

South Africa: The Financial Sector-Sovereign Nexus

Heiko Hesse and Ken Miyajima

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South Africa: The Financial Sector-Sovereign Nexus
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ABSTRACT: Globally, financial institutions have increased their holdings of domestic sovereign debt, tightening the linkage between the health of the financial system and the level of sovereign debt, or the “financial sector-sovereign nexus,” during the ongoing COVID-19 pandemic. In South Africa, the nexus is still relatively moderate, albeit rising, and the increased focus of the Prudential Authority on the associated risks provide reassurance. Options to mitigate such risks through the use of regulatory measures can be explored. However, absent the necessary fiscal consolidation and structural reforms, risks from the nexus to both the financial system and the sovereign will increase.

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WORKING PAPERS

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I. Introduction

Rising sovereign debt in the wake of the COVID-19 pandemic has generated renewed attention to the financial sector-sovereign nexus in South Africa. In the absence of fiscal space, the necessary measures to support the economy following the pandemic prompted a further increase in the stock of sovereign debt and worsened indicators of sovereign risk (Box 1 and Figure 1). The higher sovereign debt, in turn, tightened the nexus between the sovereign and the domestic financial system, notably banks, pension funds, insurance companies, and mutual funds in the context of reduced purchases and greater disposals of sovereign debt by nonresident investors. In addition to the direct channel (public debt acquisition by the financial sector), the nexus has indirect channels, including an exposure of financial institutions to domestic economic activity.

Rapid increases in the financial sector-sovereign nexus have been a global matter of concern, particularly since the late-2000s. During the Global Financial Crisis in the late-2000s, the public debt-to-GDP ratio rose across many countries, especially in the European periphery. Prompted by foreign investors' flight and funding from the ECB, many peripheral European banks absorbed sizeable amounts of domestic sovereign debt, both in the primary and secondary markets, increasing their "home bias" in sovereign debt holdings. As the bank-sovereign nexus became entrenched, concerns regarding the health of the banking sector rose. These concerns were due, inter alia, to rising asset quality problems, including valuation losses on bank holdings of sovereign debt, on the one hand, and sovereign credit quality as governments provided guarantees or other support to their banking systems, on the other. An increased bank-sovereign nexus was also observed across many advanced economies. In this regard, the IMF (2015) examined the complex linkages between the health of the banking system and sovereign debt, including implications for fiscal and monetary policy. Dell'Ariccia et al. (2018) provided a broad overview of ways of managing the bank-sovereign nexus.

In the context of elevated fiscal risks, this paper documents several aspects of the financial sector-sovereign nexus in South Africa and policy options as to how to mitigate associated risks. It examines the size of sovereign debt in financial intermediaries' balance sheets and discusses the transmission of risks from the government to the financial sector and vice versa. It surveys the literature on the fiscal cost of banking crises—strong linkages between banks and the sovereign could substantially weaken bank's balance sheets, and government interventions have been found to be expensive in cases of banking problems in some countries. This nexus is likely to remain important, and the paper outlines some recommendations, in line with the 2021 Financial Stability Assessment Program (FSAP), on how to limit risks from the bank-sovereign nexus.

The paper finds that the financial sector-sovereign nexus in South Africa is relatively moderate at present but warns about risks going forward. The large domestic investor base could help keep sovereign bond yields relatively stable. However, a continued increase of sovereign exposures could crowd out lending to the private sector and cap private investment. As fiscal risks increase further, such exposures could weaken financial institution's balance sheets, and fiscal consolidation is the first line of defense. Meanwhile, the implementation of the Financial Sector Laws Amendment Bill (FSLAB), which seeks to reduce fiscal costs in the event of a bank failure, should also be accelerated. The Prudential Authority (PA) should continue monitoring the deepening financial sector-sovereign nexus to help maintain these institutions' strength, particularly as macroeconomic conditions are expected to remain challenging.

Box 1. Indicators of Rising Sovereign Risks in South Africa

For South Africa, a commonly used indicator suggests external sovereign risk is not particularly elevated, but it may not fully capture the extent of fiscal risks.

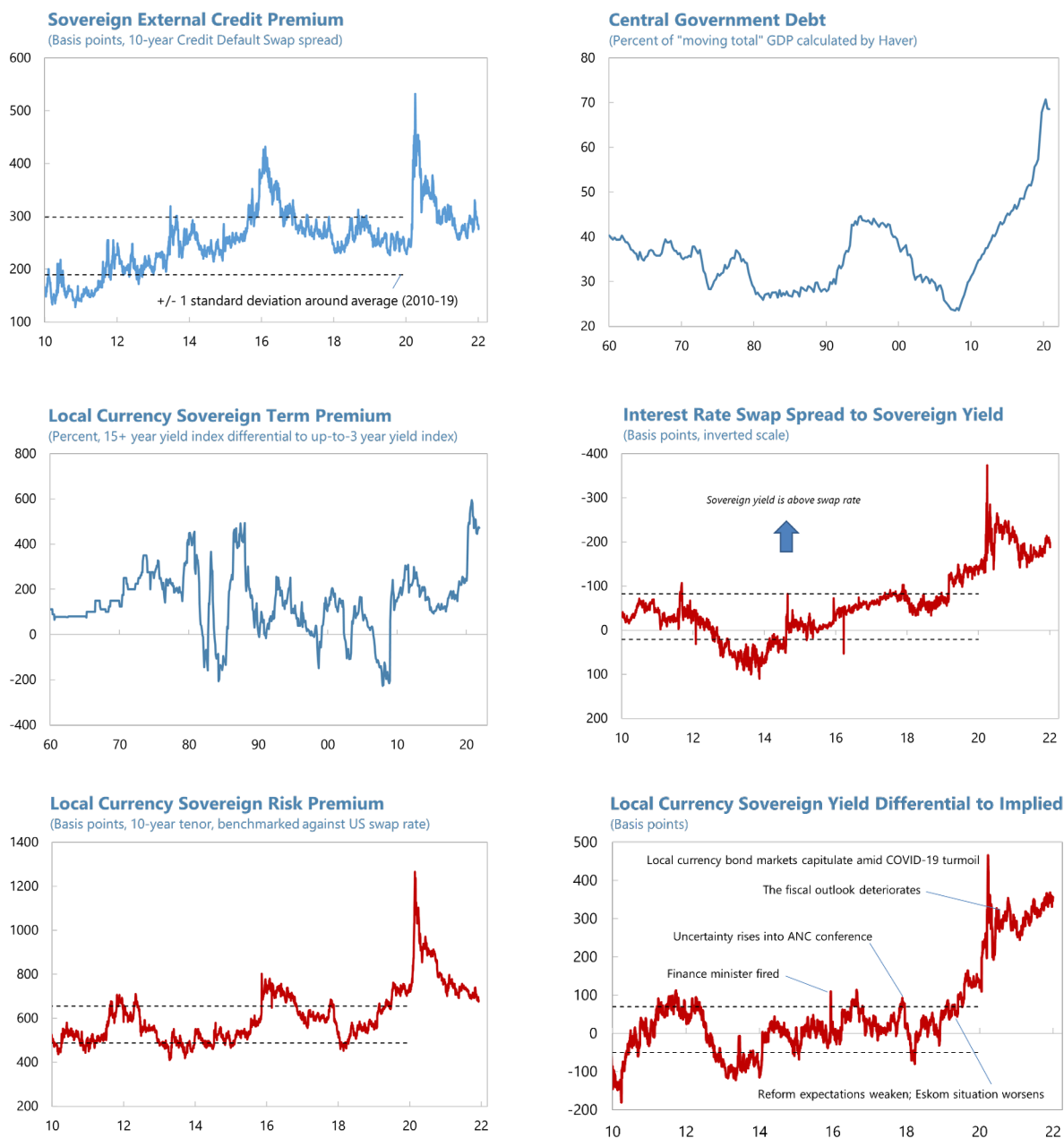
- **The sovereign credit default swap (CDS)** could be used to measure the sovereign's "external" credit risk in US dollar terms.¹ South Africa's sovereign CDS spread rose significantly (to around 430 basis points) in 2015–16 when Finance Minister Nene left, and to around 530 basis points in 2020 during the COVID-19-related global market turmoil. With the improvement in global risk sentiment and appetite for South African assets, the sovereign CDS spread has been trading at around the upper end of the "normal" range relative to its 2010–19 performance (200–300 basis points).
- However, the sovereign's debt-to-GDP ratio is around 70 percent (reflecting the recent GDP revision), significantly above its previous peak of around 45 percent registered in the 1990s. The local currency sovereign term premia, calculated as the long-term yield differential to short-term yields, remains at around its historical high.

By contrast, indicators of local currency sovereign risk in South Africa are elevated.

- **The swap spread.** Defined as the difference between the fixed rate leg of interest rate swap contracts and the maturity-matching sovereign yield, this spread is usually positive (swap rates > sovereign yields), representing the counterparty credit risk of banks trading swap contracts, and would widen as bank credit risk worsens relative to sovereign credit risk, or as general risk aversion increases. However, South Africa's swap spread has been negative (sovereign yields > swap rates), as high fiscal risks elevate sovereign yields above swap rates capped by the lack of private sector investment opportunities (and attendant demand for "paying" swaps). The swap spread narrowed in absolute terms from around –370 basis points during the worst of the COVID-19 market turmoil to around –200 basis points in early-December 2021. Nonetheless, it remains wider in absolute terms than previous levels of around –100 basis points and far outside of the "normal" range based on its historical performance, suggesting sovereign credit risk remains elevated.
- **The local currency sovereign risk premium (LCSRP).** LCSRP is the local currency sovereign yield spread to the "local currency US sovereign yield"—the latter is constructed using US sovereign yields in dollars and dollar-rand cross-currency swaps. Du and Schreger (2016) argue that the LCSRP tends to exhibit a lower average level, weaker cross-country correlations, and lower sensitivity to global risk factors than its CDS counterpart. The estimated LCSRP is comparable to previous highs including the one registered in 2015–16.²
- **The actual yield differential to its implied counterpart.** The implied counterpart is calculated as the sum of three components—the US yield, South Africa's sovereign CDS spread (in US dollars), and long-term inflation expectation differentials between South Africa and the US. The actual yield differential to its implied counterpart has moderated from more than 460 basis points in the spring of 2020 to around 350 basis points. However, the measure remains significantly above the previous highs of around 100 basis points and the upper end of the "normal" range based on its historical performance of around 70 basis points. Prior to the COVID-19 pandemic, this indicator had already widened as the Eskom situation started to worsen.

¹ A CDS spread can be used to calculate the implied probability of default (PD) for a certain loss given default, even though other factors than default risk, such as global risk sentiment and name- or tenor-specific trading liquidity conditions, also influence pricing of CDS.

² US swap rates are used instead of US sovereign yields to compute the local currency US sovereign yield, as their differences are very small relative to the level of South African sovereign yields and for ease of calculation.

Figure 1. Indicators of Sovereign Risk

Sources: Haver, Morgan Markets, and IMF staff calculations.

Note: Broken lines are \pm one standard deviation around the mean using 2010–19 data.

II. Importance of Sovereign Debt for Financial Intermediaries

Globally, banks hold domestic sovereign debt for a number of important reasons.¹ International prudential standards set by the Basel Committee on Banking Supervision (Basel standards) provide national discretion in treating bank holdings of domestic sovereign debt with respect to risk weights, large exposures, market risk, and credit risk mitigation, thus leaving room for regulatory incentives (BCBS, 2017; Dell’Ariccia et al., 2018). The preferential treatment given to sovereign debt relative to other financial assets in domestic regulatory frameworks is likely amplified during economic downturns (IMF, 2015). Sovereign debt is considered as a safe and high-quality asset for banks to meet the liquidity requirements, a strong collateral asset for central bank operations and secured wholesale funding, and a benchmark for pricing financial assets. Sovereign debt could also represent an important source of income particularly when income from other sources underperform. Banks also act as primary dealers and market makers for sovereign debt.

In addition to the incentives mentioned above, country authorities often take policy actions to further support banks’ holdings of government debt during times of stress. As discussed by Asonuma, Bakhache, and Hesse (2015a), these actions could include liquidity extension to banks, direct purchases of government debt, and/or conditional commitments to purchase government debt by central banks. Financial repression and moral suasion are sometimes used to ‘convince’ banks to purchase government bonds, especially in the primary market.² At the same time, the supply of public debt often substantially increases during times of stress, including as a result of countercyclical fiscal policy. With the quality of other assets deteriorating, domestic banks tend to prefer holding sovereign debt to help safeguard the health of their balance sheets. In addition, private-sector investment opportunities tend to decline during times of stress, further pushing banks toward domestic sovereign debt holdings.

Several factors have been identified as important drivers of bank holdings of sovereign debt across countries. Using a sample of advanced and emerging market economies (EMEs), Asonuma, Bakhache, and Hesse (2015a) show that banks’ bias to invest in domestic sovereign debt over other sovereign debt is associated with high uncertainty and increasing inflation, potentially capturing signs of macroeconomic instability or increased moral suasion. In contrast, the private-sector credit-to-GDP ratio, partly reflecting banks’ investment outside sovereign debt, and institutional quality, capturing political stability and socioeconomic conditions, are negatively related to home bias in sovereign debt holdings. Moreover, Dell’Ariccia et al. (2018) provide empirical evidence that banks hold more government debt during periods of high interest rates and in countries with lower private-sector credit-to-GDP ratios. Banks operating in less developed financial systems—for instance, with fewer high-quality lending opportunities—also hold more government debt.

Large holdings of domestic sovereign debt, or home bias, by financial institutions could create important problems. For instance, high bank holdings of domestic sovereign debt may be associated with low private-sector credit growth in emerging and developing countries, mainly reflecting a portfolio rebalancing of banks toward safer and more liquid assets in times of stress (Bouis, 2019). Issues surrounding banks’ home bias in sovereign debt holdings especially came to the forefront during the Euro area crisis. Studies on

¹ Dell’Ariccia et al. (2018) provide a comprehensive overview.

² Traditionally, home bias in banks’ holdings of government debt has been linked to financial repression (see, e.g., Reinhart and Sbrancia, 2011) that gives rise to directed credit to the government by captive domestic lenders, such as banks, and a tighter connection between government and banks.

eurozone countries highlight that, inter alia, fiscal space, changes in perceived sovereign credit quality, and state ownership of banks contribute to the increased propensity of banks to hold domestic sovereign debt.³

III. Government Bond Holdings by Banks and Nonbank Financial Institutions in South Africa

Many of the key determinants of government bond holdings are likely relevant for South Africa. High-quality liquid assets (HQLA) eligibility of sovereign debt, amid shortages of other HQLA eligible assets, and phasing out of the SARB's committed liquidity facility (CLF) provide banks with incentives to hold sovereign debt.⁴ The largest six banks, on average, hold close to 90 percent of HQLA in Level 1 unencumbered assets, which are mainly in domestic government securities and central bank reserves. The largest banks act as primary dealers in the sovereign debt market, absorbing and passing on the debt, and market makers in the secondary market (SARB, 2021). Amid low growth for a protracted period, banks and nonbank financials might have also opted for holding government bonds over other assets.

Holdings of government securities relative to assets have increased for banks but remained relatively low for nonbanks in South Africa (Figure 2). An analysis of the largest 6 banks ("top 6"), representing a little over 90 percent of system assets, and the rest ("other banks") shows that the holdings of government securities, bonds, and T-bills by the top 6 moderated from 6–8 percent of assets in the 1990s to nearly 4 percent in early-2008. Since then, such holdings rebounded to around 8 percent of assets by end-2011, with bonds representing around 60 percent. Bank holdings of government securities started to rise again in 2017 and reached somewhat above 12 percent of assets by January 2021. The increase was driven mainly by bond holdings, raising the bonds' share of total holdings to 75 percent. Holdings of government securities by "other banks" marginally moderated to somewhat below 5 percent of assets by early-2008. Since then, such holdings rose to nearly 25 percent of assets in January 2021. The increase was due mainly to T-bill holdings, taking their share of total securities holdings to around 70 percent. By contrast, nonbank financial institutions shed their government securities holdings from close to 35 percent of assets in the 1990s to around 15 percent in the 2000s. The ratio rose moderately to 17 percent by mid-2020, due mainly to holdings by "other financial institutions (OFIs)", which include mutual funds and collective investment schemes.

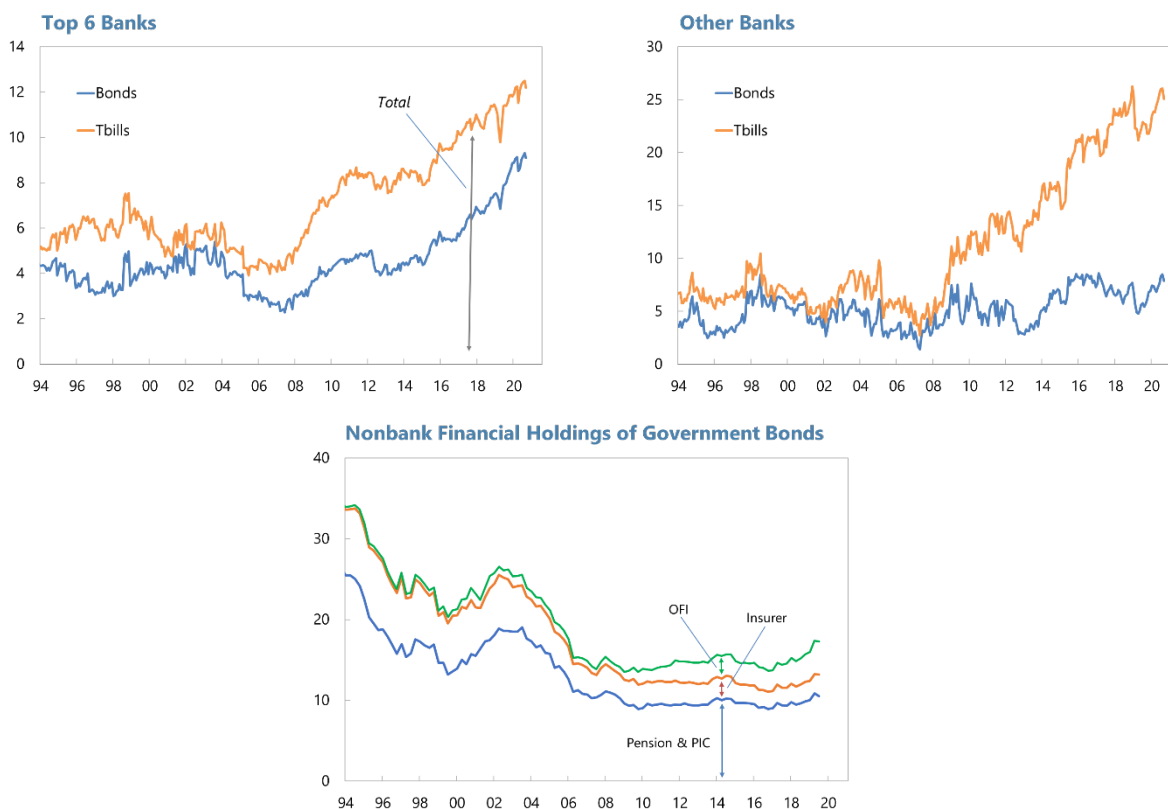
Cross-country comparisons suggest that relative to assets, government bond holdings by the South African financial sector are broadly comparable to the cross-country average (Figure 3). Data for South Africa are compared to those for all countries for which data are available. South African banks' government bond holdings as a share of assets were relatively low in the early-2000s, near the first quartile of 99 countries. Holdings then moved up to the cross-country median in the late-2000s, and broadly tracked the gradual increase in the median to date. Unlike banks, nonbanks held relatively large amounts of government bonds as a share of assets in the early-2000s—at around the third quartile of 37 countries. After declining toward the

³ Findings by Comand et al. (2014) suggest that fiscal space (measured by the ratio of debt on total tax revenue) and changes in investor expectations about governments' debt sustainability (captured by shocks to sovereign credit spreads) were key determinants of the surge in home bias in a number of Eurozone countries during 2007–12. Furthermore, De Marco and Macchavello (2014) show that in Europe, banks with a significant government ownership exhibited a higher home bias conditional on receiving liquidity injections by their governments—the effect was found to be more than twice as large for peripheral banks than for other banks.

⁴ CLF was introduced as the stock of sovereign debt was not sufficient to meet banks' HQLA needs. Banks using IRB apply positive risk weights but they are relatively low. Banks using the standardized approach apply zero risk weights.

cross-country median in the early-2000s, the ratio remained broadly flat to date, thus closing the distance from the cross-country median, which gradually increased. As of September 2020, South African bank holdings of government bonds were somewhat below the cross-country median of 129 countries, but above the levels in Brazil, Mexico, and Turkey. South African nonbanks were positioned somewhat below the cross-country median of 62 countries, similar to Turkey and above Mexico.

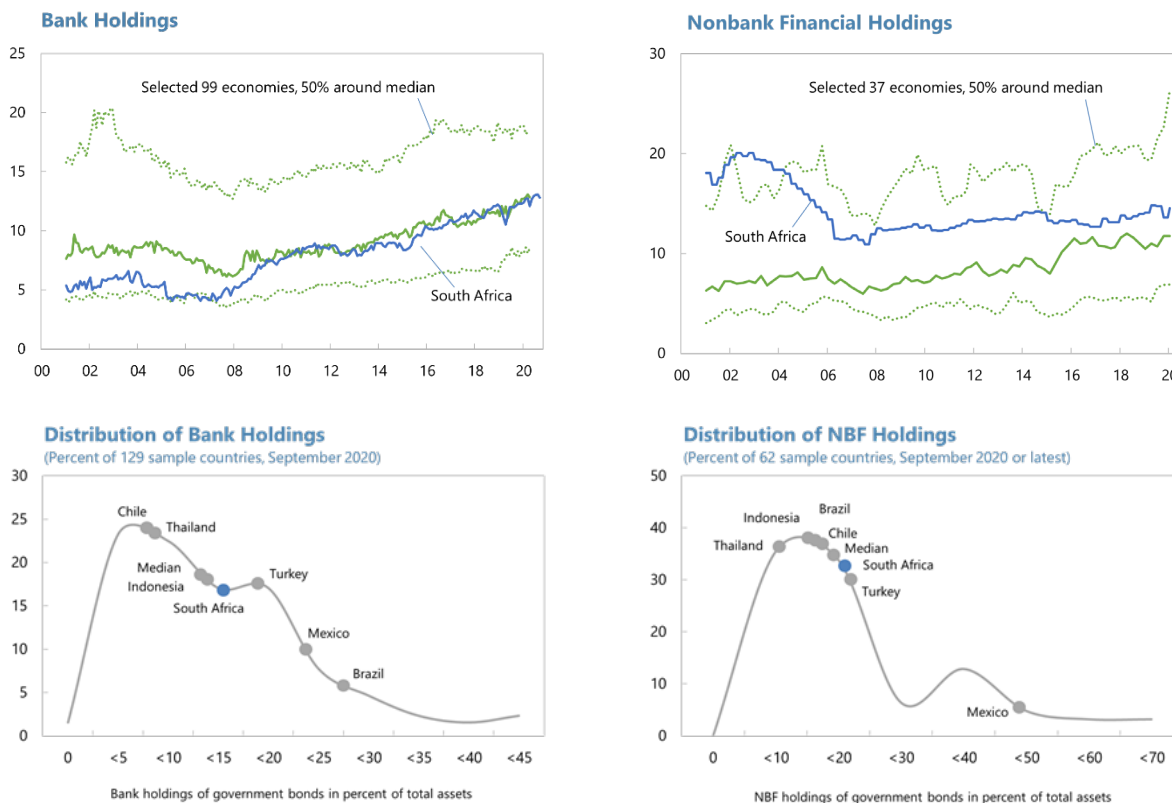
Figure 2. Bank and Nonbank Financial Institutions' Holdings of Government Securities
(Percent of respective system assets, stacked)



Sources: Haver, IMF IFS, and IMF staff calculations.

Relative to the stock of bonds outstanding, holdings by nonbanks and nonresidents appear relatively high in South Africa than in other countries (Figure 4). Compared with selected EMEs (in the Sovereign Debt Investor Base), South African banks have notably increased their government bond holdings as a share of the total stock during the COVID-19 pandemic, but their holdings still remain below the EME median. Nonbanks progressively reduced their government bond holdings as a share of the total stock through the early-2010s, but still remain in the top quartile. Nonresident holdings rose from around the median in the early-2000s to the top quartile in the mid-2010s and have remained there even after nonresidents sold government bonds during the COVID-19 pandemic.

Figure 3. Bank and Nonbank Financial Institutions' Holdings of Government Securities
(Percent of assets)



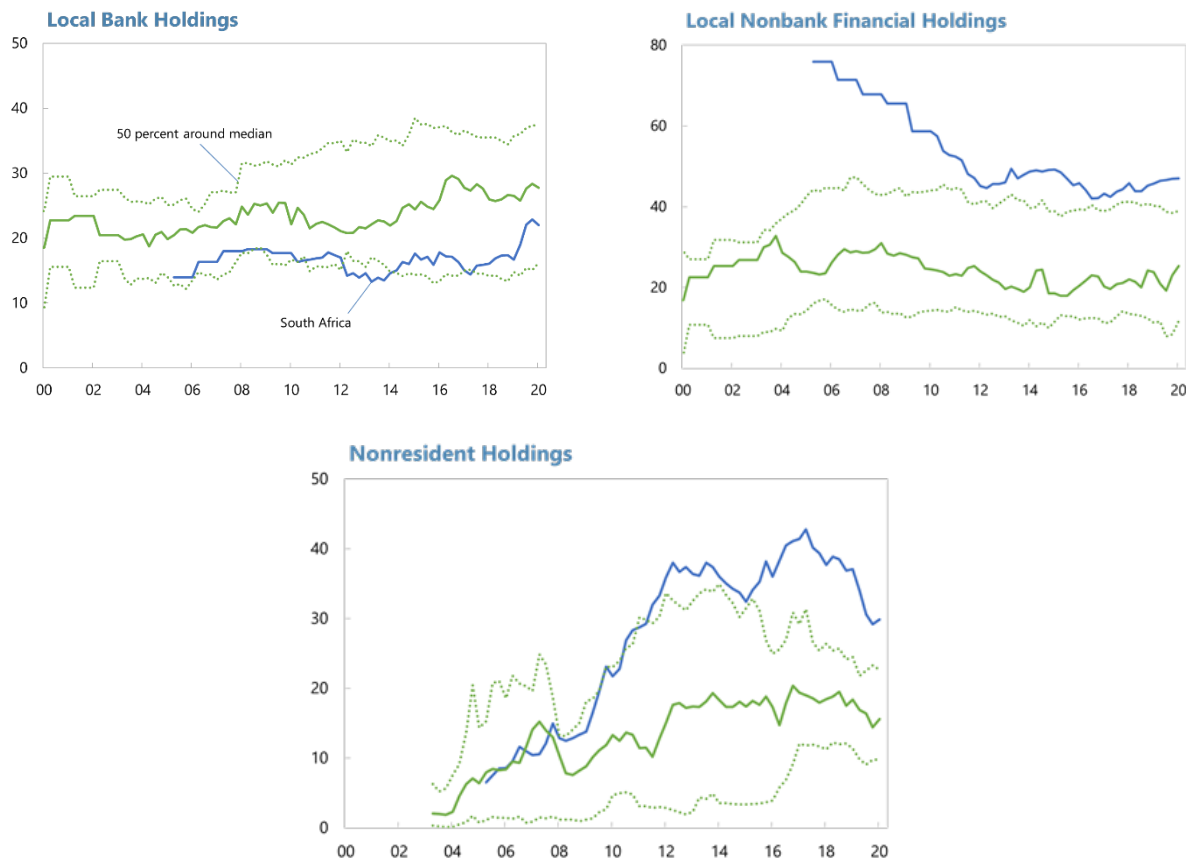
Sources: Haver, IMF IFS, and IMF staff calculations.

Looking ahead, the cost of funding for the sovereign, and for the economy more broadly, could increase (Figure 5). Generally, banks would hold more government bonds when valuation becomes attractive. Meanwhile, if risks on their own balance sheets rise, banks would attempt to hold more capital and, to compensate for the cost, would seek even higher yields to hold government bonds. Indeed, a simple correlation analysis suggests that banks in South Africa tend to increase their holdings of government securities when the yield curve steepens (potentially as government securities' valuation becomes more attractive). Moreover, a recent SARB econometric analysis (Makrelov et al., 2021) suggests that higher fiscal risks would prompt banks to increase their capital as a mitigant, making it more expensive to hold such bonds.⁵ Indeed, IRB banks have been increasing risk weights for sovereign exposure up to 10 percent in line with the rising public debt ratio and weakening sovereign credit ratings. In addition, South African sovereign bond valuations could become more volatile, potentially increasing the risk of large valuation losses. Such losses could compress profitability and capitalization to the extent that the larger four banks mark to market roughly one half of their government bond

⁵ The analysis is based on actual capital buffer data from the South African Prudential Authority and dynamic panel data econometric methods by Arellano and Bond. While the positive relationship between the sovereign risk premia and capital buffers is found to be robust across different specifications, it is based on past data. Thus, it is not clear whether South African banks will always be able to increase their capital buffers in a hypothetical situation of prolonged high elevated sovereign risk, as banks' balance sheets would be severely strained.

holdings (Table 1). Results from the FSAP's stress tests warn about the vulnerability of banks to a weakening of sovereign credit quality.⁶ As a result, banks would demand higher yields to hold sovereign debt.

Figure 4. Resident and Nonresident Holdings of Emerging Market Local Government Bonds
(Percent of stock of government bonds)



Sources: Haver, IMF Sovereign Debt Investor Base, and IMF staff calculations.

⁶ Widening of external sovereign credit spreads by 200 basis points would lead to a fall in the aggregate capital ratio by about 3 percentage points.

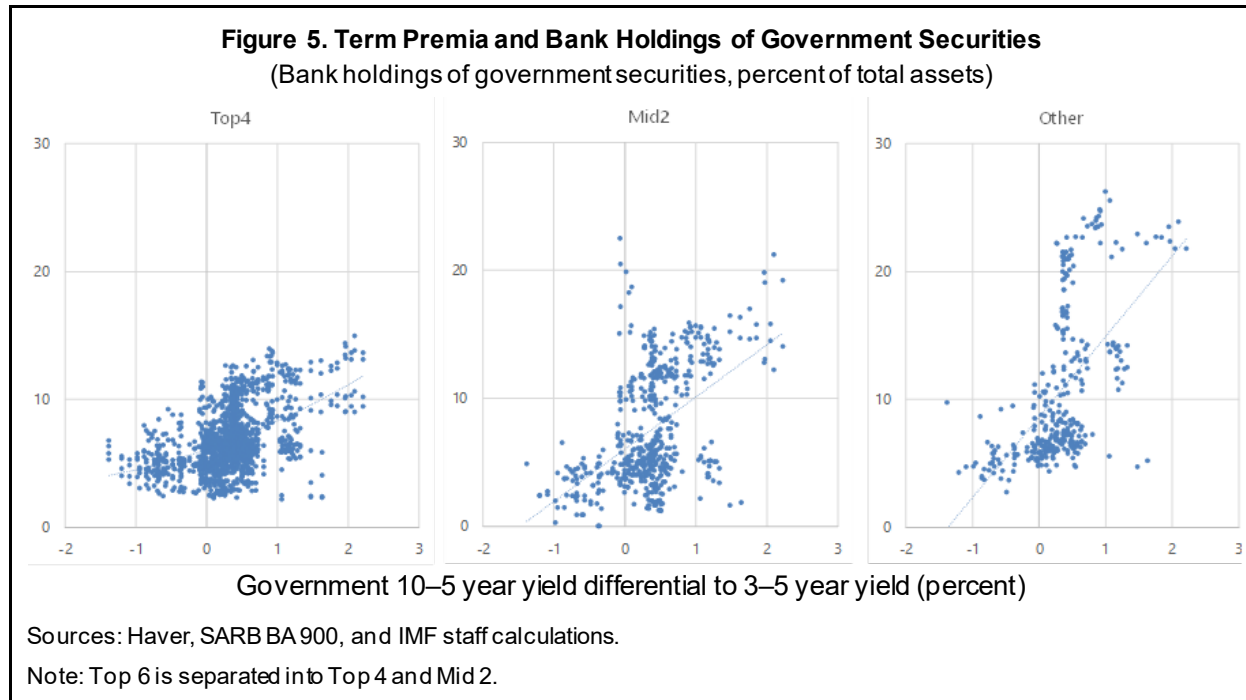


Table 1. Accounting Treatment of Bank Holdings of Government Bonds
(Percent of total)

| Bank | Trading / FV thr. Income | Available for Sale | Held to Maturity |
|------|--------------------------|--------------------|------------------|
| 1 | 67.6 | 0.4 | 32.0 |
| 2 | 53.5 | 0.2 | 46.3 |
| 3 | 52.1 | 26.9 | 21.1 |
| 4 | 44.3 | 3.2 | 52.5 |

Sources: Fitchconnect and IMF staff calculations.

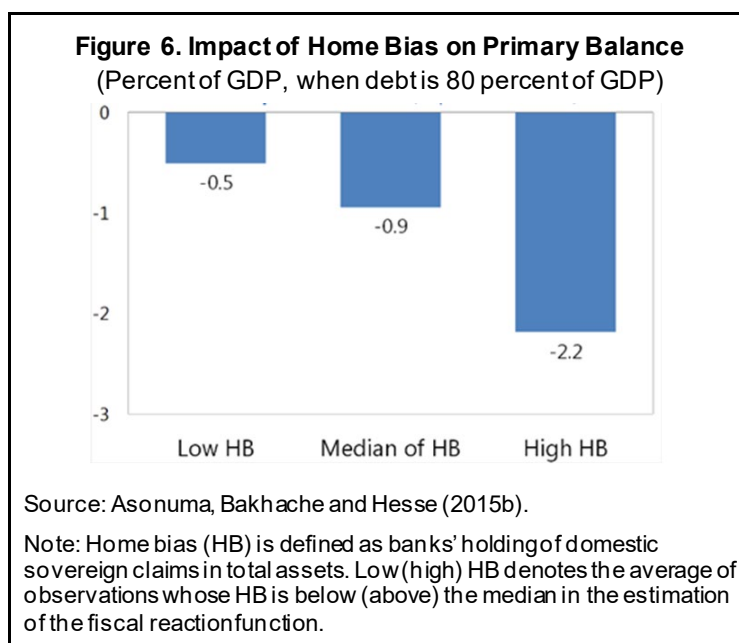
IV. Fiscal Risks' Spillovers and Feedback Loops

There are several key channels through which sovereigns could affect banks. Dell'Ariccia et al. (2018) and SARB (2021) identify exposure, safety nets, and macroeconomic linkages as key channels. The *exposure channel* reveals that bank holdings of sovereign bonds are adversely affected by falling sovereign bond prices, which could also lead to higher bank wholesale funding costs as the collateral value of sovereign bonds falls.⁷ There are also *macroeconomic channels* that can propagate shocks from higher public sector deficits and debt to higher sovereign and domestic interest rates, adversely impacting bank balance sheets. The *safety net*

⁷ According to estimates by Dell'Ariccia et al. (2018) for a hypothetical bank, a 10 percent valuation loss on its sovereign bond portfolio (representing 10 percent of the bank's assets, assuming 6½ percent leverage ratio) would imply a 15 percent reduction in the capital. Feyen and Zuccardi (2019) find that across emerging and developing economies banks' probability of default rises with the sovereign's, though the estimated effect declines after accounting for global risk sentiment.

channel stems from the contingent liabilities that governments incur as main backstops in case of banking problems, which could worsen market perception of sovereign credit quality, increase funding costs for the sovereign and the economy more broadly, and lower bank profits.⁸ With sovereign and bank ratings inherently intertwined, sovereign rating downgrades usually lead to higher bank funding costs.

There are channels of spillbacks through which the banking sector can impact the public sector balance sheet directly and indirectly (IMF, 2015). The direct effect occurs when the government intervenes in the banking sector to manage a crisis (contingent liabilities become real liabilities and worsen the debt outlook), while the indirect effect occurs when banking-sector developments affect the main drivers of debt (growth, primary balance, and interest rate). The more an economic boom is driven by banks, the deeper is the ensuing recession, with a longer recovery compared to a boom-bust cycle driven by nonbanks. Similarly, the fiscal sector's "boom-bust" cycle is more pronounced and damaging when it is driven by the banking sector.



In addition, banks' home bias in their sovereign debt holdings tends to delay fiscal consolidation. The propensity of banks to hold domestic sovereign debt over foreign sovereign debt creates a captive investor base and may provide greater fiscal breathing space, potentially delaying the necessary fiscal adjustment. Drawing on an estimation of fiscal reaction functions for advanced and emerging economies, Asonuma, Bakhache, and Hesse (2015b) show that when banks exhibit higher home bias in their sovereign debt holdings, fiscal consolidation by the sovereign tends to be slower, *ceteris paribus*.⁹ According to Figure 6, a relatively high degree of banking sector home bias (relative to the sample median) is associated with a substantially

⁸ Empirical findings by the Dell'Ariccia et al. (2018) show that banks in euro area countries with weaker sovereign credit quality (proxied by sovereign CDS spreads) tended to pay higher deposit rates. The authors attribute the finding to the view that prospective government support was perceived as less credible.

⁹ Their model specifications closely follow Ghosh and others (2011) to include both square and cubic terms of lagged debt to capture two inflexion points in the fiscal reaction function. Specifically, Ghosh and others (2011) explain the appropriateness of the nonlinear fiscal reaction function as follows: at a very low level of debt, there is little (or even a slightly negative) relationship between lagged debt and the primary balance. As debt increases, the primary balance rises, but the responsiveness eventually begins to weaken, and then actually decreases at high levels of debt.

weaker primary fiscal balance (relative to the sample of economies with a given level of public debt, which is 80 percent of GDP, somewhat above the 69 percent of GDP for South Africa in 2020). Dell’Ariccia et al. (2018) and Ongena et al. (2016) find evidence of moral suasion during the Euro area crisis, where domestic banks play a greater role than foreign banks in accommodating higher sovereign financing needs.

In South Africa, the increasing interrelationship between banks and the government poses challenges going forward. Risks from the nexus to both the financial system and the sovereign will increase absent sufficient fiscal consolidation to keep the supply of sovereign debt in check (Box 2). Risks will also increase if prospects for private investment, demand for bank credit, and broader economic activity remain weak, all of which are also partly constrained by remaining structural rigidities. Therefore, all three channels (exposure, macroeconomic, and safety net linkages) are relevant for South Africa.

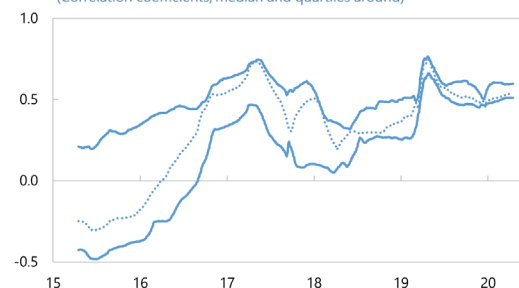
- **Exposure channel:** Banks have increased government bond holdings as discussed earlier. The valuation losses on sovereign bond holdings (and the collateral used for funding) could pressure banks’ profitability, capital position, and funding, especially amid challenging macroeconomic conditions (see *the macroeconomic channel*).
- **Macroeconomic channel:** Both banks and the sovereign affect, and are affected by, macroeconomic aggregates, such as output growth, fiscal policy, and interest rates. As a case in point, since 2010, all successive foreign currency sovereign downgrades by the main three rating agencies to eventually below investment grade (6 downgrades in total) have been matched by downgrades of banks’ credit ratings. The absorptive capacity of the banking system, along with that of nonbank financials, will affect the cost of funding sovereign debt especially if nonresidents continue to take a cautious stance.
- **Safety net channel:** The government tends to provide a backstop to banks, which creates a linkage between the credit quality of banks and the sovereign. In South Africa, lack of fiscal space could lead to a perception of a less credible government backstop, increase the financial sector’s perceived credit risk, and lead to higher funding costs than otherwise. In turn, perception of a higher chance (and scale) of fiscal support would reduce the sovereign’s perceived credit quality. More broadly, it is important, inter alia, to finalize the Financial Sector Laws Amendment Bill (FSLAB) to improve the bank resolution framework and introduce a deposit guarantee scheme.

Box 2. Feedback of Bank and Sovereign Risks in South Africa

The correlation between bank credit risk and sovereign credit risk has increased in South Africa. Daily CDS spreads estimated from the expected default frequency (EDF) are used to calculate the two-year moving correlation between the sovereign and ten banks for which the indicator is available from CreditEdge. The correlation has increased, and the dispersion has tightened over the years, mainly as small banks’ correlation with the sovereign moved from either negative or small positives to levels comparable with large banks’ correlation. Some of the increases likely reflect perception of higher risk, which tends to push the asset price correlation higher.

Indicator of Bank-Sovereign Nexus

(Correlation coefficients, median and quartiles around)



Sources: CreditEdge and IMF staff calculations.
Note: Based on 2-year rolling correlation FVCDs levels for 10 banks and the sovereign.
FVDS = credit default swap (CDS) spreads implied by expected default probability (EDF).

V. Fiscal Cost of Banking Crises in the Literature

Over the past four decades, banking crises have contributed to large output losses and fiscal costs.

Empirical evidence shows that the median output losses from banking crises are 35 percent of GDP in high-income countries and 14 percent of GDP in low- and middle-income countries. In the former, the larger size of their financial systems and longer crisis duration contributed to the higher output cost (Laeven and Valencia, 2018). Similarly, the median increase in public debt in the four years after a banking crisis is larger in high-income countries (a little over 20 percent of GDP) than in low- and middle-income countries (16–17 percent of GDP), probably as larger fiscal space allowed high-income countries to pursue greater countercyclical policies and use automatic stabilizers (IMF, 2015). There is also a large variation across countries—during the Asian financial crisis, Indonesia’s fiscal costs reached more than 50 percent of GDP, while during the global financial crisis, fiscal costs in Iceland and Ireland exceeded 30 percent of GDP (Dell’Ariccia et al., 2018).¹⁰

A number of factors drive the fiscal costs of banking crises. Direct fiscal costs of banking crises were higher in countries where banks were more leveraged and reliant on external wholesale funding prior to the crises (IMF, 2015). Banks that are dependent on external wholesale funding usually face higher rollover risks and possibly solvency risks that may necessitate greater public funds for preemptive recapitalization. Countries that guarantee the entire bank liabilities during a crisis may limit upfront deposit disbursements or issuance of debt, but face, on average, higher direct fiscal costs (see also Dell’Ariccia et al., 2018). By contrast, direct fiscal costs are found to be lower in countries with higher quality of supervision and greater credibility that the government would provide sufficient financial safety nets, such as broad deposit insurance coverage. Also, swifter government intervention tends to lower fiscal costs ex post (Laeven and Valencia, 2010).

There are several lessons for South Africa from the experiences of banking sector stress elsewhere. In general, South Africa’s banks have strong capital and liquidity buffers and are well regulated. They have navigated both the Global Financial Crisis in the late-2000s and the ongoing pandemic well. Stress tests by the joint IMF–World Bank FSAP show their resilience to adverse shocks. However, rising public-sector fiscal deficits and debt amid an increase in sovereign risk premia could lead to concerns about banks’ increasing holdings of domestic sovereign debt. This would be particularly the case if weak macroeconomic conditions for a protracted period challenge the domestic banking system.

VI. Policy Implications: Mitigating the Financial Sector-Sovereign Nexus Risks

Macroeconomic policies are the first line of defense and using potential regulatory measures would take the authorities into new territory in South Africa. Fiscal consolidation and structural reforms that IMF staff has recommended will help reduce the supply of sovereign debt, boost medium-term growth, improve banks’ lending opportunities, and further strengthen bank capital buffers. Mitigating risks from the financial sector-sovereign nexus using regulatory measures would be a new approach, with few countries currently choosing to resort to such measures.

The literature has advocated several key principles as to how risks associated with the financial sector-sovereign nexus could be addressed. Finalizing the FSLAB, enhancing the resolution framework, and

¹⁰ In contrast, in a number of European countries, the fiscal costs of systemic banking crisis were not as large during the global financial crisis (Figure 4 in Dell’Ariccia et al., 2018).

introducing a deposit guarantee scheme will go a long way in enhancing the safety net channel. Dell’Ariccia et al. (2018) argue that buffers would usefully reduce risks from the bank-sovereign nexus—stronger bank capital, sound fiscal positions, and prudent macro-structural policies help reduce risks. Avoiding measures, such as onerous concentration limits, that might have unintended pro-cyclical consequences, is important. Unintended consequences could take the form of an excessive reduction of liquidity, bond market pressures, or other unwarranted macro-financial dynamics. These unintended consequences could be especially problematic during a sharp economic downturn amid declining sovereign bond prices.

The following carefully calibrated regulatory measures to alleviate the bank-sovereign nexus, discussed during the 2021 FSAP, would be useful:

- ***Increasing risk weights on sovereign bond holdings.*** IRB banks have already increased risk weights on their holdings of domestic sovereign debt and therefore hold more capital against them. Similarly, under national discretion, a (relatively low) risk weight may be applied to domestic sovereign debt denominated and funded in domestic currency while being mindful of potential pro-cyclical effects.
- ***Applying Pillar 1 or 2 capital surcharges.*** Surcharges could be applied on holdings of domestic sovereign bonds only above certain thresholds. Such surcharges would be calibrated to reflect perceived risks and discourage excessive concentration, while limiting risks of unintended side-effects (e.g., an overly higher cost of meeting liquidity requirements).
- ***Introducing a quantitative measure to reduce concentration.*** As an important downside risk, putting a cap on concentration could create ‘cliff effects’, that is, as bank holdings of domestic sovereign debt suddenly rise either close to or past the limits, banks might quickly shed “excess” bond holdings.

The process of potential implementation would be crucial:

- To achieve the objectives, the measures would need to be gradually introduced, carefully calibrated, and clearly communicated.
- The measures could best be introduced after the ongoing normalization of the COVID-19-related prudential requirements has been completed.
- A reasonable transition period will be needed to give banks time to adjust their balance sheets. An announcement of envisaged near-term measures, with the applicable transition period, would help prevent further intensification of the nexus and smooth adjustment.

VII. Summary and Way Forward

The financial sector-sovereign nexus is relatively moderate at present but the PA should continue to monitor risks and analyze potential measures in South Africa. While options to mitigate such risks through the use of regulatory measures can be explored, such regulatory efforts need to be supported by both fiscal consolidations to reduce the supply of government debt and structural reforms to boost growth durably to help contain risks from the nexus to both the financial system and the sovereign. More broadly and beyond South

Africa, since the onset of the COVID-19 pandemic, financial institutions in many EMEs have increased their holdings of domestic sovereign debt, tightening the linkage between the health of the financial system and the level of sovereign debt. The analysis presented in the paper could be usefully broadened to other EMEs to eventually inform authorities and regulators in other jurisdictions as they think through measure to address related risks.

References

- Asonuma, T., S. Bakhache, and H. Hesse. 2015a. "Determinants of banks' home bias," 2015, [VOX](#) blog.
- _____. 2015b. "Is Banks' Home Bias Good or Bad for Public Debt Sustainability?" IMF Working Paper 15/44, (Washington: International Monetary Fund).
- Basel Committee on Banking Supervision. 2017. "The Regulatory Treatment of Sovereign Exposures." Discussion Paper, Bank for International Settlements, Basel, December.
- Bouis, R. 2019. "Banks' holdings of government securities and credit to the private sector in emerging market and developing countries, IMF Working Paper 19/224, (Washington: International Monetary Fund).
- Cornand, C., P. Gandre, and C. Gimet. 2014. "Increase in Home Bias and the Eurozone Sovereign Debt Crisis", Working Paper GATE 2014–19.
- De Marco, F., and M. Macchiavelli. 2014. "The Political Origin of Home Bias: The Case of Europe", manuscript, Boston College.
- Dell'Ariccia, G., C. Ferreira, N. Jenkinson, L. Laeven, A. Martin, C. Minoiu, and A. Popov. 2018. "Managing the Sovereign-Bank Nexus," IMF Research Departmental Paper (Washington: International Monetary Fund).
- Du, W., and J. Schreger. 2016. "Local Currency Sovereign Risk," *The Journal of Finance*, 71, 3, 1027–69.
- Feyen, E., and I. Zuccardi. 2019. "The Sovereign-Bank Nexus in EMDEs," *World Bank Policy Research Working Paper 8950*
- Ghosh, A. R., Kim, J. I., Mendoza, E. G., Ostry, J. D., and M. Qureshi. 2011. "Fiscal Fatigue, Fiscal Space and Debt Sustainability in Advanced Economies," NBER Working Paper No. 16782.
- International Monetary Fund. 2014. "The Fund's Lending Framework and Sovereign Debt, Annexes", International Monetary Fund, Board Paper.
- _____. 2015. "From Banking to Sovereign Stress: Implications for Public Debt," International Monetary Fund, Board Paper.
- Laeven, L., and F. Valencia. 2010. "Resolution of Banking Crises; The Good, the Bad, and the Ugly." IMF Working Paper 10/146 (Washington: International Monetary Fund).
- _____. 2018. "Systemic Banking Crises Revisited" IMF Working Paper 18/206 (Washington: International Monetary Fund).
- Makrelov, K., N. Pilay, and B. Morule. 2021. "Fiscal risks and their impact on banks' capital buffers in South Africa," South African Reserve Bank Working Paper Series WP/21/08.

Ongena, S., A. Popov, and N. van Horen. 2016. "The Invisible Hand of the Government: Moral Suasion during the European Sovereign Debt Crisis." CEPR Discussion Paper 11153, Center for Economic Policy and Research, Washington, DC.

Reinhart, C., and M. S. Sbrancia. 2011. "The Liquidation of Government Debt", NBER Working Paper No. 16893.

South African Reserve Bank (SARB). 2021. "Financial Stability Review," May 2021.

Smith, A., M. van der Linde, and M. van der Ven. 2020. "The Bank-Sovereign Nexus amid COVID-19," SARB Financial Stability Focus, December 2020.



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