*South African Reserve Bank*

*Working Paper Series*

*WP/26/12*

# The impact of United States interest rates on the South African economy

*Benedicte Baduel, Franz Ruch and Rudi Steinbach*

Authorised for publication by Konstantin Makrelov

**11 June 2026**

SOUTH AFRICAN RESERVE BANK

**© South African Reserve Bank**

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means without fully acknowledging the author(s) and this Working Paper as the source.

South African Reserve Bank Working Papers are written by staff members of the South African Reserve Bank and, on occasion, by consultants under the auspices of the South African Reserve Bank. The papers deal with topical issues and describe preliminary research findings and develop new analytical or empirical approaches in their analyses. They are solely intended to elicit comments and stimulate debate.

The views expressed in this Working Paper are those of the author(s) and do not necessarily represent those of the South African Reserve Bank or South African Reserve Bank policy. While every precaution is taken to ensure the accuracy of information, the South African Reserve Bank shall not be liable to any person for inaccurate information, omissions or opinions contained herein.

South African Reserve Bank Working Papers are externally refereed.

Information on South African Reserve Bank Working Papers can be found at
https://www.resbank.co.za/en/home/publications/Papers/working-papers.

Enquiries relating to the Working Paper Series can be addressed to:
Head: Economic Research Department
South African Reserve Bank
P O Box 427
Pretoria 0001

Tel. +27 12 313 3911

# The impact of United States interest rates on the South African economy

Benedicte Baduel,[*] Franz Ruch[†] and Rudi Steinbach[‡]

**Abstract**

This paper estimates the impact of different types of United States (US) interest rate shocks on the South African economy. It first classifies movements in US interest rates based on their cause – that is, changes in inflation expectations ('inflation' shocks), changes in perceptions of the Federal Reserve's reaction function ('reaction' shocks) and changes in real activity ('real' shocks). Policy tightening in the US prompted by reaction and inflation shocks have a material and adverse impact on financial developments in South Africa, with limited evidence of short-term macroeconomic and policy impacts. Real shocks, in contrast, have more benign impacts. These results are broadly similar to spillover impacts of other measures of US interest rate shocks identified in the literature. The paper also assesses the degree of asymmetry in spillover impacts when differentiating between positive (policy-tightening) and negative (policy-easing) shocks. Positive shocks – reflecting US policy tightening – tend to have larger impacts.

**JEL classification**

E50, E43, F30, C50

**Keywords**

Monetary policy spillovers, interest rates, South Africa.

---

* Senior Economist, World Bank. bbaduel@worldbank.org.

† Senior Economist, World Bank. fruch@worldbank.org.

‡ Research Fellow, South African Reserve Bank. Rudi.Steinbach@resbank.co.za.

## 1. Introduction[1]

In early 2022, the United States (US) Federal Reserve (Fed) initiated its most aggressive rate hike cycle in nearly four decades in response to inflation levels unseen since the 1980s. These rate increases have significant financial and economic impacts on emerging market and developing economies (EMDEs) like South Africa. Higher US interest rates tend to make dollar-based assets more attractive, causing bond and equity outflows from EMDEs and depreciating their currencies (see, for example, Bruno and Shin 2015). The increased borrowing costs also slow the US economy, dampening consumption and investment through standard interest-rate and credit channels, and limiting export opportunities for EMDEs (Gertler and Karadi 2015). Financial globalisation and the US dollar's role in global banking may also contribute to a financial cycle affecting all economies (Miranda-Agrippino and Rey 2019).

The Fed started lowering policy rates in late 2024 as inflation eased towards its 2% target. The easing cycle, however, was paused in 2025 as growth initially remained resilient, inflation progress slowed and economic policy uncertainty rose substantially. The implementation of tariffs on all US trading partners weighed materially on activity as tariff rates rose to levels not seen in over a century.

Against this background, this paper aims to answer the following questions:

- How do changes in US interest rates affect financial, economic and macroeconomic policy developments in South Africa?
- To what extent do these effects differ when US interest rates are tightened relative to when they are eased?

The impact of US interest rates on South Africa are traced out using local projections. This approach estimates the dynamic response of South African macrofinancial variables at each horizon directly from the data, without imposing the strong dynamic restrictions of a vector autoregressive (VAR) model (Jordà 2005). US interest-rate

[1] We would like to thank Dumisani Ngwenya, participants at seminars at the South African Reserve Bank (SARB) and University of Pretoria, and three anonymous referees from the SARB for their comments and suggestions. The findings, interpretations and conclusions expressed in this paper are entirely those of the authors and should not be attributed to the World Bank, its Executive Directors or the countries they represent, or the SARB.

movements are mainly based on three shocks identified in Arteta, Kamin and Ruch (2025), namely changes in two-year US bond yields driven by reaction, inflation and real shocks. *Reaction shocks* are interest-rate movements prompted by the market's view that the Fed has become more hawkish. *Inflation shocks* are changes in the interest rate prompted by rising expectations of US inflation, while *real shocks* are changes prompted by the belief in or anticipation of an improving economic outlook. We compare these shocks to those in Jarociński and Karadi (2020) to validate the results. Across these shocks we also compare the asymmetry of US interest-rate increases (policy tightening) and decreases (policy easing).

We report the following findings. First, US policy shocks have marked spillovers on the South African economy. Changes in two-year yields reflecting reaction and inflation shocks drive strong responses in South African financial markets, with bond yields and country risk rising, while the exchange rate weakens and the equity market falls. US inflation shocks also lead to an inflation pickup in South Africa. Although US real shocks have more muted impacts on the South African bond market, they do lower country risk, appreciate the rand, boost equities and stimulate economic activity. These responses are similar to those of the shocks identified in Jarociński and Karadi (2020). Second, we find that a significant degree of asymmetry accompanies the South African economy's response to US policy shocks, with policy tightening generally having larger spillover impacts than policy easing.

This paper complements several studies that examine spillovers of US monetary policy, and interest rates more broadly, to South Africa. South Africa is included in a number of studies on EMDEs, including Arbatli-Saxegaard et al. (2022); Arteta, Kamin and Ruch (2025); Hoek, Kamin and Yoldas (2022); Iacoviello and Navarro (2019); and Kearns, Schrimpf and Xia (2018). There are only a handful of studies, however, that look at South Africa in isolation. Tumala et al. (2021) present an alternative study that identifies US spillovers to South Africa using the global VAR approach by Pesaran and Smith (2006). Azad and Serletis (2022) show that US monetary policy uncertainty affects domestic policy rates in South Africa. Kabundi, Loate and Viegi (2020) look at the effect of conventional and unconventional US monetary policy on South Africa.

This paper contributes to the literature on US interest-rate spillovers to South Africa in several ways. It examines, for the first time, the broader implications of US interest rates on various dimensions of the South African economy, including macroeconomic policy. It analyses the effect of three different US interest-rate shocks on South African outcomes. And it is the first to investigate the possibility that the South African economy responds asymmetrically to these shocks.

The paper proceeds as follows. Section 2 looks at the methodology and data used. Section 3 discusses the identification of US interest-rate shocks. Section 4 discusses the results. Section 5 provides evidence of the robustness to changing specifications and section 6 concludes.

## 2. Drivers of US interest rates

### 2.1 Approach

We use the array of shocks related to monetary policy estimated in Arteta, Kamin and Ruch (2025) and Jarociński and Karadi (2020). Arteta, Kamin and Ruch define three shocks that describe moves in two-year US Treasury yields: real, inflation and reaction shocks. The shocks are identified using a Bayesian VAR with sign restrictions. Arteta, Kamin and Ruch state:

> Real shocks are defined as changes in interest rates that are caused by changing prospects for U.S. economic activity; they are identified as those that raise U.S. yields as well as U.S. equity prices. Inflation shocks are defined as changes in interest rates that reflect changing prospects for inflation. They are identified as those that raise U.S. yields but reduce equity prices, and within that group, those that raise inflation expectations. Finally, reaction shocks are defined as changes in interest rates due to changing market perceptions of the Fed's reaction function. They are identified as those that, like inflation shocks, raise U.S. yields but reduce equity prices; however, unlike inflation shocks, reaction shocks are assumed to lower inflation expectations.

In contrast, Jarociński and Karadi define only two shocks: a central bank information shock, which reflects the central bank's assessment of the economic outlook, and a

monetary policy shock, which reflects direct monetary policy changes. To identify the shocks, they use high-frequency moves in federal funds futures in the 30-minute window around announcements by the Federal Open Market Committee (FOMC) in a Bayesian VAR model.

There are some similarities, but also differences, between the identified shocks and their sources. On shock definition, both Jarociński and Karadi's monetary policy shock and Arteta, Kamin and Ruch's reaction shock attempt to capture the same concept: changes in the monetary policy stance. Jarociński and Karadi's central bank information shock and Arteta, Kamin and Ruch's real shock likely both reflect positive news about the economic outlook.

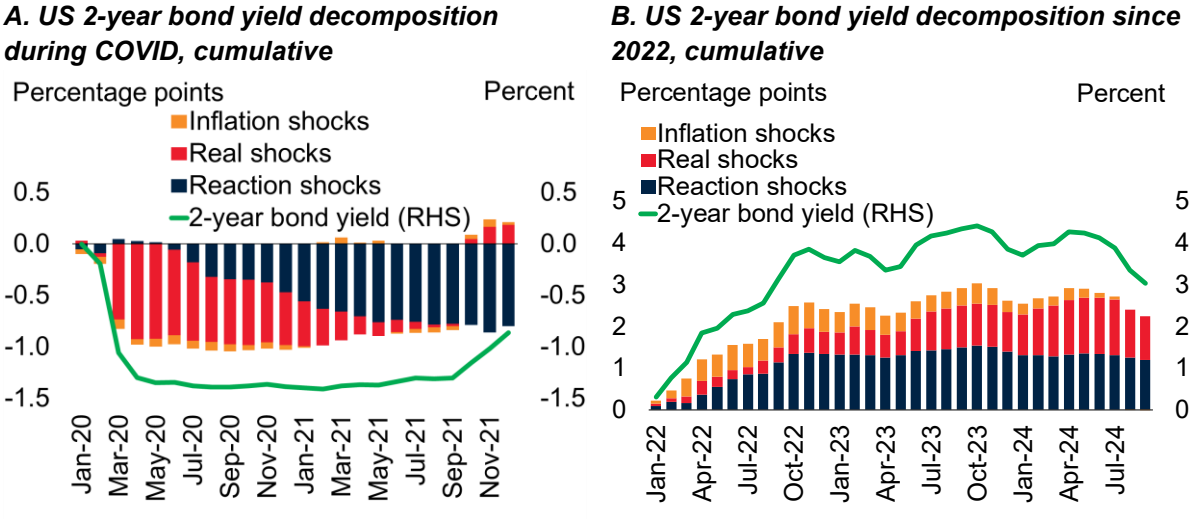
There are differences too. First, the information set used to identify the shocks is different, with Jarociński and Karadi focusing on federal funds futures, which are future prices of the overnight federal funds rate, while Arteta, Kamin and Ruch use two-year Treasury yields. Jarociński and Karadi's approach mitigates the possibility that other factors may be responsible for moves in the federal funds rate but may miss developments in markets that occur with some lags. On the other hand, Arteta, Kamin and Ruch's approach risks confounding factors explaining movements in two-year yields but captures more information from other types of Fed communication, including testimony to congress, speeches and other announcements. Second, the models are estimated on different sample periods. Arteta, Kamin and Ruch include the 1980s and the more recent COVID-19 pandemic years, which may affect the type and size of shocks identified. Arteta, Kamin and Ruch also identify a third interest-rate shock related purely to changes in the inflation outlook.

The benefit of using a variety of shocks identified from different papers is that we can compare the impact of somewhat similar shocks from different information sets on the South African economy and mitigate potential weaknesses in each, thereby enhancing the robustness of our results.

## 2.2 The pandemic and post-pandemic period

The three shocks identified in Arteta, Kamin and Ruch, and updated here to September 2024, provide a narrative of the drivers of two-year US interest rates over the pandemic and post-pandemic period. Figure 1 plots the evolution of the two-year yield from January 2020 to September 2024.

**Figure 1: US monetary policy shocks and the pandemic**




Source: Arteta, Kamin and Ruch (2025); authors' calculations.

Note: Based on a sign-restricted Bayesian VAR model with stochastic volatility from January 2000 to December 2023. Figures reflect the cumulative change in Treasury yields from the start of the period. In Figure B, the last observation is September 2024.

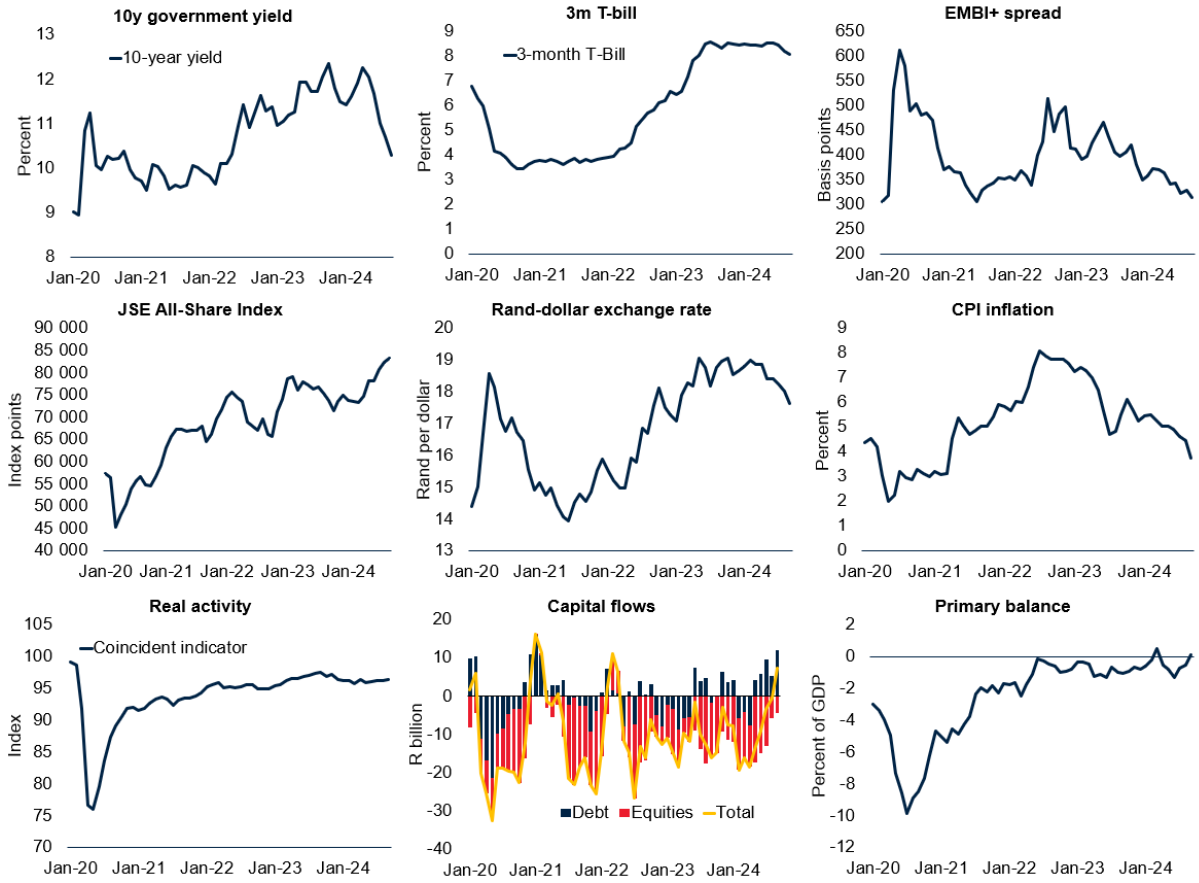
Two-year US Treasury yields collapsed in March 2020 as the pandemic hit (Figure 1A). The collapse was almost entirely the consequence of adverse real shocks as market participants absorbed the severe economic cost of the pandemic and the policy response aimed at controlling its spread (for example, through lockdowns). The Fed rapidly lowered policy rates by 150 basis points back to zero by late March and implemented several other crisis measures. The collapse in two-year yields also reflected a reassessment of inflation expectations towards lower levels (captured by negative inflation shocks). Five-year breakeven inflation dropped from 1.6% in February 2020 to 0.7% in March. Although the US economy began to recover by the middle of 2020, it took until late 2021 for cumulative real shocks to turn positive. As the pandemic progressed and Fed policymakers concluded that the economy would require prolonged policy support, reaction shocks became increasingly negative. In August 2020, the Fed announced a new monetary policy framework – formally known

as flexible average inflation targeting – which markets interpreted as a significant dovish shift.

Throughout 2021, the Fed was perceived as dovish, even as the economy and labour market improved, actual inflation climbed and inflation expectations rose. In November 2021, the Fed indicated in its FOMC statement that “inflation [was] elevated, largely reflecting factors that are expected to be transitory”. Two-year bond yields remained near zero by the end of 2021 as the market continued to perceive the Fed as dovish. This shifted rapidly in early 2022 as the Fed embarked on its steepest and fastest hiking cycle since the early 1980s (Figure 1B). The Fed raised policy rates by 75 basis points at multiple meetings in 2022, cumulatively tightening rates by 425 basis points between March and December of that year. The federal funds rate was raised by a further 100 basis points in 2023 to reach an effective rate of 5.375%. The market perceived a significant hawkish shift in the Fed’s policy stance and, consequently, reaction shocks accounted for a substantial part of the increase in two-year bond yields. An improving economy and rising inflation expectations also contributed to the rising rates through 2022 and 2023. Real GDP growth averaged 2.7% during this period, above estimates of potential growth. As the hiking cycle matured, two-year bond yields came off their high in late 2023 as inflation shocks subsided and the perceived hawkishness of the Fed weakened.

The post-pandemic period was similarly turbulent in the South African economy (Figure 2). The initial policy easing in 2020, as growth slowed and inflation remained muted, was followed by rising interest rates in 2022–23. This was accompanied by elevated country risk, substantial currency weakness, accelerating inflation, a muted economic recovery, persistent capital outflows and continued primary deficits, albeit markedly smaller when compared to the substantial deficits of 2020 and 2021.

**Figure 2: South African economy after the pandemic**




Source: Haver Analytics; SARB; Statistics South Africa (Stats SA); authors' calculations.

Note: For ease of interpretation, capital flows and the primary balance reflect three-month moving averages. T-bill: Treasury bill.

## 3. Methodology and data

We use local project models to examine the extent to which spillovers from the various US interest-rate shocks may affect the South African economy. The methodology, following Auerbach and Gorodnichenko (2012) and Jordà (2005), identifies impulse response functions through consecutive regression models at different horizons (h):

$$y_{t+h} - y_{t-1} = shock_{j,t}\beta_h + \alpha_h + x_t\delta_h + \mu_{t+h}\ , \qquad (1)$$

where $y_{t+h} - y_{t-1}$ is a long difference of the dependent variable at horizon h, $\alpha_h$ is a constant, $x_t$ is a vector of control variables, and $shock_{j,t}$ reflects the array of US interest-rate shocks for j = 1 to 5. The main shocks used are the reaction, inflation and real shocks of Arteta, Kamin and Ruch (2025), with the responses validated using the monetary policy shock and central bank information shocks estimated in Jarociński

and Karadi (2020). The models are estimated recursively to yield responses over the first six months following a shock using data from January 2000 to September 2024.

To capture the scope of possible impacts from these interest-rate shocks, the dependent variable in each local projection consists of the long-difference of 10-year local-currency government bond yields, sovereign risk spreads, short-term interest rates, capital flows, equity prices, exchange rates, a measure of real activity, consumer price index, and the primary fiscal balance for horizons 1 to 6 ahead.[2] The controls in equation 1 consist of the first-differences of these same variables – barring the dependent variable – along with their lags. The variables used in the estimation, including their description, source and transformation, are described in Table A1 in the annex. We include three lags of the controls in the model (but estimate the model from one up to six lags in the robustness section), as well as dummies from September 2008 to May 2009 and from March 2020 to November 2020 to account for the global financial crisis and the COVID pandemic. In the robustness section we exclude the data from January 2020 onwards.

We also study the asymmetry of shock spillovers by adjusting equation 1 with a dummy variable that allows us to distinguish between the impacts of positive and negative shocks such that:

$$y_{t+h} - y_{t-1} = (1 - F(z_t)) * shock_{j1,t}\beta_{1,h} + F(z_t) * shock_{j2,t}\beta_{2,h} + \alpha_h + x_t\delta_h + \mu_{t+h} \quad (2)$$

where $F(z_t)$ is equal to 1 when shocks are positive and 0 when they are negative.

## 4. Response of the South African economy

### 4.1 Financial markets

The local projections model suggests that South African financial markets respond quite forcefully to US policy **reaction shocks** (Figure 3). The main results of this paper are based on US interest-rate shocks estimated from January 1982 to September 2024. However, the local projections model has been adjusted to data availability for

[2] Given the monthly frequency, real GDP is proxied by the first principal component of production in mining, manufacturing, electricity, wholesale, retail and vehicle sales.

South African variables, and implemented from January 2000.[3] A 1-percentage-point reaction shock lifts the 10-year government yield by about 200 basis points on impact before rising further, while short-term interest rates – as measured by the three-month Treasury bill – also rise sharply by about 120 basis points on impact and then continue to rise.

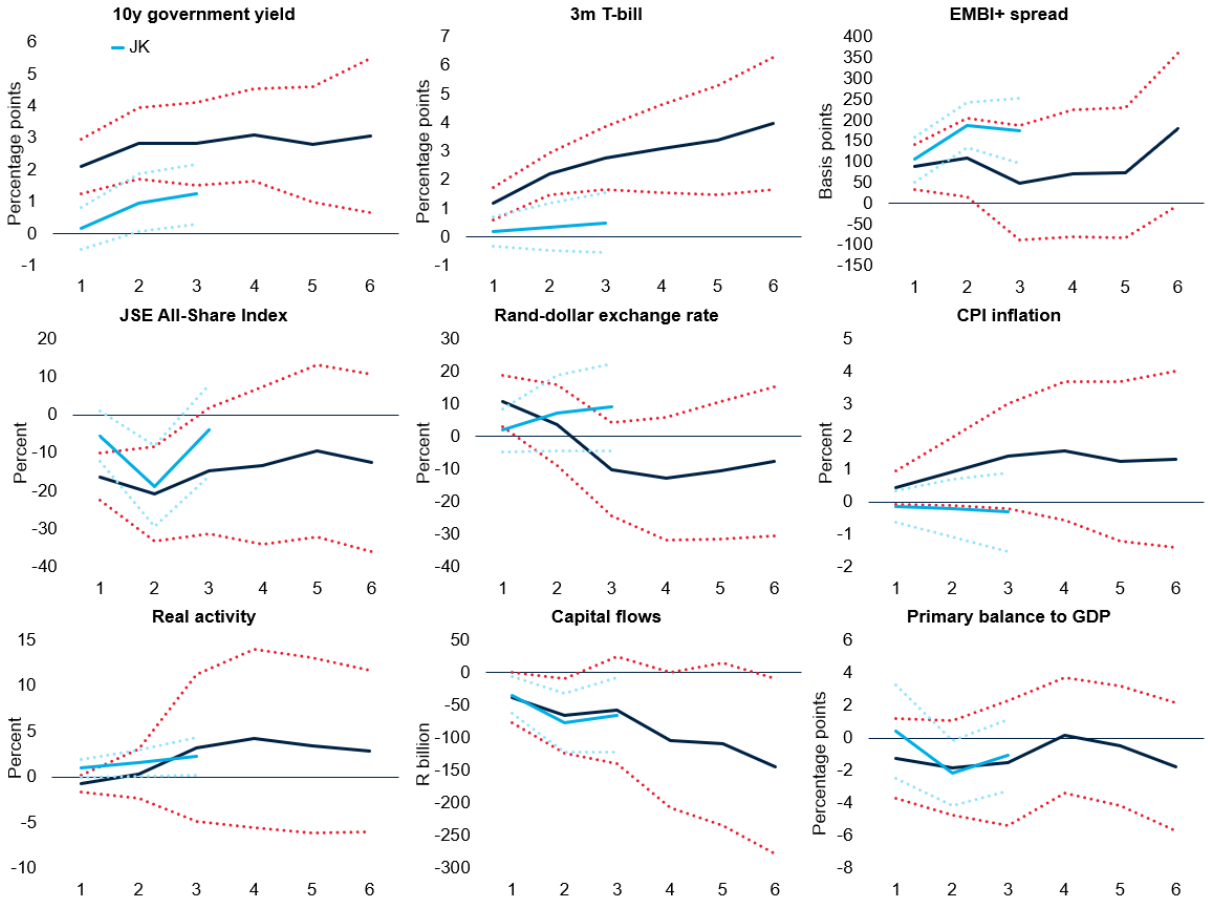
These sharp movements in South African yields in part reflect expectations of higher domestic interest rates. However, elevated country risk amid likely risk-off sentiment among international investors further lifts government borrowing rates. The greater-than-one-to-one response from long-term yields is consistent with Hoek, Kamin and Yoldas (2022), who classify South Africa among highly vulnerable countries and report similar findings for this group. It is also in line with the World Bank (2023), which found larger responses in non-investment-grade EMDEs and those with twin fiscal and current account deficits. Moreover, for context, a 1-percentage-point reaction shock is sizeable: the cumulative US reaction shock from March to December 2022 was about 95 basis points, whereas the federal funds rate and two-year Treasury yield rose by 425 and roughly 300 basis points, respectively. In South Africa, 10-year yields were about 175 basis points higher by the end of 2022 than in February of that year, while the three-month Treasury bill rate rose by more than 250 basis points.

Figure 3 shows how the reaction shock prompts short-term portfolio outflows – predominantly from debt markets (Figure A1 in the annex shows the response of debt and equity flows separately) – along with a weaker rand exchange rate and falling equity prices. The exchange rate does recover after two months, possibly reflecting a tighter domestic monetary policy stance. Figure 3 also indicates the responses to the monetary policy shock in Jarociński and Karadi (2020), which is similar in spirit to Arteta, Kamin and Ruch's reaction shock. Although the response magnitudes differ – likely reflecting definitional differences – their signs generally correspond. Following a Jarociński and Karadi monetary policy shock, long-term interest rates increase, short-term rates edge up, country risk rises, the exchange rate weakens, equity prices decline and capital flows out.

---

[3] However, re-estimating the US interest-rate shocks over the shorter period does not materially change the results.

**Figure 3: South Africa's response to a US reaction shock (cumulative)**

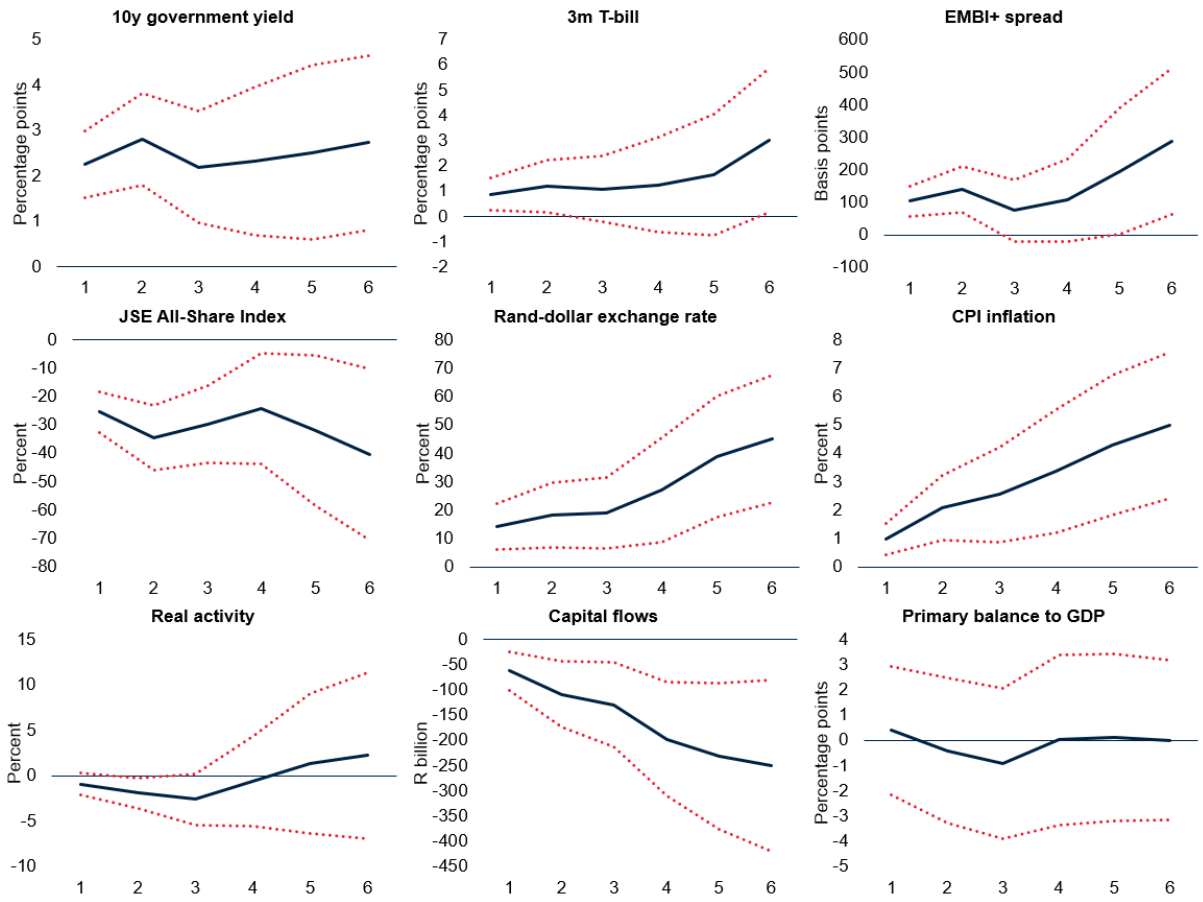



Source: Authors' calculations.

Note: Impulse responses reflect the transmission of a positive US reaction shock. Horizontal axis indicates months. Dotted lines indicate 90% confidence intervals. 'JK' indicates the response to Jarociński and Karadi's (2020) monetary policy shocks.

**Inflation shocks** in US interest rates have broadly similar domestic financial market impacts to reaction shocks, which are also immediate: both the 10-year and three-month interest rates increase, country risk rises amid assumed risk-off sentiment that also sees currency depreciation, international capital flows out of debt and equity markets, and equity prices fall (Figure 4; see also Figure A1).

**Figure 4: South Africa's response to a US inflation shock (cumulative)**



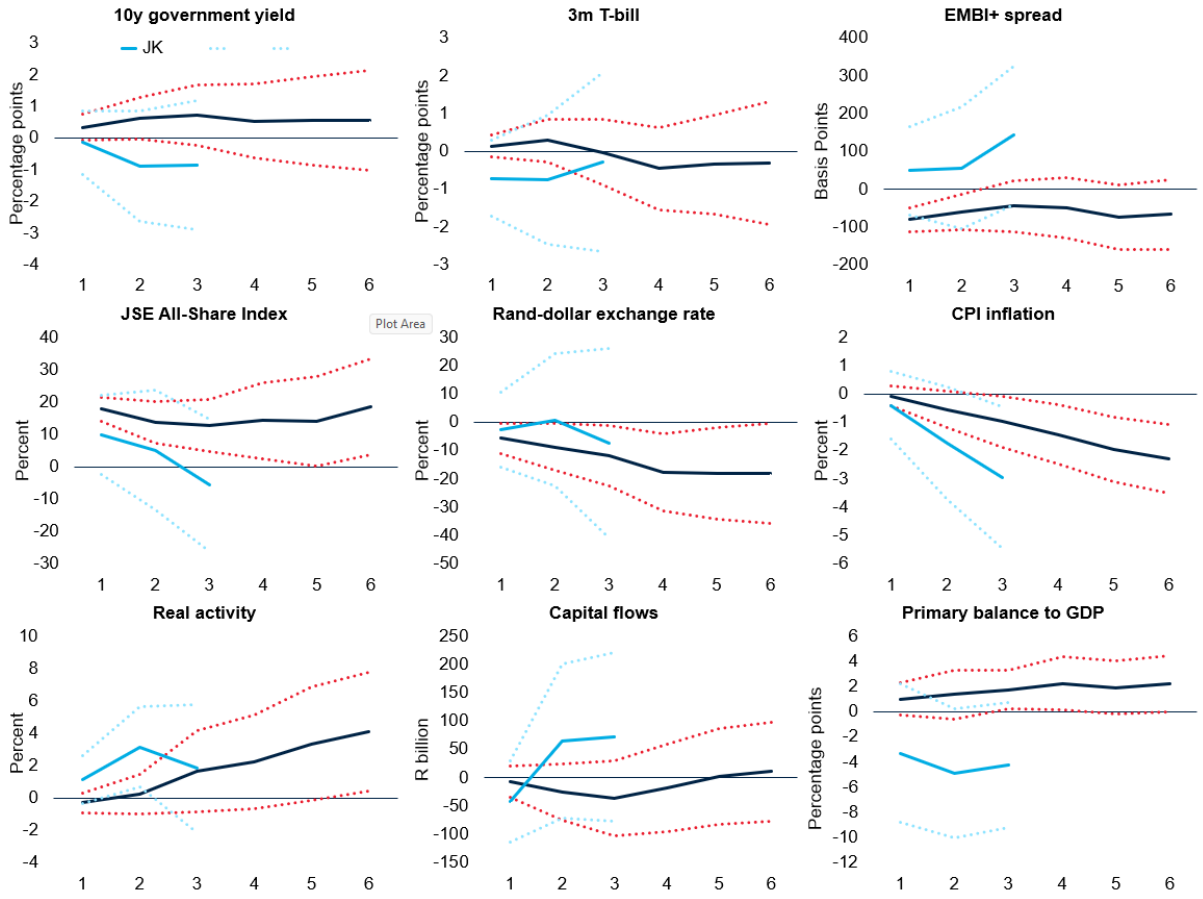

Source: Authors' calculations.

Note: Impulse responses reflect the transmission of a positive US inflation shock. Dotted lines indicate 90% confidence intervals.

As with reaction shocks, an inflation shock of 1 percentage point is substantial: the cumulative inflation reaction shock between July 2021 and June 2022 – when US consumer price index (CPI) inflation rose roughly 3.8 percentage points – was 65 basis points. The sharp pickup in domestic inflation under this shock therefore likely reflects a common global inflation driver, such as rising oil and food prices, that is being exacerbated by a markedly weaker rand exchange rate. Elevated inflation also helps explain the rise in long-term government bond yields – roughly 275 basis points after six months – likely reflecting expectations of higher inflation over the foreseeable future. The sharper rise in the 10-year yield in the event of a US inflation-driven policy shock causes the South African yield curve to steepen more than in response to a reaction shock. However, a key difference between the two shocks is the response of the exchange rate. Although the initial impact on the rand is roughly similar under both shocks, the depreciation is more persistent under the inflation shock, with the rand

weakening further at about five months – possibly reflecting the delayed pass-through to short-term interest rates.

**Figure 5: South Africa's response to a US real shock (cumulative)**




Source: Authors' calculations.

Notes: Impulse responses reflect the transmission of a positive US real shock. Dotted lines indicate 90% confidence intervals. 'JK' indicates the response to Jarociński and Karadi's (2020) central bank information shocks.

**Real US policy shocks** appear to have less of an impact on South African government borrowing rates (Figure 5). However, it is likely that an improved US growth outlook is accompanied by positive investor sentiment – as stronger US activity suggests stronger global growth – which may contribute to lowering South Africa's country risk, appreciating the rand and boosting equity prices. Although aggregate capital outflows do not respond, the real policy shock leads to outflows from the bond market that are partly offset by greater equity inflows; however, the latter are not statistically significant (see Figure A1). Outflows from the bond market suggest that a positive growth shock in the US drives a reallocation of bond portfolio flows away from emerging markets as expectations of stronger US growth attracts bond flows toward the US (Koepke 2019).

Inflation also appears to benefit, possibly reflecting a stronger exchange rate. Although responses to the central bank information shock of Jarociński and Karadi (2020) mirror those of the real shock, they are mostly not significant. Differing shock definitions complicate direct comparisons here.

### 4.2 Economic activity and inflation

South Africa's real activity appears to be partially affected by US interest-rate shocks. While US reaction shocks have no measurable impact, inflation shocks weigh on output in the very short term, likely reflecting the sharp tightening of financial conditions. US real shocks – tightening policy due to faster US growth – do however ultimately lead to a pickup in South African economic activity. This likely reflects stronger global growth that accompanies faster US growth, leading to increased export demand in emerging markets such as South Africa.

For consumer price inflation, there is no significant impact under the reaction shock, which is consistent with the muted exchange rate reaction to the shock. Under the inflation shock, CPI inflation in South Africa increases after the shock. One explanation is that policymakers in the US are responding to an inflation signal which is likely to also spill over to South African imported prices, if not already reflecting a common driver, such as a spike in international oil or food prices. The imported price pressure is then markedly worsened by the sharp depreciation of the rand. In contrast, the US real shock translates to a decline in South Africa's CPI inflation, which materialises with a significant response only three to six months after the shock. The negative impact on South Africa's CPI inflation likely reflects the appreciation of the rand.

As these results broadly align with those found in the literature for EMDEs in general, South Africa does not appear to be an outlier. Arteta, Kamin and Ruch found statistically significant impacts on economic activity and consumer price inflation in EMDEs after one quarter – consistent with our finding of a timeframe of three to four months. They also found real shocks to reduce EMDE consumer price inflation.

### 4.3 Macroeconomic policy

South Africa's three-month Treasury bill yield increases after both the reaction and inflation shocks, but not after US real shocks. This likely reflects the expectations of South African financial markets that the SARB will respond when FOMC policy decisions are driven by US inflation developments or greater hawkishness. Hence, beyond the direct impact of the US policy shock on South Africa, the response from South Africa's variables, especially financial ones, likely reflect expectations of adjustments to South Africa's domestic monetary policy and its implications for the domestic economy.

The budget primary balance – which is a proxy for the fiscal policy stance – does not respond significantly under reaction or inflation shocks. However, real US shocks lead to a primary surplus in South Africa. This is likely due to positive developments in revenue related to strengthening activity. Primary expenditure – which is defined through the budget process – is stickier to adjust to the economic cycle. The impact on South Africa's primary balance from real shocks mirrors the impact found in Arteta, Kamin and Ruch for a broad sample of EMDEs, where they found that shocks translate into improvements in primary balances.

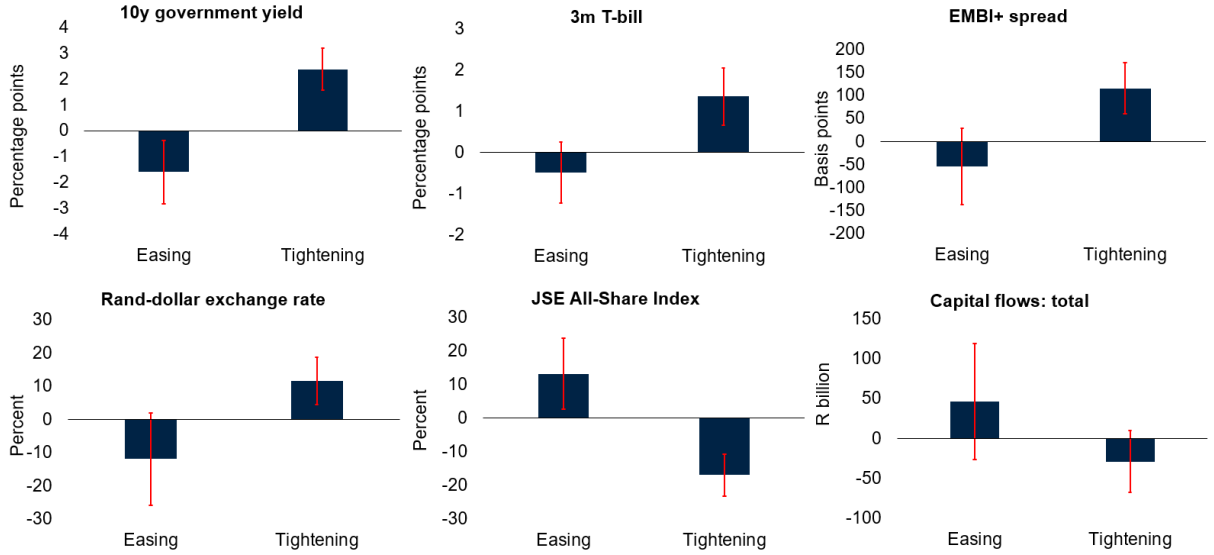
### 4.4 Non-linearities: do the spillover effects of US interest-rate hikes differ from those of cuts?

Several studies suggest that monetary policy actions have asymmetric effects – that is, they differ by the sign of the shock (positive or negative). For example, Angrist, Jordà and Kuersteiner (2018) find that policy tightening by the Fed has more pronounced effects on the domestic yield curve and economic activity than easing does. Mistak and Ozkan (2024) find that US policy spillovers to emerging markets are significantly larger during tightening episodes. Given that the Fed has eased its monetary policy stance since September 2024, we investigate the extent to which negative policy shocks (that is, those that reflect policy easing) may have different impacts on the South African economy than the mostly positive shocks that occurred during the US tightening cycle of 2022–23.

Focusing on the three shocks identified by Arteta, Kamin and Ruch, non-linear effects are clearly evident. Figures 6 to 8 compare the first-period spillover effects of reaction,

inflation and real shocks on South African high-frequency indicators, depending on whether the shocks are positive (policy tightening) or negative (policy easing).

**Figure 6: South Africa's asymmetric responses to a US reaction shock**




Source: Authors' calculations.

Note: Bars indicate the response to US reaction shocks on impact, that is, in the first month. Whiskers indicate 90% confidence intervals. An asterisk in a plot heading indicates statistically significant differences at 90% confidence levels between easing and tightening impacts (in absolute values), according to the Wald joint significance test.

Reaction shocks – measured as changes in perceptions of the Fed's reaction function – show economically meaningful asymmetries on impact, despite the differences between tightening and easing shocks not being statistically significant for any variables in Figure 6.[4] Positive reaction shocks – that is, the FOMC reaction function is seen to be more hawkish – appear to have particularly marked impacts on South African financial markets. The yield curve, risk premium, exchange rate and equity market all react adversely to tighter US interest rates when driven by a more hawkish FOMC. Total capital flows do reverse, but not significantly. In contrast, when reaction shocks are negative – reflecting perceptions of a more dovish FOMC – reactions appear generally more muted. The long end of the yield curve tends to ease and the equity market strengthens. Although short rates appear to decline, country risk

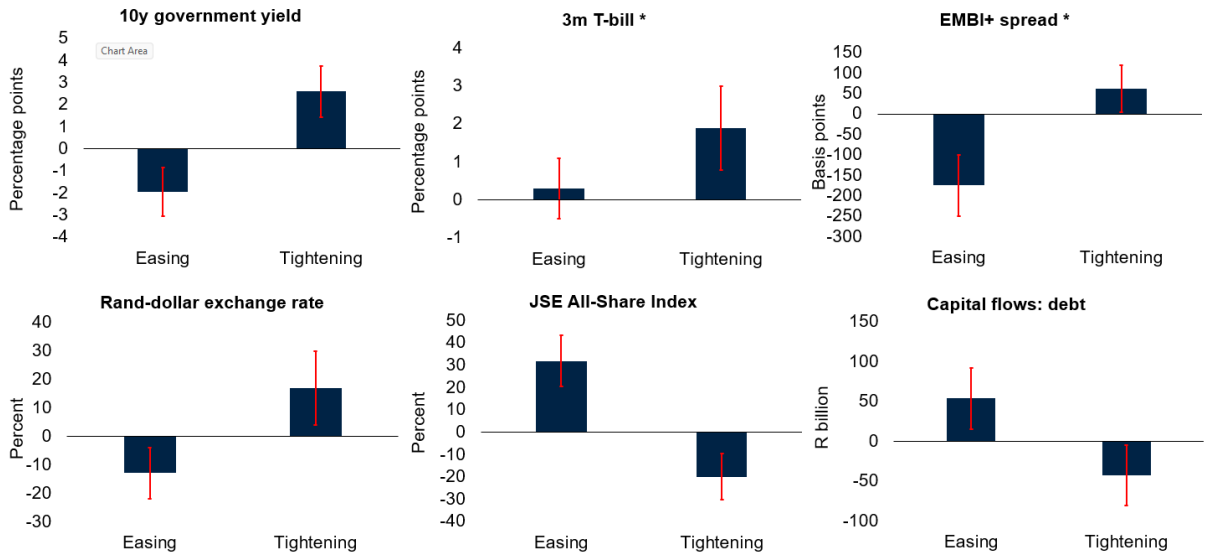
4 Although a particular tightening response is statistically different from zero in isolation (i.e. its 90% confidence interval does not overlap zero), while the corresponding easing response is not (such as that of the three-month T-Bill), the apparent asymmetry between the two responses in absolute terms may still not be statistically significant. We use the Wald joint significant test to determine statistically significant asymmetry. Thus, any apparent asymmetry in responses that fail the Wald test should be interpreted as an economic rather than statistically verified asymmetry.

moderates, the rand strengthens and capital flows in, none of these responses is statistically different from zero. From an economic perspective, this asymmetric response – where increased FOMC hawkishness leads to adverse responses in South Africa that are not matched by opposite responses in the event of greater dovishness – likely reflects the state of global risk sentiment during reaction shocks. Increases in the VIX – a barometer of rising global risk aversion – are correlated with tightening reaction shocks (not shown); however, this correlation disappears when reaction shocks are negative.

Although Mistak and Ozkan (2024) do not distinguish between the underlying shocks driving US interest-rate changes, they find that emerging markets' greater reliance on external financing, and collateral constraints becoming more binding when policy is tightened, help explain the stronger spillover responses during contractionary episodes. This asymmetry is exacerbated in cases where the emerging market central bank has a stronger aversion towards inflation.

Following a positive inflation shock – reflecting higher inflation in the US – South Africa's 10-year government yield and three-month Treasury bill yield rise sharply, as market participants expect higher future domestic interest rates amid anticipation of increased domestic inflation as higher US (or global) inflation is imported. Country risk rises too, the rand-dollar exchange rate weakens, the equity market falls and capital outflows are seen, particularly in the domestic debt market. These adverse responses likely reflect 'risk-off' sentiment among global investors toward emerging markets amid tighter US monetary policy and rising inflation. However, in response to a negative inflation shock in the US (i.e. the two-year yield reacting to lower inflation), the South African high-frequency impacts differ somewhat. Only the long end of the yield curve shifts lower in anticipation of lower global inflation, which may possibly spill over to South Africa, while short rates do not move significantly. The difference in short rate impacts under tightening and easing shocks is also statistically significant.

**Figure 7: South Africa's asymmetric responses to a US inflation shock**




Source: Authors' calculations.

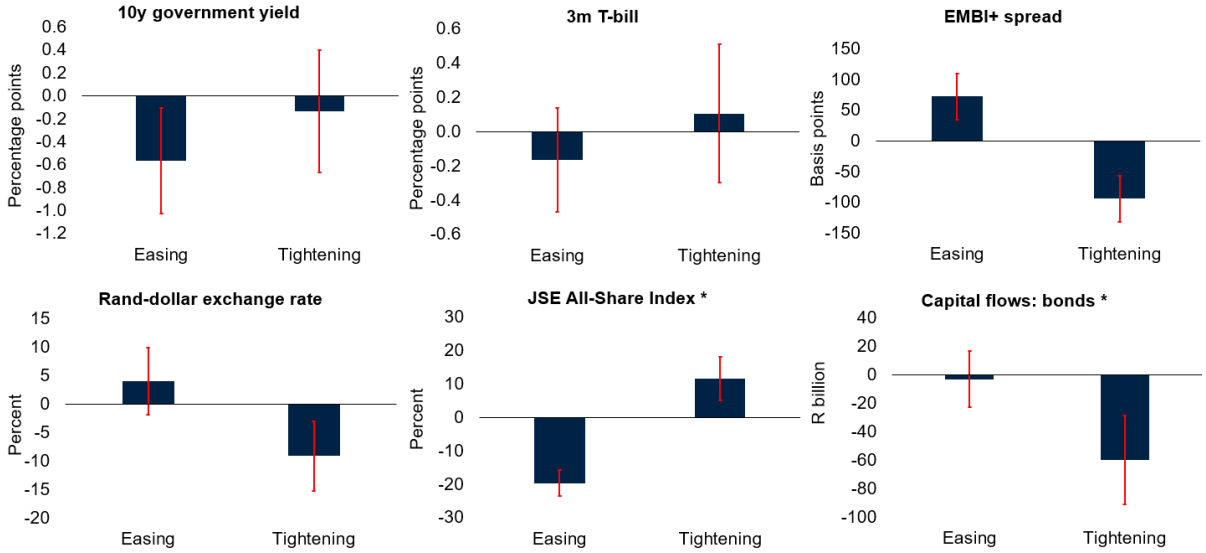
Note: Bars indicate the response to US inflation shocks on impact, that is, in the first month. Whiskers indicate 90% confidence intervals. An asterisk in a plot heading indicates statistically significant differences at 90% confidence levels between easing and tightening impacts (in absolute values), according to the Wald joint significance test.

This lack of short-term adjustment under easing US inflation-related policy shocks may in part reflect domestic inflation being downwardly sticky. Country risk also moderates in response to easing US policy shocks related to inflation, the currency appreciates, the equity market strengthens and capital flows into debt instruments. Interestingly, the compression of South African country risk under easing US inflation-related policy shocks is statistically more pronounced than the rise in country risk under tightening shocks. This result likely reflects the notion that US monetary policy easing may fuel excessive risk-taking in international bond markets (Bruno and Shin 2015; Bekaert, Hoerova and Lo Duca 2013).

Interest rate shocks in the US related to real activity also have asymmetric spillover effects on the South African economy. Positive real shocks, where the two-year yield rises because of strengthening US activity, lowers South African country risk on impact, appreciates the exchange rate and boosts equity prices. These moves partly reflect higher US growth lowering global risk aversion, as more buoyant US activity generally supports stronger global growth expectations and increased external demand that could boost exports and growth across both advanced economies and emerging markets. Despite these positive reactions, capital still flows out of the bond market. This suggests that a positive growth shock in the US leads to a reallocation of

the global bond portfolio as expectations of stronger US growth attracts bond flows toward the US (Koepke 2019). Shocks related to slower US activity generally have the opposite impact.

**Figure 8: South Africa's asymmetric responses to a US real shock**




Source: Authors' calculations.

Note: Bars indicate the response to US real shocks on impact, that is, in the first month. Whiskers indicate 68% confidence intervals. An asterisk in a plot heading indicates statistically significant differences at 90% confidence levels between easing and tightening impacts (in absolute values), according to the Wald joint significance test.

A particularly interesting result in the event of adverse real shocks is that South African 10-year yields fall in a significant manner on impact – a result that contradicts the no-response outcome in Figure 5. Although the reaction of the 10-year yield is not statistically different from tightening episodes when US policy reacts to faster growth, its economic significance suggests that easing shocks related to slower US growth signal particular information to global bond markets about the future path of short-term rates. Hubert and Portier (2025) find that policy easing in the euro area has a stronger effect on expected interest rates if it is associated with signals about rates remaining lower for an extended period. Nonetheless, policy moves related to slower US growth does raise South African country risk, weighs on equity prices and weakens the exchange rate, although the latter is not statistically significant. These reactions are consistent with a more muted outlook for emerging market economies' external demand amid slowing US growth.

## 5. Robustness

This section focuses on how the COVID-19 pandemic and subsequent years affected the response to US interest-rate shocks, and assesses the robustness of the results to alternative lag lengths.

### 5.1 Excluding the post-pandemic period

The pandemic and subsequent years reflect a significant change in economic conditions in South Africa and globally. While the main results in this paper include dummies for the specific pandemic shock – from March to November 2020 – it is important to consider whether the results change if we exclude all observations after December 2019. Figures A2–A4 (in the annex) compare the baseline to a sample that ends in December 2019 for reaction, inflation and real shocks. The overall responses of South African financial, macroeconomic and policy variables are largely similar when this post-pandemic period is excluded. For reaction shocks, interest rates still increase in equal measure, while the impact on sovereign risk spreads shows similar persistence. Interestingly, the primary balance tended towards a deficit in the pre-COVID-19 sample in response to reaction shocks. This likely reflects slowing economic activity – economically but not statistically significant – amid tighter financing conditions weighing on the fiscus. There is no evidence that financial variables respond differently to US shocks post-pandemic, apart from the equity market's decline lasting slightly longer. The patterns and responses for real and inflation shocks are also similar when the post-pandemic period is included. Notably, for real shocks, the spillovers to domestic activity – and by extension fiscal balances – is weaker when the pandemic period is excluded from the sample. This likely suggests that the synchronised nature of the COVID-19 shock across all economies amplifies this result in our full-sample estimates, despite being controlled for in the regressions.

### 5.2 Lag length

Figures A5–A7 (in the annex) plot the results when the lag length, which is set to three, is varied from one to six. The results are generally stable across different lag lengths, especially across financial variables, including three-month and 10-year government bond yields, the sovereign risk spread, equity prices and the exchange rate. For example, the response of 10-year bond yields on impact differs by 28 basis points in

response to a reaction shock between one and six lags, is virtually identical in response to an inflation shock, and varies by 16 basis points in response to a real shock. These differences fall well within the average standard deviation of the baseline impacts. Across all specifications the direction of impact remains the same for almost all variables and where the sign changes, as in the case of the primary balance in response to a real shock, the impacts are generally not statistically different from zero.

## 6. Conclusion

In this paper we analysed the impact of several US monetary policy shocks on a set of macroeconomic and financial variables for South Africa using local projections, based on data spanning January 2000 to September 2024. These shocks included changes in the US two-year bond yields driven by either reaction, inflation or real shocks. We aimed to identify the impact of these shocks on South Africa, as well as discuss whether those impacts differed when US policy was easing or tightening. Finally, we sought to establish whether the domestic impacts were sensitive to the identification of the US interest-rate shocks.

We found that US policy shocks have marked spillovers to South Africa. Changes in US two-year yields because of reaction shocks (market participants believe that the Fed has become more hawkish) and inflation shocks (rising inflation expectations by market participants) drive strong responses in South African financial markets, with bond yields and country risk rising, while the exchange rate weakens and the equity market falls. US inflation shocks also lead to an increase in inflation in South Africa – likely reflecting common global inflation drivers such as rising oil prices. Although US real shocks (expectations of stronger economic activity) have more muted effects on the South African bond market, they do lower country risk, appreciate the rand and boost equities. These responses are loosely similar to those of the shocks identified in Jarociński and Karadi (2020). We also showed that a significant degree of asymmetry accompanies the South African economy's response to US policy shocks, with policy tightening generally having larger spillover impacts than policy easing.

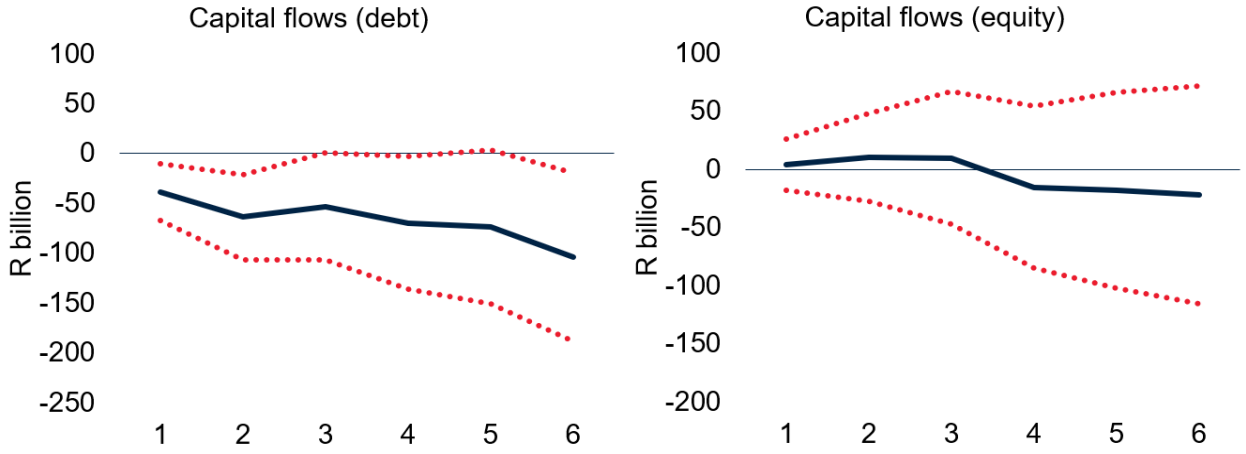
## Annexures

**Table A1: Data**

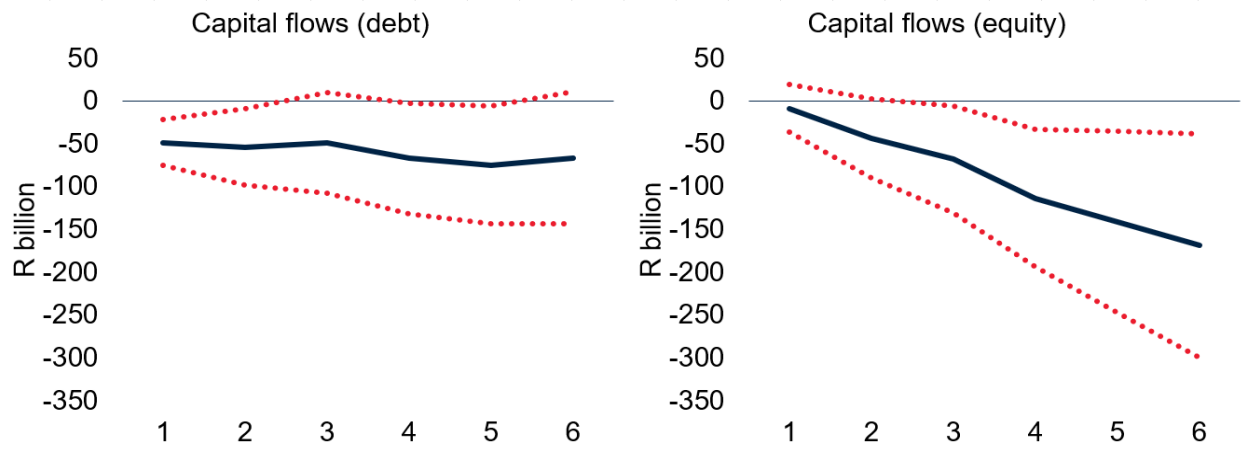
| Variable | Description | Transformation | Source |
|---|---|---|---|
| **10y government yield** | South African 10-year government bond yield | First difference | Haver Analytics |
| **3m T-Bill** | South African 91-day Treasury bill rate | First difference | Haver Analytics |
| **EMBI+ spread** | Emerging Market Bond Index plus spread for South Africa | Basis points | J.P. Morgan |
| **JSE All-Share Index** | Johannesburg Stock Exchange All-Share Index (end of period) | Log first difference (x 100) | Haver Analytics |
| **Rand-dollar exchange rate** | South African rand per 1 United States dollar | Log first difference (x 100) | Haver Analytics |
| **CPI inflation** | South African consumer price index; CPIX is used prior to 2009 | Log first difference (x 100) | Haver Analytics; Stats SA |
| **Real activity** | The monthly coincident business cycle indicator of the SARB | Log first difference (x 100) | Haver Analytics; Authors' calculations |
| **Capital flows** | Net real non-resident purchases of shares and bonds in billions of rand<br><br>Flows are deflated by CPI | Log first difference | SARB; Stats SA |
| **Primary balance** | Monthly revenue minus non-interest spending (both seasonally adjusted and annualised) as a ratio to nominal GDP interpolated to a monthly frequency<br><br>Given the sometimes erratic nature of monthly spending and revenue collection, extreme outliers have been removed | Percent of GDP | SARB; Stats SA |
| **Reaction shock** | Investors' assessments that the Federal Reserve policy stance based on sign-restricted BVAR | Percent | Arteta, Kamin and Ruch (2025) |
| **Real shock** | Expectation of economic activity based on sign-restricted BVAR | Percent | Arteta, Kamin and Ruch (2025) |
| **Inflation shock** | Expectations of inflation based on sign-restricted BVAR | Percent | Arteta, Kamin and Ruch (2025) |
| **JK** | Monetary policy shock from sign-restricted BVAR | Percent | Jarociński and Karadi (2020) |
| **CB information** | Central bank information shock from sign-restricted BVAR | Percent | Jarociński and Karadi (2020) |
| **Dummies for financial crisis and COVID-19 pandemic** | Dummies equal to one for September 2008 to May 2009, and March 2020 to November 2020 | Level | Authors' calculations |

**Figure A1: Response of debt and equity flows to US interest-rate shocks**

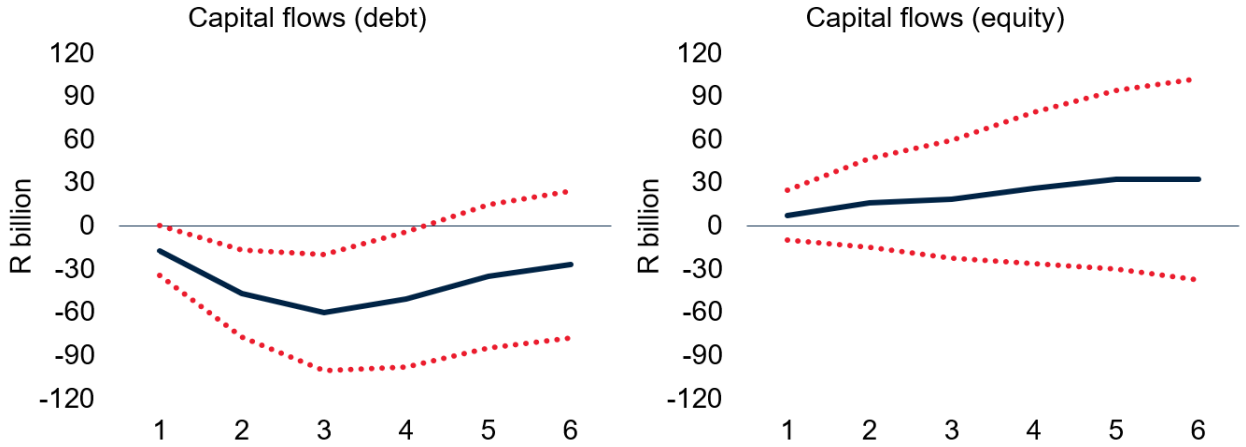
***Reaction shocks***




***Inflation shocks***




***Real shocks***




Note: Based on local projection models where equity and debt flows sequentially are substituted for total capital flows. Dotted lines indicate 90% confidence intervals.

**Figure A2: Sensitivity to post-pandemic period, reaction shock**

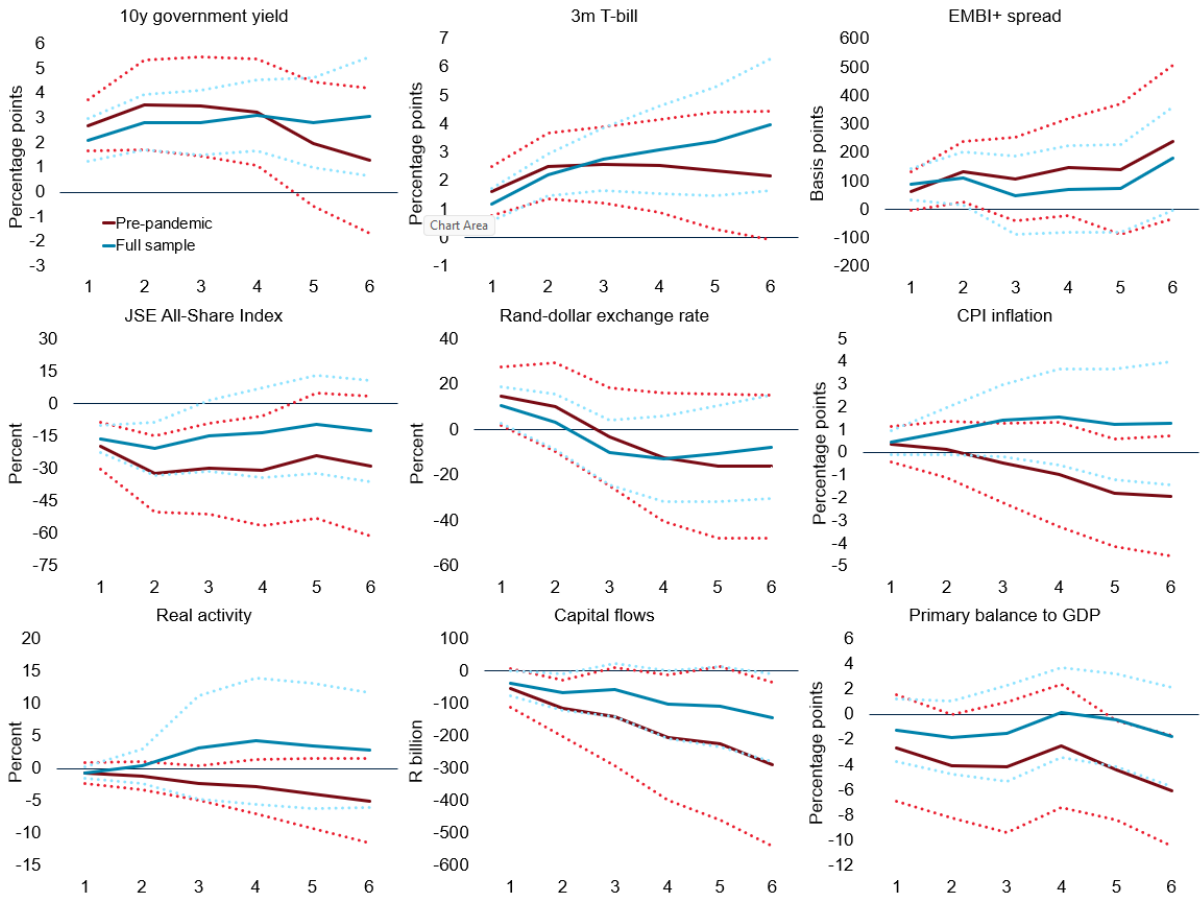


**Figure A3: Sensitivity to post-pandemic period, inflation shock**

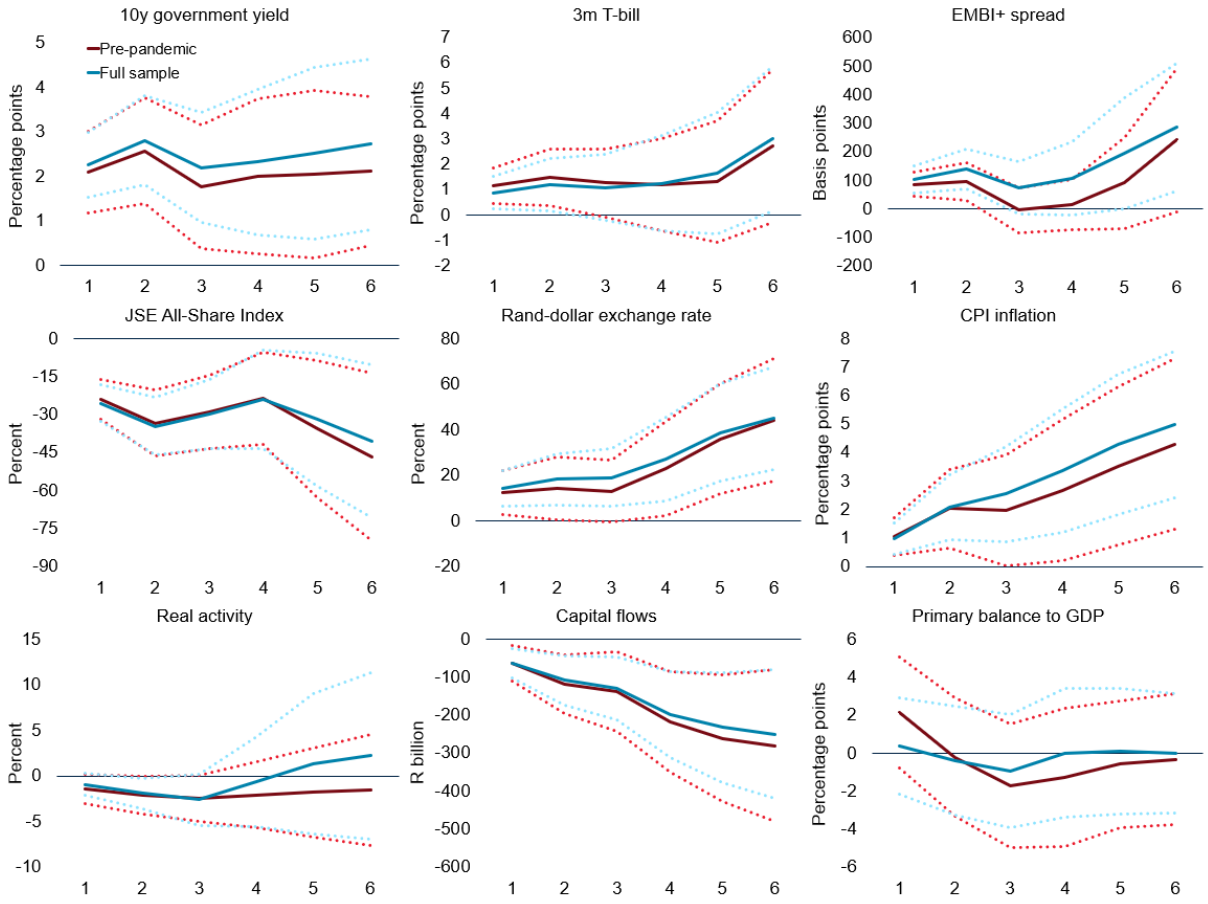


**Figure A4: Sensitivity to post-pandemic period, real shock**

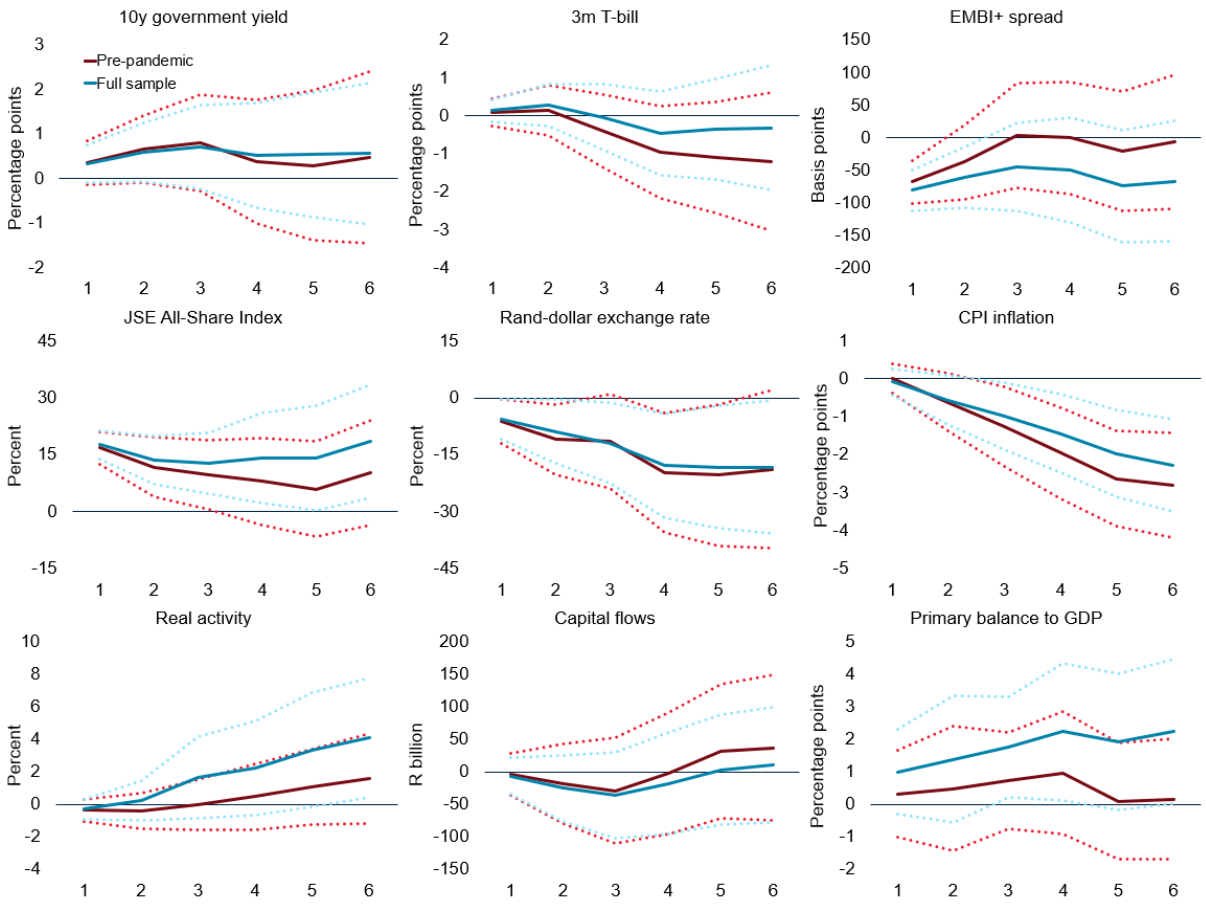


**Figure A5: Sensitivity to lag length, reaction shock**

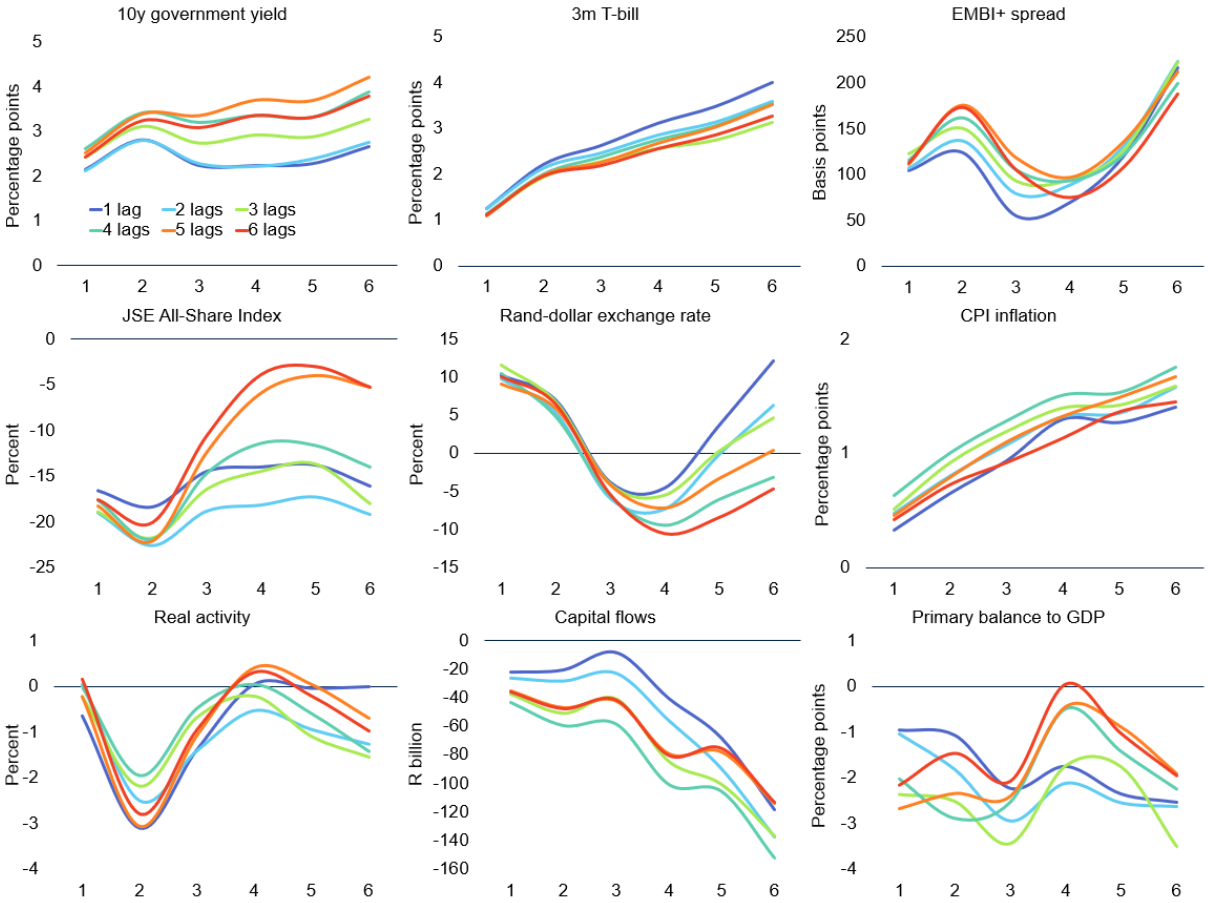


**Figure A6: Sensitivity to lag length, inflation shock**

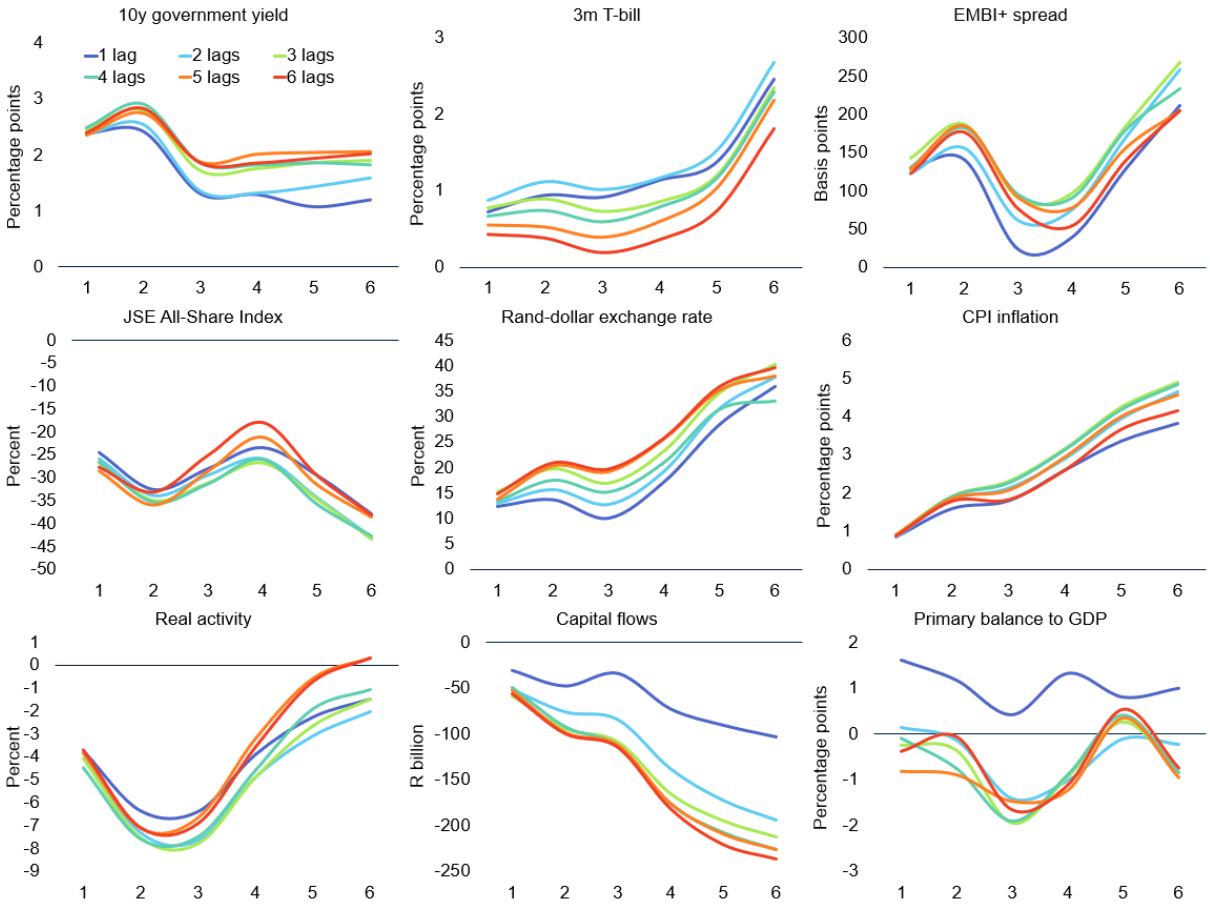
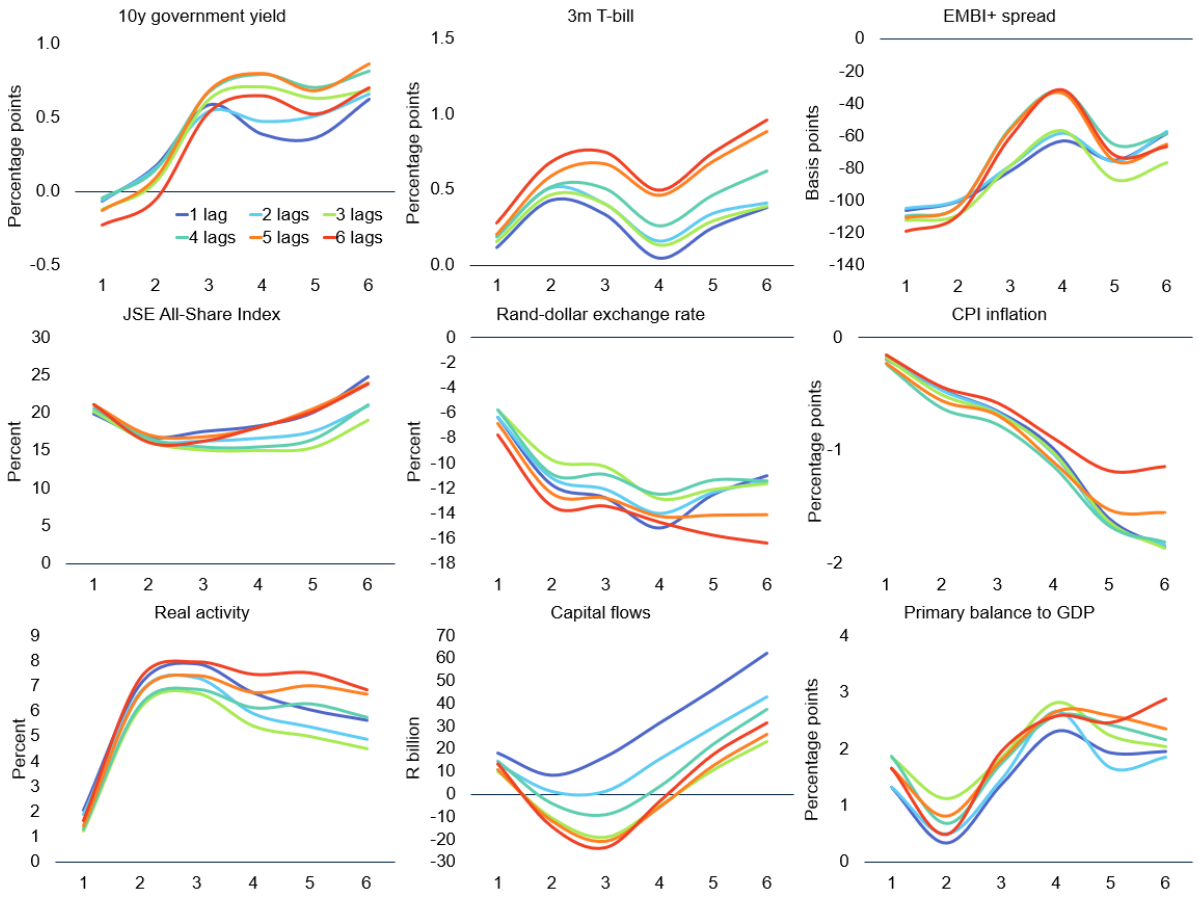


**Figure A7: Sensitivity to lag length, real shock**



**References**

Angrist, J D, Jordà, Ò and Kuersteiner, G. 2018. 'Semiparametric estimates of monetary policy effects: string theory revisited'. *Journal of Business & Economic Statistics* 36(3): 371–387.

Arbatli-Saxegaard, E C, Furceri, D, Gonzalez Dominguez, P, Ostry, J D and Peiris, S J. 2022. 'Spillovers from US monetary shocks: role of policy drivers and cyclical conditions'. ADBI Working Paper No. 1317.

Arteta, C, Kamin, S B and Ruch, F U. 2025. 'How do rising U.S. interest rates affect emerging and developing economies? It depends'. *Journal of Money, Credit and Banking*.

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

Azad, N F and Serletis, A. 2022. 'Spillovers of US monetary policy uncertainty on inflation targeting emerging economies'. *Emerging Markets Review* 51: 100875.

Bekaert, G, Hoerova, M and Lo Duca, M. 2013. 'Risk, uncertainty and monetary policy'. *Journal of Monetary Economics* 60(7): 771–788.

Bruno, V and Shin, H S. 2015. 'Capital flows and the risk-taking channel of monetary policy'. *Journal of Monetary Economics* 71: 119–132.

Gertler, M and Karadi, P. 2015. 'Monetary policy surprises, credit costs, and economic activity'. *American Economic Journal: Macroeconomics* 7(1): 44–76.

Hoek, J, Kamin, S and Yoldas, E. 2022. 'Are higher US interest rates always bad news for emerging markets?' *Journal of International Economics* 137: 103585.

Hubert, P and Portier, R. 2025. 'The signaling effects of tightening and easing monetary policy'. Banque de France Working Paper No. 999.

Iacoviello, M and Navarro, G. 2019. 'Foreign effects of higher U.S. interest rates'. *Journal of International Money and Finance* 95 (July): 232–250.

Jarociński, M and Karadi, P. 2020. ‘Deconstructing monetary policy surprises — the role of information shocks’. *American Economic Journal: Macroeconomics* 12(2): 1–43.

Jordà, Ò. 2005. ‘Estimation and inference of impulse responses by local projections’. *American Economic Review* 95(1): 161–182.

Kabundi, A, Loate, T and Viegi, N. 2020. ‘Spillovers of the conventional and unconventional monetary policy from the US to South Africa’. *South African Journal of Economics* 88(4): 435–471.

Kearns, J, Schrimpf, A and Xia, F D. 2018. ‘Explaining monetary spillovers: the matrix reloaded’. BIS Working Papers, No. 757. Bank for International Settlements.

Koepke, R. 2019. ‘What drives capital flows to emerging markets? A survey of the empirical literature’. *Journal of Economic Surveys* 33(2): 516–540.

Miranda-Agrippino, S and Rey, H. 2019 (first published 2015, revised 2019). ‘US monetary policy and the global financial cycle’. National Bureau of Economic Research Working Paper 21722.

Mistak, J and Ozkan, G. 2024. ‘Asymmetric monetary policy spillovers: the role of supply chains, credit networks and fear of floating’. European Central Bank Working Paper Series, No. 2995.

Pesaran, M H and Smith, R. 2006. ‘Macroeconometric modelling with a global perspective’. *The Manchester School* 74(1): 24–49.

Tumala, M M, Salisu, A A, Atoi, N V and Yaaba, B N. 2021. ‘International monetary policy spillovers to emerging economies in Sub-Saharan Africa: a global VAR analysis’. *Scientific African* 14: e00976.

World Bank. 2023. *Global economic prospects*. June. Washington, DC: World Bank.