Anderl and Caporale also consider Canada, South Korea and Mexico, although their emerging-market extensions use survey-based rather than market-based inflation expectations.

matters because market-based measures such as break-evens and inflation swaps reflect investors' pricing decisions, whereas survey measures capture the reported expectations of households and firms. Previous studies show that household inflation expectations can respond strongly to energy prices, particularly at shorter horizons, while longer-term expectations tend to be less responsive (Coibion and Gorodnichenko 2015; Kilian and Zhou 2022). The key question is whether financial markets treat oil shocks as short-lived price changes or as warning signs of broader inflation pressure.

Researchers identify oil shocks in different ways. Miyamoto et al. (2025) use oil supply surprises identified from daily movements in oil futures prices around OPEC announcements, giving a clean but narrow signal. Jiang (2026) separates daily WTI futures-price changes into supply, global-demand and oil-specific-demand shocks using a structural vector autoregression (VAR), which gives broader coverage but relies on stronger assumptions. Anderl and Caporale (2024) focus on shifts in the level, slope and curvature of the futures curve. Hammoudeh and Reboredo (2018) instead examine the nonlinear relationship between oil prices and US break-even inflation after decomposing break-evens into expected-inflation, inflation-risk-premium and liquidity-risk-premium components.

Despite these differences, most studies point to a similar conclusion: oil shocks move short-term inflation pricing more than long-term expectations. Miyamoto et al. (2025) find that two-year Treasury yields have become more sensitive to oil news since 2022, while the sensitivity of 10-year break-even inflation has remained small and stable since 2014. Hammoudeh and Reboredo (2018) also find stronger effects on the expected-inflation component at five years than at 10 years, especially when oil prices rise above about US\$67 per barrel. Jiang (2026) adds an important nuance: demand-driven oil increases can lower break-even inflation, while supply-driven increases tend to raise it.

Two caveats are worth noting. First, break-evens are not pure measures of expected inflation. They also contain inflation and liquidity risk premia. Hammoudeh and Reboredo (2018) show that much of the 10-year response reflects these premia rather than genuine inflation expectations, meaning headline break-evens may overstate the movement in long-run expectations. Second, the strength of the inflation-expectations channel varies across measures and horizons. Anderl and Caporale (2024) find stronger second-round effects through short-term household expectations, while effects through longer-term household and market-based expectations are smaller.

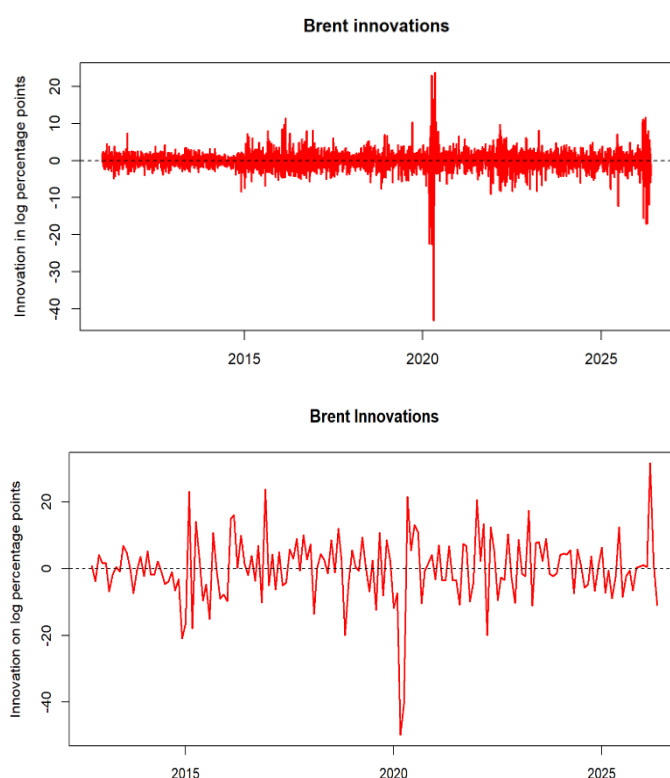
Overall, the evidence suggests that markets do price oil shocks into inflation expectations, but mainly at shorter horizons. The size and direction of the response depend on how the shock is identified and whether risk premia are separated from expected inflation. Less is known about how market-based inflation expectations respond to oil shocks in small, open emerging economies such as South Africa. This note addresses that gap by examining the responses of South African five- and 10-year break-even rates to an oil price shock and separating estimated inflation expectations from inflation risk premia.

3. Data and methodology

We estimate two separate models, one relying on daily frequency indicators and the other on monthly indicators.⁵ The data we use cover the period 2012 to 2026. For the daily frequency model, a reduced-form VAR model was estimated using daily financial market data. The endogenous variables included rand-denominated Brent oil price returns, changes in the US 10-year Treasury yield, DXY log returns and USD/ZAR log returns. We also include a measure of global risk sentiment to control for global financial uncertainty, proxied by the Chicago Board Options Exchange Volatility Index (VIX). For the monthly model, the variables included in the VAR are inflation, industrial production, interest rates, exchange rate, Brent and VIX.⁶

The VARs are used to separate unexpected changes in rand-denominated Brent prices from movements that can be explained by recent economic and financial conditions. The unexpected component is treated as the oil price shock and used in the local projections. Figure 3 shows the shocks identified from the daily and monthly VARs.⁷

Figure 3: Brent shock from the daily and monthly VAR models



Source: Authors' calculations

⁵ The daily model captures the immediate response of financial markets to an unexpected oil price shock, while the monthly model assesses whether this response persists once slower-moving domestic macroeconomic conditions are taken into account. Using both frequencies also provides a robustness check for whether the results depend on the choice of data frequency and model specification.

⁶ The VAR model is estimated using a Cholesky identification and ordered so that the Brent crude oil prices are exogenous, and therefore a shock to Brent crude oil prices affects domestic inflation, industrial production, interest rates and the exchange rate.

⁷ The Brent surprise is very close to the raw daily Brent return. This means the exercise is mainly capturing unexpected daily oil price movements, rather than a deeply structural oil shock. The results should therefore be read as evidence of how markets react to an oil price shock, not as proof of a specific supply or demand shock.

We then use the oil price shock series from the VAR models to estimate a local projections (LP) model to trace how break-even inflation rates change following an oil price shock.^{8,9} The estimated LP responses are scaled to represent a 40% unexpected increase in the rand-denominated oil price.¹⁰

The baseline specification for the daily model, shown in Equation (1), controls for same-day movements in USD/ZAR and the US two-year Treasury yield. This helps isolate the oil price news from broader currency and global-rate movements on the same day.

$$100 \times (BEI_{t+h}^m - BEI_{t-1}^m) = \alpha_h + \beta_h OilShock_t + \gamma_h \Delta USDZAR_t + \delta_h \Delta US2Y_t + \epsilon_{t+h} \quad (1)$$

As shown in Equation (2), the baseline specification for the monthly model includes a vector of control variables, X , which includes industrial production, inflation, interest rates and the exchange rate.

$$100 \times (BEI_{t+h}^m - BEI_{t-1}^m) = \alpha_h + \beta_h OilShock_t + \gamma_h X_t + \epsilon_{t+h} \quad (2)$$

4. Results

Across both the daily and monthly models, oil price shocks have little immediate effect on South African break-even inflation. The response builds gradually at the five-year horizon and is driven mainly by higher estimated inflation expectations rather than the inflation risk premium. By contrast, the 10-year response is weaker and less persistent, suggesting that oil shocks affect medium-term inflation compensation without materially shifting longer-term market pricing.

The impulse response functions from the daily LP models are shown in Figure 4. Following a once-off 40% oil price shock, the five-year break-even response is small initially but becomes statistically significant after about 30 trading days. It rises to roughly 18–20 basis points between days 38 and 60. The 10-year response is weaker, becoming statistically significant after about 35 trading days and reaching approximately 10–16 basis points over the later part of the horizon. This suggests that oil price shocks affect medium-term inflation compensation more strongly than longer-term pricing.

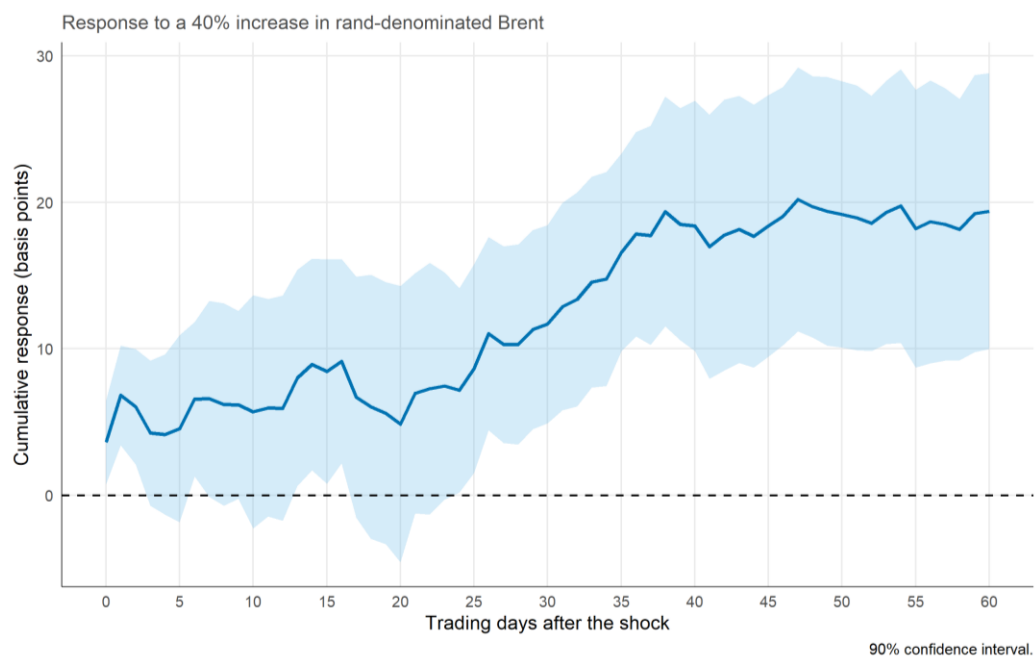
⁸ The focus is on cumulative changes over 0 to 60 trading days, measured in basis points for the daily model; and 0 to 18 months for the monthly model.

⁹ The break-even inflation rate (BEI) refers to either the use of the five-year break-even rate, the 10-year break-even rate and their components – the five-year and 10-year inflation expectations and inflation risk premium.

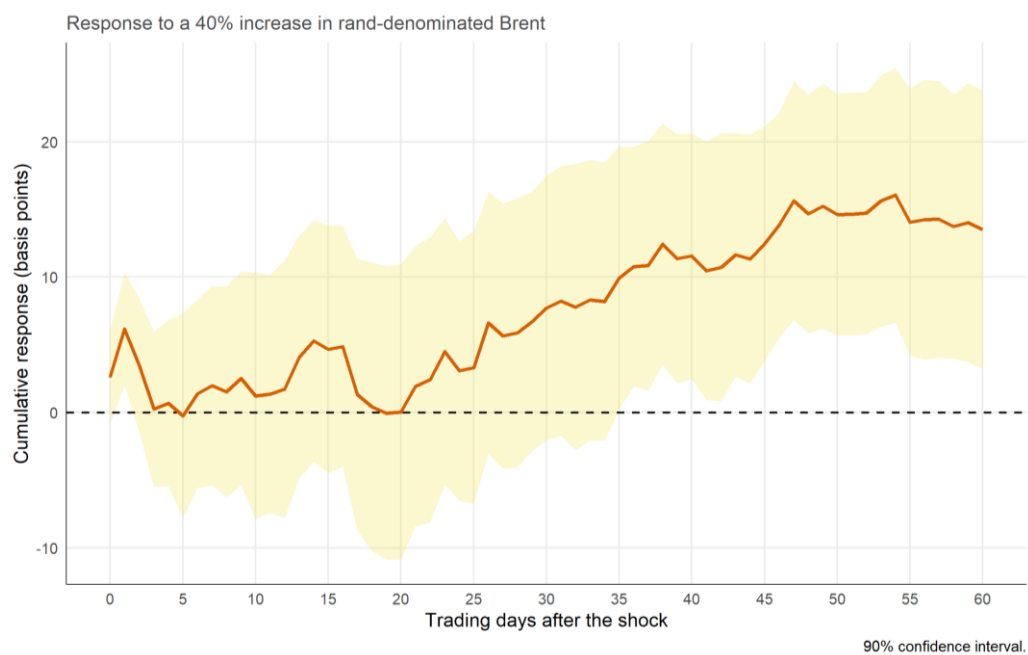
¹⁰ The 40% oil shock captures the recent rise in Brent crude oil prices following the outbreak of war in the Middle East.

Figure 4: Responses of break-even rates to an oil shock

Response of 5-year break-even



Response of 10-year break-even



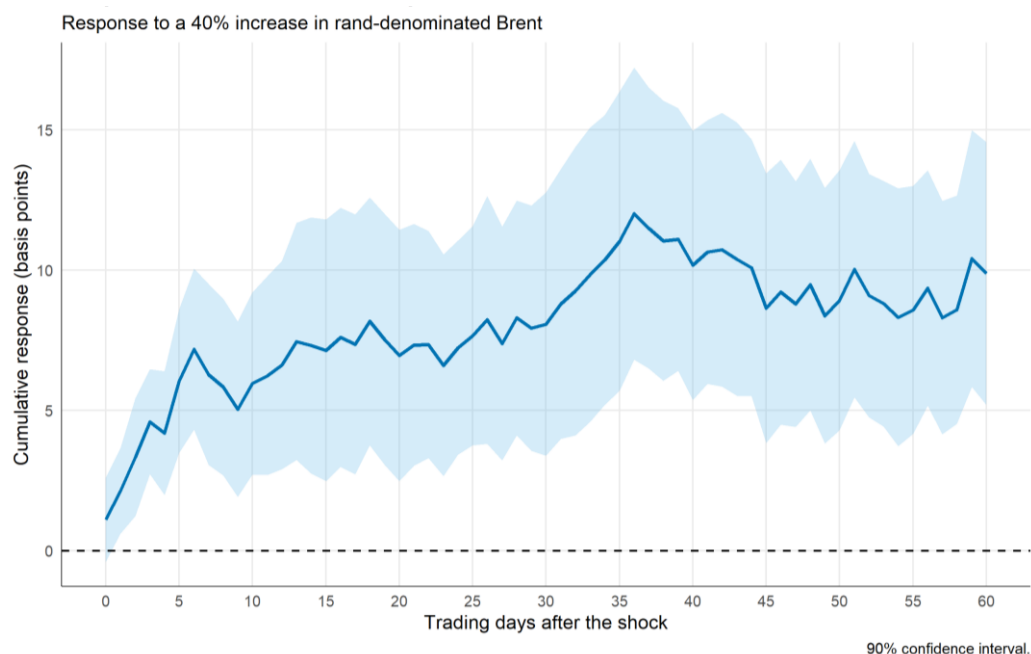
Source: Authors' calculations

One of the caveats discussed in the literature is that it is necessary to decompose the break-even rates into their risk premium component and inflation expectations component. We rely on estimates by Hendriks and Soobyah (2025) for this decomposition, which simply estimates the inflation risk premium as the difference between the nominal and real term premium estimates for South Africa. The inflation expectations component is then the difference between the break-even inflation rate and the estimated inflation risk premium.

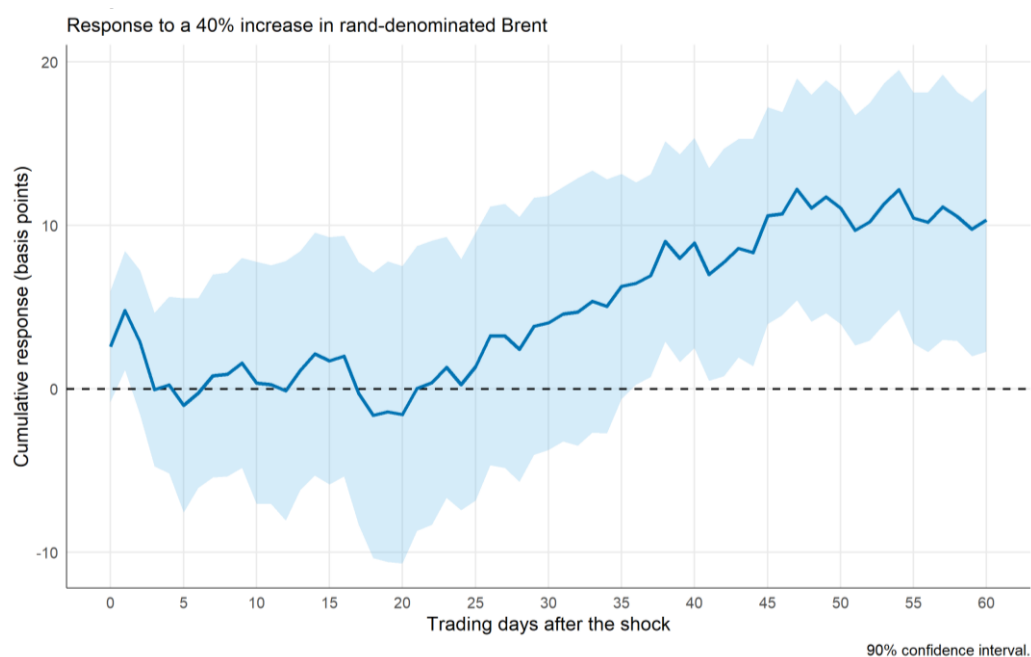
Using this decomposition, results in Figure 5 show that oil shocks significantly raise five-year inflation expectations, while risk-premium effects become significant only at longer horizons. At the 10-year horizon, both components are less consistently significant, suggesting a clearer effect on medium-term inflation pricing. In practical terms, markets expect oil shocks to raise inflation over the medium term, but not to cause a sustained shift in the longer-term inflation outlook.

Figure 5: Responses of the subcomponents of break-even rates to an oil shock

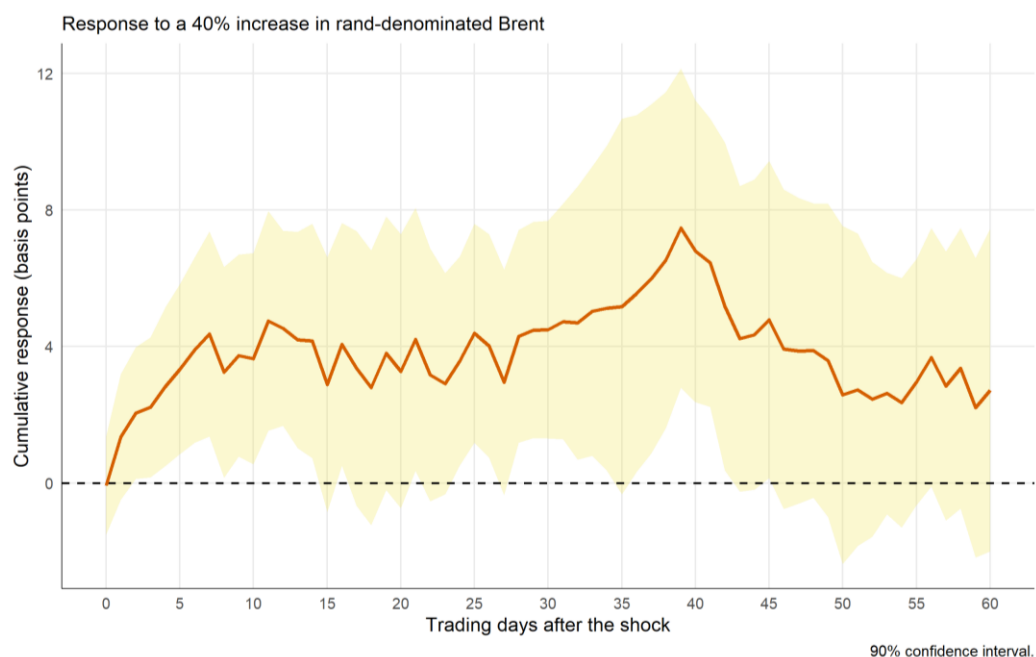
Response of 5-year inflation expectations



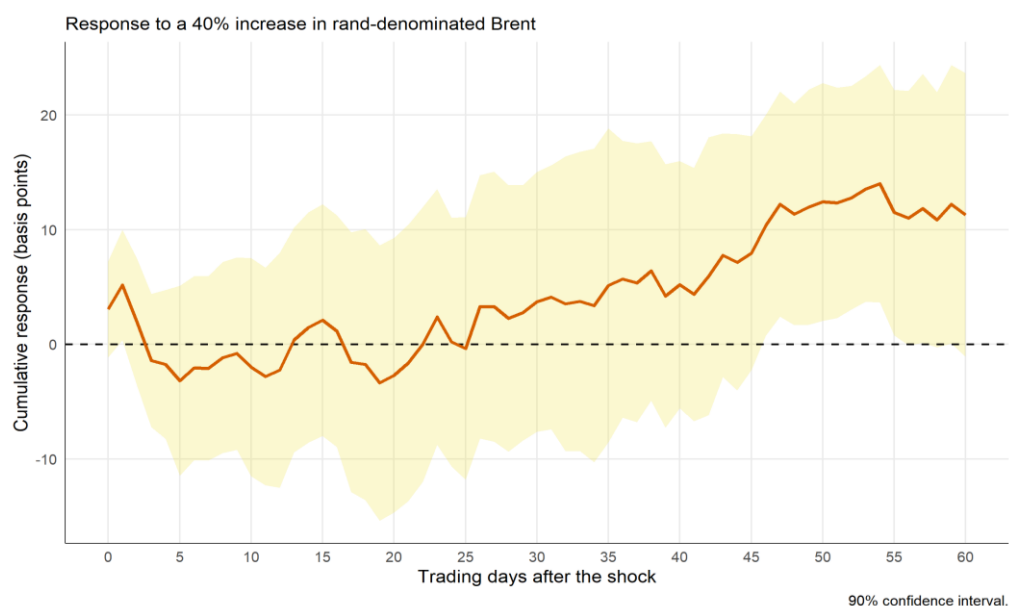
Response of the 5-year inflation risk premium



Response of the 10-year inflation expectations



Response of the 10-year inflation risk premium



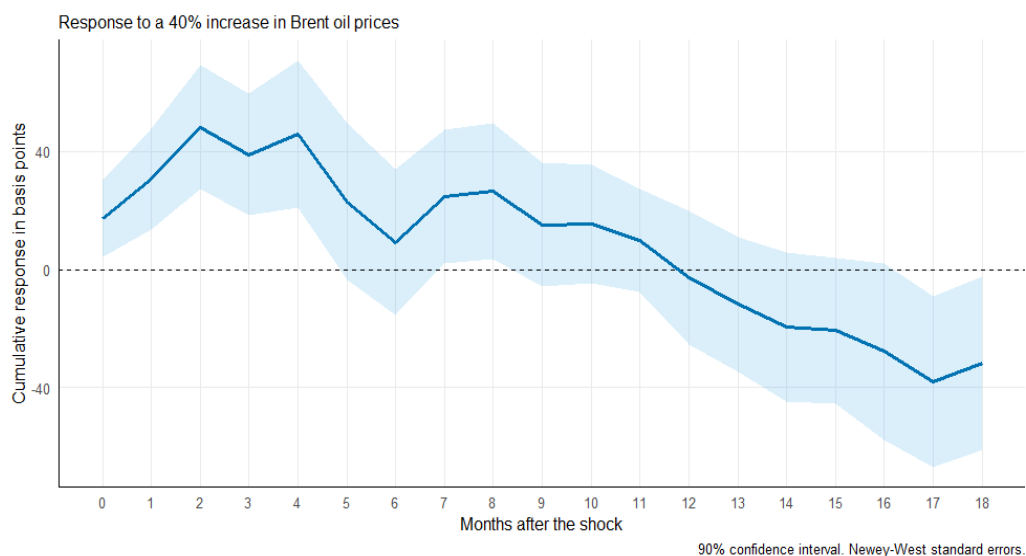
Source: Authors' calculations

The results from the monthly model are broadly consistent with the daily results. The five-year break-even rate rises gradually after an oil price shock, to about 48 basis points after two months, with the effect lasting up until five months (see Figure 6). This indicates that investors price in some risk of medium-term second-round effects. The response is mainly linked to higher estimated inflation expectations rather than higher inflation uncertainty via the inflation risk premium. By contrast, the 10-year response is weaker, at about half the size of impact of the five-year break-even response, and only statistically significant in months 2 to 4 (see Figure 7). The smaller and temporary response of the 10-year break-even suggests that markets do not expect the oil shock to result in a persistent deterioration in the longer-term

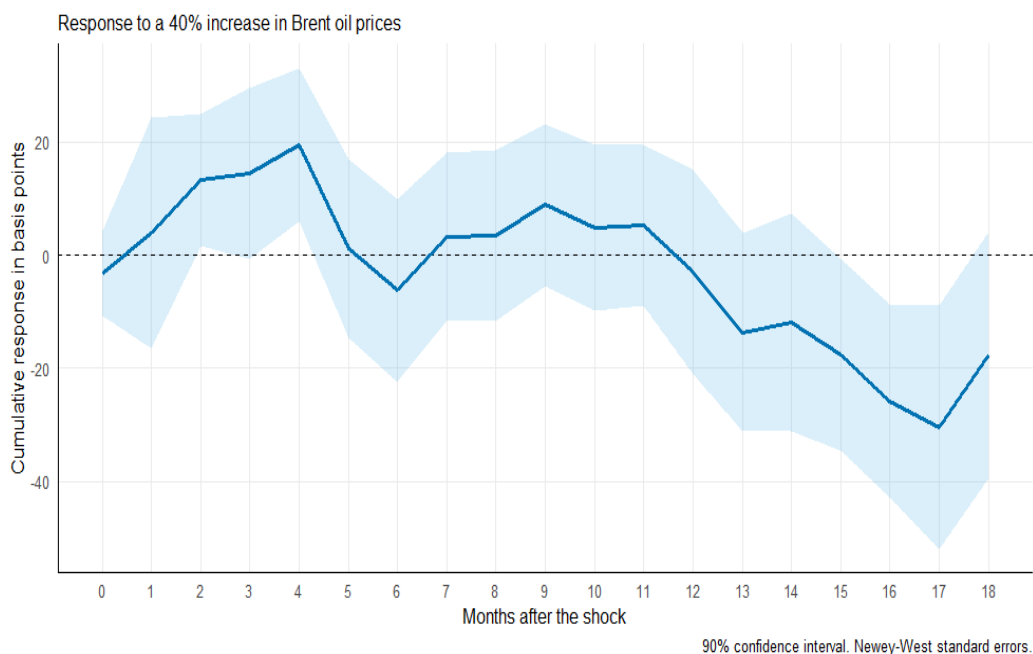
inflation outlook, consistent with longer-term inflation expectations remaining well anchored. Oil shocks still matter for inflation expectations, but the evidence points to contained rather than broad-based risks. In both the five-year and 10-year break-even rate responses, the effect dissipates in the second year.

Figure 6: Responses of 5-year break-even rates and their components to a once-off 40% oil price shock

Response of the 5-year break-even inflation rate



Response of the 5-year inflation risk premium



Response of the 5-year inflation expectations

Source: Authors' calculations

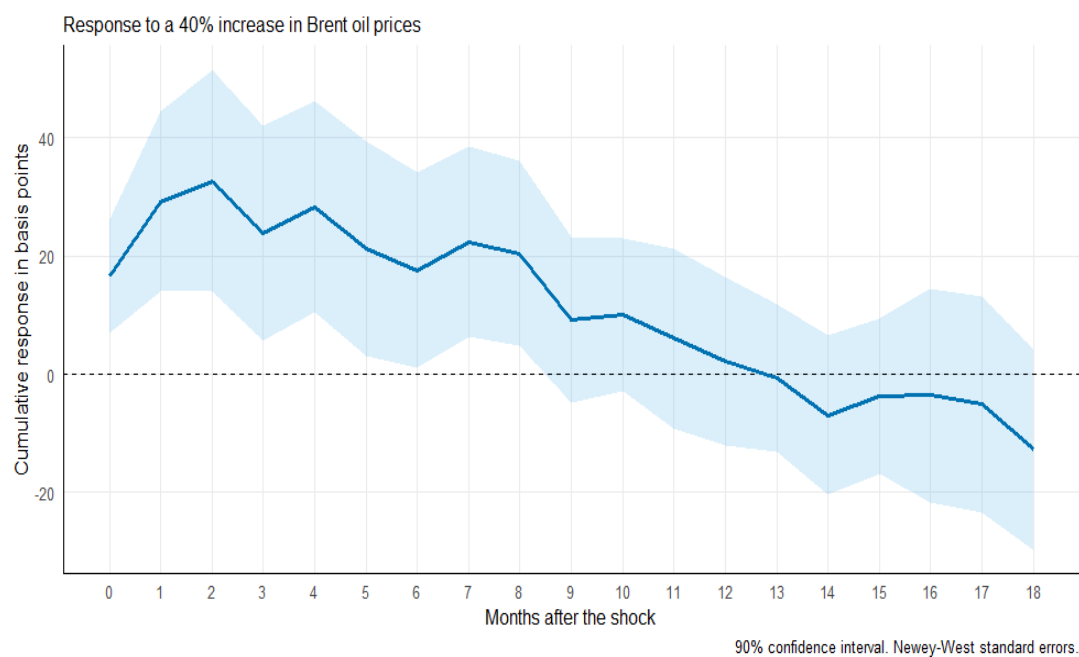
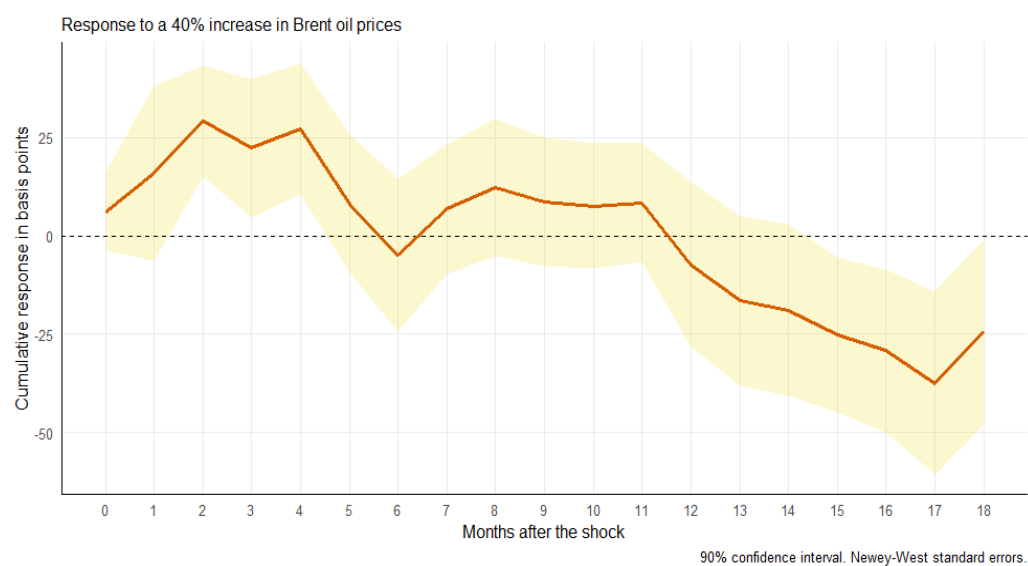
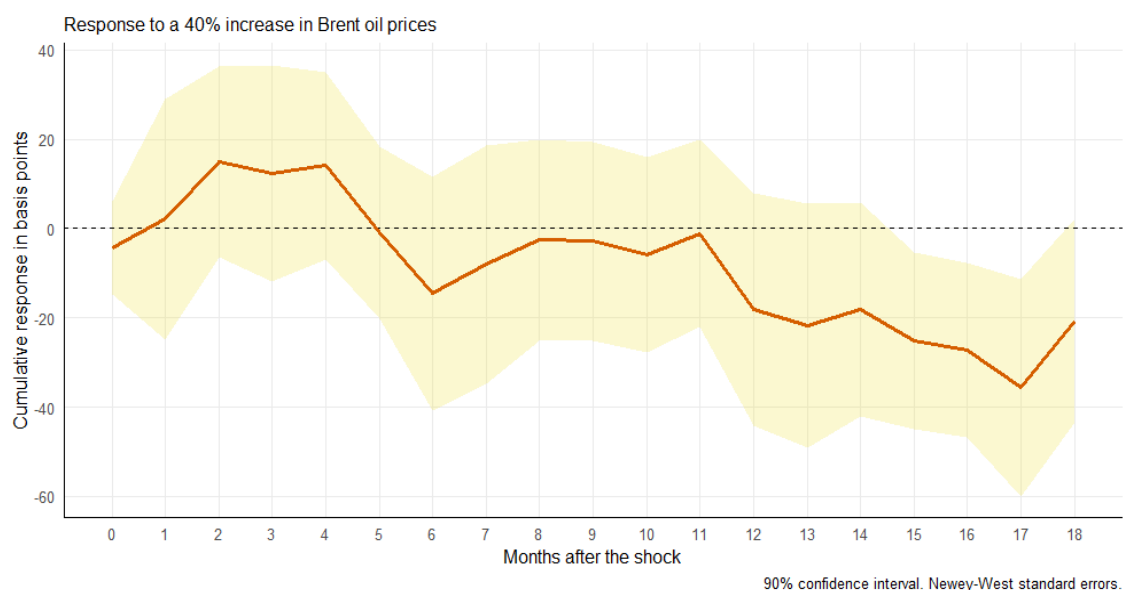


Figure 7: Responses of 10-year break-even rates and their components to an oil shock

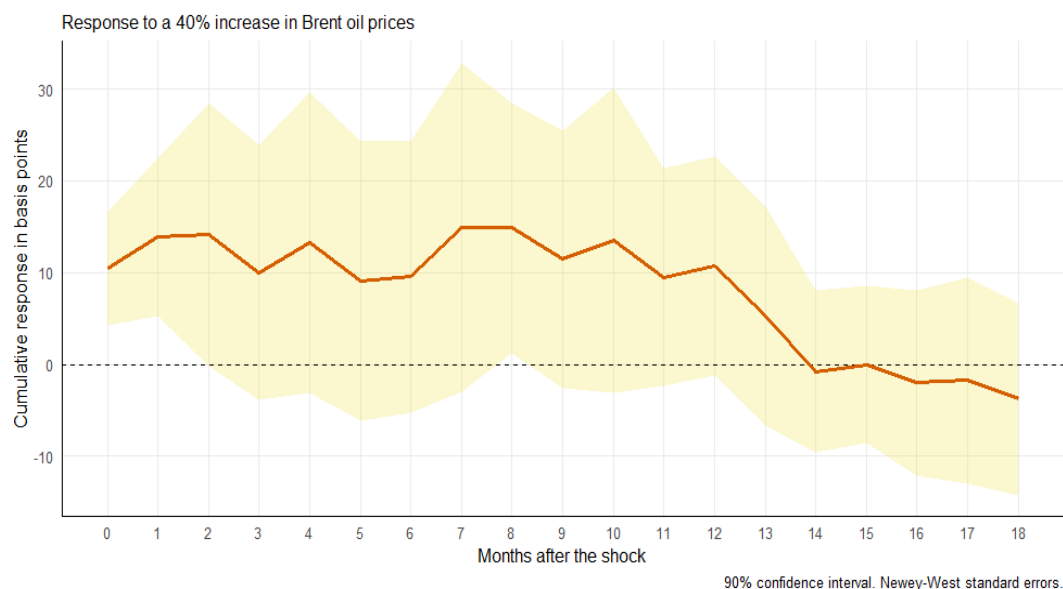
Response of the 10-year break-even inflation rate



Response of the 10-year inflation risk premium



Response of the 10-year inflation expectations



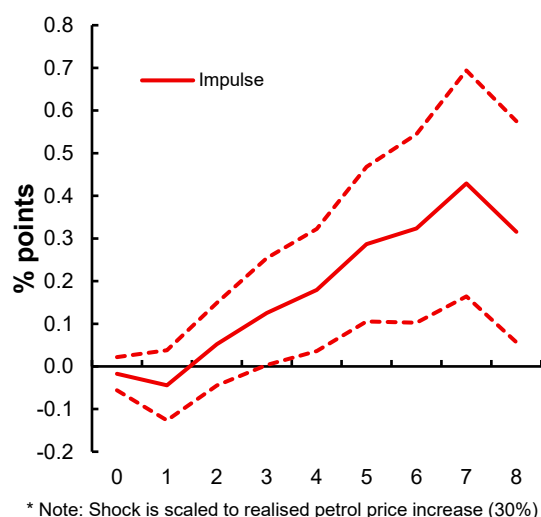
Source: Authors' calculations

Overall, the results suggest that oil price shocks can still pass through to medium-term inflation expectations, even when the effect is small in basis-point terms. This matters for monetary policy because second-round effects become more concerning when oil price increases start to influence expectations beyond the immediate fuel-price channel. At the same time, the weaker and less precise 10-year response suggests that longer-term inflation remains relatively well anchored. The results for both models are reasonably robust across alternative specifications and after removing extreme oil price observations.

5. Survey-based evidence of financial analysts' shorter-term inflation expectations¹¹

Our market-based analysis is complemented with two-year-ahead inflation expectations from the Bureau for Economic Research's inflation expectations survey. Financial analysts' expectations provide a shorter-horizon perspective than the five- and 10-year break-even measures, allowing us to assess whether the response to oil price shocks is also evident closer to the period over which inflation pressures are likely to emerge. The survey exercise considers a sustained increase in domestic fuel prices of around 30%, corresponding to the increase in fuel prices observed over the period in which oil prices rose by around 40%. Unlike the once-off shock considered in the market-based analysis, the fuel-price increase is sustained for three quarters before gradually declining and stabilising at 6% above its pre-shock level. The exercises are therefore not directly comparable but provide complementary evidence across different horizons: analysts' two-year-ahead expectations provide a shorter-horizon perspective, while the five- and 10-year break-evens capture medium- and longer-term market pricing. The analysis covers 2021Q1 to 2026Q3.

Figure 8: Response of financial analysts' 2-year-ahead inflation expectations to a sustained fuel price shock



Source: Authors' (Foresto and Reid's) calculations

Financial analysts' two-year-ahead inflation expectations show little initial response to the sustained fuel price shock, before increasing more noticeably at later horizons. The response then strengthens, rising from around 0.13 percentage points in quarter 3 to a peak of 0.43 percentage points in quarter 7, before moderating to 0.32 percentage points in the final quarter. This delayed response suggests that analysts do not immediately incorporate the full effect of higher fuel prices into their two-year-ahead expectations. Instead, the effect becomes more pronounced as the fuel price increase persists, before moderating as the shock dissipates.

¹¹ The authors would like to thank Anis Foresto and Monique Reid for this analysis.

6. Conclusion

Using a local projection model, we estimated the response of market-implied inflation expectations, break-even rates, to a shock to oil prices. We find that oil price shocks affect break-even rates mainly at shorter- and medium-term horizons, but do not produce a persistent deterioration in the longer-term inflation outlook. Across the daily and monthly models, break-even inflation responds only gradually: the effect is larger and more persistent at the five-year horizon than at 10 years, and the decomposition indicates that the increase is driven primarily by higher estimated inflation expectations rather than by the inflation risk premium. The complementary survey evidence reinforces this pattern, showing that financial analysts' two-year-ahead expectations rise more clearly when higher fuel prices persist. For monetary policy, these results indicate the need to closely monitor medium-term expectations when oil price increases are large or sustained, as this is where early signs of broader pass-through are most visible.

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