
THE REAL ECONOMY BULLETIN

TRENDS, DEVELOPMENTS AND DATA

SECOND QUARTER 2020

The Real Economy Bulletin is a TIPS review of quarterly trends, developments and data in the real economy, together with a comprehensive analysis of the main manufacturing industries and key data in Excel format.*

The GDP

As expected, the GDP dropped sharply, by 16% in seasonally adjusted terms, in the quarter ending in June 2020 as a result of the COVID-19 pandemic. Economic activity crashed in April, during the strict Level 5 of the lockdown. The gradual relaxation in restrictions since then have seen a bounce back to near pre-pandemic levels. Still, COVID-19 continues to pose a threat, limiting recovery especially in tourism and recreational services even in the absence of regulations. Moreover, long-standing structural challenges and declines in major trading partners will slow recovery.

In the second quarter of 2020, the GDP shrank by 16%, seasonally adjusted but not annualised. As the following graph shows, the fall dwarfed both the 2008/9 crisis and the recession of the three preceding quarters.

*Available at www.tips.org.za/the-real-economy-bulletin

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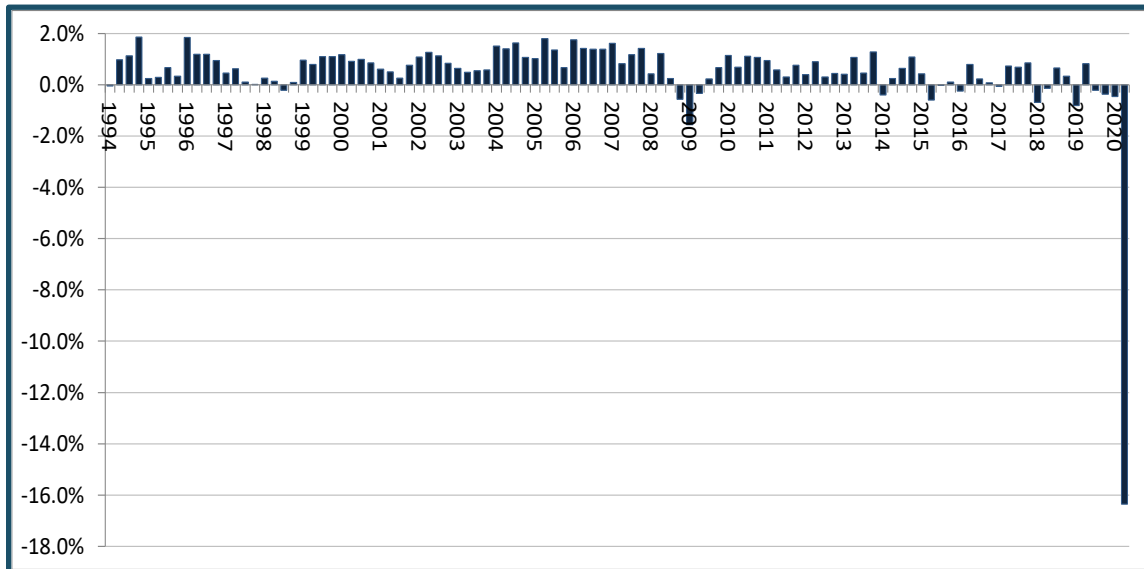
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Graph 1. Quarterly change in GDP, seasonally adjusted

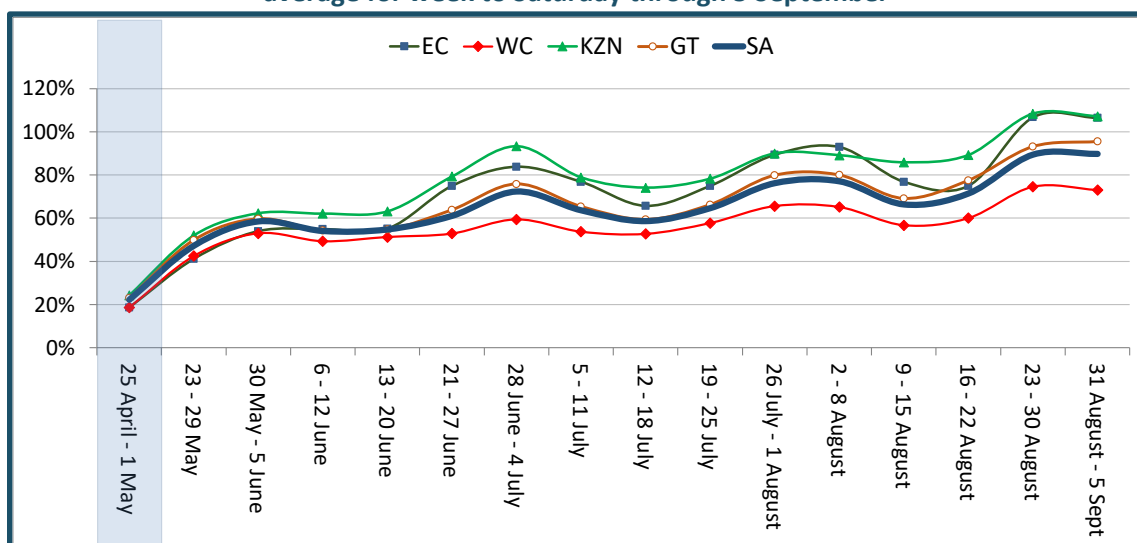


Source: Statistics South Africa. GDP quarterly figures. Excel spreadsheet downloaded www.statssa.gov.za March 2020.

The GDP is only reported on a quarterly basis, which obscures critical month-on-month trends. Statistics South Africa's monthly data, which tracks sales and production by sector, are only available through June. TIPS has tried to provide a more accurate and up-to-date view using private transactional figures in its Tracker on the pandemic and the economy (see [TIPS Tracker: The economy and the pandemic](#)). These data indicate that GDP declined very sharply in April, when the economy was in lockdown as public health authorities sought to slow the spread of the COVID-19 pandemic while developing less costly responses to prevent infections as well as ensuring adequate treatment. As the restrictions on economic activity gradually lessened from 1 May, the economy recovered, at first sharply and then much more gradually. It continued to lag pre-pandemic levels through August, with the Western Cape falling persistently behind the rest of the country.

Yoco, which provides financial transaction systems for small business, publishes an index of its turnover as a percentage of levels before the lockdown. As Graph 2 shows, its findings underscore both the extraordinary fall in economic activity in April, and the subsequent recovery. As of early September, small business turnover as measured by the index was 10% below March levels, although in the Western Cape it remained 25% below March.

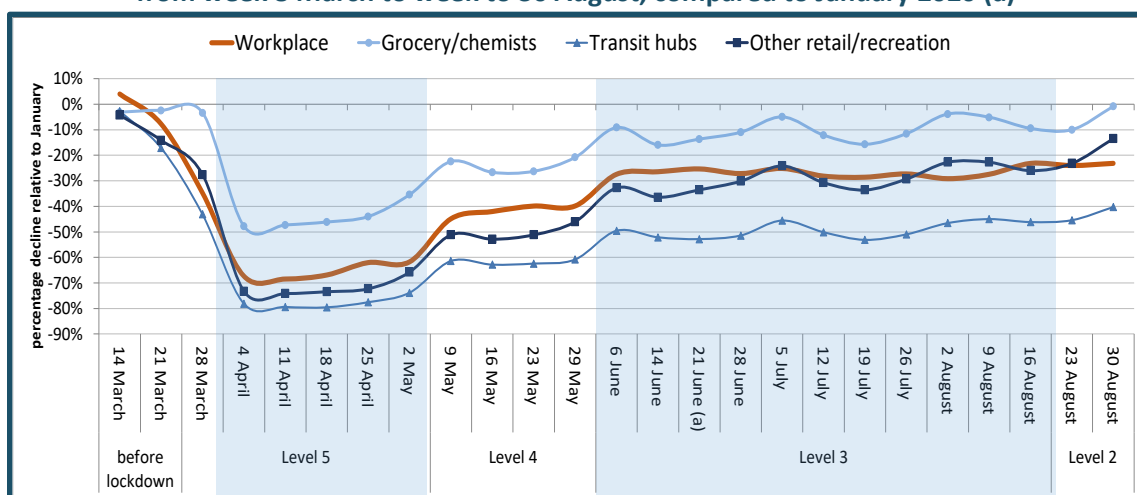
Graph 2. Small business turnover relative to the first two weeks of January, average for week to Saturday through 5 September



Source: Calculated from Yoco Small Business Recovery Monitor. Downloaded at www.yoco.co.za on relevant dates.

A similar picture emerges from figures on travel to work, essential retail and recreational businesses. The figures derive from Google figures on customers' mobility. Again, the data show a sharp initial improvement following the move to Level 3 on 1 May, with slower recovery thereafter. As of early September, the Western Cape remained something of an outlier. Travel to work there, for instance, was still 30% below pre-pandemic levels, compared to 20% in the rest of the country.

Graph 3. Percentage change in travel by type of destination, weekly average from week 8 March to week to 30 August, compared to January 2020 (a)

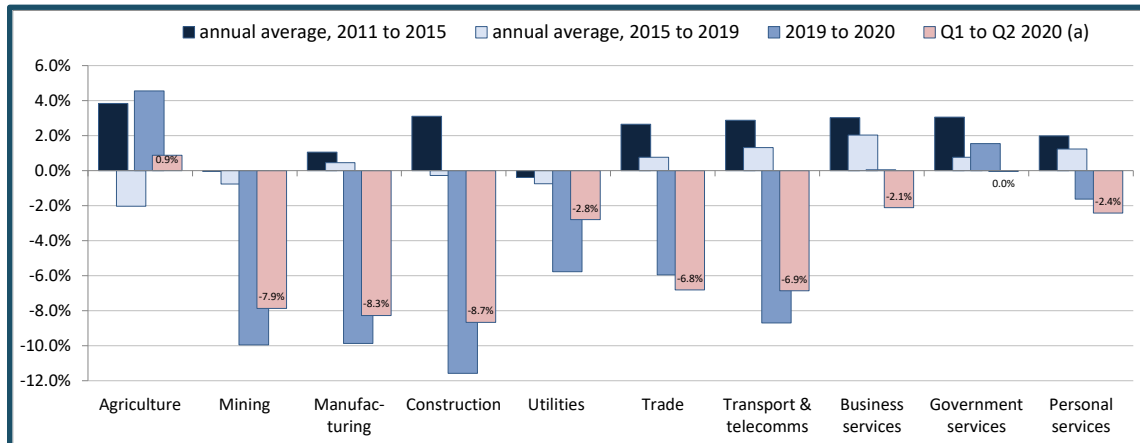


Note: (a) Data for week to 16 August exclude 10 August, which was a holiday, and may not be fully comparable to other weeks. Source: Calculated from Google COVID-19 Community Mobility Reports. Accessed at <https://www.google.com/covid19/mobility/> on relevant dates.

By sector, the real economy excluding agriculture saw the sharpest fall in GDP in the second quarter of 2020. From the first to second quarter, seasonally adjusted, mining, manufacturing and construction declined by over 8%, and logistics by almost 6,5%.

In contrast, agriculture saw a 4% increase, in large part because it was less affected by the lockdown and enjoyed good rains in most of the country. Retail and wholesale trade fell by over 6%. The services sector saw a somewhat less disastrous performance, with personal and business services shrinking just over 2% and government services remaining essentially unchanged.

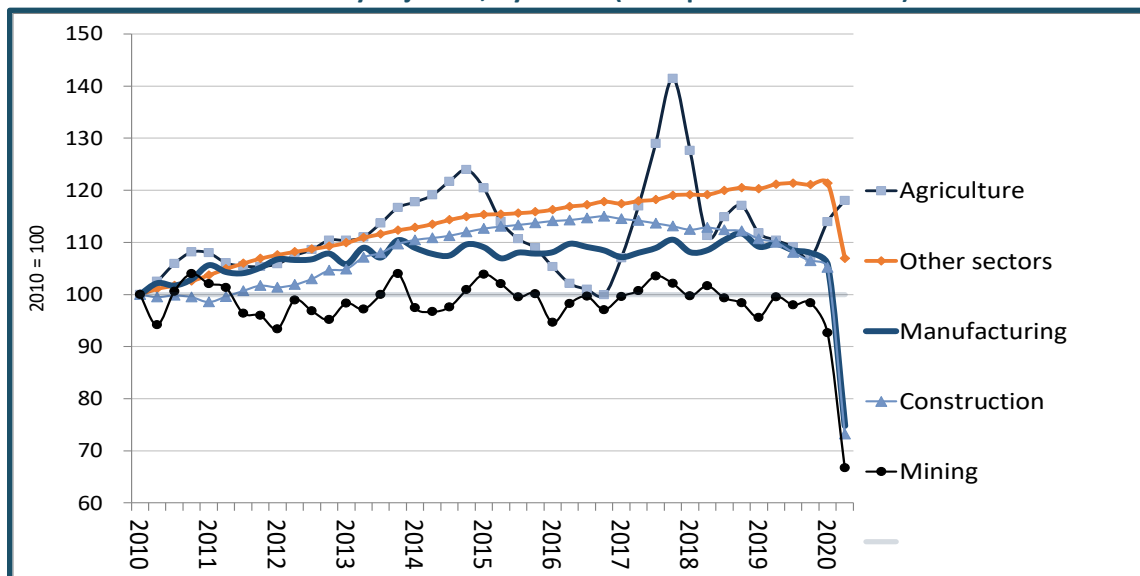
Graph 4. Growth rates by sector, averages for year to second quarter from 2011 to 2020 and first to second quarter 2020



Note: (a) Seasonally adjusted. Source: Statistics South Africa. Gross Domestic Product (Quarterly)(2019Q4). Excel spreadsheet downloaded from www.statssa.gov.za in September 2020.

As Graph 5 shows, the real economy outside of agriculture produced almost a third less in the second quarter of 2020 than it had in 2010. Other sectors – mostly services, logistics and retail – grew more strongly and fell less sharply, leaving them ahead of 2010 in total output (although lower in per person terms due to population growth). Agriculture performed better than any other sector, recovering after years of decline driven mostly by droughts linked to the climate crisis. The question remained how quickly goods producers would recover from the pandemic crisis.

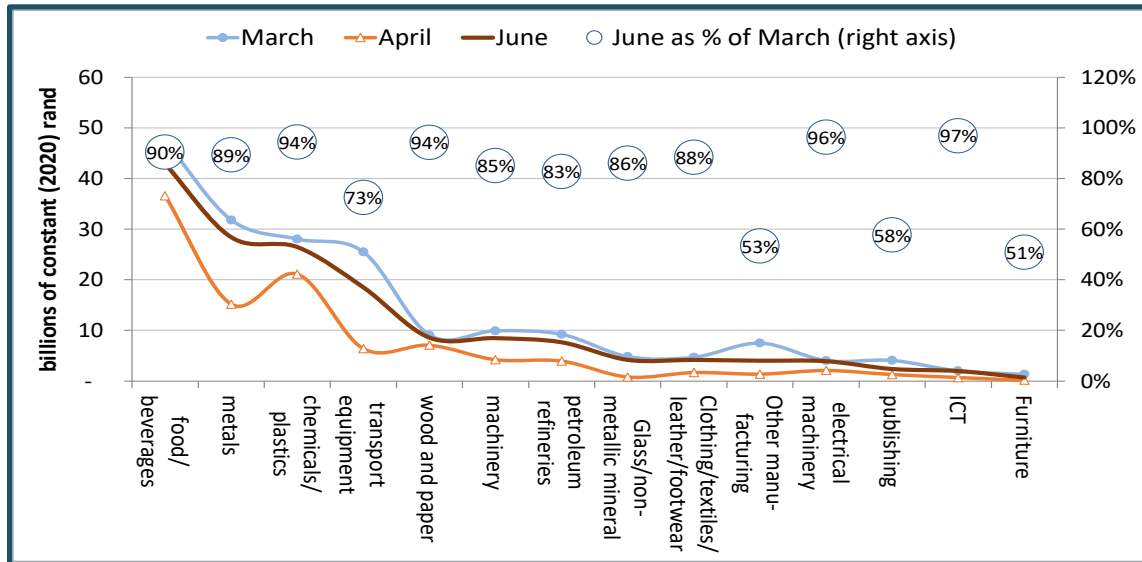
Graph 5. Indices of quarterly contribution to GDP in constant terms, seasonally adjusted, by sector (first quarter 2010 =100)



Source: StatsSA GDP quarterly figures. Excel spreadsheet downloaded from www.statssa.gov.za in September 2020.

Monthly figures for manufacturing sales point to both a differentiated impact by industry and the start of the recovery from May. As a whole, manufacturing sales in constant terms (deflated with CPI) fell by over half from March to April. By June, however, they had returned to 85% of the March figure. As Graph 6 shows, June sales in most of the major industries except auto hovered around 90% of the pre-pandemic level. Auto, which was hard hit by the downturn in Europe as well as South Africa, had only reached three quarters of its March sales.

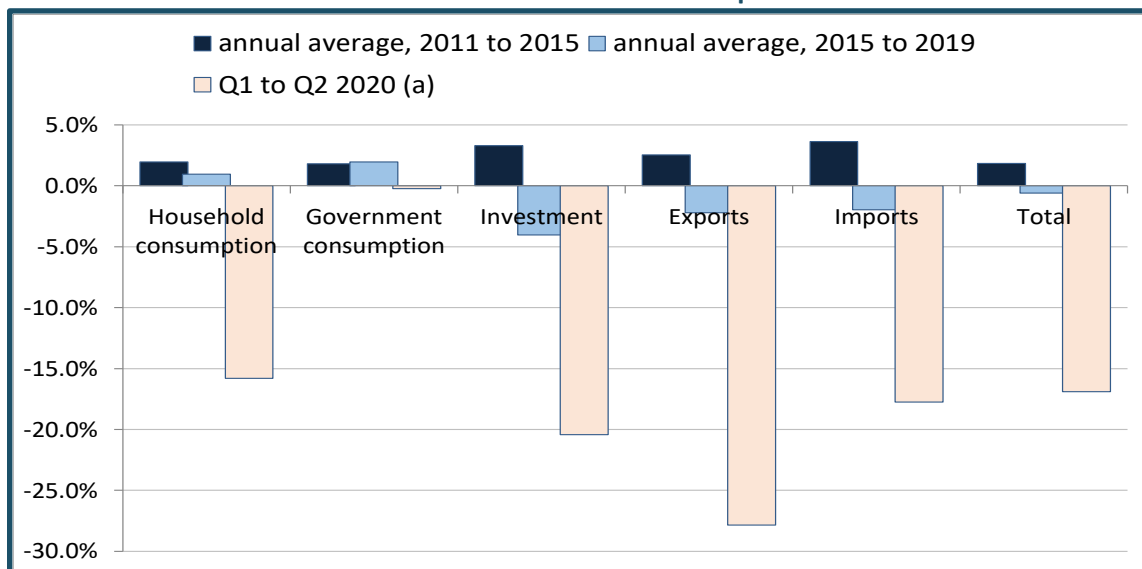
Graph 6: Monthly manufacturing sales in billions of constant (2020) rand (a) for March to June 2020, and June as a percentage of March sales



Sources: Statistics South Africa. Manufacturing production and sales. Series on actual sales. Excel database downloaded from www.statssa.gov.za in June 2020. Notes: (a) Deflated with CPI.

In terms of expenditure, the decline in GDP from the first to the second quarter was driven by falling household consumption, followed by investment and net exports. In contrast, government consumption remained virtually unchanged.

Graph 7. Change in expenditure on GDP, average for year to second quarter from 2011 to 2020 and first to second quarter 2020

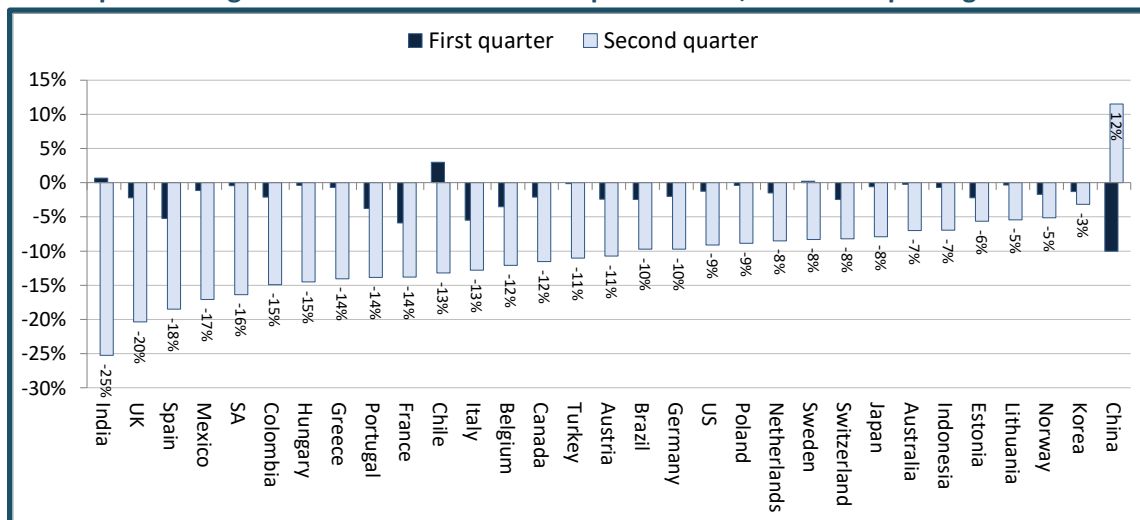


Note: (a) Seasonally adjusted. Source: Statistics South Africa. Gross Domestic Product (Quarterly)(2019Q4). Excel spreadsheet downloaded from www.statssa.gov.za in September 2020.

Of countries included in Organisation for Economic Cooperation and Development (OECD) data, South Africa came in at the lower end for GDP decline in the pandemic, after India, the United Kingdom, Spain and Mexico and slightly worse than Columbia, Hungary, Greece and Portugal.

The data also indicate the extent to which the pandemic already affected global growth in the first quarter of 2020, as the Chinese economy shrank by 10% with a knock-on effect in most other countries. The Chinese economy recovered almost entirely in the second quarter, however, and is expected to grow slightly in 2020. Still, except for China, all of South Africa’s main trading partners – the UK, Germany, the United States and Japan – shrank by at least 8% in the second quarter of 2020. That decline will in itself make it harder for South Africa to recover.

Graph 8. Change in GDP in first and second quarter 2020, selected reporting countries

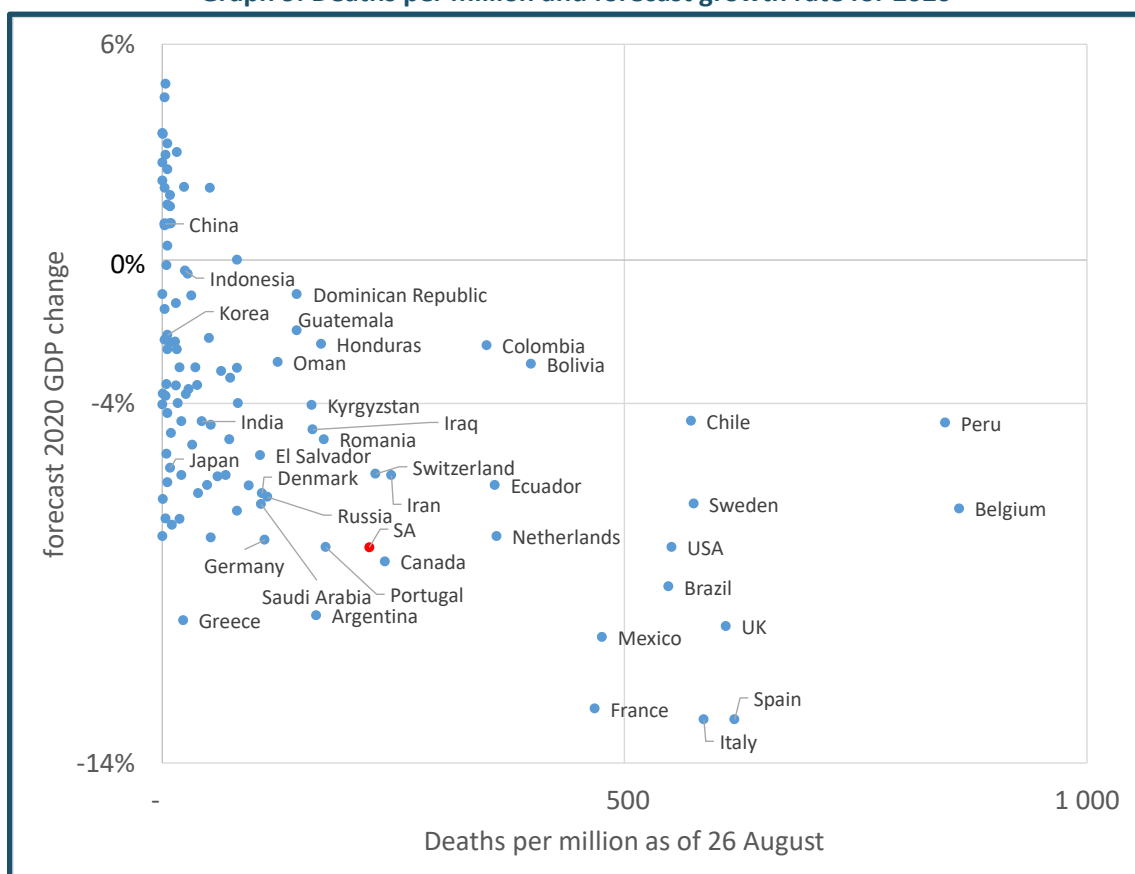


Source: OECD. Quarterly national accounts. Interactive dataset. Downloaded from www.stats.oecd.org on 9 September 2020.

Internationally, recovery in the coming year will depend on the extent to which the pandemic is contained. As Graph 8 shows, the International Monetary Fund (IMF) forecasts slower growth for countries with higher death rates from COVID-19.

Virtually no hard-hit economy is expected to recover quickly. From this standpoint, there is no trade-off between lives and livelihoods. Rather, in the short run, recovery will depend on the ability to find ways to prevent the virus that minimise economic restrictions. As a rule, that means reducing social and recreational contacts, maintaining social distancing and other protections at work, and wearing masks.

Graph 9. Deaths per million and forecast growth rate for 2020



Note: Countries with over five million residents. *Source:* Deaths per million from Worldometer. Reported Cases and Deaths by Country, Territory, or Conveyance. Downloaded on 26 August 2020 from <https://www.worldometers.info/coronavirus/#countries>. GDP forecasts from the International Monetary Fund, World Economic Outlook, June 2020 update for larger economies, as provided; for other countries, World Economic Outlook for April 2020. Accessed at www.imf.org in August 2020.

Some industries cannot operate safely and profitably on their old business models until the pandemic is fully contained. These activities include most in-door entertainments such as bars, restaurants, concerts and clubs, as well as some forms of public transport and retail. Moreover, consumers may be reluctant to risk some kinds of activity that are not strictly necessary, such as in-store shopping for clothes and in some cases working from the office. The challenge for the affected activities will be to develop new models that are both actually and visibly safe, for instance through greater use of delivery services and streaming. But the disruption will often be severe and many especially smaller businesses are unlikely to survive.

These factors mean that overseas tourism to South Africa is unlikely to recover any time soon. Although Statistics South Africa estimates that tourism as a whole provides only 3% of the GDP and 4,5% of employment, it is more important in the Western Cape. Various factors limit international travel, especially over long distances, even if it were legally permitted. Above all, consumer anxieties about long flights, quarantines imposed on returning visitors and lower incomes in key source markets mean tourism to South Africa is unlikely to recover any time soon. As discussed in the latest TIPS tracker (*TIPS Tracker: The economy and the pandemic 24 August-6 September 2020*), businesses will likely have to base any recovery in the short run on domestic travellers.

That said, the apparently slower recovery in the Western Cape and Gauteng may also reflect their relatively high share of senior managers and professionals in private formal employment. These high-level positions are often more able to work from home and limit shopping in order to avoid contagion, which would depress indices for both small business turnover and travel. According to Statistics South Africa's Labour Market Dynamics, in 2018 a quarter of formal private jobs in Gauteng and almost a fifth in the Western Cape were senior professionals or managers. In the rest of the country, the figure was just over a tenth.

In addition to the pandemic, South Africa must still grapple with complex economic challenges, for which there are no easy or cheap solutions. There is broad agreement across stakeholders and analysts that structural changes are required. Except for fixing electricity generation and ending state capture, however, there is no agreement about what that means in practice or about who should pay. These disagreements ultimately reflect deep economic inequalities, which mean that economic power is heavily concentrated while political power must respond to the needs of the majority of citizens. As a result, any strategy will be contested, and implementation requires painstaking consultation to obtain at least sufficient consent for effective implementation. A recent TIPS Policy Brief on reconstruction indicates some strategic directions in this context (see [Towards a reconstruction programme](#)).

Employment

Because it is difficult to undertake household surveys during a pandemic, the Quarterly Labour Force Survey has been delayed until late October. As a result, there are no official figures for second quarter employment.

That said, a special Unemployment Insurance Fund (UIF) grant for employees who were unable to work due to regulations has been granted to around a third of the formal private labour force. The average value of the grant was R3 500. It was terminated from 15 August, however, although applications and payments continue for an additional month. Various surveys have indicated that when the grant stops, many companies will initiate retrenchments. Those figures will, however, likely only show up in the third quarter of 2020.

Beyond the workers covered by the UIF grant, informal workers – both employees and self-employed – and domestic workers have likely lost significant numbers of jobs. The self-employed are only eligible for the special COVID-19 social grant, however, which provides just R350 a month. In theory, domestic workers should benefit from the UIF grant, but only around a tenth actually received it.

International trade

The pandemic brought a sharp slowdown in global trade as a result of blockages to transport as well as falling international demand. For South Africa, the second quarter of 2020 saw a strong decline in goods exports, combined with an even stronger slump in goods imports. Only agricultural exports performed well, increasing by 14.2% in dollars and, thanks to depreciation, by 38% in constant rand terms.

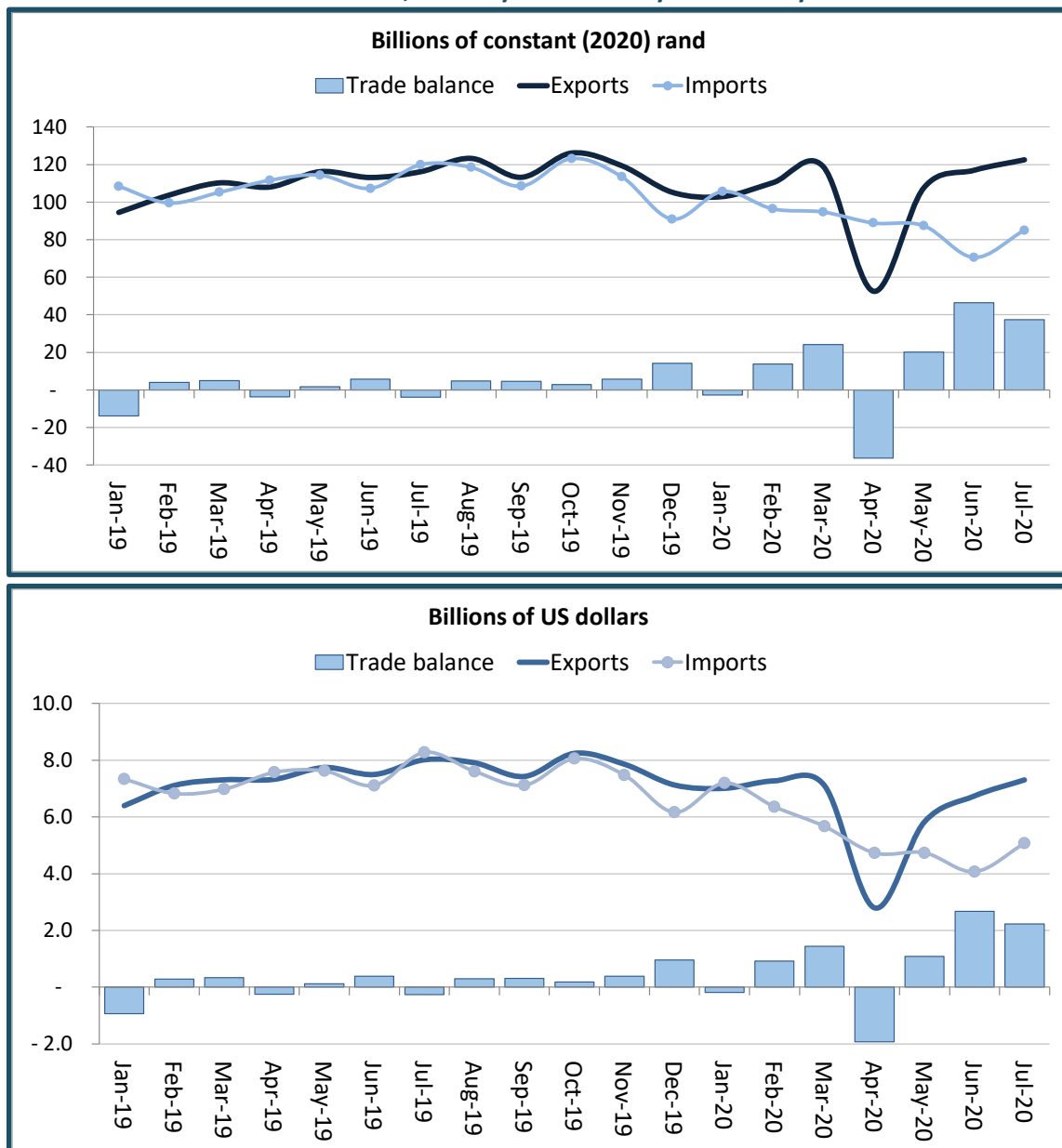
As Graph 10 shows, the pandemic brought significant disruptions to South African trade. The figures here are not seasonally adjusted, but they nonetheless indicate the extraordinary swings from the start of 2020.

Goods imports began to decline sharply from the start of the year, mostly because supply chains – especially for the auto industry – were disrupted by the initial outbreak in China. The lockdown brought a 50% fall in exports, as both mining and auto production were largely stopped.

As the lockdown ended, export producers gradually revived. Moreover, prices for mining products recovered substantially after falling significantly when the pandemic turned global in late March. Gold has seen record high prices as investors seek a safe haven.

Imports, however, continued to fall through June, reflecting logistical obstacles, the low and stagnant oil price, and lower demand from both businesses and households. They began to tick up as the recovery gained steam in July.

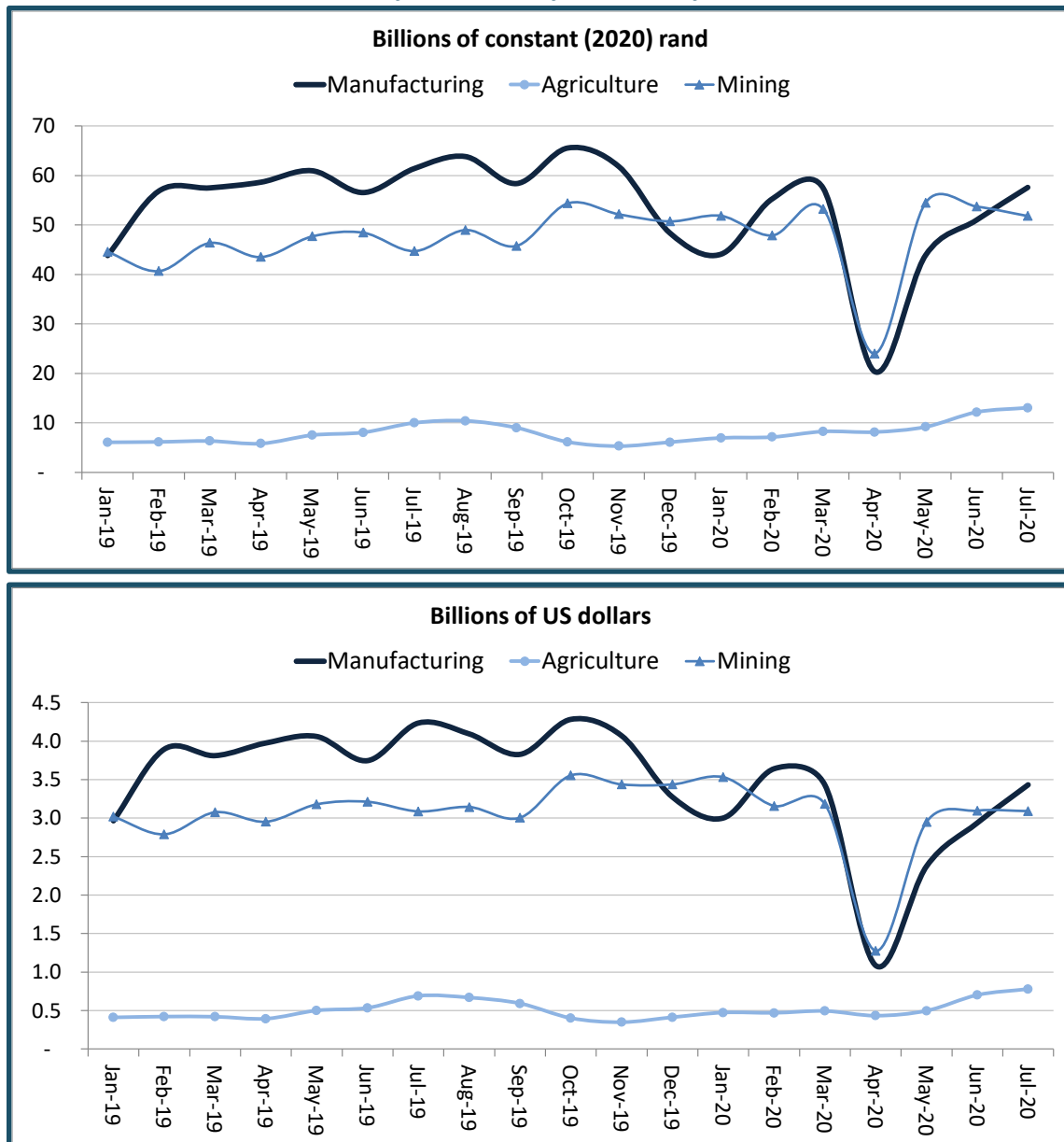
Graph 10. Exports, imports and balance of trade in billions of constant rand and current US dollars, monthly from January 2019 to July 2020



Source: South African Revenue Service (SARS) monthly data.

Exports by sector through July showed both the advantages enjoyed by agriculture and the phased effects of the pandemic and the recovery. In both dollar and rand terms, agricultural exports were fairly stable from the start of 2019, with the normal seasonal increases during the harvest. In contrast, in constant rand manufacturing and mining exports dropped over 50% in April, but had returned to pre-pandemic levels by July.

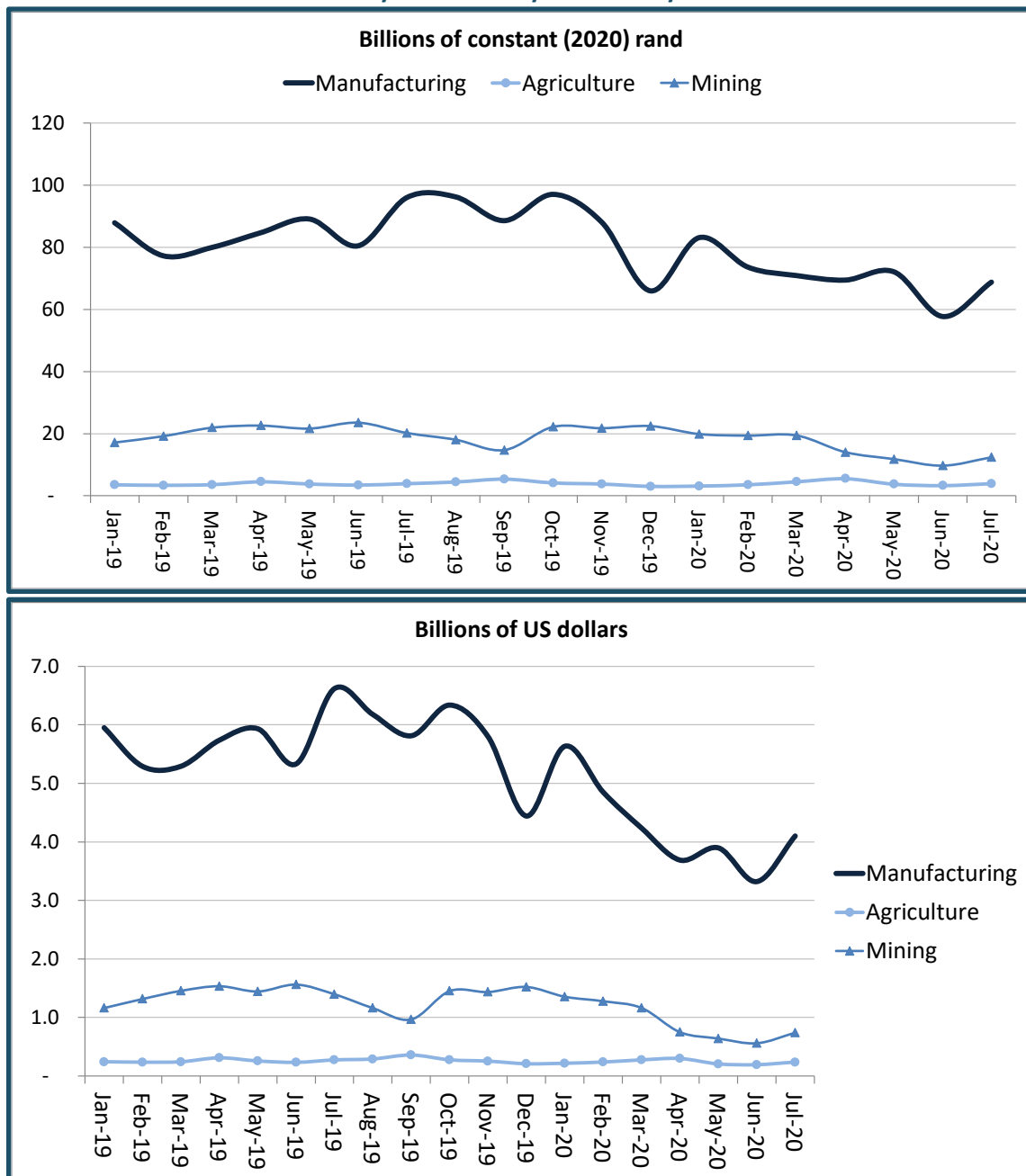
Graph 11. Exports by sector in billions of constant (2020) rand and US dollars, monthly from January 2019 to July 2020



Source: South African Revenue Service (SARS) monthly data.

In contrast to exports, imports fell across all sectors from the start of the year. Mining imports, which comprise mostly petroleum, saw a particularly sharp fall as prices fell from March.

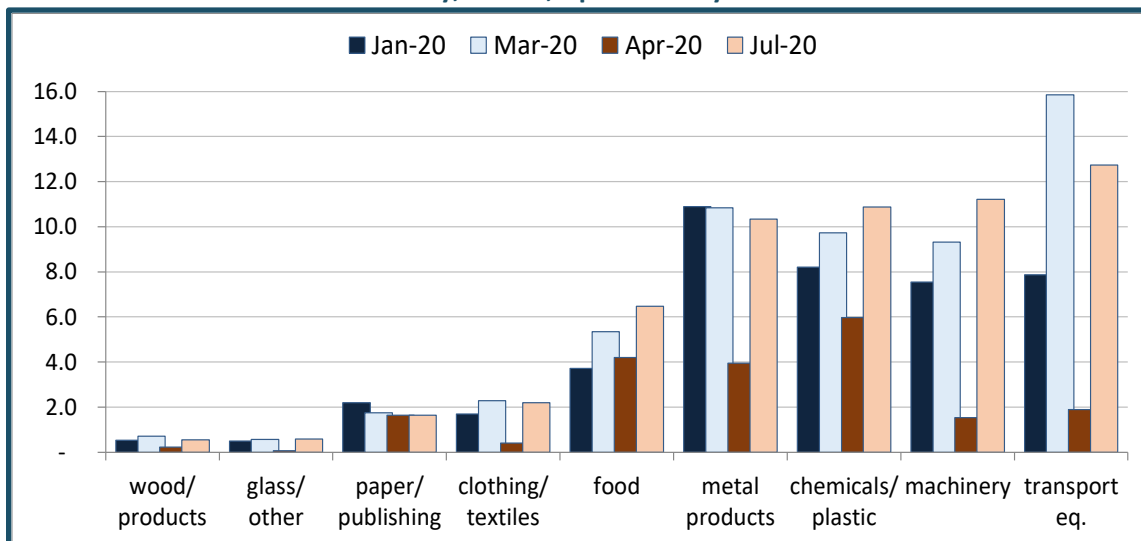
Graph 12. Imports in billions of constant (2020) rand and U.S. dollars, monthly from January 2019 to July 2020



Source: South African Revenue Service (SARS) monthly data.

Within manufacturing, exports of transport equipment and machinery – South Africa’s two largest non-commodity export industries – dropped over 80% from March to April, but had mostly recovered by July. A similar pattern emerged for clothing and textiles. Food and chemicals fell less sharply, and in July food exports exceeded those at the start of the year.

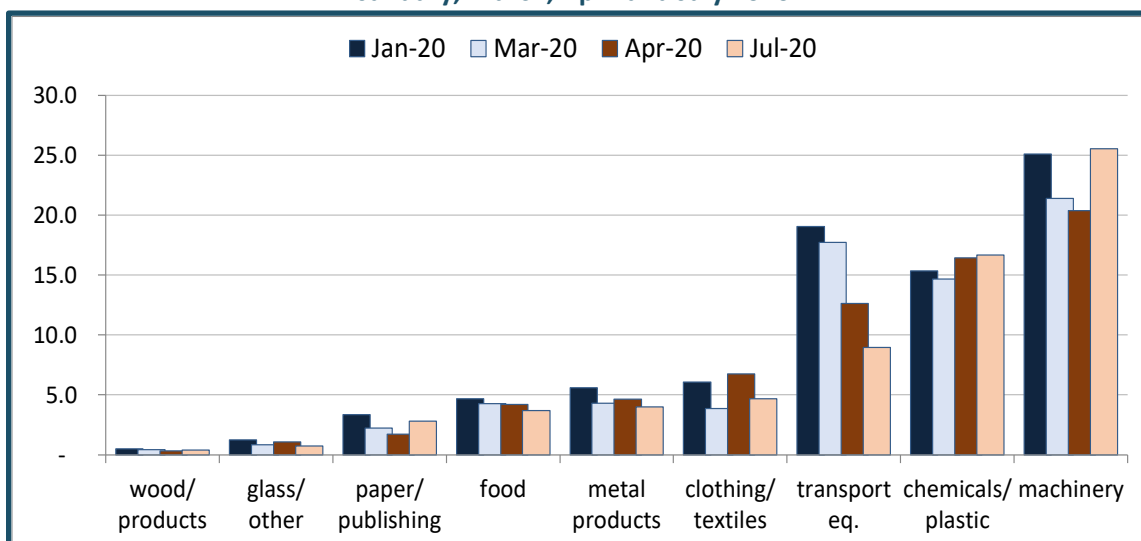
Graph 13. Exports by manufacturing industry, in billions of constant (2020) rand (a), January, March, April and July 2020



Source: South African Revenue Services (SARS) monthly data. Note: (a) Deflated with CPI.

In contrast to exports, imports of manufactures showed more varied trends by industry. Transport equipment fell by around half from January to July. In contrast, machinery and equipment imports recovered as overall production picked up. Chemicals and plastics also grew across the period, although less rapidly.

Graph 14. Imports by manufacturing industry, in billions of constant (2020) rand (a), January, March, April and July 2020

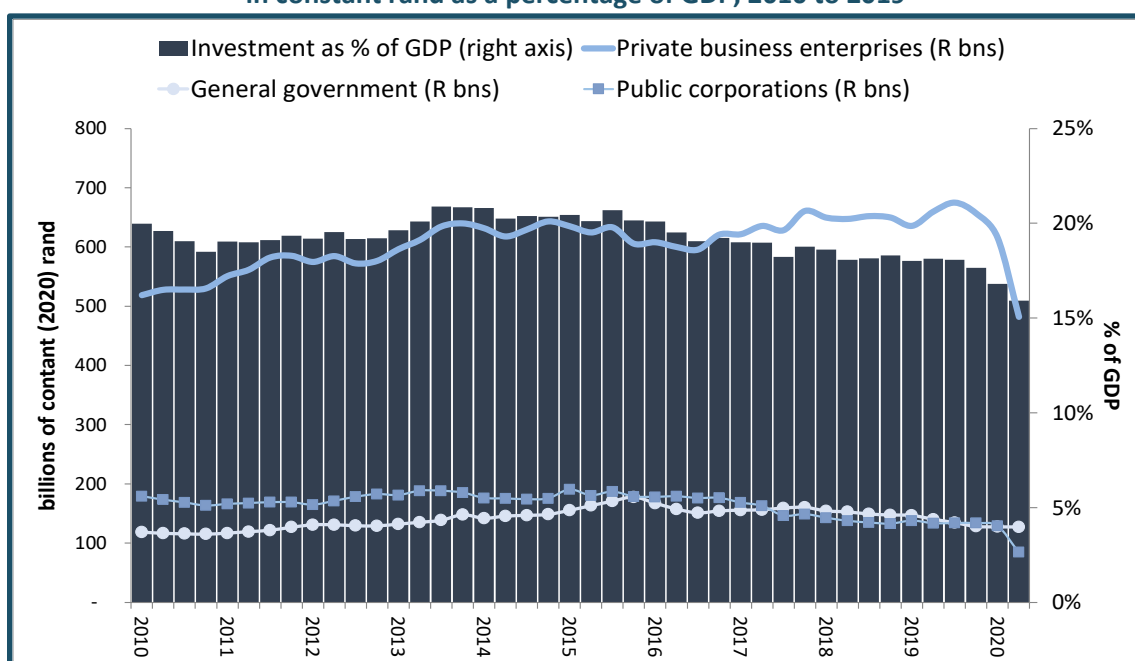


Source: South African Revenue Services (SARS) monthly data. Note: (a) Deflated with CPI.

Investment

Investment tumbled in the second quarter. Monthly data are not available, however, so it is not clear if there was any recovery over the quarter. Private investment fell by a fifth, investment by state-owned companies by a third, and general government investment remained almost unchanged. As a result, in the second quarter of 2020 investment fell to 16% of the GDP from 17% in the first quarter. That is the lowest investment rate since 2010.

Graph 15. Quarterly seasonally adjusted investment by type of organisation in constant rand as a percentage of GDP, 2010 to 2019



Source: StatsSA GDP quarterly figures. Excel spreadsheet downloaded from www.statssa.gov.za in September 2020.

Foreign direct investment projects

The TIPS Foreign Direct Investment Tracker monitors FDI projects, on a quarterly basis, using publicly-available and published information.

Eight projects were recorded this quarter, and two projects were updated in status. The total quantum of new investments recorded was approximately R2.6 billion, from six projects. Half of them were initiated by a single firm, BioTherm Energy, and two of the others are linked to the COVID-19 healthcare response. The number of announced projects fell, possibly due to the lockdown. Lockdown measures have slowed the progress of existing projects with most added after moving to lower lockdown levels starting in May 2020.

Table 1: FDI Projects Captured in Q2, 2020

	Announced	Construction/ Implementation	Complete
Number of projects	2	5	1
Value (R bns)	0.82	2.3	0.124
Industries	1 Mining 1 Healthcare	1 Manufacturing 4 Utilities	Health care
Type	1 Expansion 1 Upgrade	1 Expansion 4 Greenfield	Upgrade
Company	BMW SA and the German government	BioTherm renewable projects Toyota Motors South Africa	VWSA and the German government

Source: TIPS FDI Tracker database

New projects

BioTherm Energy is developing four renewable energy projects for about US\$116 million (R1.9 billion). The construction of two solar power plants and two wind farms across three provinces has started. The 86 MW Konkoonies II solar photovoltaic (PV) power plant and the 46 MW Aggeneys solar PV plant are located in the Northern Cape. The Eastern Cape houses the 120 MW Golden Valley wind farm, and the 32.5 MW Excelsior wind farm is in the Western Cape. The projects are funded through the Multilateral Investment Guarantee Agency (MIGA), a World Bank subsidiary.

Toyota South Africa is investing R365 million in expanding its Atlas warehouse in Gauteng. The expansion will double the size of the existing facility to 80 000m². Construction has started and once complete the warehouse will have the capacity to support more than 250 dealerships in the Southern African region and 70 international destinations where models are exported.

BMW and the German government have committed €4.3 million (R82 million) to support the South African government's fight against COVID-19. This support will be channelled towards upgrades at eight hospitals and four clinics in Gauteng, North West and Limpopo, providing a mix of upgrades and consumables. Within Gauteng, 750 additional beds will be provided, combined with upgrades to Soshanguve Combined Clinic, and including 300 new beds for George Mukhari Hospital. Cars and a fully equipped ambulance for transporting patients to hospitals in the region have also been provided. An overflow facility with 150 beds will also be established in Bronkhorstspuit. The remaining 300 beds will be distributed across the region. Detailed information about upgrades of facilities in the other provinces have not yet been provided.

Volkswagen South Africa (VWSA), in partnership with the German government, is investing €6.5 million (R124 million) to convert an old plant in Port Elizabeth into a temporary COVID-19 medical facility. The 66 000 square meter facility will accommodate 3 300 beds once all upgrades are complete. Phase one is already complete with 1 485 beds installed. The project includes procurement of protective gear for staff at regional tertiary hospitals, regional Primary Care Clinics and COVID-19 test centres in addition to supporting the National Health Laboratory Service branch in Port Elizabeth.

Existing projects

Kangra announced plans to extend the life of mine of the Mpumalanga Savmore/Maquasa mining operation by more than 20 years for an undisclosed sum. In addition to the underground operation, the extension will include about six mini-opencast mines.

Before the lockdown, the company was awaiting the approval and issuing of the necessary environmental licences. However, since the announcement, Kangra has been placed under care and maintenance due to low coal prices attributed to low demand and market disruptions from the COVID-19 pandemic. Kangra is owned by Menar, which announced a major investment in seven coal projects during the first quarter 2020. Kangra Coal operates the opencast and underground, coal mining operation in Mpumalanga.

Updates

Amazon Web Services (AWS) has officially launched and opened the AWS Africa Region based in Cape Town. The addition of the AWS Africa Region will enable organisations to provide lower latency to end users across Sub-Saharan Africa and will enable more African organisations to leverage advanced technologies such as artificial intelligence, machine learning, the internet of things, and mobile services. The expansion allows customers to run applications and store content in South African-based data centres. Amazon also announced that the company would be hiring 3 000 people in South Africa to serve customers in North America and Europe. The personnel will be home-based and provide customer services and technical expertise support.

Since Ivanplats Platreef project in Limpopo was added to the Tracker, the development of the mine has progressed. The Platreef project consists of the Flatreef underground deposit which contains platinum-group metals, nickel, copper and gold resources. This quarter, Ivanplats completed the sinking of Shaft 1 to a depth of 996 metres below surface. The development of three primary mining access level stations has been completed, while the construction of the level station at the bottom of the shaft was expected to be complete by the end of July 2020. Ivanplats parent company Ivanhoe is further updating the 2017 Platreef project feasibility study to account for developments in relation to costs, metal prices, foreign exchange assumptions and the mines development schedule. Simultaneously, the company is finalising a Preliminary Economic Assessment for the three-phase production plan to develop the mine and associated infrastructure.

Briefing Note: Stimulating consumer spending post COVID-19 lockdowns

Consumption spending by households is an important driving force of an economy. In 2019, household consumption spending accounted for 61% of the R5.1 trillion expenditure¹ on gross domestic product. Spending on essential goods and services such as food, transport, health and education accounted for 62.3% (or R1.9 trillion) of final household consumption. Spending on non-essentials like recreation and culture as well as restaurants and hotels accounted for 7.2% (or R219.6 billion) of final household consumption. However, in 2020, the COVID-19 lockdown has and will continue to negatively impact consumer spending in the absence of alternative incomes or financial resources for those consumers.

Due to the lockdown, businesses have suffered, leading to closures, retrenchments of employees and loss of income. Where businesses have not retrenched, workers have had to work fewer hours and/or had their salaries reduced, some by as much as 20%² to 50%³. The budget reprioritisation, along with stimulus measures introduced by government, mainly focused on supporting businesses through lower interest rates, tax relief and assistance with payments of salaries to employees.

¹ Stats SA. GDP Q1 2020

² <https://ewn.co.za/2020/04/06/some-sa-companies-cut-working-hours-salaries-over-lockdown>

³ <https://www.iol.co.za/news/south-africa/covid-19-and-gyms-virgin-active-staff-in-limbo-as-salaries-cut-by-75-51218933>

Compared to other upper-middle-income countries, the government has provided substantial relief to working people and the poor. Over a third of formal private workers have benefited from the UIF COVID-19 Temporary Employee/Employer Relief Scheme (TERS). It provided R40 billion or an average of around R3 500 a month, to four million workers. In addition, government increased existing social grants and established a new R350 grant for working-aged people who do not have any other income. The grant is expected to transfer over R10 billion to around 4.5 million recipients.

While the average sums provided were low, the combination of enhanced social grants and UIF support for furloughed workers cushioned the most vulnerable people from the worst effects of the pandemic downturn. At the same time, they mobilised resources as a stimulus for the economy. The risk, however, is that both these programmes are drawing to an end, and there is no move to replace them even though a full economic recovery is clearly still some way off.

With declining salaries and limited cash transfers to households, disposable income will decline and continue the cycle of low consumption of non-essentials, which will in turn adversely affect businesses in non-essential sectors. This will have far-reaching impacts for local value chains, given that when consumers have no disposable income, they spend only on necessities. Thus, as South Africa emerges from the hard lockdown, there is a need to consider strategies that will incentivise consumer spending to jump-start the economy. Some lessons can be learned from countries that emerged from their lockdowns earlier, such as China, South Korea, Australia and New Zealand.

Australia, New Zealand and South Korea have not taken active steps to boost consumer spending, but they introduced stimulus packages, including wage assistance for businesses to continue paying their workers. However, consumer spending has mainly shifted towards discount brands, resulting in a rise in their market share, especially in Australia⁴. While China initially introduced stimulus packages, some new measures have been introduced to actively boost consumer spending. In June 2020, the Beijing municipality announced that US\$1.7 billion would be used to provide vouchers for consumers to spend in sectors that suffered during the lockdown, like tourism and retail. In Shanghai, the local government urged businesses to offer discounts to consumers to boost spending.

Austerity, which South Africa has opted for in the wake of COVID-19 (much of the stimulus was budget reprioritisation, tax deferral as well as loan guarantees), will not help the economy; nor will it help consumers whose incomes have declined since the lockdown began in March. This is not a call for the government to issue shopping vouchers. However, it would be appropriate for government to consider using measures to put money in the hands of consumers, who will in turn help the economy grow. Measures could be in the form of increased and extended grants to households, a reduction in value added tax to reduce the cost of goods and services and increased infrastructure spending to create jobs.

⁴ <https://www.smh.com.au/business/the-economy/pandemic-thrift-consumers-are-switching-to-discount-brands-and-borrowing-less-20200503-p54pev.html>

Briefing Note: Unlocking the potential of South African green hydrogen in trade

Globally, countries are mobilising sizeable resources towards dealing with the climate crisis and with the COVID-19 pandemic, many countries and regions have attached sustainability criterion to their recovery packages. EU Member States, for example, have attached strict mitigation regulations to COVID-19 rescue packages and state recovery support in sectors with limited options for decarbonisation, such as aviation. Further, as part of the transition to sustainable production, trade barriers against high carbon exporters through policy tools such as border carbon adjustments are expected from large trading blocs such as the EU from as early as 2023. The climate policy responses by countries to changing trade policies differ, however, what is certain is that the nature of trade, production and investment will change in this transformation.

South Africa has to consider improving resilience to the direct physical and transition impacts of climate change, and consider the impacts of its high-carbon intensity on its competitiveness in global markets. Part of the country's response involves transforming notorious, high carbon-emitting industries, such as energy and petrochemicals, towards cleaner production. Countries that contribute heavily to emissions and make no substantial mitigation and adaptation efforts stand to be isolated internationally and incur severe costs on growth and development.

The hydrogen economy offers a potential and complementary pathway to a sustainable future and can be linked to decarbonisation in a number of value chains. For some sectors, such as aviation and shipping, green hydrogen is the only feasible decarbonisation option currently available. There is increasing international interest and investment directed towards hydrogen as an energy carrier, with a number of countries and regions indicating their intent to develop hydrogen value chains and engage in the international hydrogen market as producers and consumers. It is an important time for South Africa to position itself as a key supplier of green hydrogen into the international hydrogen market.

South Africa has vital and competitive resources to leverage which place it in good stead to competitively supply green hydrogen. These resources include:

- *Renewable energy resources:* South Africa has ideal weather conditions for solar and wind generation, which are the renewable energy options typically deployed in green hydrogen production. High solar and wind availability factors increase the utilisation factors of the hydrogen electrolyzers, ultimately lowering the cost of clean hydrogen production and make investments attractive to investors. South Africa's combined solar and wind power could provide a hydrogen production capacity factor of almost 100% during daylight hours. In the evening, wind generation could be harnessed to produce hydrogen at a capacity factor of about 30%, which exceeds the international norm of about 22.
- *Fischer-Tropsch (FT) skills and capabilities:* Hydrogen can be combined with CO₂ to produce synthetic hydrocarbons, such as methane, diesel, or jet fuel. South Africa has a unique with the patented FT process owned by Sasol. The technical expertise and skills which have developed around the Sasol processes provide South Africa with an edge in the production of liquid fuels based on the hydrogen production route.
- *Platinum resources:* South Africa is the largest producer of platinum-group metals (PGMs) in the world, and accounts for about 71% of global supply. PGMs are a key component of electrolyzers in hydrogen production and as catalysts in fuel cells.

South Africa has a key window of opportunity to develop hydrogen production to meet the demands of countries which have developed policies around growing downstream hydrogen activities. By mid-2019, a combined total of 50 targets, mandates and policy incentives were in place globally in support of the hydrogen economy.

In the medium to long term (10 years and beyond), Japan, South Korea and the European Union emerge as the main potential export destinations for South African green hydrogen, given the advancement of policies in these destinations. Japan expects to develop commercial-scale supply chains by 2030 to procure 300 000 tons of hydrogen annually. In March 2019, the first import of green hydrogen into Japan was sourced from Australia in a proof of concept test between the Queensland University of Technology and a large Japanese petroleum conglomerate, JXTG.

South Korea has also laid out ambitious plans for the development of fuel cell technologies and hydrogen, focusing on developments in power, transport, industry, buildings, and industrial feedstock applications. Demand for hydrogen in South Korea is expected to rise to 5.26 Mt in 2040, from a current base of 0.13 Mt. Demand is anticipated to slowly rise until 2030, followed by a sharp rise after 2030, driven by investments, technological advancement, customer adoption and cumulative end-user equipment purchases.

Developments in the EU also point towards the region being a potential off-taker of green hydrogen. The recently released Hydrogen Roadmap Europe (2020) sets the scene for the development of the hydrogen economy in Europe. The Roadmap plans to install 6 GW of renewable energy-based hydrogen electrolyzers by 2024 and 40 GW by 2030. The EU has identified Africa as a region with high renewable energy potential and a potential supplier.

Developing the green hydrogen value chain in South Africa will require co-ordination between the most important stakeholders, from state departments to industry, labour unions and civil society. Opportunities for development will have to be identified, taking into account the impact of investments on the final price of hydrogen and competitiveness, lock-in and pathway dependence on a specific technology, demand markets and transport costs, and the overall impact on South Africa's development trajectory. To this end, green hydrogen development can potentially be aligned with other economic development initiatives, such as just transition policies and frameworks, for example. Options for green hydrogen deployment include greenfield investments into new production and the retrofitting of existing carbon-intensive production.

Resources and incentives on the supply side can assist in the formulation of pilot projects that feed into existing processes and set up independent production that can be scaled as commercial viability is proven. Engagements by policymakers with key carbon-intensive producers such as Sasol and PetroSA are also vital to decarbonise existing process and leverage existing assets. The Hydrogen Roadmap being developed by Department of Science and Innovation and HySA is expected to be completed in the next year. This policy document should set the stage for a new and sustainable industry that can assist in the long-run recovery from the COVID-19 recession.

** The case study on green hydrogen forms part of a research project for the Department of Trade, Industry and Competition examining the vulnerability of South African trade to evolving climate change legislation. The project reports will be published on the TIPS website.*