FINANCIAL STABILITY REVIEW

Second edition
2023

SOUTH AFRICAN RESERVE BANK

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Contents

Framework for monitoring and assessing financial stability in South Africa

In pursuing its statutory mandate, the SARB follows a structured framework designed to gather information and monitor developments; assess financial stability; and communicate its assessment through the *FSR*.

Financial stability monitoring frameworks comprise two broad dimensions: the time dimension, which mainly looks at procyclicality, and the cross-sectional dimension, which mainly deals with the structural composition of a financial system. In order to capture both the cyclical and structural build-up of systemic risk, the SARB monitors and assesses domestic financial stability conditions through tools and indicators such as the financial stability heatmap and stress-testing exercises.

These indicators do not give a complete view of financial stability, but serve as a reference point from which further analyses are conducted. The quantitative indicators and deeper analyses inform the SARB's forward-looking conclusions about the main risks to financial stability, which are captured in its risks and vulnerabilities matrix (RVM).

Background to the *Financial Stability Review*

The mandate for financial stability

The primary mandate of the SARB, as stated in the Constitution of the Republic of South Africa Act 108 of 1996 (Constitution), is to achieve and maintain price stability in the interest of balanced and sustainable economic growth in South Africa. The Financial Sector Regulation Act 9 of 2017 (FSR Act) assigns a statutory mandate to the SARB **to protect and enhance financial stability in South Africa**. The SARB's primary and statutory mandates culminate in the SARB's vision of leading in serving the economic well-being of South Africans through maintaining price and financial stability.

Defining financial stability

Section 4 of the FSR Act defines 'financial stability' as meaning that:

- financial institutions and market infrastructures are capable of:
    - providing financial products and financial services; and
    - performing their functions and duties in terms of financial sector laws, without interruption and despite changes in economic circumstances; and
- there is general confidence in the ability of financial institutions and market infrastructures to keep providing the said products and services, and to keep performing their functions and duties.

Phrased differently, 'financial stability' refers to a financial system that is resilient to systemic risks and shocks and that can efficiently intermediate funds, even in adverse conditions, thereby bolstering confidence in the financial system and financial institutions. Financial stability is not an end in itself, but a precondition for balanced and sustainable economic growth.

Legal basis and purpose of the *Financial Stability Review*

Section 12 of the FSR Act requires the SARB to:

- monitor and review any risks to financial stability, including the nature and extent of those risks, as well as the strengths and weaknesses of the financial system; and
- take steps to mitigate risks to financial stability, including advising the financial sector regulators and any other organs of state of the steps to take to mitigate those risks.

Section 13 of the FSR Act requires the SARB to assess the stability of the South African financial system at least every six months, and to communicate its assessment in the *FSR*. Among other things, the SARB is required to include the following in the *FSR*:

- its assessment of the stability of the financial system during the six-month review period;
- its identification and assessment of the risks to financial stability in at least the next 12 months;
- an overview of the steps taken by the SARB and the financial sector regulators to identify and manage identified risks and vulnerabilities in the financial system; and
- an overview of the recommendations made by the SARB and the Financial Stability Oversight Committee (FSOC) during the period under review, and progress made in implementing those recommendations.

The SARB assesses financial stability as part of its ongoing operations, and its Financial Stability Committee (FSC) reviews the financial stability conjuncture and outlook at four meetings per year. The *FSR* provides readers with the SARB's assessment of the stability of the South African financial system. The period under review is six months, from May to November 2023 for this edition, while the forecast period is until at least November 2024.

The *FSR* is tabled in Parliament and is targeted at the Members of Parliament, participants in the financial sector, international central bank peers, ratings agencies, international financial institutions, standard-setting bodies and academia. The *FSR* aims to stimulate debate on pertinent issues related to financial stability in South Africa.

Key terms used in the *FSR*

Drawing largely on the definitions used by the Financial Stability Board (FSB) (2021), the frequently used terms in the *FSR* are defined as follows:

Shock: An event that may cause disruption to, or the partial failure of, the financial system.

Vulnerability: A property of the financial system that (i) reflects the existence or accumulation of imbalances; (ii) may increase the likelihood of a shock; and (iii) when impacted by a shock, may lead to systemic disruption.

Residual vulnerability: The remaining or net vulnerability after considering the identified mitigating factors and actions.

Transmission channels or mechanisms: The channels through which vulnerabilities may lead to the actual disruption of the financial system, should a shock occur. Also referred to as 'propagation mechanisms'.

Resilience: The ability of a financial system to deal with shocks and prevent financial instability.

Systemic event: According to the FSR Act, 'an event or circumstance, including one that occurs or arises outside [of] the Republic [of South Africa], that may reasonably be expected to have a substantial adverse effect on the financial system or on economic activity in the Republic, including an event or circumstance that leads to a loss of confidence that operators of, or participants in, payment systems, settlement systems or financial markets, or financial institutions, are able to continue to provide financial products or financial services, or services provided by a market infrastructure'.

Executive summary

Systemic risk has remained elevated since the release of the May 2023 *FSR*. Idiosyncratic factors continued to contribute to systemic risk and weigh on the outlook for financial stability in South Africa. The most notable of these are government's increasing debt levels and debt-servicing costs and the continued impact of being on the Financial Action Task Force (FATF) greylist.

Systemic risks that have subsided somewhat include the decrease in the risk of secondary sanctions being imposed on South Africa and the potential easing of electricity supply constraints following a marked increase in new electricity generation projects registered with the National Energy Regulator of South Africa (NERSA) in 2023. Concerns over further spillovers from the global banking stress in March 2023 also reduced notably.

Prudentially regulated domestic financial institutions, in aggregate, remained resilient, based on their ability to maintain adequate capital and liquidity buffers to absorb the impact of shocks. However, there are signs of increasing credit risk across the domestic financial sector, which are being monitored closely.

The key risks to financial stability in South Africa discussed in this edition of the *FSR* are (i) a sharp repricing in government debt; (ii) capital outflows and declining market depth and liquidity; (iii) an insufficient and unreliable electricity supply; (iv) fallout from geopolitical risks; and (v) remaining on the FATF greylist for longer (i.e. beyond the February 2025 deadline for remediating the identified deficiencies).

This edition also provides an overview of the results from the SARB's 2023 Common Scenario Stress Test (CSST). The results indicate that domestic systemically important banks will be able to remain well capitalised when faced with a set of severe but plausible scenarios. This year's CSST scenarios simulated a South African economy that (i) remains vulnerable to spillover effects from global events; and (ii) is confronted by a rapidly escalating electricity crisis, persistent inflation and a sudden decrease in economic activity. Chapter 3 in the main focuses on the results from the CSST.

The SARB undertook the following initiatives and policy actions to enhance financial stability during the period under review:

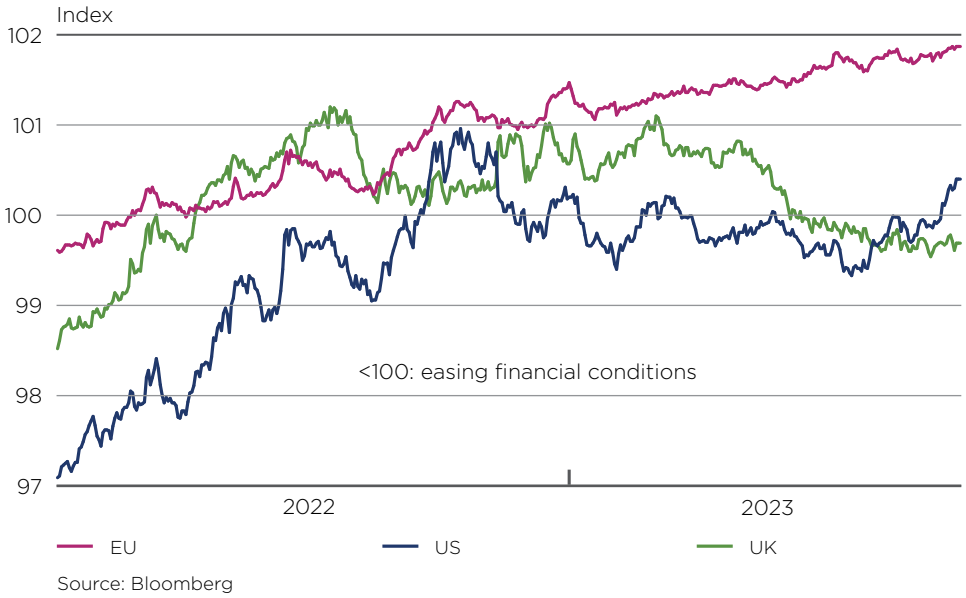
- **The SARB's FSC resolved that a positive cycle-neutral (PCN) countercyclical capital buffer (CCyB) of 1% be implemented in South Africa.** The phase-in period for implementing the 1% CCyB will commence on 1 January 2025, and is to be fully implemented by 31 December 2025.
- **The FSC resolved that developments around the sovereign-bank nexus did not require formal policy intervention at this stage.** The FSC also resolved that the PA would develop ways to monitor and close valuation gaps in banks' holdings of South African government bonds (SAGBs).
- **The SARB collaborated with FSOC members to discuss some of the key risks to financial stability,** particularly on ways to deal with South Africa's greylisting by the FATF, and the European Union (EU) adding South Africa to its list of high-risk countries.
- **The SARB, through the Financial Sector Contingency Forum (FSCF), continued to plan for the highly unlikely but not impossible scenario of a national electricity grid shutdown or other potential systemic event.** In line with the role and function of the FSCF, current efforts are centred on developing, co-ordinating and testing contingency plans to mitigate the impact on the financial system and the economy.

Chapter 1: Conjuncture

Global developments

In recent months, global financial conditions have turned more restrictive in many advanced economies (Figure 1). This has not only affected the cost and availability of credit, but also placed downward pressure on asset prices. In the current environment of heightened uncertainty regarding the global inflation and interest rate outlook, investors have increasingly favoured cash holdings, impacting on the performance of equities. Losses incurred by global equities in the third quarter of 2023 indicate that the rally experienced earlier this year was short-lived. Global corporate earnings also fell in an environment of subdued economic activity and tighter financial conditions.

Figure 1: Financial conditions in selected advanced economies



Source: Bloomberg

Yields on 10-year government bonds in advanced economies (AEs) have increased significantly since May 2023 given lingering growth and inflation concerns (Figure 2), in turn making emerging market (EM) government bonds relatively less attractive. Financial markets appear to have adjusted to a 'new normal' operating environment characterised by higher interest rates in AEs, differences in economic growth trajectories and constrained fiscal positions. These factors combine to reduce yield differentials between AEs and EMs, in turn dampening investor appetite for EM sovereign debt.

Figure 2A: 10-year AE government bond yields

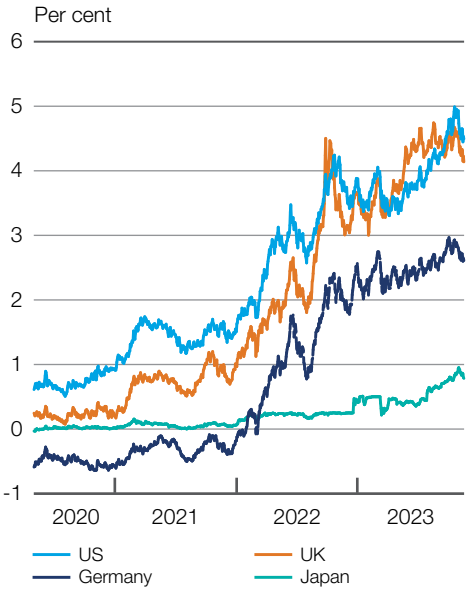
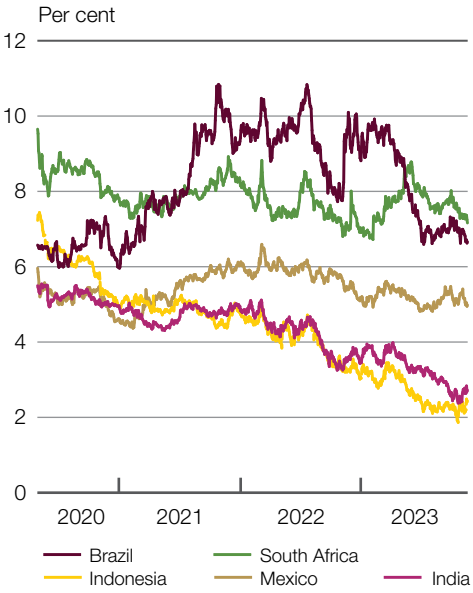


Figure 2B: 10-year EM government bond yield spreads relative to US Treasury yields

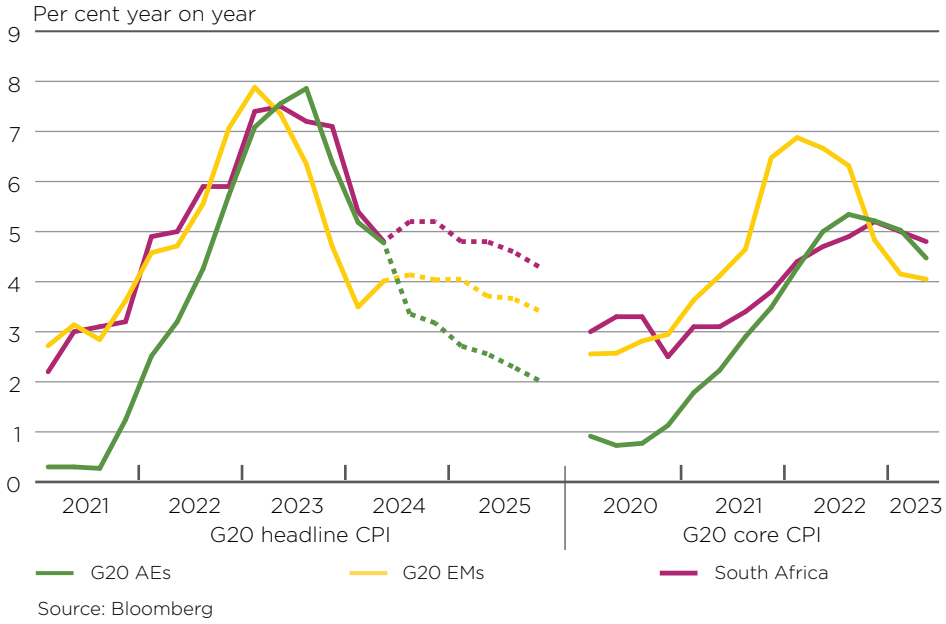


Source: Bloomberg

While headline inflation rates have declined globally, core inflation rates remain elevated, reinforcing expectations that interest rates will remain higher for longer (Figure 3). Although headline inflation rates are broadly trending lower as supply chain constraints ease and commodity prices decline, there is significant differentiation across regions. Financial markets expect a peak in the tightening cycle toward year-end or early 2024 (Figure 3). However, policy divergence has started to emerge as some jurisdictions have commenced with monetary policy easing, reflecting country-specific characteristics of the deflationary process. This may, in turn, increase volatility in the exchange rate market.[1]

1 For a more detailed discussion of how deflationary pressures could contribute to exchange rate volatility, refer to the October 2023 edition of the SARB's *Monetary Policy Review (MPR)* (available at *Monetary Policy Review* (resbank.co.za)).

Figure 3: Headline and core inflation trends in G20 countries

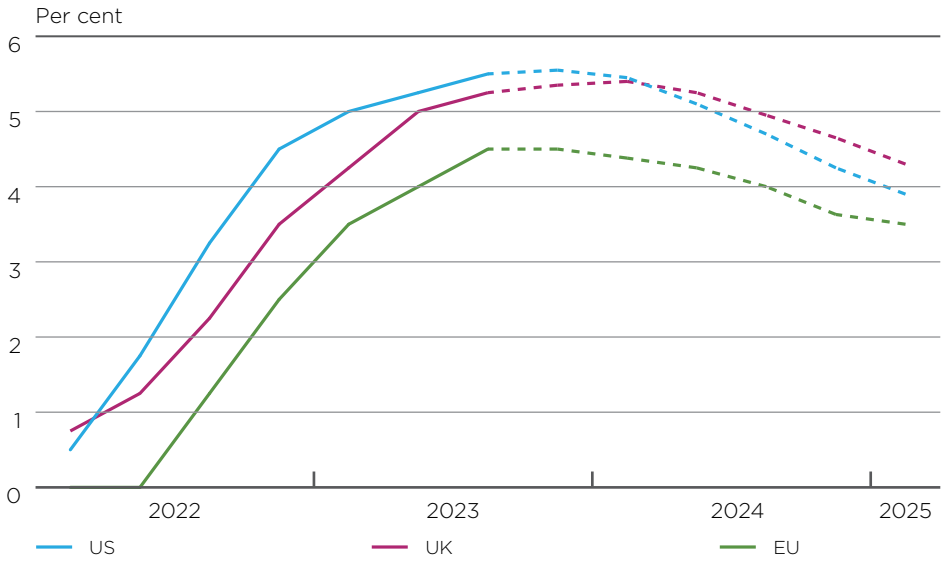


Source: Bloomberg

Since the release of the May 2023 *FSR*, global economic conditions have deteriorated as the impact of higher interest rates on business and consumer confidence has become more apparent. Increasingly, idiosyncratic factors are determining diverging inflation expectations and policy rates in some EMs. This, coupled with the slower-than-expected Chinese recovery and the higher-for-longer outlook for interest rates, continues to weigh on global investor sentiment and risk appetite.

Although indicators suggest that interest rates are at or near their peaks (Figure 4), there are factors that could undermine the moderation in global inflation, including higher energy prices. Additional policy tightening may tip the global economy into a recession, dampen appetite for riskier assets and expose financial vulnerabilities.

Figure 4: Policy rate expectations in selected AEs

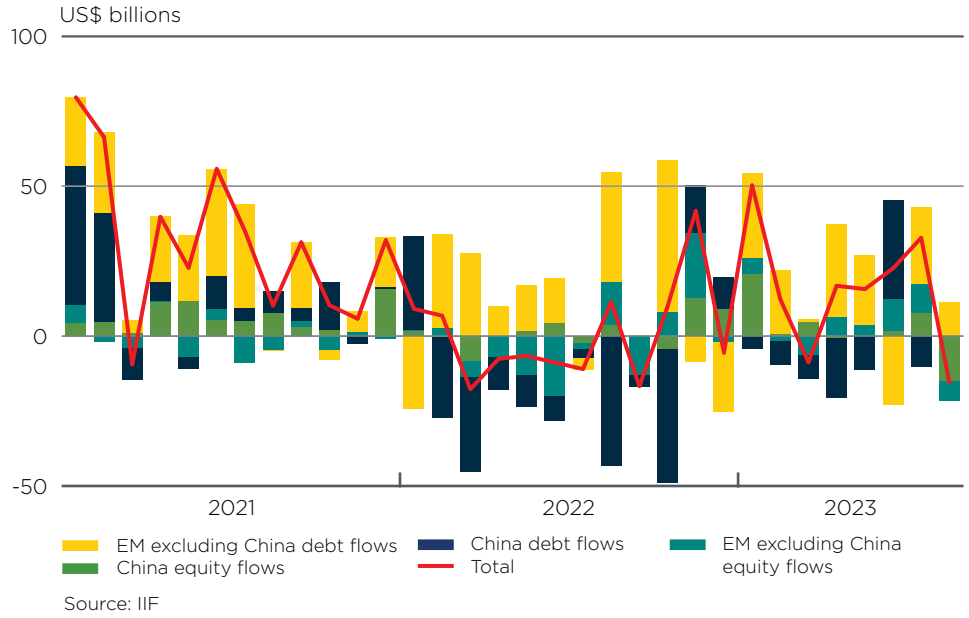


Source: Bloomberg

Energy prices remain an important determinant of global growth and inflation. A major contributor to optimistic growth expectations in 2022 was the sharply lower prices of energy, particularly of oil, gas and coal. However, the recent output cuts by OPEC+ (Organisation of the Petroleum Exporting Countries and its allies) against lower inventories have driven oil prices significantly higher since mid-June 2023 to about US$97 in September before moderating to around US$88 in October. The increase in oil prices in the second half of 2023 has fuelled a rise in global inflation expectations. Other risks to the global inflation outlook include the conflict in the Middle East, the ongoing Russia-Ukraine war and the impact of climate change on food prices. These developments could lead to a further tightening in global financial conditions and suppress appetite for riskier assets.

Capital flows to EMs have been relatively resilient in 2023 (Figure 5). However, in August 2023, Chinese equities suffered record outflows of about US$15 billion,[2] turning the total flows to EMs negative. Such massive outflows underscore the negative sentiment towards China given its lacklustre economic performance and scepticism over policy responses to date.

Figure 5: Portfolio flows to EMs



Source: IIF

Globally, pressure is mounting in the commercial real estate (CRE) sector due to higher interest rates, tightening lending standards and a decline in both transaction volumes and property valuations in various regions. The CRE sector has important links to the financial system due to its high level of interconnectedness with both bank and non-bank financial intermediaries. As a result, there could be significant financial stability implications should there be a shock to the sector.[3] The high interest rate environment has led to elevated refinancing risks, depressed property valuations and lower transaction volumes. As lending becomes more restrictive, it becomes increasingly challenging for the sector to secure financing for new projects or to refinance existing debt, putting downward pressure on property values. The recent downgrade of the 2023 outlook for United States (US) real estate investment trusts (REITs) by Fitch Ratings from 'neutral' to 'deteriorating', coupled with the downturn in China's property market, underscores the growing global concerns over the CRE sector.

2 https://www.iif.com/Publications/ID/5521/IIF-Capital-Flows-Tracker--September-2023

3 For a more detailed discussion of how the CRE sector could have implications for financial stability, see https://www.imf.org/en/Publications/GFSR/Issues/2023/04/11/global-financial-stability-report-april-2023.

Domestic developments

Financial stability heatmap

The SARB uses a wide range of financial stability indicators that are designed to act as early warning signals of a potential build up of cyclical changes in the financial system that could lead to vulnerabilities if left unattended.[4] A snapshot of all material developments is communicated through the financial stability heatmap. The heatmap visually depicts the statistical transformation of a wide range of financial stability indicators against their historical averages. It is data driven and based on historical information, and does not contain any evaluation of financial stability risks. It serves as a communication tool to flag areas for deeper analyses.[5]

Not every indicator used in the construction of the heatmap is discussed in this chapter. Rather, the focus is on key global and domestic factors that may be relevant to financial stability risks and vulnerabilities in South Africa.

Figure 6: Financial stability heatmap

Source: SARB

4 Both Adrian et al. (2015) and Aikman et al. (2017) note that a shortcoming of the framework underpinning the monitoring of financial stability vulnerabilities and the construction of financial stability heatmaps is its focus on cyclical vulnerabilities and not structural and event vulnerabilities.

5 Refer to Annexure A for an overview of how the South African financial stability heatmap is composed, including the indicators underlying the various heatmap elements. In an effort to continually improve the reliability of the indicators used in the heatmap and to keep them relevant, they are reviewed and updated from time to time.

The domestic economy continues to face a number of headwinds. Fiscal constraints remain a concern, while economic growth continues to disappoint, weighed down by electricity generation constraints, as well as rail and port infrastructure bottlenecks, among others.

The impact of South Africa being placed on the FATF list of countries that are subject to increased monitoring (commonly referred to as the FATF 'greylist') in February 2023 is increasingly being felt. As a result of being added to the FATF greylist, the EU added South Africa to its list of high-risk countries in June 2023. This requires financial institutions in the EU to apply enhanced due diligence to counterparties from high-risk countries when processing cross-border transactions, vetting clients, verifying the sources of funds and tracking their use. The immediate impact has been delays in processing times and increased documentation requirements, leading to higher monitoring and reporting costs.

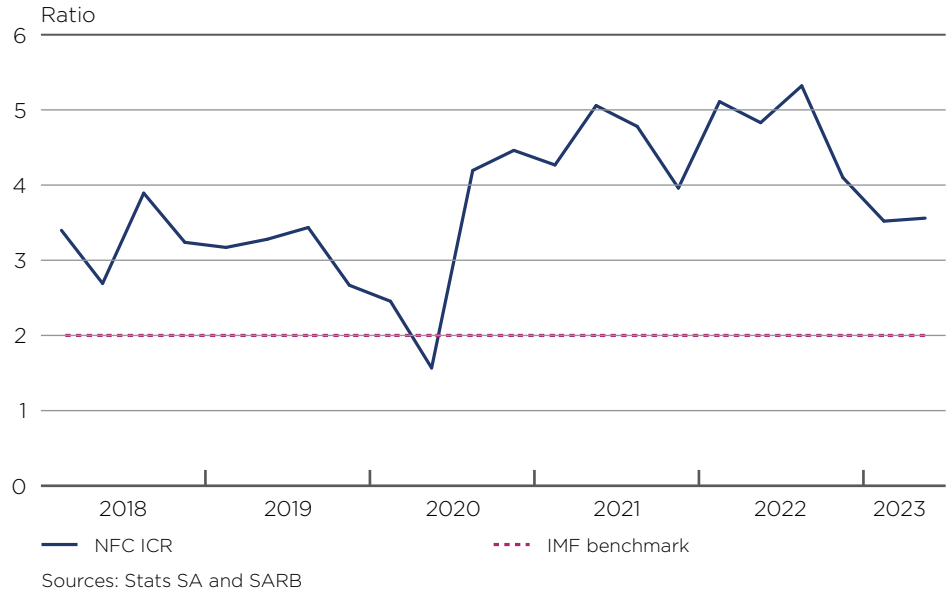
The savings buffers of households and non-financial corporates (NFCs) have deteriorated in the current higher interest rate environment, running down buffers built up during the COVID-19-induced lockdowns and contributing to an increase in non-performing loans (NPLs) (Figure 7). This reduction in savings increases the vulnerability of these sectors to another shock, especially in an environment of elevated interest rates.

Figure 7: NPLs of households and NFCs

Source: SARB

The total interest coverage ratio (ICR) for domestic NFCs declined notably to 3.56 in the second quarter of 2023 from 4.83 a year earlier (Figure 8), reflecting the combined impact of higher interest rates and lower earnings. Despite the headwinds to the sector, the ICR remains well above the International Monetary Fund (IMF) benchmark of 2, although this could deteriorate further if the more restrictive macroeconomic environment persists and the transmission of high interest rates to funding costs intensifies.

Figure 8: NFC ICR



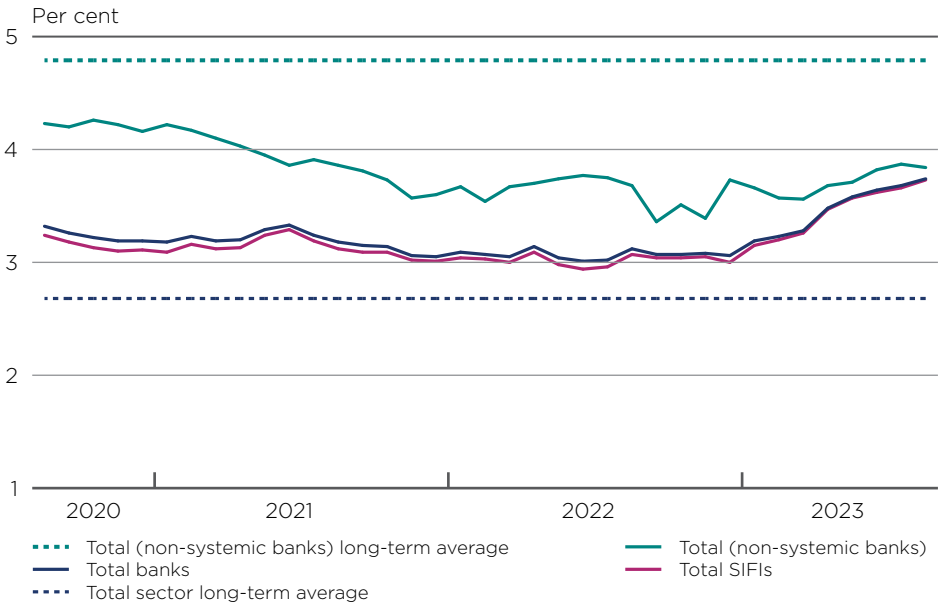
Sources: Stats SA and SARB

In a rising interest rate cycle, banks initially benefit from the endowment effect.[6] However, this effect wanes as interest rates remain elevated for an extended period and banks' longer-term liabilities start to reprice. As rates increase, the financial stress on bank customers also increases, which could lead to increased NPLs (Figure 9).[7] The credit quality of the banking sector's balance sheets has started to deteriorate, with NPLs accumulating across both corporate and retail portfolios. This risk is elevated for loans originated during previous years of low interest rates. Furthermore, the higher-for-longer interest rate environment is likely to dampen economic growth and employment levels, thereby reducing the opportunity to extend credit prudently.

6 As interest rates increase, interest rate-sensitive bank assets (i.e. loans extended) reprice faster than bank liabilities (i.e. deposits placed with the banks), meaning that banks initially profit from a rising interest rate environment through increased interest rate margins. This is called the endowment effect.

7 NPLs are calculated as loans overdue for more than 90 days as a percentage of on-balance sheet loans.

Figure 9: Banking sector NPLs

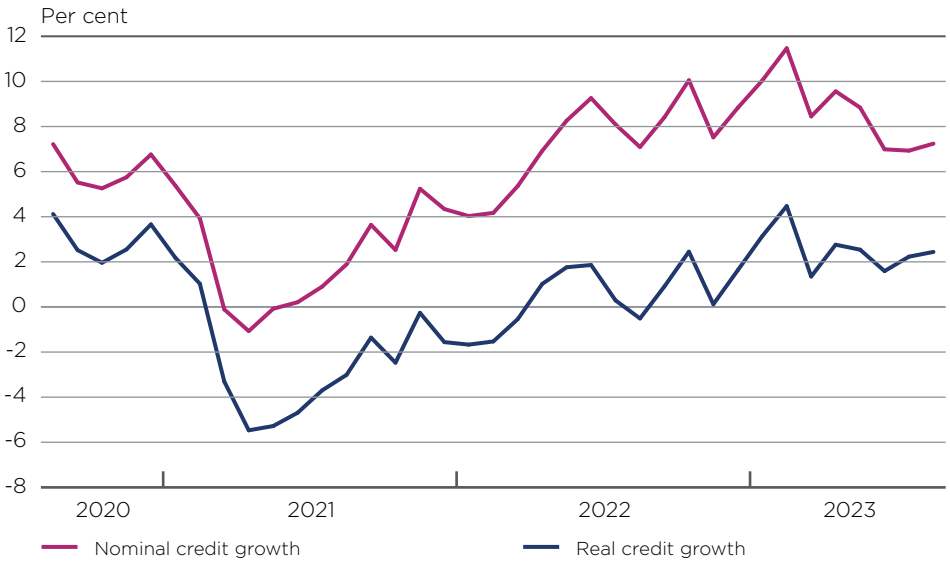


* Long-term average is from January 2014 to August 2023

Source: PA

Credit extension by banks started to moderate in February 2023 (Figure 10). The slowdown in lending activity is to be expected in an environment of high interest rates and slow growth, which is increasing financing costs and requiring banks to be more circumspect in extending credit to higher-risk clients. Some business models could increase banks' vulnerability to a higher-for-longer interest rate environment, depending on how the bank is funded (e.g. through retail or wholesale depositors), as well as the type(s) of clients on which the bank focuses. Non-systemic banks are generally more vulnerable to changes in the external environment because of their less-diversified business models.

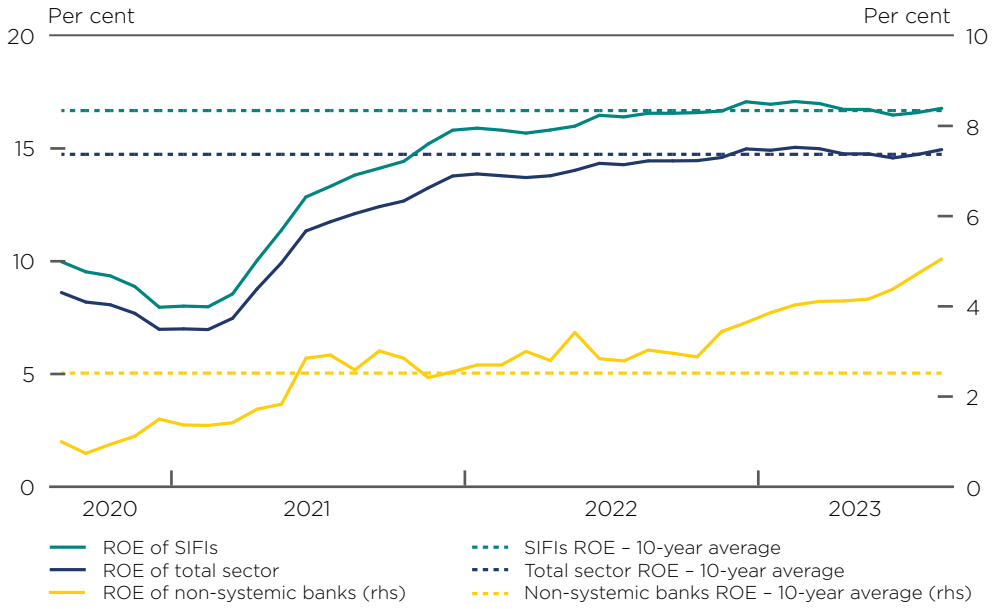
Figure 10: Real and nominal bank credit extension growth



Sources: PA and SARB

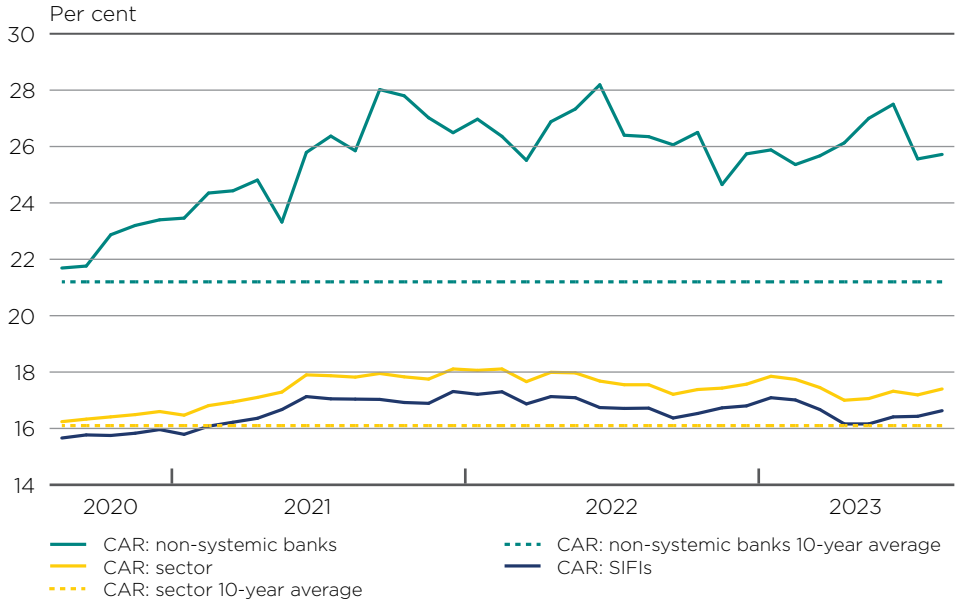
Banks have remained profitable but overall profits and capital have started to decline mainly due to increasing credit losses (Figure 11 and Figure 12). Credit risk remains a financial stability concern, which is reflective of the impact that cumulative credit losses have on banks' profits and capital.

Figure 11: Banking sector profitability



Sources: PA and SARB

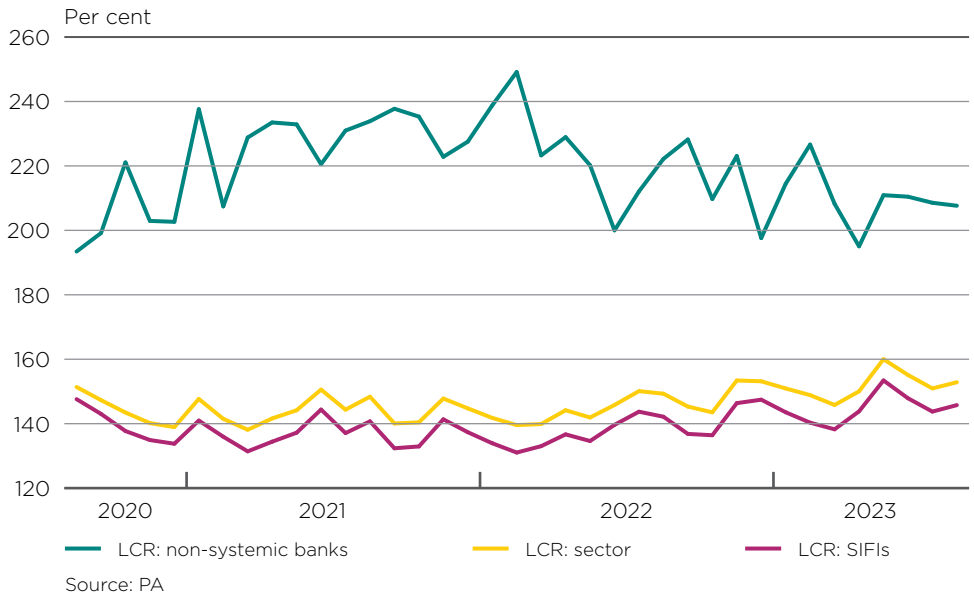
Figure 12: Banking sector capital adequacy ratio



Source: PA

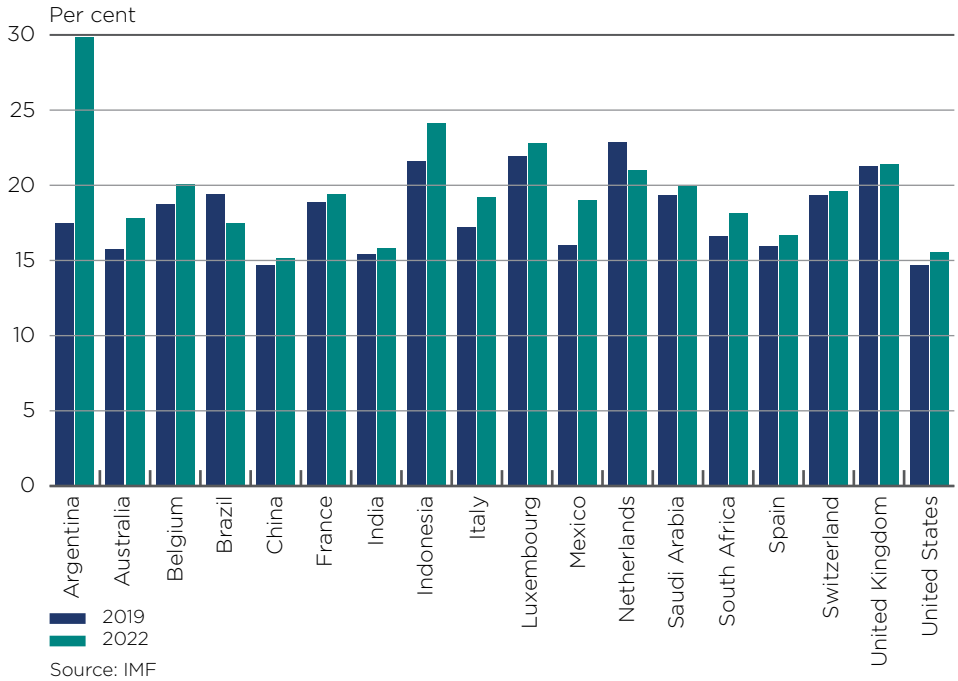
The banking sector's capital adequacy ratio (CAR) and liquidity coverage ratio (LCR) (Figure 12 and Figure 13) remain above the prudential minimum requirements, strengthening its overall resilience to shocks. The results of the SARB's 2023 CSST reaffirmed the resilience of the systemically important banks in particular.[8] The CARs for South African banks have been increasing broadly in step with their Basel Committee on Banking Supervision (BCBS) counterparts (Figure 14).

Figure 13: Banking sector LCR



Source: PA

Figure 14: CARs of BCBS member countries



Source: IMF

8 See Chapter 3 for a more detailed discussion of the results of the SARB's 2023 CSST exercise.

While total banking sector profitability, capital and liquidity ratios remain well above the regulatory minimum, there is a marked difference between systemically important and non-systemic banks, as discussed in Box 1.

Box 1: Non-systemic banks facing increasing risks after COVID-19

In recent years, three domestic non-systemic banks have either failed, been sold or placed under curatorship.[1] Public confidence in the banking system is a fundamental element of financial stability. Although these banks were not systemically important, there are a number of channels through which the failure of a non-systemic bank could impact financial stability.[2]

There is also the risk of contagion, where a loss of confidence in one institution could lead to a loss of confidence in others as evidenced by the small-bank crisis in the early 2000s.[3] Therefore, continued assessment of non-systemic banks is relevant for financial stability in the South African context. An effect of non-systemic bank failures is the consolidation of the banking sector, with increasing asset concentration in larger participants as depositors seek safer havens for their money. In this regard, the introduction of deposit insurance is expected to be a source of resilience for non-systemic banks.

Non-systemic banks were particularly hard-hit by COVID-19 because they typically service specific, niche customer groups (i.e. geographically, sectorally and even culturally). However, since the pandemic, non-systemic banks' profitability has been increasing (Figure 11) and is now significantly above its 10-year average, albeit well below the profitability level of the total banking sector. Similarly to systemic banks, the increase in non-systemic bank profitability has been driven by increasing net interest income (NII). However, the single fastest-growing expense item on non-systemic banks' financial statements has been credit losses. If this trend continues, this grouping of banks is likely to experience significant financial pressure in the short to medium term.

Like the trend in systemic banks' NPLs, non-systemic banks' NPLs are increasing (Figure 9). NPLs for the total banking sector remain above their long-term average. This suggests that *all* banks are experiencing increasing credit risk given the challenging macroeconomic backdrop. However, non-systemic banks' credit risk tends to increase much faster than those of systemic banks.

One of the buffers that non-systemic banks have against increasing credit risk is the regulatory capital that they hold. In aggregate, non-systemic banks' CARs are well in excess of the regulatory minimum requirements as well as above their 10-year average ratios (Figure 12). Their CARs also far exceed the average level of capital held by the systemically important financial institution (SIFI) banks.

1 They were VBS Mutal Bank in 2018 (https://www.resbank.co.za/content/dam/sarb/publications/media-releases/2020/10139/Press-statement-on-VBS-bank-license.pdf), Ubank Limited in 2022 (Ubank Limited Statement by Governor Kganyago incl biography of curator (resbank.co.za)) and Habib Overseas Bank Limited in 2023 (SARB Media Statement announcing the curatorship of Habib Overseas Bank Limited (resbank.co.za)).

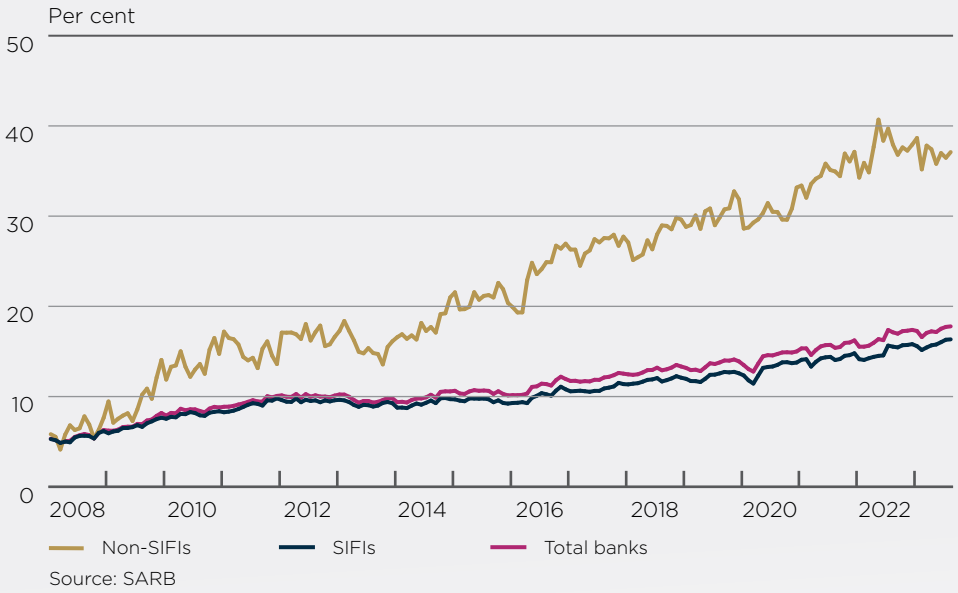
2 For further discussion of the potential channels, refer to Box 1 in the second edition of the 2018 *FSR*.

3 For example, see Chatterjee and Sing (2021) (https://www.resbank.co.za/content/dam/sarb/publications/working-papers/2021/WP%202104.pdf) or Mananga, Lin and Zhang (2023) (https://www.resbank.co.za/content/dam/sarb/publications/working-papers/2023/WP%202309.pdf).

Box 1: Non-systemic banks facing increasing risks after COVID-19 (continued)

When compared to systemic banks, non-systemic banks hold significant amounts of sovereign debt relative to their total assets (Figure B1.1).

Figure B1.1: SAGBs as a share of South African banks' total assets



Source: SARB

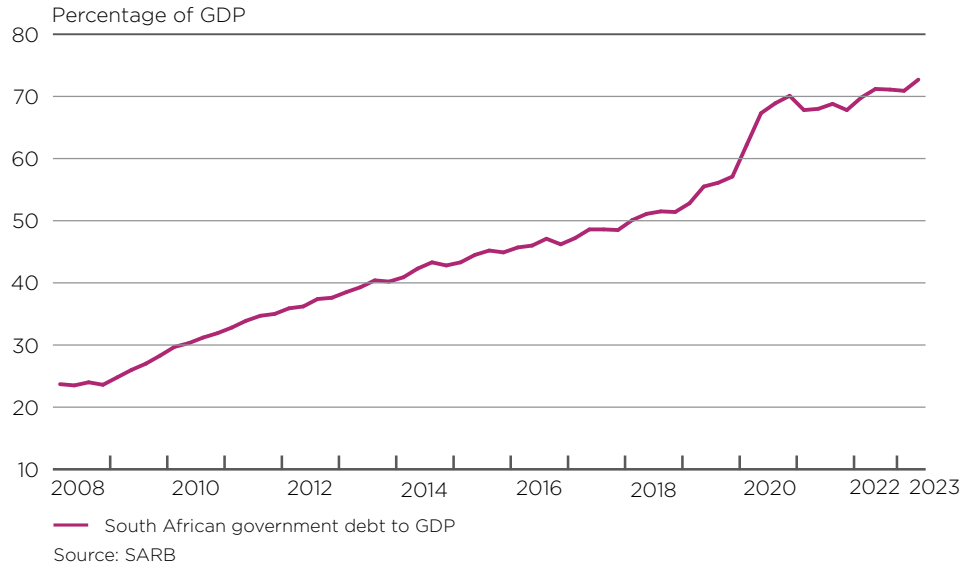
This contributes to the non-systemic banks being highly liquid and able to meet short-term obligations as they fall due. This is also reflected in the non-systemic banks' LCR (Figure 13), which is much higher than the sector's LCR, suggesting that non-systemic banks are better able to meet their short-term obligations with their large holdings of high-quality liquid assets (HQLA) (which consist mainly of government debt). However, if not hedged appropriately, significant holdings of government debt may expose these non-systemic banks to vulnerabilities such as changes in the sovereign's credit rating as well as increases in bond yields.[4]

4 Refer to the first edition of the 2023 *FSR* for a more detailed discussion of this risk.

The heatmap points out the build-up of pressure in government finances. As commodity prices eased from post-pandemic highs, South African tax revenue decreased. South Africa's public debt stood at 72.7% of gross domestic product (GDP) in the second quarter of 2023 (Figure 15), well above the EM average of around 50% (Figure 16). The increasing borrowing requirement to finance the widening fiscal deficit could result in a higher-than-projected gross loan ratio of 72.8% of GDP for the 2023/24 fiscal year by National Treasury (NT).[9]

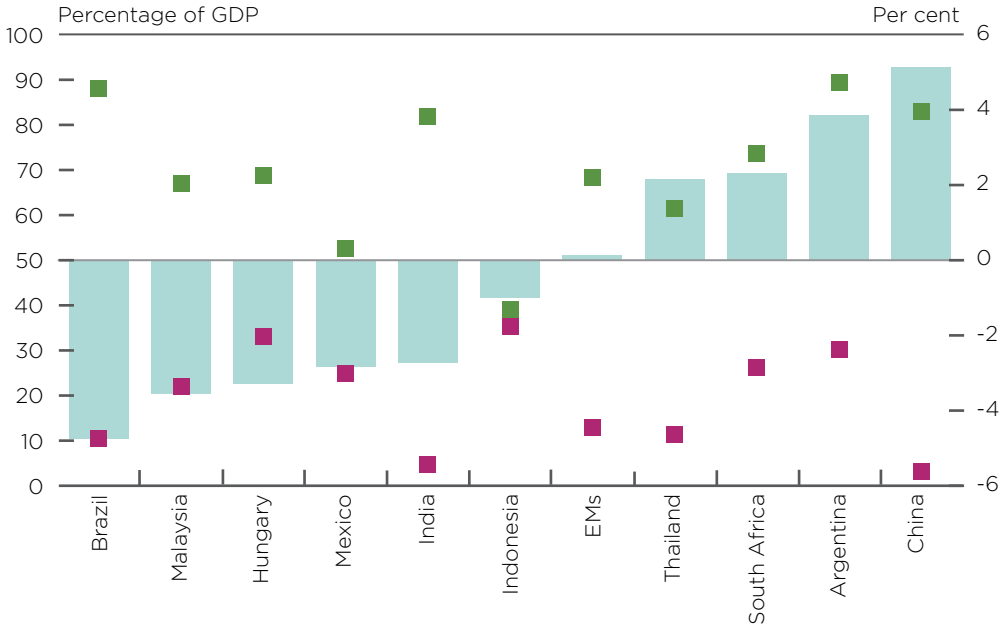
9 Refer to the 2023 *Medium-Term Budget Policy Statement (MTBPS)* (available at https://www.treasury.gov.za/documents/mtbps/2023/default.aspx).

Figure 15: South African government debt to GDP



Source: SARB

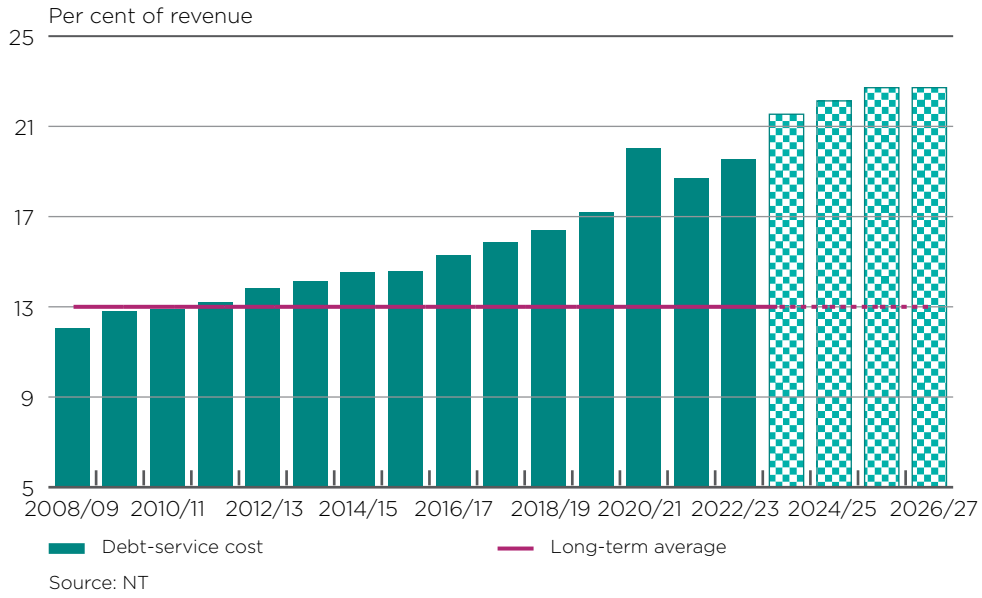
Figure 16: Government debt in selected EMs



Source: IMF

Government's debt-service costs have more than doubled since 2008 (Figure 17), further crowding out growth-supporting expenditure. The share of debt-service costs to main budget revenue increased markedly from 14.3% in 2018/19 to 20.7% in 2023/24, well above its long-term average of 13.0%. Government projects that its debt-service costs will settle at 22.1% of main budget revenue in 2025/26 and at 5.4% of GDP before easing.

Figure 17: Government debt-service cost outlook



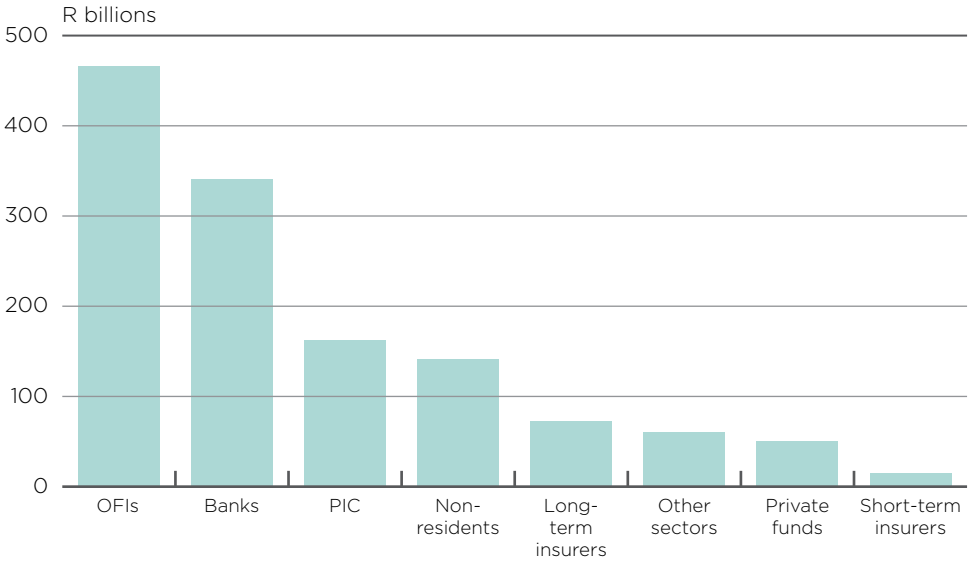
Source: NT

Concerns over the growing debt-service costs and the large stock of government debt have elevated government's borrowing costs. The South African 10-year bond yield has increased by 390 basis points since 2018 while the yield curve has steepened with the spread between short- and long-dated government bonds increasing from 274 basis points at the beginning of 2022 to 344 basis points by the end of October 2023. A major driver in rising sovereign yields has been elevated fiscal risk, with the spread between SAGBs (in both local and hard currency) and those of EM peers widening.

As government debt has increased, so has the domestic financial sector's exposure to it (Figure 18). This could lead to a negative feedback loop between the sovereign and the financial sector. The increasing concentration of SAGBs held by domestic investors, coupled with the high levels of government debt, presents a risk to the financial sector (see the 'sovereign-financial sector nexus' in Box 2).[10]

10 See the first edition of the 2020 *FSR* for an initial write-up on the sovereign-financial sector nexus.

Figure 18: Accumulation of SAGBs since 2018

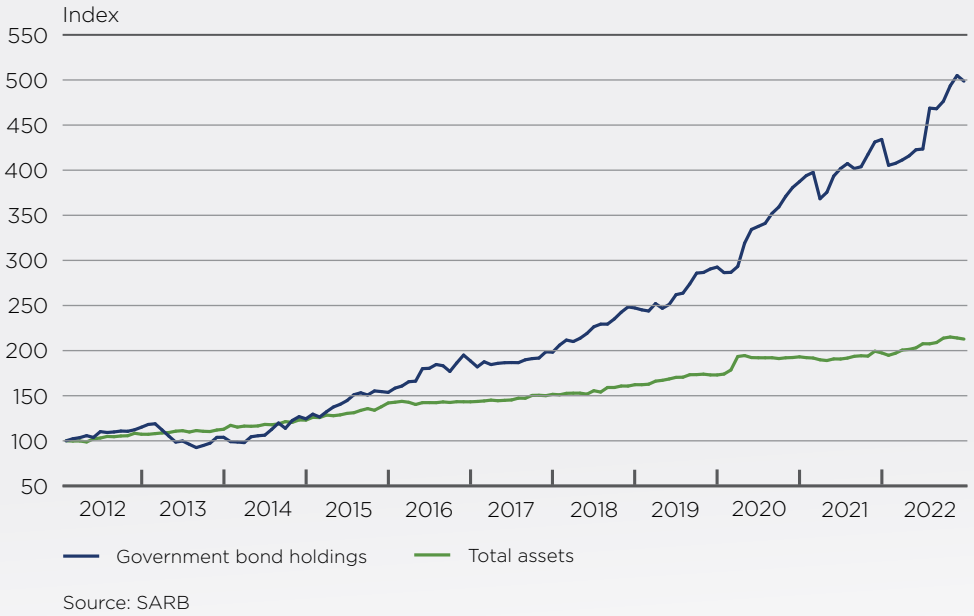


Source: NT

Box 2: The sovereign-financial sector nexus

The growth in banks' holdings of government bonds has far outpaced the growth in total assets (Figure B2.1). The disproportionate increase implies a change in the composition of bank balance sheets, where other assets may have been crowded out.

Figure B2.1: Bank balance sheets and government bond holdings

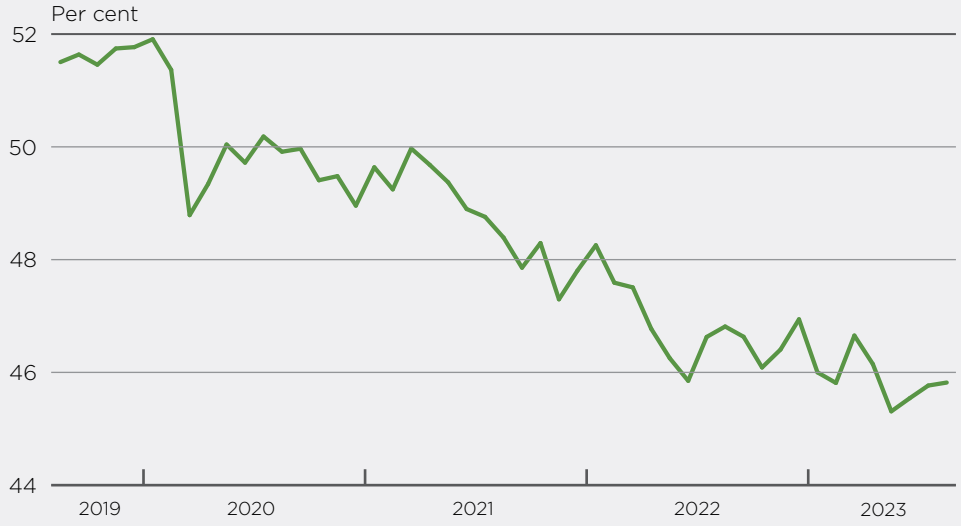


Source: SARB

The proportion of banks' risk-weighted assets (RWA) to total assets has declined from around 52% in 2019 to around 46% currently (Figure B2.2). The zero-risk weighting (for banks under the standardised approach) or low-risk weighting (for banks under the internal ratings-based approach) for exposures to the sovereign could provide an incentive for banks to increase their exposure to government debt (especially in a rising credit risk environment). Any accumulation of government debt by banks would put further downward pressure on this ratio.

Box 2: The sovereign-financial sector nexus (continued)

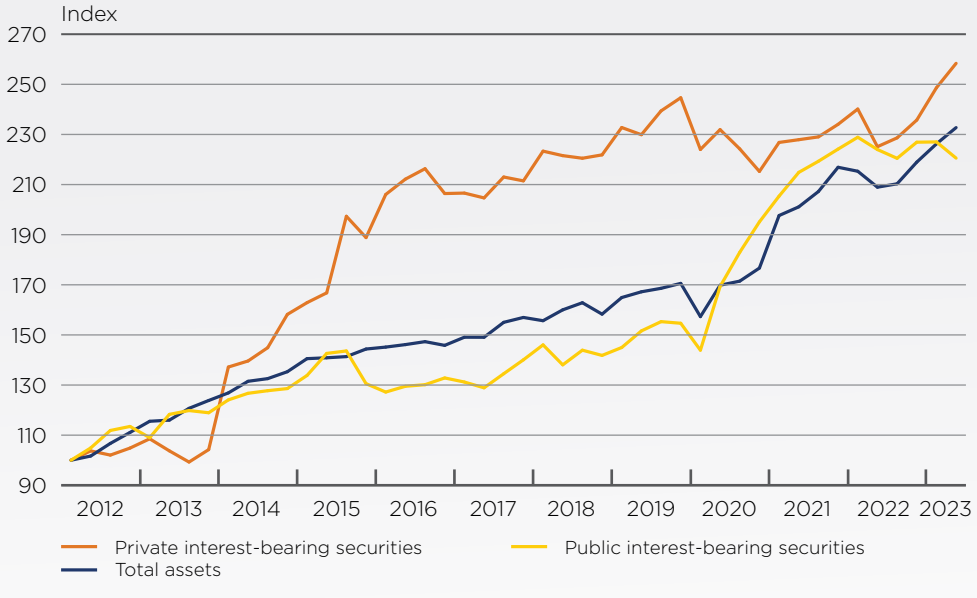
Figure B2.2: Banks' RWA as a percentage of total assets



Source: PA

It is not only banks that have increased their holdings of government debt over the last few years. Other non-bank financial institutions – notably insurers, pension funds and investment funds – have increased their relative exposure to SAGBs considerably, both since 2012 and since foreign investors started reducing their exposure to the sovereign at the end of 2017 (Figures B2.3, B2.4 and B2.5).

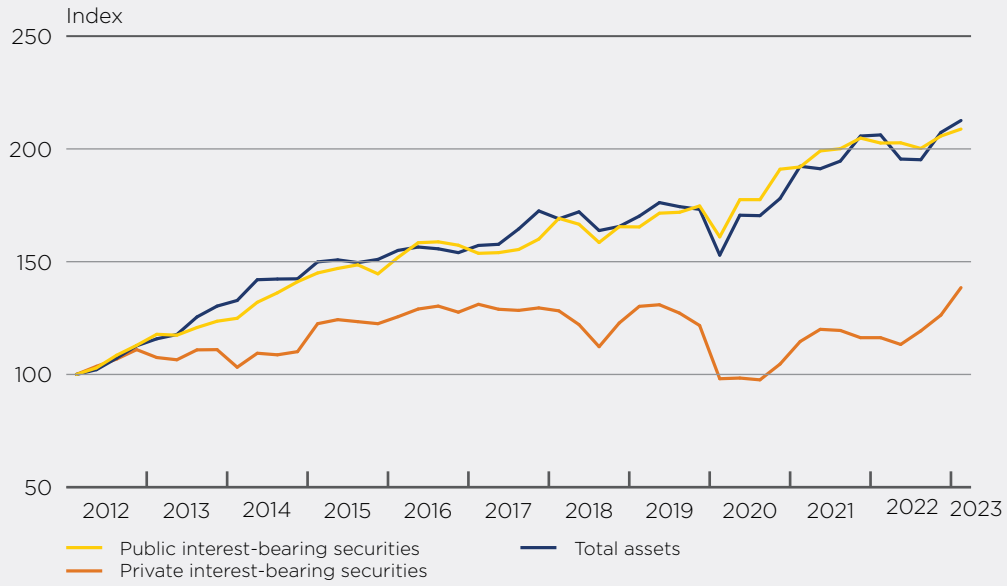
Figure B2.3: Insurers' government bond holdings and total assets



Source: SARB

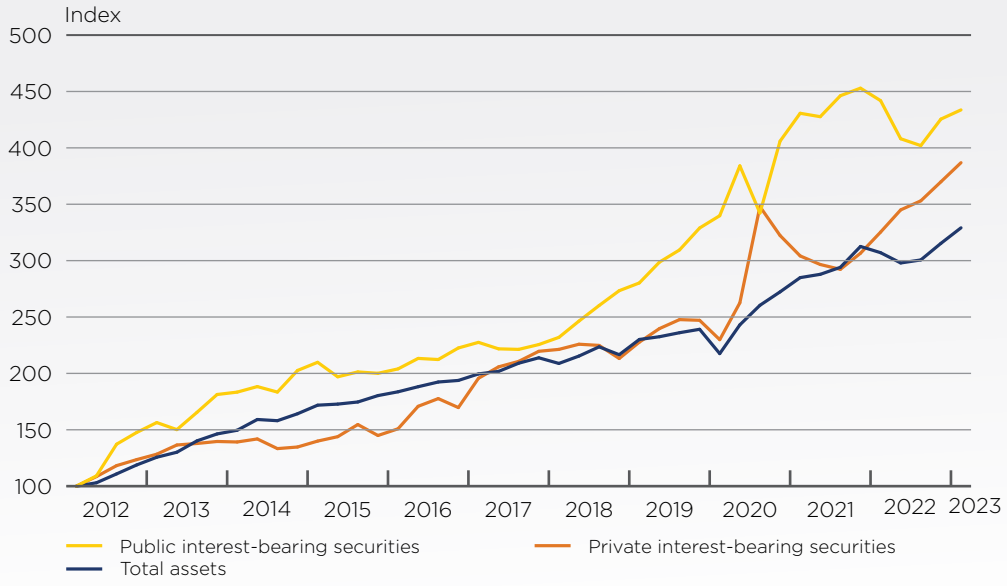
Box 2: The sovereign-financial sector nexus (continued)

Figure B2.4: Pension funds' government bond holdings and total assets



Sources: ASISA, SARB

Figure B2.5: Aggregate unit trust balance sheets

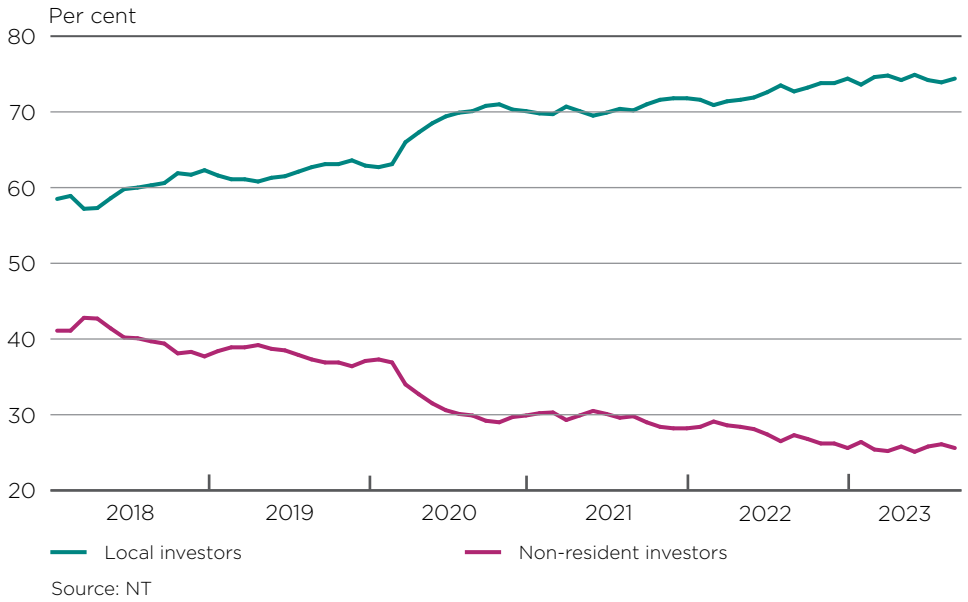


Source: SARB

The heatmap shows sustained pressure resulting from non-resident investors gradually reducing their relative holdings of SAGBs and equities. Foreign investor participation in the SAGB market has declined steadily since 2018, with an acceleration following South Africa's exclusion from the World Government Bond Index in April 2020 (Figure 19). The holdings of SAGBs by non-residents continued to decline to 25.4% in October 2023 from 38.7% in May 2019.

This gradual decline in non-resident demand increases the reliance on the domestic financial sector to absorb an increasing supply of SAGBs, thus increasing the risks associated with the sovereign-financial sector nexus as discussed in Box 2.

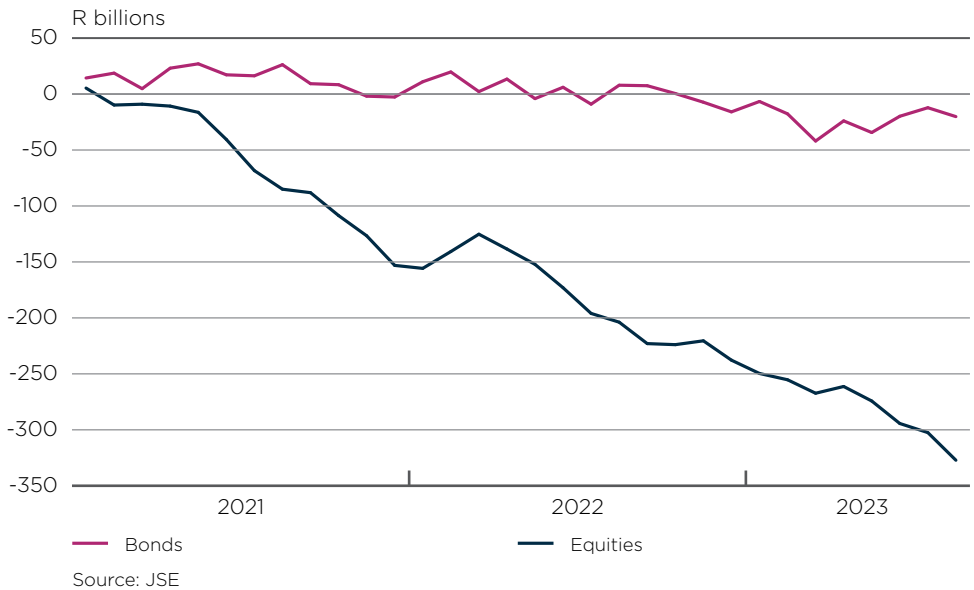
Figure 19: Breakdown of SAGB holdings by local and non-resident investors



Source: NT

South African capital markets have continued to record portfolio outflows (Figure 20). The equities market has suffered the most net outflows as foreign appetite for domestic equities has been weighed down by low growth expectations, rising interest rates, heightened exchange rate risk and idiosyncratic risks such as the FATF greylisting and load-shedding. In the year to November 2023, non-residents were net sellers of R98.1 billion of domestic equities and bonds, much higher than the net sales of R43.4 billion over the same period in 2022.

Figure 20: Cumulative non-resident flows in domestic equity and bond markets



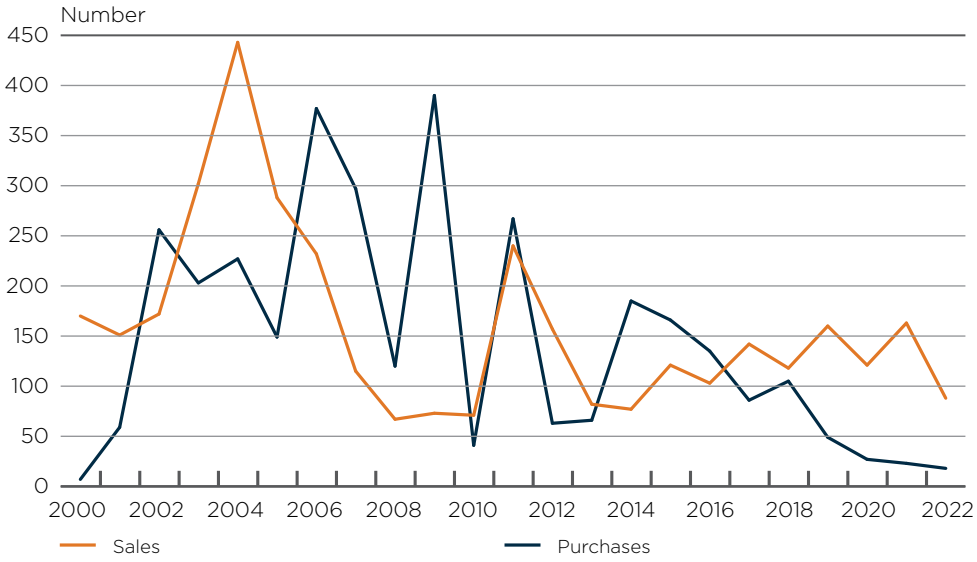
Source: JSE

The domestic CRE sector faces pressure on several fronts. These include rising municipal costs, above-inflation increases in property taxes, water scarcity, electricity shortages and environmental challenges such as floods. These factors are pushing up expenses-to-income ratios in the CRE sector (Figure 21), while a decline in CRE sales and purchases also adds to strain in the sector (Figure 22).

Figure 21: CRE expense to income ratio

Source: MSCI

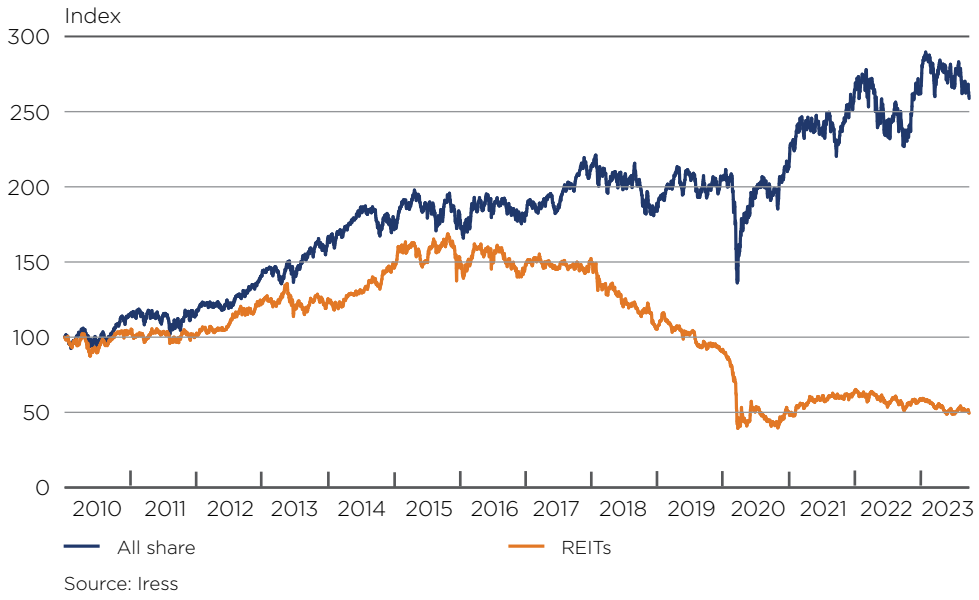
Figure 22: CRE sales and purchases



Source: MSCI

South African REITs' performance remains tilted to the downside due to a combination of lower income and slower capital appreciation. A commensurate increase in the cost of capital has led to acquisitions and developments demanding higher returns to remain economically viable. As a result, capital appreciation is curbed and REITs' equity is negatively affected, causing share prices to drop in the listed property market. South African REITs' share prices have been on a downward trajectory since 2016 (Figure 23), deviating from the previously observed correlation with the JSE All-Share Index (Alsi) prices, and they have not recovered to pre-pandemic levels.

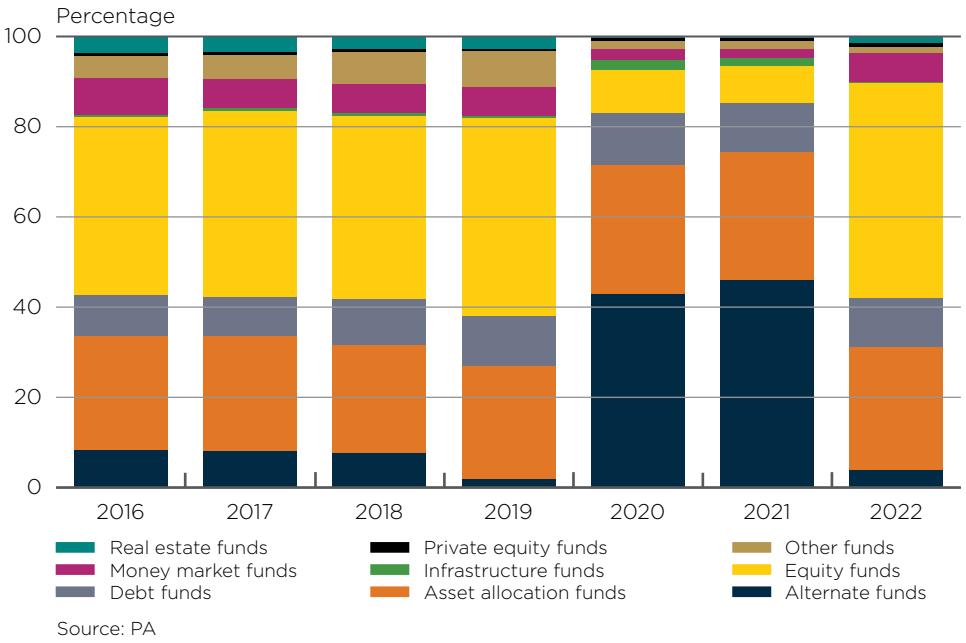
Figure 23: REITs and JSE Alsi performance



Source: Iress

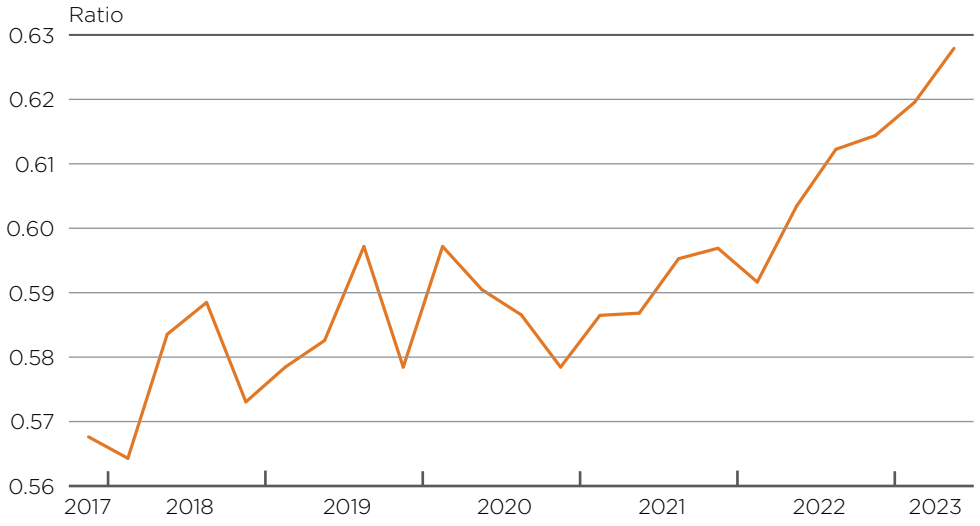
For life insurers, liquidity strain could manifest through their inability to meet redemptions. There is a risk that insurers may switch to less liquid, higher-yielding assets during periods of low interest rates to protect their profitability. This may make it difficult to meet redemptions. However, this does not seem to be the situation in the South African life insurance industry: although life insurers switched asset allocations within investment funds to less liquid assets during 2020 and 2021 (Figure 24), they did not exhibit any notable form of liquidity strain, as reflected by their ratio of liquid assets to total assets (Figure 25). This confirms the life insurance sector's ability to meet both planned and unplanned redemptions.

Figure 24: Life insurers' changing investment fund composition



Source: PA

Figure 25: Life insurers' ratio of liquid assets to total assets



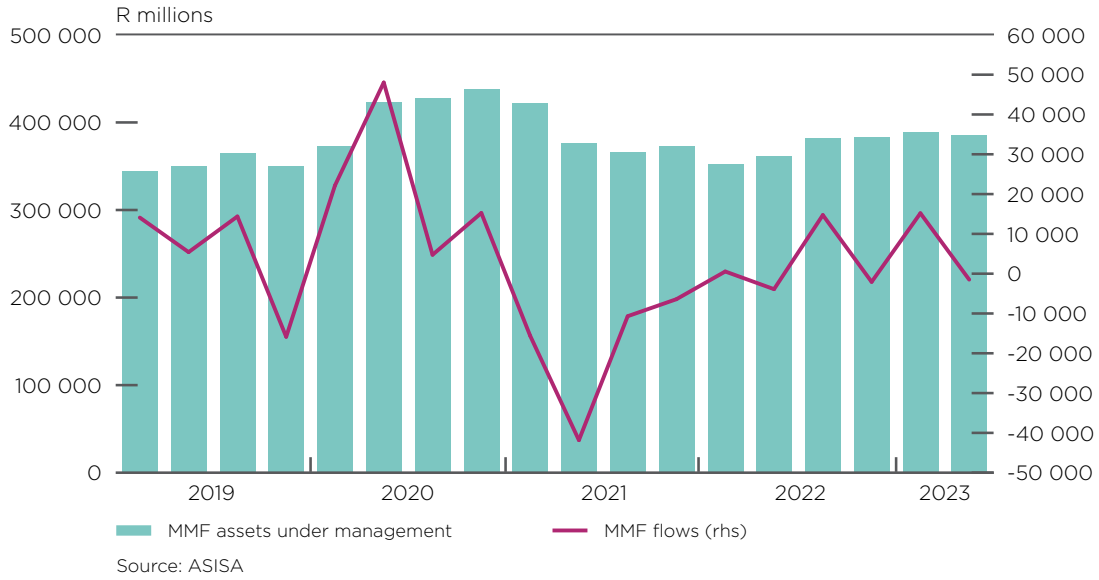
Source: PA

Underwriting losses could affect the non-life insurance sector from a solvency perspective during periods of high inflation as the cost of claims rises (e.g. due to vehicle replacement parts becoming more expensive). In addition, localised flooding and extreme weather events could add further pressure to underwriting margins.

The rest of the non-bank financial institution (NBFI) sector, or other financial institutions (OFIs),[11] could be impacted by a high interest rate environment in different ways. Leverage can amplify the impact of increases in interest rates and other shocks, thereby increasing the exposure of NBFIs to solvency and liquidity risks. During the period of low interest rates after the 2008 global financial crisis, many NBFIs used higher leverage as a way to boost their returns, some through borrowing and others through the use of derivatives.

Money market funds (MMFs) may be vulnerable to a shock that renders them unable to meet redemptions as they fall due. South Africa only has one type of MMFs (i.e. non-government MMFs), which are exposed to standard money market securities mainly issued by banks, government and state-owned enterprises (SOEs). South African MMFs invest mostly in banks, and their investments in government securities have decreased significantly since March 2022. Domestic MMFs may not engage in leverage and do not invest in credit. MMF assets are short-term in nature and are quickly replaced by higher-yielding assets, reducing the risk of triggering large-scale redemptions. However, as the COVID-19 experience demonstrated, liquidity issues could arise when liquidity does not flow through from banks to NBFIs. MMFs recorded noteworthy inflows during the 12 months ended September 2023, which does not point to liquidity issues at this point in time (Figure 26).

Figure 26: MMF assets under management and inflows



Source: ASISA

11 OFIs include MMFs, hedge funds, other investment funds, real estate investment trusts, real estate funds, trusts, finance companies, broker-dealers, structured finance vehicles, central counterparties, participation bond schemes, stokvels and bank securitisations/resecuritisations.

Chapter 2: Financial stability outlook and assessment

This chapter identifies the key risks to domestic financial stability; considers the outlook for domestic financial stability; and provides the SARB's assessment of prevailing financial stability conditions.

RVM

The SARB's RVM provides a forward-looking assessment of the key risks to financial stability in South Africa over the short, medium and longer term (Figure 27). The key risks are identified based on the current conjuncture and cyclical trends in financial stability indicators, but also take into account structural vulnerabilities and events that could pose a future risk to financial stability. The RVM shows the residual vulnerability of the financial system to such developments, after considering existing mitigating factors and policy actions. Risks with a lower residual vulnerability are the ones where the financial system is relatively well placed to absorb a shock without a broader spillover of distress across the system. Risks with a higher residual vulnerability are the ones that are more likely to lead to financial instability if no further mitigating actions are taken.

The RVM is supported by a table (see Annexure B), which:

(i) identifies the risks to South African financial stability;

(ii) summarises the channels through which the risks could manifest in a shock to the South African financial system;

(iii) identifies the mitigating factors and actions that would alleviate the expected impact of a shock; and

(iv) describes the likely residual impact on financial stability in South Africa (i.e. the potential net impact the risks would have should they materialise as a shock, after the identified mitigating factors and actions have been accounted for).

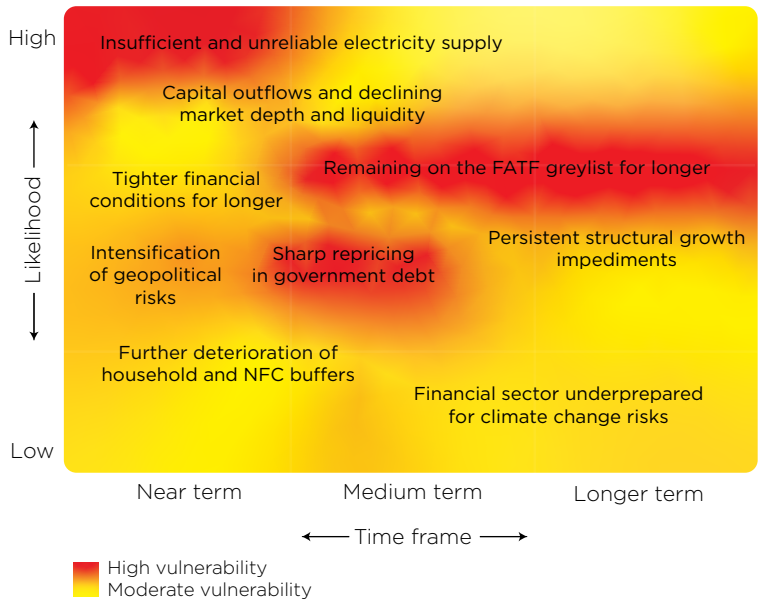
The RVM reflects three types of vulnerabilities, namely:

(i) Broader environmental risks: these are risks caused by factors beyond the SARB's and, in some cases, beyond South Africa's control, yet could have a marked impact on the domestic financial sector and financial stability. The environmental risks currently include a global environment of tight financial conditions higher-for-longer interest rates, increasing geopolitical risks and persistent structural impediments to domestic economic growth.

(ii) Idiosyncratic risks: these are risks caused by specific domestic developments or events. The country-specific risks on the RVM are an insufficient and unreliable electricity supply; capital outflows and declining market depth and liquidity; a sharp repricing in government debt; remaining on the FATF greylist for longer; and further deterioration of household and NFC buffers.

(iii) Perpetual risks: these are persistent longer-term risks that the financial sector is aware of and must prepare for, but cannot be avoided completely. The main perpetual risk on the RVM is the impact that climate change can have on the financial sector.

Figure 27: SARB RVM



Key risks to domestic financial stability

Sharp repricing in government debt

The financial sector's exposure to government debt increased markedly over the past decade, while at the same time the fiscal position and the credit rating of South African government debt deteriorated. This situation poses various risks for financial stability through different channels. One is the repricing of bonds when yields rise, resulting in both realised and valuation losses on holdings of government bonds. A second is the impact of government's higher cost of funding. A third is the possible crowding out effects of a large amount of government debt that increasingly has to be funded in domestic financial markets.

Capital outflows and declining market depth and liquidity

Government bond yields in AEs have increased notably in recent months amid lingering growth and inflation concerns, in turn making EM government bonds relatively less attractive. The reduced yield differential between AEs and EMs continues to dampen investor appetite for EM sovereign debt. The South African equities market has also been weighed down by low growth expectations, rising interest rates, heightened exchange rate risk and idiosyncratic risks such as the FATF greylisting and load-shedding.

The IMF[12] notes that the decline in foreign participation in EM local currency government bond markets in the last decade was driven by geopolitical and trade tensions, shifting more recently to concerns over fiscal sustainability as discussed in Chapter 1. Although the challenge is not unique to South Africa, it remains one of the most pertinent risks to domestic financial stability, especially if considered alongside the sovereign-financial sector nexus.

12 https://www.imf.org/-/media/Files/Publications/WEO/2023/April/English/ch4.ashx

Insufficient and unreliable electricity supply

The impact of an insufficient and unreliable electricity supply has prompted large-scale private sector investment in alternative energy solutions. While the full benefits of these reforms are likely to fully materialise over the next three to five years, some improvement has been noted this year, leading to a slight decrease in this risk since the May 2023 *FSR*.[13] New electricity generation projects (primarily by the private sector) registered with the NERSA have increased to 4 126 megawatts (MW) to October 2023, compared with 1 664 MW for the entire 2022.[14]

Intensification of geopolitical risks

Risks to the global inflation outlook include the conflict in the Middle East, the ongoing Russia-Ukraine war and the impact of climate change on food prices. Energy prices remain a key driver of global inflation and inflation expectations. In particular, the recent output cuts by OPEC+ against lower inventories have driven oil prices significantly higher in recent months, which has fuelled a rise in global inflation expectations. These developments could lead to a further tightening in global financial conditions and suppress appetite for riskier assets. Should global inflation remain sticky, central banks may continue to keep policy rates high. Domestically, higher interest rates could exacerbate emerging pressure on households and NFCs.

Remaining on the FATF greylist for longer

South Africa's addition to FATF's list of high-risk countries in February 2023 requires that financial transactions with a South African component are subject to enhanced due diligence. While the immediate impact is higher processing, monitoring and reporting costs, the long-term consequence will be the reduction of South Africa's attractiveness as an investment destination. However, the risk is mitigated by the resilience of the financial sector, compliance with international regulatory standards and the efforts being made to address the adverse findings of the FATF by the February 2025 deadline. A progress report was tabled at the FATF plenary session in October 2023.

Further deterioration of household and NFC buffers

As reflected in the financial stability heatmap in Chapter 1, households and NFCs are starting to show strain, due in part to higher interest rates. However, should inflation flare up due to events beyond South Africa's control (e.g. higher energy and commodity prices as a result of an intensification of geopolitical risks), the forecast decline for inflation may not materialise and may necessitate further policy rate tightening. The longer interest rates remain high, combined with cost-of-living increases, the more borrowers will experience strain. This could manifest in rising NPLs and payment lapses, which could reduce capital and profitability in the financial sector.

13 Refer to the October 2023 edition of the *MPR* for a more detailed discussion (resbank.co.za).

14 The May 2023 *FSR* provides a detailed discussion of the financial stability implications of electricity supply constraints.

Risks revised or removed from the RVM

The following risks have been removed from the RVM since the May 2023 *FSR*:

1. Secondary sanctions: The risk of secondary sanctions being imposed on South Africa has decreased notably. However, the fallout from the intensification of geopolitical risks more broadly remains pertinent as reflected in the rewording of this risk to 'intensification of geopolitical risks'.

2. Successful systemic cyberattack: The risk of a cyberattack remains ever-present, like several other operational risks that could cause a systemic disruption. Like other operational risks, increasing cyber resilience requires continuous investment in mitigating factors. Its removal from the RVM should not be interpreted as a reduction of this risk, but is rather reflective of the ongoing nature thereof. Cyber-risk continues to be monitored and will be put back on the RVM if there are any observable changes or events that merit reporting on.

3. Slow and inequitable domestic economic growth: This risk has been on the RVM for several editions of the *FSR*, and has been rephrased as 'persistent structural growth impediments'. This risk is included under the broader environmental factors discussed in Chapter 1.

Assessment of financial stability conditions

On the basis of the risks, vulnerabilities and mitigating factors and actions identified, the SARB's financial stability assessment is as follows:

- Systemic risk remained elevated during the period under review but with some shifts in the underlying contributors. Idiosyncratic factors continued to weigh on the outlook for domestic financial stability and contributed to the elevated systemic risk. The most notable of these included government's increasing debt levels and higher debt-servicing costs, as well as domestic financial institutions' high exposure to it. In addition, the implications of being on the FATF greylist started to materialise during the period under review, with growing evidence of domestic institutions being subjected to increased scrutiny by foreign counterparts.

- Areas that contributed to a decline in systemic risk include the marked decrease in the risk of secondary sanctions being imposed on South Africa and encouraging developments around the potential easing of electricity-supply constraints. This follows the approval of new electricity generation projects over the medium to longer term. Concerns over possible further spillovers from the global banking stress in March 2023 also reduced notably.

- Prudentially regulated domestic financial institutions, in aggregate, remained resilient, as measured by their ability to maintain adequate capital and liquidity buffers to absorb the impact of shocks. However, there are signs of increasing credit risk across the financial sector, which is being monitored closely.

Policy actions and initiatives undertaken to enhance domestic financial stability

- At its October 2023 meeting, the SARB's FSC resolved that a PCN CCyB of 1% be implemented in South Africa. The phase-in period for implementing the 1% CCyB will commence on 1 January 2025 for 12 months, and is to be fully implemented by 31 December 2025. Refer to Box 3 for a brief discussion.

- At its October 2023 meeting, the FSC resolved that developments around the sovereign-bank nexus did not require formal policy intervention at this stage. The FSC also resolved that the PA would develop ways to monitor and close valuation gaps in banks' holdings of SAGBs.
- The SARB continued to collaborate with FSOC members to discuss some of the key risks to financial stability, in particular the way forward following South Africa's greylisting by FATF and the addition of South Africa to the EU's list of high-risk countries.
- The SARB, through the FSCF, continued to plan for the improbable (but not impossible) scenario of a complete national electricity grid shutdown or another potential systemic event. In line with the role and function of the FSCF, current efforts are centred on developing, co-ordinating and testing contingency plans to mitigate, as far as possible, the potential impact of such events on the financial system and the economy.

Box 3: Increasing the South African countercyclical capital buffer for banks

One of the key weaknesses revealed by the 2008 global financial crisis (GFC) was the lack of system-wide tools to mitigate broad financial sector risks (i.e. policy instruments aimed at both (i) mitigating systemic risk; and (ii) promoting financial stability). To this end, the BCBS introduced a number of capital buffers via the Basel III framework, including the capital conservation buffer (CCB) and the CCyB.[1]

At the onset of the COVID-19 pandemic in 2020, jurisdictions that had a positive CCyB lowered the capital buffer requirements for the banking sectors (in order to reduce heightened cyclical systemic risk). With the CCyB being 0% at the time, South Africa did not have an available buffer to release to reduce systemic risk in the banking sector at the onset of the COVID-19-induced shock. The COVID-19 crisis therefore demonstrated that a 0% neutral level for the CCyB was ineffective in addressing cyclical systemic risk to the financial system from a shock.

In recent years, the BCBS has increasingly expressed support for positive cycle-neutral countercyclical capital buffers (PCN CCyBs) as they promote greater flexibility in implementing the Basel III framework. Given the inherent uncertainty in assessing the degree of risk and the time lags in implementation, authorities that introduced PCN CCyB rates found it helpful for banks in their jurisdictions to have macroprudential capital buffers in place that can be released in the event of sudden shocks (including those unrelated to the credit cycle, such as the impact of the COVID-19 pandemic). This approach can help address concerns that banks in some jurisdictions may be reluctant to cross regulatory buffer thresholds in times of stress, but may be more willing to use their capital to support lending when buffers are explicitly released by authorities.

South Africa's banking regulatory framework for capital, which is aligned to the Basel III framework, distinguishes between a permanent capital requirement (the South African base minima capital regulatory requirement which includes a Pillar 2A requirement) and a buffer component. As detailed in Directive 5 of 2021,[2] the buffer component consists of three distinguishable segments, namely the domestic systemically important bank (D-SIB) capital add on, the CCB and the CCyB. The impact of a 1% PCN CCyB is highlighted in Table B3.1.

1 For a more detailed discussion of the differences between the CCB and CCyB, refer to the PA's Banks Act Directive on the CCyB (available at https://www.resbank.co.za/en/home/publications/directives/banks-directives).

2 Available at https://www.resbank.co.za/en/home/publications/directives/banks-directives

Box 3: Increasing the South African countercyclical capital buffer for banks (continued)

Table B3.1: Capital framework for South Africa based on the Basel III framework, with effect from 1 January 2026

Capital tiers	Reference in the proposed amended regulations	CET 1 capital requirement	Tier 1 capital requirement	Total capital requirement
BCBS Basel III minima		4.5%	6.0%	8.0%
South African minima	**Reg 38(8)(b) & Reg 38(8)(e)(i)**	**4.5%**	**6.0%**	**8.0%**
Systemic risk add-on (Total Pillar 2A range 0.5% to 2.0%).	Reg 38(8)(e)(ii)	A_1 ≥ 50% of P2A	A_2 ≥ 75% of P2A	P2A (≤2.0%)
South African base minima	**Reg 38(9)(a)(i) to (iii)**	**4.5% + A1**	**6.0% + A_2**	**8.0% + P2A**
Bank-specific ICR add-on (Pillar 2B)	Reg 38(8)(e)(iii) & Reg 38(4)	B_1 = 50% of ICR	B_2 = 75% of ICR	ICR
South African minima (prudential minima)		**4.5% + A1 + B1**	**6.0% + A_2 + B_2**	**8.0% + P2A + ICR**
Domestic systemically-important bank capital add-on (0% to 2.5%)	Reg 38(8)(e)(vi)	C_1 = up to the first 1%	C2 =up to the first 1.5%	D-SIB (max of 2.5%)
Conservation buffer (CB) range (0% to 2.5%)	Reg 38(8)(e)(iv) & Reg 38(8)(f)	D_1 = 100% of CB	D_2 = 100% of CB	CB (≤2.5%)
Countercyclical buffer range (0% to 2.5%)	Reg 38(8)(e)(v) & Reg 38(8)(g)	E_1 = 100% of CCyB	E_2 = 100% of CCyB	CCyB
SA minima including countercyclical buffer, conservation buffer and D-SIB requirements[3]		**8.0% + B_1 + the lower of (2.0% or (A_1 + C_1))**	**9.5% + B_2 + the lower of (2.5% or (A_2 + C_2))**	**11.5% + ICR + the lower of (3.5% or (P2A + D-SIB))**

The combined capital buffer regime (D-SIB add-on, CCB and CCyB) was phased in between 1 January 2016 and 1 January 2019. During the phase-in period, the Pillar 2A requirement was adjusted to ensure that factors relating to systemic risk were not double counted. Pillar 2A is calibrated primarily to address the systemic and domestic concentration risk. In South Africa, the CCyB:

- was phased in between 2016 and 2019 (although it was introduced at 0% and kept at that level since – see e.g. Banks Act D5/2021 and C8/2015); and
- is incorporated into the Regulations relating to Banks (Regulations) as an extension of the CCB consistent with the Basel framework (regulations 38(8)(e) & 38(8)(g) of the Regulations).

The increase of the CCyB is not intended as a policy tightening measure, but as a structural change that will make it possible in future for the SARB to reduce it to up to 0% if there is excessive pressure on the banking system, or to increase it to up to 2.5% if there are signs of overheating in the banking system.

3 The aggregate requirement for Pillar 2A and D-SIB will not exceed 2.0% for CET1, 2.5% for Tier 1 and 3.5% in respect of the total capital-adequacy ratio.

Chapter 3: Briefings on selected topics

This chapter focuses on briefings on topics relevant to financial stability, to inform and stimulate debate. It covers the results from the 2023 CSST and an event-window assessment of the impact of the FATF greylisting on the South African stock market and financial stability consequences.

2023 Common Scenario Stress Test of South African systemically important banks

Executive summary

The 2023 CSST[15] simulates a South African economy that remains vulnerable to spillover effects from global events and is confronted by a rapidly escalating electricity crisis, persistent inflation and weak economic growth prospects. Amidst these stresses, the following outcomes emerge:

The systemically important domestic banks are likely to remain well capitalised under significant stress. At the weakest point, the sector's average capital adequacy declined by roughly 2.5 percentage points, remaining well above prudential requirements.

Lower levels of overall profitability are reported by participant banks, where significant credit losses are partially offset by increased NII due to the endowment effect. As a result, SIFIs are likely to adjust their risk appetite towards short- to medium-term sovereign securities by investing the excess funds available from increasing retail deposits and NII growth.

Credit losses are the main drivers of capital deterioration, with losses from the retail sector, specifically unsecured lending and retail mortgages, accounting for the bulk of banks' cumulative credit losses. Banks' credit risk profiles deteriorate significantly, with a notable increase in NPLs, in credit losses and in the average risk weights of loan portfolios.

Banks' liquidity profiles remain resilient under the Baseline and Adverse scenarios, and banks are well positioned to weather the identified shocks.

Purpose, scope and methodology

The SARB's CSST is a macroprudential bank stress test used to identify any risks and potential vulnerabilities within the South African banking system. This is achieved through the assessment of participating banks' resilience to severe yet plausible adverse macroeconomic scenarios. While an important part of the 2023 CSST involves assessing the health of individual financial institutions, the ultimate objective is to determine whether the identified vulnerabilities could compromise the stability of the financial sector.

The CSST covers the six South African banks designated as SIFIs.[16] As at the reference date of the exercise (i.e. as at 31 December 2022) these institutions represented 92% of total banking sector assets.

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15 As a forward-looking macroprudential tool, the CSST further contributes to the protection and enhancement of financial stability, as per the SARB mandate set out in the FSR Act.

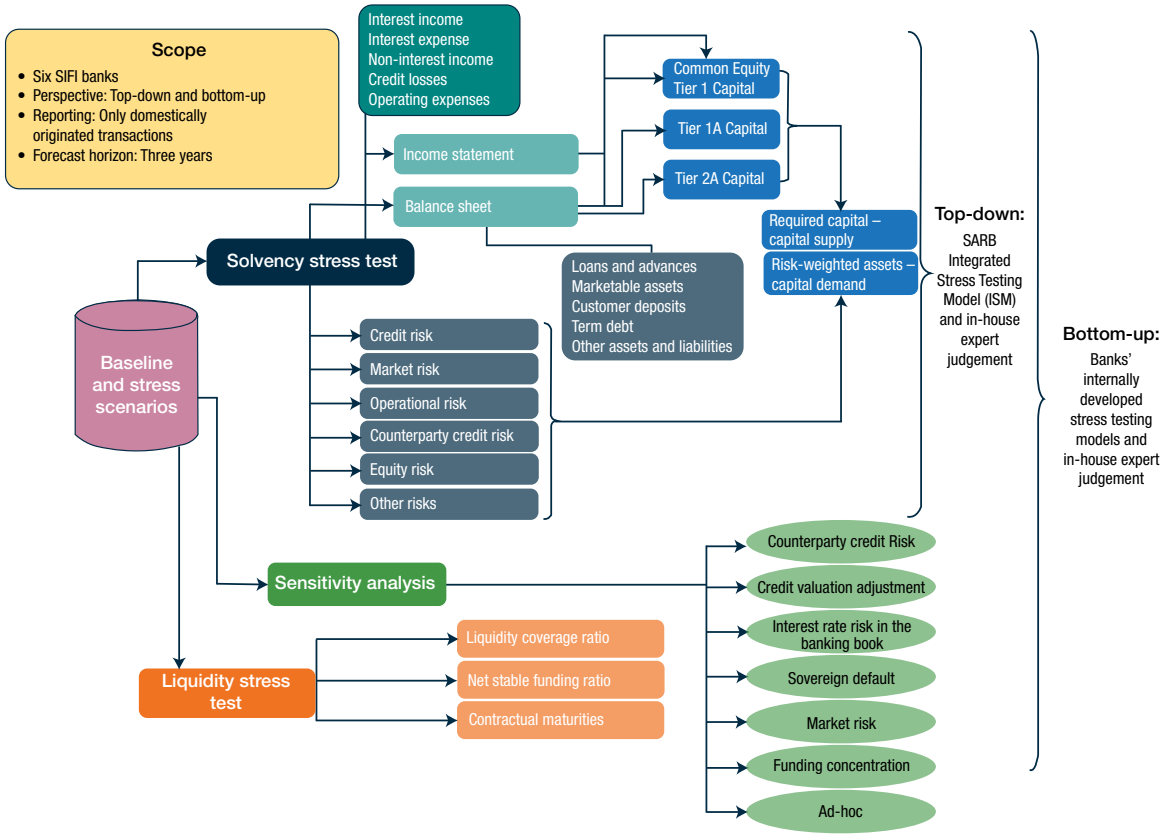
16 The SARB designated the following six banks as SIFIs in 2019: Absa, Capitec Bank, FirstRand Bank, Investec, Nedbank and Standard Bank. See the second edition of the 2019 *FSR* for further details on the designation https://www.resbank.co.za/en/home/publications/publication-detail-pages/reviews/finstab-review/2019/9606.

The CSST framework consists of a set of common scenarios and key modelling assumptions to ensure consistent and comparable outcomes and allows for the aggregation of participant banks' outputs to provide an industry view. It also enables the SARB to identify which individual banks are more likely to be vulnerable to specific shocks when compared to their industry peers. Similar to previous CSST exercises, the scenarios span a three-year forecast horizon and governing assumptions are developed in line with international best practice.

The 2023 CSST framework incorporates a bottom-up (BU) and a top-down (TD) approach (Figure 28). The BU assessments are conducted by individual banks through the application of internally developed stress-testing models and in-house expert judgement. However, with bank operations becoming increasingly complex, an issue of information asymmetry arises and there is a natural incentive to align assumptions to institution-specific circumstances, which can lead to less conservative and less comparable outcomes. Accordingly, the CSST does not exclusively rely on the BU process but augments it with a TD process.

The SARB's TD process achieves homogeneity in the treatment amongst banks as well as increased control over producing consistent results, by using a single model for the assessment of all participants. The SARB's Integrated Stress-Testing Model (ISM) is an internally developed proprietary tool employed in the TD process (see Box 4). Since the SARB does not have the same level of detailed information at its disposal as the participant banks, or the in-depth knowledge and understanding of each bank's respective balance sheet nuances, the TD approach is run concurrently with the BU approach.

Figure 28: Elements of the 2023 CSST framework



To mitigate any information asymmetry, the CSST framework follows a constrained approach. This means that the SARB provides participants with comprehensive methodological guidance, detailing certain assumptions, with caps and floors on the outcomes of internal models and incorporates a consistent approach in the ISM. These assumptions provide important context when interpreting the outcomes of the exercise. Table 1 highlights a selection of key assumptions that underpinned the 2023 exercise.

Table 1: Key assumptions of the 2023 CSST

Category	Assumption descriptions
Balance sheet growth	• Credit assets are required to increase at the same pace as the annual growth rate in nominal private sector credit extension. • No RWA optimisation is allowed.
Income statement	• Real NII growth is not permitted in the scenarios. • Operating expenses, excluding variable remuneration, are assumed to grow by at least headline inflation.
Capital	• Only profits appropriated via a board resolution, as at the reference date, qualify as capital. • Capital issuances and redemptions were allowed in line with board-approved capital plans as at the reference date.
Credit risk	• Provisioning for expected credit losses is assumed in line with International Financial Reporting Standard (IFRS) 9's perfect foresight assumption.[17] • No cures[18] from credit-impaired exposures are allowed, and accordingly the release of accumulated impairments for credit-impaired exposures is not permitted, unless the exposure is written off. • In the adverse scenarios, credit RWA cannot fall below that of the reference date.
Management actions	• No management actions from or on behalf of the respective banks are factored into the results.

Box 4: The South African Reserve Bank's ISM

The SARB uses an internally developed ISM to conduct the TD segment of the CSST. While BU approaches have the advantage of leveraging highly granular internal data and specialised models, TD approaches, and by extension TD models, have the advantage of applying uniform relationships to multiple balance sheets, producing more consistent outcomes from fewer resources.

The SARB incorporated a TD element into the CSST primarily to validate and benchmark the BU results from each bank. Without an internal model and the results therefrom, the SARB would be forced to rely exclusively on simple validation processes that would not be able to confirm the robustness of the BU submissions and test the consistency with the adverse macroeconomic scenarios provided.

The ISM is an econometric model that produces comprehensive balance sheet and income statement projections, as well as asset risk weights, for each participant bank. This effectively means that scenario consistent projections are produced for each element of capital supply and demand in order to assess solvency positions via capital adequacy metrics. As an econometric model, the majority of relationships in the model are estimated using macroeconomic data, with the notable exception of certain risk areas where certain banking regulations need to be accounted for. In terms of input requirements, the ISM relies heavily on regulatory data from the PA (which is supplemented by data directly from participants) and the internally developed common scenarios used throughout the CSST.

The capital demand side of the ISM was developed within a modular framework, with each module focusing on a specific Basel Pillar 1 risk type.[1] Since capital demand is a regulatory measure rather than an accounting one, a modular approach allows the ISM to apply appropriate regulations to each risk type. Crucially, since

1 The Pillar 1 risk types are credit risk, market risk, operational risk, counterparty credit risk, equity risk in the banking book and 'other' risk.

17 The IFRS 9 and perfect foresight for credit provision assumption was detailed in Box 5 of the second edition of the 2020 *FSR*.

18 Cures refer to the recovery of exposures from an impaired state to performing.

Box 4: The South African Reserve Bank's ISM (continued)

each risk type typically has more than one regulatory approach that banks may follow, each module also needs to be adaptable to apply the specific regulatory approach that each bank uses. Furthermore, as banking regulations are occasionally updated or revised, a modular approach enables the incorporation of incremental changes without the need for a complete overhaul.

One of the key advantages of the ISM is its ability to answer specific macroprudential questions. Given the modular approach to modelling capital demand and the comprehensive income statement projections that drive capital supply, the ISM enables the SARB to dig deeper into CSST outcomes and build specific case studies to answer difficult questions. For example, the SARB has in the past been able to build confidence intervals into credit risk metrics (like probability of default and loss given default) to assess the impact that potential measurement error may have on the sector's solvency, while on another occasion the SARB assessed the impact of specific income statement restrictions on overall profitability.

Scenarios

Three scenarios are considered for the 2023 CSST, namely a 'Baseline' scenario, a 'Domestic Adverse' scenario and a 'Global Adverse' scenario. The 'Baseline' scenario is based on the January 2023 Monetary Policy Committee (MPC) forecasts[19] whereas the adverse scenarios are developed with due consideration to the identified financial stability risks[20] of the South African banking system, calibrated to a hypothetically severe yet plausible and economically consistent environment (see Box 5).

The 'Domestic Adverse' scenario is designed to only include shocks to the South African economy while all external/global variables and trends are consistent with the 'Baseline'. These internal shocks include a severe contraction of real GDP relative to the 'Baseline', mainly driven by domestic financial shocks and an intensification of the ongoing electricity crisis. Given the severe headwinds facing the domestic economy, the country risk premium increases, causing a severe depreciation in the exchange rate of the rand, which in turn translates into significantly higher import prices spilling over to domestic prices. Increased cost of living dampens households' disposable incomes and households promptly reduce private consumption. Weak economic activity and lower potential growth result in significant declines in employment, adding further downward pressure on household consumption. As a result of higher inflation, a tighter monetary policy stance is expected to lower inflation expectations and ultimately headline inflation in the medium- to long term. The lower economic activity ensues lower tax revenue collection, weighing fiscal expenditure down. Concerns about the sustainability of national debt, accompanied by increased market interest rate expectations, lead to a sharp repricing in debt markets and elevate government bond yields.

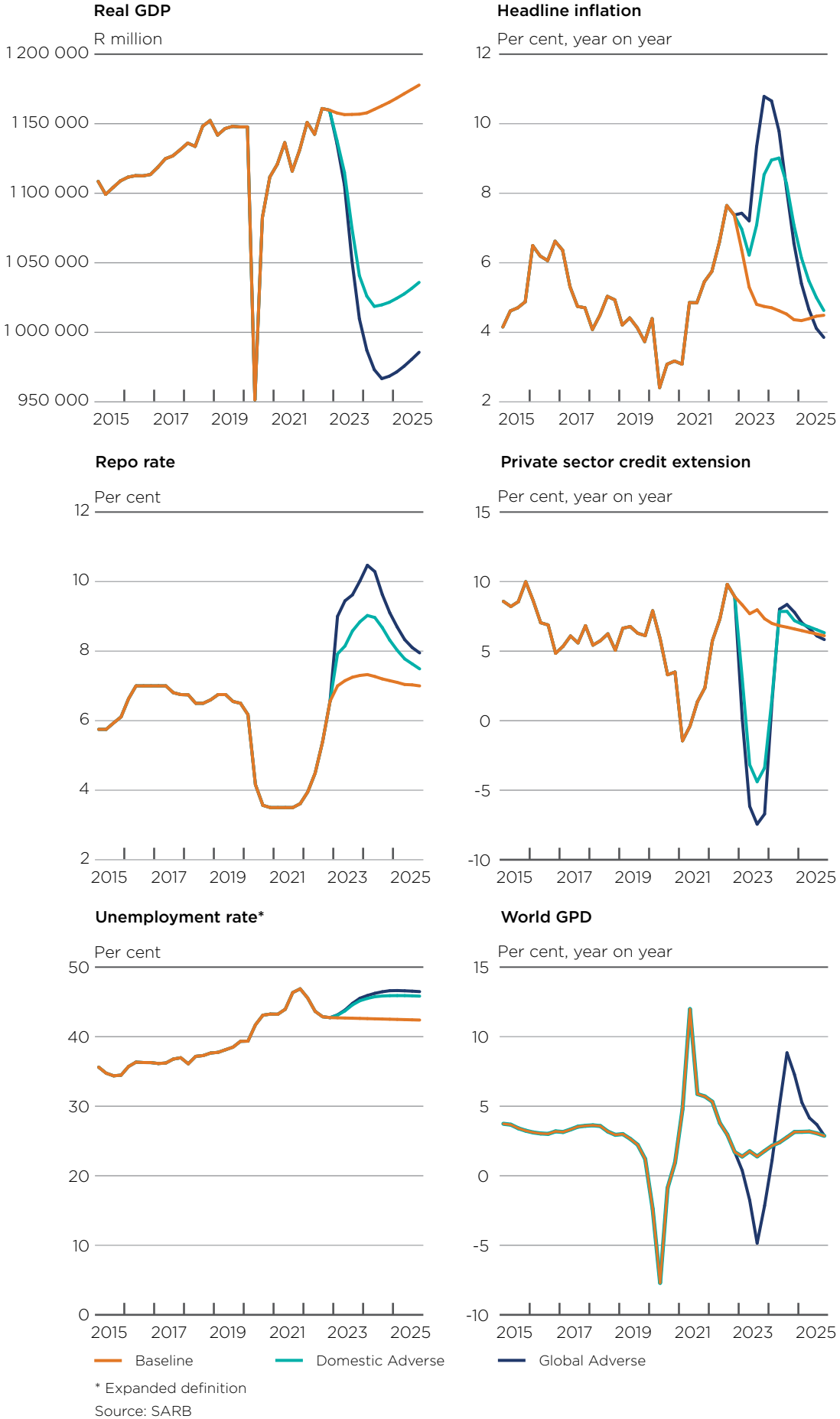
The 'Global Adverse' scenario adds a set of external/global shocks to the domestic scenario. Lower global growth amongst key trading partners, higher-than-anticipated inflationary pressures and further monetary policy tightening arise from several concerning factors. An escalation in severe geopolitical polarisation, in addition to a reversal in China's growth recovery, destabilises worldwide supply chains. These supply chain disruptions have consequential increases in South Africa's commodity import prices. The higher oil and other commodity prices, in addition to the depreciated exchange rate,[21] further increase headline inflation in this scenario (Figure 29). Finally, tighter financial conditions and a fall in corporate sector profitability lead to downward revisions in the private sector's creditworthiness and a reappraisal of credit risk premiums.

19 Refer to the MPC statement of January 2023, available at https://www.resbank.co.za/en/home/publications/publication-detail-pages/statements/monetary-policy-statements/2023/Statement-of-the-Monetary-Policy-Committee-January-2023.

20 Risks are identified through a formal approach to risk identification and scenario design in a Stress-Testing Matrix (STeM), and the severity of the scenarios is calibrated through a GaR approach.

21 When compared to the 'Domestic Adverse' scenario.

Figure 29: CSST scenario – evolution of key macroeconomic variables



* Expanded definition

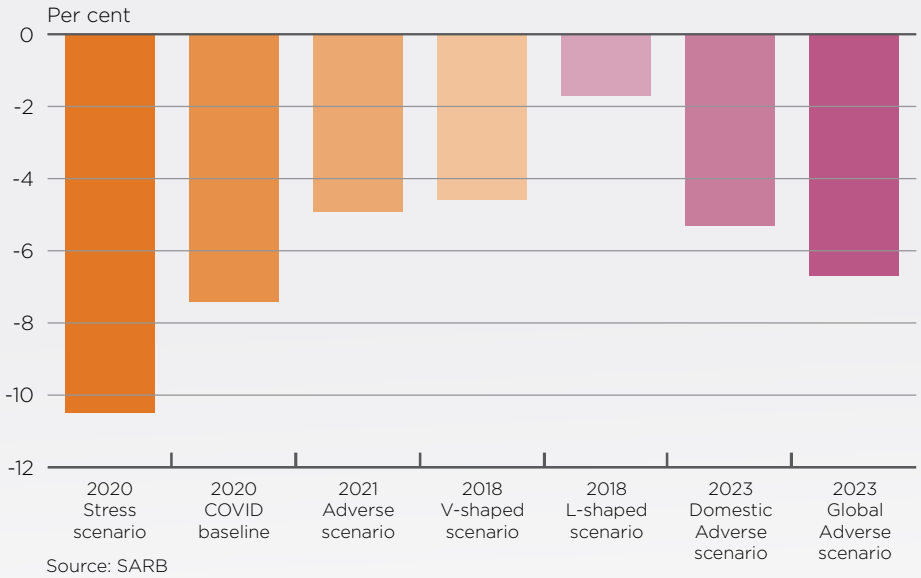
Source: SARB

Box 5: Calibration of the 2023 adverse scenarios

CSST adverse scenarios are designed to represent severe but plausible shocks with the aim of providing insights into the resilience of the financial sector under stressed macroeconomic conditions. The BCBS[1] stress-testing principles prescribe that scenarios should be designed to be 'sufficiently severe but plausible' in order to ensure that exercises produce valuable insights. To strike the appropriate balance, the SARB incorporated a statistical method into its scenario design process, the growth-at-risk (GaR) framework.[2] This methodology projects the impact of financial conditions on the possible distribution of future growth in GDP. In addition, the use of the GaR framework intends to limit the influence of expert judgement on the determination of the severity of the scenarios.

The severity of the 2023 adverse scenarios becomes evident when comparing the depth of contraction of real GDP from historical exercises and known stress events. Figure B5.1 compares the decline in real GDP from the peak to the trough for each iteration of the SARB's stress-testing exercises and other crisis periods. When considering the depth of contraction, the 2023 Global Adverse scenario appears to be less severe than the 2020 Stress scenario. This is in line with a priori expectations when observing the exacerbated GDP impact from the effects of the COVID-19 pandemic during the 2020 TD exercise. However, the electricity crisis[3] and domestic structural challenges (i.e. supply chain disruptions) negatively affect the growth prospects that underpin the 2023 exercise, resulting overall in one of the most severe contractions in a GDP projection when compared to previous stress scenarios.

Figure B5.1: Depth of contraction in real GDP under each crisis and stress-test scenario



Source: SARB

The 2023 adverse scenarios consider an escalation of South Africa's electricity crisis and its devastating impact on business activity, employment and households' disposable income. An insufficient and unreliable electricity supply further threatens the viability of corporates, specifically small and medium-sized enterprises, for the foreseeable future, with losses potentially spilling over into the

1 See www.bis.org/bcbs/publ/d428.pdf.

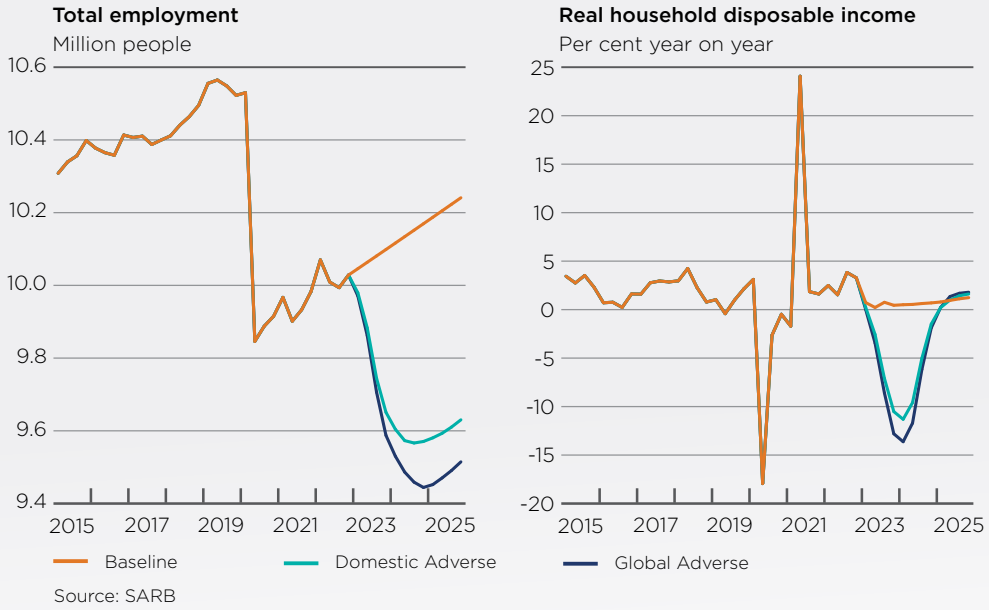
2 The GaR framework is analogous to the well-known 'value-at-risk' terminology used predominantly in financial risk management. GaR is defined as the fifth percentile of the distribution of future growth, conditional on current economic and financial conditions. For more information, see the second edition of the 2019 *FSR* https://www.resbank.co.za/en/home/publications/publication-detail-pages/reviews/finstab-review/2019/9606.

3 The electricity crisis, driven by load-shedding, is an ongoing period of widespread national blackouts of electricity supply.

Box 5: Calibration of the 2023 adverse scenarios (continued)

market hinders job creation and job preservation. Figure B5.2 shows the scenarios' overall impact on employment and subsequently the impact on disposable income. The number of persons employed decreased by 735 000 in the Global Adverse scenario at its most severe point (i.e. 40 000 less than during the lowest point during COVID-19), while the devasting effects of unemployment and rising inflation resulted in a cumulative loss of R122 billion in real household disposable income when comparing the Global Adverse to the Baseline scenario.

Figure B5.2: Scenario impact on employment and real personal disposable income

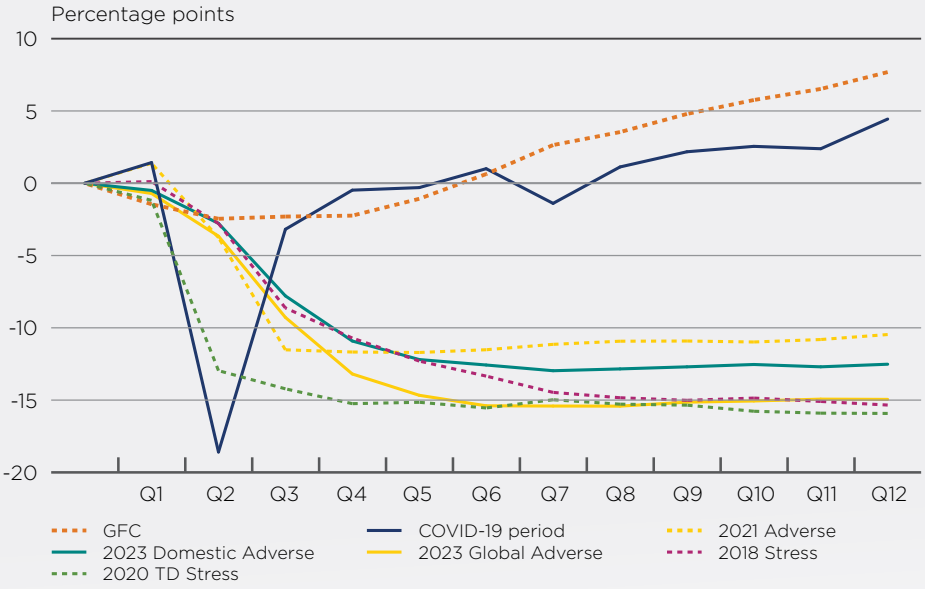


Source: SARB

Box 5: Calibration of the 2023 adverse scenarios (continued)

Figure B5.3 further compares the percentage point deviation from baseline scenarios for the 2023 CSST and adverse scenarios of earlier exercises. It is evident that in terms of disposable income lost, this exercise ranks amongst the most severe.

Figure B5.3: Real household disposable income deviation from Baseline



Source: SARB

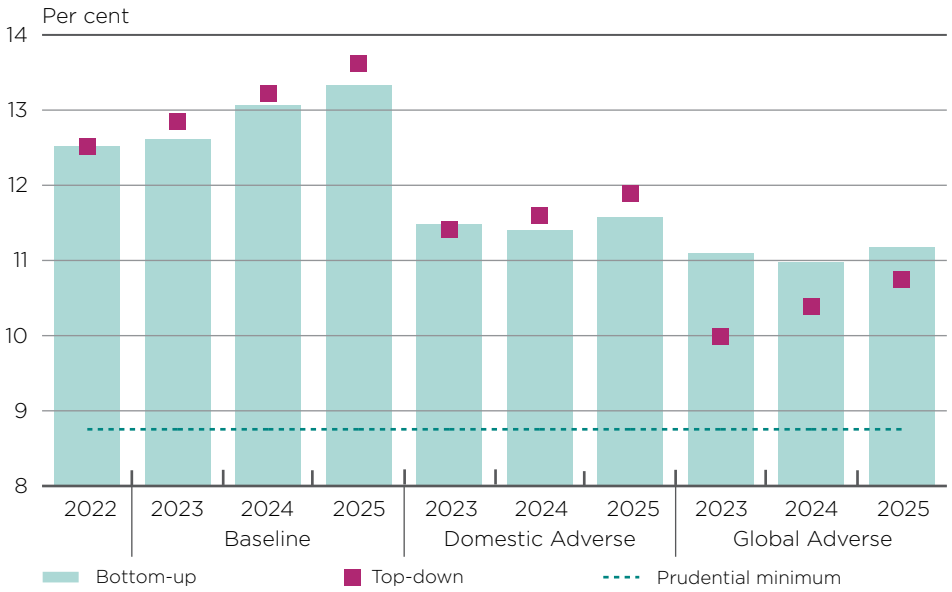
In the aftermath of the COVID-19 pandemic, there has been a necessary global shift towards adopting sufficiently severe stress scenarios to ensure that the shortcomings of pre-COVID-19 stress scenarios are not repeated. The pandemic period had brought about economic shocks whose sudden severity had not been witnessed in recent memory and did not feature in most stress-test scenarios. With this nuance in mind, the 2023 scenarios were developed to consider the current economic conjuncture, calibrated to capture significantly severe stressors in the current domestic and global environment, while remaining plausible considering the events of the past few years.

Results

Solvency

The 2023 CSST results indicate that domestic banks remain well capitalised under the baseline and adverse scenarios. While the aggregated common equity tier 1 (CET1) CAR[22] deteriorates across the adverse scenarios, it remains well above the prudential minimum. Under the 'Global Adverse' scenario, CET1 capital depletes by 257 basis points at the worst point, with capital deterioration primarily driven by a combination of higher credit losses and a decline in income generation. Figure 30 illustrates the aggregated CET1 capital adequacy ratios from the respective BU and TD approaches. It is noteworthy that, as at the start of the exercise, SIFIs hold a collective R25 billion in unappropriated profits, which are not considered in the results. Including these additional funds[23] in regulatory capital would improve the average capital adequacy positions across the sector by approximately 80 basis points.

Figure 30: Aggregate CET1 CAR



Source: SARB

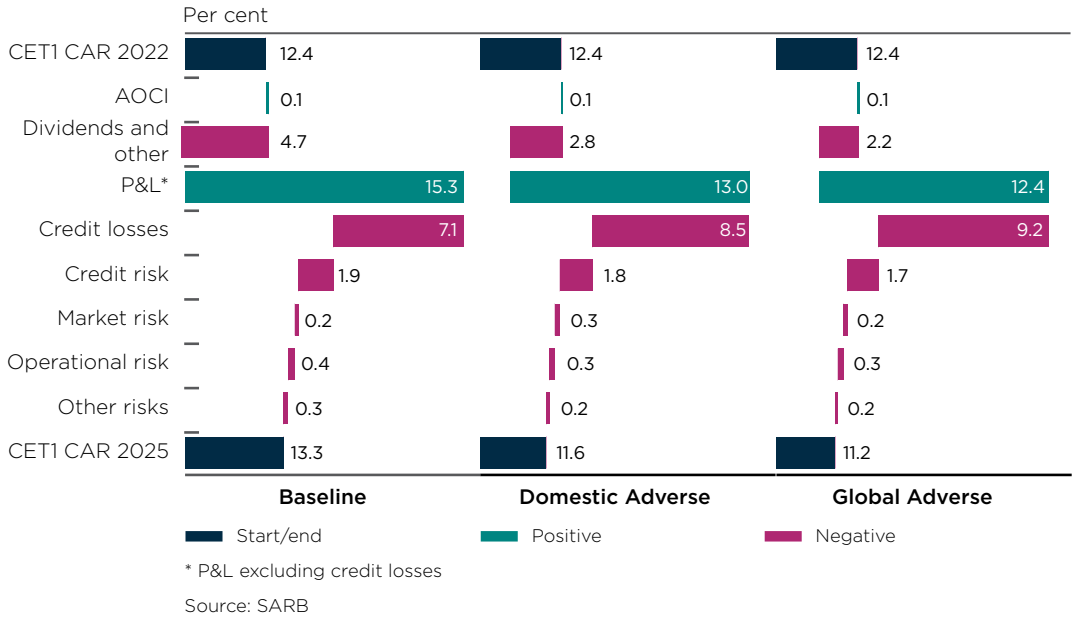
Figure 31 unpacks the capital adequacy impacts by highlighting the contributions of the different supply and demand components[24] driving the changes in the aggregate CET1 capital ratio between the reference date and the end of the stress horizon. When comparing the 'Baseline' to the 'Domestic Adverse' to the 'Global Adverse' scenarios, credit losses gradually increase while gross operating income gradually decreases, putting downward pressure on capital supply. The CET1 impact of these credit losses is further aggravated by an increase in the demand for capital due to the higher risk weights for several material asset classes. Banks continue to make significant dividend payments to shareholders throughout the period, although the proportion of these payments reduce as the severity of the scenarios increase.

22 The CAR is the ratio of an institution's available qualifying capital supply to its capital demand. In the CSST, qualifying capital supply moves in line with realised profits or losses, driven by the movements in gross operating income, credit losses and operating expenses. Capital demand, in turn, is affected through changes to banks' assets and the risks associated therewith (i.e. the risk-weighted assets or RWA).

23 Only the profits appropriated to capital via a board resolution, as at the reference date, qualified as capital (please see Table 1).

24 The red bars depict downward pressure and the green bars depict upward pressure to the CET1 capital ratio.

Figure 31: Factors driving the aggregate CET1 CAR



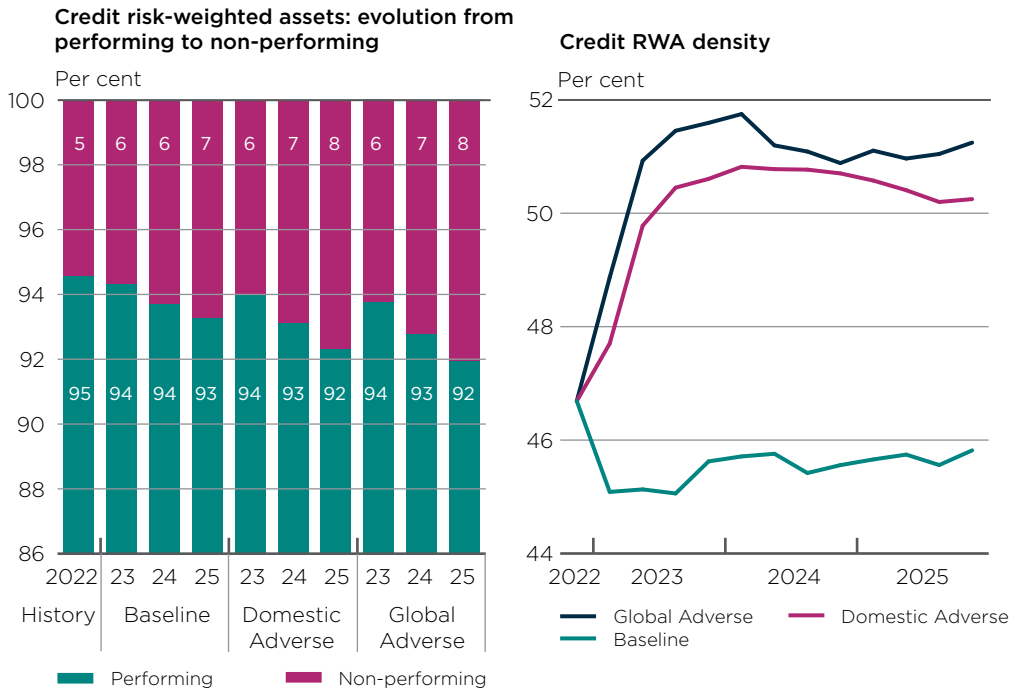
* P&L excluding credit losses

Source: SARB

The demand for capital is represented by banks' RWA, consisting of credit risk, operational risk, counterparty credit risk, market risk, equity risk and other risk. Credit RWA accounts for the vast majority of total RWA. As the severity of the scenarios increase, the increased risk associated with these assets is captured through an increase in RWA. From a credit RWA perspective, banks reported an increase in the proportion of non-performing RWA under the adverse scenarios (Figure 32). A higher RWA density[25] also suggests that a significant portion of banks' loan portfolio or credit exposures is assigned higher risk weights, as depicted by the increase in the adverse scenarios in Figure 32. This means that banks need more qualifying capital to cover the potential increase in unexpected losses from credit risk.

25 RWA density is RWA per unit of exposure, essentially measuring the average RWA. For the 2023 CSST, RWA density is calculated as the ratio of credit RWA to gross loans and advances, in line with the approach followed by the BCBS: www.bis.org/publ/bcbs256.pdf.

Figure 32: Credit risk-weighted assets



Source: SARB

Operational risk RWA are the second-largest contributor to overall RWA, where the SIFIs' BU models present quite diverse outcomes, particularly when modelling operational RWA. While some bank operational risk models did not report a material stress impact, the adverse scenarios' electricity crisis – coupled with rising inflation, rising interest rates and job losses – results in a pronounced increase in operational risk RWA for other participating banks.[26]

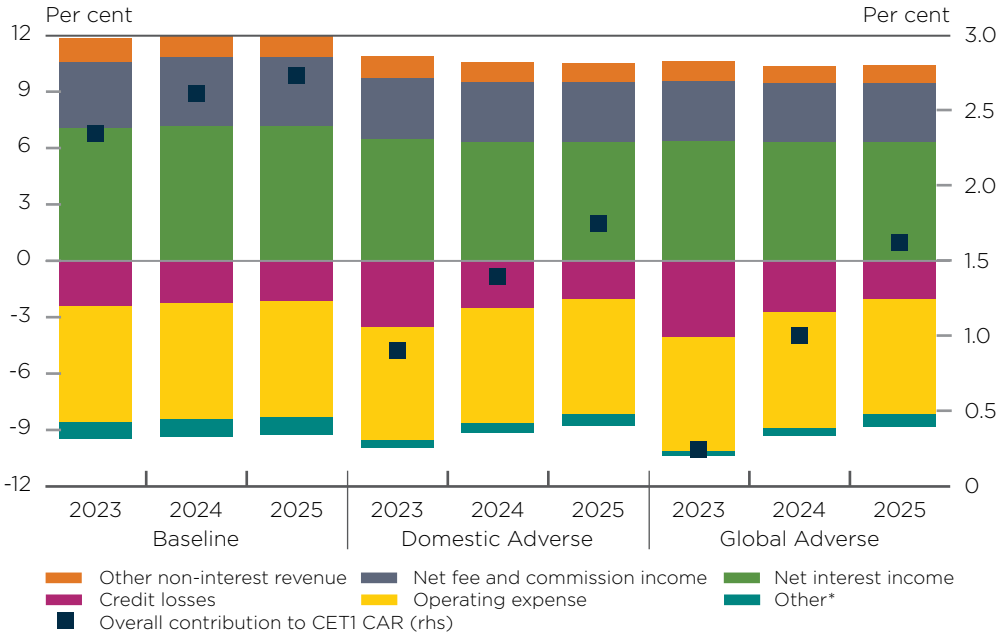
As a result of excluding external capital sources from the CSST, bank profitability is the only possible source of capital supply in the exercise. Profitability deteriorates significantly under the adverse scenarios, with a commensurate impact on CET1 CAR (Figure 33). The 'Global Adverse' scenario suffers the worst decline in profitability, closely followed by the 'Domestic Adverse' scenario, resulting in a slower increase in capital supply relative to the 'Baseline' scenario. These outcomes are driven primarily by an increase in credit losses and consistently higher operating expenses,[27] which is partially offset by the endowment effect[28] associated with the increase in NII (see Box 6) as well as higher net fee and commission income. Banks also recognise lower non-interest revenue across the adverse scenarios due to lower business activity resulting in a further marginal reduction of net profits.

26 This stems from internal and external fraud, business disruptions and system failures.

27 In part due to the assumption that operating expenses, excluding variable remuneration, are required to grow by at least headline inflation. To allow for banks to reduce their variable pay as their profitability falls, variable remuneration is excluded from the assumption.

28 During the 2023 CSST exercise, SIFIs mention that the endowment effect works in their favour to earn significant NII on large reserves.

Figure 33: Cumulative impact of profit and loss items on CET1 CAR (percentage contributions)

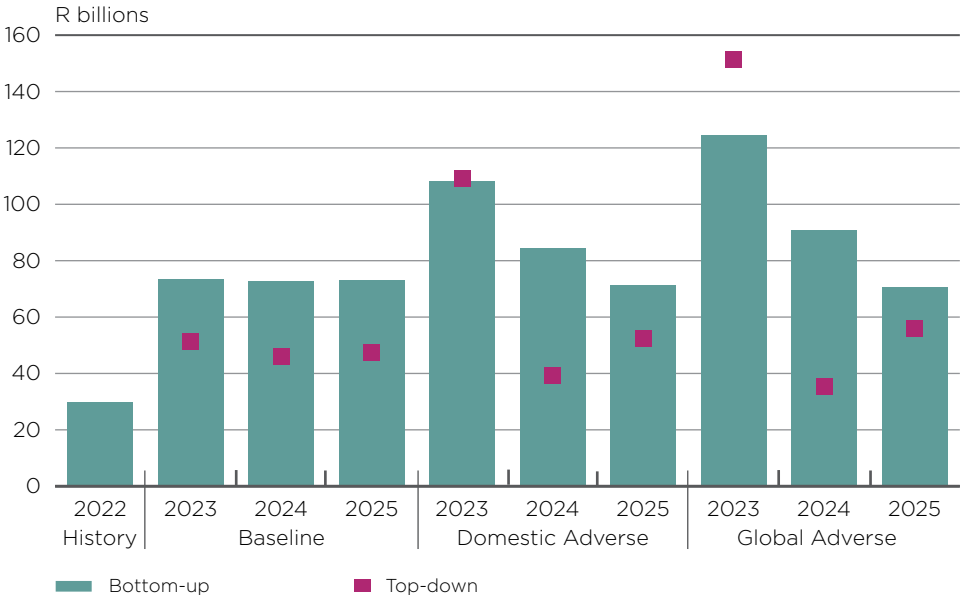


*Other includes taxes, non-trading and capital items and share of profit/(loss) of associates and joint ventures

Source: SARB

Credit losses are also the main drivers of capital erosion, reflective of the deterioration in banks' risk profiles and the degrading credit asset quality in the adverse scenarios. Participants report cumulative credit losses of R319 billion across the forecast horizon in the 'Global Adverse' scenario. For both TD and BU models, the bulk of the losses is frontloaded to the first year of the scenario that is consistent with the assumption of perfect foresight[29] (Figure 34).

Figure 34: Cumulative credit losses – top-down vs bottom-up



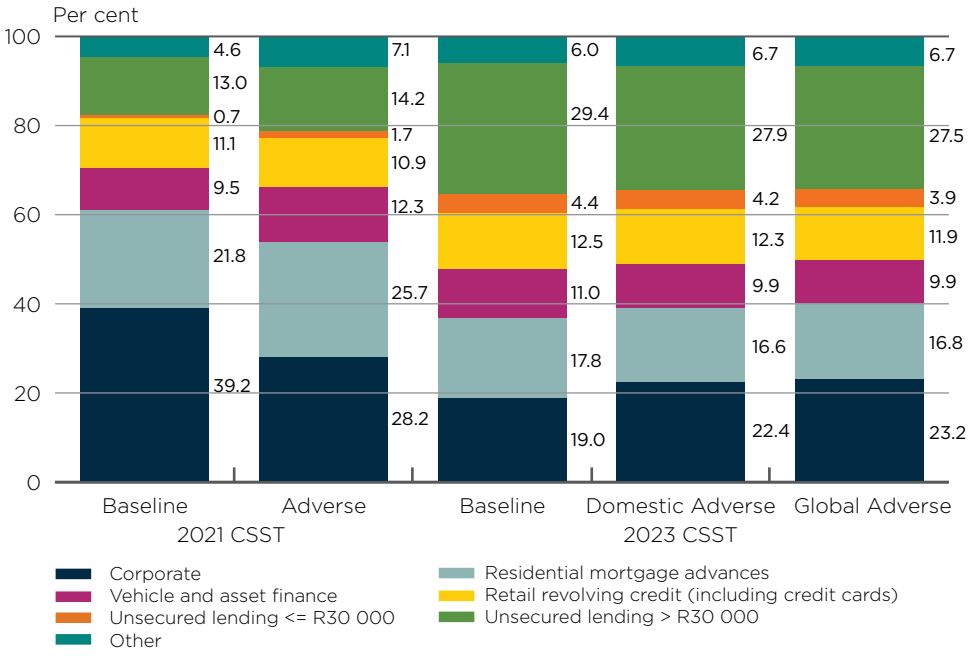
Source: SARB

29 See Box 5 in the second edition of the 2020 *FSR* (https://www.resbank.co.za/en/home/publications/publication-detail-pages/reviews/finstab-review/2020/Second_edition_Financial_Stability_Review).

The 2023 CSST BU results show that losses from unsecured lending[30] and retail mortgage categories drive banks' cumulative credit losses. Corporate losses also increase in the 2023 exercise for the respective adverse scenarios, in part due to an increase in liquidations as a result of low economic growth, load-shedding and the high interest rate environment. Losses attributed to the overall retail sector, however, accounts for 75% of all expected credit losses despite only accounting for 40% of total credit exposures[31] (Figure 35).

When comparing the 2023 CSST outcomes to the 2021 CSST outcomes, the aggregate composition of banks' credit exposures per asset class remains relatively constant. However, when comparing the losses per asset class, it becomes evident that the losses associated with the unsecured lending asset classes more than double between the respective CSSTs and ultimately account for more than 40% of total losses in the 2023 CSST.[32] These outcomes again highlight households' distress under the adverse scenarios, where higher unemployment and low growth, coupled with pressures on disposable income, results in an increase in unsecured loans, potentially taken up to service everyday needs.

Figure 35: Contribution to cumulative credit losses by asset class: 2021 CSST vs 2023 CSST



Source: SARB

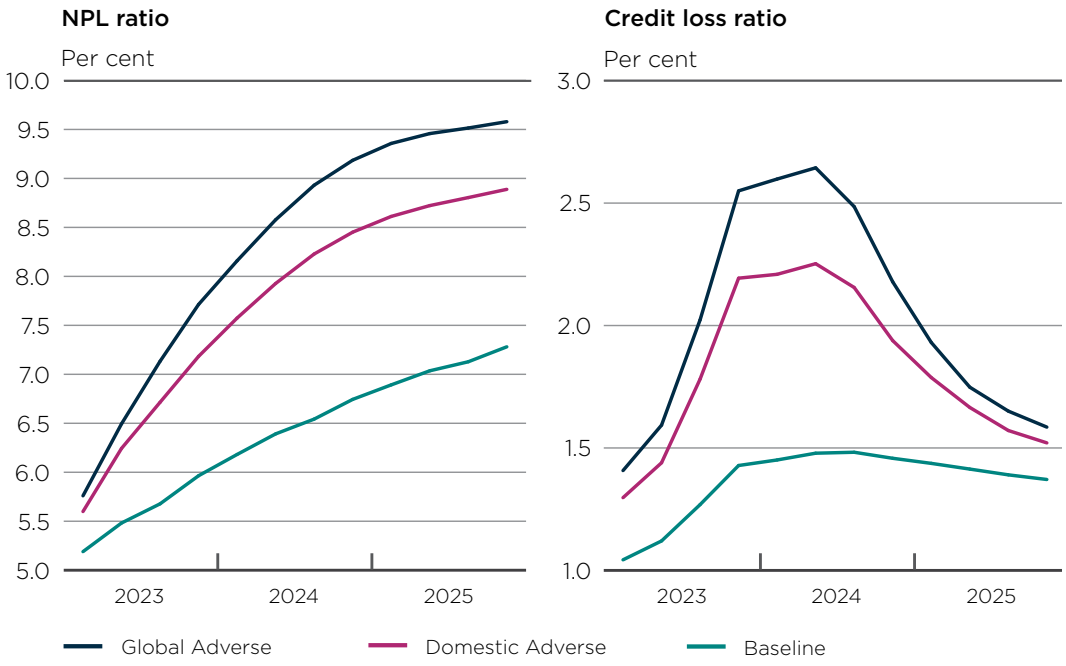
30 This refers to term and revolving unsecured lending assets.

31 When adding the contributions of the respective retail asset classes.

32 Unsecured lending asset classes are the sum of contributions from term and revolving unsecured regulatory asset classes.

The deterioration in credit quality of the participants' loan portfolios is a cause for concern, with a noticeable increase in both NPLs and credit loss ratios due to the severe impact of the adverse scenarios. While banks are required to assume that NPLs cannot be cured from a credit-impaired to performing status, the absence of aggressive write-off policies means that an accumulation of NPLs is realised. In Figure 36, these NPLs and credit losses are respectively presented as a percentage of total gross loans and advances, with increasing ratios signalling a deterioration of a credit portfolio.

Figure 36: NPLs and credit losses to gross loan and advances



Source: SARB

Box 6: Banks' projections of NII under stress

Participant banks' model outcomes provide insight into how NII[1] may perform in a rising interest rate environment. The scenarios used in the CSST exhibit significantly elevated repurchase rate projections as one of the key variables, coupled with a widespread economic downturn and rising inflation across South Africa (see Figure 29). The key modelling assumptions of the 2023 CSST exercise further ensure banks' NII projections remain conservative and do not exceed the imposed assumptions (outlined in Table 1. These assumptions ensure that real NII reported by each bank does not grow under the adverse scenarios and that NII per unit of interest-bearing asset does not exceed the corresponding figure under the Baseline scenario. These constraints helped to ensure that the higher NII outcomes stem from macroeconomic fundamentals and created a level playing field when doing cross sectional analysis.

In a typical interest rate hiking cycle, two opposing forces are at play in determining NII. On the one hand, higher interest rates lead to an endowment effect which, if unhedged, could lead to an increase in the margin between interest rates charged on assets and provided for liabilities. On the other hand, higher interest rates are associated with higher inflation and downward pressure on economic activity, which can lead to increased credit defaults, decreasing the portion of the credit book which is earning interest.

The recent BU stress test outcomes show projected NII increasing under stress. Banks report that periods of economic stress typically see higher-than-anticipated growth in deposits as customers seek safe havens for their money, whilst credit demand is muted. As a result, banks naturally invest this excess liquidity in short- to medium-term securities such as sovereign debt instruments. Holdings of these liquid assets then allow banks to earn interest income that helps to boost their overall NII under the adverse scenarios in the stress test.

That said, it appears that SIFIs have become overly reliant on NII to weather adverse conditions and remain profitable under pressure, particularly in the high interest rate environment depicted in the adverse scenarios. This income then flows into capital and leads to a stronger solvency position.

To this end, net interest margins[2] prove resilient across the scenarios despite a marked deterioration in economic output and demand for credit. Figure B6.1 shows how NII per unit of gross loans and advances remains close to, and often exceeds, the baseline, and NII is expected to be much higher in the absence of the real interest rate cap[3] of the adverse scenarios. Meanwhile, credit defaults also increase sharply under both adverse scenarios due to the rising interest rates, causing an increase in the credit loss ratio[4] (Figure 36).

1 NII is the difference between the revenue generated from a bank's interest-bearing assets and the expenses associated with paying its interest-bearing liabilities. NII is a key driver of profitability.

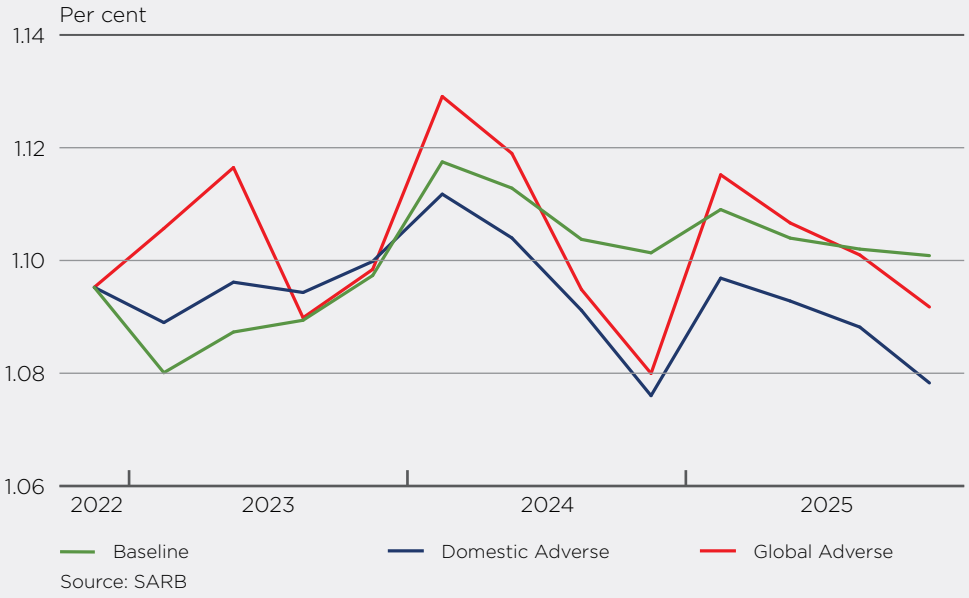
2 The net interest margin measures how profitable banks and other financial institutions are. It is the difference between *the interest earned* from a bank's granting of loans and advances and *the interest paid* to depositors and creditors. The higher the net interest margin, the better the bank is at investing its funds to make money.

3 Imposed by the CSST framework.

4 Calculated as the ratio of loan losses to total loans.

Box 6: Banks' projections of net interest income under stress (continued)

Figure B6.1: NII per unit of gross loans and advances



Source: SARB

However, from the SARB's perspective, most BU model outcomes may not cater for the non-linear elasticities[4] that are likely to manifest under the conditions of a tail event. Therefore, given the extraordinarily high interest rate environment, the BU models may fail to recognise the extent to which rapidly increasing NPLs (and the associated credit losses) may outweigh the benefits from the endowment effect under significant stress.[5]

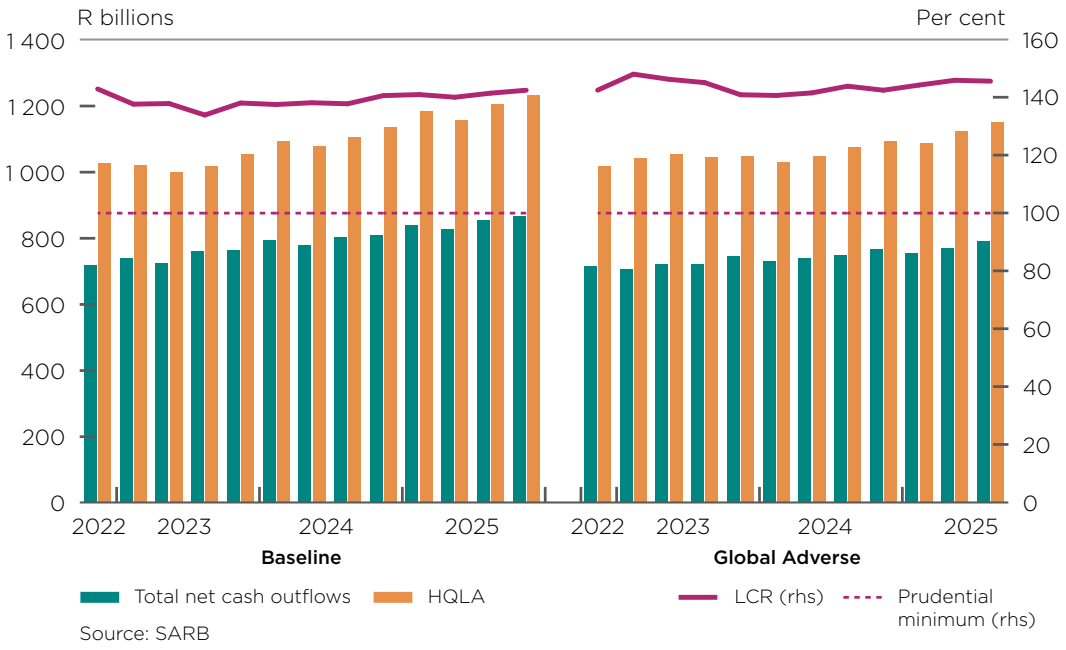
5 Where the doubling of stress would see the impact more than doubling.

Liquidity

The results of the liquidity stress test confirm that the South African banking sector is well placed to maintain sufficient liquidity buffers[33] to service operations through severe downturns. Banks are required to use the balance sheets modelled for the solvency component of the 2023 CSST exercise exercise to simulate consistent liquidity positions and cash flows.

The LCR[34] is designed to ensure that banks hold sufficient levels of HQLA[35] to cover their expected net cash outflows (NCOs).[36] As illustrated in Figure 37, participants' appetite towards HQLA investments in short- to medium-term sovereign debt securities is evident from the upward trajectory of HQLA stock in the 'Baseline' and 'Global Adverse' scenarios. This results in banks maintaining a sufficient liquidity buffer, in excess of the prudential minimum requirement of 100% under the proposed scenarios. Therefore, in the short term, the South African banking system is considered resilient to the applied shocks.

Figure 37: Aggregate LCR



Source: SARB

33 In excess of the minimum prudential requirements.

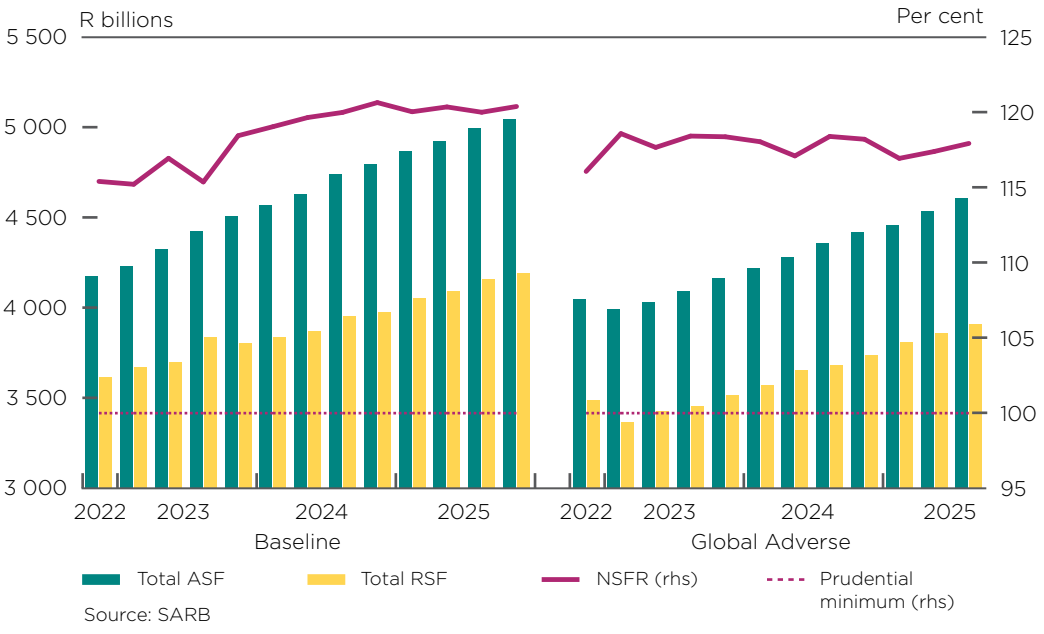
34 The LCR stress scenario combines elements of bank-specific liquidity and market-wide stresses. The 30-day period of stress corresponds to the minimum period that is deemed necessary for corrective action to be taken by the bank's management or supervisors.

35 HQLA are those bank assets that can be easily converted into cash, with little or no loss of value in private markets.

36 NCOs correspond to cumulative expected cash outflows *minus* cumulative cash inflows for the same period.

All banks fulfil the regulatory minimum requirements[37] of the net stable funding ratio (NSFR)[38] across the forecast horizon. It is evident in Figure 38 that the total available stable funding exceeds the required stable funding by a sizeable margin. This demonstrates the longer-term resilience of the SIFIs as they can maintain an NSFR that is greater than the minimum requirement across the three-year horizon.

Figure 38: Aggregate NSFR



Source: SARB

Participants' resilience against funding and market liquidity shocks is further assessed using cash flow-based liquidity data reported in the format of a maturity ladder.[39] The outcomes of the stress scenarios, highlight that the mismatches generate stress-funding requirements, where, even with the addition of the available central bank liquidity access, the system has a cumulative mismatch for several maturity tenors (Figure 39). The South African banking system's counterbalancing capacity,[40] however, manages to positively offset part of the contractual maturity mismatch over the horizon. Highly liquid central bank and government bond securities, and unutilised interbank funding capacity account for most of the collateral buffer of this counterbalancing capacity. The mismatch is explained by the practice of SIFIs to generally write longer-term loans, specifically for retail and non-financial wholesale counterparties, while their deposits tend to be for shorter periods of time. As a result, the average maturity of these assets is much longer than the average maturity of

37 Currently set at 100%.

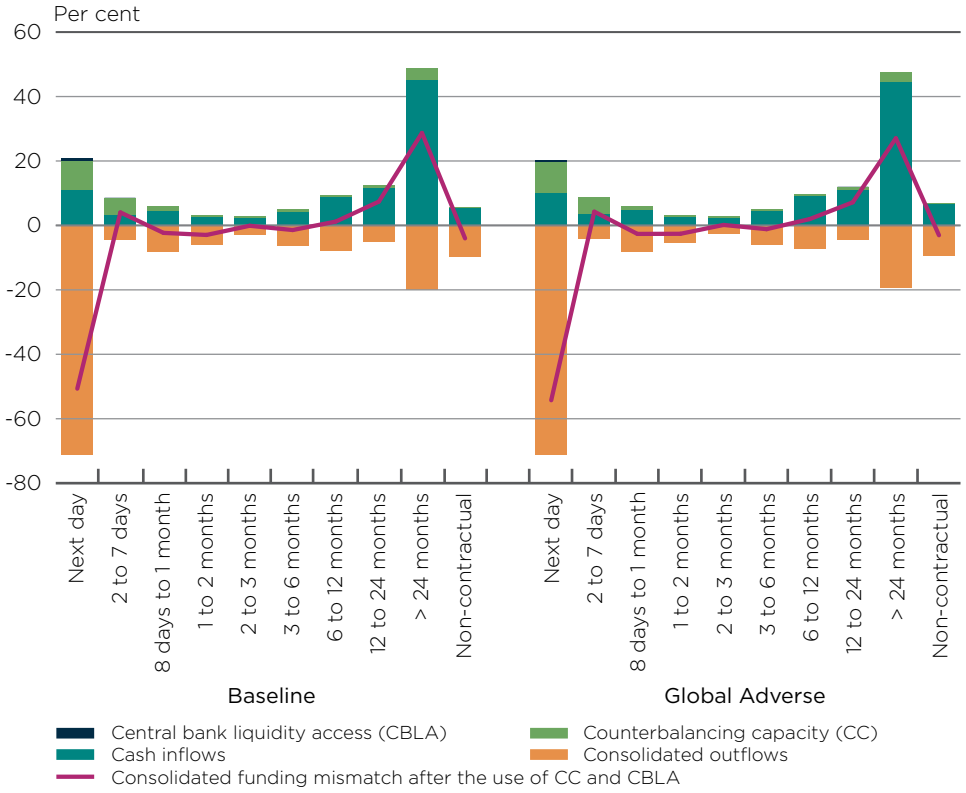
38 The NSFR aims to limit a bank's reliance on volatile sources of funding by ensuring that long-term or illiquid assets are funded by a minimum amount of stable funding. A ratio of 100% is achieved by ensuring that a bank's amount of *available* stable funding (ASF) exceeds the amount of *required* stable funding (RSF). ASF refers to funding (the sum of the bank's capital and liabilities) that will remain available over a horizon of at least one year and RSF refers to the stable funding that the bank is required to hold given the liquidity characteristics and residual maturities of its assets and the contingent liquidity risk arising from its off-balance sheet exposures. To determine the total amount of RSF, banks must multiply the carrying value of exposures by the related RSF factor.

39 The maturity ladder is used as a tool for comparing and matching a bank's cash flows over specified time periods. Banks allocate each cash flow to a given time band based on their liquidity assumptions, and once cash flows have been matched, funding gaps can be identified. Another critical component of resilience is banks' ability to withstand a withdrawal of funding since banks assume liquidity risk by engaging in maturity transformation.

40 In this context, counterbalancing capacity includes holdings of unencumbered assets of a certain high-quality liquidity together with credit lines contractually committed to the institution. The encumbrance of assets, in turn, means that the assets accounted for must be available for the institution to convert into cash. This conversion must be possible at any time to fill funding gaps between cash inflows and outflows during the time horizon.

liabilities. This means that participants may likely need to repay some liabilities ahead of their assets maturing, which is observed for those tenors where the cumulative mismatch is negative after counterbalancing. Banks do, however, earn income from taking on this risk where it accounts for part of the spread between the interest rates on their assets and liabilities.

Figure 39: Cash flows as a percentage of total assets



Source: SARB

Conclusion

The 2023 CSST results confirm that SIFIs remain well capitalised, sufficiently liquid, and able to withstand the severe, yet plausible, shocks simulated under the adverse scenarios of the exercise. While the aggregate CAR deteriorates across the adverse scenarios, it still comfortably exceeds the regulatory minima. Furthermore, the solvency results give a conservative assessment of banks' solvency positions under stress due to the exclusion of unappropriated profits, which provides an additional layer of safeguard. The liquidity stress-test results also confirm that SIFIs maintain strong liquidity buffers, well in excess of minimum prudential requirements.

Banks' profitability deteriorates due to higher credit losses, although this is partially offset by higher net operating income. Most credit losses emanate from the retail sector, which is potentially an early-warning indicator of a distressed household sector and/or an indication that corporate sector risks are not fully captured by participants, given the scenarios. Furthermore, SIFIs appear to be increasingly reliant on NII to remain profitable under stress (particularly in high interest rate environments), which highlights a potential vulnerability in a scenario where increasingly non-linear impacts of NPLs on interest income exceed the benefits from the endowment effect in an interest rate hiking cycle. These outcomes therefore highlight the need for banks to remain vigilant in managing risks and maintaining robust capital and liquidity positions.

An event-window assessment of the impact of FATF's greylisting on the South African stock market and financial stability consequences[41]

South Africa was placed on the list of countries under increased monitoring by FATF on 24 February 2023. This followed a failure to timely address the country's deficiencies in its anti-money laundering and combating the financing of terrorism (AML/CFT) systems. It is important to note that countries with strategic AML/CFT deficiencies could face higher costs from increased countermeasures such as enhanced due diligence applied to business relationships and transactions. Financial stability risks could arise mainly through the country risk premium channel and could worsen the longer the country stays on FATF's greylist.

The wider paper on which this summary draws investigated the impact of a FATF greylisting event on stock market returns using an event-study methodology. It conducted comprehensive assessments of the South African financial system, particularly of the SIFIs[42] and the large insurers, which also have systemic significance given their size (also see Kleinow et al., 2014). This disaggregated analysis allows for insights into the sector-specific impact which could be important for a targeted macroprudential policy response.

The paper employed data from two main sources: (i) events data from the respective FATF mutual evaluations on jurisdictions under increased monitoring by FATF; and (ii) stock market data provided by Bloomberg.

Table 2: Other jurisdictions that are (or have been) on the FATF greylist

Country	Event date	Stock Market Index
Barbados	21 January 2020	Barbados Stock Exchange Index
Jordan	21 October 2021	Amman Stock Exchange General Index
Nigeria	24 February 2023	NGX All Share Index
Morocco	24 February 2021	Casablanca Stock Exchange Index
Philippines	25 June 2021	Philippines Stock Exchange Index
Türkiye	21 October 2021	Borsa Istanbul 100 Index
Tanzania	21 October 2021	Tanzania All Share Index
United Arab Emirates	17 July 2022	Abu Dhabi General Index

Using Bloomberg data, the study used the daily equity return indices for the jurisdictions in Table 2 with active stock markets from April 2000 to May 2023, during which time FATF placed the respective countries under increased monitoring. For the cross-country analysis, the world index return (as derived from the MSCI World Index) was employed as a proxy for market returns. For the South African analysis, the daily JSE Alsi returns and stock returns for banks and insurance firms listed in Table 3 were collected for the period July 2022 to May 2023.

41 This topical focus is a summary of the Financial Stability Topical Briefing published on the SARB's website. The full paper is available at https://www.resbank.co.za/en/home/what-we-do/financial-stability.

42 At the time of conducting the study, only the banks listed in Table 3 were classified as SIFIs.

Table 3: SIFI banks and selected insurance firms in South Africa

Banks	Insurance firms
Absa	Momentum
Capitec	OUTsurance
FirstRand	Discovery
Investec	Clientele
Nedbank	Santam
Standard Bank	

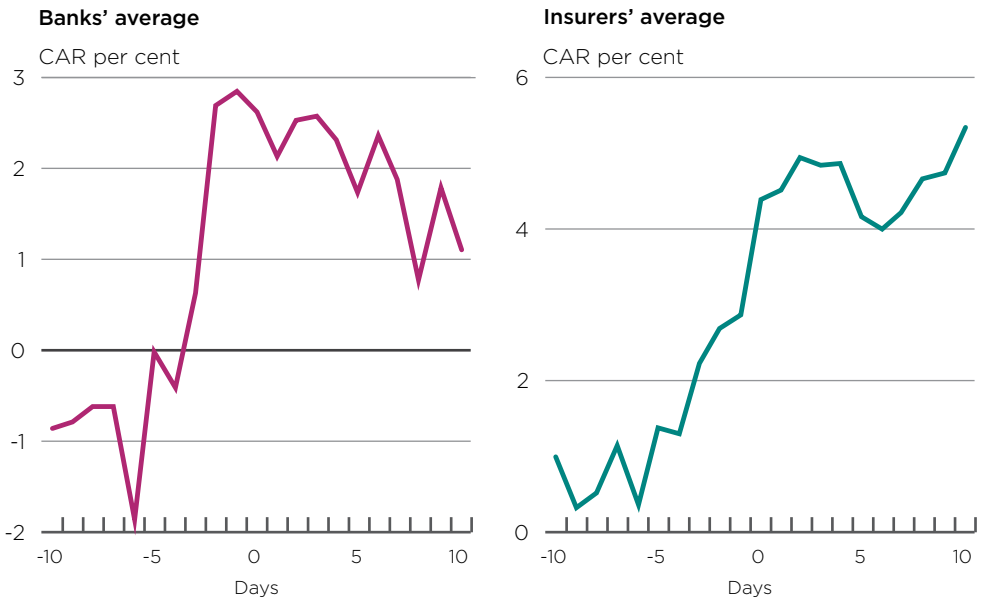
The study employed a short-horizon event-study analysis, following an approach by Kothari and Warner (2007). The event study was set up using the Capital Asset Pricing Model (CAPM), with country stock market returns as the dependent variable and the world market returns as the independent variable. The estimation period covered an interval of (-120, -11) trading days relative to the event day.[43] The model is also run on the South African financial system considering the banks and insurers listed in Table 3.

The results show that events such as the downgrading of South Africa to sub-investment grade had a greater impact on stock market returns. Several event windows relating to South Africa's downgrade to sub-investment grade are significant. On average, the results from other countries that were greylisted by FATF seem to confirm the greater market anticipation largely due to the identified gaps when compared against the country commitments in the run-up to the actual event.

At a firm level, the results reveal a differentiated impact between banks and insurers, with the sub-industry results also showing some interesting nuances. Figure 40 illustrates the cumulative abnormal returns for the banking and insurance sectors. Overall, the stock returns mostly indicate that the informational value of the actual event for market participants was not significant, which corresponds with the findings of Kleinow et al. (2014).

43 Event day 0 is the actual date of the FATF greylisting if a working day, or the first working day following the actual day of the incident, if not a working day.

Figure 40: Cumulative abnormal returns for SA banks and insurers



Source: SARB

While the study did not necessarily control for proximal events, the event-study methodology employed demonstrated strong evidence that the FATF greylisting news, unlike sovereign downgrades, did not significantly impact on stock market returns. At a sectoral level, few event windows showed significant average abnormal returns for banks and insurers, suggesting that the actual event had a limited impact on the domestic financial system.

In the longer term, failure to resolve the deficiencies raised by FATF may result in South Africa staying on the greylist for longer, which could have adverse implications for the country's risk premium, market depth and liquidity, mainly due to capital outflows from non-resident investors, as discussed in previous editions of the *FSR*.[44] Furthermore, geopolitical events interacting with this risk could have important macroeconomic and financial stability implications through the trade and financial (i.e. banking and insurance) channels, respectively.

44 For example, https://www.resbank.co.za/en/home/publications/publication-detail-pages/reviews/finstab-review/2022/second-edition-2022-financial-stability-review.

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Abbreviations

AE	advanced economy
Alsi	JSE All-Share Index
AML/CFT	anti-money laundering/combating the financing of terrorism
AOCI	accumulated other comprehensive income
ASF	available stable funding
ASISA	Association for Savings and Investment South Africa
BCBS	Basel Committee on Banking Supervision
BIS	Bank for International Settlements
BRICS	Brazil, Russia, India, China, South Africa
BU	bottom-up
CAPM	Capital Asset Pricing Model
CAR	capital adequacy ratio
CBOE	Chicago Board Options Exchange
CBLA	central bank liquidity access
CC	counterbalancing capacity
CCB	capital conservation buffer
CCyB	countercyclical capital buffer
CDS	credit default swap
CET1	common equity tier 1
CPI	consumer price index
CRE	commercial real estate
CSST	Common Scenario Stress-Testing
Constitution	Constitution of the Republic of South Africa Act 108 of 1996
D-SIB	domestic systemically important bank
EM	emerging market
EU	European Union
FATF	Financial Action Task Force
FSB	Financial Stability Board
FSC	Financial Stability Committee
FSCF	Financial Sector Contingency Forum
FSOC	Financial Stability Oversight Committee
FSR	*Financial Stability Review*
FSR Act	Financial Sector Regulation Act 9 of 2017
FX	foreign currency
G7	Group of Seven
G20	Group of Twenty
GaR	growth at risk
GDP	gross domestic product
GFC	global financial crisis
GLA	gross loans and advances
GWP	gross written premiums
H-index	Herfindahl-Hirschman Index
HQLA	high-quality liquid assets
ICR	interest coverage ratio
IFRS	International Financial Reporting Standards
IIF	Institute of International Finance
IMF	International Monetary Fund
Iress	Integrated regional settlement system
ISM	Integrated stress-testing model
JSE	Johannesburg Stock Exchange
LCR	liquidity coverage ratio
MCR	minimum capital requirement
MER	Mutual Evaluation Report
MMF	money market fund
MOVE	Merrill Lynch Option Volatility

MPC	Monetary Policy Committee
MPR	*Monetary Policy Review*
MTBPS	*Medium-Term Budget Policy Statement*
MPs	Members of Parliament
MW	megawatt
NBFI	non-bank financial institution
NCO	net cash outflow
NERSA	National Energy Regulator of South Africa
NFC	non-financial corporate
NII	net interest income
NPL	non-performing loan
NSFR	net stable funding ratio
NT	National Treasury
NYU	New York University
OFI	other financial institution
OPEC+	Organisation of the Petroleum Exporting Countries and its allies
PA	Prudential Authority
PCN	positive cycle-neutral
PE	price to earnings
PIC	Public Investment Corporation
P&L	profit and loss
QBTS	Quarterly Bulletin Time Series
R	rand
REER	real effective exchange rate
REIT	real estate investment trust
Regulations	Regulations relating to Banks
repo	repurchase
ROE	return on equity
RSF	required stable funding
RVM	Risks and Vulnerabilities Matrix
RWA	risk-weighted assets
SA	South Africa
SAGB	South African Government Bond
SARB	South African Reserve Bank
SCR	solvency capital requirement
SIFI	systemically important financial institution
SME	small and medium enterprise
SOE	state-owned enterprise
SRISK	systemic risk
Stats SA	Statistics South Africa
STeM	stress-testing matrix
TD	top down
UK	United Kingdom
US	United States of America
VIX	Volatility Index

Annexure A: South African financial stability heatmap components and indicators

The financial stability heatmap is composed by (i) identifying various financial stability elements; and (ii) assigning a weighted colour rating to the identified elements by using predefined indicators. The elements comprising the financial stability heatmap and the corresponding financial stability indicators underlying the colours on the heatmap are presented in Table A.1 below.

Table A.1: South African financial stability heatmap elements and indicators

Component	Indicator	Measure
Risk appetite and asset valuation partition		
Residential real estate	Real house price growth	BIS house price index divided by the consumer price index (CPI)
Equity market	Price-earnings ratio	JSE All Share price-earnings ratio
	Chicago Board Options Exchange (CBOE) Volatility Index (VIX)	Logarithm of CBOE VIX
Government bond market	South African credit default swap (CDS) spread	CDS spread on South African five year government bond
	Merrill Lynch Option Volatility Estimate (MOVE)	MOVE
Corporate bond market	Corporate spreads	JP Morgan Corporate Emerging Market Bond Index
Banking sector – risk appetite	Bank lending margin	Weighted average lending rate *minus* weighted average deposit rate
	Loan approval ratio: mortgages	Ratio of approved mortgages to total volume of applications
Financial sector partition		
Banking sector	CAR	Capital adequacy divided by total RWA
	Real credit growth	Real growth in gross loans and advances (GLA)
	LCR	HQLA divided by net cash expected outflows
	Bank maturity mismatches	On-balance sheet maturity mismatches divided by total assets
	Loan-to-deposit ratio	Gross loans and advances divided by deposits plus current accounts *plus* other creditors
	Exposure to housing market	Residential mortgages divided by total loans and advances
	Exposure to sovereign sector	Treasury bills *plus* government bonds/total assets
Insurance: life	Liquidity transformation	Illiquid assets divided by total financial assets
	Leverage	Total financial assets divided by equity

Table A.1: South African financial stability heatmap elements and indicators

Component	Indicator	Measure
	Solvency capital requirement (SCR)	Own funds divided by solvency requirement
Insurance: non-life	Liquidity transformation	Illiquid assets divided by total financial assets
	Leverage	Total financial assets divided by equity
	SCR	Own funds divided by solvency requirement
Unit trusts	Credit intermediation	Loans divided by total financial assets
	Liquidity transformation	Illiquid assets divided by total financial assets
Finance companies	Credit intermediation	Loans divided by total financial assets
	Liquidity transformation	Illiquid assets divided by total financial assets
	Leverage	Total financial assets divided by equity
Sector-wide	SRISK	NYU Stern
Non-financial sector partition		
Households	Household debt-service costs	Ratio of debt-service cost to disposable income
	Household debt/disposable income	Ratio of debt-service cost to disposable income
	Household net saving	Net saving
NFCs	NFC debt/operating income	Debt divided by operating surplus
	NFC ICR	EBIT divided by interest expense
Government	Government debt/GDP	Government debt divided by GDP
	Interest/revenue	National government interest expenditure divided by total national government revenue
	Primary budget balance	Primary balance as percentage of GDP
External vulnerabilities partition		
Global financial cycle	US financial conditions index	Federal Reserve Board and/or Chicago Fed indices
Capital flows	Capital outflows	Net purchase of equities and bonds by non-residents (QBTS)
Real effective exchange rate (REER)	REER	Nominal effective exchange rate of the rand: Average for the period - 20 trading partners divided by a price deflator or index of costs.

Annexure B: RVM supporting table

Table B.1: Financial stability risks, vulnerabilities, mitigating factors/actions and residual vulnerability

Risk	Associated domestic impact/ vulnerability	Mitigating factors/actions	Residual financial stability risk/ vulnerability (high, moderate or limited)	Change since last *FSR*	Time frame
Environmental factors					
Tighter financial conditions for longer	• Extended period of higher funding and debt servicing costs for households and firms alike • Rising interest rates in advanced economies could cause further capital outflows and currency depreciation for emerging markets	• Domestic inflation expectations remain anchored	• The high level of interconnectedness in the South African financial sector means that risks in individual sectors could spill over to other areas of the financial system • Tighter financial conditions could interact with low growth to weaken balance sheets • Lack of data on foreign-currency mismatches by NFCs	→	Near to medium term
Persistent structural growth impediments	• Years of slow and inequitable growth raise the risk of social unrest, which in turn may negatively impact on investor confidence, funding costs, insurance claims and operational costs • Muted new business growth may lead to increased risk-taking, reduced service and product offerings or higher fees to protect profits margins	• Regulatory frameworks comply with international standards • Close supervision of financial institutions	• Limited progress on implementing structural reforms leaves the economy vulnerable to an extended period of weak, inequitable growth. • Infrastructure degradation (railways, ports, water, electricity) limits potential and actual growth.	→	Medium term
Idiosyncratic factors					
Insufficient and unreliable electricity supply	• Increased cost of doing business threatening business profitability and sustainability • Lower government and municipal revenue collections as alternative energy sources are adopted • Negative impact on South Africa's international reputation, increased capital outflows and a higher country risk premium • Increased risk of critical infrastructure not being available, most notably cellular network towers and water distribution facilities • An increased number of domestic uninsurable risks	• Cabinet approved a bill on energy regulation to remove obstacles to private electricity generation projects in March 2023 • Households and firms are investing in alternative energy, although at the expense of other priorities	• Higher stages of loadshedding, combined with non-scheduled breakdowns severely impedes the domestic financial system's ability to keep performing its functions • The risk of a complete electricity grid failure remains, while still highly unlikely • A total grid collapse would likely constitute a 'systemic event' as defined in the FSR Act	↓	Near term to medium term
Capital outflows and declining market depth and liquidity	• A sustained decrease in the value of SAGBs held by non-residents causes greater concentration within the domestic financial system • The orderly functioning of the government bond market can be disrupted, potentially requiring repeated episodes of support by authorities • Less diversified capital markets ecosystem, which reduces the financial system's ability to absorb systemic shocks • A decrease in the exchange value of the rand if foreign investor appetite wanes and commodity prices decline • This risk can interact with the high exposure of the financial sector to government debt	• Flexible exchange (FX) rate • Level of FX reserves meets international benchmarks • Low FX mismatches on bank and sovereign balance sheets	• Growing concentration and interconnectedness within the South African financial system	→	Near term to medium term

Table B.1: Financial stability risks, vulnerabilities, mitigating factors/actions and residual vulnerability

Risk	Associated domestic impact/ vulnerability	Mitigating factors/actions	Residual financial stability risk/ vulnerability (high, moderate or limited)	Change since last *FSR*	Time frame
Sharp repricing in government debt	• High holdings of SAGBs, especially by non-systemic banks and other financial institutions expose financial institutions to valuation changes • High level of sovereign and SOE debt, combined with committed spending items and lower tax revenue • Lower levels of private investment and savings • This risk can interact with the risk of lower liquidity in the SAGB market, which could amplify shocks in a liquidity squeeze	• Banks hedging against interest rate and repricing risk • Government debt is largely domestic currency denominated with long maturities • Large, diversified banks are less exposed to government debt and better hedged against adverse events. • Regulatory oversight of risk management processes in financial institutions • Closer supervisory scrutiny	• Hedging remains concentrated among systemically important banks • Financial sector exposures to the sovereign remain elevated, in particular among non-systemic banks • Accounting practices may not fully reveal unrealised losses • The risk of dysfunction in the SAGB market is exacerbated by high exposure, concentration and lower liquidity. • Failure in fiscal consolidation can lead to unsustainable government debt levels.	↑	Near to medium term
Remaining on the FATF greylist for longer	• Initial impact of the greylisting had been priced in, but there are longer-term implications should South Africa not manage to get off the FATF greylist within 24 months • Further damage to South Africa's international reputation contribute to capital outflows and a higher country risk premium • Higher transactional, administrative and funding costs for domestic banks • A decline in correspondent banking relationships for South African banks, with regional spillover effects	• Coordinated response to address the deficiencies identified through a government-led interdepartmental committee on anti-money laundering, counter financing of terrorism and counter financing of proliferation to coordinate South Africa's response. • Active engagement with foreign counterparts by SA authorities • Financial sector assessment relatively sound, mitigating the reaction of correspondent banks • Several countries have offered assistance to South Africa, both in terms of funding and other forms of support	• Mitigating actions from the remedial recommendations of FATF may not be implemented in time for the next assessment cycle • Assistance and support by other countries cannot address all idiosyncratic domestic risk factors	→	Medium to longer term
Intensification of geopolitical risks	• South Africa's desire to maintain political neutrality may not be perceived as such • A sudden stop to capital inflows and increased outflows • Continued conflicts among countries are likely to have non-linear impacts on growth prospects going forward • Impact of conflicts on energy, commodity and food prices have inflation risks, which may require higher interest rates for longer	• Active engagement with foreign counterparts by SA authorities • Financial safety nets and foreign exchange reserves • Credible monetary policy anchors inflation expectations	• Many events are beyond South Africa's control, e.g. policy tightening in AEs, the ongoing Russia-Ukraine war, rising global inflation and global market uncertainty and volatility. • South Africa's ties with Russia through BRICS and otherwise raises SA's risk profile	↑	Short to medium term
Further deterioration of household and NFC buffers	• Rising NPLs and payment lapses • Increase in distress borrowing	• Higher bank provisioning for NPLs	• Increased provisioning may still not be enough	New	Near to medium term

Table B.1: Financial stability risks, vulnerabilities, mitigating factors/actions and residual vulnerability

Risk	Associated domestic impact/ vulnerability	Mitigating factors/actions	Residual financial stability risk/ vulnerability (high, moderate or limited)	Change since last *FSR*	Time frame
Perpetual risks					
Financial sector unprepared for climate change risks	• High concentration of carbon-intensive activities in South Africa may lead to the financial system having large exposures to stranded assets in the future • Increase in the number of uninsurable risks relating to frequently occurring climate-related events (e.g. droughts, floods, fires). • Immature international regulatory framework against which to define and quantify risks	• More affluent consumers are decreasing reliance on Eskom through green energy alternatives • Introduction of climate stress testing by the SARB promotes industry efforts to define and quantify risks • Establishment of the Presidential Climate Financial Task Team should contribute to policy certainty. • South African carbon tax implemented in June 2019 to increase to at least USD30 per tonne by 2030. • Proposed guidance notes issued by the PA on climate risk practices and disclosures by banks and insurers	• As more affluent consumers reduce reliance on Eskom for electricity, Eskom's client base could shrink and become dominated by non-payers, in turn placing further pressure on Eskom's longer-term viability • Loss of competitiveness in the South African economy as the world shifts toward carbon neutrality. • Higher funding costs and other barriers for financial institutions that fund unsustainable assets. • Lack of comparable, granular climate-related data on financial exposures and voluntary reporting limit supervisory and regulatory analysis. • Increasing cost of short-term insurance and unwillingness to provide cover against climate-related risks.	→	Medium to longer term

Annexure C: Banking and insurance sector indicators

Table C.1: Banking sector indicators*

	2019	2020	2021	2022	2023***
Market share in terms of assets (five largest banks)	90.37	89.99	89.84	89.55	89.55
Gini concentration index	83.21	83.11	82.68	82.36	81.38
Herfindahl-Hirschman Index (H-index)	0.179	0.176	0.178	0.179	0.178
Total assets (R billions)	5 769.3	6 457.3	6 562.3	7 019.7	7 448.6
- Year-on-year percentage change	8.63	11.93	1.74	6.96	8.10
Total loans and advances (R billions)	4 249.5	4 542.5	4 643.1	4 984.0	5 324.0
- Year-on-year percentage change	7.8	6.9	2.2	7.3	8.7
Total capital adequacy ratio	16.53	16.21	17.49	17.68	17.36
Tier 1 capital adequacy ratio	13.45	13.14	14.47	14.96	14.99
Common equity tier 1 capital adequacy ratio	12.69	12.33	13.30	13.63	13.45
Impaired advances (R billions)**	161.7	211.9	229.2	226.7	268.8
Impaired advances to gross loans and advances	3.8	4.7	4.9	4.5	5.0
Specific credit impairments (R billions)	73.6	92.2	105.5	109.7	124.4
Specific credit impairments to impaired advances	45.51	43.56	46.07	48.45	46.32
Specific credit impairments to gross loans and advances	1.73	2.03	2.27	2.20	2.34
Return on assets (smoothed)	1.24	0.79	0.81	1.12	1.11
Return on equity (smoothed)	15.31	10.22	10.62	14.26	14.85
Interest margin to gross income (smoothed)	56.80	58.17	58.65	58.77	59.92
Operating expenses to gross income (smoothed)	58.22	58.26	58.73	58.08	56.50
Liquid assets to total assets (liquid asset ratio)	11.1	12.2	13.3	14.0	14.9
Liquid assets to short-term liabilities	22.4	24.1	24.1	25.2	27.4
Liquidity coverage ratio	146.9	142.2	144.1	145.7	151.8

* Updated as at 25 October 2023. All data are averaged for the year shown. Percentages unless stated otherwise.

** Impaired advances are advances in respect of which a bank has raised a specific impairment and include any advance or restructured credit exposure subject to amended terms, conditions and/or concessions that are not formalised in writing.

*** 2023 is year to date (to August 2023).

Source: PA

Table C.2: Insurance sector indicators

	2018	2019	2020	2021	2022	2023 Q2
Market share in terms of assets (five largest life insurers)	73	74	73	73	74	74
Market share in terms of gross written premiums (five largest non-life insurers)	46	48	47	50	49	49
Balance sheet						
Total assets: life insurers (R millions)	3 011 459	3 143 872	3 254 815	3 724 257	3 705 455	3 943 357
Total assets: non-life insurers (R millions)	196 726	206 831	239 132	260 616	290 127	296 702
Total liabilities: life insurers (R millions)	2 638 347	2 760 773	2 909 562	3 343 586	3 353 525	3 574 053
Total liabilities: non-life insurers (R millions)	114 828	117 377	141 422	178 516	177 446	116 442
Profitability						
Gross written premiums: life insurers (R millions)	529 741	551 175	564 327	620 821	631 629	165 572
Net profit before tax and dividends: life insurers (R millions)	45 067	45 373	11 766	48 731	19 848	16 229
Individual lapse ratio: life insurers	61.0	91.1	66.0	77.0	76.2	92.3
Gross written premiums: non-life insurers (R millions)	144 265	159 548	158 632	169 846	181 916	105 626
Combined ratio: non-life insurers (%)	97.0	97.0	113.0	119.0	98.0	84.0
Operating profit ratio: non-life insurers (%)	15.0	23.0	16.0	-14.4	14.0	22.0
Solvency and capital*						
Solvency capital requirement cover ratio (median): life insurers	1.9	2.0	1.9	1.7	1.7	1.7
Minimum capital requirement cover ratio (median): life insurers	4.3	4.2	4.3	4.2	4.7	4.2
Solvency capital requirement cover ratio (median): non-life insurers	1.8	1.8	1.9	1.8	1.5	1.6
Minimum capital requirement cover ratio (median): non-life insurers	3.9	4.0	4.4	3.8	3.7	3.5

* These returns are only available from 2018 due to changes in reporting requirements.

Source: PA