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**Authorised for publication by:**

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SOUTH AFRICAN RESERVE BANK

# SARB Special Occasional Bulletin of Economic Notes

## February 2024

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# Special OBEN 2401\* – February 2024

## High public debt and its implications for monetary and financial stability

*Fabrizio Zampolli*<sup>1</sup>

### Abstract

Public debt has increased substantially since the Great Financial Crisis in both advanced and emerging market economies and is set to increase further post-pandemic. This note discusses what risks higher public debt poses for price and financial stability as well as the policy adjustments needed to mitigate these risks.

### 1. Introduction

The Great Financial Crisis (GFC) and the COVID-19 pandemic left a legacy of higher public debt in both advanced economies (AEs) and emerging market economies (EMEs). Looking ahead, strong spending pressures and weakening trend growth are likely to put additional strain on public finances. Hence, for many countries, the future is one in which public-debt-to-gross-domestic-product (public-debt-to-GDP) ratios might be even higher than today.

This brief note discusses what this means for price and financial stability.<sup>2</sup> After illustrating the scale of the fiscal problems, the note explains how the fiscal outlook may translate into inflationary pressures. Evidence shows that the inflationary effects of fiscal deficits depend on the fiscal and monetary policy regimes in place. The evidence also points to sovereign risk as an important driver of inflation in EMEs through its impact on the exchange rate.

The note then discusses how the worsening of the sovereign debt outlook may also lead to higher risk for the financial sector. As sovereign debt securities play an important role as a safe store of value, as collateral and as a source of liquidity, an increase in sovereign risk can lead to losses for financial institutions and stress in financial markets. Moreover, without sustainable public finances, it may not be possible to support financial institutions should a financial crisis materialise.

The note ends by highlighting how policy can mitigate these risks. It emphasises the need to preserve and further strengthen the institutions presiding over fiscal and monetary policy as well as the need for policymakers to recognise the limitations of macroeconomic stabilisation policies.

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<sup>1</sup> Fabrizio Zampolli is the Head of Emerging Markets at the Bank of International Settlements (BIS).

<sup>2</sup> This note is based on the author's presentation at the 2023 SARB Biennial Conference. It largely draws on Chapter II of the Bank for International Settlements' 2023 Annual Economic Report (BIS 2023), as well as several papers that the author has written with colleagues over the past few years. Burcu Erik and Berenice Martinez provided excellent research assistance.

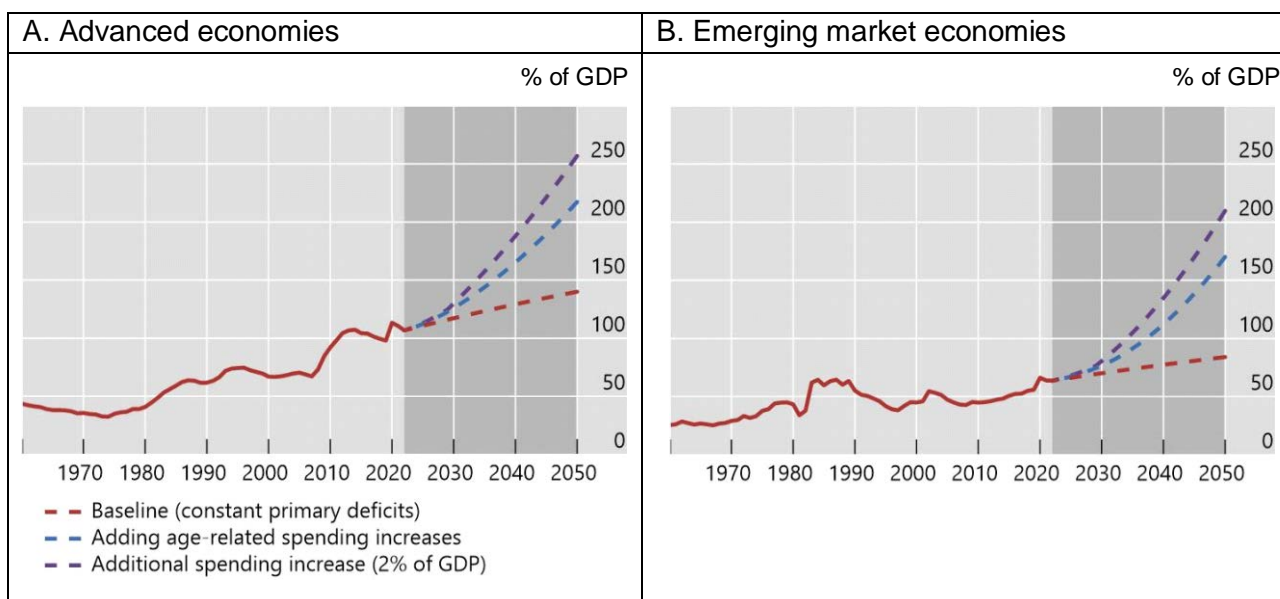
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As stressed in the Bank for International Settlements' (BIS's) 2023 Annual Economic Report (BIS 2023: 70), these policies “cannot be the engines of lasting economic growth”.

## 2. Public debt projections

Despite large deficits, public debt did not increase as much as forecast in the early months of the pandemic. In some cases, debt-to-GDP ratios changed little or even declined. This was a result of the unexpected surge in inflation, which boosted fiscal balances and nominal income. Nevertheless, the long-term outlook for sovereign debt is worrying.

**Figure 1: Public debt projections**



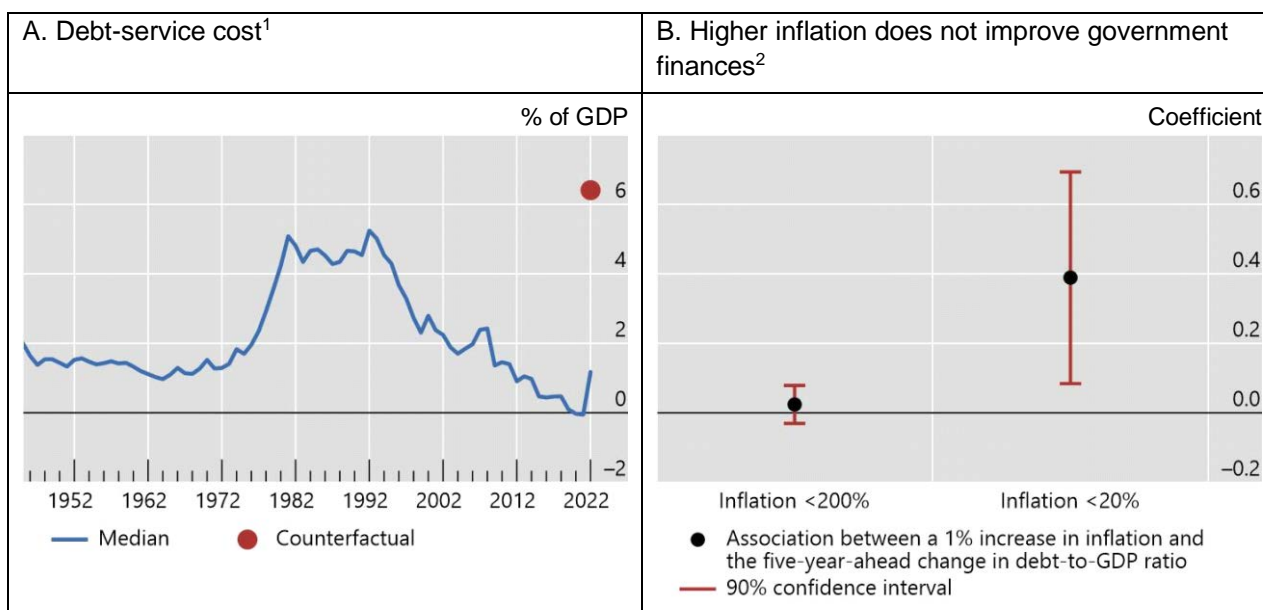
Notes: Baseline projections assume an interest rate-growth differential equal to  $-1\%$  and constant primary deficits as percentages of GDP as of 2022. Age-related spending is based on IMF projections for pension and healthcare spending for 2030 and 2050. For the additional spending increase scenario, it is assumed that the primary deficit will increase by 2% of GDP by 2030 and stay at that level afterwards. Historical debt is computed using a smaller set of countries when data are not available. Simple average across AEs = AT, BE, DE, ES, FI, FR, GB, IE, IT, JP, NL, PT and US. EMEs = AR, BR, CL, CN, CO, CZ, HU, ID, IL, IN, KR, MX, PL and ZA.

Sources: International Monetary Fund (IMF), Organisation for Economic Co-operation and Development (OECD) and BIS.

The debt projections shown in Figure 1 provide a vivid illustration. Absent fiscal consolidation (and regardless of the recent inflation spike), debt ratios will increase in both AEs and EMEs (red line). Furthermore, additional spending pressures will materialise. First, pension and health expenditure related to population ageing are estimated to increase (on average across countries) by about 4% and 5% in AEs and EMEs, respectively. Without any adjustment, this would cause debt to exceed 200% and 150% of GDP by 2050 in AEs and EMEs, respectively (blue line). Second, spending to support the transition to a greener economy and military spending are also poised to increase. As an illustration, if this extra spending amounts to 2% of GDP, debt will be 50 percentage points higher in both groups of countries (purple line).<sup>3</sup>

<sup>3</sup> See also Cecchetti, Mohanty and Zampolli (2011) for an earlier discussion of the challenges posed by age-related spending.

**Figure 2: Inflation and the interest-growth differential**



Notes: <sup>1</sup> The sample covers AR, AT, AU, BE, BR, CA, CH, CL, DE, DK, ES, FR, GB, GR, IN, IT, JP, NL, NO, NZ, PT, RU, SE and US. Statistics are computed using a smaller set of countries when data are not available. Government debt-to-GDP ratios are multiplied by the simple average of short-term and long-term interest rates, where government debt is general (if not available, central) government core (if not available, total) debt at nominal (if not available, market) value. The counterfactual median debt service cost is constructed using the interest rate levels prevailing in 1995.

<sup>2</sup> Coefficients are obtained by regressing changes in general government debt as a percentage of GDP between year  $t$  and  $t+5$  over inflation in year  $t$  and country fixed effects, excluding periods when a debt restructuring took place. The sample includes annual data between 1970 and 2022 for AE, AR, AT, AU, BE, BR, CA, CH, CL, CN, CO, CZ, DE, DK, DZ, ES, FI, FR, GB, GR, HK, HU, ID, IE, IL, IN, IT, JP, KR, MA, MX, MY, NL, NO, NZ, PE, PH, PL, PT, RO, RU, SA, SE, SG, TH, TR, US and ZA.

Sources: Abbas et al. (2010), Jordà, Schularick and Taylor (2016), European Commission, IMF, OECD, Bloomberg, Datastream, Global Financial Data, Oxford Economics, national data and BIS.

These projections assume that the effective interest rate paid on debt will remain below GDP growth. Should interest rates exceed growth rates again, debt pressures would be considerably stronger. For example, if today interest rates were as high as those in the mid-1990s, all else equal debt service burdens would over time exceed their historical peak, given higher debt levels today (Figure 2A).

It is important to notice that the projections in Figure 1 are not forecasts. Instead, they are meant to illustrate the scale of the challenge faced by policymakers. Most likely, policymakers will take corrective action to prevent debt from reaching levels that would call into question fiscal sustainability. This may involve measures to boost fiscal revenues, in addition to cutting other forms of expenditure. All told, public debt levels have been trending up in AEs over the past 50 years and, after a period of relative stability, they have been steadily increasing in EMEs too since the GFC. This suggests that any fiscal correction may – if past trends are a guide to the future – only stabilise debt at a higher level than today.

Can higher inflation contribute to the necessary fiscal adjustment? If inflation has helped reduce or keep debt ratios stable during the recovery from the pandemic, why can it not help in the future? The consensus among economists – also confirmed by some recent research at the IMF (such as

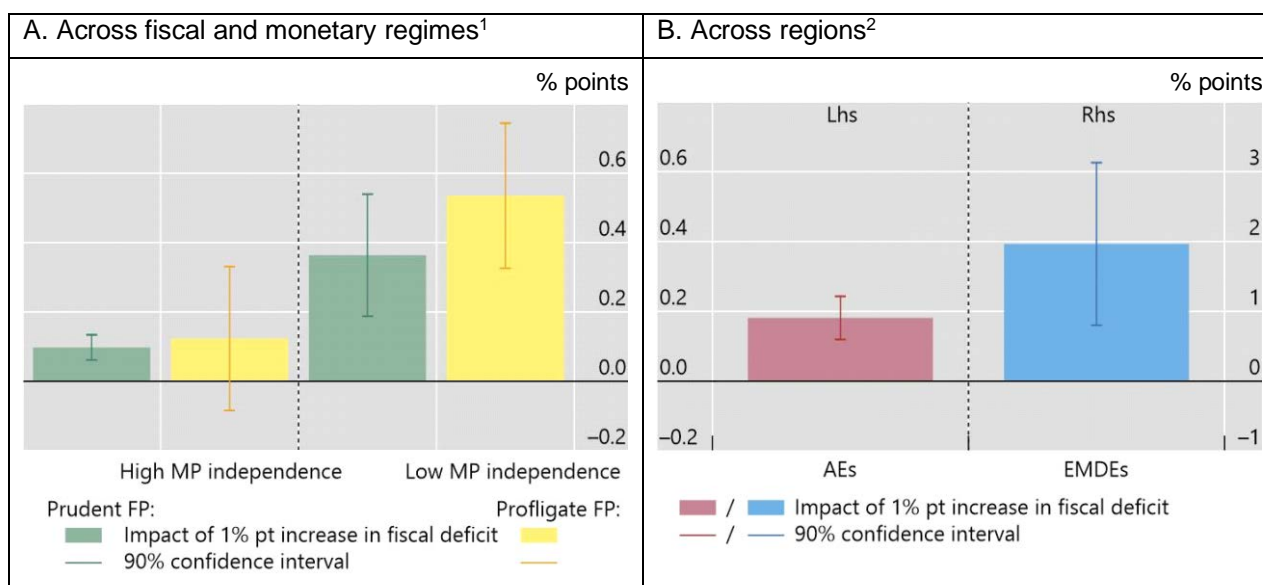
IMF 2023) – is that higher inflation can reduce debt ratios only temporarily, especially if inflation is unexpected. In the long run, interest rates, public wages, social transfers and other public spending are likely to catch up with inflation, if this does not occur automatically through indexation. Figure 2B shows that, if anything, higher inflation has led to higher – not lower – debt-to-GDP ratios. Even at high inflation rates, the impact has hardly been different from zero.

### 3. Risks to price stability

When public debt is on an unsustainable trajectory, risks to inflation increase. The historical evidence for AEs spanning several decades shows that the inflationary effects of expansionary fiscal policy depend on the fiscal policy regime and monetary policy regime (Banerjee et al. 2022): as shown in Figure 3A, they are much larger when the fiscal policy regime is less concerned with fiscal sustainability – in other words, when fiscal policy is profligate as opposed to prudent.<sup>4</sup>

Central bank independence is also key to the outcome: the inflationary effects of fiscal stimulus are much larger when the lack of fiscal prudence is accompanied by a low degree of central bank independence. On the contrary, strong central bank independence is associated with significantly smaller effects, even in the case in which fiscal policy is not prudent. Thus, a highly independent and credible central bank can help keep inflation low even in the presence of persistent fiscal deficits.

**Figure 3: Inflationary effects of fiscal stimulus**



Notes: MP = monetary policy, FP = fiscal policy. <sup>1</sup> Based on Banerjee et al. (2022). Annualised effect on inflation over the next two years. Coefficient intervals at 90% confidence bands clustered by country. The sample covers AT, AU, BE, CA, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, JP, NL, NO, NZ, PT, SE and US. Fiscal regimes are classified as prudent or profligate based on Mauro, Romeu and Zaman (2015). Monetary policy independence is defined as being high or low based on legal limitations on central bank lending to the public sector in Romelli (2022). Estimation sample from 1972– 2011 upon data availability.

<sup>2</sup> Based on Banerjee et al. (2023). Effect on inflation after one year. Coefficient intervals at 90% confidence bands clustered by country. The sample covers AEs = AT, AU, BE, CA, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, JP, NL, NO,

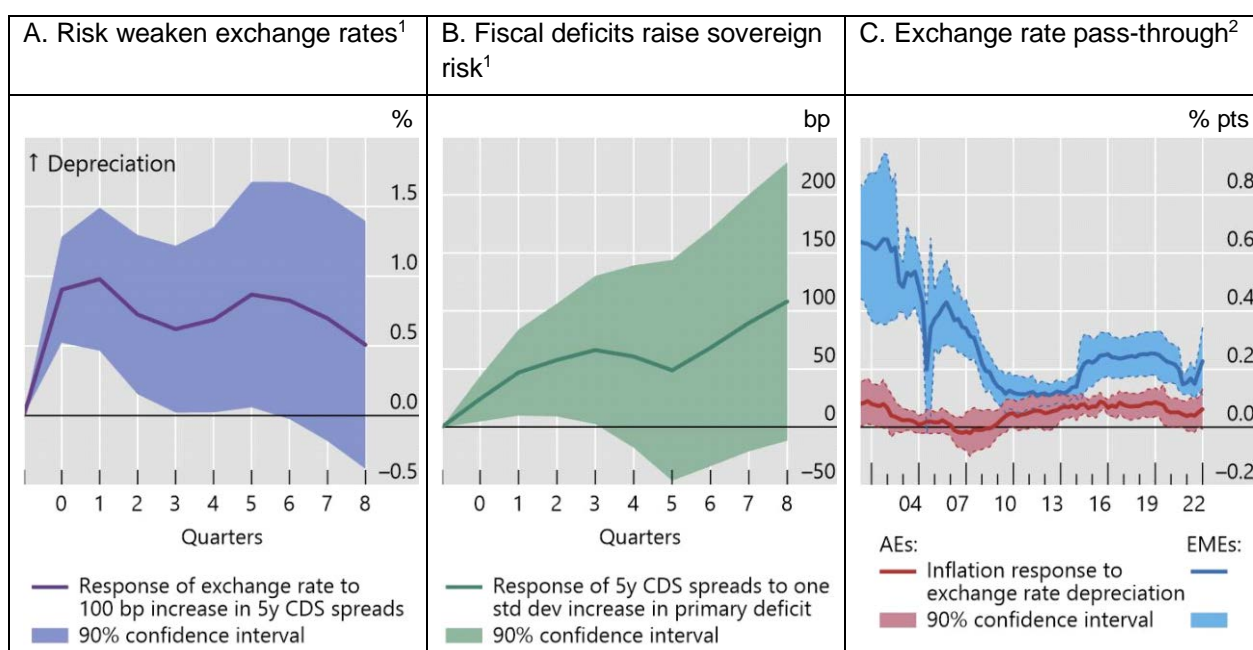
<sup>4</sup> Prudent fiscal policy means that the primary balance leans against higher debt, given the cyclical position of the economy and other factors. Profligate means that fiscal policy does not respond to higher debt. See Mauro, Romeu and Zaman (2015).

NZ, PT, SE and US. Emerging market and developing economies (EMDEs) = BO, BR, CL, CN, CO, DO, GH, HK, HN, HT, HU, ID, IL, IN, KR, MX, NI, PE, PH, PL, RO, RU, TH, TR, UY and ZA. The period covered is 1972–2011 upon data availability.

Sources: Banerjee et al. (2022 and 2023).

Evidence also shows that the inflationary effects of fiscal stimulus are larger in emerging market and developing economies: on average, the effect is estimated to be approximately ten times as large (Figure 3B). Furthermore, the transmission of the fiscal impulse in EMEs differs from that in AEs owing to the behaviour of the exchange rate. While the exchange rate tends to appreciate in AEs following a fiscal expansion (consistent with the typical textbook response), it tends to depreciate in EMEs (Figure 4A). Such depreciation is typically accompanied by an increase in sovereign risk, as proxied by the credit default swap (CDS) spread (Figure 4B). The fact that the exchange rate pass-through is typically larger in EMEs than in AEs (Figure 4C) also helps to explain why the inflation effect of a fiscal stimulus is higher in EMEs.

**Figure 4: Fiscal risk and inflation in EMEs – the role of the exchange rate**



Notes: <sup>1</sup> Estimates following Aguilar, Cantú and Guerra (2023) based on a sample for BR, CL, CN, CO, CZ, HK, HU, ID, IL, IN, KR, MX, MY, PE, PH, PL, RO, RU, TH, TR and ZA from Q1 2000 to Q1 2023.

<sup>2</sup> Coefficients are six-year rolling window long-run multipliers from the equation:  $Inflation_{it} = \alpha_i + \beta_t + \delta Inflation_{it-1} - \sum_{j=0}^3 \gamma_j \Delta NEER_{it-j} + \phi Outputgap_{it} + \varepsilon_{it}$ . The sample starts in Q1 1995. For details, see Jašová et al. (2019). The ranges indicate the 90% confidence intervals. AEs = AU, CA, GB, NO, NZ and SE. EMEs = BR, CL, CN, CO, CZ, HK, HU, ID, IL, IN, KR, MX, MY, PE, PH, PL, RO, RU, SG, TH and ZA.

Sources: IMF, Datastream, IHS Markit, national data and BIS.

Recent research has provided a few additional insights (Banerjee et al. 2023). First, the inflation effect is not only larger in EMEs but also strongly non-linear – that is, fiscal stimulus has a greater impact on upside inflation risks, on the right tail of the distribution, than on average inflation. Correspondingly, a fiscal expansion tends to raise the risk of future currency depreciation in a non-linear fashion as well. By contrast, there is no evidence of non-linearity for the exchange rate in AEs.

Second, the composition of debt matters: the risks to the currency and hence to future inflation are higher the larger the share of foreign currency debt and the larger the share of debt held by non-residents.

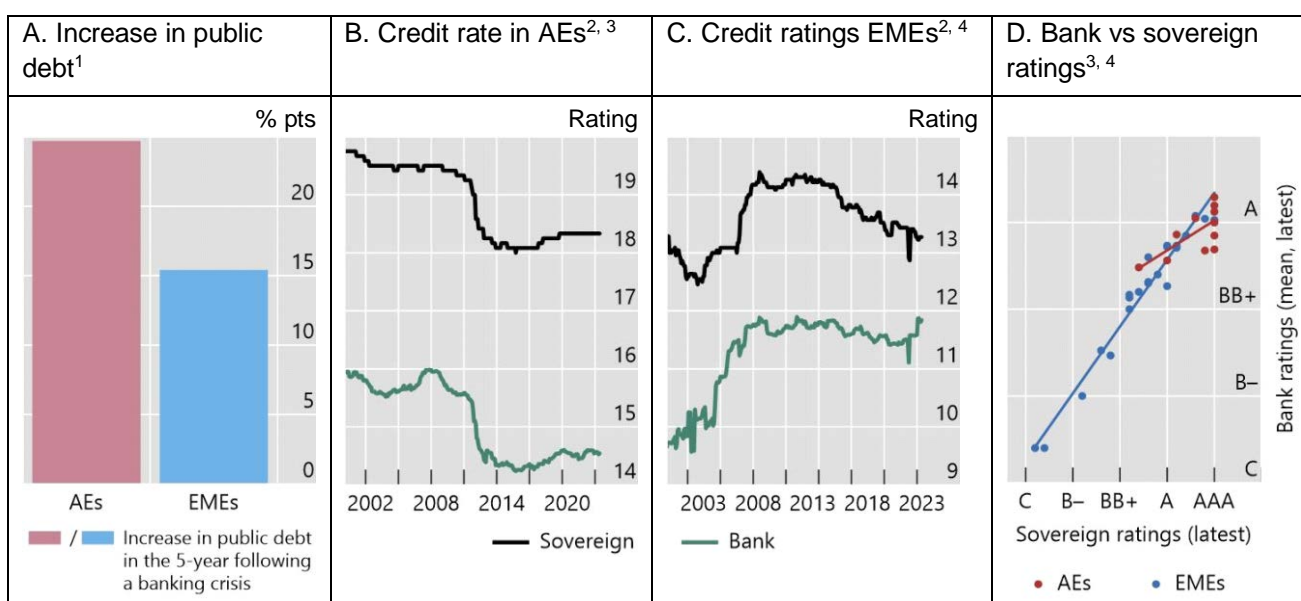
Finally, the effects of fiscal expansion on the exchange rate and inflation and their non-linearity are strongly attenuated when the central bank is inflation targeting, as well as, in the case of the exchange rate, when the country has relatively high international reserves. Thus, the good news is that an EME with a credible central bank and good buffers is more similar to an AE than to its peers with weaker institutions and policy credibility.

#### 4. Risks to financial stability

Unsustainable public finances can also weaken the financial system.<sup>5</sup> An increase in sovereign risk can lead to a repricing of government debt securities and hence losses for the financial institutions holding them. It can also lead to a deterioration of the broader economy and the loan portfolio of all banks, even those that do not have large sovereign exposures.

A weaker financial system, in turn, may lead to a further deterioration in sovereign creditworthiness. It can do so directly, as the sovereign may need to backstop the financial system, or indirectly, as the economy tanks. As shown in Figure 5A, the surge in public debt following banking crises is typically quite large, well above 10 percentage points of GDP in both AEs and EMEs.

**Figure 5: Two-way causality between fiscal risk and financial instability**



Notes: <sup>1</sup> Based on Borio, Farag and Zampolli (2023a). <sup>2</sup> Mean credit ratings across economies. <sup>3</sup> AEs = AU, CA, CH, DE, DK, ES, FR, IT, JP, NO, SE and US. <sup>4</sup> EMEs = AR, BR, CL, CN, CO, CZ, HK, HU, ID, IL, IN, KR, MX, MY, PE, PH, PL, RU, SA, SG, TH, TR and ZA.

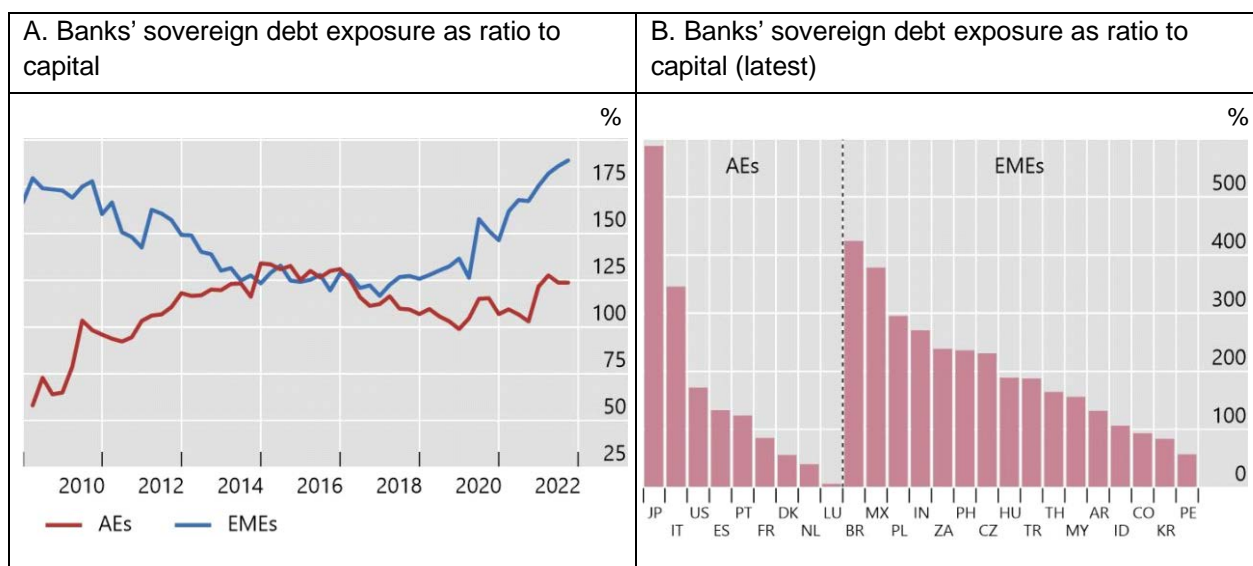
Sources: Borio, Farag and Zampolli (2023a); Fitch; S&P Global; and BIS.

The two-way causality is a key reason why government and bank credit ratings tend to co-move with each other over time and across countries (Figure 5B and Figure 5C). The latest cross-section of credit ratings across both AEs and EMEs is no exception (Figure 5D).

<sup>5</sup> For a detailed description of the various channels and the associated evidence, see for example the survey by Borio, Farag and Zampolli (2023a and b).



**Figure 6: Increasing exposure to sovereign debt**



Notes: The sample consists of AEs = AT, DK, ES, FR, IT, JP, LU, NL, PT and US. EMEs = AR, BR, CL, CO, CZ, HU, ID, IN, KR, MX, MY, PE, PH, PL, SG, TH, TR and ZA, where data are available. Banks' sovereign debt exposure refers to other depository corporations' net claims on central government and their claims on state and local government by residence, as a percentage of banks' Tier 1 capital. The reporting depository corporations comprise all solo entities resident in the country, including those which are foreign-owned subsidiaries or branches of foreign entities. Branches and subsidiaries abroad of domestically owned entities are not included. Latest corresponds to latest available quarterly figure in 2022. For AT, data up to Q3 2021; for CL, data up to Q4 2021; for SG, data up to Q4 2019.

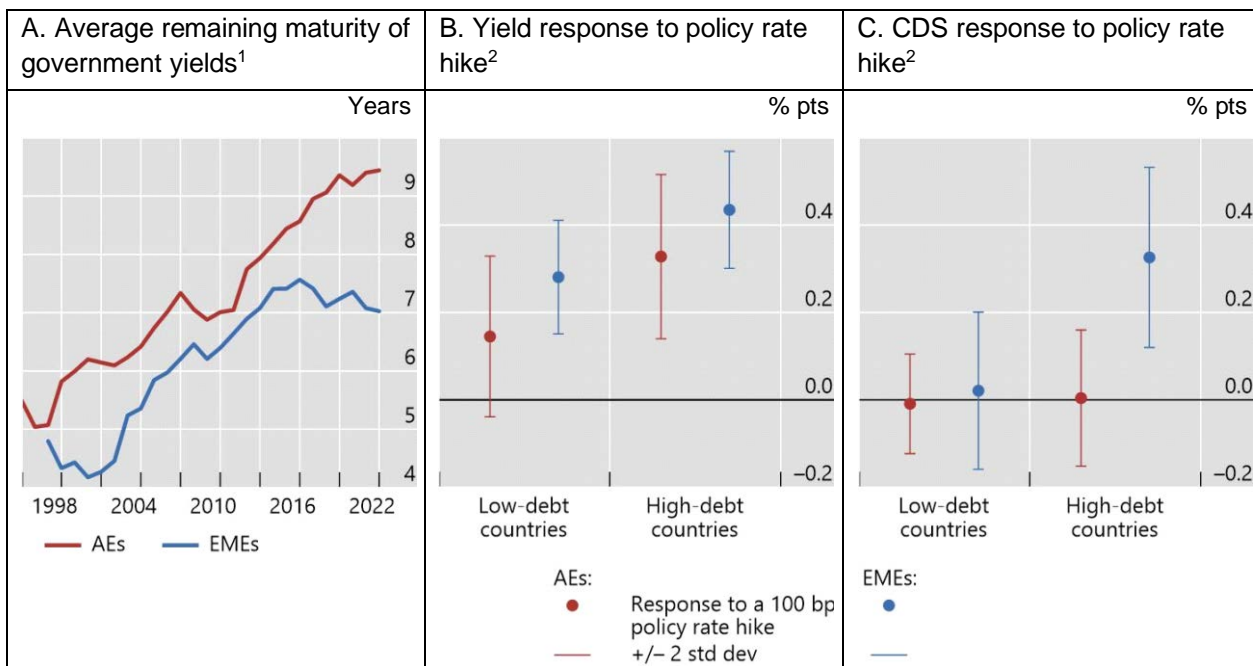
Sources: IMF, Datastream and BIS.

There seems to be greater potential today for adverse feedback between sovereign and financial risks. Since the GFC, financial institutions have absorbed growing amounts of public debt, increasing the potential for the financial sector to suffer losses. In aggregate, banks' sovereign exposures (relative to bank capital) have been on an upward trend in EMEs (Figure 6A), while they have been more stable in AEs. Furthermore, there is also considerable variation across countries, even among AEs, with banks in some jurisdictions holding several times their capital (Figure 6B).<sup>6</sup> This increase in holdings has been accompanied by a lengthening of maturities (despite large-scale asset purchase by central banks). The average maturity of sovereign debt has gone up from about five years in both AEs and EMEs to more than nine years in AEs and about seven years in EMEs (Figure 7A).

Higher sovereign debt also tends to magnify the responses of yields to changes in monetary policy rates. Specifically, the reaction of the 10-year yield to an interest rate hike of 100 basis points tends to be larger in high-debt countries (Figure 7B). The effect is also bigger in EMEs than in AEs. One reason for this is that a hike in EMEs tends to also increase sovereign risk when the country already has a high level of debt (Figure 7C).

<sup>6</sup> Non-bank financial institutions (NBFIs) have also been raising their share of sovereign debt since the GFC and now account for roughly 40% and 60% of total government bond holdings in AEs and EMEs respectively. The close links between banks and NBFIs means that distress can be easily transmitted from one sector to the other and amplified.

**Figure 7: Elevated interest risk rate**



Notes: <sup>1</sup> Simple average maturity of central government debt securities issued across countries in the region depending upon data availability. AEs = AT, AU, BE, CA, DE, ES, FR, GB, GR, IT, JP, NL and US. EMEs = AR, BR, CL, CO, CZ, HK, HU, ID, IN, KR, MX, MY, PE, PH, PL, SA, SG, TH, TR and ZA.

<sup>2</sup> Coefficients from a linear regression of quarterly changes of 10-year sovereign bond yields and five-year sovereign CDS spreads on a constant and the policy rate change, conditional on the policy rate being raised. Dots correspond to point estimates and bars to +/- two standard deviations. Low- and high-debt countries correspond to the lowest and highest quartile of the distribution of government debt to GDP. Sample covers AEs = AU, BE, CA, CH, DE, DK, ES, FR, GB, IT, JP, NL, NO, NZ, SE and US. EMEs = AR, BR, CL, CN, CO, CZ, HK, HU, ID, IL, IN, KR, MX, MY, PL, SG, TH, TR and ZA (with varying availability of individual variables).

Sources: Datastream, IHS Markit, national data and BIS.

Financial stability risks arising from government bond losses are not hypothetical. Such losses were at the heart of the turmoil in the UK gilt markets following the announcement of a “mini budget” in September 2022 and the failure of a number of banks in the US in March 2022. In future, the stress could be much more severe if the creditworthiness of some sovereigns is questioned.

## 5. Policy implications

The risks from high public debt have several policy implications. First, fiscal policy needs to ensure the sustainability of public debt going forward. In this regard, consolidation does not necessarily have to be disruptive for economic activity in the short run. To the extent that a country is not close to losing market access, fiscal consolidation could be sufficiently gradual to minimise initial output losses and make consolidation more likely to succeed.<sup>7</sup> The quality of the fiscal adjustment also matters. In particular, sacrificing public investment may be easier than taking other fiscal measures

<sup>7</sup> For a recent overview of factors that make fiscal consolidation successful, see for example Balasundharam et al. (2023).

in the short run but will translate to lower potential growth in the future, making other types of spending less sustainable.<sup>8</sup>

Second, institutional safeguards are essential. Fiscal rules and fiscal councils can encourage prudent fiscal policy in the first place and, where consolidation is needed, they can improve fiscal credibility and allow for a more gradual adjustment. Central bank independence is also key to maintaining low and stable inflation. As noted above, evidence suggests that independence can reduce the inflationary effects of fiscal stimulus even when fiscal policy is not prudent.

Third, the way monetary policy is conducted may impact fiscal space. For example, looser monetary policy may help reduce borrowing costs. However, this may generate undesired inflation without necessarily improving fiscal sustainability.<sup>9</sup> And, even in the absence of inflationary pressures, looser monetary policy may have side effects, which tend to accumulate over time in the form of greater financial vulnerabilities, including higher debt. As noted above, these vulnerabilities may ultimately reduce fiscal space. To reduce vulnerabilities, monetary policy could in the future be more tolerant of moderate – even if persistent – undershooting of the inflation target (BIS 2023). Given the self-stabilising properties of low-inflation regimes and the lower traction of monetary policy at low inflation rates, there is less need to respond aggressively to deviations from target, thereby limiting the negative side effects of monetary policy (see also Borio, Lombardi, Yetman and Zakrajšek (2023)).

Lastly, prudential and structural policies play an important complementary role. As a first line of defence against financial instability, prudential policy can reduce the build-up of financial vulnerabilities and enhance the resilience of financial institutions. In this regard, progress since the GFC has been considerable but uneven. For example, in the Basel III framework, banks' sovereign exposures continue to receive preferential treatment. Moreover, not enough progress has been made to mitigate sovereign risk for NBFIs.<sup>10</sup> Structural policies, such as increasing competition, improving the functioning of the labour market and reducing red tape, are key to reviving productivity and economic growth, which have been on a declining trend in many countries, including EMEs. Structural reforms are also a crucial factor for fiscal consolidation to succeed.<sup>11</sup>

Ultimately, what is needed to mitigate risks to price and financial stability is a shift in policymakers' mindset. As noted in Chapter II of the BIS Annual Economic Report (BIS 2023: 70), "policymakers

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<sup>8</sup> In the assessment of the fiscal policy stance and the adequacy of fiscal buffers, it would be useful to incorporate the role of financial factors in a more systematic way. For example, Borio, Lombardi and Zampolli (2017) suggest adjusting fiscal balances using the "finance neutral output gap" to take into the flattering effects of financial booms; and Borio, Contreras and Zampolli (2020) propose a method for estimating the potential fiscal cost of a systemic banking crisis.

<sup>9</sup> With inflation below target, interest rates lower than growth rates may make higher debt sustainable. However, the historical evidence indicates that countries with high debt levels tend to experience shorter periods of low interest rates and a higher probability of interest rates rising sharply. Several defaults have occurred following periods of negative differentials (see, for example, Mauro and Zhou 2021).

<sup>10</sup> See Borio, Farag and Zampolli (2023a and b) for a detailed discussion of regulatory issues.

<sup>11</sup> Structural fiscal reforms that strengthen automatic stabilisers may also help to rebuild fiscal buffers during economic expansions. See, for example, Kharroubi, Mojon and Pereira da Silva (2023).

need to have a keener recognition of the limitations of macroeconomic stabilisation policies, which cannot act as engines of growth". Monetary and fiscal policies interact with each other in ways that may reduce policy space in the future and increase instability. The chapter introduces the concept of the "region of stability" to indicate the sets of policies that are consistent with stability. Mapping this region will be an important task for future research.

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