



South African Reserve Bank Special Occasional Bulletin of Economic Notes

Special OBEN/24/01

South African Reserve Bank Special Economic Notes are a collection of descriptive and critical economic analyses with recommendations written for internal SARB discussion. They are written by staff members or fellows of the Economic Research Department and, on occasion, by consultants under the auspices of the SARB. They are released publicly on an occasional basis. This series features summaries of discussions that took place at the 2023 SARB's Biennial Conference.

Authorised for publication by:

Chris Loewald

February 2024



SOUTH AFRICAN RESERVE BANK

SARB Special Occasional Bulletin of Economic Notes

February 2024

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Enquiries
Head: Research Department
South African Reserve Bank
P O Box 427
Pretoria 0001

Tel. no.: +27 12 313-3911
0861 12 SARB (0861 12 7272)

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Special OBEN 2401* – February 2024

High public debt and its implications for monetary and financial stability

*Fabrizio Zampolli*¹

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.² 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.

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

² 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.

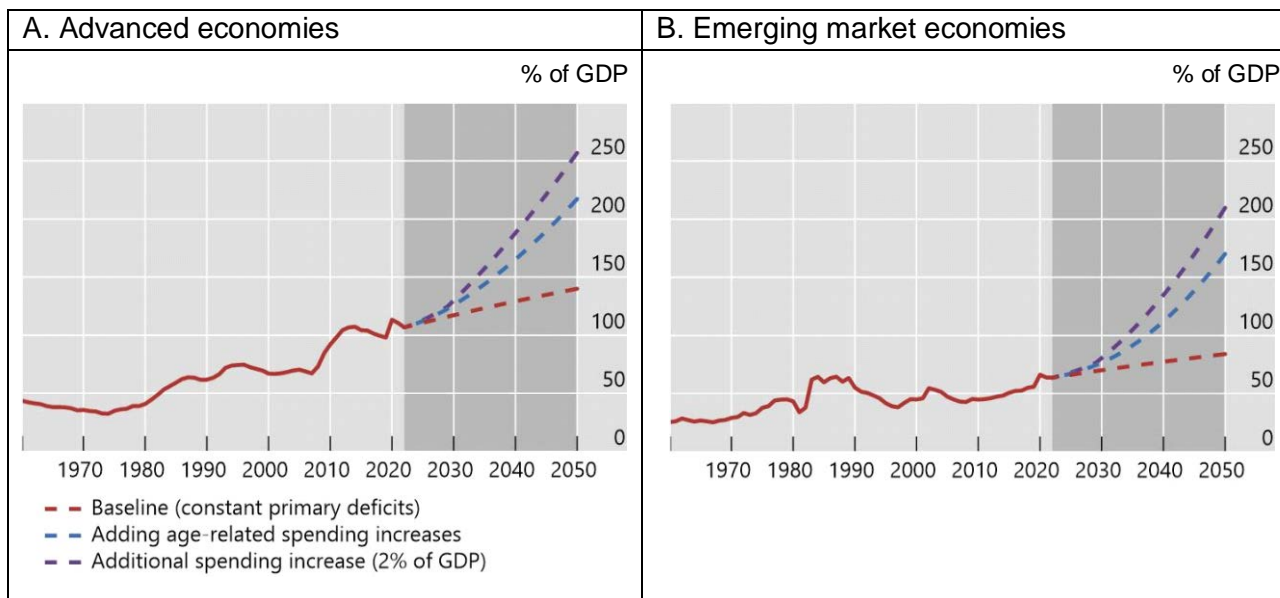
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As stressed in the Bank for International Settlements' (BIS's) 2023 Annual Economic Report (BIS 2023: 70), these policies “cannot be the engines of lasting economic growth”.

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



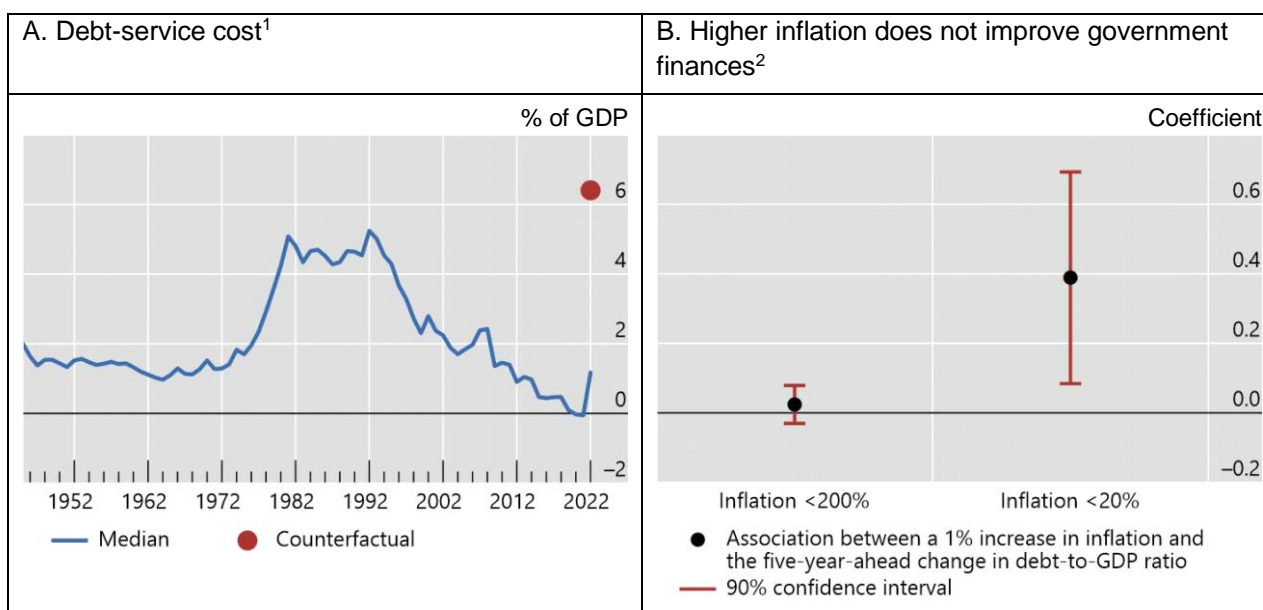
Notes: Baseline projections assume an interest rate-growth differential equal to -1% and constant primary deficits as percentages of GDP as of 2022. Age-related spending is based on IMF projections for pension and healthcare spending for 2030 and 2050. For the additional spending increase scenario, it 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).³

³ 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: ¹ 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.

² 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?

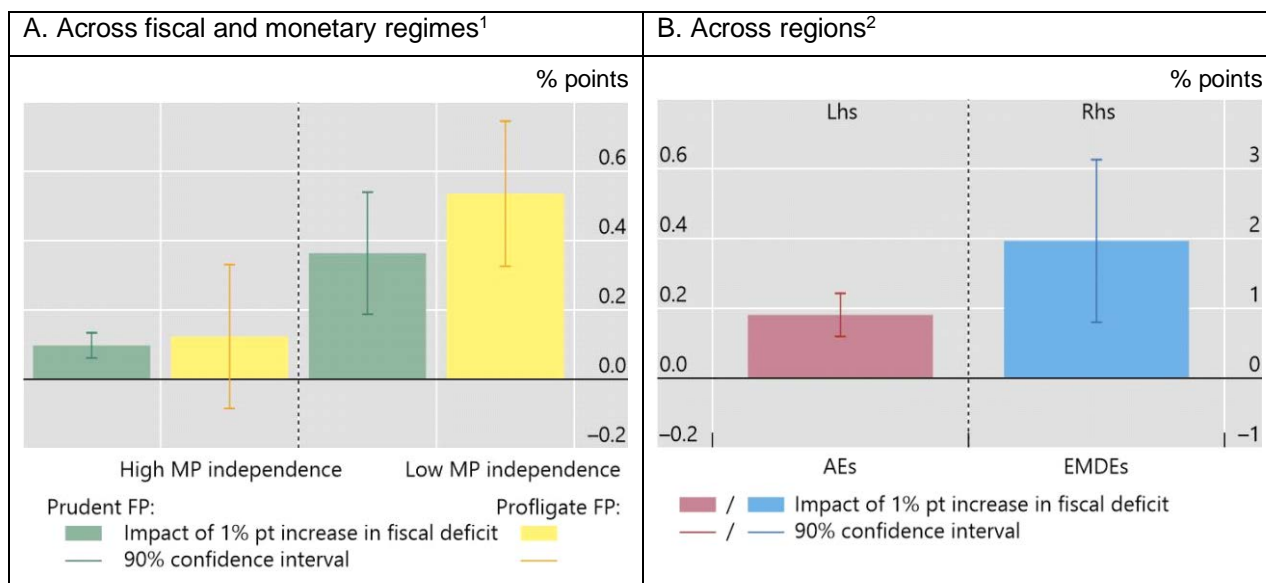
The consensus among economists – also confirmed by some recent research at the IMF (such as IMF 2023) – is that higher inflation can reduce debt ratios only temporarily, especially if inflation is unexpected. In the long run, interest rates, public wages, social transfers and other public spending are 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.⁴

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. ¹ 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.

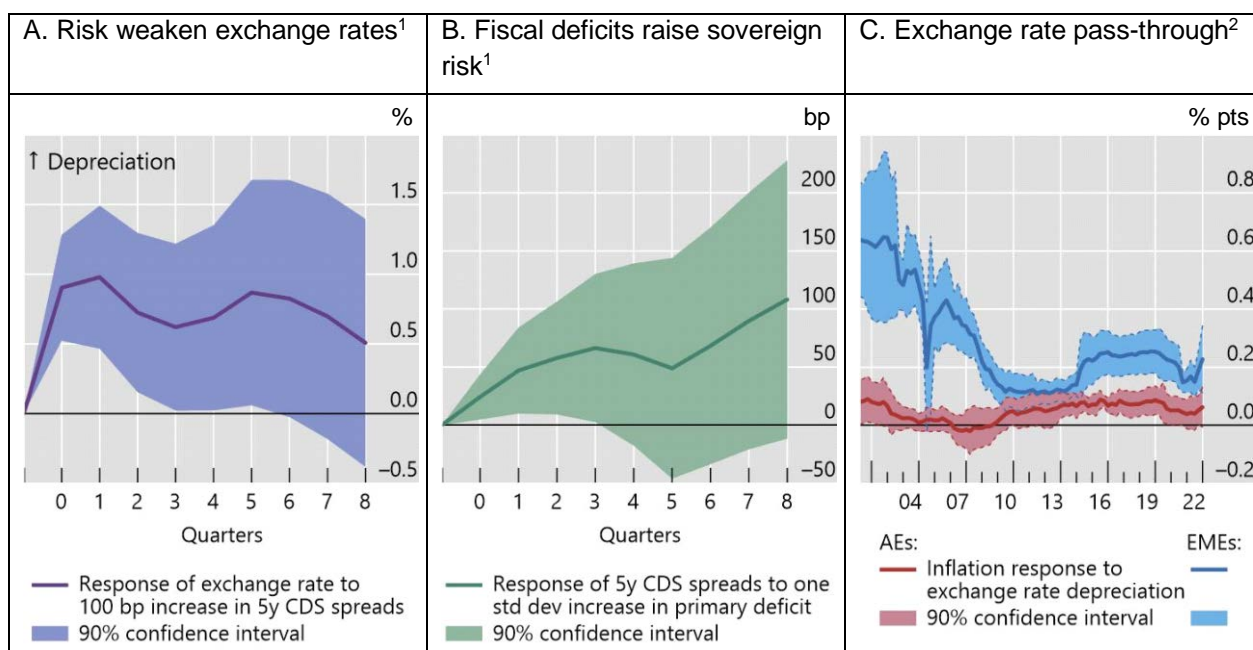
⁴ Prudent fiscal policy means that the primary balance leans against higher debt, given the cyclical position of the economy and other factors. Profligate means that fiscal policy does not respond to higher debt. See Mauro, Romeu and Zaman (2015).

² 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, 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: ¹ 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.

² 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.

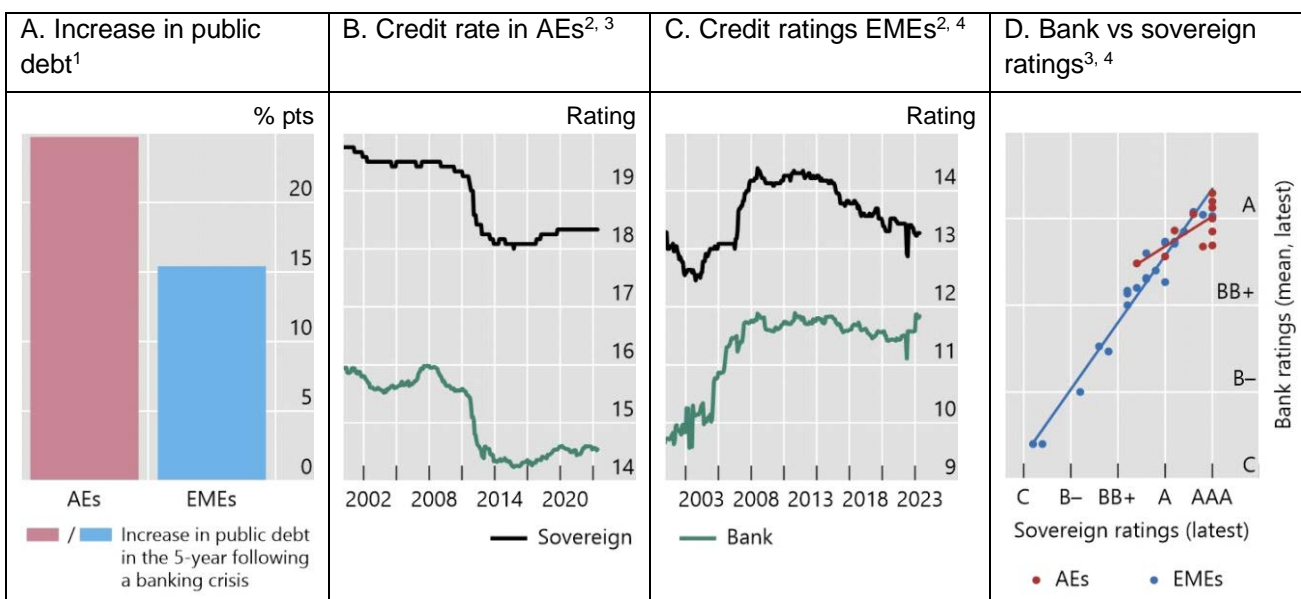
Finally, the effects of fiscal expansion on the exchange rate and inflation and their non-linearity are strongly attenuated when the central bank is inflation targeting, as well as, in the case of the exchange rate, when the country has relatively high international reserves. Thus, the good news is that 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.⁵ 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



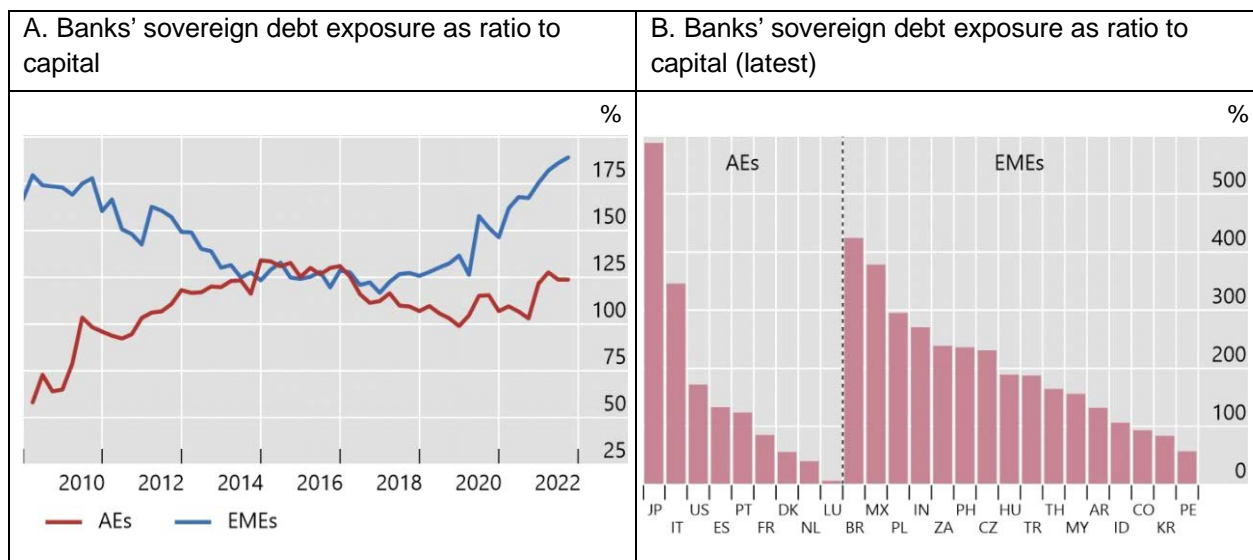
Notes: ¹ Based on Borio, Farag and Zampolli (2023a). ² Mean credit ratings across economies. ³ AEs = AU, CA, CH, DE, DK, ES, FR, IT, JP, NO, SE and US. ⁴ EMEs = AR, BR, CL, CN, CO, CZ, HK, HU, ID, IL, IN, KR, MX, MY, PE, PH, PL, RU, SA, SG, TH, TR and ZA.

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

⁵ 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).

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).

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.

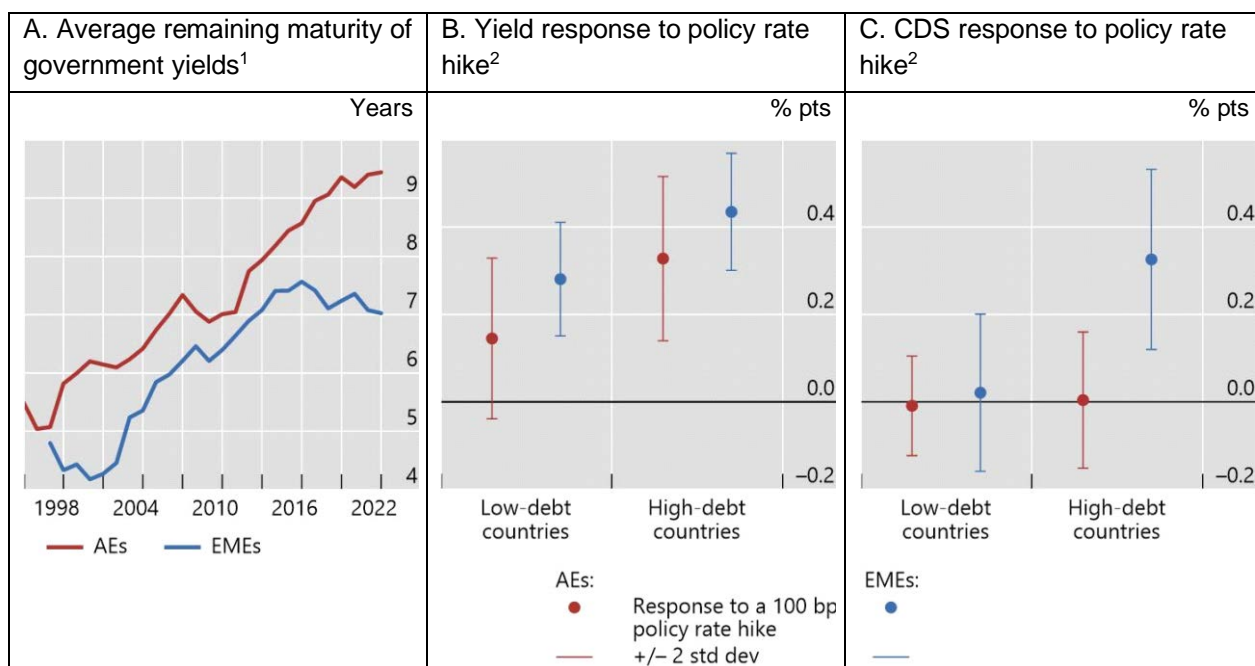
There seems to be greater potential today for adverse feedback between sovereign and financial risks. Since the GFC, financial institutions have absorbed growing amounts of public debt, increasing the potential for the financial sector to suffer losses. In aggregate, banks' sovereign exposures (relative 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).⁶ 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

⁶ 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.

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).

Figure 7: Elevated interest risk rate



Notes: ¹ 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.

² 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.⁷ The quality of the fiscal adjustment also

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

matters. In particular, sacrificing public investment may be easier than taking other fiscal measures in the short run but will translate to lower potential growth in the future, making other types of spending less sustainable.⁸

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.⁹ 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.¹⁰ 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.¹¹

⁸ 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.

⁹ 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).

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

¹¹ 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).

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 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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Special OBEN 2401* – February 2024

Meeting the climate change challenges: Instruments for climate change mitigation

*Luiz de Mello*¹

Abstract

Climate change is among the most significant challenges facing humanity. Achieving the 2015 Paris Agreement goal of limiting the rise in world temperature to below 2°C compared to pre-industrial levels will require ambitious action to decarbonise economies and societies. Policymakers have several price and non-price instruments at their disposal to achieve decarbonisation goals. These instruments have different abatement potential and associated costs that need to be quantified to inform policy choices. Policy strategies also need to cushion vulnerable social groups from adverse effects on jobs and livelihoods, so that the transition is cost-effective and socially acceptable. Private sector involvement is crucial, given the large investment needs associated with decarbonisation, as well as international cooperation on policies to achieve common climate change goals while reflecting the specific conditions of different countries.

1. Introduction

Climate change is among the most significant challenges facing economies and societies. In 2023, several climate-related records were broken, surprising climate science experts, while extreme weather events have heightened awareness about the risks of climate feedback loops and damaging tipping points.² These developments are drawing the attention of policymakers to the need for action to achieve agreed climate change goals.

Achieving the goal – enshrined in the 2015 Paris Agreement – of keeping the rise in world temperature well below 2°C, and preferably below 1.5°C, compared to pre-industrial levels, requires a sizeable reduction in emissions of greenhouse gases (GHGs). Countries have made ambitious pledges and announced climate change mitigation policies to honour those commitments. One hundred and thirty of the 196 countries that signed the Paris Agreement, accounting for 90% of global GHG emissions, have committed to achieving carbon neutrality by mid-century. However, policy action has so far been insufficient to put emissions on track to reach medium-term (2030) and mid-century targets, although estimates of the gap vary significantly both globally and by country depending on policy scenarios (Figure 1).

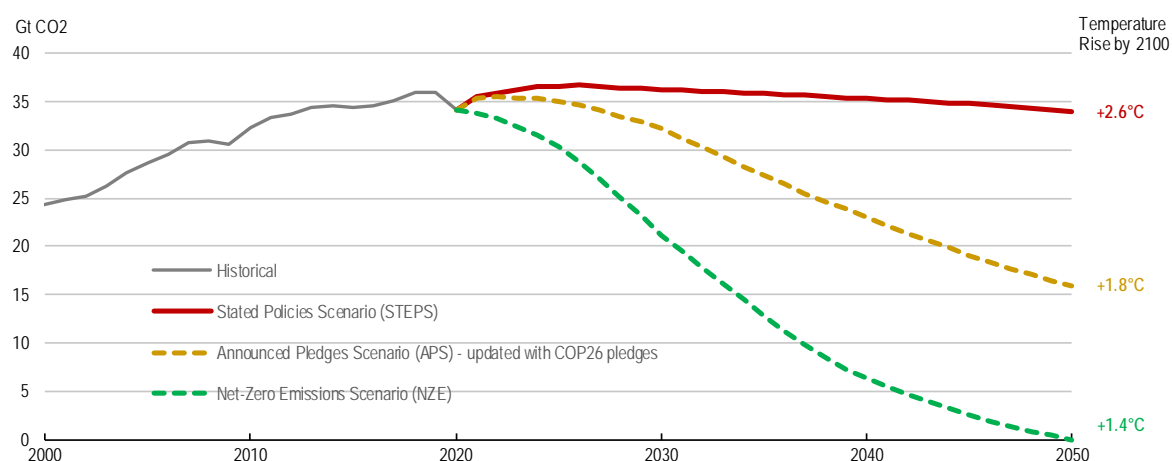
¹ Luiz de Mello is a Director of the Policy Studies Branch of the Economics at the Organisation for Economic Cooperation and Development (OECD).

² See, for example, Ripple et al. (2023).

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Figure 1: Global emissions of GHGs are out of step with the net-zero target by 2050

Scenarios of CO₂ emissions during 2000–2050 and associated expected temperature rise by 2100



Notes: The Announced Pledges Scenario is updated with COP26 pledges as of 3 November 2021; the Net-zero Emissions Scenario shows the global energy-related emission pathway developed by the IEA where technology, investments and policies are deployed in line with the objective of reaching net-zero emissions by 2050. Expected temperature rises by 2100 are relative to pre-industrial levels, and are subject to an upward risk due to uncertainties in the estimate and possible future changes in policy.

Sources: IEA (2021a, 2021b and 2021c)

According to the International Energy Agency (IEA),³ achieving net-zero emissions by 2050 will require global annual investment in the energy sector to rise from about US\$2.3 trillion in recent years to close to US\$5 trillion by 2030. Infrastructure, buildings and transport account for sizeable shares of the required investment to achieve net-zero emissions by mid-century. This is a tall order, but there have been a few encouraging developments. These include the increase in global clean energy investment in 2023, in part due to the recovery of the global economy from the COVID-19 pandemic and the response to the global energy crisis triggered by the war in Ukraine. This is important, because the energy sector is responsible for around three-quarters of GHG emissions globally.

Beyond energy generation, comprehensive decarbonisation will require efforts in other areas as well. More efficient use of energy across all economic sectors, behavioural changes to reduce demand for fossil fuels among firms and households, and continued innovation to speed up the development and deployment of green technologies will all be part of the transition. At the same time, beyond climate change mitigation efforts, countries are already having to adapt to climate change, including by investing in new and upgrading existing infrastructure.

2. Policy instruments to achieve the low-carbon transition

There is no shortage of policy tools to deliver a successful low-carbon transition. These tools need to be deployed in line with effective transition strategies to address the specific needs of different countries, which vary depending on economic structure, social preferences and political circumstances. Transition strategies in turn need to credibly identify gaps in abatement trajectories relative to targets and provide sound evidence on the expected effects of specific policy actions.

³ For more information and discussion, see the IEA (2023a and b).

Equally important is the need to identify and manage the risks of the transition, so that corrective measures can be considered where and when needed. Policy strategies also need to cushion vulnerable social groups from adverse effects on jobs and livelihoods, so that the transition is cost-effective and socially acceptable.⁴

In short, the decarbonisation toolkit includes price and non-price instruments. Among price-based instruments, there are those whose primary objective is to reduce emissions, such as explicit carbon prices and emissions trading schemes, as well as other instruments, such as emissions-based vehicle taxes, feed-in tariffs and tax incentives for businesses. Price-based instruments also include taxes, excises and subsidies on the use/consumption of fossil fuels or electricity, which are relevant for climate change mitigation, even though their primary objective is not to reduce emissions.

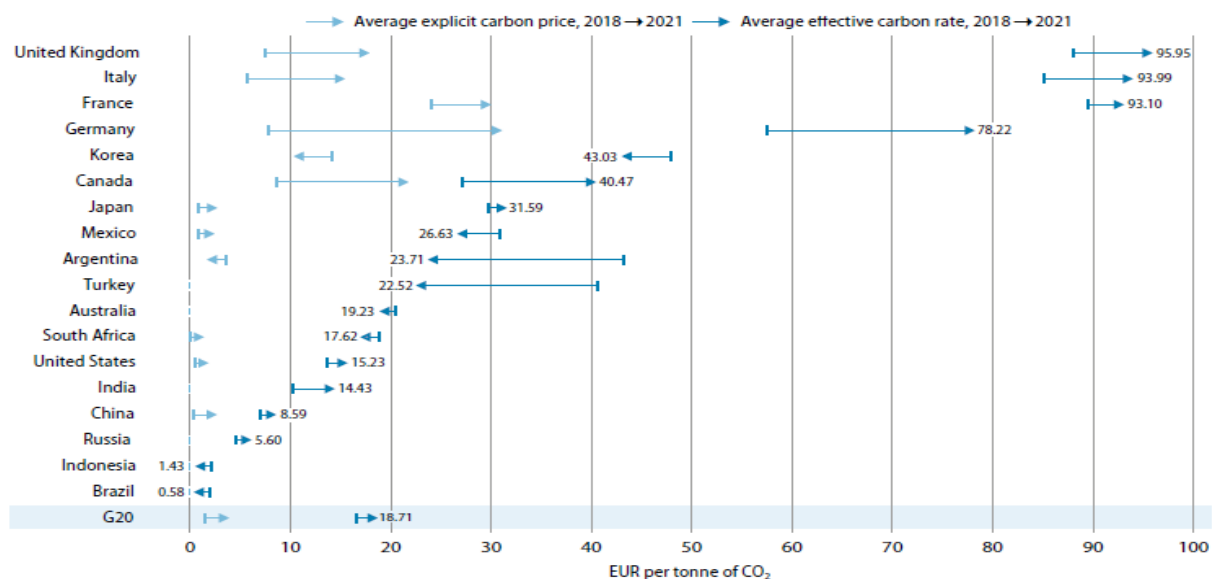
As for non-price levers, emissions intensity standards, technology adoption subsidies and technology mandates are among the instruments primarily aimed at reducing emissions. Other instruments, such as fuel efficiency regulations and air pollution standards, are relevant for climate change mitigation but their main use is not directly aimed at reducing emissions. These non-price instruments can help to overcome coordination failures, split incentives and other market failures. In general, they can be used instead of price instruments in situations where firms and households do not respond strongly to explicit price signals. The costs associated with these instruments can be seen as implicit prices on emissions and need to be quantified. They also need to be designed appropriately to avoid blurring price signals, blunting economy-wide incentives and complicating performance monitoring.

These price and non-price instruments have different abatement potential and associated costs that need to be quantified to the extent possible to inform policy choices. For example, effective carbon rates (the combination of explicit carbon taxes, emissions trading scheme permit prices and fossil fuel excises) remain low around the world and tend to be dominated by fossil fuel excises, rather than explicit carbon prices or emissions trading schemes (Figure 2). There is also a large share of emissions – nearly one-half from energy use – that are not priced at all. This is in part due to concerns about their distributional implications, which motivates public resistance to explicit carbon pricing. In particular, the risk of joblessness for those adversely affected by the transition limits public support for policy change. Consistent with reliance on excises on fossil fuels, effective carbon rates on energy-related emissions are highest in the road transport sector, followed by agriculture and fisheries. The real estate, electricity and manufacturing sectors are taxed comparatively lightly (Organisation for Economic Co-operation and Development, or OECD, 2021).

⁴ For more information, see D’Arcangelo, Levin, Pagani, Pisu and Johansson (2022).

Figure 2: Carbon pricing remains low worldwide

Effective carbon rates, 2018–2021

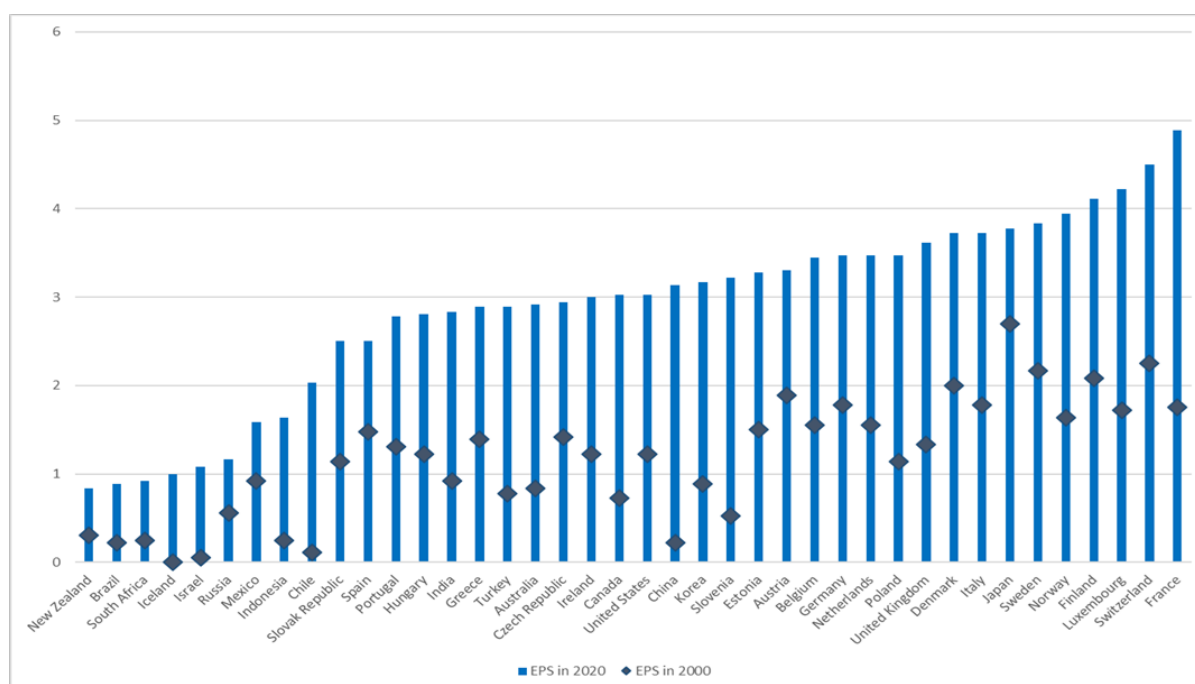


Source: OECD (2021)

Carbon pricing has made overall environmental policies more stringent, despite variations across countries. According to the OECD Environmental Policy Stringency (EPS) indicator, which aims to measure the stringency of price, non-price and technology support policies, there has been a gradual increase in the use of these instruments over time (Figure 3). According to the indicator, price and non-price-based instruments have become more stringent since the mid-2000s, even though progress has been slower in research and development (R&D) subsidies and support for the adoption of green technologies in the countries covered by the indicator. Recent policies and measures, including the Inflation Reduction Act of 2022 in the United States and the European Union’s Green Deal Industrial Plan, may help strengthen technology support policies and reverse this trend.

Figure 3: OECD Environmental Policy Stringency

(0–6 scale, increasing order of stringency)



Source: Kruse et al. (2022)

Policy instruments differ in their impact on government budgets. A simulation carried out by the OECD shows that introduction of a price floor at €60 per ton of CO₂ would significantly reduce emissions, while raising revenue for the government budget.⁵ Of course, these revenue gains would be temporary to the extent that carbon pricing leads to a shift away from the use/consumption of fossil fuels. More importantly, the associated revenues can be used, at least in part, to finance spending on training/retraining programmes for affected workers, support for the development and adoption of green technologies, and investment in climate change mitigation and adaptation, which are needed to support the transition and could make carbon pricing more socially acceptable. Indeed, opinion surveys suggest that public support depends on how the associated revenue is used: there is an increase in support for carbon pricing if revenues are channelled to fund green infrastructure and low-carbon technologies and to compensate low-income households via lower taxes or cash transfers.⁶

3. Addressing the costs of the transition

Related to the above is the need to acknowledge the adverse effects of mitigation policies. Even where aggregate effects are small, there may be heterogeneous effects across firms and workers. OECD work shows that stricter environmental policies explain small shares of economy-wide variations in manufacturing employment, trade and investment.⁷ However, firms operating in energy-intensive and trade-exposed industries tend to be more adversely affected by stricter

⁵ For empirical evidence, see D’Arcangelo, Pisu, Raj and van Dender (2022).

⁶ For more information and discussion, see Dechezleprêtre et al. (2022).

⁷ For empirical evidence, see Dechezleprêtre, Nachtigall and Stadler (2020).

environmental policies than their peers in other sectors. Firms that are on, or close to, the technological frontier are better equipped for the green transition than productivity laggards.

Using climate change mitigation instruments effectively therefore requires action in other policy areas to lower the economic and social costs of the transition. For example, new technologies may reduce the costs of abatement and can be supported through incentives for R&D and innovation incentives. These incentives can take the form of grants, tax credits or innovation prizes. Policies to accelerate the adoption of clean technologies by firms and households are also important. They can be delivered through demand-side policies such as public procurement. Appropriate regulation of product markets is essential to create a competitive environment that is, in turn, crucial for business dynamism and the diffusion of innovation.

At the same time, safety nets and labour market policies will have to respond to the specific needs of those adversely affected by the transition. Low-income households are the most exposed to price hikes in 'polluting' goods, and policymakers need to devise strategies to support them. In addition, workers in declining 'brown' sectors may face persistent joblessness and earnings losses, whereas firms in expanding 'green' activities may have to deal with shortages of workers with the necessary skills.

To achieve a just transition, policymakers will need to invest in education and training/retraining programmes, as well as making sure that labour mobility and market competition are not thwarted by ill-conceived regulation and other policy-related impediments. The same is true for active labour market policies and appropriate social safety nets for the most vulnerable. By emphasising protection for workers, rather than jobs, these interventions have the additional merit of helping to muster public support for climate change mitigation initiatives.

4. The role of the private sector

The investments required for the transition cannot be funded solely by governments. There are indeed many investment opportunities that could support a low-carbon transition, including in power system flexibility, public transport infrastructure, energy-efficient retrofitting of buildings, carbon capture facilities and renewable energy deployment. The private sector has an important role to play and policies will be needed to promote its involvement.

A credible, predictable policy landscape will be required so that business investment plans are not undermined by policy uncertainty.⁸ Green investments need transparent and consistent disclosure standards, as well as appropriate labels, taxonomies and rating methodologies to come to fruition. Strong and transparent environmental credentials by businesses themselves, including credible transition strategies for those operating in high-emissions sectors, can do much to reduce their costs of borrowing, encourage investment and reduce the risk of greenwashing.⁹ Monetary authorities and regulators also have an important role to play in ensuring that there is a smooth reallocation of capital towards low-carbon investments to avoid a build-up of vulnerabilities and risks to financial stability in the course of the transition.

⁸ For empirical evidence on the effect of policy uncertainty on investment, see Berestycki et al. (2022).

⁹ For empirical evidence, see D'Arcangelo et al. (2023).

5. The importance of international dialogue

Effective strategies for the transition to a low-carbon economy will require international dialogue, as well as efforts to build trust in policies and institutions. International dialogue is crucial for policy cooperation, which is particularly important in this area for at least two main reasons. One is because the climate change mitigation goals are global in nature and scale. The other is to minimise the risk of carbon leakage, which is likely to occur as countries pursue different standards with different levels of ambition and conviction. As for trust in policies and institutions, effective decarbonisation strategies will need to rely on a solid evidence base to inform policy choices. They will also require efforts not only to communicate the benefits and costs of policy alternatives, for example through well-conducted climate education and awareness campaigns, but also to engage relevant stakeholders, combat disinformation and engage with interest groups.

6. Conclusion

Mitigating the effects of climate change on economies and societies requires a gradual and steady transition to a low-carbon global economy. To be successful in this transition, policy strategies will require vision and ambition, international coordination and effective use of all available policy tools. An important step towards this goal is to build a solid evidence base of the decarbonisation potential, associated costs, trade-offs, complementarities and unintended consequences of different policy options. This is essential for transition packages to be designed and implemented to achieve common climate change goals while reflecting the specific conditions of different countries.

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Special OBEN 2401* – February 2024

Resilience in the face of large shocks: challenges that await central banks in emerging market economies

*Pierre L. Siklos*¹

Abstract

A series of large shocks since 2008 have upended the previous era's macroeconomic stability. Policymakers, among others, yearn for a return to the so-called Great Moderation that saw lower and less volatile inflation together with consistently positive economic growth. Central banks and other institutions can deal with threats of greater instability by seeking to become more resilient to shocks, both small and large. This note provides a definition of resilience and explains how central banks, especially in emerging market economies such as South Africa, can deliver economic resilience. That said, other challenges remain that may well test a country's resilience to future economic and financial shocks.

1. Introduction

The seemingly endless series of large shocks² over the past decade and a half have naturally prompted policymakers to yearn for a return to macroeconomic stability. Developments over this period pose challenges for all central banks. This note will identify a few for emerging market economies.

Part of the desire for a return to macroeconomic stability stems from a wistful attachment to the period of the so-called Great Moderation. This was an era when inflation became much less volatile in the United States (US) while economic expansion remained largely uninterrupted.³ This era is generally thought to have begun in the early 1980s and ended on the eve of the so-called Great Financial Crisis (GFC) in 2008. The timing of the Great Moderation likely varied across countries, but the phenomenon was largely global.

In general, the pursuit of price stability is one explanation for the emergence of the Great Moderation. Inflation targeting is the policy framework that spread most quickly around the world throughout this period, especially during the 1990s. Indeed, the South African Reserve Bank

¹ Pierre Siklos is a Professor at Wilfrid Laurier University and Balsillie School of International Affairs.

² By definition, a shock is an unexpected event. Since economists work with models when discussing shocks, the timing and size of shocks will be model dependent. Alternatively, one can think of a shock as an event whose impact was not expected by individuals (e.g., households, firms, professional forecasters). Economists like to think that expectations of these groups are formed as if they had a model in mind although, of course, it is unobserved.

³ The era that precedes the Great Moderation is often referred to as the period of the Great Inflation. Bernanke's (2004) speech provides an excellent summary of the US experience.

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(SARB) has been tasked with targeting inflation in a range of 3% to 6% since 2000. If the GFC and, later, the Eurozone sovereign debt crisis shattered both economic and financial stability, the COVID-19 pandemic would eventually undo inflation stability.

Since shocks are unpredictable, aiming for macroeconomic stability has instead turned into a search for resilience in the face of repeated threats to inflation and economic performance. This note will argue that resilience is necessary to achieve macroeconomic stability. Moreover, resilience comes in at least two forms: economic and political.

What is resilience? The concept is understood to refer to an economy’s ability to be less susceptible to shocks. Alternatively, one can define resilience as developing policies that are designed to reduce an economy’s vulnerability to both domestic and global shocks. Given the economic challenges facing emerging markets, including South Africa, institutional capacity is a critical ingredient to achieve macroeconomic stability as this is the principal mechanism that can deliver resilience.

This note begins by defining resilience in greater detail. Next, I identify critical challenges faced by central banks in emerging markets. I then briefly summarise what we know about the macroeconomic effects of shocks, before concluding with implications for South Africa.

2. Resilience and macroeconomic stability: two sides of the same coin

When economic shocks are small, and policy strategies are well designed, stability is the natural outcome. At the high point of the Great Moderation, Stock and Watson (2003a) asked whether the era had brought about a change in the nature of the business cycle. One of their most striking conclusions is that monetary policy played a small role. Instead, a substantial reduction in the size of global shocks was the main culprit.⁴ This finding is especially relevant for emerging markets, including South Africa, which tend to be open economies. The implication is that best practices in monetary policy design may not guarantee stability unless there is also resilience to global shocks.

What then are the ingredients that define resilience? Table 1 highlights a few of its key elements.

Table 1: Selected elements of resilience

Economic resilience	Political resilience
<i>Property rights</i> : the ability to trade, manage and dispose of one’s own property should allow for adjustment mechanisms to work more efficiently in times of crisis	<i>Extent of democracy</i> : democracies can absorb shocks more easily because of reallocation mechanisms ⁵

⁴ A companion piece of theirs (Stock and Watson 2003b) concurs with this conclusion but also assigns about 20–30% of the explanation for the Great Moderation to “luck” in the form of favourable productivity and commodity price shocks.

⁵ For example, fiscal space can pick up the slack when monetary policy cannot or is inappropriate, and public policies can be modified to ensure continued economic growth, which also aids resilience.

<p><i>Exchange rate type:</i> the more flexible a country's exchange rate regime, the greater its ability should be to adjust to external shocks</p>	<p><i>Executive constraints:</i> more constraints on the executive means more veto points against bad policies</p>
<p><i>External openness:</i> a country's openness to trade and its openness to capital movements is associated with greater resilience</p>	

The column labelled economic resilience argues that protecting property rights is critical as it ensures that economic activity can proceed unhindered by arbitrary rules or interventions, notably by the state. Next, exchange rate flexibility is thought to be the best way to ensure that the domestic economy is insulated from external shocks. While this matters less when external shocks are small, when shocks are large then exchange rate flexibility becomes a more potent device to ensure resilience. It is important, however, to emphasise that exchange rate flexibility is insufficient. After all, if flexibility provides the ability to implement policies independently, the latter must be well designed. There are plenty of historical illustrations of countries with poorly designed domestic policies that did not exploit the advantages of the freedom of action provided by a floating exchange rate arrangement.⁶ Finally, if external shocks represent a significant threat to macroeconomic stability, then the extent to which the domestic economy is open to such shocks will also matter.

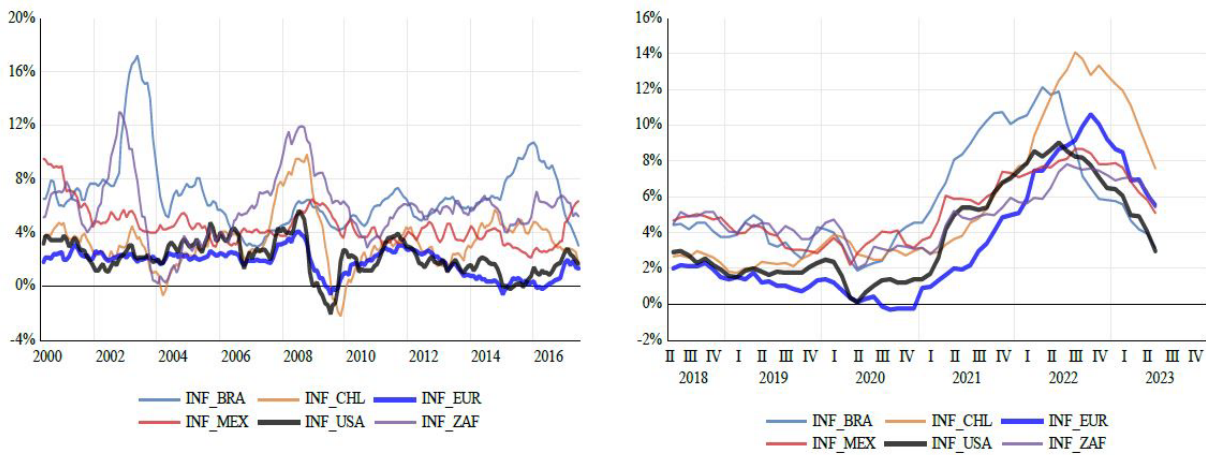
Turning to political resilience, there is considerable evidence that democracies are more resilient than alternative political regimes (for example, see Imam and Temple 2023). Similarly, checks and balances on the executive are thought to be the best vehicles to ensure that fewer bad policies are implemented. Economic and political resilience are likely jointly determined. However, given limited space, this note focuses on the challenges that emerging markets face in seeking economic resilience.

3. Challenges facing emerging markets

Central banks are often judged by their ability to control inflation. In countries with an inflation target, that judgment can be assessed against a numerical value. Figure 1 plots headline inflation (that is, inflation in a consumer price index) for two advanced economies, namely the US and the eurozone, and four inflation-targeting emerging market economies. They are Brazil, Chile, Mexico and South Africa. The left-hand-side plot shows inflation for the period 2000–2017; the right-hand side shows inflation between 2018 and 2023.

⁶ Canada during the 1970s and 1980s is one such example but it is not alone. See Bordo and Siklos (2022).

Figure 1: Headline inflation in select emerging and advanced economies



Note: Data are from the Bank for International Settlements (BIS) and are at annual rates. BRA=Brazil, CHL=Chile, EUR=eurozone, MEX=Mexico, USA=United States and ZAF=South Africa.

Three observations can be made about Figure 1. First, inflation in the emerging market economies has historically tended to be higher and more volatile than in the advanced economies. However, the inflation gap between these two types of economies has declined considerably since 2018. Second, recent inflation in the six economies follow similar trajectories, unlike in the 2000–2017 period. Third, the surge in inflation is evident everywhere in 2021, suggesting the global nature of the post-pandemic rise in inflation. The parallels persist when the reversal in inflation begins in 2022, although the reversal is slightly earlier in some emerging markets (e.g., Brazil).

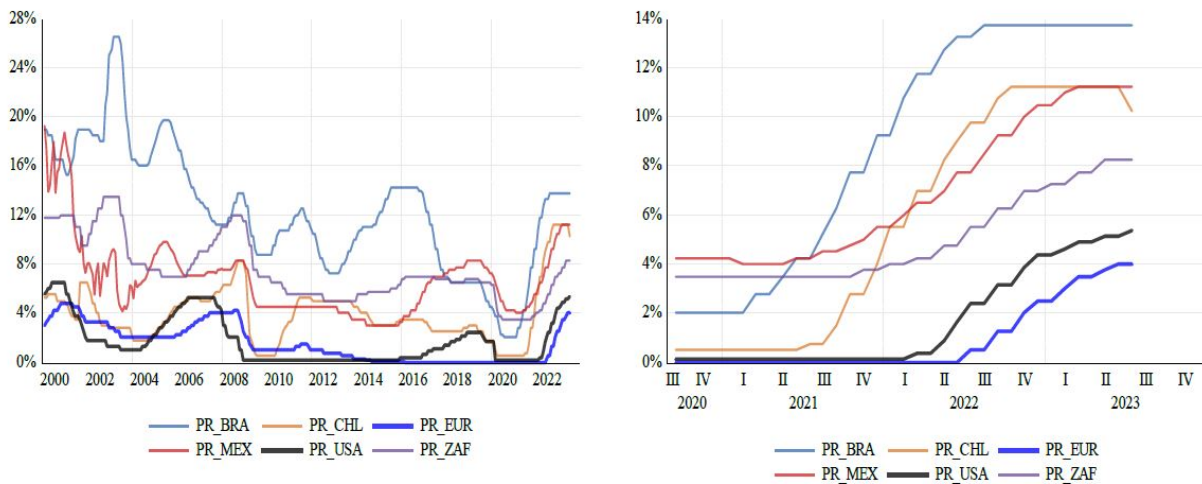
Developments since 2022 reflect the common shock that hit the global economy beginning in 2020.⁷ Monetary policy played a role in the outcome. How were emerging markets capable of confronting this challenge? A floating exchange rate regime, combined with institutional capacity, assisted in addressing the inflation challenge.⁸

If a floating exchange rate regime buys resilience, what are the implications? For several decades the stance of monetary policy has been set via a policy rate. This is true in both emerging market and advanced economies. Figure 2 shows selected policy rates for the same economies as in Figure 1. The left-hand side plots the policy rates since 2000; the same data are plotted on the right-hand side since 2020.

⁷ Of course, this is not the first time a global shock emerged. As shown in the left-hand figure, there was also a synchronous and sharp decline in inflation in the wake of the GFC.

⁸ Ilzetki, Reinhart and Rogoff (2019) concur that all of the emerging markets shown had floating exchange rate regimes.

Figure 2: Central bank policy rates in select emerging and advanced economies



Note: Monthly data from the BIS. See Figure 1 for country codes.

The following features stand out. First, policy rate rises in both advanced and emerging market economies have become more synchronous over time. This reflects commonality in monetary policy strategies around the globe. Next, focusing on the post-pandemic era, policy rates rose faster and earlier in the emerging markets shown than in the US or the eurozone. Exchange rate flexibility is one reason for the timely response to the post-pandemic surge in inflation. However, as we shall see, institutional factors were also at play. Central banks in Brazil, Chile, Mexico and South Africa were able to react by tightening their policy stances earlier than in the advanced economies.⁹ Finally, while policy rates in emerging markets remain higher than in advanced economies, the left-hand side plot makes it clear that the gap in policy rates compared with the US and the eurozone are smaller than the historical norm. Once again, a policy strategy aimed at achieving low and stable inflation, assisted by an independent central bank, is part of the explanation.

Can we conclude anything from what we know about how shocks of various sizes and sources impact economies? Fortunately, a large empirical literature that examines how shocks impact economic performance in emerging market economies has reached some consensus.¹⁰ First, important global shocks originate in the US. Shocks from the eurozone and China have been found to amplify and not offset US shocks. Second, a legacy of greater globalisation is that tighter monetary policy conditions in the US are transmitted globally. The stylised evidence discussed above (Figures 1 and 2) corroborates this interpretation. Finally, improving economic conditions in the US generate a positive spillover that benefits perceptions of the performance of central banks. What is the mechanism by which this happens? The answer is via enhanced central bank credibility.

⁹ Indeed, Brazil is the first country shown to reduce its policy rate. This reduction has since continued. Chile has also begun to reduce its policy rate. If advanced economies hold policy rates at current levels, the gap in policy rates between advanced and emerging market economies might continue to decline. (This information was true at the date of writing.)

¹⁰ See Bordo and Siklos (2022) and Chen and Siklos (2023) and references therein for more details.

This brings us to another challenge faced by central banks in emerging markets, namely the preservation of institutional capacity.¹¹ Institutional capacity is enhanced when there is greater credibility of and trust in the central banking institution. A simple but widely adopted definition of credibility is based on the evolution of misses in achieving an inflation target. Generally, the central bank will not suffer a credibility loss for small differences between observed and targeted inflation. However, persistent and large misses will threaten institutional credibility and, therefore, institutional capacity. This can largely explain the negative public reaction when inflation rose much faster than expected from 2021. Central banks around the world were at pains to explain that the ‘exogenous’ shock of the pandemic could not have been foreseen by their models, since they were not designed for shocks of this kind. Nevertheless, the insufficient timeliness of monetary policy responses, once the surge in inflation did not prove transitory, would show up as sizeable and persistent misses in the inflation target, thereby negatively impacting central bank credibility.

Institutional capacity requires more than credibility. Trust in an institution represents the accumulated impact of changes in credibility over time. The greater the trust in an institution, the greater the reservoir of institutional capacity available to be used when large shocks threaten the public’s perception of the capacity of the central bank to control inflation. The available empirical evidence¹² suggests that credibility and trust, and institutional capacity, are the main determinants of central bank resilience.

To summarise, a floating rate regime, a well-designed monetary policy strategy and policymakers’ response to global and domestic shocks are all necessary ingredients for economic resilience, but they are insufficient. Solid institutional capacity is also required.

4. Implications for emerging markets and South Africa

Emerging markets have dealt quite effectively with the monetary policy challenges they face. This includes South Africa. However, this development masks other challenges. Briefly, at least three stand out.

First, emerging markets face the problem of debt sustainability. Figure 3 illustrates the problem. The plots show the ratio of government debt to gross domestic product (GDP) in emerging markets and Organisation for Economic Co-operation and Development (OECD) countries.¹³ While the ratio declined in emerging markets until 2014, it has risen almost inexorably in both advanced and emerging market economies during the 2000s. The sharp rise in 2020 everywhere reflects COVID-related spending. Although debt levels began to recede in 2021, they remain elevated. While the

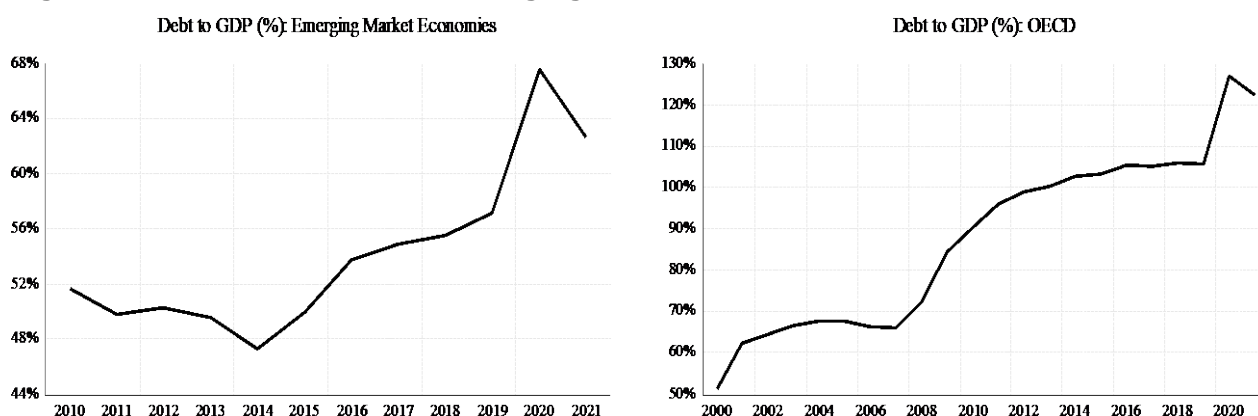
¹¹ There is no agreed-upon definition of institutional capacity. However, it is generally thought to represent the collection of country-specific economic and political characteristics that serve to protect a central bank’s capacity to conduct monetary policy independently from government pressure. That said, it is the government’s responsibility to set the mandate of the central bank.

¹² Hartwell and Siklos (2023) provide a survey and empirical evidence for a sample of over 100 countries.

¹³ The group of OECD countries are considered advanced.

ratio for OECD members is almost twice as high as the one for emerging markets, this likely reflects in part the lower capacity of the latter economies to add more government debt.

Figure 3: Debt-to-GDP levels in emerging markets and the OECD



Note: Data from the OECD and the International Monetary Fund's World Economic Outlook databases, which also provides the complete list of emerging market economies.

The second challenge facing all economies is another old one, largely forgotten in an era where responsibility for macroeconomic stability was largely left to central banks: fiscal and monetary policy cannot work at cross-purposes for long. As debt levels remain elevated, and higher interest rates translate into higher debt-servicing costs, combined with a return to secular stagnation,¹⁴ there is a greater risk that fiscal policy in both emerging market and advanced economies becomes unsustainable, prompting fears of another global financial crisis. As the International Monetary Fund (2023) has pointed out, the global economy faces a “trilemma” in the post-COVID world, namely the difficulty of ensuring debt sustainability when demands from climate change and other structural reforms generate economic and political pressure on policymakers. These will certainly test resilience achieved to date.

Finally, there is the imponderable impact of the slowing down and potential reversal of globalisation. While there are positive and negative aspects to globalisation, both emerging market and advanced economies, including South Africa, have benefited from the ability to trade and interact with economies around the world. A more resilient economy ought to be able to exploit the net benefits of globalisation but geopolitical risks have begun to create a backlash (Colantone, Ottaviano and Stanig 2022).

Engineers frequently argue that resilience also requires that systems contain redundancies. An important lesson for emerging markets and South Africa may be that macroeconomic stability requires more than just a flexible monetary policy aimed at achieving low and stable inflation. It requires that fiscal and monetary policies not place undue pressure on each other. This means that monetary policy should not be too loose for too long to avoid incentivising a loose fiscal policy, or fiscal policy should not force the hand of central banks to tighten monetary policy excessively to avoid macroeconomic instability. This may be the only way to avoid more large economic shocks and to provide an opportunity for a return to macroeconomic stability. Even if economic

¹⁴ ‘Secular stagnation’ refers to chronically weak economic growth and very low interest rates due to low aggregate demand.

resilience is enhanced, there is still the matter of political resilience not directly addressed in this note. Hopefully, there is a chance that if the former succeeds, the latter may also follow.

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Special OBEN 2401* – February 2024

The finance gap challenge: mobilising opportunities for clean energy growth

*Suzi Kerr and Xian Hu*¹

Abstract

A holistic approach – instead of tackling problems incrementally – must play a pivotal role in the climate transition. Transitioning to a low-carbon economy requires multifaceted strategies that encompass pricing, planning, regulation and institutional mechanisms. Current approaches are not mobilising sufficient action and investment. We highlight the importance of leveraging all sources and instruments, including public funds, private investments, carbon markets and philanthropy, to fill the climate finance gap and seize the huge opportunity to support economic development and promote climate stability. We introduce the idea of the “mitigation avocado”, where individual projects are complemented by infrastructure, institutions and regulations that create an improved investment environment, and a large-scale systems approach ensures integrity in rewards for change observed at the system level. We suggest that holistic approaches and large-scale international carbon market agreements can jointly mobilise private finance and unlock the potential capacity of the global south for climate action and sustainable development.

1. Introduction²

Climate change constitutes a global challenge that necessitates a collective, humane, imaginative and intelligent response. Failure to address it could result in catastrophic consequences, endangering all that humanity has accomplished. The world has made significant progress in climate finance, with climate finance flows reaching US\$1.3 trillion as an annual average over 2021–2022, according to estimates by the Climate Policy Initiative (CPI 2023). This amounts to almost a doubling compared to 2019–2020 levels.³ Estimated investment needs, to mitigate climate change and meet Paris Agreement goals, are around US\$8.4 trillion per year until 2030, implying an annual finance gap of roughly US\$7.2 trillion. It is imperative that we accelerate investment – and we need innovative strategies and global efforts to bridge this gap.

¹ Suzi Kerr is a Senior Vice President and Chief Economist at the Environment Defense Fund (EDF) and Xian Hu on a Doctoral Internship at EDF and Ph.D. Student at Tsinghua University.

² The authors would like to thank Anshuman Tiwari and Aurora Barone for their invaluable assistance and insightful comments to this research.

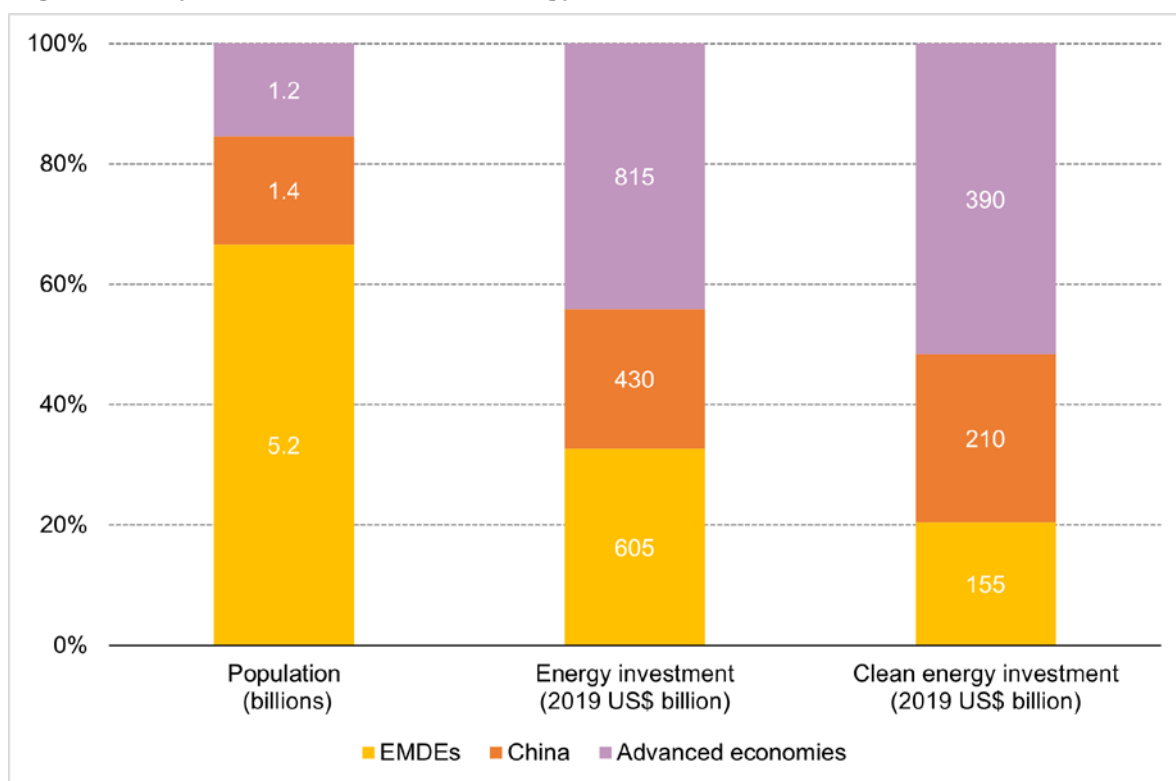
³ Nearly 28% (US\$173 billion) of the climate finance increase in 2021–2022 is attributable to improved data.

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The distribution of climate investments worldwide remains uneven. Emerging markets and developing economies (EMDEs) excluding China already account for two-thirds of the world’s population and are expected to experience substantial economic development in the next few decades. As a result of this growth, and low levels of current energy efficiency, three quarters of the mitigation efforts necessary to achieve global net-zero emissions that must be accomplished annually by 2030 would most efficiently occur within developing countries.⁴ EMDEs now face the challenge of developing in a way that meets the aspirations of their citizens while avoiding the high-carbon pathway that other countries have pursued in the past. The falling cost of key clean energy technologies offers a tremendous opportunity to chart a new, lower-emissions pathway for growth and prosperity. However, as shown in Figure 1, only one-third of the total energy investment and a mere 20% of global investments in clean energy technologies are directed towards these regions (IEA 2021). The International Energy Agency (IEA 2023) estimates that US\$200 billion per year is needed in Africa alone to achieve all energy-related development goals, but the continent received well below US\$54 billion in 2022.⁵ This stark disparity highlights a critical issue: there is not enough clean energy investment where it counts.

This note aims to demonstrate how use of international carbon markets and comprehensive systemic solutions can create a more favourable environment for climate investments. This, in turn, will mobilise greater private sector investments, facilitate the development of emissions reduction initiatives in more developing countries and ultimately bridge the investment gap while achieving global climate goals.

Figure 1: Key indicators for clean energy investment for EMDEs in 2021



Source: IEA 2021

⁴ Authors’ calculations based on data from Keramidas et al. (2021).

⁵ Africa and the Middle East received a combined US\$54 billion in total climate finance in 2022 (CPI 2023).

2. International carbon markets as part of the solution

Carbon markets in their broadest sense represent a mechanism for transferring resources from those who possess them to those who need them to accelerate mitigation, fostering mutual benefit and climate ambition. Carbon revenues can substantially raise the returns on clean investments, because investors can earn revenue by selling carbon reduction credits as well as, for example, renewable electricity. International carbon markets have the potential to play a pivotal role in bridging the finance gap for climate action, as well as helping meet the diverse economic development, carbon reduction and political needs of different regions.

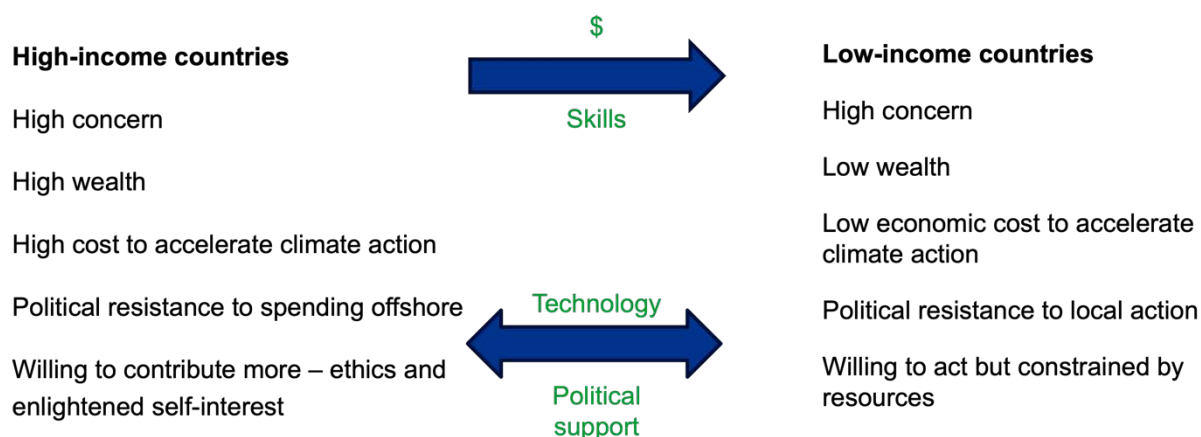
2.1 The foundation of international carbon markets

Shared climate needs and disparities in resource endowments present an opportunity for international climate cooperation in the form of carbon markets. Developed regions exhibit a high level of concern for climate issues alongside relatively high abatement costs but substantial wealth to fund mitigation. Developing regions share a high level of climate mitigation and adaptation concern, but although they have lower abatement costs, their mitigation is hindered by limited financial resources and capacity constraints.

Moreover, international carbon markets can provide political support for increased climate ambition in developed and developing regions. While developed regions are willing to contribute beyond their boundaries for both ethical and enlightened self-interest reasons, they may face political resistance to offshore spending as foreign aid. Conversely, developing regions willing to take action may encounter political resistance to local initiatives due to resource constraints and concerns about competition between climate mitigation and development objectives. Collaborative efforts through carbon emission reduction projects and transfer of carbon credits can effectively address these challenges, fostering mutually beneficial outcomes.

International demand for carbon credits comes from both compliance and voluntary carbon markets, including Article 6 of the Paris Agreement and the Carbon Offsetting and Reduction Scheme for International Aviation. Supply of carbon credits can originate from individual projects, a historically common practice, or broader jurisdictional and sectoral initiatives that are emerging, particularly in the context of forest conservation and sustainable energy transitions.

Figure 2: Drivers and flows in an international carbon market



Source: Authors

A carbon market is frequently viewed as a commodity market focused on the transfer of carbon credits. More broadly, a carbon market can encompass diverse contractual arrangements, including large-scale jurisdictional, sectoral and even national agreements and government-to-government relationships. Climate investments to transform systems extend beyond constructing specific facilities, such as renewable power plants or energy-efficient buildings. They involve aspects such as labour force transitions and skills training, social protection, capacity building for climate policy and grid management, and systemic reforms (e.g. power sector reform).

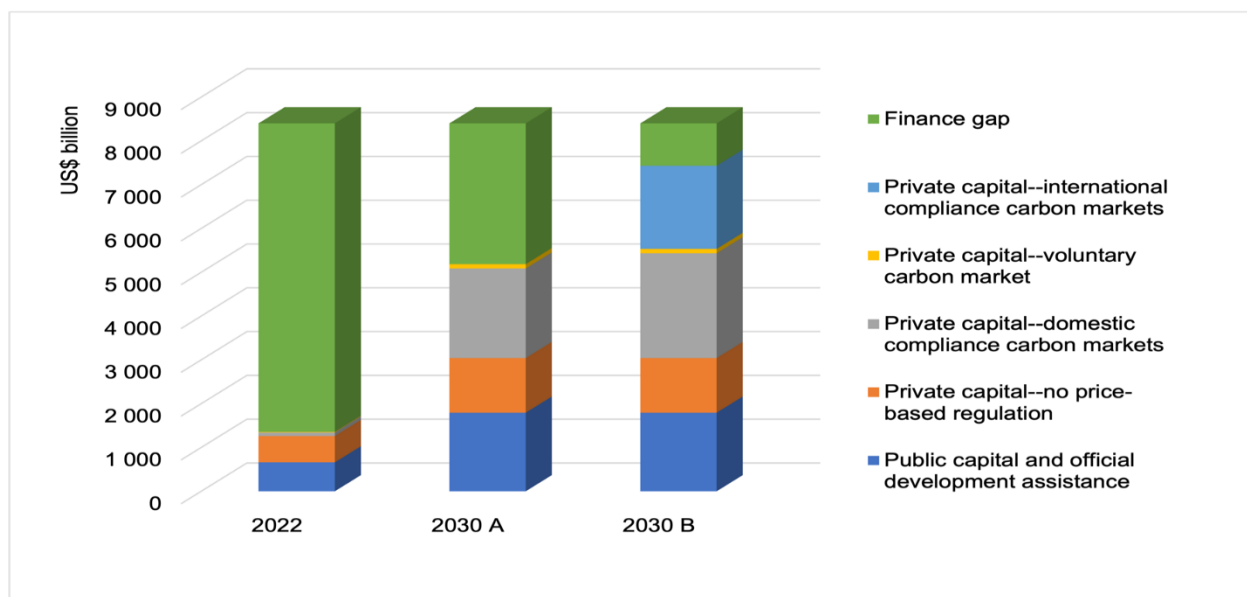
To address these multifaceted challenges, innovative contracts can be designed between carbon credit buyers and sellers. These contracts may include provisions for advance payments and approaches to mitigate and allocate investment risks, whether these stem from political instability or uncertainties in project delivery. Advance payments motivated by expected recognition for contributions to global mitigation (possibly in the form of carbon credit revenue) can be allocated as insurance coverage or as equity stakes, thereby facilitating more conventional private sector investments. Additionally, such contracts can incorporate pricing mechanisms that share the carbon price risk, mitigating the impact of lower-than-expected prices while sharing gains in times of high carbon prices.

Large-scale sectoral agreements with carbon credit rewards for reductions measured at a sectoral scale can support systemic changes. By creating a conducive economic and regulatory environment that offers higher returns (e.g. through domestic compliance pricing), lower risks, and increased technical and political support, these markets can effectively mobilise private capital, accelerating the transition to a sustainable and low-carbon future.

2.2 Carbon markets can help fill the gap

All estimates suggest that trillions of investment capital are needed annually by 2030 to meet Paris Agreement goals but there is no clarity on how to achieve this. Based on data and estimates from diverse sources, we present two scenarios that illustrate potential market-based approaches to filling the global climate finance gap shown in the first column in Figure 3. We divide the drivers of finance into public funding, private funding not driven by carbon pricing, capital mobilised by domestic and international compliance pricing, and the voluntary carbon market (VCM). These are not predictions or optimal scenarios. We aim only to show the potential scale of the mobilisation of finance by each driver and highlight the need to use all instruments to drive finance, including ones that are emerging now.

Figure 3: Three scenarios of current and future global climate finance drivers



Source: Authors, using various data sources and assumptions

The dark blue segment represents public finance, including contributions from governments, state-owned agencies, multilateral development banks and official development assistance. It is no surprise that developing countries rely heavily on public funding for their climate finance needs. Public finance is currently about 51% of total climate finance and accounted for US\$660 billion in climate finance for mitigation in 2022. Public funding is assumed to grow to nearly US\$1.8 trillion in 2030.⁶

The orange segment represents private capital mobilised without price-based regulation. This might result simply from the investments turning profitable as costs fall; from voluntary efforts driven by environmental, sustainability and governance concerns; or as a result of non-price regulatory factors. Private capital includes funds from non-financial corporations, commercial financial institutions, and individual and institutional investors. Our simple projection for 2030 assumes that private finance will continue to grow at the cumulative average rate since 2011 to reach nearly US\$1.25 trillion in 2030.⁷ We then exclude from this total the private capital flows that might be attributed to carbon pricing.

The grey segment is estimated as capital that was in 2022 and could in future be mobilised by domestic carbon pricing instruments, such as carbon taxes or emissions trading systems (ETS). This rough estimate is based on several simple assumptions: currently carbon price policies (ETS plus tax) cover 23% of global greenhouse gas emissions (World Bank 2023), with average global carbon prices (including a wider range of pricing instruments such as renewable portfolio standards and fossil fuel subsidies) estimated at US\$18.5/ton of CO₂ by Carbon Barometer (2021).⁸ We use a long-run semi-elasticity, with a low estimate of 0.28, based on an Organisation for Economic Co-operation and Development (D’Arcangelo et al. 2022) report to estimate

⁶ This is the long-term compound annual growth rate from 2011 to 2022 with data from CPI (2021 and 2022). Growth in the last two years has been faster so this estimate may be conservative.

⁷ See footnote 4 for explanation. The private capital estimate is adjusted to account for changes in methodology that lead to higher climate finance estimates.

⁸ We realise that these are not consistent but want to recognise a wide set of carbon price instruments.

emission reductions driven by carbon prices. We then mimic a private sector claim that every dollar spent on buying emissions reduction credits mobilises US\$10 in private capital.⁹ For 2022 we subtract this estimate of capital mobilised from the total measured private climate finance. For 2030 A, we assume that compliance carbon pricing will be set at US\$80.7 for greenhouse gas pricing coverage, reaching 30% in countries with existing pricing systems plus an additional 30% of new coverage in developing countries at a low price of US\$10.¹⁰ This could mobilise over US\$2 trillion annually in private capital.

The yellow segment is the contribution of the VCM to mobilising capital. We calculate this by multiplying current payments for VCM credits (around US\$1.3 billion in 2022, according to Trove Research 2023) by the assumption of US\$10 of capital mobilised per dollar of credit payment. For 2030 we use the low estimate from Trove Research (2021), which suggests this market could grow to US\$10–40 billion and mobilise ten times the capital. Morgan Stanley (2023) projects the VCM to grow to about US\$100 billion by 2030 and US\$250 billion by 2050, which is rather ambitious and optimistic.

The light blue part in Scenario 2030 B represents potential capital mobilisation through perfectly functioning international carbon markets enabled by Article 6 of the Paris Agreement (Piris-Cabezas, Lubowski and Leslie 2023).¹¹ The estimates by Piris-Cabezas, Lubowski and Leslie suggest that a perfectly functioning market consistent with meeting a 2° target would involve carbon payments between countries of over US\$200 billion annually and therefore might achieve additional annual capital mobilisation of US\$2 trillion by 2030. We assume that this international support could, among other things, enable an increase in the ambition of domestic carbon pricing in developing countries from US\$10 to US\$35, so US\$348 billion of this additional capital mobilisation is attributed to that segment.

These scenarios show that relying solely on public funding and the voluntary market is highly unlikely to be sufficient. They indicate the critical role of international Article 6 transfers, which can complement direct public funding. Both avenues should be used in complementary ways. They also show the importance of both domestic non-price regulations and carbon pricing mechanisms, which can also be supported by international transfers.

⁹ This leverage factor is synthesised from a review of various industry websites and sources. Although no existing paper or report provides an exact leverage factor derived through model simulation or empirical analysis, our assumptions regarding the factor and corresponding estimation results are intended to illustrate the crucial role of carbon pricing in mobilising private finance, rather than to forecast specific capital amounts.

¹⁰ The US\$80.7 price is a global price required in 2030 to be on track to achieve 2° of global warming with use of REDD, which stands for 'Reducing emissions from deforestation and forest degradation in developing countries' (Piris-Cabezas, Lubowski and Leslie 2023). The coverage is consistent with the Global Carbon Pricing Challenge, which was launched in 2021 at COP26 and sets a collective goal for carbon pricing to cover 60% of global emissions by 2030 (Canada.ca 2021). We assume that the 30% carbon pricing coverage in developing countries with a low price may be implemented in diverse forms and is less stringent than the global average.

¹¹ US\$80.7 is based on prices required to achieve National Determined Contributions that are sufficient to achieve a 2° climate target. This is probably an underestimate as we use their estimates of trade volumes, 2.6 gigaton of CO₂ equivalent per year, consistent with trade to meet current Nationally Determined Contributions.

3. Holistic strategies and the “mitigation avocado”

The CPI identifies three key actions that are essential to bridge the finance gap to address climate change: adopt holistic sectoral strategies, shift to a new integrated finance paradigm, and coordinate public and private actors using innovative financial mechanisms.

Holistic sectoral strategies consider the entire sector’s transformation (and even that of the economy and society), instead of solving issues incrementally, to ensure a more comprehensive and effective climate mitigation approach. A coordinated set of actions and decisions is necessary, including reducing technology costs, promoting innovation, scaling up proven technologies, and establishing stable and predictable environments that accelerate the transition to a net-zero economy. Successful climate action also requires a foundation of trust in a common vision and approach. Modelling that is developed and explored collaboratively and transparently can help build this common vision and encourage people (including politicians, the private sector, and civil society in both host and supporting countries) to buy in to the changes and provide support as needed. Robust domestic policies and international agreements are then needed to transfer resources (cash, capital and capability), mobilise private finance and implement effective change.

Creating enabling environments to mobilise private finance is critical. This involves a coordinated effort between public and private sectors, along with the implementation of innovative financial mechanisms. Rather than approaching climate finance as separate efforts through distinct agencies (e.g. international development agencies, multilateral development banks, private initiatives and philanthropic groups), there is a need to integrate finance from different sources into cohesive packages, leveraging their different strengths to complement each other and maximise impact.

For instance, multilateral banks, private investors, insurance companies, developed countries and host countries can jointly act to amplify the impact of each other’s efforts. Private investors can refocus their attention on the potential for profitable investments in energy transition in developing countries, apply innovative solutions to emerging financing challenges and more carefully assess the real risks and hence returns required in markets previously unexplored. Insurance companies can offer investors new products that target risks specific to the climate transition. Multilateral development banks could provide guarantees or subsidies to reduce or offset private financing risks. Host governments, possibly with international support, can provide a more conducive investment environment for the energy transition by increasing capacity, enacting policies (possibly including carbon pricing) to facilitate the integration of renewable energy into the grid and encourage end-users to accelerate the green transition. To fulfill their obligations under the Paris Agreement or voluntary climate commitments, developed countries and companies could negotiate carbon credit trade agreements with host (developing country) jurisdictions, sectors and companies. These credit contracts would provide higher investment returns and strong incentives for jurisdictions to support implementation, thereby making private investments more attractive. Together, by simultaneously reducing, reallocating and subsidising the management of risk, and by reducing barriers to success and increasing returns, energy investments that are currently impossible on a large scale can become feasible, even with the limited support currently available from multilateral development banks, foreign aid, carbon markets and philanthropy.

These components can work in harmony to create what we call a “mitigation avocado” (or pick your favourite stone fruit) with its seed, flesh and skin: an appealing package comprising incentives and resources in the form of policies and actions needed at each level from individual firms up to the production sector, finance providers and host (implementing) and partner (supporting) countries. The large-scale and coherent package provides integrity and climate effectiveness that voters, businesses and governments can support with confidence, and that can mobilise more profitable private sector investment.

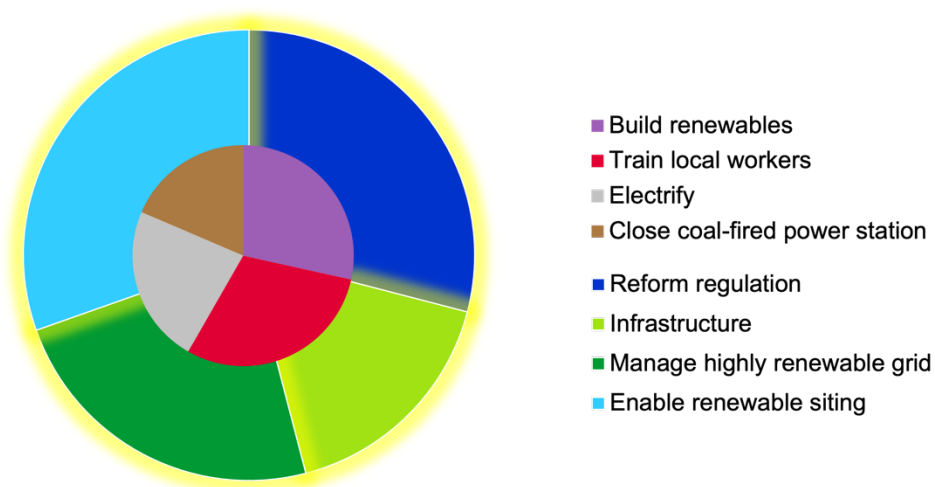
Around half of the global emission reductions required by 2030 could come from the electricity sector, and reliable, clean, low-cost electricity is key to decarbonizing the rest of our economies (Keramidas et al. 2021). The ‘seeds’ are individual components: building renewable energy and storage facilities, expanding the transmission grid, electrifying end-users like industry and transportation, improving the efficiency of existing fossil-fuel-based facilities that must continue to operate during the transition, and accelerating the closure of inefficient plants. As well as profits, co-benefits such as jobs or improved air quality arising from emission reduction activities can justify contributing resources at a local level, with local governments or federal governments stepping in to provide funding. Government climate policies, such as carbon pricing and regulatory mandates, and voluntary carbon market projects can further mobilise private financial resources.

However, similar to when planting a seed, it is also essential to create an environment conducive to growth and sustainability. This entails regulatory reforms that encourage profitable generation of renewable electricity and ensure its dispatch during peak times. It requires developing infrastructure and grid management skills to manage a renewable grid effectively to provide reliable electricity. Building a skilled workforce and supporting workers and communities affected by closing fossil fuel plants is crucial for enabling a just transition.

A set of simultaneous actions at multiple levels that complement each other can shift the system as a whole, creating equitable and enduring change. But how can this attract international funding and private finance? The holistic plan and the large-scale effort can provide assurance that additional effort funded through international carbon markets is really making a difference – or that it is indeed ‘additional’. If countries and finance providers develop an agreement for large-scale change that transparently measures and rewards progress at a system level, relative to an agreed and already ambitious system-level baseline, this can provide a ‘skin’ that gives the whole package integrity.¹² This can give seller countries confidence that if they implement ambitious, politically risky climate policies they will be rewarded with significant support, motivate buyer countries to pay for carbon reductions by helping them overcome scepticism and resistance from their citizens and fear of international criticism, and provide private actors with the confidence they need to invest.

¹² This type of agreement can be implemented under the rules of Article 6.2 of the Paris Agreement.

Figure 4: Electricity sector “mitigation avocado”



Source: Authors

4. Conclusion

Climate change is a major global challenge that requires a collective effort from all of humanity to be addressed. The annual finance needed to mitigate climate change is now over US\$8.4 trillion; the existing contributions from public and private sources and mobilised through voluntary markets fall well short. We must accelerate policy and financial innovation efforts to massively increase investment and bridge the current financing gap of over US\$7 trillion annually. The challenge of climate change is immense, and we must unite, collaborate and help each other to jointly address this global issue.

While climate finance discussions are a critical part of global negotiations, it is important to recognise that the majority of the capital required for the climate transition must come from the private sector, as that is where financial resources are concentrated. By effectively harnessing the potential of carbon markets, we can enhance returns, improve risk management and create a conducive economic environment for climate-related investment. This, in turn, can mobilise private capital and help close the finance gap.

The current barriers to decarbonisation often extend beyond the profitability of individual clean facilities such as renewable power plants or energy-efficient buildings. Frequently, the challenges lie in areas such as securing an adequate workforce, ensuring social protection for vulnerable households and undertaking necessary regulatory system reforms. A holistic approach to each energy system – rather than a focus only on individual emission reduction projects and attempts to create trade in carbon reductions as a commodity – is necessary to ensure a sustainable transition and equitably address climate change.

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Special OBEN 2401* – February 2024

Less harm, more growth

*Christopher Loewald*¹

Abstract

Macroeconomic policy in South Africa has been neither austere nor orthodox. Public spending has risen in real, inflation-adjusted, terms, in nearly every year of the post-GFC era, averaging over 3% annually, and rose especially strongly over the past three years. Real interest rates have averaged around 1%, well below neutral levels. Despite this track record, calls for higher public spending and looser monetary policy abound. But with observed low fiscal multipliers, weak potential growth and a closed output gap, a stimulus package will generate more inflation and little growth. This deepens inequality as inflation erodes incomes of poorer households and makes it harder to create labour-intensive manufacturing. With debt levels and borrowing costs at historical highs, macroeconomic de-risking – reducing debt and setting a more efficient inflation target – would increase economic growth in the short and long term, and, critically, increase the impact of economic reforms in factor, energy and logistics markets on inclusive growth. Faster sustainable growth in turn increases revenue for the upgrading of public services.

1. Introduction

Between 2010 and 2019, the real repurchase rate averaged 1% and fiscal deficits 4.5%, annually. Inflation averaged 5.1% and public spending grew by a nominal 8.3% per year. Excluding state-owned enterprise spending, public spending as a share of GDP rose to 32% from the average level of 25% of the previous decade. From one decade to the next, seven percentage points more of GDP was being spent annually in the public sector (see Figures 1 and 2). Despite these increases, fiscal austerity and high interest rates are regularly blamed for an underperforming economy.²

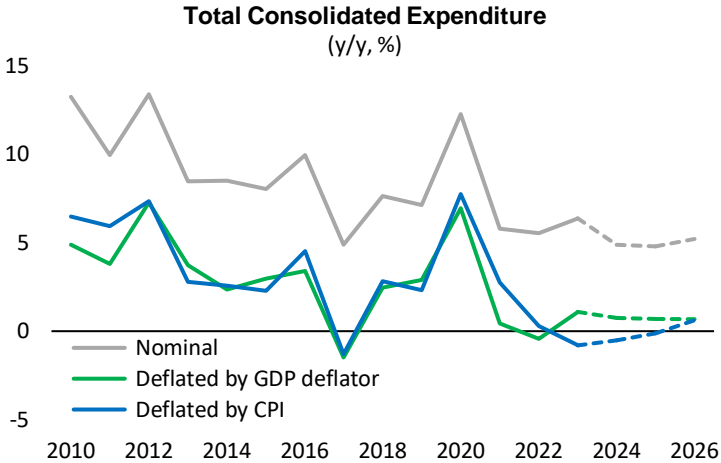
¹ Christopher Loewald is the Chief Economist of the South African Reserve Bank.

² See COSATU, 'COSATU rejects Treasury's reckless attempts to impose misguided austerity budget cuts across government'. Media release, 7 September 2023. Available at: <https://mediadon.co.za/2023/09/07/cosatU-rejects-treasurys-reckless-attempts-to-impose-misguided-austerity-budget-cuts-across-government/>; S Smit, 'The high cost of austerity', *Mail and Guardian*, 11 September 2023. Available at: <https://mg.co.za/business/2023-09-11-the-high-cost-of-austerity/>; *Business Tech*, 'Reserve Bank has lost the plot – interest rates in South Africa should be 200bps lower: economist', 24 July 2023. Available at: <https://businesstech.co.za/news/business-opinion/706448/reserve-bank-has-lost-the-plot-interest-rates-in-south-africa-should-be-200bps-lower-economist/>.

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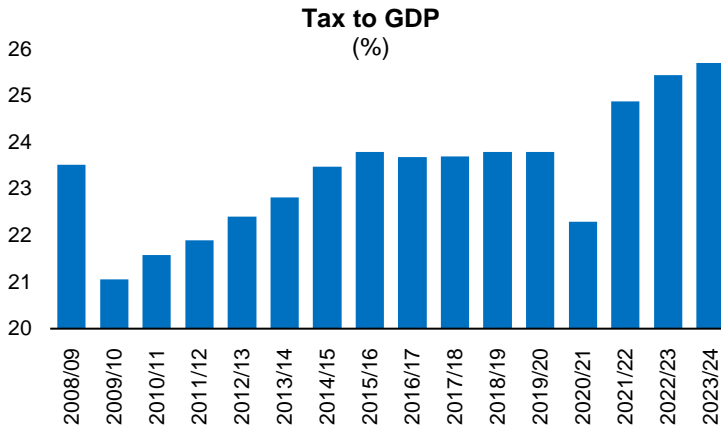
As these statistics reveal neither austerity nor even orthodoxy, it is hard to see how larger deficits or artificially low interest rates would improve sustainable growth. Fiscal multipliers are weak and with no output gap, more debt will push up already very high borrowing costs and the country risk premium. These need to decrease to get more growth out of public spending and to increase private economic activity. This note discusses why.

Figure 1: Nominal and real growth in spending



Source: National Treasury, Stats SA and SARB

Figure 2: Tax to GDP rising over time



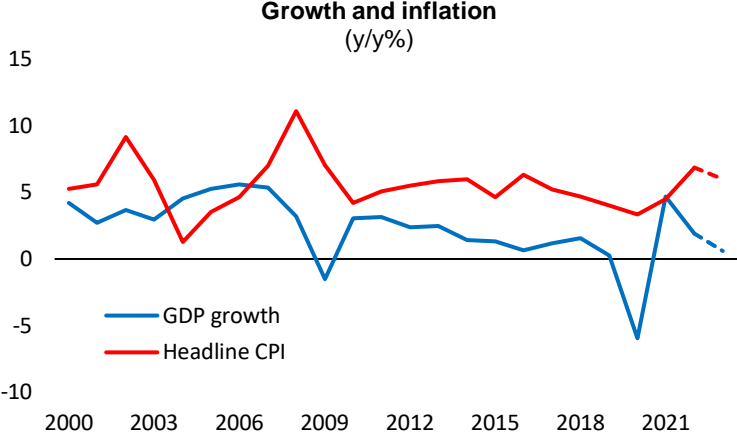
Source: National Treasury

2. The structural and distributive implications of inflation

In macroeconomic models, in the short term, an unexpected increase in demand lowers the real cost of labour and capital, and activity increases. Outside of those deflationary conditions, however, there is little robust real-world evidence for this positive relationship of inflation to growth (see Figure 3).³ Instead, efforts to exploit the theoretical relationship usually create as many harms as benefits, resulting in few net gains. These harms come in various forms.

³ As the Japanese case shows, substantial demand stimulus moves an economy from deflation to low but positive inflation, therefore pulling the economy out of deep recession. See H

Figure 3: Growth and inflation over the past two decades



Source: Stats SA

First, while unanticipated inflation can increase jobs in the short term, these rarely last long enough to benefit low-skilled workers. Instead, inflation sharply lowers the purchasing power of lower-income households, driving up the cost of employment, reversing the earlier gains, and making it even harder to engage in economic activity.⁴ The income losses suffered are also much larger than those experienced by better-off households. This loss of income can be extreme: if we measure real income with the inflation rate experienced by the poor rather than total inflation, over the period 2005 to 2010, the poverty head count rate of the population would have been 4.5 percentage points higher.⁵ The impact of inflation depends on the source of income and the basket of consumption. Where nominal wages cannot rise in line with inflation, a 1 percentage point rise in inflation lowers total real income by 1 percentage point, whereas higher-income households experience about 30% to 50% less of the rise in prices. Income is protected, while the consumption basket is less heavily weighted towards food and fuel. Generally speaking, negative economic shocks of all kinds hurt already marginalised households disproportionately more than those with formal jobs and access to finance.⁶

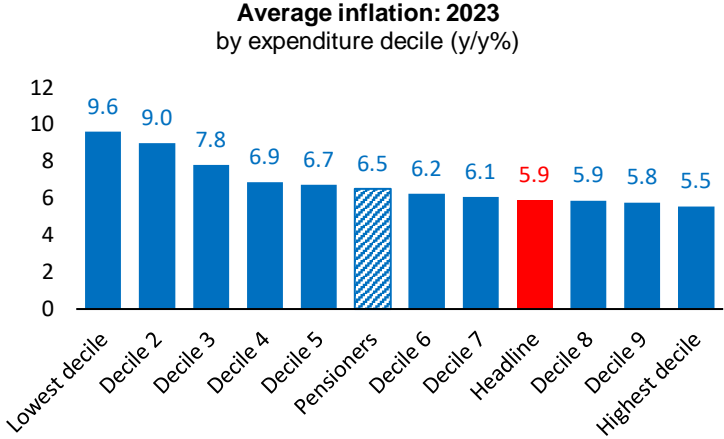
Kuroda, 'Overcoming deflation: Japan's experience and challenges ahead'. Speech at the 2019 Michel Camdessus Central Banking Lecture, International Monetary Fund (IMF), Washington DC.

⁴ See R Hausmann et al., 'Growth through inclusion in South Africa', CID Faculty Working Paper No. 434, 2023, Growth Lab, Harvard University. Available at: <https://growthlab.hks.harvard.edu/sites/projects.iq.harvard.edu/files/growthlab/files/2023-11-cid-wp-434-south-africa-growth-through-inclusion.pdf>.

⁵ See C Loewald and K Makrellov, 'The impact of inflation on the poor', SARB Occasional Economic Bulletin, Pretoria: SARB, June 2020. Available at: <https://www.resbank.co.za/content/dam/sarb/publications/occasional-bulletin-of-economic-notes/2020/10005/OBEN-2001--The-impact-of-inflation-on-the-poor----June-2020.pdf>.

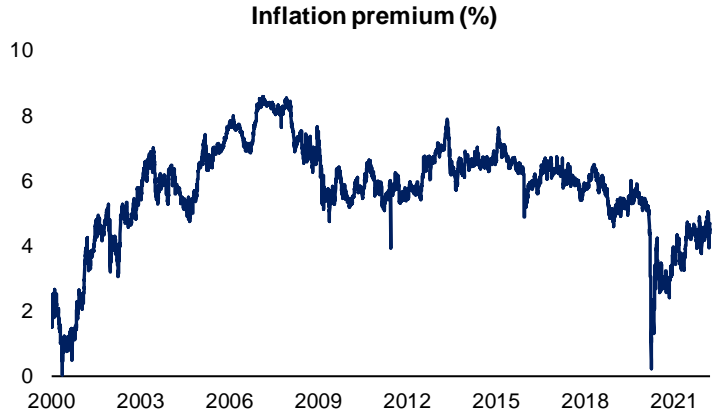
⁶ For further discussion on the inflation tax, see E Cardoso, 'Inflation and poverty', NBER Working Paper no. 4006, 1992, Washington DC: National Bureau of Economic Research. Available at: <https://www.nber.org/papers/w4006>. For an analysis on the distributive impact in South Africa, see K Mayijima, 'Monetary policy, inflation, and distributional impact: South Africa's case', IMF Working Paper No. 2021/078, 2021, Washington DC: IMF. Available at:

Figure 4: Inflation is highest for the poor



Second, higher inflation increases interest rates as economic agents of all kinds anticipate more inflation in future. If inflation rises by 1%, a corresponding 1.25 percentage point rise in interest rates is needed to reverse the spike. This increases the debt service cost on outstanding debt, which currently sits at 62% of disposable income (net of tax). As inflation rises however so do all interest rates at all maturities. This rise in the cost of borrowing for all maturities occurs whether or not there is a rise in the short-term policy rate and will be larger if there is no policy rate response. This can be seen clearly in the way in which inflation premiums have risen and yield curves have shifted up across many economies where inflation control is in some doubt.⁷

Figure 5: Inflation premium starting to rise

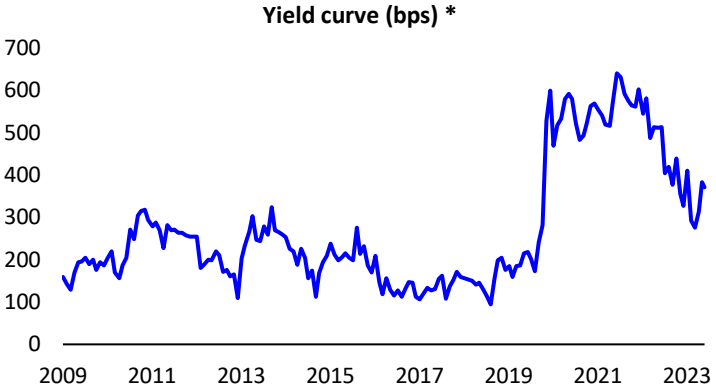


Source: SARB

<https://www.imf.org/en/Publications/WP/Issues/2021/03/19/Monetary-Policy-Inflation-and-Distributional-Impact-South-Africas-Case-50282>.

⁷ For a basic primer, see H Levy, 'The yield curve and expected inflation', *Financial Analysts Journal* 38(6), 1982, pp. 37–42.

Figure 6: Yield curve historically steep



* 10-year bond less 3-month Treasury bills

Source: Bloomberg

Third, as seen in the mid-2000s, when inflation is low, real growth from borrowing and consumption will be stronger. But such booms are rarely sustainable without growth in investment and productivity, and indeed that one wasn't as demand exceeded supply and inflation accelerated. The economic impact of spending more today (and the cost of financing it) depends critically on whether and how it improves the future capacity of the economy to grow. Enhancing long-term growth will attract cheaper finance, whereas consumption for its own sake is less likely to do so.

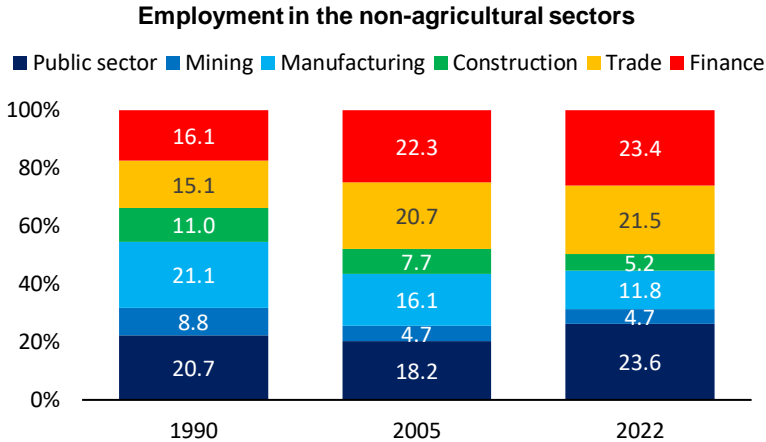
Contextualising policy and its potential effects in an economy is clearly important, helping identify what really happens when policy levers get pulled. In particular, starting conditions and structural features of an economy matter greatly for outcomes. For instance, when economic growth is weak and saving is low, expanding demand quickly pitches the external account into deficit that requires financing from abroad. The fiscal expansion might increase consumption, but unless there is a negative output gap, it would work directly against lower interest rates and a competitive real exchange rate that might increase investment.⁸

The implications of continuously pushing on the macro string are far-reaching, not least in a job creation record that is skewed away from labour-intensive manufacturing export sectors. Excess demand stimulus creates some kinds of jobs, but many are lost (or never contemplated) as inflation and an appreciated exchange rate undercut the growth of non-commodity exports. But this kind of stimulus also constrains the growth of services jobs as overall GDP is lower and depresses indirect services jobs derived from the human and physical

⁸ South Africa's investment and export to GDP ratios sit at 16% and 27% of output respectively, versus the 25% and 35% achieved by a typical emerging market. These ratios compare poorly against fast-growing economies (and even worse when including savings ratios). For an extended analysis, see C Loewald, D Faulkner and K Makrelov, 'Time consistency and economic growth: a case study of South African macroeconomic policy', SARB Working Paper Series, WP/20/12, Pretoria: SARB, November 2020. Available at: <https://www.resbank.co.za/content/dam/sarb/publications/working-papers/2020/10421/WP%202012.pdf>.

capital-intensive sectors in which South Africa has comparative advantage (finance, agriculture and mining).⁹

Figure 7: Sectoral breakdown of jobs



Sources: Stats SA and SARB

Economic growth should be thought of as additions of capital stock, labour use and productivity gains, and should broadly reflect population growth. The economy should be able to absorb the growing labour supply, with inefficiencies in factor markets determining the rate of unemployment. Each of these factor markets, the productivity of labour and capital, and how they become more efficient can be easily undermined, and in various ways. Spatial inefficiencies lower living standards and raise the cost of supplying labour.¹⁰ Wage indexation that drives a wedge between productivity and real pay costs disadvantages less-skilled workers and reduces labour demand and productivity. A low throughput of well-educated students into the job market weakens the labour supply and its potential productivity. Insufficient energy supply limits economic activity and higher inflation raises the cost of capital. The list goes on. And there is nothing in this list that will be made better by unsustainable fiscal or monetary policies.

Diversification to more labour-intensive, non-traditional exports can in the first instance be helped by doing no macroeconomic harm. Many smaller economies grow fast by importing cheap intermediate imports, adding competitive labour and producing exports to take advantage of vast global markets. These economies don't need to dominate global markets,

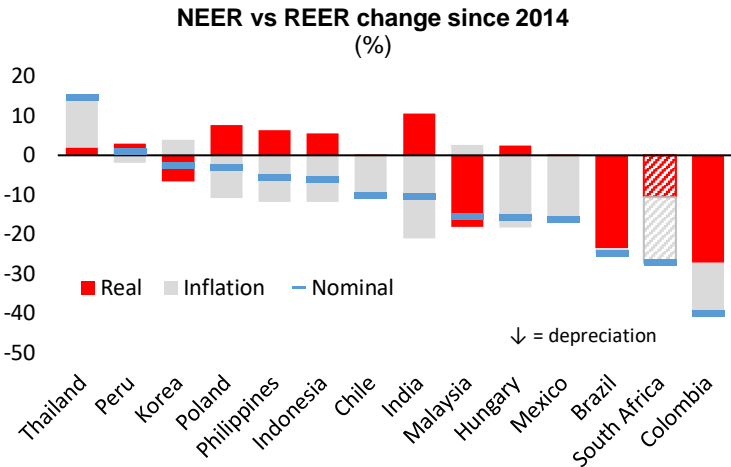
⁹ It is tempting to include automobiles here, but on balance reducing the heavy subsidisation to production would lower prices (by 25% or more) for automobiles and create more services jobs than currently exist in manufacturing. See D Kaplan, 'Manufacturing in South Africa over the last decade: a review of industrial performance and policy', *Development Southern Africa*, 21(4), 2004, pp. 623–644. Available at: <https://www.tandfonline.com/doi/pdf/10.1080/0376835042000288824>.

¹⁰ See C Loewald, K Makrelov and A Wörgötter, 'Addressing low labour utilisation in South Africa', SARB Working Paper Series, WP/21/09, Pretoria: SARB, June 2021. Available at: <https://www.resbank.co.za/content/dam/sarb/publications/working-papers/2021/WP%202109.pdf>.

but do need to be competitive enough to sell successfully into it using the skills they have (rather than the ones they wish they had).¹¹

The export-oriented, small, open economy growth models are well understood around the world, but are counter-intuitive to old-school, closed economy textbooks that feature efficient labour and capital markets and few constraints to borrowing. Instead, the small, open economy growth model focuses on the need to grow domestic demand sustainably and fight inflation, both of which require good microeconomic-level policies. Without them, the inflation arising out of a demand and supply imbalance is aggravated in price rigidities, such as price and wage indexation, a feature notably rooted in public sector.¹²

Figure 8: South Africa’s real effective exchange rate depreciation eroded by inflation



Source: BIS

3. Really not-existing austerity

In this context, we need to be as wary of mischaracterisations of policies as of the claims that throwing one or two levers somewhere will make macroeconomic and microeconomic dynamics suddenly add up to faster growth. As in monetary policy, there are trade-offs and balances to strike in fiscal policy in order for it to contribute sustainably to economic growth.

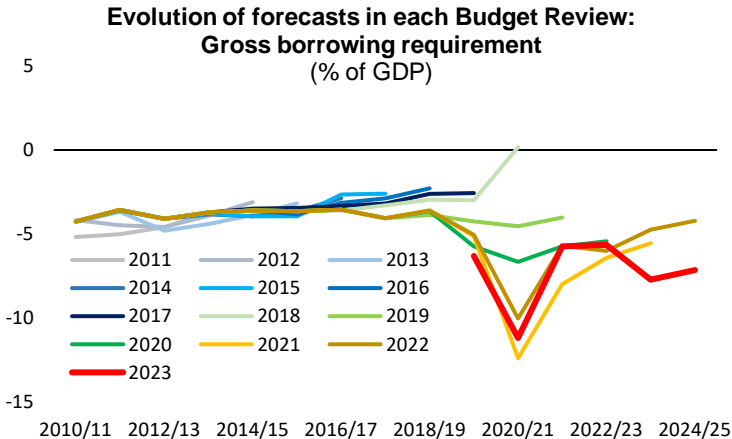
¹¹ See M Stern and Y Ramkolowan, ‘Understanding South Africa’s trade policy and performance’, SARB Working Paper Series, WP/20/17, Pretoria: SARB, August 2021. Available at: <https://www.resbank.co.za/content/dam/sarb/publications/working-papers/2021/WP%202117.pdf>.

¹² On average, the effects of public wage shocks on private sector wages are stronger and more persistent in countries where the public sector (as share of total employment) is relatively large. The impact on the consumer price level is also larger and more persistent in countries with higher bargaining (or union) coverage and in countries with a greater degree of centralisation of wage bargaining. See C Abdallah, D Coady, and L Jirasavetakul, ‘Public-private wage differentials and interactions across countries and time’, IMF Working Paper Series No. 064, 2023, Washington DC: IMF. Available at: <https://www.elibrary.imf.org/view/journals/001/2023/064/article-A001-en.xml>.

The more dramatic claims that there are easy fiscal solutions to growth or that nothing can possibly be done to become sustainable are equally wrong.¹³

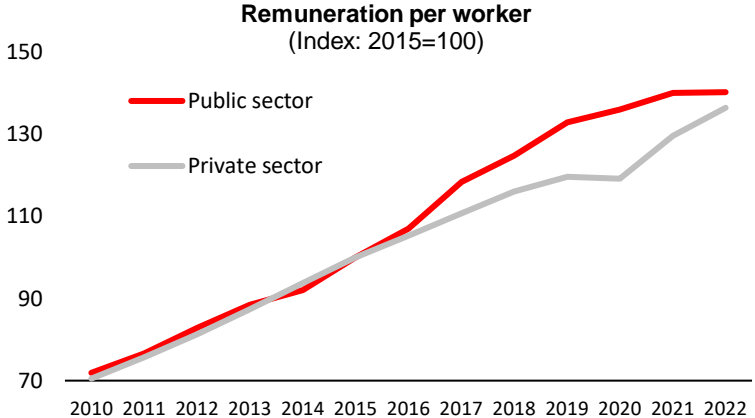
First, South Africa has seen a lot of spending and inflation that belies the claim of really-existing austerity. In inflation-adjusted real terms, public spending has increased in almost every year in the last 20. Public debt as a ratio of output has tripled from 24% to 72% in 15 years; stabilisation of the debt tends to be pushed up to a higher level (77.7%), at a later period.¹⁴ As Figure 9 below shows, budgeted deficits almost always exceeded actual outcomes, both in nominal terms and as a share of output, as spending continued to exceed expenditure caps.

Figure 9: Expected budget balance against outcomes



Source: National Treasury

Figure 10: Public vs private sector compensation



Source: SARB

¹³ For an argument on South Africa’s “austerity” measures, see M Sachs, R Amra, T Madonko and O Willcox, ‘Austerity without consolidation: fiscal policy and spending choices in Budget 2023’, SCIS Working Paper Series, No. 60, 2023, Public Economy Project, Southern Centre for Inequality Studies, Johannesburg: University of the Witwatersrand. Available at: <https://wiredspace.wits.ac.za/server/api/core/bitstreams/d7b51c8a-da16-4deb-8190-f3732672cdf6/content>.

¹⁴ According to National Treasury, *Medium-Term Budget Policy Statement (2023)*. Available at: <https://www.treasury.gov.za/documents/mtbps/2023/mtbps/FullMTBPS.pdf>.

Between 2014 and 2018, in what has been considered South Africa's strongest push to rein in public deficits, the primary balance improved by 1.3 percentage points of GDP and the structural deficit by 0.5 percentage points of potential GDP.¹⁵ This change isn't meaningful by any comparative standard: relative to the 62 countries that underwent some sort of fiscal consolidation during the last decade, South Africa's change in its structural balance was only slightly better than Argentina's performance.¹⁶ In contrast, Portugal and Spain narrowed their primary balances by more than 7% of output, and their structural budget balances by about 8.7% during the eurozone crisis. In these cases, at the peak of their consolidation efforts, output gaps widened to about 7–9% of potential output. By contrast, South Africa's efforts to reduce public deficits are insignificant and have had no clear impact on economic growth.¹⁷ We simply have not seen the same economic outcomes that a country with austerity would experience.¹⁸ One of the reasons for this is that the policy framework's floating exchange rate pushes off the point of crisis, which is so easily reached when the exchange rate is fixed.¹⁹

¹⁵ Estimates of the structural deficit are from the IMF, based on the methodology developed by A Fedelino, A Ivanova and M Horton, 'Computing cyclically adjusted balances and automatic stabilisers', Technical Notes and Manuals 09/05, 2009, Fiscal Affairs Department, Washington DC: IMF.

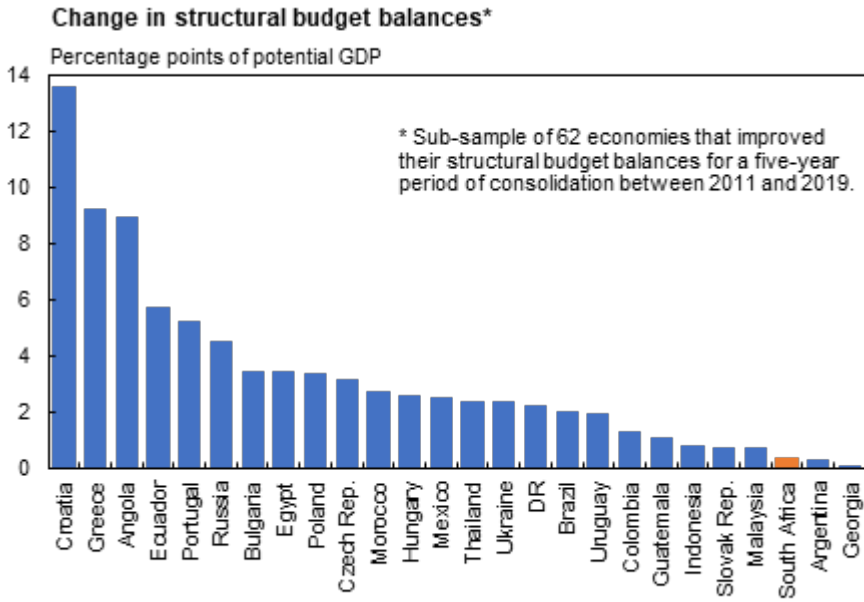
¹⁶ South Africa was only one of five consolidator countries that did not see a stabilisation in its debt ratio. The others are Angola, Argentina, Brazil and Ecuador.

¹⁷ A typical consolidator reduced its structural budget balance by 2.8 percentage points (pp) of potential output versus South Africa's 0.4pp adjustment. This is primarily due to South Africa's inability to rein in expenditure: spending over that period fell by just 0.6pp versus a typical consolidator's 2.2pp reduction. Instead, the main policy tool for South Africa's consolidation was raising taxes, with revenues as a share of output rising by 1.5pp. Importantly, disinflation over the period does not appear to be a major reason for South Africa's relative underperformance, with the country's 1.5pp disinflation over the period in line with the median 1.6pp decrease. See T Radebe (forthcoming), 'Comparative perspective on South Africa's fiscal consolidation'.

¹⁸ This is true even when we consider the different effects a tax-based versus expenditure-based austerity would have on income. See C Favero, F Giavazzi, and A Alesina, *Austerity: when it works and when it doesn't*, 2019 (Princeton University Press). Available at: <https://www.jstor.org/stable/j.ctvc77f4b>.

¹⁹ See J E Gagnon and M Hinterschweiger, 'Fiscal policy and exchange rate regimes', in *Flexible exchange rates for a stable world economy*, 2011 (Washington, DC: Peterson Institute for International Economics), pp. 207–211. Available at: https://www.piie.com/publications/chapters_preview/6277/07iie6277.pdf.

Figure 11: Comparative perspective on fiscal consolidation



DR = Dominican Republic

Source: IMF

Second, while unbridled expansion won't deliver any significant benefit, a fiddle around the margins approach to spending won't either. Marginal additions to spending will not add up to a sustainable growth trajectory when debt service costs are growing so fast and when the impact of spending on potential growth is so low. It is these higher debt levels that crowd out other fiscal priorities, because service costs for the debt level rise much faster than nominal GDP (15% last year alone and closer to 19% this year). Debt costs have doubled as a percentage of total public spending (to 15.2%). If debt service costs were half as high, there would be an additional R154 billion (or 2.3% of GDP) of resources available to government.²⁰

At present, three areas of spending attract particular attention. One is the addition of loan financing to state-owned enterprises, in particular Transnet and Eskom, to pay back debt. This should become sustainable spending, in the sense that the borrowing for it is paid back with more energy, easing logistics constraints, and therefore leads to better growth.²¹

The second is the set of pandemic commitments, in particular the social transfers. Given the raft of studies showing that social transfers have had little impact on job creation, these should at a minimum be targeted to reduce unintended consequences such as a further rise in the

²⁰ In a sample of 110 countries, South Africa's projected r-g gap of 2.5 percentage points is lower than only Mexico (2.9pp), Brazil (2.8pp), Oman (5.7pp) and Kuwait (4.8pp). For analysis of South Africa's debt sustainability, see R Havemann and H Hollander, 'Fiscal policy in times of fiscal stress: or what to do when $r > g$ ', WIDER Working Paper 2022/52, 2022, Helsinki: UNU-WIDER. Available at: <https://www.wider.unu.edu/publication/fiscal-policy-times-fiscal-stress>.

²¹ For estimates of the impact of the energy crisis on growth, see T Janse van Rensburg and K Morema, 'Reflections on load-shedding and potential GDP', Occasional Bulletin of Economic Notes, OBEN 2301, 2023, Pretoria: SARB. Available at: <https://www.resbank.co.za/content/dam/sarb/publications/occasional-bulletin-of-economic-notes/2023/oben-2301-reflections-on-load-shedding-and-potential-gdp-june-2023.pdf>.

supply cost of labour.²² Neither loan financing to state-owned enterprises nor the social transfers are necessarily permanent increases to spending, but they do carry major risks of having little economic impact, while further changing the composition of the fiscus to even more consumption and even less investment. In the case of the social transfers, job creation would be far better delivered with good housing, transport and education services that permanently lower the supply cost of labour.

The third area of spending concern is public sector compensation, which is where efforts to manage a smaller than expected fiscal envelope focused, though less effectively than portrayed. This is a larger challenge than the others given weak fiscal multipliers and the strong rise in compensation already seen.²³ Although total compensation of employees has moderated over the last two years as nominal GDP surged, this really shows just how stable compensation spending has been despite the pandemic and poor real growth rates – the collapse in growth had no effect on public employment. The slowdown in compensation in real terms is almost entirely a private sector phenomenon, going back to 2015. The public sector saw sustained increases in real compensation of 2.6% per year starting already in 2012 and running up to 2019.

4. Inflation, fiscal metrics and debt service costs: towards macroeconomic de-risking

A rise in inflation is often said to have positive effects on the fiscus as revenues increase and expenditure remains constant, while the real debt stock declines. However such an improvement in the fiscal position is temporary and ultimately self-defeating. Higher inflation gets indexed into nominal wages and spending schedules, increasing borrowing costs and sovereign debt yields, permanently. The real cost of borrowing rises across the economy with predictable costs to economic growth, and as debt service costs accelerate, the public sector is able to buy less in real terms – less labour, less goods and less services.²⁴

In short, and in the same way as with job creation, surprise inflationary shocks provide at best only a temporary benefit to the primary balance and high debt levels. In the GFC and its deflation, policymakers tried to engineer positive inflation, rather than create it by surprise. The fiscal position would be best served by credible and ambitious fiscal targets and a lower, more credible inflation target and rate. These would immediately improve inflation expectations,

²² For instance, see H Bhorat, T Köhler and D de Villiers, 'Can cash transfers to the unemployed support economic activity? Evidence from South Africa', Development Policy Research Unit Working Paper 202301, 2023, Cape Town: University of Cape Town. Available at: https://commerce.uct.ac.za/sites/default/files/media/documents/commerce_uct_ac_za/1093/DPRU%20WP202301.pdf.

²³ See T Janse van Rensburg, S de Jager and K Makrelov, 'Fiscal multipliers in South Africa after the global financial crisis', SARB Working Paper Series, WP/21/07, 2021, Pretoria: SARB. Available at: <https://www.resbank.co.za/content/dam/sarb/publications/working-papers/2021/WP%202107.pdf>.

²⁴ See S Arslanalp and B Eichengreen, 'Living with high public debt', Paper presented at the Jackson Hole Symposium: Structural Shifts in the Global Economy, 24–26 August 2023. Available at: https://www.kansascityfed.org/Jackson%20Hole/documents/9749/Living_With_High_Public_Sep_2_2023.pdf.

lowering long-run debt costs, sovereign credit risk and yields, and make it easier to achieve a better fiscal balance. A lower target would also reduce the inflation cost of the floating currency, reducing its corroding effect on competitiveness.²⁵

What else can monetary policy do to help the deteriorating fiscal position? Some have argued for a direct bond-purchasing programme, where the SARB buys long-term bonds, and finances the purchases by issuing central bank reserves remunerated at the repo rate.²⁶ This is clearly not free money, as remunerated liabilities are created on the SARB balance sheet. The SARB in effect issues short-term debt instead of the National Treasury. Not only is this a poor precedent for fiscal transparency, but the Bank has already implemented an excess reserves liquidity system for the economy. This in principle satisfies all demand for reserves that the banking sector might need in the case of large negative economic or financial shocks.

Higher central bank reserves increase settlement balances, an asset on their balance sheets that allow commercial banks to increase the creation of new deposits for borrowers. It is also for this reason that, outside of deflationary conditions, the direct purchase of equities and bonds when a country is above the zero lower bound raises inflation risk, creates moral hazard and transfers the risk to the SARB's balance sheet while bailing out investors.²⁷ Issuance of treasury bills does not inherently have this additional implication in the short term as reserves rise and deposits rise.

These arguments also hold for the more recent appetite to draw down on the gold and foreign exchange contingency reserve account (GFECRA). One way of doing this involves selling foreign currency reserves outright, which the fiscal authority uses to either issue less debt or increase spending. The net debt of the country does not change, however, just the composition of the debt (fewer foreign currency assets and rand liabilities), with the gain being the interest saving. Another method is to forego the sale of foreign currency assets and issue central bank reserves to commercial banks, which then credit government deposits. The catch in both instances is that the rand now transferred to government deposits at commercial banks should be sterilised to prevent a rise in inflation and currency weakness. Without this, the risk of flight

²⁵ The long-term benefits of disinflation outweigh its costs. See C Loewald, K Makrelov and E Pirozhkova, 'The short-term costs of reducing trend inflation in South Africa', SARB Working Paper Series, WP/22/08, 2022, Pretoria: SARB. Available at: <https://www.resbank.co.za/content/dam/sarb/publications/working-papers/2022/WP%202208.pdf>.

²⁶ See C Fratto et al., 'Unconventional monetary policies in emerging markets and frontier countries', IMF Working Paper, WP/21/14, 2021, Washington, DC: IMF. Available at: <https://www.imf.org/en/Publications/WP/Issues/2021/01/22/Unconventional-Monetary-Policies-in-Emerging-Markets-and-Frontier-Countries-50013>.

²⁷ For the argument against QE in EMDEs, see D Laxton and C Y Rhee, 'Lessons from unconventional monetary policy for small open economies and emerging markets', Presentation for the Jackson Hole Economic Symposium, August 2022. Available at: https://www.kansascityfed.org/documents/9089/Governor_Rhee_Remarks.pdf.

For the South African case in particular, see D Fowkes, 'Not so easy: why quantitative easing is inappropriate for South Africa', SARB Working Paper, WP/22/05, 2022, Pretoria: SARB. Available at: <https://www.resbank.co.za/en/home/publications/publication-detail-pages/working-papers/2022/NotsoeasywhyquantitativeeasingisinappropriateforSouthAfrica>.

to safer assets increases (increasing rand volatility) or commercial banks reduce credit spreads and lending accelerates, both tending to higher inflation.

The macroeconomic test of tapping GFECRA or changing the composition of the debt depends on whether it leads to more inflation and currency depreciation. If it does, we earn a short-term, temporary benefit (lower interest payments in the near term) for a long-term, permanent loss, again. We should not be surprised by bond trader enthusiasm for this, as higher bond prices in the very short term are exchanged for lower prices later on as the long-term cost of sterilisation gets built into the policy framework.

Other recommendations, such as credit allocations and prescribed assets for the state would both produce large deadweight losses and further reduce the efficiency of the public sector.²⁸ In almost all cases where such policies were implemented, the public balance sheet was worse off, and inflation soared, a reminder that just because one *can* implement unconventional monetary policy doesn't mean one *should*.²⁹

5. Conclusion

What is clear from the many economic diagnostics of South Africa is that our network and factor markets are inefficient, resulting in, among other problems, uncompetitive pricing and high unemployment. Taking steps to make these into functioning, efficient markets would go a long way to increase job creation, in turn decreasing the macroeconomic incentive to take on more debt. Lower inflation and less borrowing would cut interest costs for the public and the private sector, generating benefits to the sovereign risk premium, the currency, and back to inflation and rates in a beneficial spiral of effects. Lower debt service costs on its own could free up major fiscal resources that can be better targeted at service delivery, in turn lowering the cost of economic activity generally and expanding it.

This is a virtuous circle, but trying to set it off by squeezing more out of monetary and fiscal expansion hasn't worked, and won't, especially in the absence of more specific reforms to factor markets. Spurring inclusive and sustainable growth requires deep reforms, particularly in product and labour markets, as well as in the digital and climate transitions.³⁰

²⁸ See policy recommendation by G Isaacs, Z Mncube, L Mduyana and K Ramburuth, 'Is South Africa heading for a "fiscal crisis"?' IEJ Policy Brief, 2023, Institute for Economic Justice. Available at: <https://www.iej.org.za/wp-content/uploads/2023/10/IEJ-policybrief-MTBPS-20231.pdf>.

²⁹ See R Gürkaynak, 'Unconventional monetary policies for EMDEs: uses and consequences – practical questions and some answers', Presentation at the SARB 2023 Biennial Conference, Cape Town. Available at: <https://www.resbank.co.za/content/dam/sarb/what-we-do/research/biennial-conference/updated/presentations/3b.%20Session%203%20-%20Refet%20Gurkaynak.pdf>.

³⁰ See National Treasury, 'Economic transformation, inclusive growth, and competitiveness: a contribution towards a growth agenda for the South African economy', 2019. Available at: https://www.treasury.gov.za/comm_media/press/2019/towards%20a%20growth%20agenda%20for%20sa.pdf. For a progress report, see the Presidency and National Treasury, 'Operation Vul'indlela progress update: Q3/Q4 2023 report', 2023. Available at: <https://www.stateofthenation.gov.za/operation-vulindlela>, For a comparative perspective, see

In short, the effectiveness of our macroeconomic policy and how we think about what to do in the macro space is closely shaped by the workings of the micro-economy. Macroeconomic policies helped to ease the way to post-GFC and post-pandemic recoveries, but they are not quick fixes to the long-run growth and job creation problems of this economy. Finding solutions to the economic challenges would benefit from clearer sighting of how macroeconomic and microeconomic policies actually work. Reform momentum has increased and many important ones are under way. We should be careful to nurture that momentum, ensure that reforms progress, and back them up with sensible long-term macroeconomic goals.

OECD, 'Economic policy reforms 2023: going for growth', 2023. Available at: <https://www.oecd.org/publication/going-for-growth/2023/>.