

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: stylised facts from historical oil shocks

Mathias Manguzvane, Koketso Mantsena and Mpho Rapapali

Abstract

This note uses an event-study approach to examine how South Africa's inflation has responded to global oil price shocks. The results show that oil price shocks differed markedly in size, speed and duration, resulting in very different inflation outcomes. Pass-through was strongest in the food, transport and core goods components of the consumer price index (CPI), highlighting the uneven transmission of oil price shocks across the CPI basket. Inflation persistence varied considerably across shocks, with many CPI components remaining elevated long after the initial fuel price shock. The inflation environment also matters given that oil price shocks have larger and more persistent effects when they coincide with broader inflationary pressures.

1. Introduction¹

The 2026 US-Iran conflict has increased global oil prices, renewing concerns about the inflationary impact of energy shocks. Oil prices affect inflation through fuel, transport, imported inputs and production costs, but previous shocks show that pass-through is neither immediate nor uniform.

This economic note examines South Africa's inflation response to three major global oil price shocks: the 2008 commodity boom, the 2011 Arab Spring shock and the 2022 Russia-Ukraine shock. Using an event-study approach and CPI inflation data at COICOP (classification of individual consumption by purpose) level 3, it assesses whether inflation responses differed across episodes in size, speed and persistence, and identifies which components of the CPI basket were most exposed. The historical evidence provides a framework for understanding how previous oil shocks were transmitted through the CPI basket, which categories proved most vulnerable to persistent inflationary pressures, and what this may imply for assessing inflation risks associated with the current shock.

2. Data and methodology

We use monthly CPI data from Statistics South Africa (Stats SA), spanning January 2007 to December 2025, covering the CPI basket up to COICOP level 3. Using an event-study approach, we examine how South African inflation evolved around three major oil price shock

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¹ The authors would like to thank the following colleagues for their valued inputs and assistance: Keletso Morwane, Mokgabiso Tshenkeng, Siphosihle Lebea and Callum Frost.

episodes in 2008, 2011 and 2022. We focus on how large the responses were, how quickly they materialised and how long they lasted.

The analysis is descriptive rather than causal. While the event-study framework allows for a consistent comparison of inflation dynamics across historical oil price shocks, it does not isolate the effect of oil prices from other factors affecting inflation. The results should therefore be interpreted as stylised evidence rather than estimates of oil price pass-through.

To compare inflation responses across each oil shock episode, we normalise inflation rates relative to their average level in the six months before the shock.² For each episode, the event month is defined as the start of the oil price shock, identified as the month in which Brent crude oil prices began a sustained increase.³ Inflation responses are tracked over a 24-month post-shock event window for each episode. Let $\pi_{i,h}$ denote the year-on-year inflation rate of CPI component i at event horizon h . Following MacKinlay's (1997) event-study framework, we define the pre-shock benchmark as:

$$\bar{\pi}_i^{pre} = \frac{1}{n} \sum_{h=-n}^{-1} \pi_{i,h} \quad (1)$$

where n is the number of months in the pre-shock window. We then calculate the normalised inflation deviation as:

$$D_{i,h} = \pi_{i,h} - \bar{\pi}_i^{pre} \quad (2)$$

This captures the magnitude of the inflation response to an oil shock, measured as the deviation from the pre-shock average.⁴ Speed refers to the number of months it takes to reach the peak, while persistence reflects how long inflation stays above half of that peak size.⁵ For the CPI basket, we summarise this as the share of categories still elevated on this basis at that horizon (see Table 2). We also track CPI levels to account for base effects (see the annexures). This is a useful check, as falling year-on-year inflation does not necessarily mean earlier price increases have reversed.

3. Oil shocks differ in size, speed and duration

Oil price shocks have differed sharply in magnitude, speed and duration. The 2008 shock was the largest in size, with Brent crude oil prices rising from about US\$54 a barrel in early 2007 to more than US\$145 by mid-2008 (Figure 1). The increase reflected strong global demand, constrained supply and a broader commodity price boom that reinforced energy, food and agricultural price pressures. The shock lasted for 19 months before reversing sharply as the global financial crisis weakened economic activity.

² Results are broadly robust to using the pre-shock median instead of the mean and to alternative pre-shock windows. The six-month pre-shock window is used in the main analysis because it captures prevailing inflation conditions while limiting the influence of earlier, potentially unrelated developments.

³ The event dates are January 2007, February 2011 and February 2022 for the 2008, 2011 and 2022 oil price shocks, respectively. Although the first episode began in early 2007, it is referred to as the 2008 oil price shock because oil prices peaked in 2008.

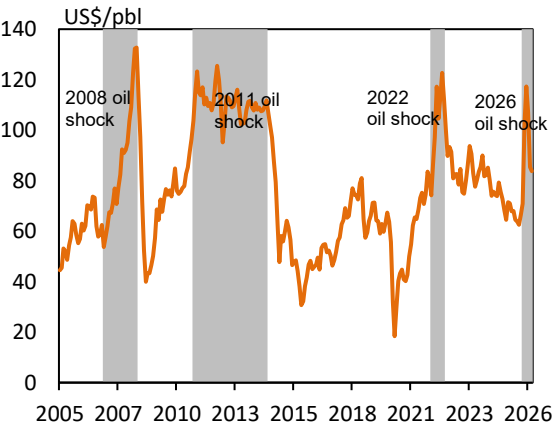
⁴ To avoid treating small, temporary movements as peak responses, peaks are identified only when the increase in inflation is sufficiently large relative to the overall response following the shock.

⁵ The half-peak threshold is motivated by the half-life concept in the persistence literature (e.g. Andrews and Chen 1994; Rogoff 1996). It provides a simple way to assess whether the effects of a shock have materially dissipated.

While the 2011 shock was comparatively smaller, with Brent crude rising from about US\$80 a barrel in mid-2010 to just under US\$130 by April 2011, it was the most persistent. Prices stayed elevated for about 42 months after disruptions to Libyan oil exports during the Arab Spring (Figure 2). This oil shock also coincided with global food price pressures from bad weather, crop failures and export restrictions.

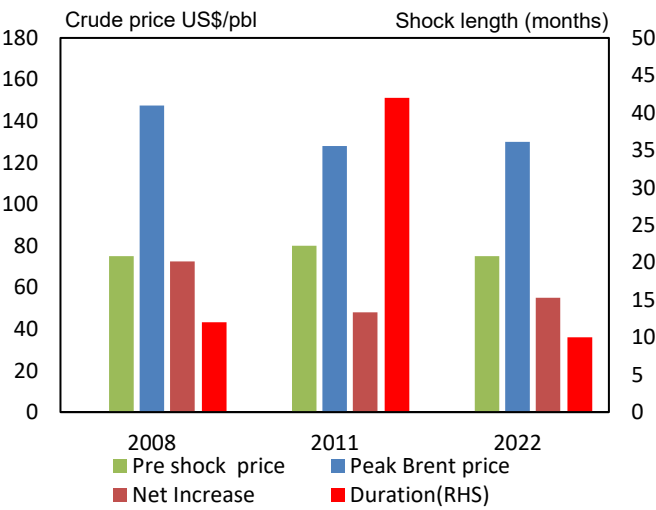
By contrast, the 2022 shock was the fastest to reach its peak. Brent crude rose from about US\$75 to more than US\$130 a barrel within the first month of Russia’s invasion of Ukraine. Prices remained elevated until June 2022 before gradually unwinding. Despite being similar in size to the 2011 shock, it lasted only about 10 months. The shock also coincided with a broader surge in food, fertiliser and energy prices alongside lingering supply-chain disruptions that predated the invasion but were exacerbated by the war.

Figure 1: Brent crude prices



Source: Thomson Reuters.

Figure 2: Historical global oil price shocks



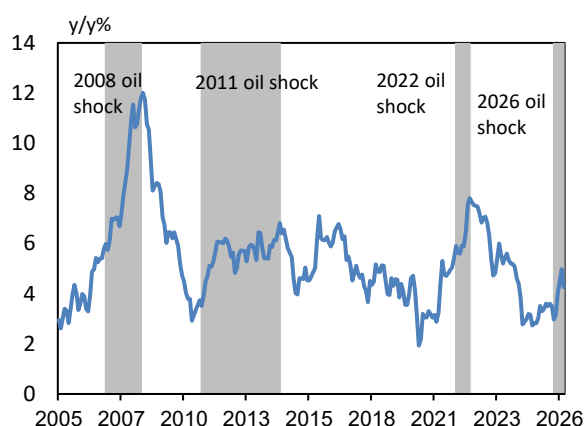
Source: Thomson Reuters. Authors’ own calculations.

4. The inflation response differs across oil shocks

4.1 Headline inflation responds differently across oil shocks

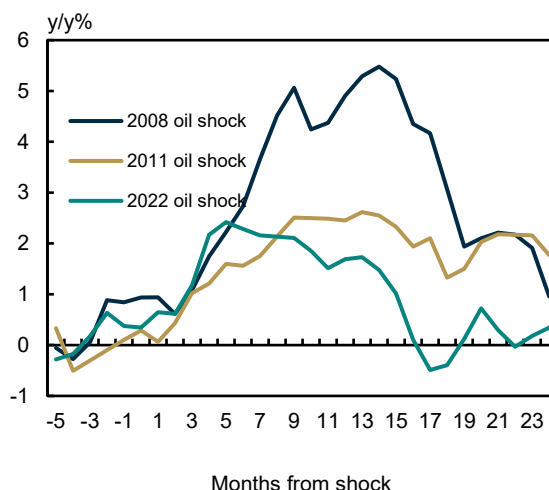
The inflation environment ahead of each oil shock was quite different. Inflation was already high and rising during the build-up to the 2008 shock, increasing from around 6% to almost 9% during 2007 (Figure 3). Ahead of the 2011 episode, inflation was falling, whereas in 2022 it was rising from a relatively low base. To make the three episodes comparable despite different starting conditions, Figure 4 plots each shock’s inflation path relative to its own six-month pre-shock average. This shows that the 2008 shock produced the largest response. Headline inflation peaked at more than 5 percentage points above its pre-shock average, about nine months after the shock. The 2011 response was smaller, at around 2.5 percentage points, but stayed elevated throughout the two-year window. The 2022 response was quicker, peaking within six months before fading below its pre-shock average after roughly 16 months.

Figure 3: Headline inflation across shocks



Source: Stats SA.

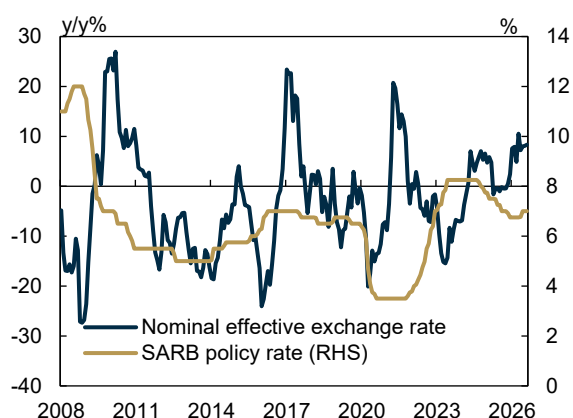
Figure 4: Headline inflation deviation from pre-shock average



Source: Stats SA. Authors' own calculations.

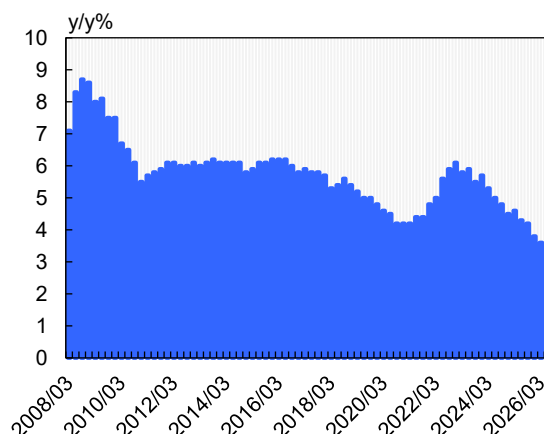
The inflation response to an oil price shock depends not only on the shock itself, but also on the broader inflation, macroeconomic and policy environment. In 2008 and 2011, higher oil prices coincided with food and commodity price shocks, a weak rand and elevated inflation expectations (Figures 5 and 6).⁶ Ahead of the 2022 shock, inflation expectations were considerably lower, but climbed as fuel, food and fertiliser costs rose. The period also coincided with a rapid monetary policy tightening cycle, with the South African Reserve Bank (SARB) raising the repo rate by 475 basis points between November 2021 and May 2023. Inflation was less persistent than previous shocks, despite elevated price pressures and rising inflation expectations. While tighter monetary policy may have contributed to this outcome, the event-study evidence does not allow its effect to be identified separately from other influences on inflation.

Figure 5: NEER and policy rate



Source: SARB.

Figure 6: One-year-ahead inflation expectations



Source: Bureau of Economic Research.

⁶ The May 2008 and November 2011 *Monetary Policy Review* highlight the role of rising food and energy prices, exchange rate weakness and elevated inflation expectations in shaping the inflation outlook (SARB 2008, 2011).

4.2 Pass-through is uneven across the CPI basket

Oil price shocks do not move uniformly through the CPI basket. Both the size and timing of the response differ sharply across components. Table 1 sets out the peak response and time to peak for selected CPI categories across the three episodes. Food and non-alcoholic beverages, transport and core goods were consistently the most sensitive, while housing and utilities responded far less, likely because prices in that category are driven more by housing-market and financial conditions than by oil costs.

Table 1: Speed and magnitude of CPI responses across oil shock episodes

Category	Peak response (ppts)			Time to peak (months)		
	2008	2011	2022	2008	2011	2022
Headline	5.1	2.6	2.4	9.0	13.0	5.0
Core	3.9	1.2	1.5	22.0	23.0	15.0
Core services	1.0	0.8	1.5	12.0	23.0	14.0
Core goods	6.7	4.5	3.6	9.0	10.0	5.0
Food and non-alcoholic beverages	8.3	9.1	7.3	14.0	11.0	13.0
Alcoholic beverages and tobacco	2.2	0.4	1.9	1.0	14.0	4.0
Clothing and footwear	27.7*	2.8	1.3	18.0	12.0	12.0
Housing and utilities	–	0.5	1.1	–	6.0	4.0
Furnishings	–	3.3	4.9	–	23.0	13.0
Health	–	0.2	2.7	–	0.0	19.0
Transport	–	5.6	2.7	–	10.0	1.0
Information and communication	–	1.0	0.4	–	6.0	4.0
Recreation, sport and culture	–	2.5	2.6	–	5.0	14.0
Education	0.0	0.0	1.6	0.0	0.0	13.0
Restaurants and accommodation	–	1.0	2.8	–	24.0	1.0
Insurance and financial services	1.4	1.6	1.5	9.0	12.0	14.0

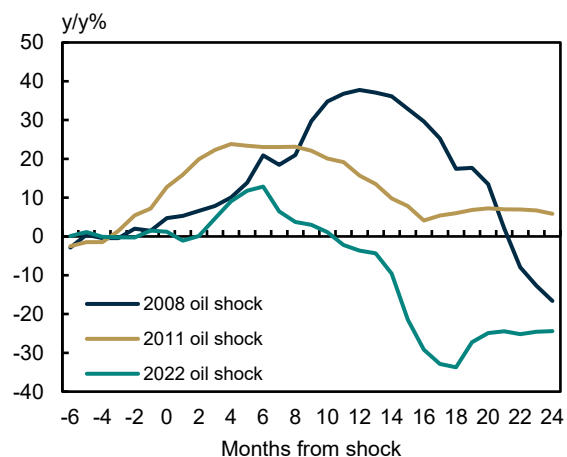
Note: 'Peak response' measures the maximum deviation from the six-month pre-shock average (percentage points). 'Time to peak' measures the number of months needed to reach this maximum response. A dash (–) indicates insufficient pre-shock data to calculate the peak response.

* The unusually large peak response in clothing and footwear inflation in 2008 partly reflected methodological changes introduced by Stats SA, alongside the broader inflation shock at the time. This resulted in inflation in this category rising to record highs.

Breaking down food and transport further reveals important differences within the same category. Oils and fats CPI saw some of the largest responses of any component across all three shocks (Figure 7), amplified by developments in global agricultural commodity and edible-oil markets.⁷ Cereals and milk and eggs responded more gradually, shaped by weather, fertiliser costs, feed costs and animal disease (Figure 8). Within transport, airfares exhibited large but volatile responses, reflecting fuel and demand conditions. Taxi fares responded more gradually and remained elevated for longer, likely because fare adjustments occur less frequently and changes in fuel costs are passed through to consumers with a lag (Figure 9).

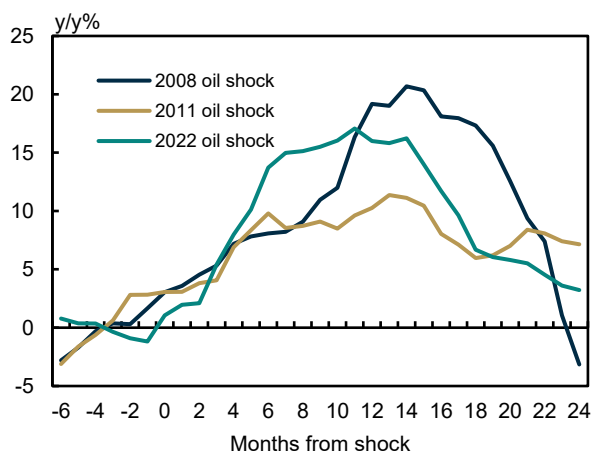
⁷ The large increases in oils and fats reflected more than oil price pass-through alone. They were also influenced by broader developments in global agricultural commodity and edible-oil markets, including the global commodity price boom, weather-related supply disruptions, geopolitical tensions in the Middle East and North Africa, and disruptions to Black Sea sunflower oil exports following Russia's invasion of Ukraine.

Figure 7: Oils and fats inflation deviation from pre-shock average



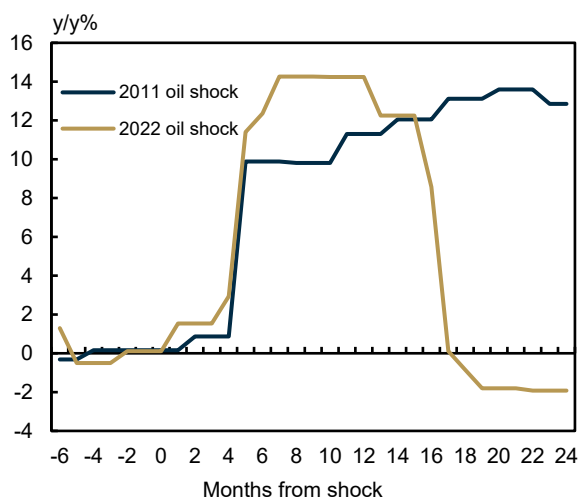
Source: Stats SA. Authors' own calculations.

Figure 8: Cereals inflation deviation from pre-shock average



Source: Stats SA. Authors' own calculations.

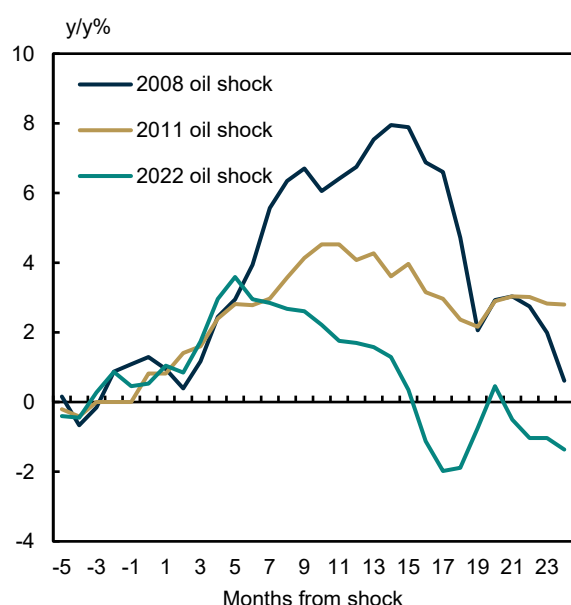
Figure 9: Taxi fares inflation deviation from pre-shock average



Source: Stats SA. Authors' own calculations.

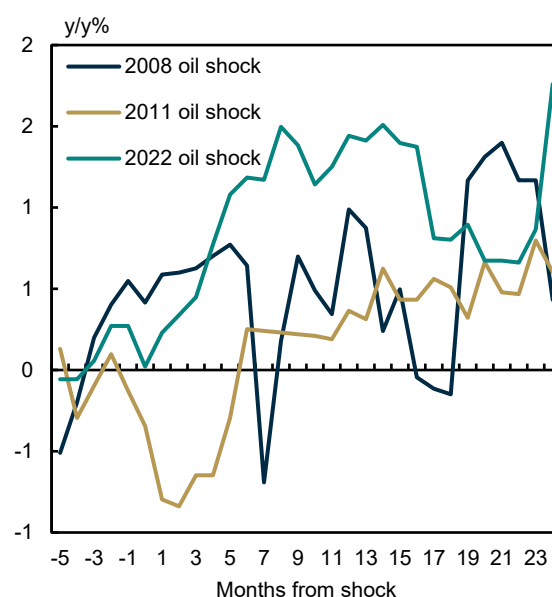
Core inflation responses to oil shocks were largely driven by core goods (Figures 10 and 11). Core goods responded earlier and by more than core services for all three shocks, consistent with their greater exposure to transport costs and energy-intensive manufacturing processes. Services such as housing and utilities, and restaurants and accommodation, exhibited smaller and more gradual responses.

Figure 10: Core goods inflation deviation from pre-shock average



Source: Stats SA. Authors' own calculations.

Figure 11: Core services inflation deviation from pre-shock average



Source: Stats SA. Authors' own calculations.

4.3 Inflation persistence varies across oil shocks

Inflation persistence also differed across the three oil shocks. Table 2 shows the share of COICOP 3 categories still above half their peak response after 24 months.⁸ Persistence was greatest after the 2008 shock, with 66.7% of categories still elevated, against 61.1% in 2011 and 55% in 2022. Inflationary pressures faded faster after 2022, but even then, more than half of the included CPI categories were still elevated two years later.

Table 2: Persistence of inflation responses across the CPI basket following oil price shocks

Oil shock period	Categories dissipating within 24 months (%)	Categories remaining above half-peak after 24 months (%)
2008	33.3	66.7
2011	38.9	61.1
2022	45.0	55.0

Note: Shares are calculated using the CPI components at COICOP level 3 available in each episode, excluding insurance, education, and information and communication services. As category coverage differs across time, the shares are based on current weights and are indicative rather than strictly comparable across episodes.

⁸ Persistence is measured as the share of COICOP 3 categories remaining above half of their peak response 24 months after the shock. Insurance, education, and information and communication services are excluded because their price dynamics are often driven by factors unrelated to oil price shocks. The dissipation point is defined as the first month after the peak when the response falls below half of its peak value and remains below this threshold for the rest of the event window.

5. Conclusion

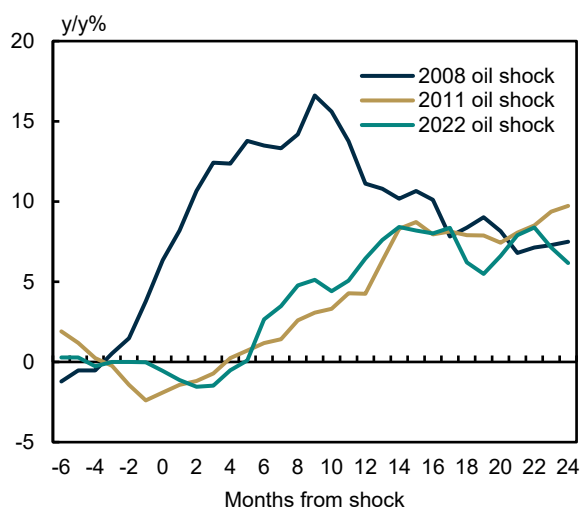
In this note we used an event-study approach to assess inflationary responses following the 2008, 2011 and 2022 oil price shocks. The results show that inflation outcomes are shaped not only by the size of the oil price increase, but also by the type of shock, how widely price pressures spread through the CPI basket, and the prevailing macroeconomic and policy environment. The largest and most persistent responses occurred when higher oil prices coincided with broader food and commodity price pressures. Transport, food and core goods were the main transmission channels, while persistence differed sharply across episodes. These findings suggest that the inflationary effects of oil price shocks depend on more than the oil price increase itself. Oil shocks appear most inflationary when they spread beyond fuel into the food, transport and core goods categories, particularly when they reinforce inflationary pressures already present elsewhere in the economy.

For the 2026 oil shock linked to the US-Iran conflict, the historical record indicates the need for a cautious assessment. Relative to 2008 and 2011, the current shock is unfolding in an environment of lower inflation and lower inflation expectations. Historical experience nevertheless suggests that oil price shocks tend to have more persistent effects when they reinforce inflationary momentum already present elsewhere in the economy. Monitoring how price pressures evolve across the CPI basket may provide an early indication of whether the current shock remains a temporary relative price adjustment or develops into a more persistent source of inflationary pressure. A broadening of price pressures beyond fuel into food, transport-intensive services and core goods would suggest greater persistence risks and warrant closer monitoring.

Annexures

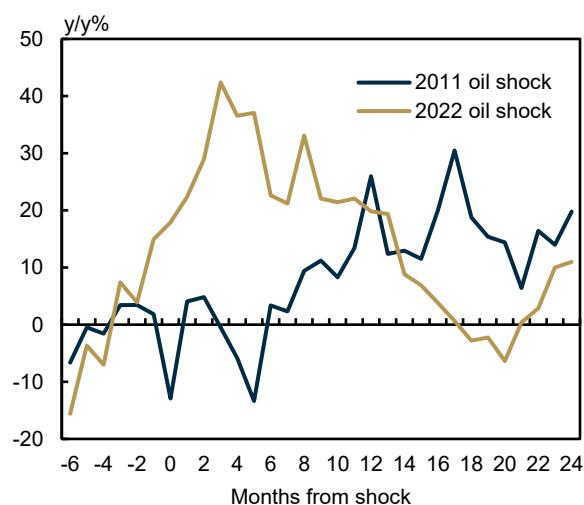
Annexure A: Disaggregated CPI components and oil shocks

Figure A1: Milk and eggs inflation deviation from pre-shock average



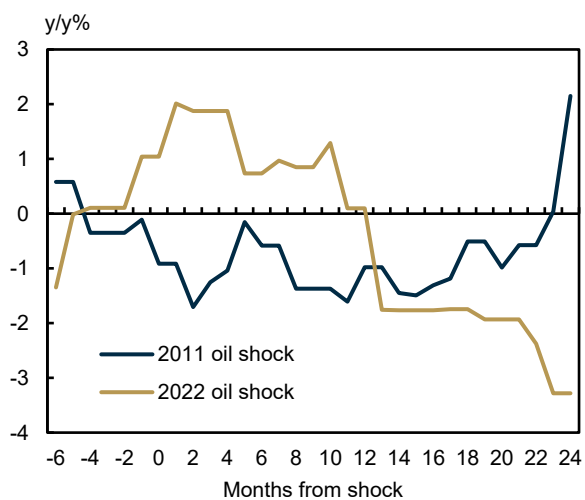
Source: Stats SA. Authors' own calculations.

Figure A2: Airfares inflation deviation from pre-shock average



Source: Stats SA. Authors' own calculations.

Figure A3: Bus fares inflation deviation from pre-shock average

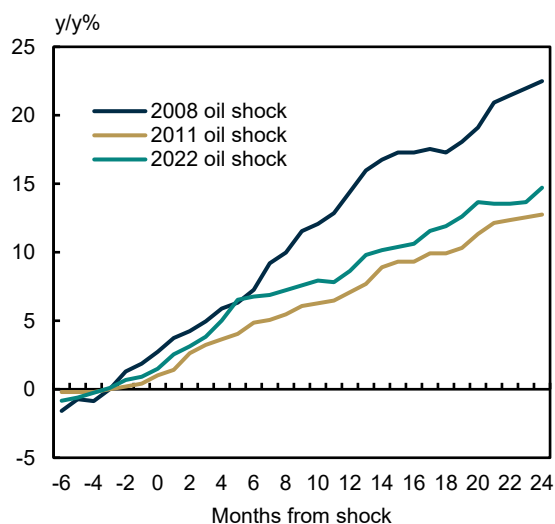


Source: Stats SA. Authors' own calculations.

Annexure B: Price-level responses to historical oil price shocks

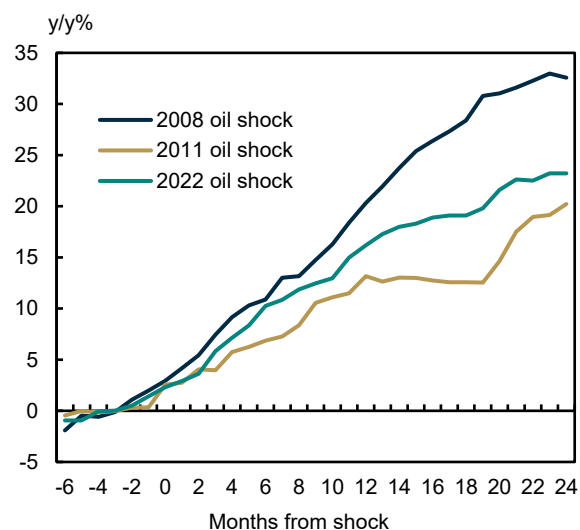
Our main analysis focuses on inflation rates. However, lower inflation does not necessarily imply that earlier price increases have been reversed. To assess whether oil price shocks resulted in lasting price increases, this annexure examines CPI price levels. The results broadly confirm the inflation rate findings: inflation eventually moderated, but price levels remained permanently higher following each shock.

Figure B1: Headline CPI price-level response across oil shock episodes



Source: Stats SA. Authors' own calculations.

Figure B2: Food and non-alcoholic beverages CPI price-level response across oil shock episodes



Source: Stats SA. Authors' own calculations.

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