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Recent GDP growth outcomes exceed expectations despite record power outages

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Abstract

Despite ongoing weakness, GDP growth has been unexpectedly higher during the first half of 2023 as the mining, manufacturing and finance sectors outperformed expectations. Meanwhile, on the demand side, better than expected growth from government expenditure and private sector gross fixed capital formation was realised. Better-than-expected growth outcomes can be ascribed to firms adapting to load-shedding; Eskom reducing its planned maintenance to improve generation capacity and relying more on its Open Cycle Gas Turbines; and increases in self-generating rooftop solar power and wind energy. This occurred amidst trading partner growth resilience. Looking ahead into 2024, GDP growth outlook remains weak, but risks to the outlook are still balanced.

1. Introduction[1]

Against the backdrop of a sluggish economic landscape exacerbated by heightened instances of load-shedding in the latter part of 2022, ongoing logistical constraints and a GDP contraction worse than anticipated of 1.1% q/q in 2022Q4, prospects for domestic growth in the current year were subdued, especially during the initial six months of 2023. This lack of optimism was primarily fuelled by a continued surge in load-shedding, which has now peaked at a record-breaking 21 715 gigawatt-hours (GWh) in 2023, surpassing the previous high of 11 724 GWh recorded in 2022.

In 2023H1 alone, the country encountered a staggering loss of 15 349 GWH in electricity production, exceeding the total experienced throughout 2022. Nevertheless, in the face of these elevated power rationing levels, GDP growth surpassed initial expectations, thereby altering the narrative that prevailed at the start of the year. GDP growth is now expected to be closer to 1.0% this year, relative to earlier forecasts that were nearer to 0.0%. There are several reasons for this, and the purpose of this economic note is to explain the errors made in the forecast predictions as well as to provide some anecdotal evidence for these upside surprises.

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2.   Domestic growth has exceeded expectations in 2023H1

The SARB generally overestimated GDP leading up to the Great Financial Crisis (GFC) of 2008/09 and again from 2011 to 2019. Thereafter, small underestimations have essentially prevailed (see Figure 1).

Figure 1: GDP errors

Source: SARB
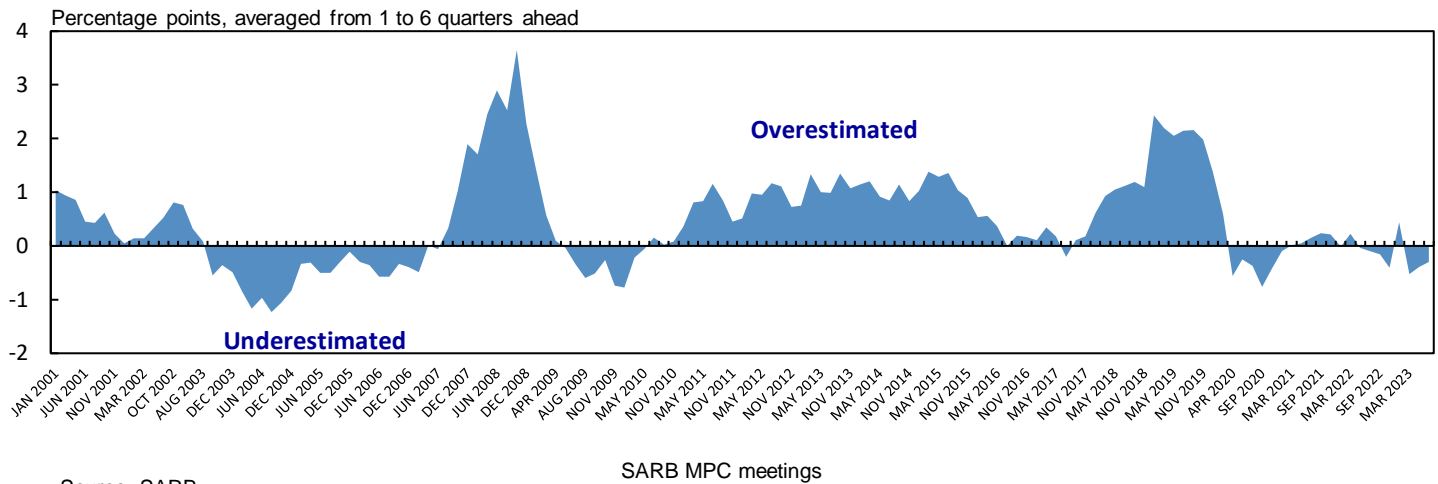
Lately, GDP growth has exceeded expectations, surprising both the SARB and other forecasters. This has occurred despite worsening supply challenges, such as load-shedding and logistics issues (see Figure 2).[2] During the first half of 2023 these above expected GDP outcomes have primarily originated in mining and to a greater extent in the manufacturing sector. Being energy-intensive sectors, this might suggest that firms in these sectors have demonstrated more effective adaptation to operate amid load-shedding.

Figure 2: SARB GDP forecast errors in 2023H1

Source: SARB

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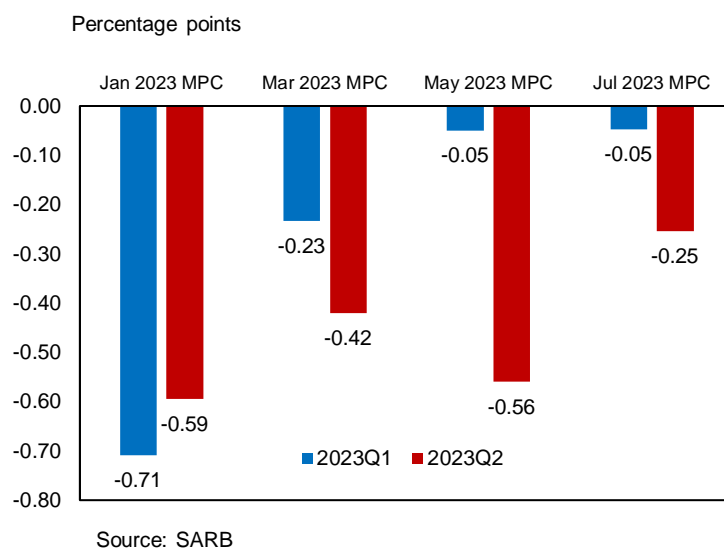
[2]   Recent GDP surprises, when compared to historical upside surprises, have been minimal.

The finance sector also contributed to the better-than-expected GDP growth outcomes. This is likely due to our limited access to high frequency data in advance of growth outcomes in this sector. Finance firms have also adapted to operating during load shedding, especially since they are not substantial electricity users. Unlike the intense power (especially base power) users such as the mining and manufacturing sectors, finance sector firms do not require significant installation of power to continue with operations during outages. This explanation could also apply to other sectors such as government and personal services (see 'other' category in Figure 3) which also contributed to the upside surprises in 2023H1 GDP growth. On the contrary, the agricultural sector GDP growth outcome was lower than expected in 2023Q1, while the transport sector outcome was much lower than anticipated in 2023Q2. Had it not been for the two negative outcomes from these sectors, GDP growth in the first half of 2023 would have probably been even higher than expected.[3]

**Figure 3: Contribution to 2023H1 GDP growth forecast errors (Production side)**

Source: SARB
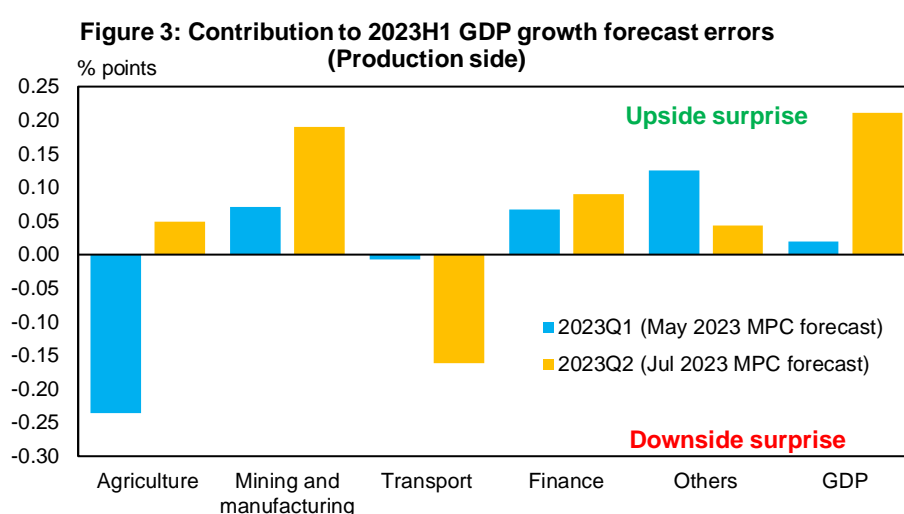
There were even more significant positive surprises in growth that originated from government and total gross fixed capital formation (particularly the private sector) as measured by the demand side of the economy in 2023H1 - see Figure 4. Higher than anticipated private investment spending was mainly associated with load-shedding mitigation measures such as alternative self-generation. These energy projects also exhibit a high import content, which explains the significant and unexpected outcome in imports relative to our forecast. Meanwhile, exports came out higher than expected in 2023Q1, mirroring resilient trading partner growth. However, the reverse was true in 2023Q2, likely linked to the further sharp slowdown in commodity prices that began in early 2022.

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[3] There are a few elements that explain this sharp 2023Q1 contraction in the agricultural sector. These include the adverse impact of loadshedding on poultry production, delayed plantings due to field crops being affected by heavy rains, as well as foot and mouth disease which affected the cattle industry. In 2023Q2, the transport sector was impacted by a decline in rail freight and road passenger transport.

**Figure 4: Contribution to 2023H1 GDP growth forecast errors
(Expenditure side)**

% points
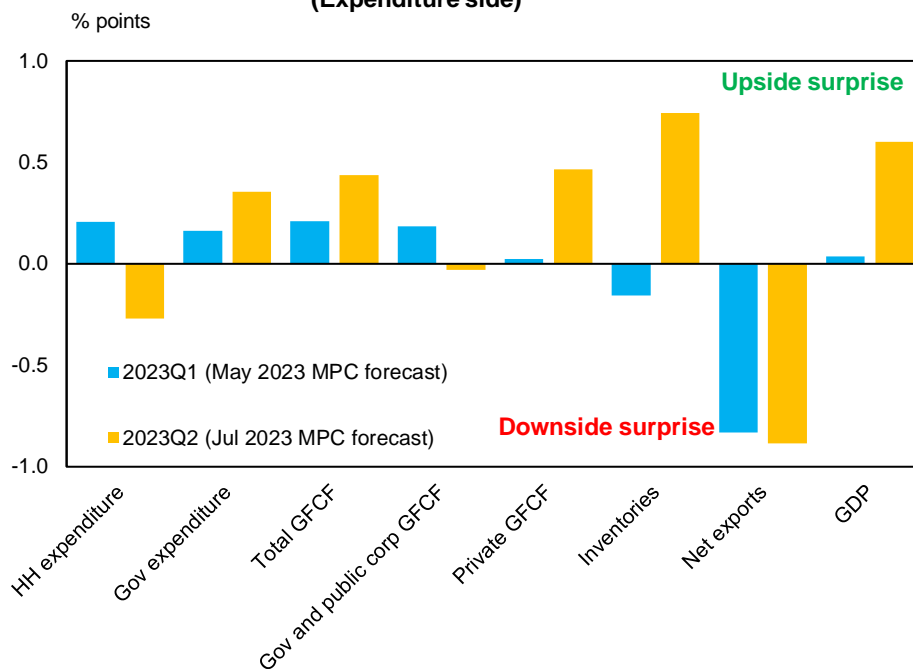
Source: SARB

3.   Detail on the drivers of recent better-than-expected GDP outcomes

There are several reasons that could explain why domestic growth has surpassed expectations in the first half of 2023 (as discussed in Section 2).

3.1   Adaptation in energy intensive sectors

Recent near-term growth forecast errors were relatively small for the mining and manufacturing sectors given the benefit of high frequency data releases, which track these quarterly growth outcomes quite closely. However, it would be remiss to deliver a research output on how the economy has been fairing during record-high power rationing without unpacking the outcomes in the energy intensive sectors.

Notwithstanding the intensity of load-shedding, the mining, and manufacturing sectors have contributed positively to growth during the first half of this year in comparison with the last six months of 2022. In the mining sector (Figure 5), gold production has been a significant driver of total output (+9.9%). There was also a marked increase of 3.6% in the production of PGMs in the first half of 2023, which has the second highest weight in total production, after coal. In the manufacturing sector (Figure 6), large-weight items such as food and petroleum (supported by the reopening of a Cape Town refinery) advanced by 2.9% and 7.0% respectively in the first six months of the year, continuing their post-pandemic recovery.

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Figure 5: Mining sector

Percentage change

Source: Stats SA
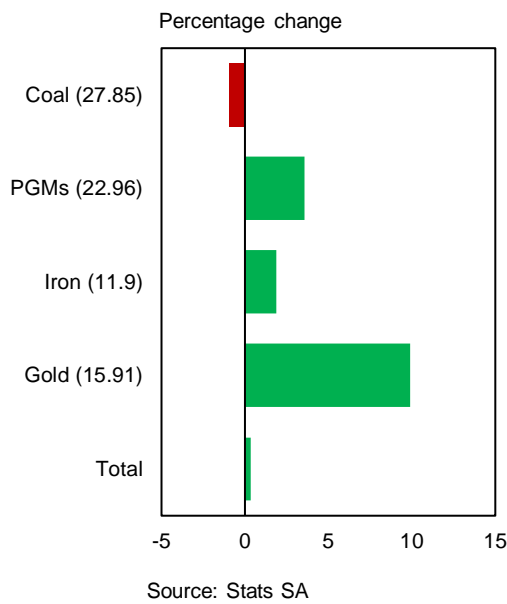
Figure 6: Manufacturing sector

Percentage change

Source: Stats SA
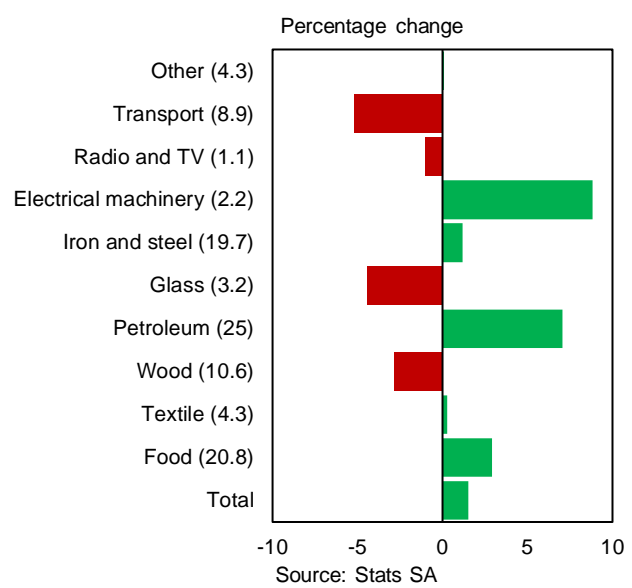
The growth observed in the mining and manufacturing sectors indicates a certain degree of resilience against the impacts of load-shedding. One potential avenue of adaptation is load curtailment, which involves instructing key industrial customers (>100GWh/annum) to reduce their demand for energy.[4] Predominantly, the industrial (40%) and mining (50%) sectors, encompass most of these curtailment customers.

As of 31 August, the cumulative implementation of load curtailment has amounted to 424 hours, as indicated in Table 1. This figure is significantly lower than the approximately 5000 hours of load shedding over the same period. Furthermore, load curtailment this year has been dominated by lower stages, particularly, stage two. Large industrial companies in these sectors may have benefited from some reprieve, as load curtailment customers are exempt from inclusion in load-shedding schedules.[5]

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[4]   Load curtailment is load reduction obtained from customers who can reduce demand on instruction. Load curtailment is implemented on instruction from the System Operator. Customers who are a) able to respond, b) fall within the classification of being a key industrial customer (>100Gwh/annum), c) able to be measured and monitored and d) capable of being isolated on the network, may apply to be on load curtailment.

[5]   However, loadshedding remains a constraint for smaller operations in the production chain that won't have the benefit of load curtailment.

| Table 1: Load curtailment		
Load curtailment*	Number of events	Number of hours
Stage 2	30	232
Stage 3	1	8
Stage 4	20	184
Total	51	424
* Data obtained until 31 Aug 2023 Source: Eskom		

Another possible reason for the adaptation to load-shedding is the investment in self-generation within these sectors. Total gross fixed capital formation increased by 6.0% year-on-year, largely driven by investment in machinery and equipment (Figure 7), partly due to the ongoing renewable energy drive and related load-shedding mitigation measures. When analysing sectoral contributions to fixed investment, the manufacturing sector dominated during the first half of this year, contributing 2.7% points to growth (Figure 8). This partly reflects an increase in investment (possibly in self-generation) in the manufacturing sector.

Conversely, the mining sector has been diminishing fixed investment growth since the start of 2022 (apart from 2022Q3). This implies that adaptation within the mining sector may be attributed more to measures such as load curtailment, and less so to investment in renewable energy.

Despite the welcomed adaptation, mining and manufacturing production volumes are still underperforming (Figure 9). The overall trend in total production levels has remained broadly flat, with growth in the sectors constrained by a range of domestic challenges. These include criminal activities, logistical inefficiencies, high operating costs, navigating electricity load-shedding and a fragile global economic environment.
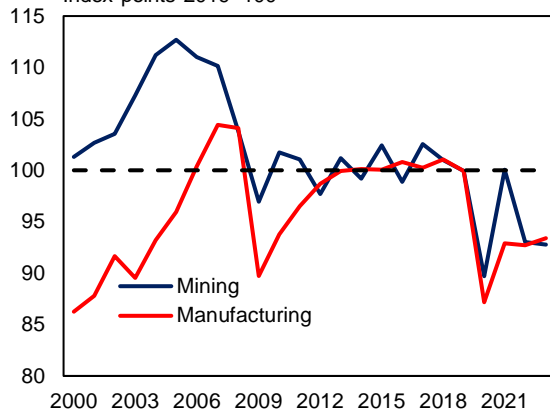
Figure 7: Machinery and equipment
Index points 2019Q4=100

Source: Stats SA

Figure 8: GFCF contributions
Percentage points
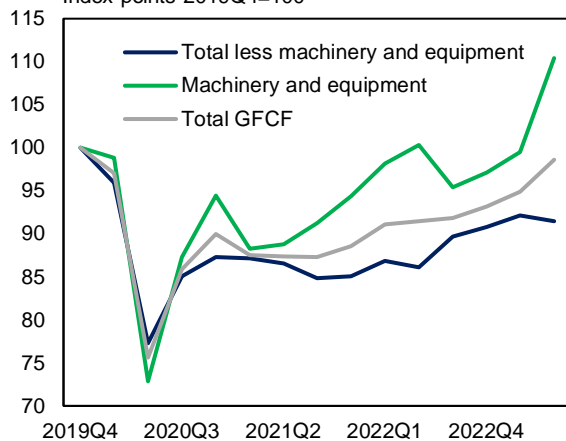
Source: Stats SA

Figure 9: Mining and manufacturing production volumes
Index points 2019=100
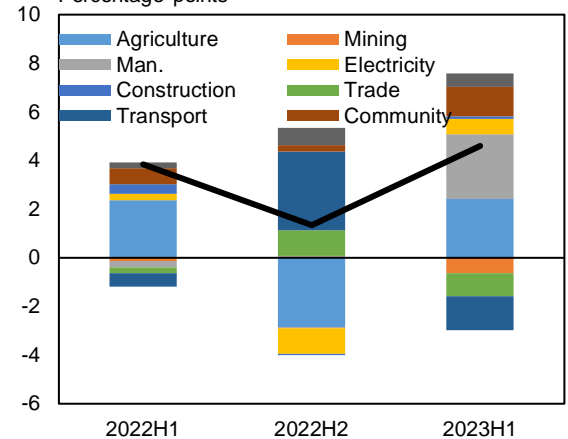
Source: Stats SA

3.2 Load-shedding assumed to worsen, but intensity improves

Evolution of the load-shedding assumption

The escalation in load-shedding at the tail-end of 2022 and the first half of 2023 is the result of a combination of factors. These include the breakdown of several generation units (resulting in unplanned maintenance) and delays in returning previously damaged generation units at various power stations back onto the grid. These developments resulted in revising the 2023 load-shedding assumption higher at both the January MPC from 100 days to 250, and the May MPC from 250 to 280 days. Further revisions were made at the September MPC, as there was an under allocation of load-shed days (lower stages). Therefore, an additional 30 days were added to the assumption taking the total expected load-shedding days to 310 for 2023 (see Table 2).
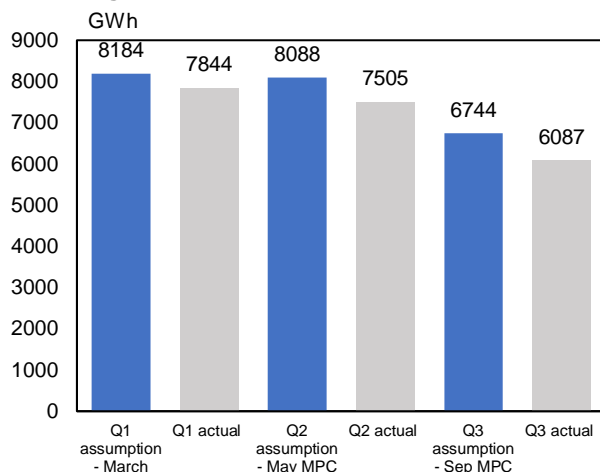
Table 2: Load-shedding		
	Load-shed days (2023)	GWh shed
Nov 2022 MPC	100	11724
Jan 2023 MPC	250	25416
Mar 2023 MPC	250	24840
May 2023 MPC	280	27000
Jul 2023 MPC	280	25872
Sep 2023 MPC	310	27792
Source: SARB		

Load-shedding intensity better than expected

Estimating load-shedding intensity in GWh shed has proven especially challenging with outcomes repeatedly lower than our forecasts – see Figure 10.

Several reasons explain the downside surprises. During the winter months, from June to August 2023, load-shedding was less intense when compared to the start of the year as Eskom introduced measures to counter the seasonal increase in demand. These included higher electricity tariffs for high-energy users to deter extensive energy consumption. Eskom also reduced its planned maintenance to improve generation capacity. Moreover, the increase in self-generating rooftop solar power and wind energy generation increased. Finally, Eskom was also more reliant on Open Cycle Gas Turbines (OCGTs) – see Figure 11, especially during peak time, which aided efforts to close the supply-demand gap.

Figure 10: GWh shed

Source: SARB

Figure 11: OCGT generation
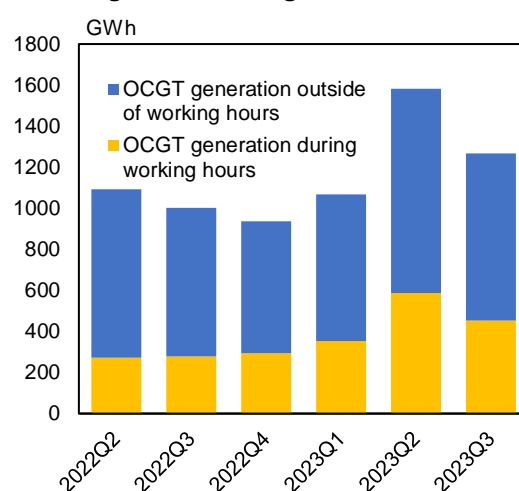
Source: Stats SA

These factors contributed to a more structured load-shedding schedule, favouring less load-shedding during working hours relative to the previous year's schedule. Figures 1 and 2 (in the appendix), which disaggregates load-shedding occurrences per hour while differentiating between the different stages, depicts this. That is, despite load-shedding intensity and frequency worsening over time, it has been relatively moderate during working hours (08:00-16:00). All these factors benefitted the entire economy, resulting in growth coming out higher than expectations.

3.3 SA trading partner growth proves resilient

The upside surprise in domestic growth could also be explained by better-than-expected global growth outcomes, particularly SA's trading partners as they proved to be quite resilient despite fears that tighter credit conditions would derail growth. This is reflected in the evolution of SA's trading partners' growth projections that have been revised continually upward over the course of the year for 2023, from 2.1% at the January 2023 MPC meeting to 2.7% at the September meeting (see Figure 12). These upward revisions are broad-based, but most pronounced in the US and Japan. This is also confirmed by Citigroup's global economic surprise index which has been positive for most of this year[6]. In our view, this has contributed to the recent upside surprises in domestic GDP, as export growth, as shown in Figure 3 came out higher than expected.

Figure 12: Evolution of 2023 global GDP growth forecasts

Percent
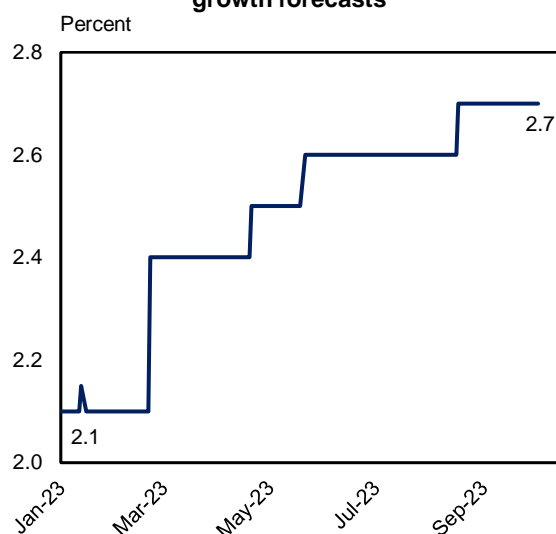
Source: Bloomberg

3.4 GDP growth volatility

Domestic supply shocks have also contributed to the highly volatile economic activity levels (see Figure 13), making it harder for forecasters to project growth. There is a wide uncertainty band around our prediction for the estimated impact of these shocks (including that of load-shedding) as well as the recovery from these shocks. This could also explain some of the

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[6] https://en.macromicro.me/charts/45866/global-citi-surprise-index.

SARB's GDP growth forecast errors, especially recently as the country is still recovering from Covid-19 and the KZN floods. Also important is that the primary sector has been the most volatile in quarter-on-quarter terms post the GFC. This increases the likelihood of incorrectly projecting the primary sector (particularly the agricultural sector) compared to the secondary and tertiary sectors (see Figure 14).
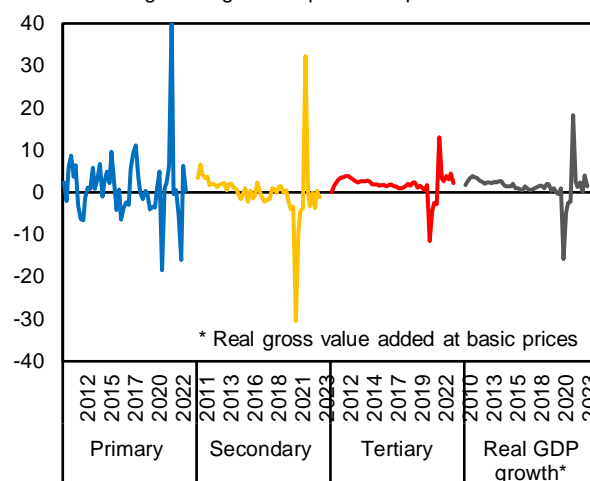
Figure 13: SA's GDP volatility

Standard deviation of q/q%
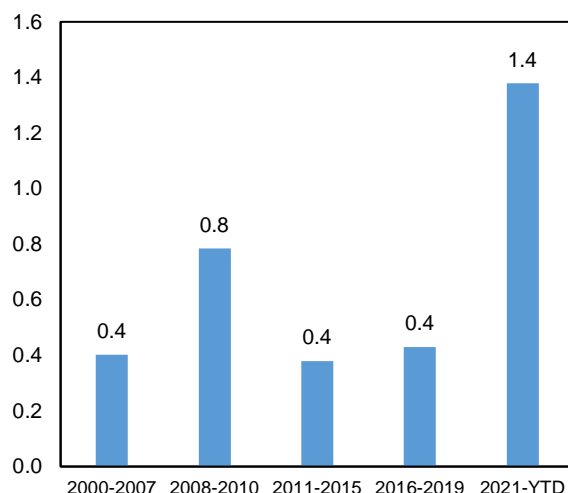
Source: SARB

Figure 14: Economic growth by sector

Percentage change from quarter to quarter

* Real gross value added at basic prices

Seasonally adjusted
Source: Stats SA

4. Could GDP growth continue to exceed expectations?

Over the near term, growth is likely to remain weak, particularly in 2023Q3, given the slowdown in commodity prices, N3 truck torchings, the taxi strike in the Western Cape and floods in some parts of the country. Monthly data from Statistics South Africa has substantiated this expectation with risks to GDP growth in 2023Q3 skewed to the downside.

Meanwhile, in 2023Q4 risks could be to the upside as the intensity of load-shedding could be lower than expected. This is because Eskom has fast-tracked the return of three Kusile units (1, 3 and 4) which were expected to return online by December 2023. These units are currently fully operational adding an additional 2400MW to the grid. This is expected to provide just above two stages of load-shedding reprieve. The return of these units a month earlier than anticipated bodes well for the economy. Unit 2 and Unit 5 are expected to return online by early November and late December respectively each adding 800MW. With that said, Eskom officials have warned that even post-operational, Unit 5 would constantly undergo testing and would be regularly taken offline. Overall, excluding Unit 5, current developments surrounding Kusile are expected to generate 3200MW of electricity if they remain online sustainably.

5. Conclusion

South Africa has been hit by a series of shocks, such as intensified load-shedding, disruptions to rail and port, weather events, etc. The dramatic escalation in the intensity and frequency of load shedding, especially since 2022H2, has been the primary risk to economic activity. In 2023H1, around 15 300 GWh was lost due to load shedding – making 2023 the worst load-

shed year since the first incident of load shedding in 2007. However, despite the magnitude of load-shedding in 2023H1, growth has shown some resilience, surprising both the SARB and other forecasters to the upside. These upside surprises can be explained by several factors such as businesses adapting to operating during load-shedding; upside surprises in load-shedding during working hours; load curtailment; better-than-expected trading partner growth and finally, GDP volatility. Looking ahead into 2024, we are uncertain whether these upside surprises in GDP growth will persist, as risks appear somewhat balanced.

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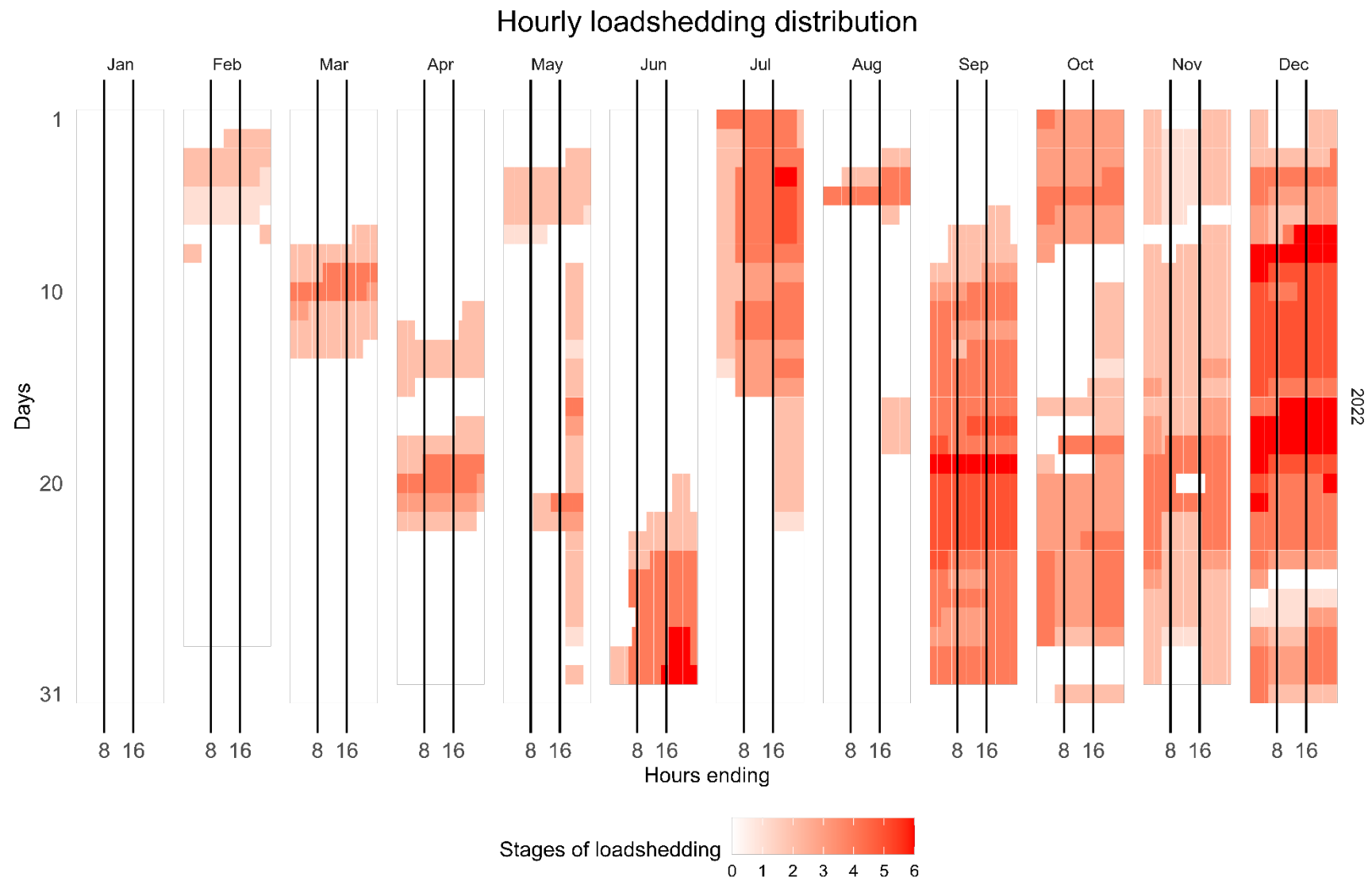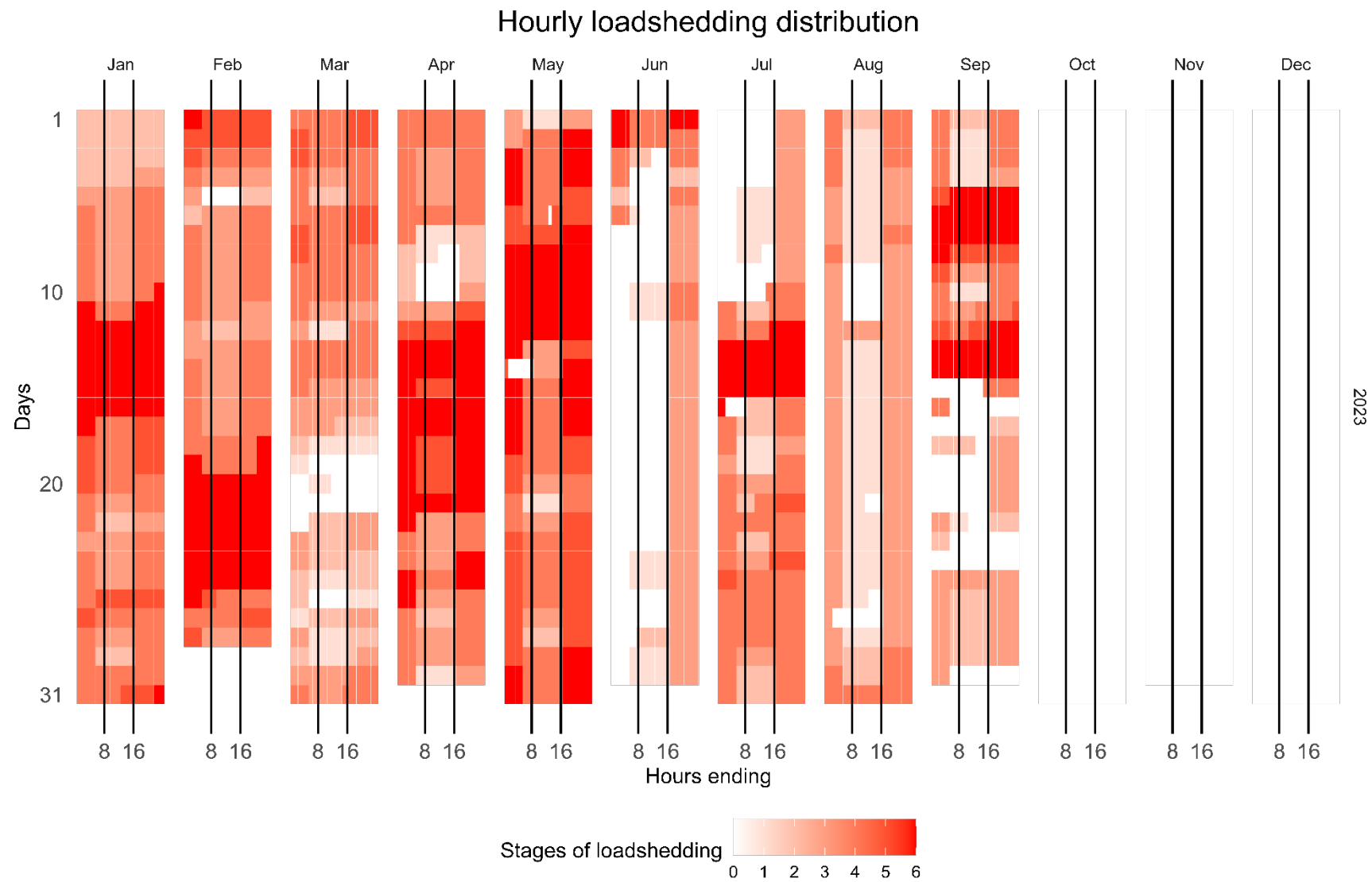
Figure 1

Figure 2