2022

Skills Supply and Demand in South Africa

Labour Market Intelligence
research programme

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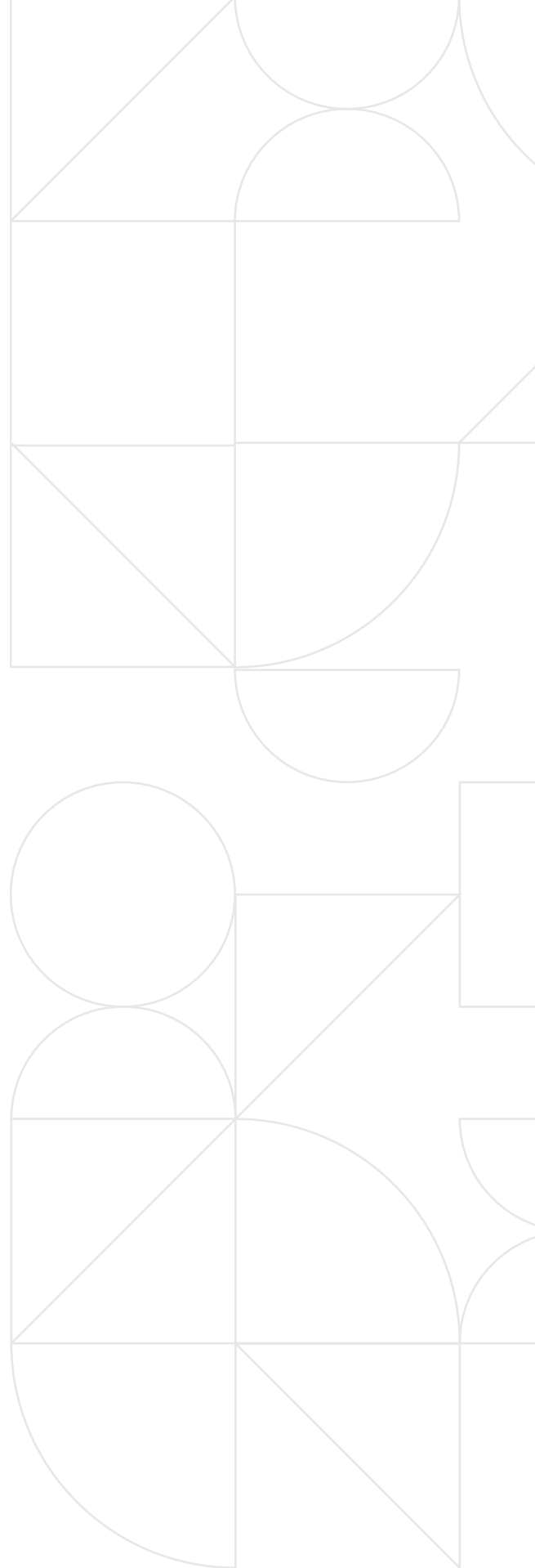Labour Market Intelligence
research programme

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Acronyms and abbreviations

4IR	Fourth Industrial Revolution
AI	Artificial intelligence
AR	Augmented reality
AsgiSA	Accelerated Shared Growth Initiative of South Africa
ATR	Annual Training Report
BACI	Base pour l'Analyse du Commerce International
CESM	Classification of Educational Subject Matter
CET	Community education and training
CHE	Council on Higher Education
CSP	Community, social and personal services
CTLF	Clothing, textiles, leather and footwear
DAFF	Department of Agriculture, Forestry and Fisheries
DBE	Department of Basic Education
DHET	Department of Higher Education and Training
DTI	Department of Trade and Industry
GDP	Gross Domestic Product
GER	Gross enrolment ratio
GEAR	Growth, Employment and Redistribution Strategy
GETC: ABET	General Education and Training Certificate: Adult Basic Education and Training
GFCI	Gross fixed capital investment
GVA	Gross value-added
HE	Higher education
HEI	Higher education institution
HEMIS	Higher Education Management Information System
HP	Hodrick-Prescott
HRD-SA	Human Resources Development Strategy for South Africa
HSRC	Human Sciences Research Council
IFR	Institute for Futures Research
ILO	International Labour Organisation
ILOSTAT	International Labour Organisation Database
INSETA	Insurance SETA
IPAP	Industrial Policy Action Plan
ISCED	International Standard Classification of Education
LFPR	Labour force participation rate
LFS	Labour Force Survey

LMIP	Labour Market Intelligence Partnership
NC(V)	National Certificate (Vocational)
NDP	National Development Plan
NEDLAC	National Economic Development and Labour Council
NEET	Not in employment, education or training
NGP	New Growth Path
NIDS	National Income Dynamics Study
NIPF	National Industrial Policy Framework
NPPSET	National Plan for Post-School Education and Training
NQF	National Qualifications Framework
NSC	National Senior Certificate
NSDP	National Skills Development Plan
NSDS	National Skill Development Strategy
O*NET	Occupational Information Network
OECD	Organisation for Economic Co-operation and Development
OFO	Organising Framework of Occupations
PIVOTAL	Professional, vocational, technical and academic learning
PPP	Public-private partnership
PSET	Post-school education and training
PSLSD	Project for Statistics on Living Standards and Development
PSP	Priority Skills Plan
QLFS	Quarterly Labour Force Survey
RDP	Reconstruction and Development Programme
SARB	South African Reserve Bank
SET	Science, engineering and technology
SETA	Sector Education and Training Authority
SONA	State of the Nation Address
Stats SA	Statistics South Africa
STEM	Science, technology, engineering and mathematics
TETA	Transport SETA
TIMMS	Trends in mathematics and science study
TVET	Technical and vocational education and training
UKCES	United Kingdom Commission for Employment and Skills
UNISA	University of South Africa
WEF	World Economic Forum
W&R	Wholesale & retail
WPPSET	White Paper for Post-school Education and Training
WSP	Workplace Skills Planning

Foreword by the Director-General

Since the establishment of the Department of Higher Education and Training (DHET) in 2010 and its adoption of the function of skills planning, the Department has been compelled to look more closely at the relationship between Education and Training on the one hand, and the labour market on the other hand. The Department undertake this work through the Labour Market Intelligence (LMI) research programme which is a major multi-year, research project intended to support the Department in its move towards a more responsive Post-School Education and Training (PSET) system or a demand driven approach to education and training. The LMI research programme conduct several research studies and produce research reports to inform skills planning in South Africa. One of the key research reports of the LMI research programme is the Report on Skills Supply and Demand in South Africa. This report, which the DHET publishes biennially, provides a holistic understanding of the current supply of and demand for skills in South Africa, and analyse how the two interact to inform the future skills policy to support inclusive growth.

South Africa is generally experiencing substantial imbalances between the demand for and supply of skills, and several workers are either underqualified or overqualified for their current jobs. In the face of growing demand for workers with high-level skills in correlation with global-wide changes such as the fourth industrial revolution, many workers in South Africa's labour force possess low-level skills. There are great mismatches between workers' levels of education and educational qualifications required by their present jobs. To a moderate extent, some workers are employed in the fields that are not aligned to the fields in which they completed their studies.

To this end, it is my pleasure to present to you the fourth issue of the report on Skills Supply and Demand in South Africa. The report serves as a crucial resource to strengthen enrolment planning at our post-school education and training institutions via improved career information services. Insights from the report are also used to guide resource allocation and inform the prioritisation of qualifications development.

It is hoped that our stakeholders will find this report useful and derive intuitions on matters pertaining to the supply of and demand for skills in South Africa. The Department strives to improve the accuracy of this report and be more responsive to stakeholders' needs. Your feedback, and suggestions for improvement, can be emailed to Khuluvhe.M@dhet.gov.za

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Executive summary

Key trends in skills supply and demand in South Africa

○ Economic growth has been poor in South Africa between 2018 and 2021. Before the onset the of COVID-19 pandemic, the economy had already entered a technical recession. In 2020, the economy contracted by 6.4 percent. The poor economic performance has contributed to the inability of the labour market to absorb new labour market entrants, leading to an increase in the unemployment rate.

○ There is an overarching structural imbalance between labour demand and labour supply. The only occupation to record an increase in employment between Q2 2018 and Q2 2021 was that of managers who are highly-skill. However, most South African workers are low- or medium-skilled.

○ The South African labour force was made up of 14.9 million employed and 7.8 million unemployed people in Q2 2021. The number of unemployed people rises to 11.1 million when the non-searching unemployed are considered as well. 75.4 percent of the employed and 91.2 percent of the unemployed are from the Black African population group. Women account for 43.4 percent of the employed and 50.2 percent of the unemployed. The highest rate of unemployment is observed among South African youth (those aged between 15 and 24), at 74.8 percent. This rate has risen as more young people have joined the labour force.

○ In Q2 2021, 32.4 percent of South African youth were not in employment, education, or training (NEET), an increase from 0.4 percentage points in Q2 2013. Relative to a number of other developing countries, South Africa has the highest rate of individuals between the ages of 15 and 24 who are NEET, at 32.4 percent. These individuals are of particular concern: they remain disconnected from the country's formal economy, given that they are low-skilled, not engaged in employment, and not developing their skills to improve their employment prospects.

○ The education levels of the labour force increased on average between Q2 2018 and Q2 2021. However, the average level of educational attainment remains low. Among the employed, 12.2 percent have a degree, 10.8 percent have a diploma or certificate and 34.4 percent have completed secondary schooling. Over two-fifths of the employed (41.8 percent) have not completed secondary schooling. This amounts to 6.2 million individuals, as of Q2 2021.

○ A concerning trend is the rising unemployment rates among even those with HE and TVET qualifications. Unemployment among individuals with HE qualifications increased at an annual average rate of 32.4 percent per year between Q2 2018 and Q2 2021, while unemployment among individuals with TVET qualifications grew at an average rate of 18.6 percent per year over the same period. These increases are troubling and suggest that, on the whole, there is insufficient demand for individuals with HE and TVET qualifications in the economy. They also indicate that the specific qualifications attained by individuals are not in demand, or else that the skills obtained through these qualifications are not aligned with the skills needs of employers.

○ By rate of increase, growth in unemployment among individuals with HE qualifications has been highest for those with science, humanities and education qualifications. For individuals with TVET qualifications, those with "other" and engineering qualifications have seen the greatest increase in unemployment.

- Most industries experienced a contraction in output between Q2 2018 and Q2 2021. Agriculture (6.3 percent per annum) and CSP services (0.9 percent per annum) were the only industries to expand over this period. Construction (−8.7 percent per annum) and transport (−4.6 percent per annum) contracted the most.

- In terms of employment, agriculture (0.7 percent) was the only industry that did not experience a contraction between Q2 2018 and Q2 2021. Utilities (−9.7 percent), manufacturing (−6.7 percent) and construction (−6.1 percent) experienced the largest reductions in employment.

- Between Q2 2018 and Q2 2021, only the professional occupations experienced an increase in employment (115 000). Craft and related trades (−408 000), services and sales workers (−313 000), clerks (−230 000) and elementary occupations (−170 000) were the four occupations that experienced the biggest absolute decreases in employment.

- In terms of highest level of educational attainment, there has been a decrease in the number of individuals employed with primary schooling or less, incomplete secondary schooling, completed secondary schooling and those in possession of a diploma or certificate. Only individuals with degrees experienced an increase in employment between Q2 2018 and Q2 2021, indicating the value that the labour market places on individuals with these educational qualifications.

- Within the tertiary sector, there was a clear increase in the absorption of individuals with HE qualifications across all fields of study between Q2 2018 and Q2 2021. For individuals with TVET qualifications, however, this trend was not observed. The tertiary sector, while dominant and expanding, seems to offer muted demand for TVET qualifications, except those in the business, science and engineering fields.

- The quality of basic education remains a critical constraint on the education and training system and the labour market. The pass rate in mathematics and physical science – two key matric subjects that enable learners to apply for Science, Technology, Engineering and Mathematics degrees – is low. Between 2018 and 2021, the mathematics pass rate ranged from 53.8 percent to 58.0 percent. The pass rate for physical sciences dropped by 6.5 percentage points from 75.5 percent in 2019 to 69.0 percent in 2021.

- The number of public university students graduating with undergraduate degrees increased from 100 740 in 2018 to 103 196 in 2020, constituting an average annual growth rate of 1.2 percent. The number of students graduating with postgraduate degrees below master's level decreased at an average rate of 4.0 percent over the same period, and the number of students graduating with master's degrees declined by 3.5 percent per year. The number of students graduating with doctoral degrees increased at an average rate of 3.1 percent per year.

- Between 2018 and 2021, the number of graduates in business and management and other humanities increased by 4.0 and 9.1 percent per annum, respectively. By contrast, the number of science, engineering, technology and education graduates declined by 0.4 and 3.4 percent, respectively.

- The Organisation for Economic Co-operation and Development (OECD) has noted that there are considerable occupational shortages in South Africa, with higher-skilled occupations marked by a higher proportion of shortages. The share of occupational shortages across occupational groups ranges from 38.0 percent for skilled agricultural workers to 94.2 percent for managers. For those occupations marked by shortages, the lack of individual skills competencies was shown to be particularly acute for reading comprehension, writing, speaking and active listening.

- With respect to the employment mismatch of qualified individuals, 29.7 percent of individuals with HE qualifications are employed in occupations that are not appropriate for highly-skilled individuals. Conversely, only 7.6 percent of the TVET-qualified employed were in low-skill occupations in Q2 2021, suggesting that most were employed in appropriate occupations.

Glossary of terms and concepts

Labour Market Concepts

Working-age population: The working-age population is defined as all individuals aged 15 to 64 years.

Employed: An individual of working-age is considered by Statistics South Africa (Stats SA) to be employed if, for at least one hour during the survey's reference week, he/she worked for a cash or in-kind payment; ran a business, irrespective of size, alone or with partners; helped without pay in a business operated by a household member; or was temporarily absent from a job or business (2008: 8-9). The term 'employed' therefore includes employees, the self-employed, employers, and unpaid family workers. This term is also interchangeable with the term 'workforce'.

Unemployed: The official (narrow) definition of unemployment defines the unemployed as those who were not employed in the reference week, but who actively sought employment or tried to start a business during the four weeks prior to the survey (Stats SA, 2008: 8). The broad (expanded) definition of unemployment uses the same criteria except that it does not require that the unemployed were actively seeking work or trying to start a business in the four-week reference period. For the purposes of this report, working-age individuals who were not employed in the reference week, but were willing and able to work, and who were available to work are defined as unemployed.

Labour force: The labour force consists of all working-age individuals who are either employed or unemployed. Since there are two definitions of unemployment, there are two definitions of the labour force. The narrow definition of consists of the employed and the narrowly-defined unemployed; the expanded definition consists of the employed and the broadly-defined unemployed.

Economically active: The economically active population is synonymous with the labour force. Individuals of working-age who are not members of the labour force are not economically active.

Non-searching unemployed: The non-searching unemployed are unemployed individuals who did not actively seek employment or try to start a business during the four weeks prior to the survey. In other words, the non-searching unemployed are those individuals who are unemployed according to the expanded definition of unemployment, but who are not economically active according to the narrow definition. Conventionally, the non-searching unemployed are referred to as discouraged work-seekers. However, Stats SA has recently begun defining discouraged work-seekers as a subgroup of the non-searching unemployed.

Labour force participation rate: The proportion of the working-age population who are members of the labour force (i.e., who are either employed or unemployed) is referred to as the labour force participation rate. Given the two definitions of unemployment, it is possible to calculate the corresponding narrow and expanded labour force participation rates.

Unemployment rate: The unemployment rate refers to the proportion of the labour force that is unemployed. It is possible to calculate a narrow unemployment rate and an expanded unemployment rate based on the two definitions of unemployment provided above.

Skills Concepts

Skills: In a skills planning context, skills are "all types and facets of competencies required by workers to perform their jobs" (OECD, 2017b). The term may, though, be used in different contexts to refer to competencies, educational attainment or qualifications, or occupations. In some contexts, skills refer to job competencies, such as communication, literacy or numeracy. Competencies that are required in the workforce, but which may not be adequately represented in the current skills profile of the workforce, are also labelled in the South African discourse as 'critical skills', 'top up skills' or 'skills gaps'. Skills may be thought of in terms of an educational attainment, such as passing Grade 12 or a degree, or in terms of a qualification, such as a National Senior Certificate (NSC), a MSc. Degree, or a diploma in nursing. Finally, skills may be categorised in terms of occupation—for example, electrician, nurse, or civil engineer. In this document, the term 'skills' is primarily used to refer to qualifications or educational attainments. Where appropriate, however, it will also be used to refer to job competencies or occupations.

Skills planning: Owing to its numerous dimensions and extensive scope of activities, the term 'skills planning' means different things to different people. At the one end of the continuum, skills planning is about the *identification* of skills requirements through research, analysis and social dialogue. At the other end, it is about the *use* of labour market intelligence and data about skills needs for practical planning and action, including the allocation of resources and interventions to address skills demand, shortages and imbalances—both currently and as anticipated in the future.

Skills demand: Skills demand refers to the human resources (in this instance, people) and competencies required by employers at prevailing wages rates to meet their operational needs at a given point in time. In this sense, the demand for skills derives from the demand for the goods and services produced by employers. Skills demand therefore reflects the skills needed by public and private sector employers to meet their objectives. Skills demand can also be thought of as skills needs.

Skills supply: Skills supply consists of the skills, as represented by any appropriate conceptualisation of skills, possessed by individuals who are either working (the employed) or willing, able and available to work (the unemployed). In other words, skills supply consists of the skills possessed by the labour force. Skills supply is influenced by various factors, including the decisions of individuals to either participate (or not) in the labour force, to learn new skills and to migrate. In this context, it is important to understand the pipeline of skills acquisition, which includes the various components of educational and vocational training systems, and how they facilitate the acquisition of new skills, qualifications and competences. A full picture of skills supply must therefore include a consideration of both the skills within the current labour force, as well as within the future labour force (which includes those individuals currently acquiring skills but who are not currently in the labour force). It may also include a consideration of the effect on skills supply of changes in labour force participation and migration.

Skills imbalances: Skills imbalances arise when the skills demanded by employers and the skills supplied by individuals in the labour market are not aligned. Types of imbalances include skills shortages, skills surpluses, skills gaps, and skills mismatches.

Skills shortage: Skills shortages arise when employers require human resources that are not supplied in sufficient quantities by individuals in the labour market. A skills shortage may be indicative of an inadequate number of workers in a particular occupation, and is associated with hard-to-fill vacancies—where jobs cannot be filled due to a lack of appropriately skilled individuals.

Skills surplus: Skills surpluses occur when the supply of skills in the labour force exceeds demand for those skills. A skills surplus may be identified through high unemployment rates amongst individuals possessing a specific skill.

Skills mismatch: A skills mismatch may occur where the skills supplied by an individual do not match demand exactly, but are sufficiently close for employers to hire the worker. Skills mismatches refer either to the inadequacy of a worker's skills relative to the requirements of their job (e.g., having a lower level of qualification than that which is required, or being trained in a field of study other than the one generally required for the job); or to the situation where a worker's skills exceed the skills required for the job (e.g., having a higher level of qualification than is strictly necessary). A skills mismatch is categorised as either a skills gap, a qualification mismatch or a field-of-study mismatch.

Skills gap: A skills gap refers to a situation where a worker lacks one or more of the particular skills required to effectively perform their job.

Qualification mismatch: A qualification mismatch may result when a worker's level of education is not in line with the educational qualification/s required by their job.

Field-of-study mismatch: A field-of-study mismatch occurs when a worker is employed in a field that differs from the field in which they have qualified.
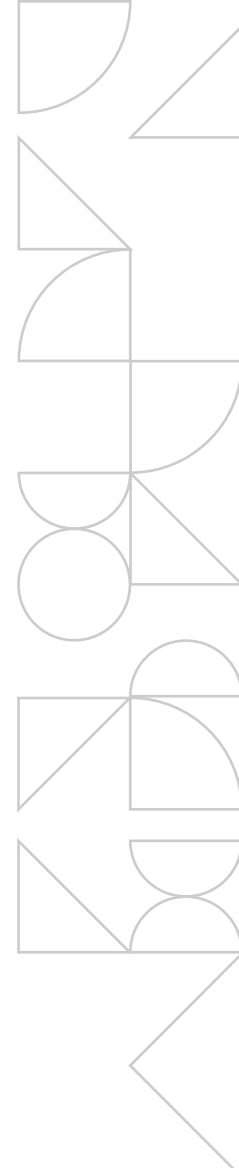
Introduction

Since the establishment of the Department of Higher Education and Training (DHET) in 2010 and its adoption of the function of skills planning, the Department has been compelled to look more closely at the relationship between education and training on the one hand, and the labour market on the other. The Department undertakes this work through the Labour Market Intelligence (LMI) research programme, which is a major multi-year research project intended to support the Department in its move towards a more responsive post-school education and training (PSET) system or a demand-driven approach to education and training. Under the auspices of the LMI research programme, a number of research studies are being conducted to inform skills planning in South Africa. One of the key research reports of the LMI research programme is the Report on Skills Supply and Demand in South Africa. This report, which the DHET publishes biennially, provides a holistic understanding of the current supply of and demand for skills in South Africa, and analyses how the two interact to inform a future skills policy that supports inclusive growth.

South Africa faces two persistent concerns. The first of these relates to skills shortages, and the second refers to the challenge of high levels of unemployment. The unemployment rate in South Africa is amongst the highest in the world and has remained consistently high throughout the post-apartheid period. Currently, the overall unemployment rate is estimated at 34.9 percent, while 33.5 percent (3.5 million) of young people aged 15–24 years are currently not in employment, education or training (NEET). Although South Africa's high level of unemployment is not unique, it is compounded by skills shortages that result in a structural mismatch between labour demand and supply. This structural mismatch occurs because many of the skills shortages occur in the high-end skills market, while the majority of the employed and the unemployed have low-level skills.

One reason for South Africa's skills shortages could be attributed to education levels. Of the employed population, 23.0 percent have a tertiary qualification, 35.0 percent have completed secondary education, and 41.0 percent of the workforce do not have a Grade 12 certificate. Of the unemployed population, 52.0 percent do not have a Grade 12 certificate. This translates to 9.88 million members of the labour force who have less than a Grade 12 certificate.[1] Key policy documents, like the National Development Plan (NDP), the Human Resource Development Strategy for South Africa (HRD-SA), the White Paper for Post-School Education and Training (WPPSET), and the National Skills Development Plan (NSDP) all draw attention to the risks associated with the poor supply of skills from the national education and training system and the misalignment between skills supply and demand for the implementation of economic growth strategies (NPC, 2012; HRDC, 2009; DHET, 2010 and 2019). These policies concur that an improvement in the quality of skills is critical for economic growth, and underpin the rationale of aligning skills development to plans for investment in industrial sector strategies.

It is in this context of imbalances between skills supply and demand, that government and its partners need to understand the interface between education and the labour market, and how to improve the supply of skills and targeting of resources appropriately in order to be responsive to the needs of the labour market. This fourth edition of the Report on Skills Supply and Demand in South Africa, which forms part of the second phase of the LMI research programme, aims to provide a holistic overview of the supply of and demand for skills in South Africa by analysing the key indicators of supply and demand and the interaction between them. Its insights can be used to provide evidence for policy-making; to provide foundational data for further research; to assess international competitiveness; and to assess human resource availability in the country for investors.

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1   Stats SA (2021). Quarterly Labour Force Survey

1.1. Policy imperatives

Since 1994, government has implemented various policy initiatives relating to or impacting on skills development. These include the Reconstruction and Development Programme (RDP); the Growth, Employment and Redistribution Strategy (GEAR); the Accelerated Shared Growth Initiative of South Africa (ASGISA); the HRD-SA; the National Skills Development Strategy (NSDS); the New Growth Path (NGP); the NDP 2030 and the WPPSET. Within the broader macroeconomic and developmental plans, the challenges around skills are frequently identified as of central importance and are highlighted for policy attention.

The HRD-SA aimed to align and coordinate human resource development strategies of government, civil society sectors, organised businesses, labour, professional bodies and research communities. The first HRD-SA ("HRD-SA I") was launched in 2001 with the title "Human Resources Development Strategy for South Africa: A nation at work for a better life for all". The second HRD-SA (HRD-SA II), "Human Resources Strategy for South Africa 2010–2030", was approved in 2009. The NSDS, a subordinate strategy to the HRD-SA, broadly aimed to equip South Africa with the skills needed for economic growth, social development and sustainable employment growth. The NSDS was released in three phases. The NSDS I (2001–2005) focused on equality and the need to cultivate lifelong learning in the workplace. The NSDS II (2005–2010) was focused on equity, quality training and skills development in the workplace. The NSDS III (2011–2016) was released with the central aim of improving effectiveness and efficiency within the skills development system. Together with the Sector Education and Training Authority (SETA) landscape system, the NSDS III was extended to March 2020.

Current government policy on skills development is guided by the NSDP, which recognises that education and training is important in facilitating economic development. The NSDP provides for eight outcomes, namely: (1) identifying and increasing the production of occupations in high demand; (2) linking education and the workplace; (3) improving the level of skills in the South African workplace; (4) increasing access to occupationally directed programmes; (5) supporting the growth of the public education and training system; (6) supporting skills development for entrepreneurship and cooperative development; (7) encouraging and supporting worker-initiated training and (8) supporting career development services. The framework allows for the identification and analysis of skills shortages, surpluses and mismatches, in order to guide policy that can achieve these outcomes. The framework also allows for economic planning to feed into the objective of aligning supply and demand. While there is a need for responsive supply side intervention, on the demand side economic policy and planning must also be cognisant of the supply of skills in the country, and pursue economic growth that is inclusive.

The WPPSET,[2] approved in November 2013, defines the priorities of the DHET in terms of building and strengthening the PSET system. With specific reference to labour market intelligence, the WPPSET (2013) observes that, although South Africa has put in place a range of ambitious measures to improve skills planning, "*the system neither produced good information about skills needs, nor increased the quality of provision in areas needed in the economy*". The WPPSET concludes that the limited credibility and impact of the current sector skills planning system is the result of inadequate research capacity; lack of economics, labour market and industry expertise; poor data management and a lack of planning.

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2   DHET (2013). White Paper on Post-School Education and Training, Pretoria. Department of Higher Education and Training.

The document envisages the establishment of a Skills Planning Unit to address problems in identifying and analysing skills supply and demand, and to promote responsiveness to identified skills needs. The WPPSET (2013:58) therefore commits the Department to establishing a central unit for skills planning as part of its vision of "*building an expanded, effective and integrated post-school system*" for the country.

1.2. Conceptual framework

This report is informed by the conceptual framework outlined in Figure 1.1. In terms of this framework, skills supply and demand in South Africa need to be understood within a broader national and global context. The numerous contextual factors impacting on skills supply and demand vary in importance over time and their impact may operate directly or indirectly. The interaction of supply and demand may give rise to skills imbalances, which may signal the need for policy intervention.

FIGURE 1.1: Framework for the analysis of skills supply, skills demand and skills imbalances

GLOBAL CONTEXT
COVID-19 pandemic, climate change, fourth industrial revolution (4IR), economic shifts, labour force, and deglobalisation

NATIONAL CONTEXT
Factors impacting on skills supply and demand
Demographic trends, macroeconomic trends, SA growth path, sector trends, employment, unemployment trends, poverty levels, and inequality

SKILLS DEMAND
Current demand
- Employment
- Vacancies

Future demand
- Expansion demand
- Replacement demand

SKILLS SUPPLY
Current supply
- Stock
- Flow

Future supply
- Stock projections
- Flow projections

SKILLS IMBALANCES
- Occupational shortages
- Occupational surpluses
- Mismatches
- Migration gap analysis
- Skills gaps

SKILLS POLICY AND PLANNING RESPONSES

1.2.1. The global and national context

A range of factors may influence the supply of and demand for skills either directly or indirectly. These range from current events, such as the impact of the COVID-19 pandemic or global economic uncertainty, to long-term trends, such as globalisation and climate change. It is important to recognise that government's ability to influence these contextual factors is often extremely limited and, as a result, the policy response must be to mitigate the negative effects and harness the positive effects on the South African economy, while monitoring the market for skills requirements that may emerge. Here, the experiences of other countries facing similar challenges can provide important inputs for the policymaking process.

1.2.2. Skills demand

The demand for skills originates in the needs of employers to deliver the goods and services they offer. From a policy perspective, understanding the economy's skills requirements is critical as it determines the ability of policy to improve the alignment between skills demand and supply. Skills requirements may be understood in terms of either current skills demand or future skills demand and may, therefore, give rise to policy interventions with different time horizons.

Current employment is the starting point for analysing current skills demand. However, where particular skills are in short supply, current employment may not reflect the demand for skills; instead, it simply reflects that portion of demand that is satisfied by the supply of skills. Consequently, an accurate picture of current skills demand based on current employment patterns must incorporate additional information that takes into account vacancies and employers' assessments of skills shortages, for example.

Future demand for skills can be quantified through understanding the evolution of skills demand over time. The nature of future economic growth, for example, determines which sectors will likely see job gains or job losses over time. Assuming that skills demand is met by supply, future skills demand is reflected in future employment. More specifically, future skills demand is reflected in the occupational distribution of future employment. The analytical approach typically used is thus to predict future employment by occupation. The occupations that are predicted to be required in the economy in the future are then mapped to the appropriate qualifications that provide the skills required for these occupations through an occupation–qualifications mapping process. This process then provides the skills (qualifications) requirements of the economy, or the predicted skills demand.

1.2.3. Skills supply

The stock of skills in the economy – i.e., the mix of skills or qualifications held by the labour force – is what is meant by 'skills supply'. It should be noted that analysing skills supply in terms of occupations is not always possible. For example, where a large proportion of the unemployed have never worked before, such as in South Africa, there is a significant gap in our ability to assess the mix of available skills.

However, as a nation's stock of skills changes over time, it is important to also understand the *flow* of skills, both into and out of the labour market. Factors that influence the supply of skills include, for example, demographic and migration trends, changing labour market conditions that encourage or discourage participation and, critically, the skills pipeline. Thus, projections of the future supply of skills must be informed by analysis of the education and skills pipelines, of the changing age structure of the population, trends in labour force participation and international migration flows.

1.2.4. Skills imbalances: The intersection of skills demand and supply

Within the labour market, skills supply is matched against the skills demand of the economy. In scenarios where skills supply and skills demand are aligned with each other, no specific adjustment or intervention are required in the education and training system. However, misalignment of skills supply and demand leads to skills imbalances that do need to be addressed through appropriate policy and implementation actions. The Organisation for Economic Co-operation and Development (OECD) (2017b) distinguishes between three types of skills imbalances:

1. **Skills shortages.** These arise when skills demand exceeds skills supply. Employers are unable to find staff with the required skills in the labour market at the going rate of pay and under existing working conditions due to the lack of an adequately skilled workforce.
2. **Skills surpluses.** These occur when skills supply exceeds skills demand. Skills surpluses are characterised by a relatively high supply of, but a low demand for, a given skill and can be identified by high unemployment.
3. **Skills mismatches.** These can refer to the inadequacy of workers' skills relative to the requirements of the jobs they are currently in or to a situation in which workers' skills exceed those required for their current jobs. Skills mismatches can be measured relative to qualification level, field of study or competencies. From the perspective of employers, the competencies that are perceived to be lacking in workers are often referred to as 'skills gaps'.

The types of imbalances identified through the considerations of supply relative to demand inform the actions that need to be taken within education and training systems so that the market's demand for skills can ultimately be met by a supply of sufficiently skilled workers. Appropriate feedback and decisive action taken in line with that feedback is necessary to ensure that the current stock of skills evolves over time to better align with the economy's skill demand, thereby reducing the likelihood of skills imbalances in the future.

1.3. Limitations

Before proceeding to the analysis, it is important to highlight some of the conceptual and methodological limitations a report of this nature faces.

First, matching the supply of and demand for skills is a complex undertaking, made even more challenging when moving beyond high-level aggregates. As with any attempt at predicting the future, the analysis is subject to uncertainty as unforeseen events emerge over time. It is necessary, therefore, to rely on evidence of different signals from the labour market and education and training systems, and to triangulate these with other data in order to identify areas where skills imbalances are likely to occur. Only by doing this, it may be possible to provide timely guidance to policymakers with respect to making appropriate interventions over the short- and medium-term. The longer the range of the prediction, however, the greater the accompanying uncertainty.

The approach adopted in this report is further limited by the scarcity and quality of data related to skills demand and skills supply in South Africa. For this reason, most of the evidence presented here relies on data from household surveys, most notably the Quarterly Labour Force Survey (QLFS). A key challenge with the QLFS, however, relates to its relatively small sample size in the context of the types of analysis ideally required. It is, for example, difficult to derive accurate occupational breakdowns beyond the two-digit level, or to analyse outcomes for individuals with specific types of qualification.

Furthermore, the QLFS data is not designed to measure some of the variables of interest from a skills planning perspective. As a result, researchers must look to other sources of data that may or may not be aligned to standard classification systems and, in several instances, there simply is no suitable data available to answer particular research questions.

Another major information gap exists in the form of data provided by firms themselves regarding their demand for skills. Consequently, current and historical employment data – such as that derived from household surveys – are used to note trends in the demand for labour and skills from employers. However, the total skills demand includes not only the skills possessed by those who are already employed, but also the skills that employed persons do *not* have that may be desired by their employers, as well as the demand for new skilled employees that is currently not being met. Comprehensive, good-quality data do not currently exist on these last two groups (desirable skills and unmet skills), although there have been various efforts to collect firm-level data on the part of SETAs and the DHET itself.

A further gap exists in understanding how qualifications have affected the employment opportunities (as well as other outcomes) of the individuals who have obtained them. Tracer studies analyse the same subject observed at two or more points in time and could be used to provide better insights with respect to the employment outcomes of higher education (HE) and technical and vocational education and training (TVET) graduates. This type of data remains scarce, however, despite its potential to produce valuable insights into skills imbalances in South Africa.

Regardless of these limitations, every effort has been made to make the best use of the available data. Where possible, analysis draws on several different data sources to triangulate findings, add to the validity of the findings, and provide a strong basis for the recommendations made in the report.

1.4. Purpose of the report

In line with the need for labour market intelligence to understand demand and supply as articulated in the NSDP, and in order to inform the planning and provision of education and training, this report aims to provide a holistic overview of skills supply and demand in South Africa. At its core, the approach is demand-led, which, while acknowledging the importance of both demand and supply, also recognises that ultimately the supply of skills in the country must be responsive to the skills demanded by the economy in order for workers to be employed and for employers to provide their goods and services. Furthermore, it recognises that skills demand is dynamic and continually evolving. With these caveats in place, this report seeks to provide a broad overview of skills demand, skills supply, and the extent to which they are in balance. The skills imbalances highlighted by the report thus provide signals of how skills supply should respond to changing skills demand.

The report is expected to benefit the capacity of the PSET system to respond to South Africa's skills needs. It should be used as a resource to guide supply-side planning in PSET institutions, funding and the development of qualifications that are appropriate for the needs of the labour market and the country. The report provides analysis of the supply of, and demand for, skills in the country in order to propose a set of recommendations for skills development in PSET institutions and the workplace. Such credible skills planning information is important since it:

○ Provides an understanding of skills supply and demand in order to guide enrolment planning, programme development and infrastructure investment requirements;

○ Provides an understanding of the skill sets and profiles of the unemployed, so that suitable educational and training programmes can be developed;

○ Supports the government's economic growth and development strategies and helps direct resources to the most critical areas of skills shortage; and

○ Expands the quality and quantity of South Africa's stock of skills over time, improving competitiveness and contributing to poverty alleviation and the reduction of inequality.

1.5. Structure of the report

The report consists of six further chapters. Chapter 2 provides an overview of the international and national trends that impact on skills supply and demand in South Africa. Chapter 3 describes the South African economy, the impact of COVID-19 and patterns of employment. Chapter 4 focuses on skills supply, describing key drivers of the supply of skills, and analysing both the current stock of skills and the skills pipeline. Chapter 5 considers the demand for skills. This chapter first speaks to key drivers of skills demand and signals of skills demand, before considering the various ways to begin understanding the future demand for skills. In Chapter 6, the discussion turns to skills imbalances and pays particular attention to skills shortages, surpluses and mismatches. Conclusions and implications for skills planning are provided at the end of each chapter, and Chapter 7 provides key findings and recommendations relating to the entire report.

International Context

South Africa's economy is susceptible to global shocks and has been largely driven by international demand. Similar to other emerging market economies, the country experienced positive GDP growth post-democracy until the abrupt change caused by the 2008/09 global financial crisis, which has been followed by slower economic growth. South Africa returned to its pre-crises level in 2011, but subsequently growth was slow and gradually followed a downward trend. More recently, the COVID-19 pandemic brought about a deceleration in productivity growth globally due to international lockdown measures. South Africa is amongst the emerging economies that are plagued by the aftereffects of the pandemic, resulting in continued slow economic growth.

Manufacturing is the backbone of a long-run growth trajectory in developing economies and, overall, South Africa has lagged behind its economic counterparts and has been in a long-run growth trap. On average, between 1994 and 2020 South Africa's GDP grew at a rate of 2.3 percent, which is relatively low compared to emerging markets such as China (8.9 percent) and India (6.0 percent). These latter economies have succeeded in industrialisation by prioritising labour-intensive manufacturing. By contrast, the South African manufacturing sector's share of GDP has contracted over the last two decades. The effect of this contraction has been primarily felt in the labour-intensive domains of mining and agriculture. This shift is indicative of the economy moving towards de-industrialisation, with growth mainly occurring in the services sector.

The current macroeconomic environment in South Africa remains extremely challenging. Under these conditions, the economy will struggle to return to even moderate growth rates. Like many countries, South Africa faces a significant challenge in ensuring that the economy creates sufficient numbers of jobs to absorb the growing labour force into productive employment. Being positioned within a low-growth trap has adversely affected South Africa's labour market and its ability to generate sufficient employment opportunities for its growing labour force. However, in order to reduce high unemployment levels, the economy must follow a labour absorbing growth path.

This chapter begins by discussing global economic trends and attempting to position South Africa within the international context. In that regard, it is important to understand South Africa's growth trajectory compared to other emerging economies. For this reason, as far as possible, this section presents the South African data alongside data for Brazil, China, India, Indonesia, Malaysia, Nigeria, Philippines and Turkey. The chapter then looks at demographic and economic indicators in comparison to other middle-income countries. Lastly, the chapter compares the education and skills levels of the workforce across countries relative to South Africa.

2.1. Locating South Africa within the international context

2.1.1. Economic indicators

Since the onset of the COVID-19 pandemic in 2019, the global economy experienced contraction in output and productivity levels, entering 2022 in a weaker position than previously expected (IMF, 2022). Table 2.1 shows that global growth is expected to moderate from an estimated 5.9 percent in 2021 to 4.4 percent in 2022, and 3.8 percent in 2023. While South Africa's growth estimate in 2021 (4.6 percent) compares closely to that of Brazil (4.7 percent) and is higher than that of Nigeria (3.0 percent), its economic growth projections of 1.9 percent and 1.4 percent for 2022 and 2023 respectively, are

much lower than the growth projections of India (9.0 percent in 2022 and 7.1 percent in 2023) and China (4.8 percent in 2022 and 5.2 percent in 2023), according to the IMF (2022).

TABLE 2.1: Economic growth estimates and projections (real GDP, annual percent change), 2021–2023

	ESTIMATE	PROJECTIONS	
	2021	2022	2023
World output	5.9	4.4	3.8
South Africa	4.6	1.9	1.4
Brazil	4.7	0.3	1.6
China	8.1	4.8	5.2
India	9.0	9.0	7.1
Nigeria	3.0	2.7	2.7

Source: International Monetary Fund (IMF) (2022)

Changes in economic growth rates have considerable implications for job creation and labour incomes (ILO, 2018). Figure 2.1 presents average annual growth rates of output in selected countries over the period 1994–2020 and shows that South Africa's average annual growth in output improved from 2.9 percent during 1994–2000 to 3.8 percent during 2001–2005. Between 2006–2015, growth remained positive but slowed slightly to an average of 3.1 percent per annum during 2006–2010 and 2.2 percent per annum during 2011–2015. The latter half of the 2010s saw South Africa's economic growth performance weaken substantially to average −0.8 percent during 2016–2020. The single economy whose growth performances were closely comparable to those of South Africa was Brazil. In relative terms, economic growth was much higher in China, India, Indonesia, Malaysia, Nigeria, Philippines and Turkey. Over the entire 1994–2020 period, South Africa's output growth averaged 2.3 percent, which remained relatively much lower than that of China (8.9 percent), India (6.0 percent) and Malaysia (4.8 percent).

FIGURE 2.1: Average annual growth rate in output of selected countries, 1994–2020
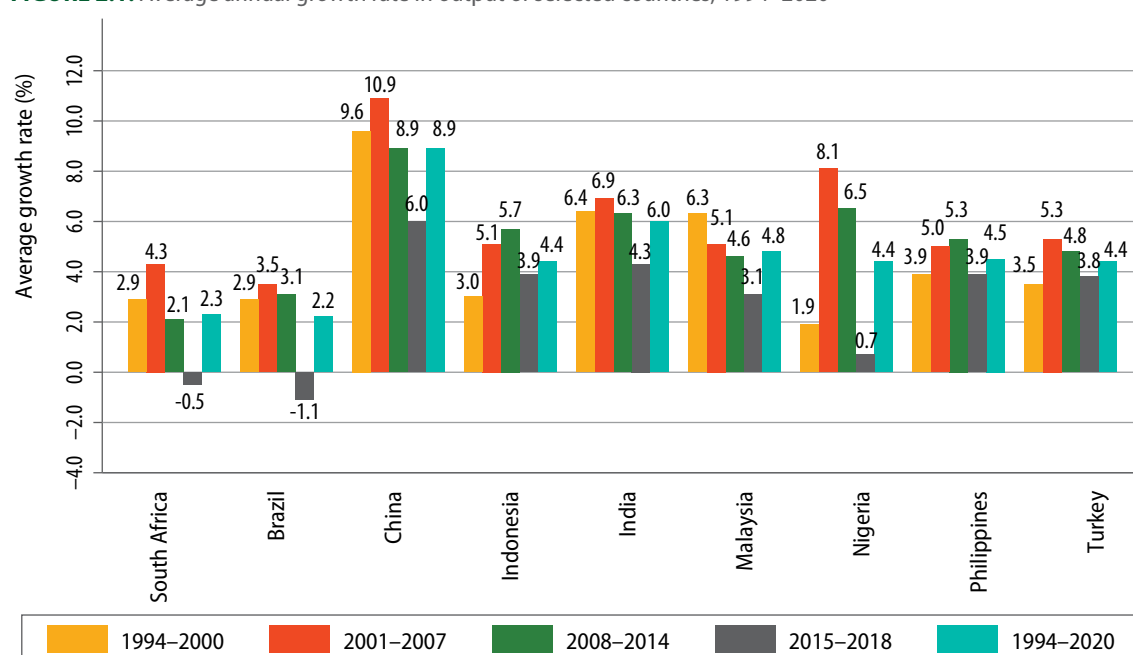
Source: World Bank (2021)

Economic growth is an essential prerequisite for job creation and increasing productive employment (ILO, 2022). Figure 2.2 shows the average annual growth in GDP per capita for South Africa relative to selected regional averages during the period 1994–2020. South and East Asia and the Pacific are the regions that recorded the fastest per capita GDP growth over this period, averaging 4.0 percent and 4.2 percent respectively. At 0.7 percent, South Africa's per capita GDP growth rate over the same period was half that of Sub-Saharan Africa, adding further fuel to the argument that the country is caught in a low-growth trap.

FIGURE 2.2: Average annual growth in GDP (PPP) per capita, (constant 2017 international $), 1994–2020
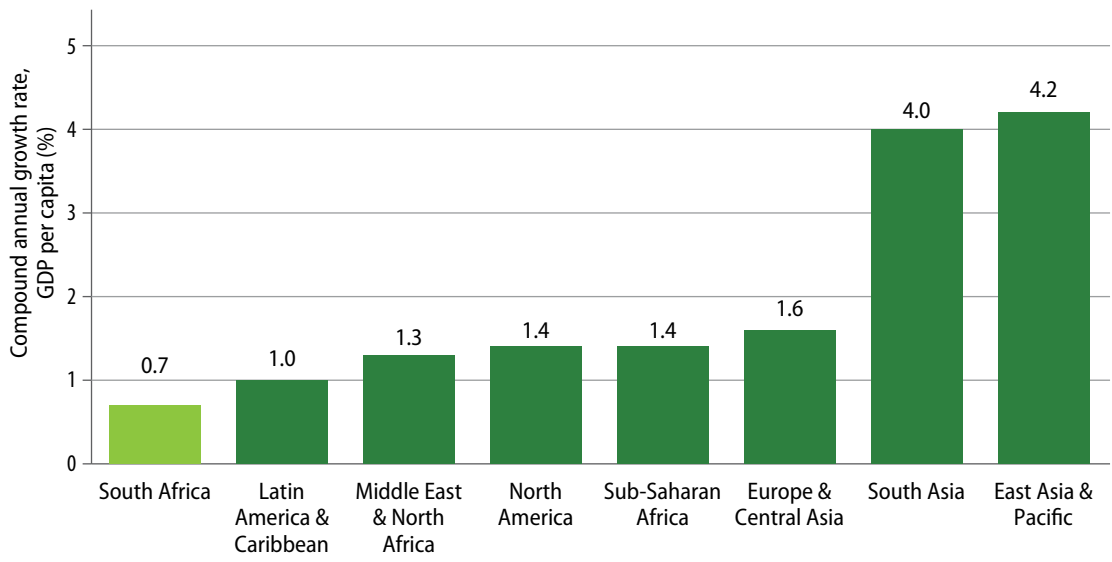
Source: World Bank (2021)

Growth in gross fixed capital formation has been found to be a strong catalyst for economic growth and job creation in many countries (Ramudo et al., 2014; Suleiman, 2017; and Pasara & Garidzirai, 2020). Figure 2.3 compares average growth in gross fixed capital formation between South Africa and other selected countries between 1994 and 2020. South Africa's average annual growth has generally been positive, but weakened to 2.6 percent during 2008–2014 after having improved to 9.5 percent between 2001–2007 (from 5.0 percent between 1994–2000). During 2015–2020, South Africa experienced a decline in gross fixed capital formation (averaging −3.3 percent per annum), as was also the case in Brazil (−3.5 percent) and Malaysia (−0.5 percent). Nevertheless, South Africa's average growth in fixed capital formation (3.7 percent) over the period 1994–2020 was close to that of Malaysia (3.9 percent) but higher than that of Brazil (2.5 percent) and Nigeria (1.9 percent)

FIGURE 2.3: Average annual growth in gross fixed capital formation for selected countries, 1994–2020
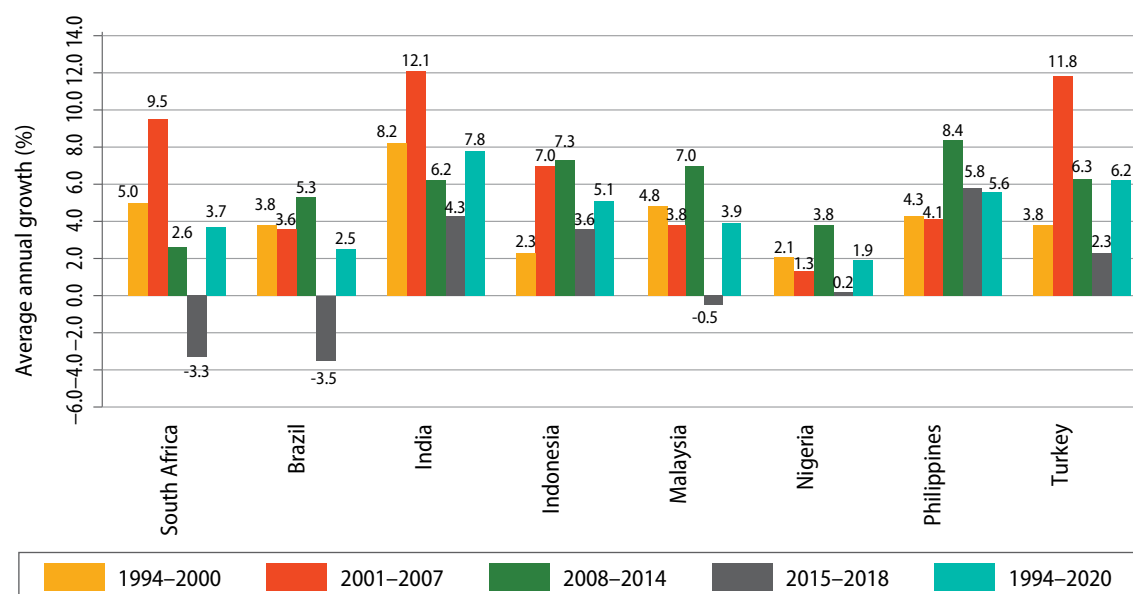
Source: World Bank (2021)

Note: Figure depicts real average annual growth of gross fixed capital formation based on constant 2015 prices, expressed in U.S. dollars. China was not included in the above figure due unavailability of data from the World Bank.

High investment and savings rates have conventionally been considered as key drivers of economic growth (DHET, 2020). Figure 2.4 presents the averages of gross savings and gross fixed capital formation as ratios of GDP for South Africa and selected countries over the 1994–2020 period. South Africa's average gross savings and gross fixed capital formation levels have been relatively low over this period, averaging 16.1 percent and 18.1 percent of GDP respectively. The country with a similarly low level of investment is Brazil. Conversely, average investment and savings as shares of GDP have been quite high in China, India, Indonesia, Malaysia, Nigeria, Philippines and Turkey. The savings-to-output ratio in China (44.2 percent), Malaysia (33.2 percent), Philippines (32.8 percent), India (31.3 percent) and Nigeria (30.5 percent) have been substantially higher than the average savings-to-output ratio achieved in South Africa (16.1 percent) over the period under review.

FIGURE 2.4: Average ratios of gross savings and gross fixed capital formation for selected countries, 1994–2020
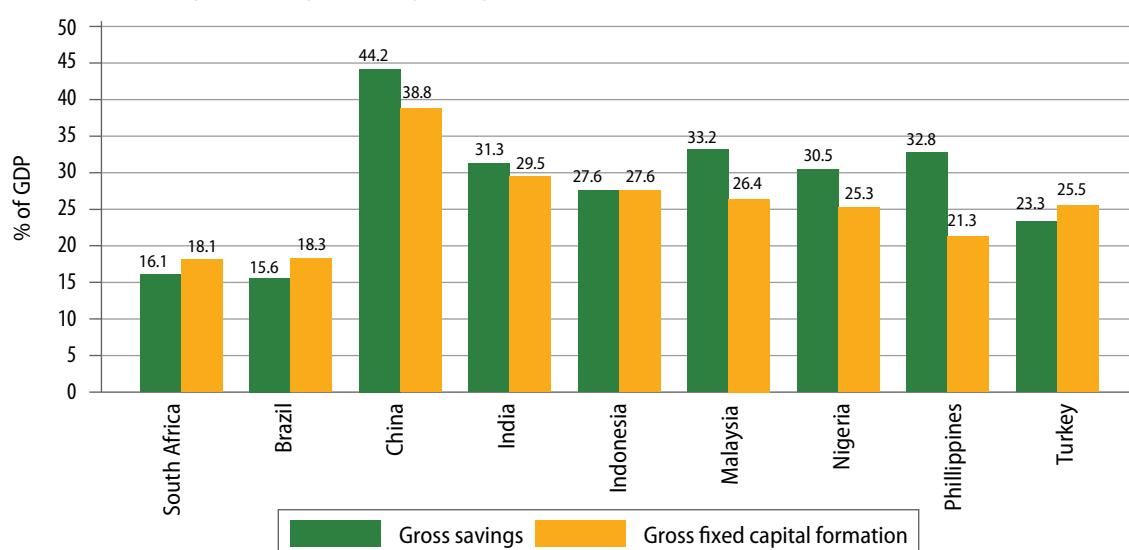
Source: World Bank (2021)

In contrast to South Africa, countries such as India and Indonesia have boosted their exports relative to their imports (Figure 2.5). During the period 1994–2020, India's growth of exports averaged 10.4 percent against an average of 9.7 percent in its imports, while Indonesia's growth in exports and imports averaged 4.7 percent and 4.4 percent respectively. In South Africa, however, growth in exports averaged 2.3 percent, much lower than the 3.9 percent average annual growth in imports during the period under review. In South Africa, Brazil, Malaysia, Philippines and Turkey, average growth in exports has been lower than growth in imports, suggesting a link between a trade orientation tilted towards exports and higher levels of economic growth (Ee, 2016; Bhorat et al., 2020).

FIGURE 2.5: Average annual growth of imports and exports of goods and services (constant 2015 US$), 1994–2020
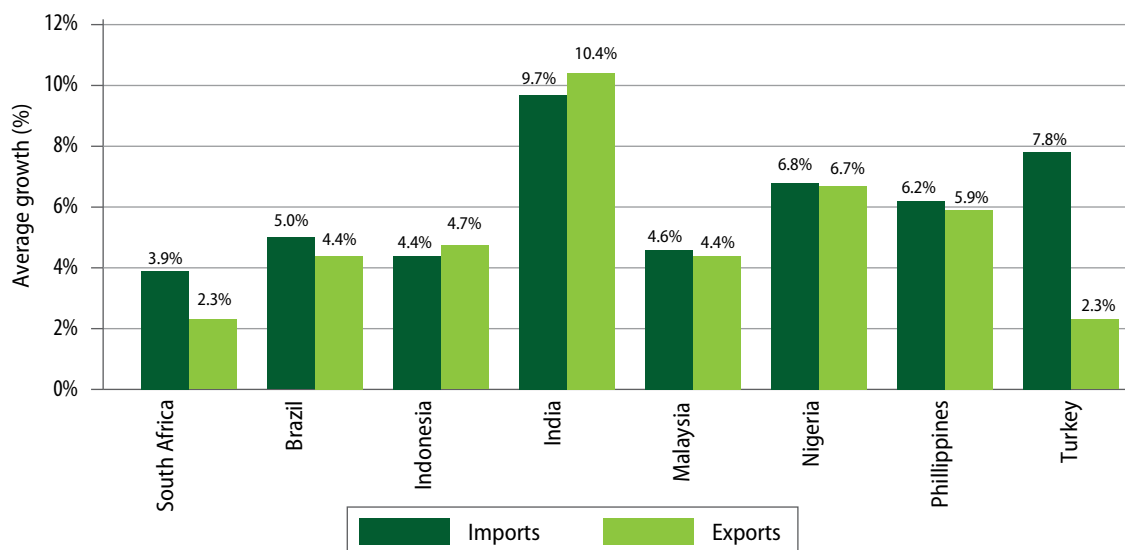
Source: World Bank (2021)

Strong positive employment growth can be an effective instrument for reducing poverty in an economy (Khan, 2005). Figure 2.6 presents employment numbers in South Africa and selected countries over the period 2018–2020. South Africa and Malaysia had the least numbers of persons employed relative to other nations (Brazil, Russian Federation, Mexico and Turkey), even considering the decline in numbers of the employed across all economies in 2020, possibly due to the COVID-19 pandemic.

FIGURE 2.6: Employment-to-population ratio in selected countries, 2018–2020

	South Africa	Turkey	Philippines	Brazil	Indonesia
2017	43.2	50.6	57.8	60.2	65.4
2018	43.3	50.6	57.7	60.7	66.3
2019	42.6	48.7	58,4	61.5	67.8
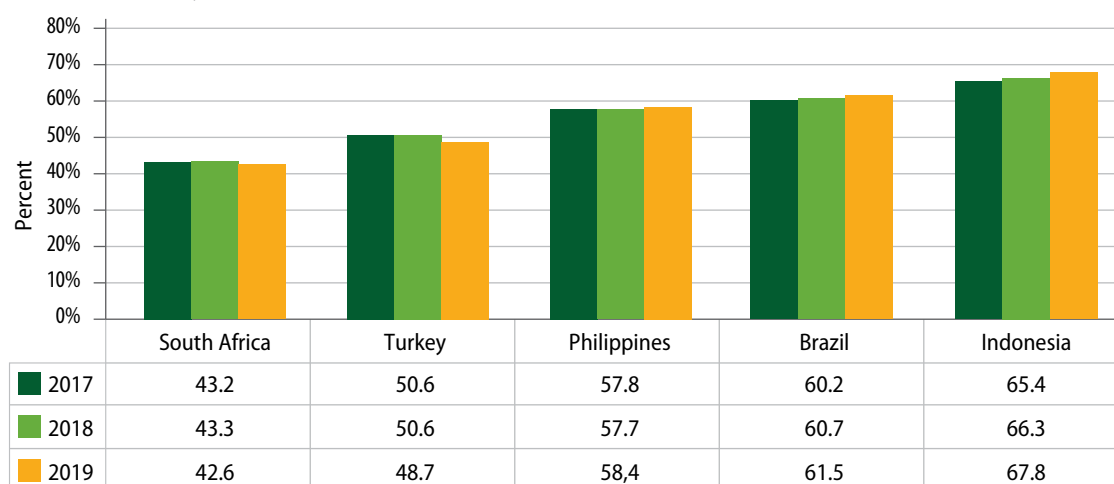
Source: Author's calculations using data from the International Labour Organisation (2022) and United Nations (2022)

The International Labour Organisation (ILO) regards the unemployment rate as a useful measure of the underutilisation of labour supply, and thus an indicator of the performance of the labour market and the capacity of an economy to absorb its labour force (ILO, 2022). Figure 2.7 compares the trend in South Africa's unemployment rate relative to selected emerging economies in the world. The unemployment rate in South Africa increased from 29.9 percent in 1994 to 33.3 percent in 2002, declined to 22.4 percent in 2008 and gradually increased to 28.7 percent in 2020. South Africa is clearly an outlier in terms of its unemployment rate: by 2020, South Africa's unemployment rate was more than double that of Brazil (13.7 percent) and Turkey (13.9 percent), and far above the rates in the other comparator countries.

FIGURE 2.7: Unemployment rate for selected countries, 1994–2020
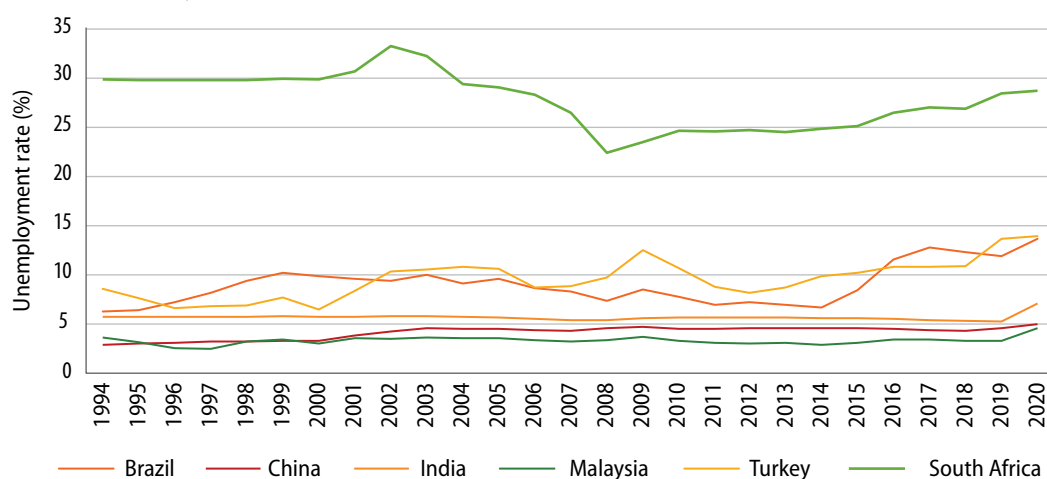
Source: World Bank (2021)

The share of youth not in education, employment or training (the NEET rate) highlights the proportion of the youth population that is neither employed nor actively investing in their human capital. The NEET rate serves as a broader measure of potential youth labour market participants than youth unemployment, since it also includes young persons outside the labour force not in education or training (ILO, 2022). Figure 2.8 shows the proportion of youth (aged 15–24 years) who were NEET in selected countries during the period 2013–2020. Compared to other countries, South Africa had a much higher NEET rate, which remained between a low of 30.5 percent in 2015 and a high of 32.5 percent over the period 2013–2020. NEET rates in Italy and Philippines consistently declined, while Mexico generally had the lowest NEET rate during the period under review.

FIGURE 2.8: Proportion of youth (aged 15–24 years) not in education, employment or training NEET (%) for selected countries, 2013–2020

	2013	2014	2015	2016	2017	2018	2019	2020
South Africa	32.0	31.3	30.5	31.2	31.0	31.6	32.5	32.4
Brazil	20.9	20.7	22.1	23.9	25.0	24.7	24.1	26.2
Indonesia	22.9	22.4	22.9	22.5	21.5	21.7	20.6	21.8
Philippines	24.3	23.4	22.8	22.2	21.7	19.9	18.8	18.6
Turkey	25.5	24.8	23.9	24.0	24.2	24.4	26.0	28.3
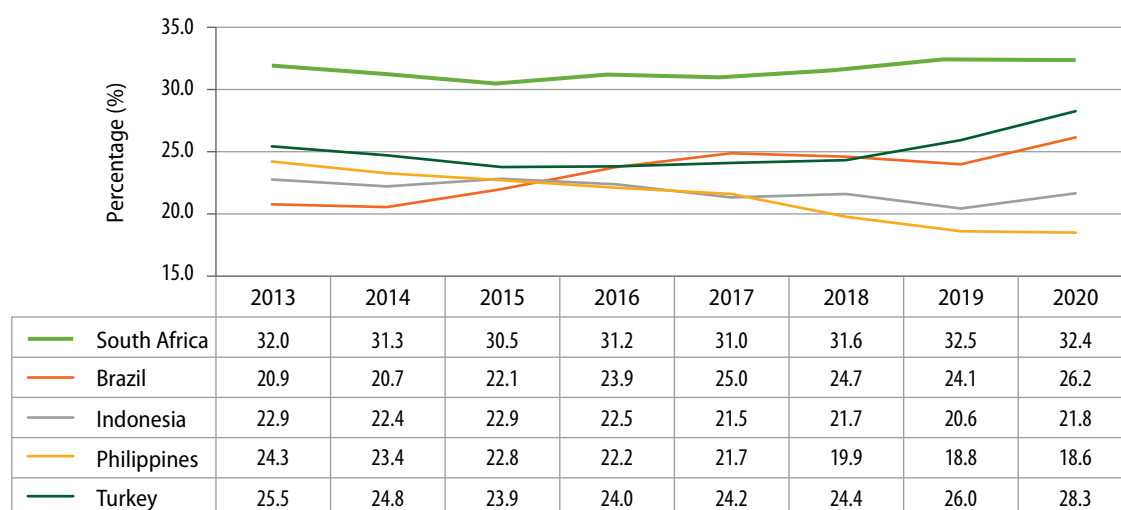
Source: International Labour Organisation (2022)

2.1.2. Demographic indicators

The effect of demographic changes on the labour market varies from one country to another, hence countries implement different policy measures in response to changes in their working-age populations (Räisänen & Maunu, 2019). Stehrer and Leitner (2019) indicate that changes in populations largely affect labour supply. Figure 2.9 shows population trends during 2010–2019 for selected nations, using data from the United Nations Development Programme (UNDP, 2021). Malaysia and South Africa had the smallest populations, which slightly increased from 28.2 million in 2010 to 31.9 million in 2019 (Malaysia) and from 51.2 million in 2010 to 58.6 million in 2019 (South Africa). Nigeria and Brazil had the largest populations relative to other nations. Nigeria experienced the steepest upturn in total population from 158.5 million in 2010 to 201.0 million in 2019, while Brazil's population progressively increased from 195.7 million in 2010 to 211.1 million in 2019.

FIGURE 2.9: Population growth rates in selected countries, 2011–2019

	2011	2012	2013	2014	2015	2016	2017	2018	2019
Brazil	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8
China	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.4
India	1.3	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0
Indonesia	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.1	1.1
Malaysia	1.8	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3
Nigeria	2.7	2.7	2.8	2.7	2.7	2.7	2.6	2.6	2.6
Philippines	1.7	1.7	1.7	1.6	1.6	1.6	1.4	1.4	1.3
South Africa	1.6	1.5	1.7	1.5	1.7	1.4	1.4	1.4	1.4
Turkey	1.5	1.8	1.6	1.7	1.7	1.7	1.6	1.5	1.3
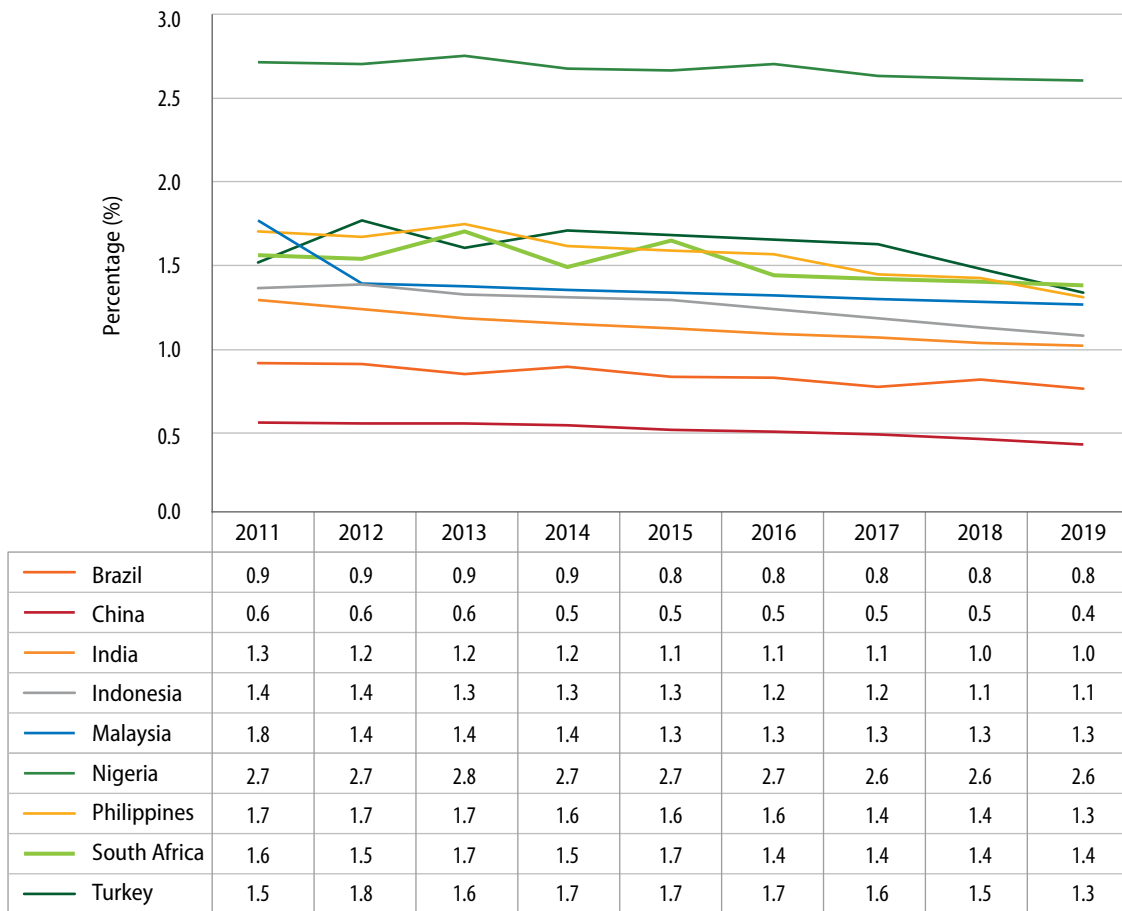
Source: Author's calculations using population data from UNDESA (2019a)

Higher life expectancy may imply a rising ageing population in the labour market, subject to a country's existing retirement policies (Samorodov, 1999; Aísa, Pueyo & Sanso, 2012; Kuitto & Helmda, 2021). The trends depicted in Figure 2.10 show that although life expectancy in South Africa slightly improved from 62.3 years in 1994 to 64.1 years in 2019 (more than in Nigeria), it did, however, remain lower than life expectancies in other BRICS peer-nations, namely Brazil, China, India and Russian Federation.

FIGURE 2.10: Life expectancy at birth for selected countries, 1994–2019

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
South Africa	62.3	61.6	60.6	59.5	58.3	57.1	56.0	55.1	54.3	53.7	53.4	53.4	53.8	54.5	55.4	56.5	57.7	58.9	60.1	61.1	62.0	62.6	63.2	63.5	63.9	64.1
Brazil	67.9	68.3	68.7	69.1	69.4	69.8	70.1	70.5	70.8	71.2	71.5	71.9	72.3	72.6	73.0	73.3	73.6	73.9	74.2	74.5	74.7	75.0	75.2	75.5	75.7	75.9
China	69.7	69.9	70.1	70.4	70.7	71.1	71.4	71.7	72.1	72.4	72.7	73.0	73.3	73.6	73.8	74.1	74.4	74.7	75.0	75.3	75.6	75.9	76.2	76.5	76.7	76.9
India	59.8	60.3	60.8	61.2	61.7	62.1	62.5	62.9	63.3	63.7	64.1	64.5	64.9	65.3	65.8	66.2	66.7	67.1	67.5	67.9	68.3	68.6	68.9	69.2	69.4	69.7
Indonesia	63.9	64.3	64.6	65.0	65.2	65.5	65.8	66.0	66.3	66.6	67.0	67.3	67.7	68.1	68.5	68.9	69.2	69.5	69.9	70.2	70.5	70.8	71.0	71.3	71.5	71.7
Malaysia	71.7	71.8	72.0	72.1	72.3	72.4	72.6	72.8	73.0	73.2	73.4	73.6	73.7	73.9	74.1	74.3	74.5	74.7	74.9	75.1	75.3	75.5	75.6	75.8	76.0	76.2
Nigeria	45.8	45.9	45.9	45.9	46	46.1	46.3	46.5	46.8	47.2	47.7	48.3	48.8	49.4	49.9	50.4	50.9	51.3	51.8	52.2	52.7	53.1	53.5	54	54.3	54.7
Philippines	68	68.2	68.4	68.6	68.7	68.7	68.8	68.8	68.9	68.9	69	69.1	69.2	69.4	69.5	69.7	69.8	70	70.1	70.3	70.5	70.6	70.8	71	71.1	71.2
Turkey	66.4	67	67.6	68.2	68.8	69.4	70	70.6	71.1	71.6	72	72.4	72.8	73.2	73.6	74.1	74.5	74.9	75.4	75.8	76.2	76.5	76.9	77.2	77.4	77.7

Source: UNDESA (2019a)

2.1.3. Social indicators

Productive employment and decent work are reliable instruments for reducing poverty (United Nations, 2010). The poverty headcount ratio and poverty gap are key indicators used to assess poverty levels. The poverty headcount ratio is the proportion of the population living below the poverty line, while the poverty gap is the mean shortfall in income from the poverty line (making it a good reflection of the depth of poverty in a nation) (World Bank, 2022). Despite substantial declines from 36.3 percent in 1996 to 18.7 percent in 2014, South Africa's poverty headcount ratio (using a poverty line of $1.90 a day at 2011 international prices) remains higher than poverty headcount ratios in Brazil, China and Russia between 2005 and 2014 (Figure 2.11). Furthermore, the effects of the pandemic have stalled the progress made in reducing poverty in Sub-Saharan Africa. Income has been severely impacted as people have lost jobs, been forced to adjust to reduced working hours and born witness to higher inflation (World Bank, 2021).

In fact, this has been the case all over the world: as income has declined, the global poverty level has increased (World Bank, 2021). Approximately 97 million more people are living in poverty as a result of the pandemic (World Bank, 2021).

FIGURE 2.11: Poverty headcount ratio at $1.90 a day, selected years: 1996–2014

	1996	2005	2008	2010	2014
■ China	41.7	18.5	14.9	11.2	1.4
■ South Africa	36.3	25.7	16.7	16.2	18.7
■ Brazil	14.1	8.6	5.5		2.7
■ Russian Federation	4.8	0.8	0.1	0.1	0.0
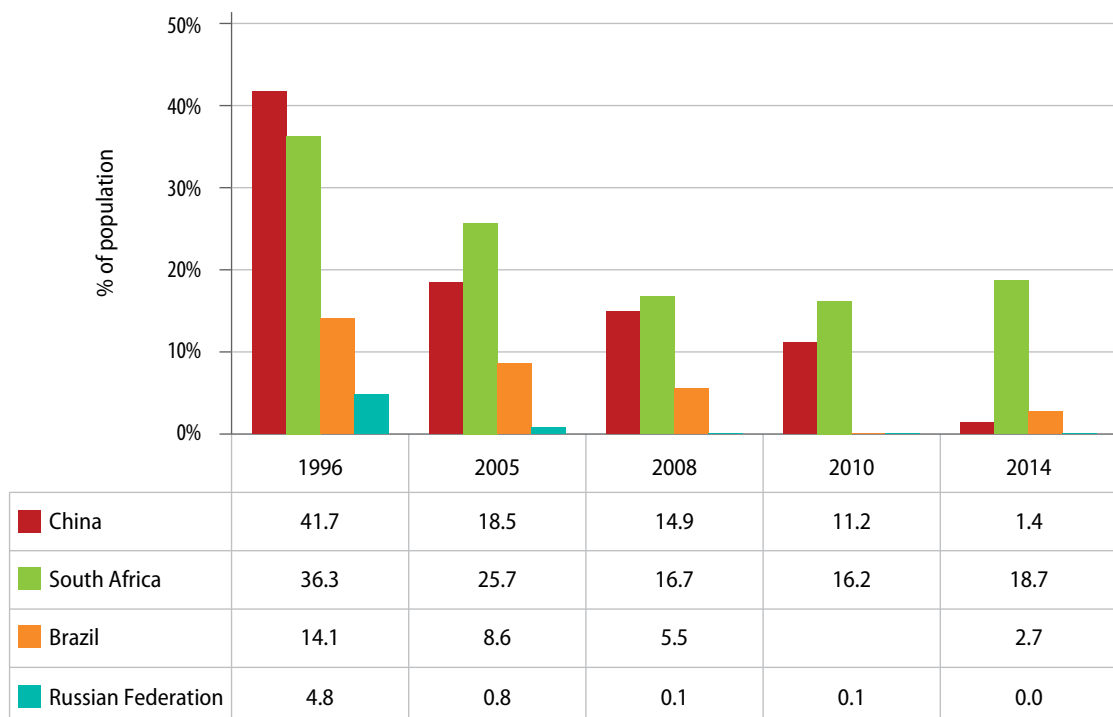
Source: World Bank (2021)

The Gini index or coefficient is a measure of income inequality among a nation's population (Gini, 1921). The index takes values from zero to 100, where zero indicates perfect equality and 100 perfect inequality; thus, lower values indicate more equal societies. Figure 2.11 shows that between 1996 and 2014, South Africa consistently had the highest Gini index relative to other economies such as Argentina, El Salvador, Indonesia, Mexico and Russian Federation. While the income inequality index generally declined in most of the selected economies (Argentina, El Salvador, Mexico and Russian Federation), the index increased in Indonesia (from 34.5 in 1996 to 39.4 in 2014) and South Africa (from 60.7 in 1996 to 63.0 in 2014).

FIGURE 2.12: Gini index for selected countries, selected years between 1996–2014

	1996	2000	2005	2008	2010	2014
■ Argentina	49.5	51.1	47.7	44.9	43.6	41.6
■ El Salvador	51.0	51.5	48.5	46.9	43.5	41.6
■ Indonesia	34.5	28.6	33.0	35.2	36.4	39.4
■ Mexico	53.6	52.6	50.1	49.9	47.2	48.7
■ Russian Federation	46.1	37.1	41.3	41.6	39.5	39.9
■ South Africa	60.7	57.8	64.8	63.0	63.4	63.0
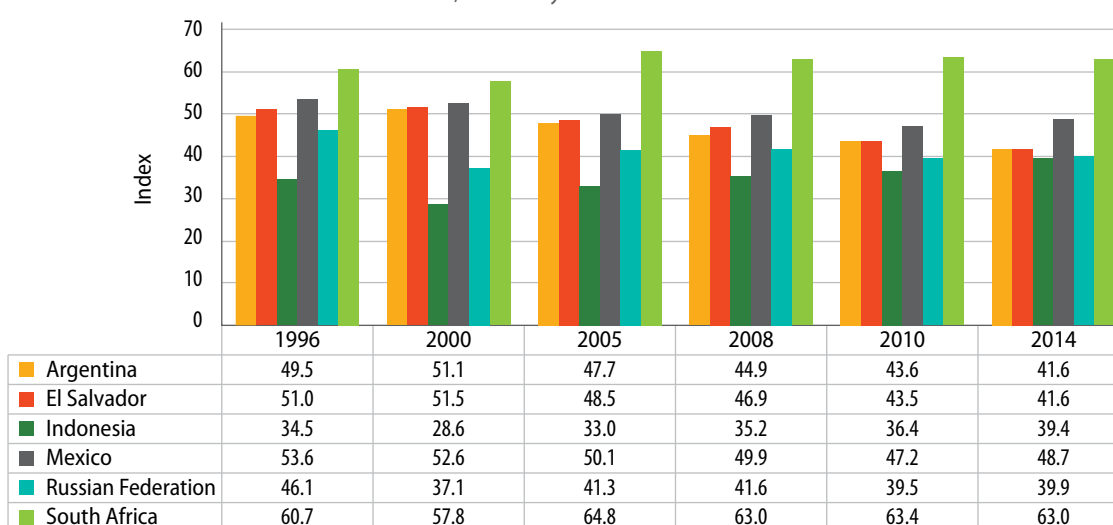
Source: World Bank (2022)

Note: Selection of countries included in Figure 2.3 was based on the availability of data for the periods that South Africa's data was available. Brazil, China, India, Malaysia, Nigeria, Philippines and Turkey were excluded due to lack of data.

A country's stage of human development has potential implications for that country's levels of labour productivity. Additionally, it can serve as a push or pull factor for international labour migration (International Organisation for Migration, 2018). In practice, human development is measured using the human development index (HDI). The HDI estimates human development according to the metrics of whether citizens have a long and healthy life, are well-educated and enjoy a decent standard of living (UNDP, 2020). Figure 2.13 shows that, despite a steady improvement between 1994–2019, South Africa's HDI remained lower than that of China, Brazil and Russia (but generally higher than that of India).

FIGURE 2.13: Human Development Index for selected countries, 1994–2019
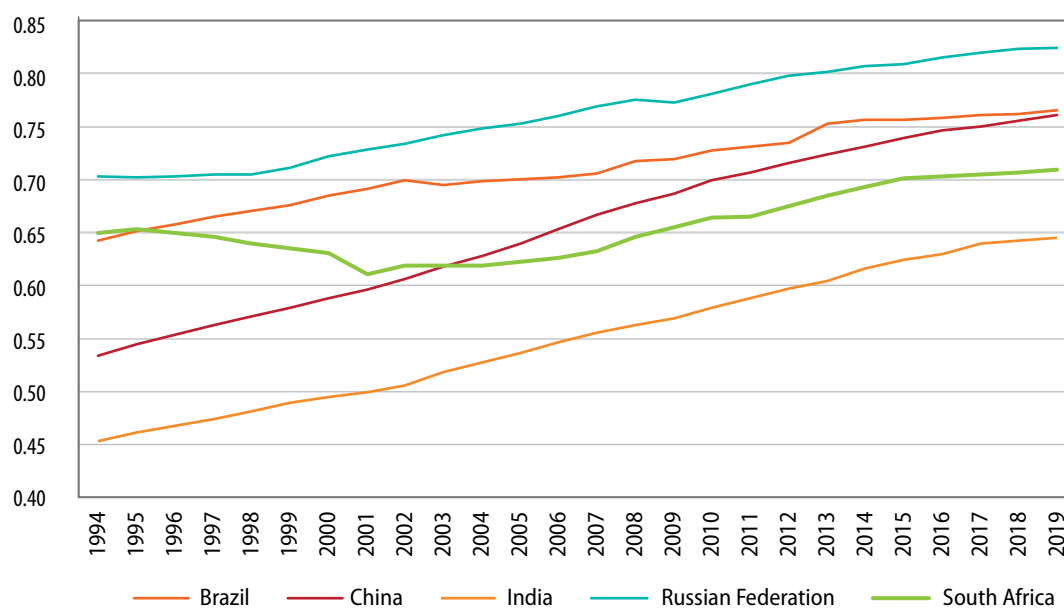
Source: HDRO (2021)

Note: Calculations based on data from UNDESA (2019a), UNESCO Institute for Statistics (2020), United Nations Statistics Division (2020b), World Bank (2020a), Barro and Lee (2018) and IMF (2020).

2.1.4. Education and skills indicators

The human capital theory (Becker, 1962; Rosen, 1976) maintains that education equips individuals with the knowledge, skills and productive capabilities (Quang, 2012; Ganyaupfu, 2014; Hampf, Wiederhold & Woessmann, 2017; OECD, 2019) required to stimulate economic growth. In line with the endogenous growth theory (Romer, 1994), which holds that education and skills are primary determinants of long-term economic growth (Barro, 1991, 1997, 2001; Mankiw, Romer & Weil, 1992), the impact of education on an economy's growth trajectory can be seen in the form of increased demand for skilled labour (Bhorat, Cassim & Tseng, 2014).

The degree of a population's participation in tertiary education, therefore, has critical implications for a country's relative international position with regards to its production of human capital stock, which remains integral to an economy's production function. Figure 2.14 presents trends in gross enrolment ratios (GER) for South Africa relative to its peer economies in the Brazil, Russian Federation, India, China and South Africa (BRICS) bloc, and other nations over the period 2012–2019. Despite some improvement in its GER from 19.1 percent in 2012 to 23.9 percent in 2019, South Africa's performance with regards to participation in tertiary education remains lower than the other BRICS countries, Malaysia and Mexico.

FIGURE 2.14: GER for tertiary education for selected countries, 2012–2019

	2012	2013	2014	2015	2016	2017	2018	2019
Brazil	45.2	47.1	50.2	51.3	50.7	51.6	53.3	55.1
China	28.7	32.4	42.4	46.0	48.0	49.1	50.6	53.8
India	24.3	23.8	25.4	26.8	26.8	27.4	28.1	28.6
Russian Federation	75.9	77.9	78.5	79.9	80.6	81.9	84.6	86.4
South Africa	19.1	19.9	19.8	22.3	20.9	22.4	23.8	23.9
Mexico	29.5	30.3	31.1	31.8	38.4	40.2	41.5	42.8
Malaysia	37.6	39.1	39.5	45.6	46.8	43.7	45.1	43.1
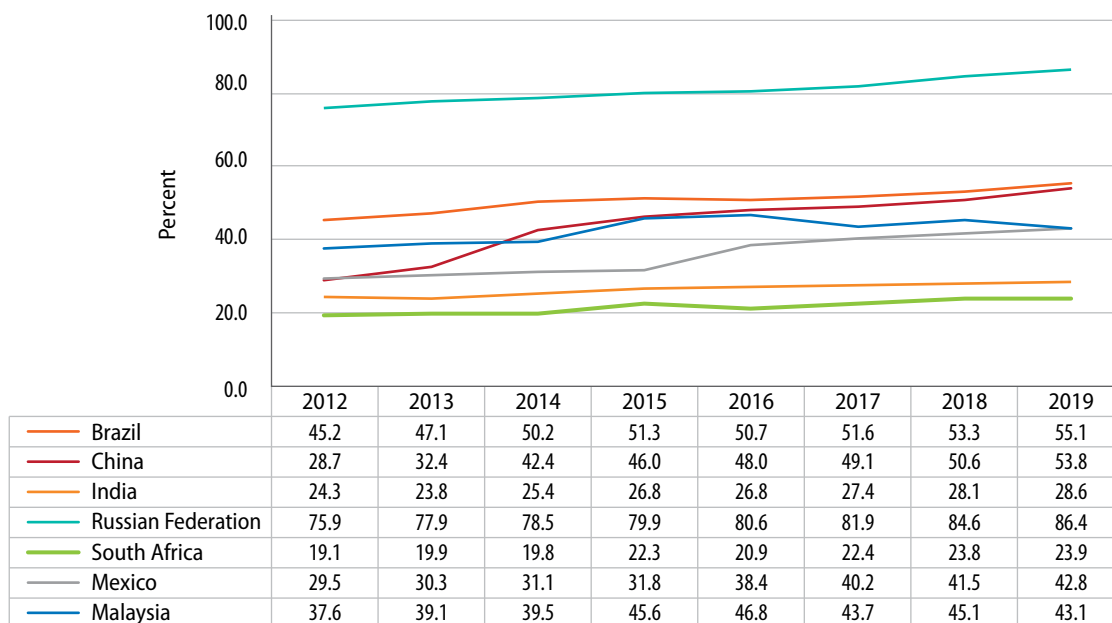
Source: World Bank, 2021

Note 1: Countries included in the analysis were selected based on the consistent availability of data.
Note 2: Indonesia, Philippines and Turkey had no data consistently reported for the period under review.
Note 3: All the GER statistics presented were obtained as precisely calculated and reported by World Bank.

Figure 2.15 compares the percentage of the population aged 25 years old and over with at least a completed bachelor's or equivalent degree (ISCED 6 or higher) across a range of selected countries. In 2017, this cohort in South Africa stood at 8.2 percent, reflecting that South Africa's performance was lower than other nations such as Brazil (15.7 percent), Mexico (15.4 percent) and Portugal (19.2 percent).

FIGURE 2.15: Percentage of population aged 25 years old and over with at least a completed bachelor's or equivalent degree (ISCED 6 or higher), 2017–2018
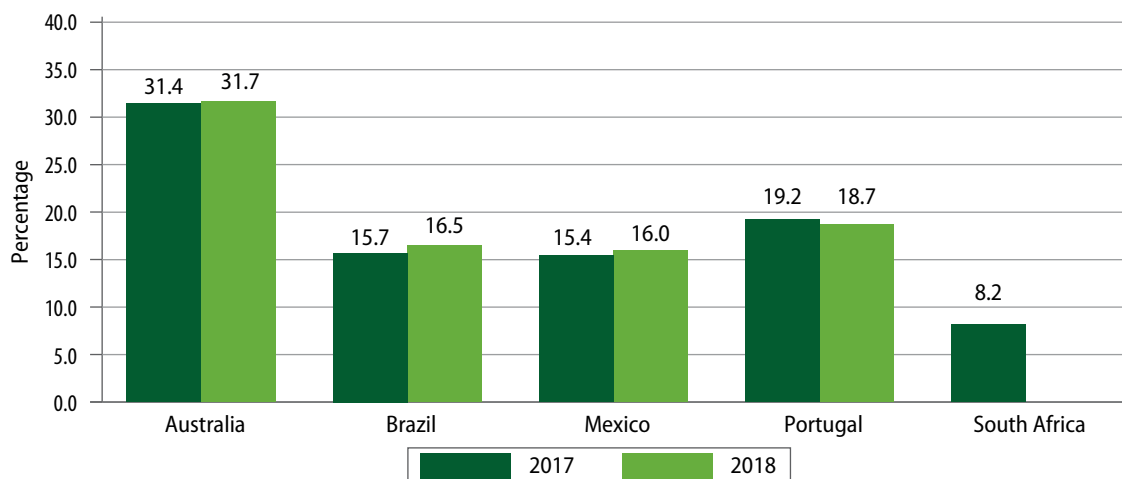
Source: World Bank Education Statistics, 2021

Notes:
1. The latest data available at the time of producing the report were for the year 2018, South Africa's latest data was for the year 2017.
2. The countries included in this figure were selected based on the availability of the latest data.

Figure 2.16 compares the share of persons aged 25–64 who attained doctoral degrees or equivalent (ISCED 8) with the general population between 2018 and 2019. As the table shows, the share of South Africa's population aged 25–64 years that attained a doctoral or equivalent qualification was markedly lower than in the comparator countries at 0.01% in 2019.

FIGURE 2.16: Share of population that attained doctoral degrees or equivalent (ISCED 8) (%), for the population aged 25–64 years
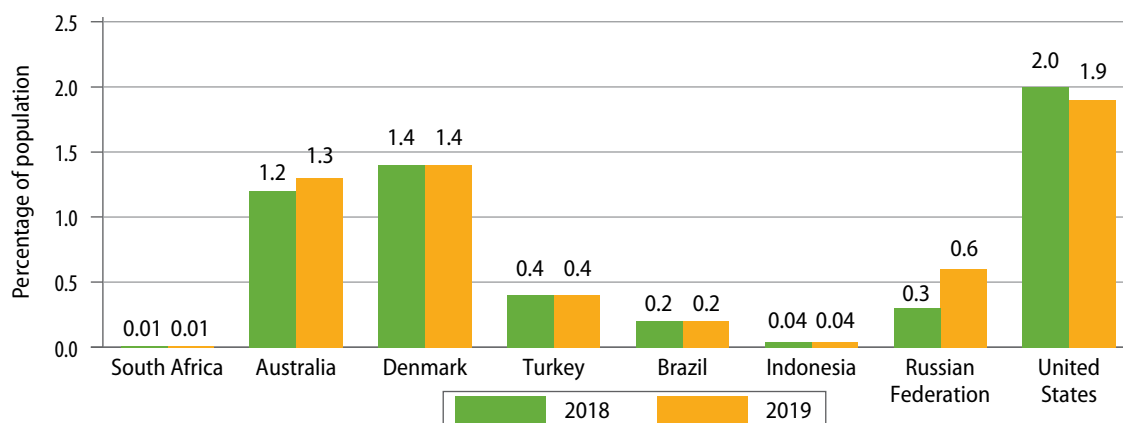
Sources: 1. OECD Education at a Glance, Educational attainment of 25–64 year-olds, 2021
2. DHET, HEMIS data, 2018–2019
3. Stats SA, mid-year population estimates, 2021

Note: The proportions for all other countries were obtained from the OECD, while the proportions for South Africa were calculated using educational attainment data from the DHET and population estimates from Stats SA.

Figure 2.17 makes an international comparison of the percentage of 25–34-year-olds with a tertiary education relative to the general population during 2018–2020. In South Africa, the proportion of the population aged 25–34 years old with a tertiary education improved substantially by 9.3 percentage points (from 5.6 percent in 2018 and 2019 to 14.9 percent in 2020). While acknowledging this improvement, South Africa's performance in this area remained much lower than that of Brazil, Indonesia, Mexico, United States, Russian Federation and the OECD average.

FIGURE 2.17: Population aged 25–34 years with a tertiary education, 2018–2019

	South Africa	Brazil	United States	Indonesia	Russian Federation	Mexico	OECD average
2018	5.6	21.3	49.4	16.1	62.7	23.4	44.3
2019	5.6	21.3	50.4	16.1	62.1	23.6	45.0
2020		23.5	51.9	18.1	62.1	25.3	45.5
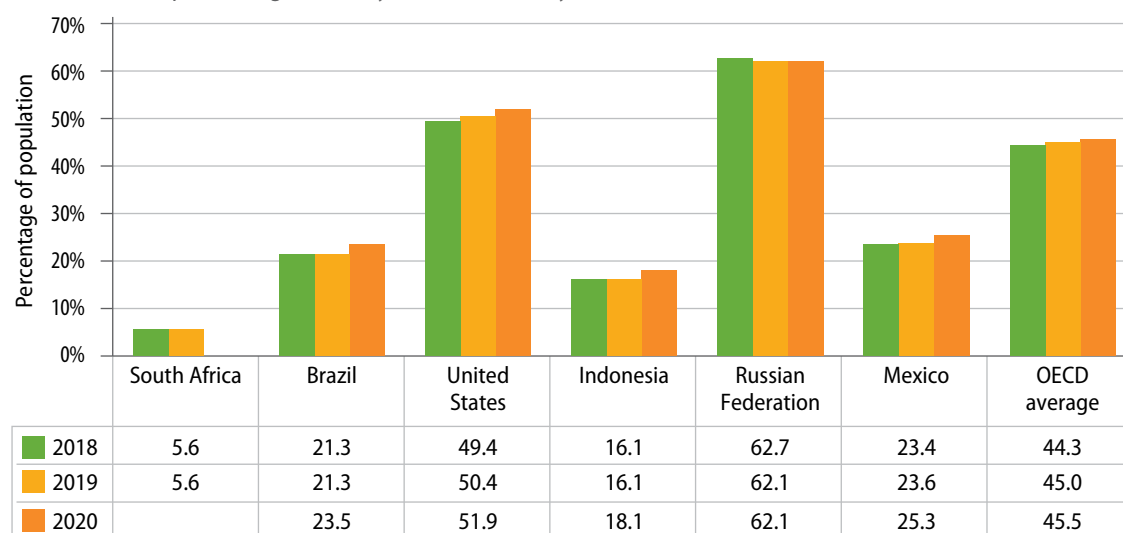
Source: OECD (2021)

Note: OECD reported South Africa's figure as 14.9 percent but the sharp improvement implied by the figure is improbable.

2.2. Conclusion and implications for skills planning

Despite having the most advanced economy on the African continent, South Africa has not only performed poorly relative to its continental peers, but has also lagged behind other fast-growing middle-income countries. While South Africa's HDI generally remained higher than that of India, it was lower than HDIs for China, Brazil and Russia. This suggests that South Africa has a higher level of labour productivity compared to its counterparts.

An ageing population and the corresponding shrinkage of the labour force will create a significant drag on economic growth and may jeopardise the economic well-being of some of South Africa's elderly population. An ageing population is often associated with the economic structural shift from a high-growth industrialised economy towards a less vigorous economic welfare state (Malmberg et al., 2006). Despite a slight improvement in life expectancy in South Africa over the past quarter of a century, life expectancy remains low compared with other emerging economies. Life expectancy should be considered as a proxy for a broad range of health outcomes at the population level. Thus, rising life expectancy implies generalised improvements in health, which is part of human capital—and this might lead to improved productivity. Therefore, economic policy should mitigate the adverse effect of an ageing population by making the best use of the demographic dividend.

The South African labour market is challenged due to a large section of its labour force being low-skilled, and only a small section being high-skilled. This has led to high returns on skilled labour, thereby increasing wage inequality and poverty. To this point, South Africa consistently had the highest Gini index relative to other economies such as Indonesia, Mexico and Russian Federation between 1996 and 2014 (rising from 60.7 in 1996 to 63.0 in 2014). However, while South African inequality has remained stubbornly high, the level of poverty has fallen over time. Nonetheless, despite a substantial decline in poverty headcount from 36.3 percent in 1996 to 18.7 percent in 2014, South Africa's poverty headcount ratio remains higher than poverty headcount ratios in Brazil, China and Russia.

South Africa's average annual growth in output grew by 2.3 percent between 1994 and 2020. However, when accounting for population, South Africa's growth in per capita income stood lowest compared to its comparator countries at 0.7 percent, validating the view that the country is caught in a low-growth trap. Furthermore, the employment-to-population ratio was the lowest in South Africa relative to other economies. In a low-growth environment, the economy will struggle to create new jobs for the growing labour force and will, therefore, increase pressure on the already high levels of unemployment.

Unemployment remains a global challenge and youth are the most vulnerable (WEF, 2018). The unemployment rate in South Africa increased from 29.9 percent in 1994 to 33.3 percent in 2002, declined to 22.4 percent in 2008 and constantly increased to 28.7 percent in 2020. The underutilisation of labour in South Africa remains much higher relative to comparable economies, including Brazil, China, India, Malaysia and Turkey. South Africa's slow economic growth has precipitated slow employment growth, meaning that under the present circumstances the economy will struggle to absorb new labour market entrants. To address this, the government should implement policies and strategies that can put the economy on a positive growth trajectory.

The large number of people without jobs and education qualifications is a sign of the constraints on the demand for skilled workers. It also reinforces the need for economic growth to create jobs for the millions of people who are still excluded from the labour market. NEET serves as a broader measure

of potential youth labour market entrants than youth unemployment, since it also includes young persons outside the labour force who are not in education or training (ILO, 2022). Compared with other countries, South Africa has a much higher NEET rate, which fluctuated between a low of 30.5 percent in 2015 and a high of 32.5 percent over the period 2013–2020.

The educational composition of the South African labour force has been changing over time. The degree of participation in tertiary education has critical implications for a country's relative international position in being able to produce human capital stock, something that remains an integral input in an economy's production function. Continued demand for skilled labour and a small tertiary educated labour force in South Africa have led to high wages at the top of the wage pyramid, putting pressure on already high wage inequality.

The share of South Africa's population between the age of 25 and 65 years with a doctoral or equivalent qualification was markedly lower than its counterparts. Furthermore, South Africa lags behind in terms of individuals with a tertiary level of education relative to other countries. This means that if South Africa can increase enrolment for tertiary education, this could yield high labour market and productivity returns, and therefore contribute to economic growth. In summary, the key constraint to sustainable job creation in South Africa is the structural mismatch between labour demand and supply. Therefore, it is imperative that skills planning is not seen in isolation from the economic growth and employment trajectories.

The South African Economy

The South African economy experienced positive real GDP growth from the turn of the century until the onset of the 2008/09 global financial crisis, which led to a recession both globally and domestically. The severe impact within the domestic economy reflects the vulnerability of the South African economy to external shocks largely determined by trends in global growth and demand. In the aftermath of the 2008/09 recession, growth was subdued but, by 2011, had rebounded somewhat. Subsequently, real GDP growth has been positive until the economy entered into a technical recession in 2017. The contraction in economic performance was exacerbated by the COVID-19 pandemic, leading the economy to contract by a record –6.4 percent in 2020. However, while real GDP per capita in 2020 was lower than it was in 2006 (SARB, 2021), COVID-19 explains only a small part of this weak performance: in 2019 (i.e., pre-COVID-19), real GDP per capita was at the same level as in 2007.

The sustained poor growth rates that the country has experienced over the past decade have affected employment and have contributed to high levels of inequality. Weak economic growth has prevented the country from creating new jobs and absorbing the growing labour force. Hence, persons in the labour force are more likely to experience difficulties in retaining or finding employment. The growing labour force has put pressure on unemployment. Therefore, it is critical for the South African labour market to ensure that the demand for workers in South Africa is aligned with the country's skill supply. The education system must deliver the necessary skills – to a growing population – to meet the needs of the economy. Economic and skills planning must also be conducted to ensure that the country's economy can support future growth.

A demand-driven approach to skills planning needs to be supported by sound and deep understandings of various factors that drive skills demand in the economy. Hence, it is important to understand the socio-economic challenges faced in South Africa. This chapter provides a framework for assessing the state of the South African economy and its implications for skills planning in the country.

3.1. The COVID-19 pandemic

The COVID-19 pandemic sparked economic and social disruption both globally and regionally, with the negative output shock from the pandemic exceeding that of the 2008/09 global financial crisis (IMF, 2020). The pandemic has had a ripple effect on the labour market, poverty and inequality, and has resulted in a surge in debt levels for countries at all levels of development (World Bank, 2021b).

The pandemic weighed heavily on the South African economy which, even prior to COVID-19, was in a weak position having already entered a technical recession going into 2020 (Bhorat et al., 2020). Factors negatively impacting the economy included the domestic electricity supply constraints, declining consumer spending and fixed investment spending, further decline in the financial positions of state-owned enterprises (SOEs), and low consumer and business confidence (Bhorat et al., 2020). Overall, these factors led to low business confidence, low investment appetite, and a reduction in the ability of firms to invest over the medium- and long-term.

In response to the arrival of COVID-19 in South Africa, government implemented lockdown measures to contain its spread. These included border shutdowns, travel restrictions and quarantine—all of which led to a severe contraction in economic activity and a large supply shock, which has affected demand

and production. The only economic activities that continued during lockdown were providing essential goods and services. In turn, this led to a disruption in the supply value-chain.

The negative effects of the current economic shock are heterogeneous across sectors. Industries that involve social interactions – such as public transport, entertainment and hospitality – experienced the most adverse supply effects. This meant that these firms had to undergo operational changes—in other words, some firms could only operate at partial capacity, while others had to shut down completely. In addition, the initial shift to working from home, the extended duration of remote working and its impact on team interactions, as well as the rising numbers of infection that required workers to take sick leave, have all potentially impacted negatively on labour productivity. Furthermore, imports and exports of goods were affected, resulting in a ripple effect on the supply chain. The sectors that were hardest-hit initially by the outbreak of COVID-19 relied heavily on human interactions. However, restrictions on movement and on which sectors were permitted to operate also had significant impacts. For instance, agriculture – designated as essential – remained largely operational during the hard lockdown, with one of the highest proportions of active workers (Bhorat et al., 2020).

The negative economic shock from COVID-19 resulted in substantial adverse effects on employment, with almost three million jobs lost between February 2020 and April 2020 (Spaull, 2020). Social distancing, self-isolation and travel restrictions have further led to a reduced workforce across economic sectors and caused many jobs to be lost.

More broadly, data collected through the National Income Dynamics Study Coronavirus Rapid Mobile (NIDS-CRAM) survey provides evidence of significant impacts on schooling, employment, hunger, early childhood development and mental health, amongst others. In terms of schooling, learner dropout rates are now at the highest they have been in 20 years, with the highest rates of dropout found amongst the poorest households and those living in rural arears (Spaull et al., 2021; Shepherd and Mohohlwane, 2021). Within the labour market, there is evidence of gender disparities in employment recovery, with women's employment in March 2021 8.0 percent lower than pre-pandemic levels, while men's employment had almost recovered fully (Spaull et al., 2021; Daniels et al., 2021). Moreover, women have not benefited from either the Unemployment Insurance Fund – Temporary Employment Relief Scheme (UIF-TERS) or the COVID-19 Social Relief of Distress (SRD) grant at the same rate as men (Spaull et al., 2021; Kohler and Hill, 2021). In terms of food security, approximately 10 million people and 3 million children were reportedly in a household that had been affected by hunger in the past seven days (as recorded in April/May 2021) (Spaull et al., 2021; van de Berg et al., 2021).

In response to the crisis, government announced a massive stimulus package in April 2020. After initially implementing a stimulus package that amounted to 1.1 percent of GDP (or R59 billion), the government increased its size to R502 billion. This additional stimulus was earmarked and allocated to support COVID-19 relief measures (Bhorat et al., 2021; Bhorat et al., 2020). Spending allocations were made to provide additional health support, to provide basic services to the needy, to provide support for the unemployed and as employment subsidies. R100 billion was allocated to stimulate job creation and protect the economy; R2 billion was designated for SMME support; R70 billion was allocated for corporate tax relief and R200 billion was set aside for the credit guarantee scheme (Bhorat et al., 2021; Bhorat et al., 2020).

3.2. The policy context

3.2.1. The Economic Recovery and Reconstruction Plan (ERRP)

Government has developed an economic plan as part of its package of responses to the devastating impact of the COVID-19 pandemic on the economy and its negative effects on unemployment, poverty and inequality. The South African Economic Recovery and Reconstruction Plan (ERRP), launched by President Cyril Ramaphosa on 15 October 2020, aims to catalyse the structural economic change needed for a post-COVID-19 economic recovery, while also addressing structural issues facing the economy. The plan recognises the extent of the crisis caused by the pandemic. Moreover, the plan notes that the impact of this global pandemic is exacerbated by a decade of a stagnant economy and low levels of investment and growth in South Africa. COVID-19 has put significant strain on collective efforts that are being made to tackle historical structural inequalities, as well as unemployment and poverty. The extent of these challenges has been recognised by several social partners, resulting in a strong commitment to mobilise all our resources and efforts in economic activities that will put the economy in a sustainable recovery trajectory.

The ERRP identifies seven priority interventions and over ten enabling focus areas to grow the economy and create jobs. These are reinforced by macro-policy interventions and are expected to find expression in public and private sector strategies and plans. Figure 3.1 provides a summary of these priority interventions and enablers.

FIGURE 3.1: Enablers and priority interventions
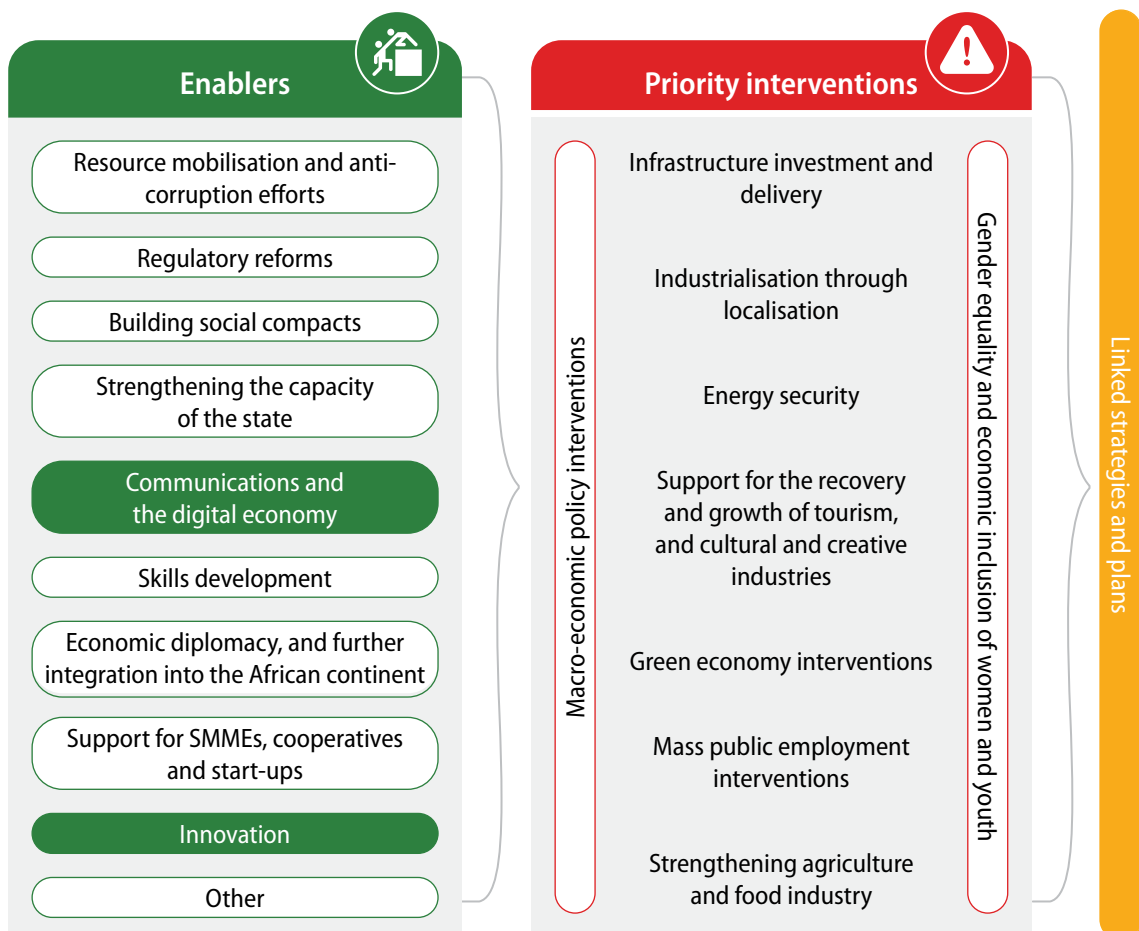
More specifically, the ERRP speaks to the above interventions as follows:

o **Infrastructure:** Galvanise aggressive infrastructure investment that will unlock more than R1 trillion in infrastructure investment over the next four years;

o **Industrialisation through localisation:** Promote employment-orientated strategic localisation, reindustrialisation and export promotion to reverse the decline of the local manufacturing sector through deeper levels of localisation and export;

o **Energy security:** Achieve reliable energy supply within two years;

o **Tourism and cultural and creative industries:** Support recovery and growth;

o **Green economy:** Implement applicable government policies and plans;

o **Mass public employment interventions:** Create thousands of jobs through a range of mass employment schemes across multiple economic sectors;

o **Strengthen agriculture and food security:** Strengthen implementation.

In all of these priority interventions there is a strong focus on ensuring gender equality and supporting the economic inclusion of women and youth, including through the implementation of the Presidential Youth Employment Interventions.

As shown in Figure 3.1, the ERRP identifies a range of 'enablers' that are expected to aid the growth of priority economic sectors. These range from skills development and resource mobilisation, to anti-corruption measures, digitisation, and building state capacity. The importance of skills development to economic recovery is given expression in the ERRP, which indicates that skills development is critical not only in driving South Africa's economic reconstruction and recovery, but also in sustaining it. The ERRP also stresses the need to contribute to the prevention of job losses through the expansion of reskilling and retraining of workers.

3.2.2. Skills strategy: Lever of the ERRP

The skills strategy sets out key interventions to ensure the effective implementation of the ERRP. It aims to ensure that skills are not a constraint on economic development and, therefore, proposes interventions and actions that address occupational shortages and skills gaps in the labour market. More importantly, the strategy supports the implementation of ERRP in ways that maximise opportunities for new entrants to the labour market, as well as support the preservation of existing jobs and the creation of new jobs.

The strategy envisages that both public and private sectors will play a central role in its implementation. It represents a call for collective action, mobilising public and private education and training providers, SETAs, businesses, government departments, state entities and other social partners to commit to working together to promote skills development.

The strategy identifies the skills implications of the ERRP and outlines ways in which the PSET system, together with other key role-players, will ensure that the skills required to implement the ERRP are available. This strategy can therefore evolve as the ERRP itself evolves. The DHET can serve as the lead department for the development and coordinated implementation of the strategy. Skills are crucial for sustainable growth, productivity and innovation, and are therefore key to the competitiveness of businesses. Human capital theorists advocate that providing people with the right skills improves their work effectiveness, better optimises their use of advanced technologies, reduces investment risks, minimises labour market mismatches and lays the ground for research and development (R&D) and firm-based innovation.

The skills strategy focuses on interventions for large numbers of young people that facilitate access to skills development and workplace-based learning (WBL) programmes. The aim of this is to boost job creation and improve employability of persons. Given the unacceptably high number of young NEET South Africans, it is imperative to expand access to WBL programmes (e.g., internships) and to improve employability through the provision of work readiness and other kinds of skills development programme.

It is essential to support and incentivise self-employment through entrepreneurship development programmes, which have been recommended in many national plans and strategies, including the NSDP and the NDP. Since entrepreneurship contributes to economic growth and employment, more youth need to be encouraged and trained to become entrepreneurs. Entrepreneurship is generally considered a positive opportunity for youth, not only as a means of escaping unemployment, but also to help alleviate socio-economic challenges and help them build soft skills such as perseverance and resilience (DHET, 2020).

The skills strategy notes the urgency to undertake interventions that support the retraining of workers to prevent further job losses. Access to upskilling and reskilling opportunities is vital for millions of workers who have been propelled into part-time work or unemployment. Having the right skills means being more employable—or being able to stay employed more easily and to manage job transitions more smoothly. This requires an expansion of upskilling and reskilling opportunities for all people, irrespective of their qualification or skills level.

The strategy examines funding modalities for the various interventions that have been proposed, ensuring a comprehensive and holistic approach to skills development. The strategy comprises the following two dimensions, each of which outlines interventions and actions that support the implementation of the ERRP.

Dimension 1
Interventions focusing on the provision of targeted education and training programmes:
o Expand the provisioning of short skills programmes (both accredited and non-accredited) to respond to skills gaps identified in this strategy;
o Expand the provisioning of WBL prospects to respond to occupational shortages and skills gaps identified in this strategy;
o Boost enrolments in qualification-based programmes that respond to occupational shortages identified in this strategy;
o Review and revise education and training qualifications, programmes and curricula to respond to occupational shortages and skills gaps identified in this strategy; and
o Update the draft Critical Skills List and associated regulatory mechanisms.

Dimension 2
Interventions focusing on enabling transitions from education to work:
o Strengthen entrepreneurship development programmes;
o Embed skills planning into economic planning processes and vice versa;
o Facilitate the use of National Pathway Management Network in the PSET system; and
o Strengthen the PSET system.

3.3. The macroeconomic environment

Strong macroeconomic policies are highly effective instruments for limiting employment declines during economic downturns and preventing cyclical upsurges in unemployment from becoming structural (OECD, 2017). Therefore, macroeconomic (fiscal and monetary) policy responses to economic downturns influence labour market resilience—contingent on the size and nature of the economic shocks, subsequent output growth developments, and the macroeconomic and labour market policy settings in a country (OECD, 2017).

3.3.1. The fiscal environment

Fiscal support during economic recessions, through automatic and discretionary fiscal measures, enhances labour market resilience and cuts the risk of hysteresis (long-term unemployment) by stabilising aggregate demand (Engler & Tervala, 2016). Fiscal backing through automatic fiscal stabilisers responds promptly to business cycle conditions, but additional discretionary measures need to be implemented in a timely manner in order for fiscal support interventions to be effective (OECD, 2017). However, it is crucial to note that the use of fiscal policy as a stabilisation tool may only be possible if there is ample fiscal space during recessions, which highlights the importance of keeping public debt and fiscal balance at prudent levels, and building good flexibility into fiscal rules (OECD, 2017).

Figure 3.2 shows trends in the fiscal balance and public debt (as ratios of output) in South Africa over the period 1994–2020. Following an episode of steady decline from 43.5 percent in 1994 to 24.0 percent in 2008, the gross public debt ratio persistently increased from 27.0 percent in 2009 to 69.4 percent in 2020. On the budget side, the fiscal balance remained in the deficit zone from a low of −0.3 percent in 2008 to a high of −9.6 percent in 2020, except for the years 2006 and 2007, in which surpluses of 0.3 percent and 0.7 percent respectively were achieved. These trends in the fiscal balance and public debt levels suggest limited fiscal space to enable fiscal policy to reduce the risk of continued increase in the unemployment rate in the domestic labour market after recovery by the economy.

FIGURE 3.2: Fiscal balance and gross public debt trends (as ratios of GDP), 1994–2020
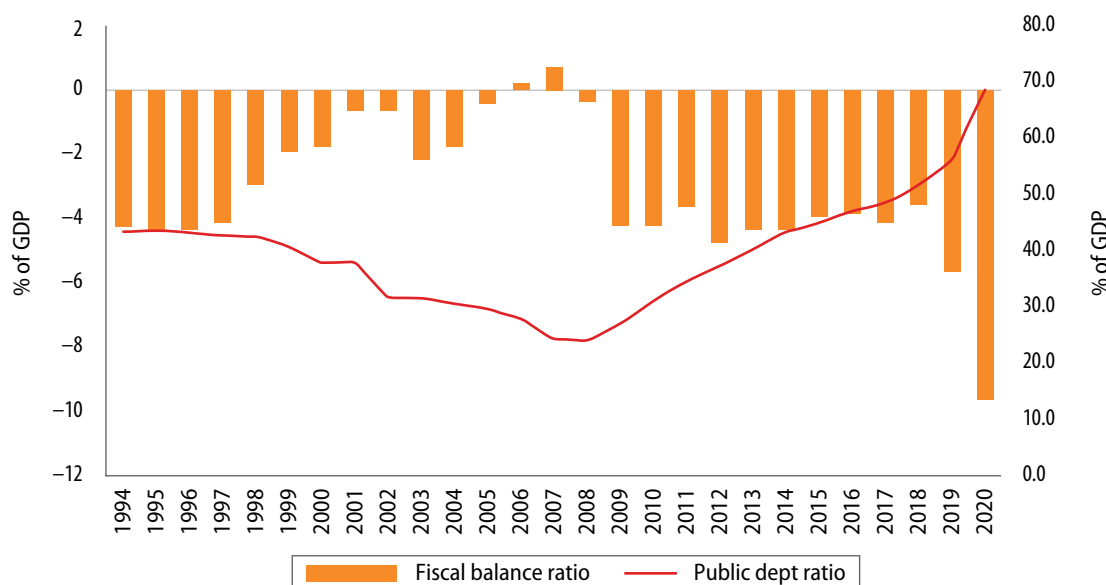
Source: SARB (2021)

3.3.2. Inflation and interest rates

From the monetary policy side, "inflation affects labour market efficiency by influencing firms' wage-setting practices and compensation schemes" (Groshen & Schweitzer, 1997). In the South African context, Vermeulen (2017) finds no empirical evidence of a trade-off between inflation and unemployment rate in the short-run, but finds strong evidence of a negative relationship between inflation and employment, leading to the conclusion that inflation harms employment creation. Low inflation rates thus help the economy to adjust to changes in labour supply and demand (Groshen & Schweitzer, 1997). Regarding the monetary policy interest rate, a high real interest rate raises the unemployment rate, raises the share of the unemployed and reduces the employment-to-population ratio in the long-run (Feldmann, 2013).

Furthermore, the reaction of monetary policy to changes in fiscal conditions has deep implications for the effectiveness of fiscal policy measures that might be implemented to reduce the risk of labour market hysteresis during periods of economic downturn (Alesina et al., 2016). Monetary policy may not act to offset the fiscal stimulus if the policy interest rate stands at the zero lower bound (ZLB) or expected inflation hovers below the target (OECD, 2017). In that regard, fiscal multipliers are usually larger when monetary policy does not respond to the demand stimulus by raising domestic interest rates, which is classically the case at the zero interest lower bound (Woodford, 2011; Alesina et al., 2016).

Figure 3.3 illustrates that during the period 1999–2020, episodes of inflation rate decline were experienced during the periods 2002–2004, 2008–2010 and 2016–2020. An all-time low of 1.4 percent in the inflation rate was recorded in 2004, while an all-time high of 11.5 percent was experienced in 2008. On the other side, the policy rate was high during the periods 1999–2002 and 2006–2008. Between 2010 and 2019, the interest rate fluctuated between a low of 5.0 percent in 2012 and 2013 and a high of 7.0 percent in 2016, before declining to 3.3 percent in 2020 in response to the COVID-19 pandemic.

FIGURE 3.3: Inflation and monetary policy interest rate trends, 1999–2020
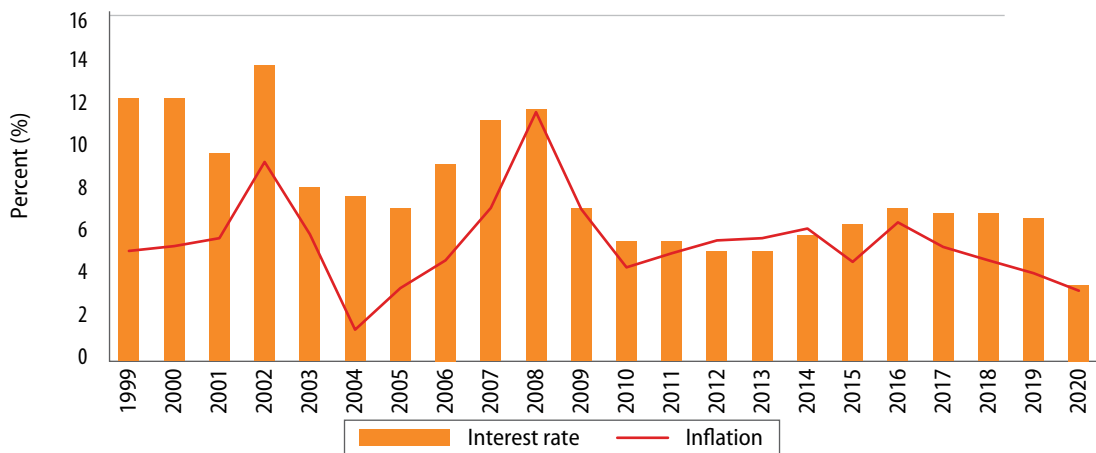
Source: Stats SA (2021) and IMF (2021)

3.4. The South African Economy: Stylised facts

For the longest part of the post-apartheid era, South Africa has experienced real GDP growth. However, the long expansionary phase that began after the 1997–1998 Asian financial crisis came to a sudden end as a result of the 2008/09 global financial crisis. In the aftermath of the domestic recession in 2008/09, the economy returned to growth, but growth rates have been subdued and the economic recovery remains fragile (DHET, 2020). This growth trajectory reflects an economy that is characterised by vulnerability to external shocks and largely determined by trends in global growth and demand.

Due to weak economic growth, the economy has been unable to create new jobs and absorb the growing labour force, resulting in upward pressure on already high unemployment rates. The labour market distortion has ultimately manifested itself in high inequalities. South Africa's overall per capita household income Gini coefficient, driven by labour income inequality, stood at 0.67 in 2015, virtually unchanged from 0.68 in 1993 (Hundenborn et al., 2016; and Stats SA, 2019a). This constitutes one of the highest rates of inequality in the world, despite the slight decline since 1993.

In light of the above, a demand-led approach to skills planning must be underpinned by a strong understanding of the factors that drive demand in the overall economy. This demand, however, must also be understood within the context of the unique challenges faced by South Africa in terms of poverty, unemployment and inequality. This chapter thus provides context for skills planning by describing the state and the evolution of the South African economy in comparison with other countries, before considering the implications of the current state of the economy for skills planning in the country.

3.4.1. Size of the economy

As shown by Figure 3.4, South Africa's real output generally increased during the period 1994–2019, from approximately R2.4 trillion in 1994 to nearly R4.6 trillion in 2019. However, real output declined in 2020 to about R4.3 trillion, largely due to the onset of the COVID-19 pandemic. Sharp declines in the real growth rate experienced in 1998 and 2009 reflect the aftermath of the 1997–1998 Asian financial crisis and 2008–2009 global financial crisis, respectively.

In both instances, the contagion effect of these crises appears to have had a bigger impact on growth in South Africa compared with other sub-Saharan African countries. This disparity may be driven largely by the fact that the South African financial services industry is relatively developed and globally connected and thus susceptible to adverse shocks in international financial markets. In 2020, a considerable sharp decline in the real output growth from 0.1 percent in 2019 to –6.4 percent was experienced due to COVID-19, which led to hard lockdowns and sustained sharp decreases in productivity. Slow economic growth has had an impact on employment, exacerbating already high unemployment levels and income inequality over the past 10 years (DHET, 2020).

FIGURE 3.4: Trends in the absolute value of GDP and real GDP growth, 1994–2018
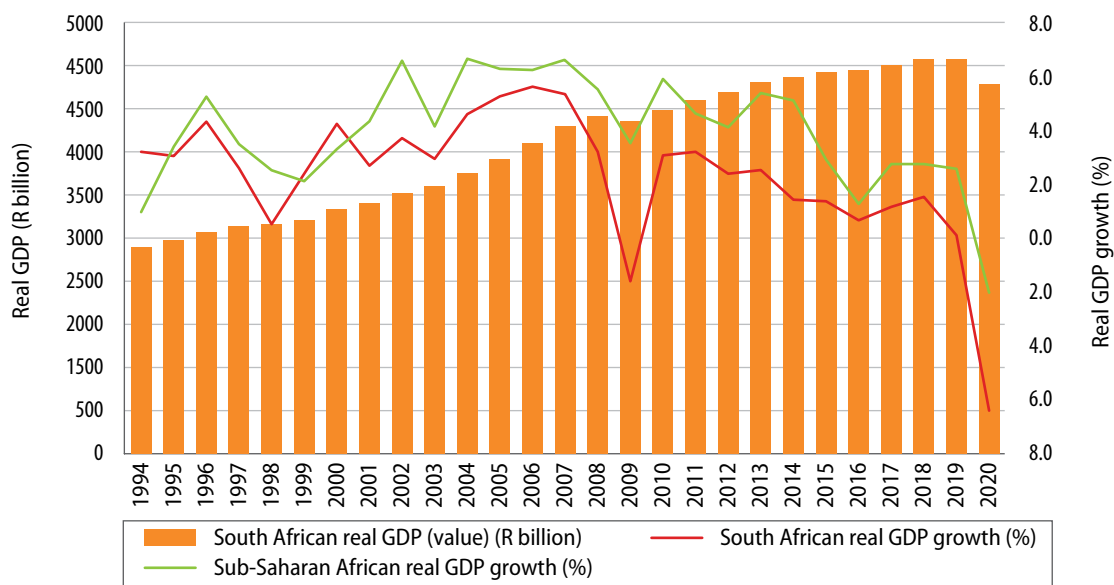
Source: Stats SA (2021)

Low savings rates in South Africa are the result of numerous factors (Bhorat et al., 2020). Persistent low economic growth and low per capita income growth, high unemployment and low public savings are among the factors impeding domestic savings, creating a cycle of insufficient savings and economic stagnation (Loayza et al., 2000). The low savings rate also partly explains South Africa's low fixed investment rate. In particular, it is possible that both domestic and foreign investors in South Africa may be insensitive to changes in the return on capital but somewhat more responsive to changes in other factors such as perceived political risks, structural impediments and low national savings rates.

Structural impediments include low levels of industrial competition due to concentrated industries with high barriers to entry, volatile labour relations that are essentially a tax on investment, and scarcity of skills (Bhorat et al., 2014). These impediments have the effect of raising the cost of doing business, which may outweigh the high investment returns available in the South African market. Where investment has grown, it has been driven by the private sector, with government and public enterprise expenditure tending to be fairly low (Figure 3.5). Private investment accounted for between 63.0 percent and 74.0 percent of total investment between 1994 and 2020. This contribution was facilitated by large-scale capital expenditure projects in the mining, platinum, automotive, real estate and chemical manufacturing sectors. It is worth noting that the industries that attracted investment during this period were invariably capital-intensive in nature, thus reinforcing the economy's capital-intensive growth trajectory.

FIGURE 3.5: Gross fixed capital investment trends in South Africa, 1994–2020
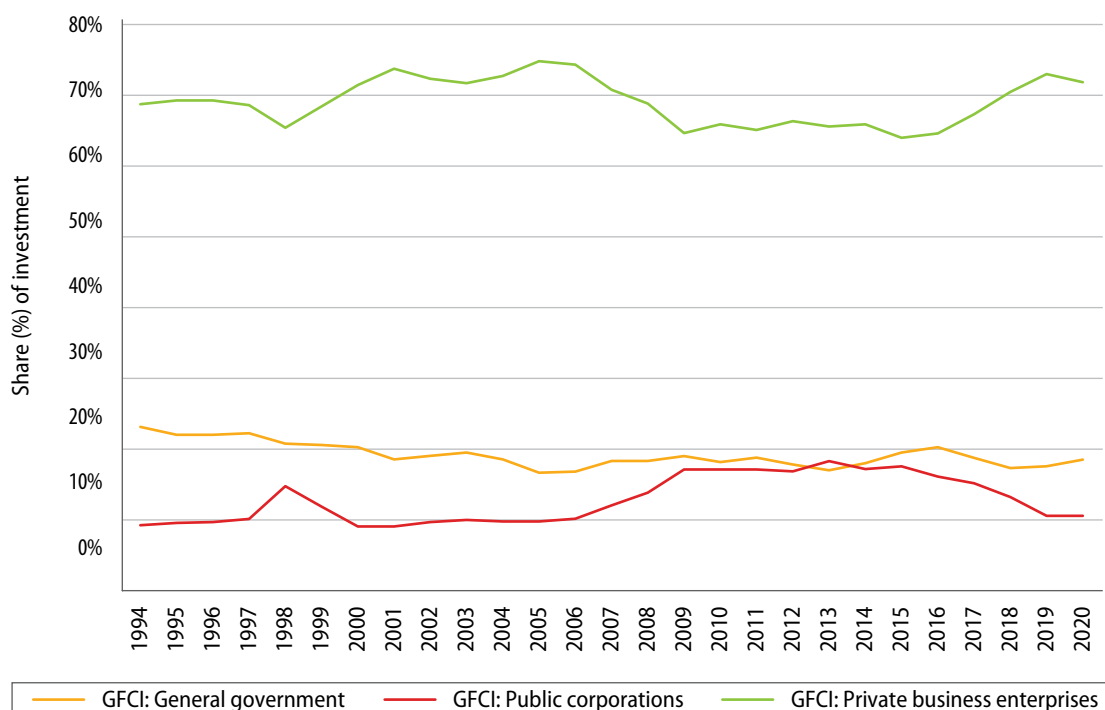
Source: Stats SA (2021)

3.4.2. Structure of employment by formality and size

While employment is the key channel through which working-age adults interact with the broader economy, not everyone has access to secure, good quality employment with the various protections mandated by labour legislation. Traditionally, informal employment in a developing country is seen as a possible alternative to the limited opportunities for formal employment (Fields, 1975; Mazumdar, 1976; Bernabe, 2002). Stats SA (2021) defines informal employment as individuals who are in precarious employment situations, irrespective of whether the entity for which they work in is operating in the formal or informal sector. While the informal sector is defined as having two components, namely: "[employees] working in establishments that employ fewer than five employees [and which] do not deduct income tax from their salaries/wages" and "[employers], own-account workers and persons helping unpaid in their household business who are not registered for either income tax or value-added tax" (Stats SA, 2016). There is an overlap between employment in the informal sector and informal employment, hence it is important to distinguish between these two concepts. Based on the definition of the informal sector and informal employment, it is implied that all informal sector workers are being informally employed.

The number of South Africa's informally employed workers is relatively small when compared with other countries at similar levels of economic development (Table A.1 in the Appendix). In 2021, informal employment stood at 28.2 percent, which is comparable to the average for developed countries (WIEGO, 2019). The table shows the informal sector employment rates by region and country classification in 2018. It is clear from the table that the informal sector represents a key component of labour markets around the world. Approximately three in five workers (61.0 percent) globally are informally employed (WIEGO, 2019). Informal employment in developing countries, at 90.0 percent of total employment, is five times more common than in developed countries. This means that the labour market in developing countries is predominantly informal, while two-thirds of workers in the emerging economies are informally employed (67.0 percent).

Turning to regional comparisons, Sub-Saharan Africa has the highest informality rate at 89.0 percent (or 92.0 percent if Southern Africa is excluded). This is followed by Southern Asia, 88.0 percent, and East and South-Eastern Asia (excluding China), 77.0 percent. In Eastern Europe and Central Asia, more than one-third (37.0 percent) of the labour market are informally employed, while in developing countries, particularly in Sub-Saharan Africa and South Asia, employment is overwhelmingly informal. As a means of avoiding unemployment and destitution, many accept informal employment. However, these jobs are often inferior to those offered by formal employment in terms of remuneration, job security, legal protection and safety.

In Q2 2021, total employment stood at 14.9 million, down more than 1.3 million from the 16.3 million recorded three years earlier (Table 3.1). This decline – the labour market impact of COVID-19 – is equivalent to an average annual growth rate of −2.8 percent, and disaggregates formal and informal sector employment, focusing on the distinction between agricultural and non-agricultural employment. As mentioned, the South African labour market is predominantly a formal labour market. In Q2 2021, the formal sector accounted for nearly three-quarters (73.2 percent) of total employment, slightly lower than the 74.0 percent share observed three years earlier. During the same period, employment in formal agriculture is estimated at 740 000 (5.0 percent of total employment), with 10.2 million (68.3 percent) workers employed in the formal non-agricultural sector. Employment within the formal non-agricultural sector was disproportionately impacted over the three-year period, contracting more sharply than other employment category (−3.4 percent per annum) to 10.2 million in Q2 2021.

TABLE 3.1: Formal and informal sector employment by agriculture and non-agriculture, Q2 2018–Q2 2021

(000S)	NUMBER OF EMPLOYED		SHARE OF EMPLOYMENT		CHANGE IN EMPLOYMENT			
	Q2 2018 (000S)	Q2 2021 (000S)	Q2 2018 (%)	Q2 2021 (%)	ABSOLUTE CHANGE (000S)	SHARE OF CHANGE (%)	ANNUAL AVERAGE GROWTH RATE (%)	
Overall employment	**16 288**	**14 942**	**100.0**	**100.0**	**−1 346**	**100.0**	**−2.8**	*
Formal sector employment	12 048	10 940	74.0	73.2	−1 108	82.3	−3.2	*
Formal agriculture	728	740	4.5	5.0	12	−0.9	0.5	
Formal non-agriculture	11 320	10 200	69.5	68.3	−1 120	83.2	−3.4	*
Informal sector employment	**2 943**	**2 807**	**18.1**	**18.8**	**−136**	**10.1**	**−1.6**	†
Informal agriculture	115	121	0.7	0.8	6	−0.5	1.8	
Informal non-agriculture	2 828	2 686	17.4	18.0	−143	10.6	−1.7	
Private households	**1 296**	**1 194**	**8.0**	**8.0**	**−102**	**7.6**	**−2.7**	

Source: Own calculations, QLFS Q2 (Stats SA, 2018, 2021)

Notes: An asterisk (*) denotes a statistically significant change at the 95 percent level of confidence, while a dagger (†) indicates a statistically significant change at the 90 percent level of confidence.

Employment in the informal sector also fell, albeit only from 2.9 million to 2.8 million over the period, mainly due to falling informal non-agricultural employment. Employment within the informal non-agricultural sector decreased marginally by 1.7 percent per annum to 2.7 million over the period—however, this change is not significant. While the informal sector employs more than twice as many individuals as are employed in private households, it remains small when compared with other countries at comparable levels of development and may partly explain South Africa's unusually high unemployment rates.

Most informal businesses are established as an alternative income source to escape poverty and unemployment (Ligthelm, 2006), and there is no doubt that informal traders have been seriously affected by the various measures taken to combat COVID-19. Many informal workers remain vulnerable to the economic shocks of the pandemic (Megersa, 2020).

However, some informal businesses are established to escape the burden of high taxes and state regulations (Ligthelm, 2006). South Africa is characterised by the two parallel economies: the first economy and the second economy (Mbeki, 2003). The second economy is made up of the informal sector businesses—for example, small, survivalist businesses such as vendors, kerb-size traders, spaza shops and so on. The informal sector consists of the unrecorded first economy as well as the second economy (Ligthelm, 2006). According to Stats SA (2015), in 2013, the formal sector contribution to GDP was 88.8 percent, which is 15 times the informal sector contribution (5.9 percent). There is no doubt that measuring the size of the informal economy is challenging because it is difficult to report income from informal economy activities (Ligthelm, 2006).

In measuring the size of the informal sector, Stats SA (2015) based their estimates on the systems of national accounts (SNA), which includes the production boundary (the range of goods and services included in the estimates of value added). The production boundary is divided into the formal and

non-observed economy (Stats SA, 2015). The estimate shows that despite its small size, the informal economy constitutes an important part of the South African economy.

The formal sector income is the most important source of income for most South African households, but the informal sector also has a large positive impact on poverty reduction (Etim and Daramola, 2020; Fourie, 2018).

3.4.3. Firm size

Table 3.2 provides employment by firm size, distinguishing between the formal and informal sector. In Q2 2021, 1.5 million workers were employed in firms with no employees (10.1 percent of total employment), while a further 1.4 million worked in firms with only one employee (9.3 percent). Cumulatively, nearly three-fifths worked in firms with at least 10 employees (57.6 percent of total employment), while nearly one-third of workers were employed in firms with 50 employees or more (29.9 percent). Over the period Q2 2018–Q2 2021, firms with 50 or more employees shed jobs rapidly by 5.1 percent per annum, while firms with 5–9 employees decreased by 4.5 percent per annum. Both changes are statistically significant.

In terms of firm size, the informal sector consists predominately of small sized firms. Nearly half (46.6 percent) worked in firms with no employees, while a further 12.9 percent worked in firms with only one employee. This means that three in five workers in the informal sector work in firms with one or no employees (59.5 percent). Formal sector workers, by contrast, typically work in larger firms. 43.5 percent worked in firms with more the 50 employees, while just 5.6 percent worked in firms with five employees or less.

Employment losses in the formal sector were more rapid than in the informal sector between Q2 2018 and Q2 2021. Employment in the formal sector decreased rapidly by 3.2 percent per annum, while informal sector employment decreased by 1.6 percent per annum. In the formal sector, employment losses were most rapid amongst firms with 5–9 employees (−4.1 percent per annum) and more than 50 employees (−5.1 percent per annum). Indeed, these two firm size categories accounted for 82.2 percent of the decline in total formal sector employment between 2018 and 2021.

TABLE 3.2: Formal and informal employment by firm size, Q2 2018–Q2 2021

FIRM SIZE	2018 (000S)	Q2 2021 (000S)	ABSOLUTE CHANGE (000'S)	Q2 2018 SHARE (%)	Q2 2021 SHARE (%)	SHARE OF CHANGE (%)	ANNUAL CHANGE (%)	
Total Employment								
Overall employment	**16 288**	**14 942**	**−1 346**	**100.0**	**100.0**	**100.0**	**−2.8**	*
0 employees	1 575	1 502	−73	9.7	10.1	5.4	−1.6	
1 employee	1 356	1 390	34	8.3	9.3	−2.5	0.8	
2–4 employees	1 554	1 414	−140	9.5	9.5	10.4	−3.1	
5–9 employees	1 294	1 128	−166	7.9	7.6	12.3	−4.5	*
10–19 employees	1 837	1 830	−7	11.3	12.2	0.5	−0.1	
20–49 employees	2 373	2 321	−52	14.6	15.5	3.9	−0.7	
50 or more employees	5 238	4 473	−765	32.2	29.9	56.8	−5.1	*
Do not know	1 061	883	−178	6.5	5.9	13.2	−5.9	*

FIRM SIZE	2018 (000S)	Q2 2021 (000S)	ABSOLUTE CHANGE (000'S)	Q2 2018 SHARE (%)	Q2 2021 SHARE (%)	SHARE OF CHANGE (%)	ANNUAL CHANGE (%)	
Formal Sector Employment								
Total (Formal Sector)	**12 048**	**10 940**	**−1 108**	**100.0**	**100.0**	**100.0**	**−3.2**	*
0 employee	202	180	−22	1.7	1.6	2.0	−3.8	
1 employee	67	76	10	0.6	0.7	−0.9	4.6	
Between 2 and 4 employees	412	406	−6	3.4	3.7	0.6	−0.5	
Between 5 and 9 employees	1 240	1 094	−146	10.3	10.0	13.2	−4.1	†
Between 10 and 19 employees	1 824	1 817	−7	15.1	16.6	0.6	−0.1	
Between 20 and 49 employees	2 365	2 312	−53	19.6	21.1	4.8	−0.8	
50 or more employees	5 229	4 465	−765	43.4	40.8	69.0	−5.1	*
Do not know	708	590	−118	5.9	5.4	10.6	−5.9	†
Informal Sector Employment								
Total (Informal Sector)	**2 943**	**2 807**	**−136**	**100.0**	**100.0**	**100.0**	**−1.6**	†
0 employee	1 356	1 308	−48	46.1	46.6	35.0	−1.2	
1 employee	326	362	36	11.1	12.9	−26.1	3.5	
Between 2 and 4 employees	889	812	−77	30.2	28.9	56.4	−3.0	
Between 5 and 9 employees	37	28	−9	1.3	1.0	6.4	−8.7	
Between 10 and 19 employees	4	2	−1	0.1	0.1	0.9	−12.3	
Between 20 and 49 employees	1	4	3	0.0	0.2	−2.4	67.5	
50 or more employees	0	4	4	0.0	0.2	−3.2		
Do not know	331	286	−45	11.2	10.2	33.1	−4.8	

Source: Own calculations, QLFS Q2 (Stats SA, 2018, 2021)

Notes: An asterisk (*) denotes a statistically significant change at the 95 percent level of confidence, while a dagger (†) indicates a statistically significant change at the 90 percent level of confidence.

Skilled workers dominate total employment irrespective of firm size, accounting for 42.4 percent, 45.1 percent and 47.7 percent in micro, small, and medium and large firms respectively (Table A.5 in the Appendix). Whereas the proportion of high-skill occupations within small firms was nearly twice of that within micro firms (32.0 percent compared to 17.8 percent), and 4.8 percentage points higher than within medium and large firms (27.2 percent), the proportion of high-skill occupations within small firms was nearly twice of that within micro firms (32.0 percent compared to 17.8 percent), and 4.8 percentage points higher than within medium and large firms (27.2 percent).

At a more disaggregated level, micro firms were dominated by three occupations: elementary occupations (25.3 percent), domestic workers (16.2 percent) and services (15.6 percent). Similarly, elementary occupations dominate in medium and large firms. Employment loss in micro firms was driven by the declines in the employment of clerks and technicians of 11.6 percent and 8.0 percent per annum, respectively. While small firms saw a rapid decline in crafts workers over the period (9.4 percent per annum), the employment of technicians increased rapidly (8.1 percent per annum). Medium and large firms account for most of the job losses over the three-year period. Employment in these firms decreased rapidly in the occupational categories of crafts (−11.2 percent per annum), services and sales.

3.4.4. Trends in the sectoral composition of the economy

The sectoral composition shift of the South African economy provides insight into the structural transformation of the economy over time. Figure 3.6 shows the contribution to GDP by industry from Q2 2018 to Q2 2021. It is clear that the South African economy is services driven, with the largest contribution of GDP from tertiary sector activities. That is, the tertiary sector contributed nearly three-quarters of total GDP (71.8 percent in Q2 2018 in Q2 2018 and 73.2 percent in Q2 2021). The tertiary sector is followed by the secondary sector, which accounted for 20.0 percent and 18.2 percent of total GDP in Q2 2018 and Q2 2021, respectively. Meanwhile, the primary sector contributed less than a tenth of total GDP (8.2 percent in Q2 2018 and 8.6 percent in Q2 2021). This suggests that the economy is moving more towards services and away from the secondary sector, such as manufacturing.

Four industries – community, social and personal (CSP) services; finance; wholesale and retail (W&R) trade; and manufacturing—together contributed almost four-fifths of GDP in Q1 2021 (77.8 percent); CSP services and finance alone each accounted for at least a quarter of total GDP. The manufacturing industry's contribution to GDP slightly declined from 13.7 percent in Q2 2018 to 13.0 percent in Q2 2021. These industries were followed by transport (8.4 percent) and mining (5.4 percent) in Q2 2021—whereas construction, utilities and agriculture each accounted for 2.7 percent, 2.5 percent and 3.2 percent of total GDP, respectively. However, the share of agricultural output increased from 2.7 percent in Q2 2018 to 3.2 percent in Q2 2021.

FIGURE 3.6: Contribution to gross value added (GVA) by industry from Q2 2018 to Q2 2021
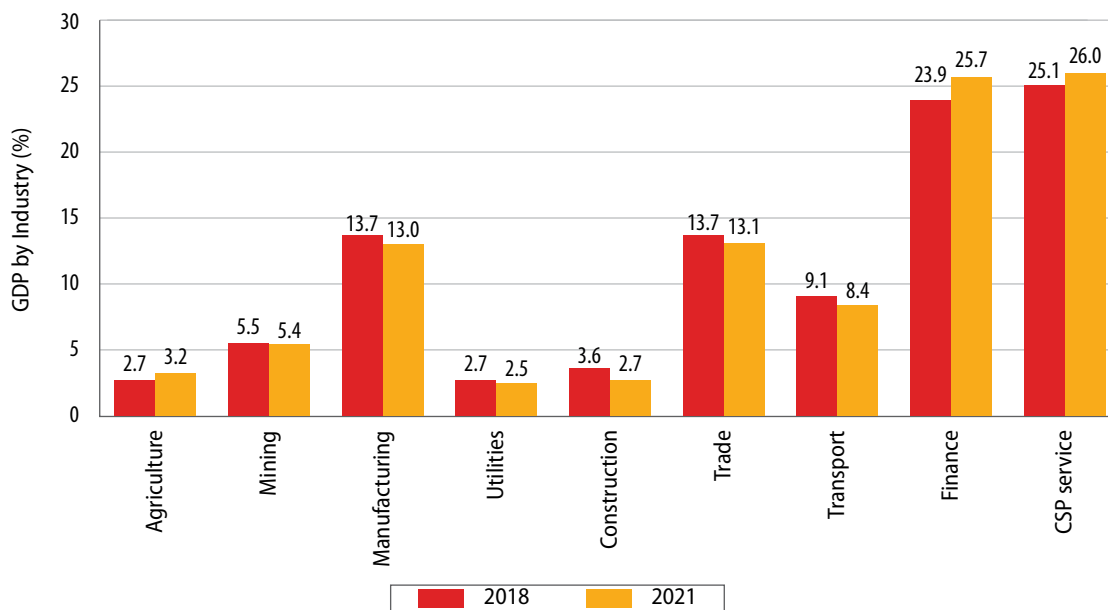
Source: Own calculations, Stats SA (2021)

The early- to mid-2000s marks South Africa's strongest period of economic growth in the post-1994 period. Transport, storage and communication output grew at an average rate of 6.8 percent between 1994 and 2000 (Figure 3.7). W&R trade output grew at a rate of 4.2 percent between 1994 and 2000 and 4.4 percent between 2001 and 2007. This was largely due to the appreciation of the rand and favourable trade policies (Bhorat et al., 2014). Construction boomed in the mid-2000s, with output increasing by 9.3 percent on average between 2000 and 2007—largely due to infrastructure spending for the 2010 FIFA World Cup that was announced in 2004 (Bhorat et al., 2014). Meanwhile, the financial and business services industry's average output growth stood at 7.0 percent between 2001 and 2007.

In the wake of the 2008/09 global financial crisis, mining was most affected, with growth contracted by 0.5 percent. This demonstrates the growth effects linked with the global commodities super-cycle and China's high demand for natural resources (Bhorat et al., 2014). Similarly, utilities contracted by 0.5 percent between 2008 and 2014, with loadshedding negatively affecting energy intensive sectors such as electricity, mining and manufacturing, and attributing to the general contraction of utilities (Morema et al., 2019).

The COVID-19 pandemic weighed heavily on the South African economy. However, the economy was already in a weak position in the immediate pre-pandemic period. All sectors contracted except for agriculture and CSP services, while finance was stagnant. Construction saw the largest contraction (-6.3 percent), followed by mining (−4.9 percent), transport (−4.5 percent) and manufacturing (−3.8 percent).

FIGURE 3.7: Average annual sectoral GVA growth rates from 2018–2021
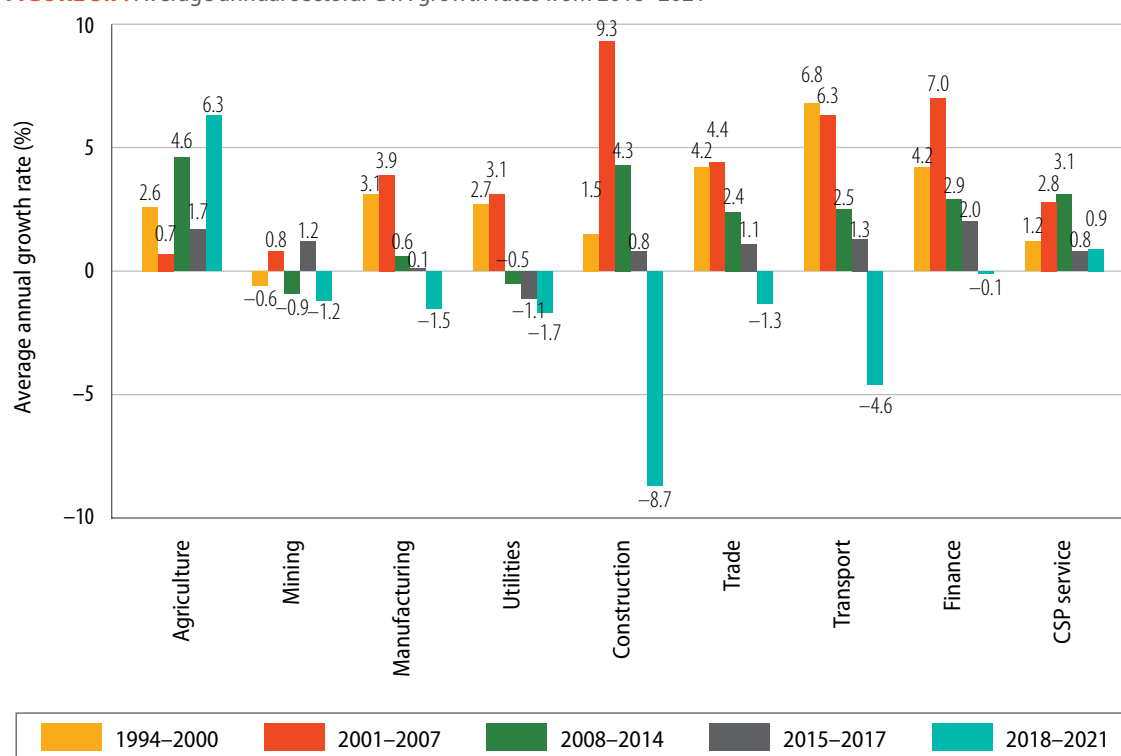
Source: Own calculations, SARB (2021), Stats SA (2021)

At a disaggregated level, three service industries dominated South African employment in 2021: CSP services account for 22.8 percent, followed by W&R trade (20.7 percent) and financial and business services (15.0 percent). Although CSP services is the largest employment sector (and public sector employment is dominant), almost 300 000 jobs were lost over the 2018–2021 period. Manufacturing

was the fourth-largest employment sector, accounting for 9.5 percent, with another 8.2 percent of the employed working in construction. These two sectors also experienced significant job loses between 2018 and 2021. Manufacturing and construction both experienced statistically significant declines in employment of 6.7 percent and 6.1 percent per annum, respectively. By contrast, agriculture is the only industry that experienced an increase in employment over the period, accounting for 5.2 percent of total employment in 2018 and 5.8 percent in 2021.

Figure 3.8 depicts the relationship between real output (gross value added) growth on the horizontal axis and employment growth on the vertical axis across industries for the 2018–2021 period. Each industry is represented by a bubble, whose size is determined by the industry's share of total employment in Q2 2021. The dotted 45-degree line indicates where output growth equals employment growth. In the area above this line, employment growth is more rapid than output growth and sectors are becoming more labour intensive. In contrast, output growth is more rapid than employment growth in the region below the 45-degree line; in other words, sectors located here are becoming less labour intensive.

Nearly all industries saw output contractions over the three-year period under review, except for agriculture, finance and CSP services. Agricultural output grew rapidly at 5.9 percent per annum, however, employment grew marginally by 0.7 percent. Meanwhile, CSP services output increased marginally by 1.1 percent per annum and finance grew by 2.3 percent per annum. However, employment declined considerably in both industries, falling by 2.7 percent per annum in CSP services and 2.1 percent per annum in finance. Output in finance remained virtually unchanged over the period, despite an average annual employment growth of 2.6 percent.

FIGURE 3.8: Gross value added and employment growth by industry from 2018–2021
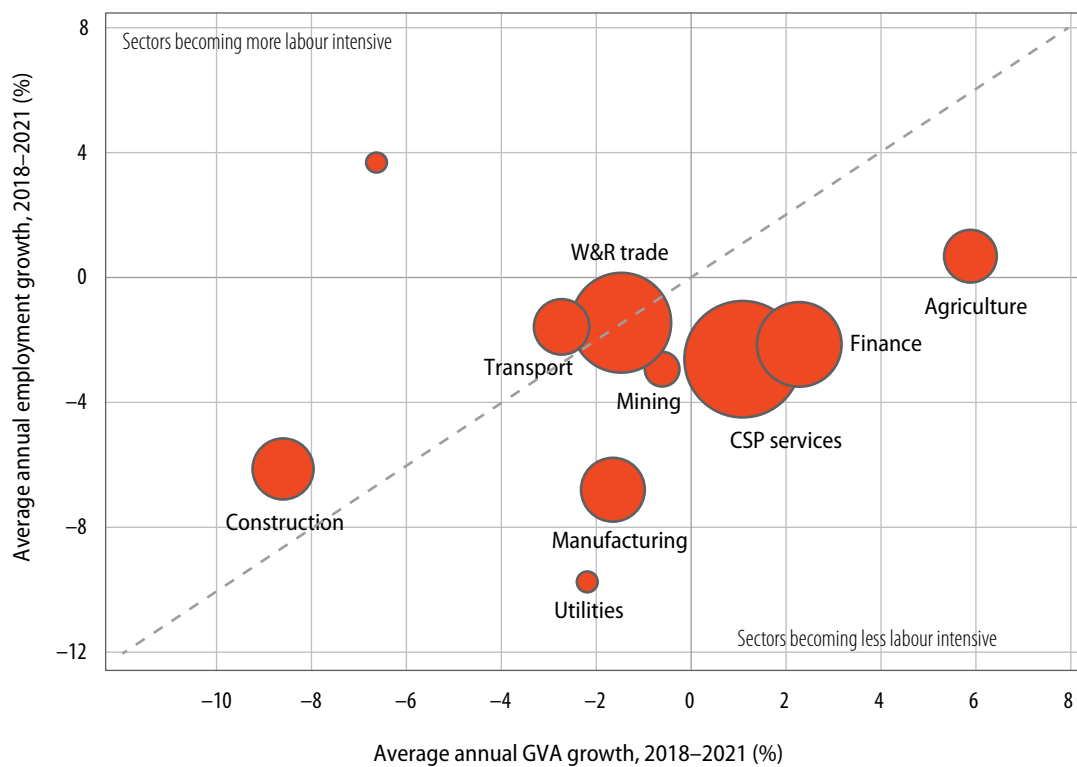
Source: Own calculations, Stats SA (2018, 2021)

Note: The size of the bubbles indicates relative employment levels in each industry in Q2 2021.

In general, there has been a positive relationship between employment and output growth, with output growth outpacing employment growth in some industries, such as agriculture, finance and CSP services. The construction industry has suffered its worst decline, with output slumping by 8.6 percent, followed by transport (−2.7 percent per annum). This was coupled with a decline in employment by 6.1 percent in construction and 1.5 percent per annum in transport. Employment in both manufacturing – the industry traditionally considered as an engine of employment growth in developing economies – and utilities contracted by 6.7 percent 9.7 percent per annum, respectively. These two industries together account for almost half of total jobs lost (372 000). At the same time, manufacturing output contracted by 2.2 percent and utilities contracted by 1.6 percent per annum. Output in mining and W&R trade declined by 0.6 percent and 1.5 percent per annum, respectively, while employment also declined by 1.4 percent and 2.9 percent in W&R trade and mining, respectively. Figure 3.8, linking output change and employment change, reveals that over the three-year period, there has been a positive relationship between the two in general, but that employment growth has overall been negative. Few industries have bucked the trend even if they have managed to grow their output.

Only three industries – finance, mining and transport – lie above the 45-degree line that implies an increase in labour intensity of production over time. However, finance employment growth outpaced output growth. Of those industries below the 45-degree line; construction, utilities, CSP services and agriculture were furthest below the line, implying that that these sectors are becoming less labour intensive.

3.5. Conclusion and implications for skills planning

Growth in gross fixed capital formation is a strong catalyst for economic growth and job creation in many countries. South Africa's average gross fixed capital formation growth has tended to be relatively low in an international context. Weak investment suggests that growth will remain relatively weak, meaning relatively few new jobs will be created. Further, the country has continued on its relatively capital-intensive growth path, meaning that even when the economy is growing, it is generating fewer jobs than would have been in the case with more labour intensive growth, and the jobs that are created tend to be for more high-skill occupations.

The private sector plays an important role in job creation. Nearly two-thirds of investment comes from the private business enterprises. Therefore, government should create an enabling environment for investing. Furthermore, export is a key driver of long-run economic growth. South Africa therefore needs to promote export competitiveness.

The South African economy is services-driven, which is skills-biased by nature. The increasing skills intensity has been at the expense of semi-skilled workers rather than unskilled workers. Over the period under review, the share of semi-skilled workers has contracted across all micro, small, medium and large firms. Bhorat and Khan (2018) argue that the shrinkage of employment of semi-skilled workers reflects the existence of a "missing middle" in the labour market, which might contribute to income inequality. Furthermore, firms' experiences are different based on, amongst other things, their size. Small firms and large firms have different needs and different capacities to engage. From a skills development

perspective, we need to ensure that policies and programmes are sensitive to these issues. This is also important if we want to leverage small businesses as a source of employment growth as we move towards a more competitive economy.

South Africa's position within a low-growth trap has adversely affected its labour market and its ability to generate sufficient employment opportunities for a growing labour force—this was exacerbated by the pandemic. From the perspective of skills supply, the size of the informal sector in South Africa is relatively small compared to other emerging markets but with a high unemployment rate. It is those with fewer skills and lower levels of education that experience the most significant barriers to entering the formal labour market and, as a result, the informal sector plays a key role in providing income-earning prospects. However, the informal sector is, generally speaking, neglected. If the informal sector is to absorb more of the unemployed and if it is to grow and raise household incomes, it will require skills. This is a big challenge because the informal sector can be challenging to engage with.

The impact of the pandemic and containment measures led to a severe contraction in economic activity as many people were unable to go to work and businesses could no longer operate. Industries that involve social interactions, such as transport, entertainment, hospitality and so forth experienced the most adverse supply effects. Construction, transport, mining and manufacturing sectors experienced output contraction largely because non-essential services firms were non-operational during the lockdown. CSP services and agriculture were the only sectors that saw growth because they were mostly essential services, which were allowed to continue under lockdown regulations.

The various trends that have affected the demand for skills are expected to have important implications for South Africa's economy. Low growth means slow employment growth, but this may disguise continued skills-biased employment growth: In a low growth environment, workers may be more vulnerable to changing 'tastes' for skills on the part of employers. Total employment is not growing, therefore the shift to more highly-skilled workers may manifest in absolute declines in unskilled employment; not just relative declines. Low growth often means that there are job losses in particular sectors (employers may respond by changing the pattern of skills they demand), and it raises the challenge of upskilling workers or reskilling them for alternative employment. The informal sector is an important part of the economy, but it is, generally speaking, neglected. If the informal sector is to absorb more of the unemployed and if it is to grow and raise household incomes, it needs skills.

PART 4

The Supply of Skills

Skills supply consists of the skills currently possessed by individuals who are either employed or willing, able and available to work. In other words, these are the skills available within the labour force. An understanding of skills supply is important for creating an understanding of skills acquisition. The skills supply of a country can be influenced by a number of driving factors, which change the stock of skills within the current labour force, as well as the future skills being produced through the country's skills pipeline.

This chapter begins with a discussion of the key driving factors of skills supply in the South African context. Using quarterly labour force survey data, the chapter then presents an analysis of the trends of two main indicators of the supply of skills in South Africa between 2018 and 2021. First, the current stock of available skills in the labour market is analysed. This allows us to observe the current pool of skills and qualifications present in the labour force, which together with skills demand analysis can provide insight about where skills shortages and surpluses exist.

Following this, a consideration of the future skills supply requires additional information over and above that related to the current stock of skills. Details regarding the education and skills pipelines becomes important, and individuals receiving education and training continually alter the future skills supply. The chapter therefore presents an analysis of the education and training pipeline to ascertain the future skills entering the labour market. The skills acquired from the schooling, TVET and university sectors provide an indication of the potential skills entering the labour market and driving change.

4.1. Drivers of the supply of skills

The skills supply of a country is affected by four key drivers: demographic trends, labour force participation, migration, and education and training trends. When either of these factors change, they can either increase or decrease the supply of skills within the working-age population and labour force. These changes may come about in the short- or long-term, either changing the current stock of skills within a country or the skills being produced via the skills pipeline.

4.1.1. Demographic trends

Changes to a country's demographic profile will have a direct effect on the economically active population. Some countries may contain an ageing population, which will result in more people leaving the labour force to retire (Leitner & Stehrer, 2019). However, other countries may experience growing youth populations, in which case more people will be entering the labour force. These changing age structures will heavily impact the number of individuals entering the labour market, as well as the number of children and elderly in need of support from the working-age population.

South Africa's fertility rate continues its downward trend, declining from 2.4 in 2018 to 2.3 in 2021,[3] while life expectancy has been on the rise (Stats SA, 2021).[4] These trends imply a gradual shift of the population towards older ages and a slowdown of the growth of the working-age population. According to the Stats SA mid-year population estimates of 2021, 28.3 percent (17 million) of the population is below the age of 15 years, while 9.2 percent (5.5 million) are older than 60 years old.

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3   Assuming a constant decline in births over time, to account for the COVID-19 pandemic.
4   Estimation accounts for excess deaths due to HIV and COVID-19 pandemic.

However, South Africa's elderly cohort (60+ years old) is currently growing at a rate approximately three times that of both the youth (15–24 years old) and child (younger than 15 years old) populations (StatSA, 2021).

According to the Quarterly Labour Force Survey (Table 4.1), South Africa's youth population grew by 0.6 percent per annum over the three-year period under review, while the non-youth population growth rate was 2.6 percent. The youth labour force declined from 9.9 million in Q2 2018 to 9.7 million in Q2 2021. This is a reduction of 2.0 percent (−0.7 percent per annum), compared to the 4.8 percent increase for the 35- to 64-year-old portion of the labour force (1.6 percent per annum).

TABLE 4.1: Working-age population and labour force, Q2 2018–Q2 2021

| | Q2 2018 (000s) | Q2 2021 (000s) | CHANGE | | |
			ABSOLUTE (000s)	PERCENT %	AVE. ANN. GROWTH %
15–64 years (Working-age population)					
Population	37 832	39 599	1 768	4.7	1.5
Labour Force	22 370	22 768	397	1.8	0.6
15–34 years					
Population	20 238	20 578	339	1.7	0.6
Labour Force	9 924	9 724	−200	−2.0	−0.7
34–64 years					
Population	17 594	19 022	1 428	8.1	2.6
Labour Force	12 446	13 044	597	4.8	1.6

Source: Own calculations, Stats SA QLFS Q2 (2018, 2021)

Note: Due to rounding, numbers do not necessarily add up to totals.

This is a reflection of the changing age structure of South Africa, a factor which can affect the labour force. In addition to the slow growth of the working-age population, a declining youth population and labour force would result in the slower entry of new skills and individuals into the skills pipeline and labour market. While the overall age structure of the labour force can change, this may also occur at the occupational level so that – for various reasons– the labour force within a particular skill category may become relatively old over time. For example, within nursing, the South African Nursing Council estimates that, in 2021, 47.0 percent of registered nurses in South Africa were 50 years or older, while only 6.0 percent were under 30 years old (SANC, 2022).

4.1.2. Labour force participation

Table 4.2 shows the expanded labour force participation rates (LFPRs) across various demographic categories in Q2 2018 and Q2 2021. The LFPR is the proportion of the working-age population who are economically active (i.e., who are either employed or unemployed). The expanded definition of the LFPR includes the non-searching unemployed as part of the labour force. The labour force participation rate provides an indication of the size of the current pool of available labour and skills in the labour market. All other things equal, a higher labour force participation rate indicates a larger labour supply.

In 2021, 67.8 percent of the working-age population was part of the expanded labour force, 0.7 percentage points down from 2018. Although the participation declined across all race groups, the decrease was most rapid amongst Coloureds (−5.7 percentage points, equivalent to an average annual decline of 2.9 percent). The participation rate among Black Africans, Asians and Whites fell by 0.1 percentage points, 1.9 percentage points and 0.9 percentage points, respectively.

TABLE 4.2: Expanded labour force participation rates, Q2 2018–Q2 2021

| | Q2 2018 | Q2 2021 | CHANGE | |
	%	%	PERCENTAGE POINTS	AVE. ANN. GROWTH (%)
Overall LFPR (Expanded)	*68.5*	*67.8*	*−0.7*	*−0.3*
By race				
Black African	68.4	68.4	−0.1	0.0
Coloured	69.0	63.2	−5.7	−2.9
Asian	65.3	63.4	−1.9	−1.0
White	70.2	69.4	−0.9	−0.4
By gender				
Male	73.7	72.6	−1.1	−0.5
Female	63.4	63.2	−0.2	−0.1
By age group				
15–24 years	35.4	32.3	−3.1	−3.0
25–34 years	86.4	85.6	−0.8	−0.3
35–44 years	89.0	88.1	−0.8	−0.3
45–54 years	81.4	82.1	0.7	0.3
55–64 years	49.0	47.8	−1.2	−0.8
By highest level of educational attainment				
Primary or lower	57.1	53.7	−3.4	−2.0
Secondary not completed	61.0	59.7	−1.3	−0.7
Secondary completed	77.1	76.2	−0.9	−0.4
Diploma or certificate	89.1	89.0	−0.1	0.0
Degree	90.4	90.6	0.2	0.1

Source: Own calculations, Stats SA QLFS Q2 (2018, 2021)

Note: For all values of 10 000 or lower the sample size is too small for reliable estimates. Due to rounding, numbers do not necessarily add up to totals.

There is also a substantial gender gap in labour force participation rates. In 2021, the male LFPR was 72.6 percent, compared to 63.2 percent amongst females. However, while both rates decreased over the period under review, the decline in the female LFPR was slightly less rapid than for males (−0.2 percentage points compared to −1.1 percentage points). Furthermore, the female LFPR decreased at an annual rate of 0.2, compared to the 0.5 percent annual decline of the male participation rate.

Participation rates initially increase with age, reaching a peak of 88.1 percent in the 35–44 years age group in Q2 2021. The LFPR then decreases for each successive age group. The LFPR was lowest amongst those aged 15–24 years (32.3 percent) and those aged 55–64 years (47.8 percent). All age groups, except for the 45- to 54-year-olds, experienced a decline in their participation rates between Q2 2018 and Q2 2021.

The LFPR tends to be higher for individuals with higher levels of educational attainment. Individuals with primary or lower education (53.7 percent) and incomplete secondary education (59.7 percent) had the lowest LFPRs in 2021. Those with a diploma or certificate (89.0 percent) or a degree (90.6 percent) had the highest LFPRs. However, the LFPR decreased for all educational groups over the period under review.

Another important factor to consider here is the COVID-19 pandemic. The lockdown measures implemented at the onset of the pandemic have had significant impacts on the labour force participation rate, as can be seen in the figures. In all age groups, LFPR was higher in Q1 2020 (69.9 percent overall), before declining in 2020 and 2021. The most significant drop in participation is observed during Q2 2020 (62.5 percent), when South Africa's lockdown measures were strictest. Furthermore, the health concerns surrounding the virus would have also impacted the decision to work or not. This may be a contributing factor to the decline in the rate, especially for older age groups. In addition, the ongoing pandemic is likely to create a difficult job market for younger labour market entrants.

4.1.3. Migration

Migration occurs when individuals change their geographical location, either temporarily or permanently, and demographic trends can be influenced by both immigration and emigration. Immigrants are generally part of the working-age population and thus high levels of immigration would result in an increased supply of labour to the economy (Leitner & Stehrer, 2019). However, high levels of emigration would reduce the supply of labour and skills in an economy.

South Africa tends to receive immigrants from the rest of Africa, as it is one of the more developed countries on the continent (Botha & Rasool, 2014). Since the 1970s, South Africa has been mostly characterised by net in-migration, except for the brief periods of net outflows in 1977–1978 and 1986–1987 and the ten-year period between 1994 and 2003 when the numbers of emigrants exceeded those of immigrants. This was likely due to political uncertainty at the time (Yu, forthcoming). Importantly, significant numbers of skilled South Africans have been lost to the country through emigration. Push factors resulting in South Africans emigrating include employment equity, crime, political instability, declining educational standards and power outages (Botha & Rasool, 2014). However, pull-factors for foreigners typically include attractive salaries, better working conditions and promotional opportunities.

South African census and community survey data suggests that the number of immigrants in South Africa has increased from 0.7 million in 2001 to 1.3 million in 2016 (Yu, forthcoming). Immigrants, who constituted 3.8 percent of South Africa's working-age population in 2016, are more likely to be economically active (i.e., have higher LFPRs) and are less likely to be unemployed (Yu, forthcoming). Furthermore, the data has indicated that the immigrant age structure in 2016 was much younger than the native South African population, with 76.9 percent of working-age immigrants being between the ages of 15 and 34 (compared to 53.0 percent of working-age South Africans).

In addition to being younger, immigrant workers were historically relatively more educated than native South African workers, despite the share of immigrants without matric being almost 60.0 percent in

2016. However, similar shares of the immigrant and native populations worked across different skill levels of occupations in 2011.

On the other hand, South African emigrants in the top five emigration countries (United Kingdom, New Zealand, USA, Australia and Canada) were considerably more educated between 2011 and 2016 than immigrants coming into South Africa. They also reported higher LFPRs and lower unemployment rates than native South Africans during the same period. Furthermore, a higher proportion of emigrants in these destination countries were participating in high-skill occupations and tertiary sector activities, compared to immigrants to South Africa and native South Africans in South Africa.

These findings emphasise the South African skills gap, which immigrants and native South Africans are currently unable to fill. The data also suggests 'brain drain', as international migration represents a net loss of highly skilled labour. This has been exacerbating the skills mismatch currently occurring in the South African labour market.

4.1.4. The schooling and PSET system

Schooling influences the labour supply through individuals' attainment of qualifications and skills. Educational qualifications act as signals to prospective employers about an employee's abilities. Education and training outcomes are important determinants of economic growth, as they lead to a more highly skilled workforce available to employers (ILO, 2010; ILO, 2015). This workforce is more productive, and more efficiently produces outputs of a higher standard.

South Africa's history of segregation by both race and language has left a legacy that still impacts economic inequality today. The schooling system prior to 1994 spent significantly more on the White population and intentionally provided low-quality education to students of colour. It is the responsibility of the current education system to continue playing a key role in rectifying the damages of the apartheid era and providing sufficient educational opportunities to those in need, in order to reduce the inequalities that presently characterise South African society (DBE, 2020).

South Africa has made notable gains in terms of transforming the highly fragmented, racially segregated, and discriminatory education system inherited from the apartheid government in 1994. Higher education institutions (HEIs) were racially segregated, and the institutions serving Black African, Coloured and Asian South Africans deliberately offered limited tertiary education opportunities (CHE, 2010). Institutions reserved for Whites were favoured in terms of both funding and programme offerings (CHE, 2010). Consequently, a major challenge for the post-apartheid government has been promoting equitable access to PSET institutions. A related challenge has been integrating the fragmented HE system and reversing racial discrimination in funding and quality. This section evaluates the extent to which these challenges have been addressed in the post-apartheid era, while also discussing the implications of these trends in the PSET system for skills planning.

The Department of Basic Education (DBE) and the DHET play a vital role in shaping the skills pipeline. The DBE is responsible for the schooling system (Grade R to Grade 12), while the DHET is responsible for PSET. The DBE and its responsibilities are split between the National Department of Basic Education and the education departments of each province. The DBE is responsible for decisions regarding the development of policies, as well as the monitoring of all activities to ensure quality basic education, while the PEDs enact these policies and are responsible for funding decisions in the pursuit of quality basic education (DBE, 2020).

At the international level, South African basic education is performing poorly in important subjects. According to the latest Trends in International Mathematics and Science Study (TIMSS) results, South Africa's Grade 9 learners obtained the lowest and second lowest scores for science and mathematics out of the 39 participating countries (DBE, 2019). Similarly, the Grade 5 cohort placed third-last for both science and mathematics. More than half of Grade 9 learners do not have a basic level of mathematics or science. This percentage increases to 60.0 percent for the Grade 5 cohort. The results have slightly improved over time for Grade 9 learners, but additional effort is necessary if the goals set for the South African schooling system are to be met. The targets set for the younger cohort will not be achieved at the current pace (DBE, 2019).

On the other hand, the 2020 Grade 12 cohort obtained a record number of passes (440 702), despite the difficulties associated with the COVID-19 pandemic (DBE, 2021). This is 7.5 percent higher than the year before, in absolute terms. However, the pass rate did decline from 81.3 percent to 76.2 percent between 2019 and 2020.

Continued progress within the schooling system is important for ensuring that learners are able to successfully move through the skills pipeline. The provision of a strong foundational education level is essential for the success of learners while in the PSET system. This, in turn, will help to improve the number of candidates and their skill level as they leave the PSET system and enter the labour market.

In 2019, the PSET system consisted of 26 public universities, 131 private universities, 50 TVET colleges, 9 community education and training (CET) colleges and 287 registered private colleges (DHET, 2021b). According to the DHET's estimates, over 2.2 million students were enrolled at various PSET institutions in 2019. Of these, the highest share of students was enrolled at HEIs (56.0 percent). There were 997 000 students enrolled at colleges and 222 000 workers and unemployed individuals enrolled in SETA-supported programmes.

According to the NDP, the HE system has three main purposes. Firstly, to educate and equip individuals with high-level skills to meet the needs of employment within the public and private sectors. Secondly, to produce new knowledge and to find and assess new applications for existing knowledge, and finally, to provide opportunities for social mobility while simultaneously improving equity, social justice and democracy (DHET, 2019).

The following sections further explore the current stock of skills in South Africa (Section 4.2), as well as the skills being produced by the skills pipeline (Section 4.3). The discussion regarding the stock of skills expands on the demographic and labour force discussion above, while the skills pipeline provides additional detail about the types and level of skills being produced by the schooling and PSET systems of South Africa.

4.2. The stock of skills

The South African labour force continues to be shaped by the legacy of apartheid with two key challenges: the challenge to grow the skills and capability of the workforce, which started from a low base; and to reduce the high unemployment rate (Reddy et al., 2016). Information about the stock of

skills – the quantity of skills currently available within the labour market – is important to provide signals for both the PSET system and employers on how they organise education and training programmes.

Table 4.3 shows the highest level of education of the labour force (using the expanded definition) in South Africa in Q2 2018 and Q2 2021. The labour force increased by 1.2 percent on average per annum over this period, from 25.7 million to 26.7 million. There was also a slight improvement over this period in the overall education level of the labour force. The share of persons with primary or lower levels of education decreased by 3.0 percentage points while the share of persons who completed secondary education increased by 3.0 percentage points over the period. This shows an increase in the proportion of South Africans in the labour force that have attained Grade 12 as their highest level of education.

TABLE 4.3: Highest level of education of the expanded labour force, Q2 2018 and Q2 2021

	LABOUR FORCE		SHARE OF LABOUR FORCE		CHANGE IN LABOUR FORCE		
	Q2 2018	Q2 2021	Q2 2018	Q2 2021	ABSOLUTE	PERCENTAGE POINTS	AAGR
	'000s	'000s	%	%	'000s	%	%
Primary or lower	5 998	5 424	23.3	20.3	−575	−3.0	−3.3
Incomplete secondary	7 247	7 396	28.2	27.7	148	−0.5	0.7
Complete secondary	8 406	9 527	32.7	35.7	1 121	3.0	4.3
Diploma/certificate	2 511	2 611	9.8	9.8	99	0.0	1.3
Degree	1 532	1 708	6.0	6.4	175	0.4	3.7
Total	**25 695**	**26 664**	**100.0**	**100.0**	**969**	**0.0**	**1.2**

Source: Own calculations, QLFS Q2 (Stats SA, 2021)

Notes: The expanded labour force comprises all persons aged 15–64 years who are employed, plus all persons who are unemployed using the expanded definition of unemployment. Figures may not add to total due to "other" and "do not know" responses.

Table 4.4 presents the changes in the skills share of the employed population by occupational skill level from Q2 2018 to Q2 2021. Only one quarter (25.0 percent) of the employed were highly-skilled in 2021, this share having increased by 2.0 percentage points over the period. By contrast, while the share of skilled workers decreased by 2.9 percentage points, at 44.9 percent this occupational category remains the largest within employment. Finally, low-skill workers accounted for 30.2 percent of employment in 2021, slightly higher than observed in 2018. The overwhelming majority of the job losses observed over the period occurred among those working in skilled occupations (about 1.1 million or 78.5 percent of the total jobs lost), with low-skill employment falling by 275 000 and highly-skilled workers remaining almost unscathed (in aggregate). It is therefore clear that in absolute terms and in terms of the rate of employment decline, medium-skilled workers have been hit particularly hard.

TABLE 4.4: Changes in skills shares of the employed population by occupational skill level, Q2 2018 and Q2 2021

	ABSOLUTE		PROPORTIONS		CHANGE FROM Q2 2018–Q2 2021	
	Q2 2018	Q2 2021	Q2 2018	Q2 2021	PERCENTAGE POINTS	NUMBERS ('000)
High-skill	3 741	3 718	23.0	25.0	2.0	−24
Medium-skill	7 773	6 681	47.7	44.9	−2.9	−1 092
Low-skill	4 772	4 497	29.3	30.2	0.9	−275
Total	**16 286**	**14 896**	**100.0**	**100.0**		**−1 391**

Source: Own calculations, QLFS Q2 (Stats SA, 2021)

Notes:
1. High-skill includes the following occupations: "Manager", "Professional" and "Technician".
2. Medium-skill includes the following occupations: "Clerk", "Skilled agriculture", "Craft and related trade" and "Plant and machine operator".
3. Low-skill includes the following occupations: "Elementary" and "Domestic worker".

Table 4.5 shows the number of employed people by occupation and qualification. The number of employed persons who have attained no more than primary education decreased by 8.5 percent on average per annum from Q2 2018 to Q2 2021. In all years, most of these workers were employed in elementary occupations, followed by plant and machine operators. Employment in these occupations decreased by 7.3 percent and 12.7 percent on average per annum, respectively, in the period under review.

For persons with incomplete secondary education, employment decreased by 3.7 percent on average per annum over the same period. Most of these people were elementary workers, followed by plant and machine operators, and services and sales workers. Employment decreased by 0.9 percent per annum for those who had completed secondary education from Q2 2018 to Q2 2021.

The number of people employed with diploma and certificates decreased by 2.4 percent per annum over this period. Most of the people with these qualifications were employed in high- and medium-skill occupations. Although there was an overall loss of jobs for people with these qualifications, there were small job gains for professionals and elementary occupations. Employment for individuals with degrees increased by 3.3 percent per annum between 2018 and 2021, with particularly strong expansion seen amongst technicians and associate professionals.

TABLE 4.5: Number of people employed by occupation and qualification, Q2 2018 and Q2 2021

	PRIMARY OR LOWER			SECONDARY NOT COMPLETED			SECONDARY COMPLETED			DIPLOMA OR CERTIFICATE			DEGREE			TOTAL		
	2018 Q2	2021 Q2	AAGR	2018 Q2	2021 Q2	AAGR	2018 Q2	2021 Q2	AAGR	2018 Q2	2021 Q2	AAGR	2018 Q2	2021 Q2	AAGR	2018 Q2	2021 Q2	AAGR
	'000s	'000s	%	'000s	'000s	%	'000s	'000s	%	'000s	'000s	%	'000s	'000s	%	'000s	'000s	%
Managers	29	39	10.5	172	137	−7.3	493	538	2.9	335	313	−2.2	375	369	−0.5	1 416	1 406	−0.2
Professionals	3	..	−100.0	17	12	−11.8	74	122	18.3	123	212	19.9	658	646	−0.7	878	992	4.2
Technicians	29	25	−4.6	116	126	2.9	428	400	−2.2	675	487	−10.3	187	279	14.3	1 448	1 320	−3.0
Clerical	18	7	−26.9	276	151	−18.2	974	886	−3.1	327	301	−2.7	103	120	5.3	1 704	1 474	−4.7
Services and sales	187	125	−12.5	946	835	−4.1	1 184	1 072	−3.3	250	236	−1.9	41	41	0.0	2 635	2 322	−4.1
Skilled agricultural	16	4	−34.2	24	18	−9.9	10	14	12.5	7	6	−7.8	6	3	−24.2	64	45	−10.8
Operators	438	292	−12.7	1 521	1 228	−6.9	1 120	1 080	−1.2	215	196	−3.0	29	15	−19.4	3 371	2 840	−5.5
Elementary	1 173	933	−7.3	2 397	2 378	−0.3	1 056	1 011	−1.4	78	107	11.2	9	14	15.7	4 472	4 497	−2.0
Total	1 892	1 425	−9.0	5 470	4 892	−3.7	5 282	5 144	−0.9	2 011	1 868	−2.4	1 407	1 491	1.9	16 288	14 942	−2.8

Source: QLFS Q2 (Stats SA, 2021)

Note: Education and occupational category numbers do not add up to total employment due to unspecified or no responses.

4.3. The skills pipeline

4.3.1. The schooling system

Figure 4.1 provides trends in matric passes for the period 2018 to 2021. The number of learners achieving a bachelor's pass increased from 172 043 in 2018 to 256 031 in 2021. This is a significant improvement despite the drop in the matric pass rate starting from 2020 due to COVID-19. This shows that higher proportions of learners qualified for undergraduate degree programmes in more recent matric cohorts than has historically been the case. Assuming that capacity constraints in HE are dealt with, this trend—combined with free HE for qualifying students—is supportive of significant increases in undergraduate degree enrolments in the future.

FIGURE 4.1: Matric results, 2018–2021

	2018	2019	2020	2021
■ Bachelor	172 043	186 058	210 820	256 031
■ Diploma	141 700	144 672	150 600	177 572
■ Higher Certificate	86 790	78 984	79 117	103 859
■ NSC	99	105	61	103
■ Not Achieved	111 974	94 397	137 766	166 456
▬ Pass rate	78.2%	81.3%	76.2%	76.4%
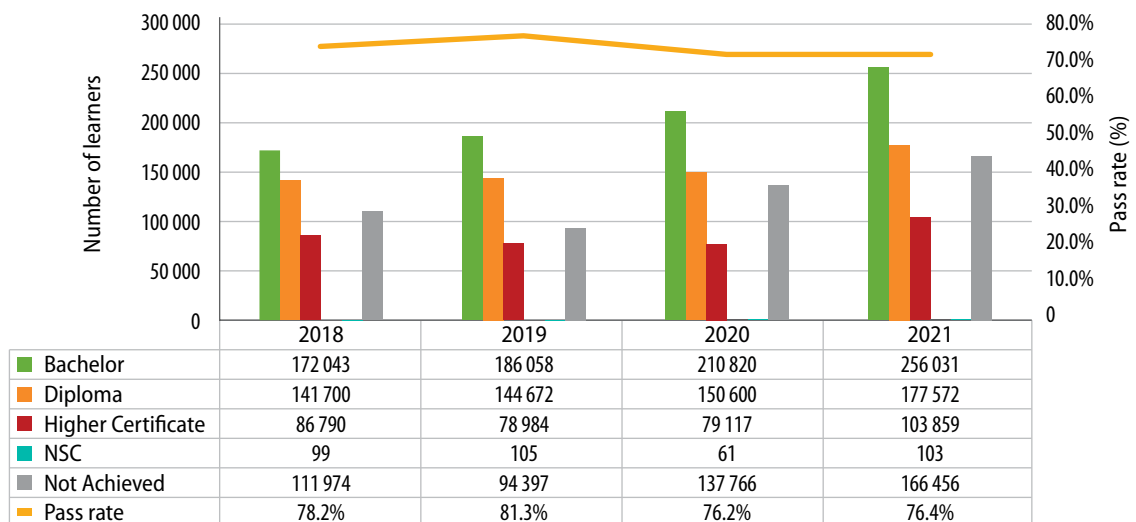
Source: DBE 2022

In terms of performance in mathematics, Figure 4.2 shows that the number of learners who wrote mathematics increased slightly from 233 315 in 2020 to 259 143 in 2021. This was accompanied by an increase of 3.8 percentage points in the pass rate, from 53.8 percent in 2020 to 57.6 percent in 2021. This improvement is encouraging, especially considering the disruptions in education and learning caused by the COVID-19 pandemic.

FIGURE 4.2: Number of learners who wrote and passed matric mathematics, 2018–2021

	2018	2019	2020	2021
■ Wrote	233 858	222 034	223 315	259 143
■ Passed	135 638	121 197	125 526	149 177
▬ Pass rate	58.0%	54.6%	53.8%	57.6%
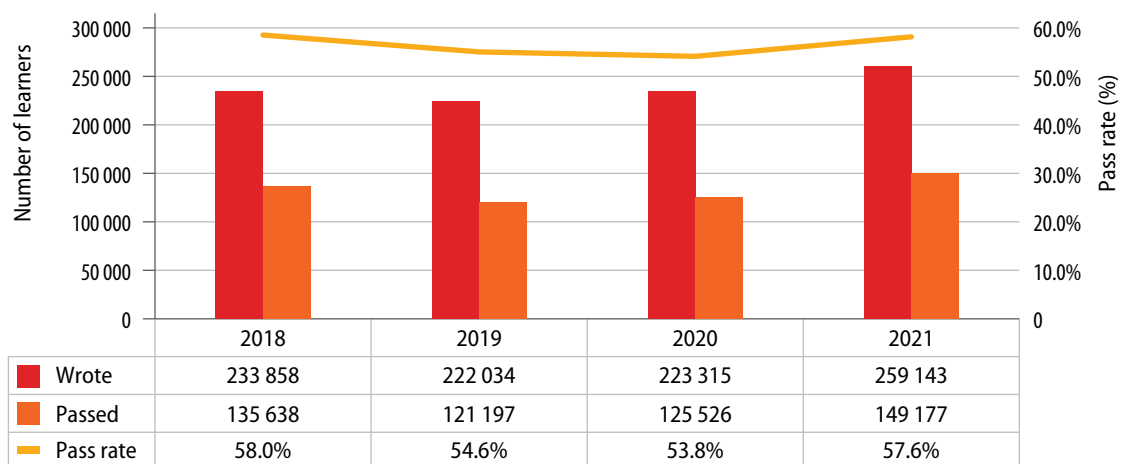
Sources: DBE (2021 & 2022)

The number of learners who wrote physical sciences increased from 174 310 students in 2020 to 196 968 students in 2021 (Figure 4.3). However, the pass rate remained relatively low compared to levels observed before COVID-19. The pass rate for physical sciences dropped by 6.5 percentage points from 75.5 percent in 2019 to 69.0 percent in 2021.

FIGURE 4.3: Number of learners who wrote and passed matric physical sciences, 2018–2021

	2018	2019	2020	2021
Wrote	172 319	164 478	174 310	196 968
Passed	127 919	124 237	114 758	135 915
Pass rate	74.2%	75.5%	65.8%	69.0%
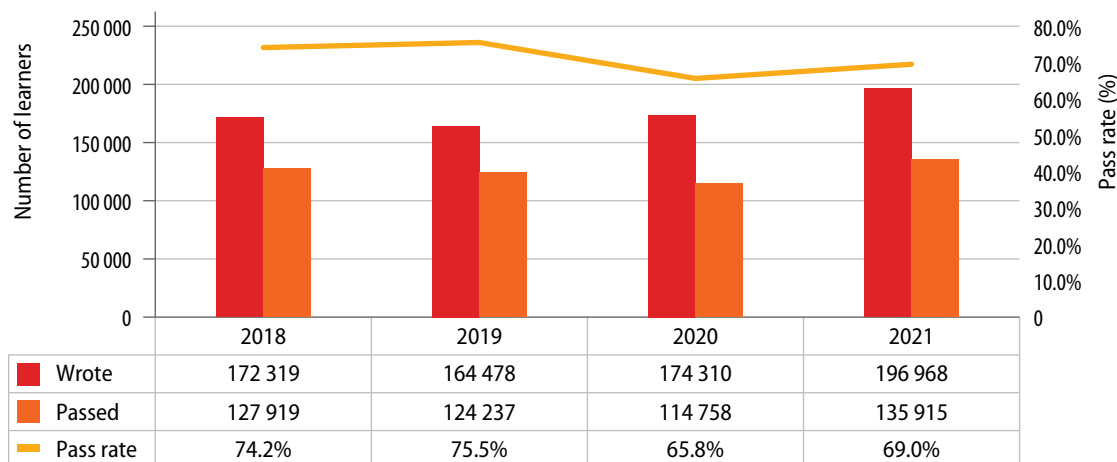
Sources: DBE (2021 & 2022)

4.3.2. Post-School Education and Training

Table 4.6 shows the number of graduates by PSET institution type for the period 2018–2020. The number of graduates increased from 441 165 in 2018 to 522 994 in 2019 and then decreased to 453 487 in 2020. TVET and CET colleges contributed to the decrease in the number of graduates from 2019 to 2020.

TABLE 4.6: Number of graduates by PSET institution type, 2018–2020

INSTITUTION	2018	2019	2020
Public HEIs (universities)	227 188	221 942	237 882
Private HEIs	33 972	42 526	47 085
TVET colleges	120 007	162 176	104 310
CET colleges	28 154	41 638	22 764
Private colleges	31 844	54 712	41 446
Total	**441 165**	**522 994**	**453 487**

Source: DHET (2020, 2021, 2022)

4.3.3.1. The college system

The college system comprises of TVET, CET and private colleges. TVET and private colleges cater for those who have left school (whether or not they have completed their secondary education) and who wish to do vocational training or complete their schooling (DHET, 2013). CET colleges, on the other hand, cater for those adults who need a second chance to complete their schooling but are not catered for by universities and TVET colleges.

Despite the significant increase in the enrolments in TVET colleges in recent years, TVET colleges still enrol fewer numbers of students than universities. This has been worsened by the COVID-19 pandemic as TVET colleges did not enrol students in the second semester of 2020 at all. Enrolment in TVET colleges decreased by 32.8 percent (221 213) from 673 490 in 2019 to 452 277 in 2020 (DHET, 2022). This had a negative impact on the number students certificated from TVET colleges. As stated in the WPPSET, this is not ideal for the development of a skilled and educated population or for meeting the needs of an economy that suffers a serious shortage of mid-level skills (DHET, 2013).

TVET and private college graduates

Figure 4.4 shows the number of students in TVET and private colleges by qualification category from 2018 to 2020. As mentioned, the number of students who completed qualifications in TVET colleges decreased from 2019 to 2020 due to COVID-19. A similar trend was observed in private colleges. The number of students who completed N3 decreased from 37 863 in 2019 to 34 558 in 2020, while the number of those who completed N6 decreased from 113 393 in 2019 to 57 245 in 2020. The number of students who completed NC(V) Level 4, however, increased from 10 920 in 2019 to 12 507 in 2020. The number of students who completed N6 in private colleges decreased from 33 597 in 2019 to 19 582 in 2020. On the other hand, the number of students who completed N3 and NC(V) Level 4 in private colleges increased slightly by 731 and 18, respectively, over the same period.

FIGURE 4.4: Number of students who completed qualifications in TVET and private colleges by qualification category, 2018–2020

	N3	N6 TVET colleges	NC(V) Level 4	N3	N6 Private colleges	NC(V) Level 4
2018	34 793	73 377	11 837	12 297	19 354	193
2019	37 863	113 393	10 920	21 063	33 597	52
2020	34 558	57 245	12 507	21 974	19 582	70
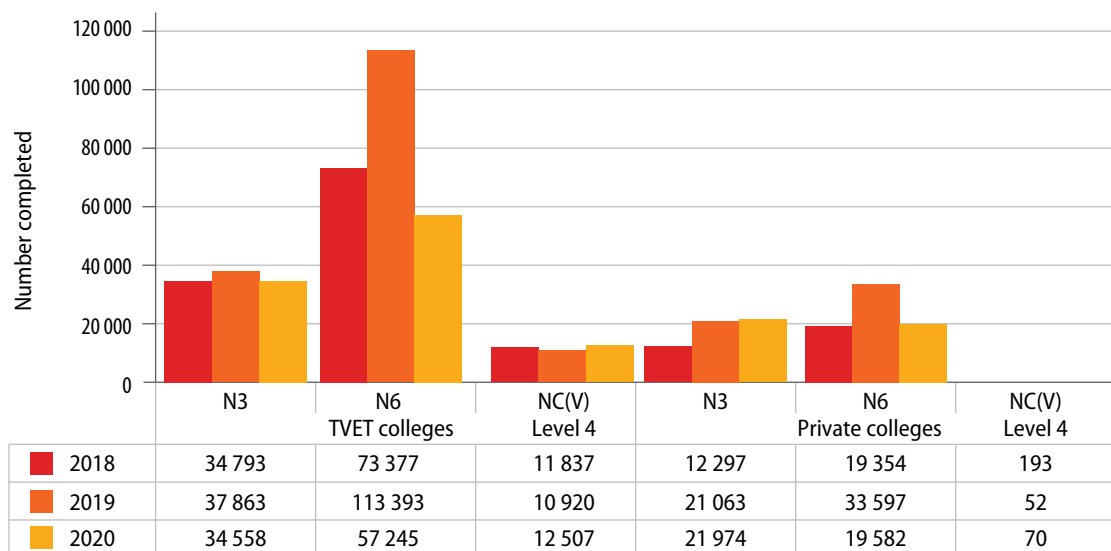
Source: DHET (2020, 2021, 2022)

CET college graduates

The General Education and Training Certificate (GETC-ABET) Level 4 has continued to dominate enrolments in CET colleges. Figure 4.5 shows the number of students who completed GETC-ABET: Level 4 in CET colleges from 2018 to 2020. The number of those who passed increased from 28 154 in 2018 to 41 638 in 2019 and then decreased to 22 764 in 2020. These adults were equipped with a general educational foundation which enables them to access further learning or training, particularly vocational education at TVET colleges.

FIGURE 4.5: Number of students who completed GETC-ABET: Level 4 in CET colleges, 2018–2020
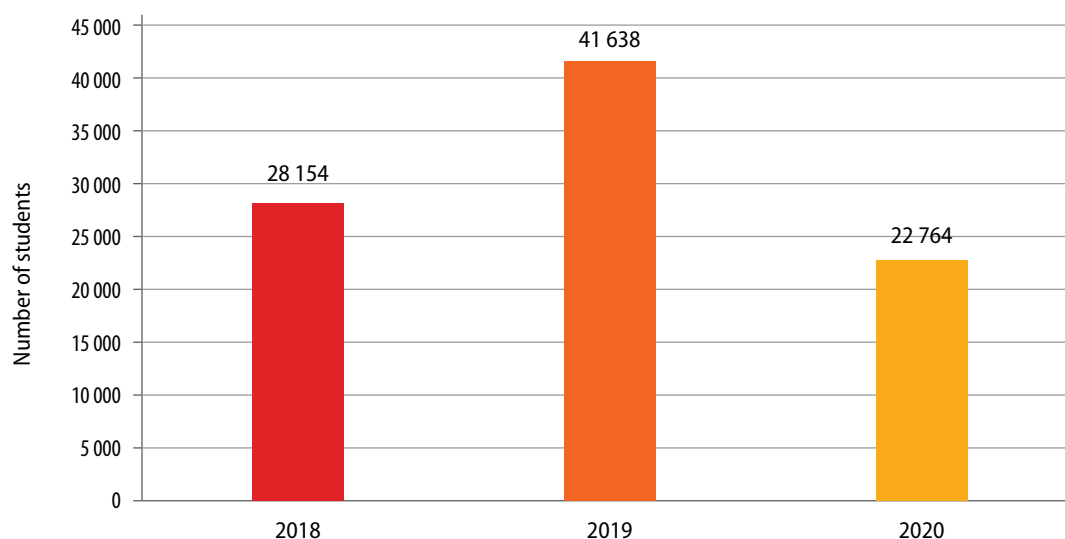
Source: DHET (2020,2021,2022)

4.3.3.2. Higher education institutions

This sector comprises public (universities) and private HEIs. Most students here are enrolled at public HEIs (universities). The NDP envisioned that, by 2030, South Africa would have over 10 million university graduates with a minimum of a bachelor's degree, taking into account the current number of graduates and the fact that many of the new graduates must be qualified with critical skills such as engineering, actuarial science, medicine, financial management and chartered accountancy (NPC, 2011). The growth in the number of graduates should be accompanied by an increase in the number of enrolments. However, the number of students enrolled at public HEIs increased only slightly, from 1 074 912 in 2019 to 1 094 808 in 2020, an increase of less than 1.9 percent.

There were 237 882 graduates in public HEIs in 2020, which was 7.2 percent (15 940) higher compared to 2019 (221 942) (DHET, 2022). Figure 4.6 shows the number of students graduating from public HEIs by qualification type from 2018 to 2020. The number of students graduating with undergraduate degrees increased from 100 740 in 2018 to 103 196 in 2020, while those graduating with postgraduate degrees below master's level decreased from 43 190 to 39 779 over the same period. The number graduating with advanced diploma and postgraduate certificates in education also increased significantly from 4 008 in 2018 to 14 533 in 2020.

	Undergraduate Degrees	Undergraduate Certificates and Diplomas	Postgraduate Below Master's Level	Master's Degree	Doctoral Degrees	Advanced Diploma and Postgraduate Certificate in Education
2018	100 740	62 019	43 190	13 887	3 344	4 008
2019	102 387	56 906	39 137	13 519	3 445	6 548
2020	103 196	63 900	39 779	12 922	3 552	14 533

Source: DHET (2022)

Regarding the number of graduates in public universities by field of study, Figure 4.7 shows that there has been a decline in the number of students graduating from science, engineering and technology (SET) and education, while there has been an increase in the graduates in from business and management and other humanities fields of study. Given the importance of SET qualifications for economic development, as well as differences in the likelihood of employment of graduates across different fields, this result – declining numbers of SET graduates and a rising number of humanities graduates – is concerning.

FIGURE 4.7: Number of graduates from public HEIs by field of study, 2018–2020

	SET	Business and Management	Other Humanities	Education
2018	65 211	60 459	50 868	50 651
2019	64 636	58 668	51 096	47 492
2020	64 721	65 336	60 547	47 271
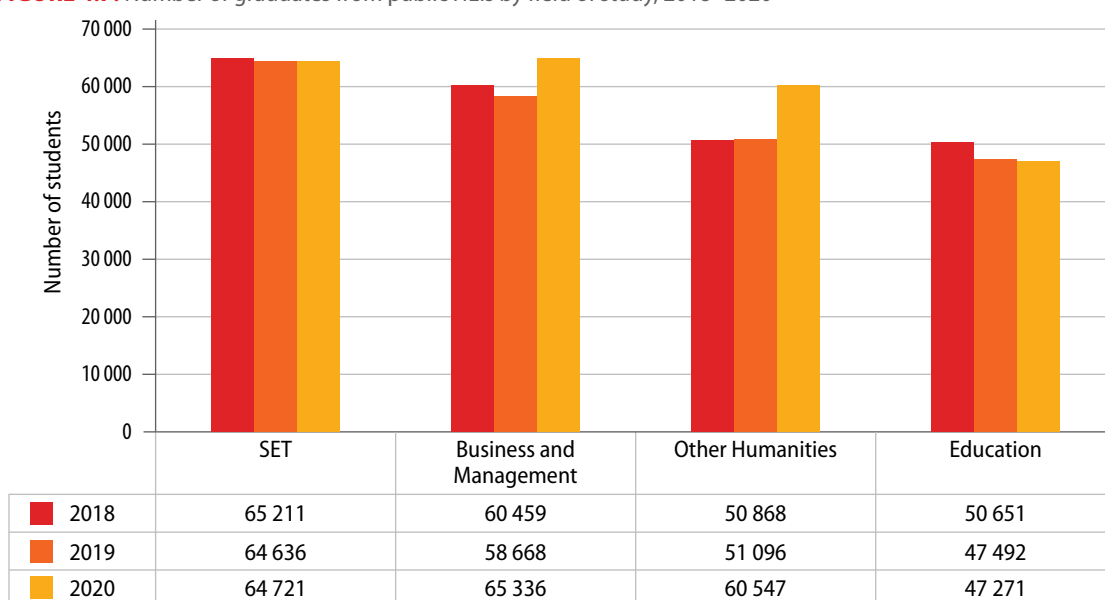
Source: DHET (2022)

Table 4.7 shows the number of graduates graduating from private HEIs by qualification type from 2018 to 2020. The number of graduates increased from 33 972 in 2018 to 47 085 in 2020. The highest number

of students graduated with a bachelor's degree (360-credits), followed by those graduating with a higher certificate and diploma (360-credits) in the period under review.

TABLE 4.7: Number of graduates from private HEIs by qualification type, 2018–2020

QUALIFICATION TYPE	2018	2019	2020
Higher Certificate	7 790	11 197	13 134
Advanced certificate	393	1 032	1 739
Diploma (240-Credits)	1 905	1 624	1 543
Diploma (360-Credits)	7 297	8 264	10 227
Advanced Diploma	891	1 137	1 138
Postgraduate Diploma	1 008	2 757	2 500
Bachelor's degree (360-Credits)	11 068	12 817	12 704
Bachelor's degree (480-Credits)	1 207	874	1 059
Honours Degree	1 394	1 226	1 616
Master's Degree	988	1 575	1 383
Doctoral Degrees	31	23	42
Total	**33 972**	**42 526**	**47 085**

Source: DHET (2020, 2021, 2022)

4.3.3. Sector Education and Training Authority (SETA) supported programmes

Certification in SETA supported learning programmes decreased from 2018/19 to 2020/21, as shown in Figure 4.8. A total number of 126 725 workers and unemployed persons were certificated in 2020/21 compared to 212 424 in 2018/19. The COVID-19 pandemic contributed to the decline as some SETAs did not register students in the first and second quarter of the 2020/21 financial year (DHET, 2022).

FIGURE 4.8: Number of workers and unemployed persons certificated in SETA-supported learning programmes by programme type, 2018/19–2020/21

	Learnership	Internship	Skills Programmes	Total Certificated
2018/19	61 841	6 123	144 460	212 424
2019/20	57 888	7 711	114 032	179 631
2020/21	37 684	7 405	81 636	126 725
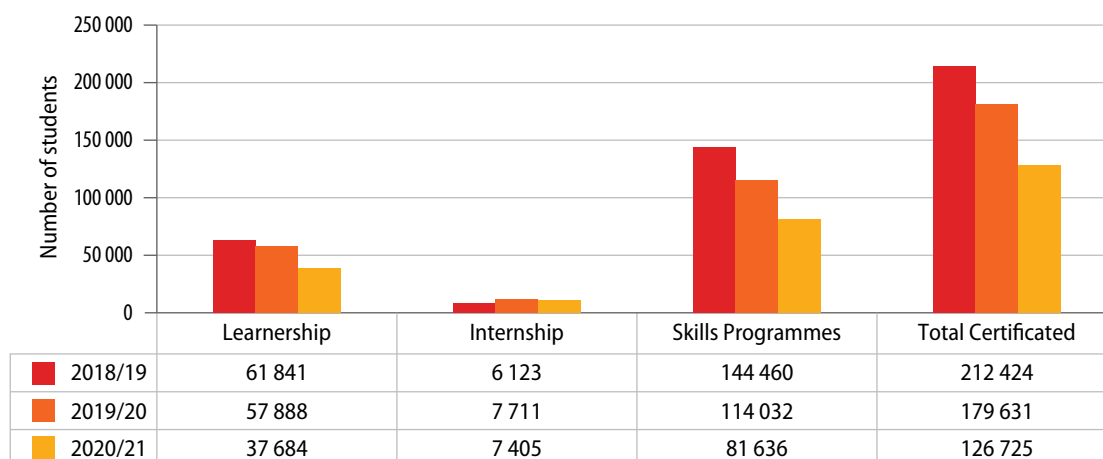
Source: DHET (2021)

4.4. Conclusion and implications for skills planning

The effects of demographic change and the gradual ageing of the South African population is feeding into the labour market. This has been resulting in older age cohorts experiencing the strongest growth in terms of employment. The changing age structure can further manifest in the age profiles of certain occupations being affected by a weak pipeline. This problem has already been identified in some fields, for example, the large proportion of the nursing field approaching retirement age.

The trends observed in this chapter indicate that a larger pool of skilled graduates have been entering the labour market. The number of highly-skilled individuals entering the labour market has increased, which can be expected to raise the productivity of the country's workforce and aid in promoting economic growth. There has also been an increasing number of individuals obtaining higher levels of educational attainment over the period, specifically, an increased number of individuals obtaining masters and doctoral degrees.

However, technological change and adoption have also resulted in a skills bias in the labour market. Higher proportions of highly-skilled workers are participating in the labour market, while low-skill workers are struggling to find employment. This can be seen in the skills/education gradient in unemployment rates.

Although there have been improvements in the stock of skills and skills pipeline in recent years, the analysis has shown that the pandemic has derailed some of the progress being made in South Africa's skills supply. This will require a recovery period before returning to the promising trends observed for skills supply prior to the onset of the pandemic and lockdown measures. This is especially important for the younger age cohorts, as the long-term impacts that COVID-19 will have on education are still unknown—for example, the effect of disruptions in Grade 11, and the potential knock-on effects this may have for Grade 12 results.

The analysis has identified that the number of individuals completing secondary education and qualifying to enrol in HE has been increasing. However, the number of enrolments at TVET institutions has declined recently. Although this means a lower number of individuals are studying towards obtaining higher skills, this decline is largely due to the COVID-19 pandemic, and the country should be able to recover from this. Nonetheless, it has hindered progress already made over the past two decades.

The analysis has also pointed to key areas that require attention within the PSET sector. An annual decline in the number of certifications has been observed for TVET colleges, private colleges and SETA programmes. Although some of this decline can be attributed to COVID-19, it is still vital that emphasis be placed on increasing the number of individuals moving through the PSET system and increasing the supply of skills beings produced by the skills pipeline.

Furthermore, although an increasing number of graduates have been observed for HE institutions, this can be broken down further into a decreasing number of SET and education graduates, and an increasing number of business and management and other humanities graduates. This is concerning, as SET qualifications are vital for economic development. Therefore, emphasis should also be placed on the specific skills being produced by the skills pipeline.

The Demand for Skills

Understanding the economy's skills requirements is critical to skills planning. A clear sense of the required mix of skills is needed to formulate appropriate policy that will improve alignment between skills demand and supply. The purpose of this chapter is to identify signals of changes in the demand for skills in South Africa. Considering trends in employment, the data allows a picture of the demand for occupations and skills to emerge, providing signals to the education and training system regarding the areas of supply that ought to be prioritised.

The chapter first considers four key drivers of skills demand: globalisation, technological change, a country's growth path and production structure. The report then proceeds to use labour force survey data to consider trends in the demand for skills in South Africa between 2018 and 2021. Employment trends over time are an important lens through which to analyse the demand for skills. Patterns of employment across skills categories reveal employers' preferences for workers with different skill levels. The chapter provides an analysis of the changes in the sectoral and occupational distribution of the economy to ascertain signals of change in the demand for skills.

This chapter also presents a profile of changes in wages to ascertain the type of skills that are valued (or demanded) by the labour market. With respect to future skills demand, we conclude the chapter by providing an overview of two important concepts that are crucial to skills planning: replacement and expansion demand. Highlighting these two concepts will ensure that they form part of the considerations and actions that should be taken today in terms of skills planning.

5.1. Drivers of the demand for skills

This section examines how four interrelated key drivers, namely; globalisation, technological change, a country's growth path and its production structure—affect the demand for skills. Understanding how these factors change the demand for skills is crucial to skills planning as they provide an indication of future skills demand. Using these projections, skills planners can identify which skills may be in shortage (or surplus) in the future and design interventions on the skills supply side to ameliorate the projected skill imbalances in the labour market.

5.1.1.   Globalisation

Globalisation can have both positive and negative effects on skills demand in the domestic labour market. Although globalisation is multi-faceted, in this report, the focus is on economic globalisation. The IMF (2008:1) defines economic globalisation as "increasing integration of economies around the world, particularly through the movement of goods, services and capital across borders". The IMF (2008:1) also notes that it can also refer to the "movement of people (labour) and knowledge (technology) across borders". Globalisation can increase skills demand when domestic producers become involved in exports. Exports represent an increase in demand for a product and, if the current workforce cannot meet demand, the business will be required to hire more individuals with a particular skillset. Furthermore, the steep decline in transportation and telecommunication costs has accelerated the pace of technological diffusion (OECD, 2017). This has enabled businesses located in developing countries (which are characterised by low levels of innovation compared to developed countries) to adopt the latest technologies quickly and cheaply, ensuring they are not left behind by better resourced competitors in developed countries.

However, globalisation can also lower skills demand for certain types of workers. In the past few decades, a large portion of the manufacturing sector in developed countries has moved to China and other countries

in Southeast Asia. This has lowered the demand for skills that were required to work in the manufacturing sector in developed countries. At the same time, the manufacturing sector in many developing countries, such as those located in South America and Africa, has also declined due to their inability to compete with Asia's manufacturing prowess. As has been experienced in many developed countries, manufacturing workers find that their skills are not in demand anymore and thus they need to re-skill themselves.

The impact of globalisation on the South African labour market is evident in the rapid change in sectoral employment trends since the early 1990s. Bhorat and Rooney (2017) show that while the share of employment in the tertiary sector (especially business and the financial services sector) has expanded substantially, it has remained steady in the secondary sector and halved in the primary sector. Sectors that were uncompetitive internationally (like textiles) declined while sectors that could leverage the expanded opportunities arising from a more interconnected world – such as South African financial services firms, which promoted themselves as a "gateway to Africa" – flourished. As a result of these employment trends, the demand for high-skill labour has increased while low and semi-skilled labour have experienced a decrease.

5.1.2. Technological change

With the onset of the Fourth Industrial Revolution (4IR) and associated technologies such as cloud computing, artificial intelligence, robotics and the Internet of Things, concern about the effects of technological change on the labour market have been increasingly highlighted in the policy discourse. Broadly speaking, the introduction of new technology has a disruptive effect on the labour market with specific occupations and industries expanding while others decline. This disruption can cause immediate skills shortages as new technology creates demand for skills that may not be in good supply in the labour market. This skills shortage will persist until the education system can create a sufficient number of individuals with the new skills demanded by employers.

In the past few decades, technological change has been signified by the introduction of Information and Communication Technologies (ICTs). Autor, Levy and Murnane (2003) note that this has two substantive effects on the labour market: firstly, the widespread adoption of ICTs has led to an increase in occupational skills requirements, benefiting skilled individuals who can command higher wages (skills-biased technological change). In addition, ICTs can substitute for workers who perform routine tasks that are codifiable and repetitive. The combined effects have caused polarisation within the labour market: an increase in the share of low-skill and high-skill jobs and a decline in semi-skilled jobs (Autor, Levy & Murnane, 2003). This polarisation has been observed not only in developed countries such as the UK and Germany (Hoftijzer & Gortzar, 2018), but also in developing countries such as South Africa (Bhorat et al., 2020).

With the introduction of 4IR technologies, however, individuals who perform non-routine tasks – which were previously thought to be safe from automation – may be at risk. In their seminal paper, Frey and Osbourne (2013) estimated that 47.0 percent of jobs in the US may be at high risk of automation. However, subsequent studies showed that this may be an overestimate, with Arntz, Gregory and Zierahn (2016) and Nedelkoska and Quintini (2018) estimating that only 9.0 and 14.0 percent of the US workforce were at high-risk of automation, respectively.

In the South African context, Bhorat, Goga and Stanwix (2014) concluded that the changing occupational structure of the South African labour market – growth in high-skill occupations such as managers and professionals at the expense of low and semi-skilled occupations – was partially attributable to technological change. As technological change will continue to be a feature of the South African labour market, we expect skills demand to continue to favour those who are regarded as highly-skilled, while the number of job prospects for workers in low- or semi-skilled occupations will remain stagnant or decline.

5.1.3. Economic growth path

Different contexts combined with different policy mixes can determine the nature, pattern and characteristics of economic growth within a country. South Africa is currently on a growth path in which the tertiary sector (particularly financial services and retail trade) accounts for most of South Africa's economic growth. Growth also tends to be concentrated in capital-intensive activities, which are unable to absorb the millions of unemployed South Africans. In addition, low levels of economic growth further inhibit job creation.

The implications for skills planning are dependent on whether South Africa continues on its current growth path or if it achieves a new growth path based on plans such as the NDP or the EERP. If South Africa continues on its current growth, employment growth will continue to be located in high-skill occupations and it will remain important to be able to provide these types of skills that have grown in demand. Alternatively, with the implementation of plans such as the NDP, which aims to achieve a higher growth path based on "government investment, microeconomic reforms [...], competitive and equitable wage structures, and the effective unblocking of constraints to investment in specific sectors" (NPC, 2012:117), the economy may shift to an alternative growth path, and it will be important for skills planners to quickly adapt to these strategies as well.

5.1.4. Production structure

The production structure of a country influences the demand for skills through a variety of mechanisms (Hoftijzer & Gortazar, 2018). In a wealthy country, the types of goods and services demanded are different to those demanded in a poor country, which in turn influences the task content of jobs (Hoftijzer & Gortazar, 2018). Accordingly, this affects the type (in terms of skills level) of jobs available in the labour market. Caunedo et al. (2021) show that occupations involving non-routine analytical and interpersonal tasks are more common in developed than developing countries. On the other hand, the task content for developing countries was characterised by routine-cognitive and routine-manual tasks.

The production structure also influences remuneration across sectors. High wages influence the types of skills demanded, as they act as a signal to firms about which economic activities (such as manufacturing) should be off-shored (Hoftijzer & Gortazar, 2018). Typically, goods that are off-shored are those in the low value-added part of the value chain, as they can be sold cheaply and thus would not be able to offset the high labour wage costs.

Finally, the production structure of a country also influences the extent of the adoption of ICTs in the workplace and by implication, the demand for skills (Hoftijezer & Gortazar, 2018). De la Rica and Gortazar (2016) demonstrate that higher workplace adoption of ICTs leads to more routine tasks being replaced by machines. Typically, businesses in developed countries are the early adopters of new technology and therefore will demand a different skills profile than those in developing countries.

As discussed previously, the current production structure in South Africa is dominated by services, particularly financial and CSP services (which together comprised 51.7 percent of GDP in 2021). In contrast, both manufacturing and agriculture have declined substantially since 1994 (Bhorat et al., 2020). The implication of this production structure on skills planning if South Africa is to continue on this trajectory, is that policies need to be developed that substantially increase the number of highly-skilled individuals in the South African labour market.

5.2. Signals of demand for skills

5.2.1. Employment

Table 5.1 presents the profile of the employed in Q2 2018 and Q2 2021 by population group, gender, age group and highest level of education. The Black African population accounted for 75.4 percent of employment in 2021, up from 74.7 percent in 2018. The Coloured, Asian and White population groups accounted for 9.5 percent, 3.3 percent and 11.9 percent, respectively, in 2021. Employment declined over the period for all race groups, with statistically significant declines observed for Coloureds (−6.2 percent per annum) and Black Africans (−2.6 percent per annum).

TABLE 5.1: Employment by demographic characteristics, Q2 2018 and Q2 2021

	NUMBER		SHARE		CHANGE		
	Q2 2018	Q2 2021	2009Q2	2019Q2	ABSOLUTE	SHARE OF CHANGE	AVE. ANN. GROWTH RATE
	'000s	'000s	(%)	(%)	'000s	(%)	(%)
TOTAL	**16 288**	**14 942**	**100.0**	**100.0**	**−1 346**	**100.0**	**−2.8** *
By Race							
Black African	12 172	11 264	74.7	75.4	−908	67.4	−2.6 *
Coloured	1 716	1 416	10.5	9.5	−300	22.3	−6.2 *
Asian	547	487	3.4	3.3	−60	4.4	−3.8
White	1 853	1 774	11.4	11.9	−79	5.9	−1.4
By Gender							
Male	9 154	8 462	56.2	56.6	−692	51.4	−2.6 *
Female	7 134	6 480	43.8	43.4	−654	48.6	−3.2 *
By Age Group							
15 to 24 year olds	1 200	833	7.4	5.6	−367	27.3	−11.5 *
25 to 34 year olds	4 869	4 214	29.9	28.2	−655	48.6	−4.7 *
35 to 44 year olds	5 147	4 714	31.6	31.6	−432	32.1	−2.9 *
45 to 54 year olds	3 511	3 647	21.6	24.4	136	−10.1	1.3 *
55 to 64 year olds	1 561	1 533	9.6	10.3	−28	2.1	−0.6
By Education							
Primary or less	1 892	1 425	11.6	9.5	−467	34.7	−9.0 *
Incomplete secondary	5 470	4 892	33.6	32.7	−578	42.9	−3.7 *
Complete secondary	5 338	5 144	32.8	34.4	−194	14.4	−1.2
Diploma/certificate	2 011	1 868	12.3	12.5	−143	10.6	−2.4
Degree	1 407	1 491	8.6	10.0	84	−6.2	1.9

Source: Own calculations, QLFS Quarter 2 (Stats SA, 2018 and 2021)

Notes:
1. Education category numbers do not add up to total employment due to unspecified or no responses.
2. An asterisk (*) denotes statistically significant changes at the 95 percent confidence level, while a dagger (†) denotes statistically significant changes at the 90 percent confidence level.

The composition by gender remained almost unchanged over the period: males accounted for 56.6 percent of the employed in 2021, and females 43.4 percent. However, job losses disproportionately impacted women, who accounted for 48.6 percent of the decline in total employment over the period under review.

The bulk of the employed are between the ages of 25 and 44 years, with these cohorts accounting for 59.8 percent of total employment in 2021. The period saw a shift in the distribution of employment away from younger cohorts towards older cohorts as the most rapid declines in employment were observed amongst 15–24 year olds (−11.5 percent per annum) and 25–34 year olds (−4.7 percent per annum). Thus, the youth share of employment declined by 3.5 percentage points, from 37.3 percent in 2018 to 33.8 percent in 2021. The only age group to avoid net job losses over this period was the 45–54 year old segment: employment for this group increased by 136 000 or by 1.3 percent per annum over the three-year period.

There has been a significant decline in the number of people employed with primary education or less and secondary education from 2018 to 2021. The number of people employed with primary education or less decreased by 467 000 (or −9.0 percent per annum), while employment of those with incomplete secondary education decreased by 578 000 (−3.5 percent per annum). The only educational category that did not see a decline in employment was individuals with degrees: a total of 84 000 jobs were added between 2018 and 2021 at a rate of 1.9 percent per annum.

Table 5.2 shows employment trends by industry. The South African labour market is dominated by the tertiary sector, accounting for more than three quarters of total employment (71.3 percent). This is followed by the secondary sector (20.8 percent) and the primary sector (7.9 percent). Job losses were most rapid within the secondary sector, where employment contracted by 6.6 percent per annum between 2018 and 2021. This is more than three times as fast as the decrease in tertiary sector employment (−2.1 percent per annum), and several times as fast as primary sector employment contraction (−0.5 percent per annum).

TABLE 5.2: Employment by industry, Q2 2018 and Q2 2021

	NUMBER		SHARE		CHANGE IN EMPLOYMENT		
	Q2 2018	Q2 2021	Q2 2018	Q2 2021	ABSOLUTE	SHARE OF CHANGE	AVE. ANN. GROWTH RATE
	'000s	'000s	%	%	'000s	%	%
TOTAL	**16 288**	**14 942**	**100.0**	**100.0**	**−1 346**	**100.0**	**−2.8** *
Agriculture	843	862	5.2	5.8	18	−1.3	0.7
Mining	435	398	2.7	2.7	−37	2.7	−2.9
Primary	**1 279**	**1 260**	**7.9**	**8.4**	**−19**	**1.4**	**−0.5**
Manufacturing	1 744	1 415	10.7	9.5	−329	24.5	−6.7 *
Utilities	161	118	1.0	0.8	−42	3.2	−9.7
Construction	1 476	1 222	9.1	8.2	−253	18.8	−6.1 *
Secondary	**3 380**	**2 755**	**20.8**	**18.4**	**−625**	**46.4**	**−6.6** *
Trade	3 219	3 087	19.8	20.7	−132	9.8	−1.4
Transport	1 014	969	6.2	6.5	−46	3.4	−1.5
Finance	2 399	2 248	14.7	15.0	−151	11.2	−2.1
CSP services	3 692	3 401	22.7	22.8	−291	21.6	−2.7 *
Domestic Services	1 296	1 194	8.0	8.0	−102	7.6	−2.7
Tertiary	**11 621**	**10 900**	**71.3**	**72.9**	**−722**	**53.6**	**−2.1** *

Source: Own calculations, QLFS Q2 (Stats SA, 2018, 2021)

Note: An asterisk (*) denotes a statistically significant change at the 95 percent level of confidence, while a dagger (†) indicates a statistically significant change at the 90 percent level of confidence.

At a disaggregated level, three service industries dominate South African employment: CSP services account for 22.8 percent, followed by W&R trade (20.7 percent) and financial and business services (15.0 percent) in 2021. Although CSP services is the largest employment sector (and public sector employment is dominant), almost 300 000 jobs were lost over the period under review. Manufacturing was the fourth-largest employment sector, accounting for 9.5 percent, with another 8.2 percent of the employed working in construction. These two sectors also experienced significant job loses between 2018 and 2021. Manufacturing and construction experienced a statistically significant decline in employment by 6.7 percent and 6.1 percent per annum, respectively. By contrast, agriculture is the only industry that experienced an increase in employment over the period, accounting for 5.2 percent of total employment in 2018 and 5.8 percent in 2021.

Table 5.3 presents the occupational distribution of the employed from Q2 2018 to Q2 2021. The occupational distribution of employment was broadly similar across the two periods. As already indicated in Table 4.7, the biggest share of the employed were medium-skilled, followed by low-skilled and high-skilled in Q2 2018 and Q2 2021. In 2021, the largest occupational categories were elementary workers (24.1 percent), followed by sales and services workers (15.5 percent), and craft and related trade workers (10.7 percent).

TABLE 5.3: Employment by occupation, Q2 2018 and Q2 2021

	NUMBER OF EMPLOYED		SHARE OF EMPLOYED		CHANGE IN EMPLOYED			
	Q2 2018	Q2 2021	Q2 2018	Q2 2021	ABSOLUTE	CHANGE SHARE	AVE. ANN. GROWTH	
	'000s	'000s	%	%	'000s	%	%	
TOTAL	**16 288**	**14 942**	**100.0**	**100.0**	**−1 346**	**100.0**	**−2.8**	*
Managers	1 416	1 406	8.7	9.4	−10	0.8	−0.2	
Professionals	878	992	5.4	6.6	115	−8.5	4.2	
Technicians	1 448	1 320	8.9	8.8	−128	9.5	−3.0	
High-skilled	**3 741**	**3 718**	**23.0**	**24.9**	**−24**	**1.8**	**−0.2**	
Clerks	1 704	1 474	10.5	9.9	−230	17.1	−4.7	*
Services and sales	2 635	2 322	16.2	15.5	−313	23.2	−4.1	*
Skilled agricultural workers	64	45	0.4	0.3	−19	1.4	−10.8	
Craft and related trades	2 007	1 599	12.3	10.7	−408	30.3	−7.3	*
Operators and assemblers	1 364	1 242	8.4	8.3	−122	9.1	−3.1	
Medium-skilled	**7 773**	**6 681**	**47.7**	**44.7**	**−1 092**	**81.1**	**−4.9**	*
Elementary occupations	3 775	3 605	23.2	24.1	−170	12.6	−1.5	
Domestic workers	996	892	6.1	6.0	−105	7.8	−3.6	
Low-skilled	**4 772**	**4 497**	**29.3**	**30.1**	**−275**	**20.4**	**−2.0**	†

Source: Own calculations, QLFS Quarter 2 (Stats SA, 2018 and 2021)

Notes:
1. Numbers do not add up to total employment due to unspecified occupation or no responses.
2. An asterisk (*) denotes statistically significant changes at the 95 percent confidence level, while a dagger (†) denotes statistically significant changes at the 90 percent confidence level.

Employment decreased across all occupations from Q2 2018 to Q2 2021 except for professional occupations, which recorded an increase of 115 000 workers. The occupation that shed the greatest number of jobs was craft and related workers (a loss of 408 000 jobs), followed by sales and services workers (313 000 jobs) and clerks (230 000 jobs). This suggests that skilled employment was hardest hit by the COVID-19 pandemic.

Table 5.4 shows the share of total change in employment by industry and occupation. The analysis highlights the industries that recorded the highest increases or decreases in demand for occupation, based on the changes in employment observed.

There was a rise in employment of managers across all industries except manufacturing, construction, W&R trade and private households. The increase was greatest for financial and business services (426.0 percent of the change in managers), CSP services (153.0 percent) and mining (58.0 percent). For professionals, there was an increase in employment in all industries except mining; transport, storage and communication; and CSP services, while employment was unchanged for utilities and private households. The largest increase was for financial and business services (73.0 percent of the change in professionals) and W&R trade (33.0 percent). For technicians, employment fell across all industries except W&R trade, while there was no change for agriculture, forestry and fishing, and private households. The biggest decline was for CSP services (accounting for 67.0 percent of the change in technicians), followed by financial and business services (37.0 percent) and transport, storage and communication (17.0 percent).

There was a decline for the clerks in all industries except for mining and construction, while there was no change for utilities and private households. The biggest decline was for financial and business services (45.0 percent of the change in clerks), followed by W&R trade (20.0 percent) and manufacturing (17.0 percent).

For services and sales workers, employment declined across all industries except agriculture, forestry and fishing, and private households. There was no change for the mining and construction industries. The largest share of the decline was W&R trade (contributing 44.0 percent of the change in services and sales workers) and CSP services (41.0 percent).

For skilled agricultural workers, employment was unchanged in most industries. However, there was a marginal increase in employment in financial and business services, while employment declined in agriculture, manufacturing, W&R trade and CSP services. The largest share of the decline was for agriculture, forestry and fishing (73.0 percent of the change in skilled agricultural workers), manufacturing (15.0 percent) and CSP services (11.0 percent).

Employment for craft workers declined across all industries except for W&R trade and CSP services. There was no change for agriculture, forestry and fishing, and private households. The biggest contributor to the decline was construction (58.0 percent of the total change in craft workers), followed by manufacturing (27.0 percent) and mining (10.0 percent).

While there was an overall decrease in employment for operators and assemblers, in agriculture, forestry and fishing, W&R trade, transport, storage and communication and CSP services, employment increased. The industries that contributed to the decline were manufacturing (114.0 percent of the total change in employment in operators and assemblers), mining (11.0 percent) and construction (10.0 percent).

TABLE 5.4: Share of total change in employment across industry by occupation, Q2 2018–Q2 2021

| | SHARE OF CHANGE Q2 2018–Q2 2021 (%) | | | | | | | | | | |
| | HIGH-SKILL | | | MEDIUM-SKILL | | | | | LOW-SKILL | | TOTAL |
	MANAGERS	PROFESSIONALS	TECHNICIANS	CLERKS	SERVICES AND SALES	SKILLED AGRICULTURE	CRAFT AND RELATED	OPERATORS AND ASSEMBLIES	ELEMENTARY	DOMESTIC	
Agriculture, forestry and fishing	−5	1	0	0	−2	73	0	−5	−11	–	−1
Mining	−53	−2	5	−1	0	0	10	11	−12	–	3
Manufacturing	58	6	3	17	6	15	27	114	12	–	24
Electricity, gas and water (utilities)	−28	0	11	3	1	0	3	1	4	–	3
Construction	16	8	7	−8	0	0	58	10	14	–	19
W&R trade	740	33	−48	20	44	4	−8	−12	12	–	10
Transport; storage and communication	−16	−2	18	9	5	0	4	−26	10	–	3
Financial and business services	−426	73	37	45	8	−4	8	10	35	–	11
CSP services	−153	−21	67	16	41	11	−2	−5	34	–	22
Private households	0	0	0	0	−2	0	0	0	2	100	8
Other	−36	3	0	−2	0	0	0	1	0	–	−1
Total change ('000s)	**−10**	**115**	**−128**	**−230**	**−313**	**−19**	**−408**	**−122**	**−170**	**−105**	**−1 346**

Note: Shares within occupations total to 100 percent. However, due to rounding, this may not always be the case in the table.

PART 5

Employment fell for elementary workers across all industries except agriculture, forestry and fishing, and mining. The biggest contributors to the decline were financial and business services (35.0 percent of the total change in elementary workers), followed by CSP services (34.0 percent) and construction (14.0 percent).

Table 5.5 shows the five fastest-growing occupational groups from Q2 2018 to Q2 2021.[5] The fastest growing occupational group was that of science and engineering professionals with an increase of 69.8 percent, from 138 000 in 2018 to 235 000 in 2021. This was followed by health professionals, which may be explained by the increase in demand for health workers over the course of COVID-19 pandemic.

TABLE 5.5: Top five fastest-growing occupations, Q2 2018–Q2 2021

	Q2 2018	Q2 2021	CHANGE	OVERALL GROWTH
	'000s	'000s	'000s	%
Science and engineering professionals	138	235	97	69.8
Health professionals	102	136	33	32.5
Administrative and commercial managers	932	991	60	6.4
Business and administration professionals	386	395	9	2.2
Stationary plant and machine operators	147	148	2	1.1

Source: QLFS Q2 (Stats SA, 2018 and 2021)

Table 5.6 shows the top five fastest-declining occupational groups from Q2 2018 to Q2 2021. The fastest-declining occupational group was skilled forestry, fishery and hunting workers with a decrease of 38.2 percent from 17 000 in 2018 to 10 000 in 2021, followed by building and related trades workers with a decrease of 29.6 percent from just over 1 million in 2018 to 727 000 in 2021.

TABLE 5.6: Top five fastest-declining occupational groups, Q2 2018–Q2 2021

	Q2 2018	Q2 2021	CHANGE	OVERALL GROWTH
	('000s)	('000s)	('000s)	(%)
Market-orientated skilled forestry, fishery and hunting workers	17	10	−6	−38.2
Building and related trades workers (excl. electricians)	1 033	727	−306	−29.6
Assemblers	347	244	−102	−29.6
Science and engineering associate professionals	342	258	−84	−24.4
Market-orientated skilled agricultural workers	51	40	−22	−21.5

Source: QLFS Q2 (Stats SA, 2018 and 2021)

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5   This report focuses on occupational groups instead of individual occupations, as samples are very small at the four-digit level and thus are typically not representative.

5.2.2. Wages

There are several theories about wage formation in the literature. Neoclassical economic theory assumes that wages are a function of an individual's productivity (Mincer, 1974). Variation in wages is assumed to be a signal of differences in relative productivity. Becker (1957), in his pioneering work on racial discrimination, demonstrated that discriminated workers receive lower wages than non-discriminated workers. Spence (1973), in contrast to Mincer (1974), developed a signalling model that assumed that education was used as a signal by job seekers to indicate that they were highly productive individuals, regardless of whether this was actually the case.

We begin our analysis by illustrating the level of wage inequality in South Africa's labour market. Table 5.7 considers several ratios that compare the earnings of workers at different points in the income distribution. In the first column of Table 5.7, for example, workers in the 90th percentile of the wage distribution in 2010 earned 16 times more than those in the 10th percentile. Since then, the ratio increased, reaching 21.6 in 2019 (an increase of 33.8 percent over the period). When comparing top earners (90th percentile) to those in the middle of the wage distribution (50th percentile), the ratio increased between 2010 and 2015, but decreased slightly thereafter.

TABLE 5.7: Real wage percentile ratios, 2010–2019

YEAR	DECILE		
	90TH/10TH	90TH/50TH	50TH/10TH
2010	16.1	4.8	3.3
2015	20.8	6.0	3.5
2019	21.6	5.8	3.7
Change (%): 2010–2019	33.8	19.7	11.8

Source: Labour Market Dynamics of South Africa 2010, 2015 & 2019, own calculations.

Compared to the other ratios, the 50th/10th ratio is much smaller and has increased the least over the period (11.8 percent). This evidence suggests that although real wage increases for those in the 50th percentile outpaced those in the 10th percentile, the difference was small. Nevertheless, the rise in this ratio indicates that those in the 10th percentile are falling further behind those at the 50th percentile of the wage distribution and, therefore, that inequality is increasing.

Potential explanations for the high levels of wage inequality experienced in the South African labour market relate to education and skills. In relation to education, it is expected that those with higher levels of educational attainment will earn more than those with lower levels of education, all other things being equal. Figure 5.1 presents the distribution of educational attainment across each income decile in 2010, 2015 and 2019.

	2010	2015	2019

2010
Decile	Primary or less	Incomplete secondary	Complete secondary	Post-secondary
1	37.9	42.0	15.3	4.5
2	34.5	44.9	17.5	3.2
3	28.8	46.2	21.8	3.3
4	20.5	45.4	28.7	5.4
5	17.3	46.5	30.0	6.2
6	14.3	39.1	38.4	8.3
7	12.4	33.5	40.1	13.9
8	7.2	22.5	42.1	28.2
9	2.5	13.0	38.3	46.4
10	2.4	8.3	23.9	65.5

2015
Decile	Primary or less	Incomplete secondary	Complete secondary	Post-secondary
1	23.7	42.0	26.5	7.9
2	25.6	42.6	23.6	8.3
3	22.1	45.8	25.3	6.8
4	20.2	43.4	29.4	7.0
5	14.3	41.1	35.0	9.6
6	14.5	39.7	33.2	12.6
7	11.1	33.3	37.8	17.9
8	8.1	27.0	40.3	24.6
9	4.4	15.8	36.1	43.8
10	2.4	10.8	27.1	59.8

2019
Decile	Primary or less	Incomplete secondary	Complete secondary	Post-secondary
1	18.4	40.6	29.6	11.3
2	20.8	45.0	24.7	9.5
3	17.4	43.2	30.0	9.7
4	18.2	45.6	30.2	6.0
5	13.1	43.6	34.8	8.6
6	10.5	38.7	38.3	12.8
7	8.5	34.4	41.4	15.7
8	8.2	26.1	39.5	26.2
9	4.1	15.5	36.5	43.9
10	3.0	9.0	22.0	66.1

Legend: ■ Primary or less ■ Incomplete secondary ■ Complete secondary ■ Post-secondary

% of individuals

Source: Labour Market Dynamics of South Africa 2010, 2015 & 2019, own calculations

Across all years, most workers in the lowest six income deciles have either no more than primary education or have incomplete secondary education. Amongst the top four deciles, however, those with completed secondary education or who hold a post-secondary qualification (either a degree or a diploma) are in the majority, with a plurality of those in deciles 9 and 10 having obtained a post-secondary qualification. The tenth decile is the only decile in which the majority of workers have a post-secondary qualification.

There is a steady decrease in the proportion of those with no more than primary education and a steady increase over time in the proportion of those with completed secondary education and post-secondary qualifications in the lower income deciles. This evidence suggests that while there has been an expansion of educational opportunities for workers, the labour market has been unable to absorb a sufficient number of these workers, resulting in workers obtaining low-paid jobs for which they may be over-qualified.

Figure 5.2 considers skill levels by occupation – which are related to, but not perfectly correlated with, educational attainment – across the wage distribution. The dominance of skilled workers within employment previously noted is clearly evident in the figure. In 2010, in deciles one, two and three, most of the workers were low-skill. By 2019, the skills composition within the same three deciles shifted, with skilled workers comprising either a majority (decile one) or a plurality (deciles two and three). Skilled workers predominate in deciles 6 through 9, accounting for nearly two-thirds of workers in those deciles. The proportion of high-skill workers in the top decile has increased from 48.4 percent in 2010 to 62.3 percent, emphasising the increasing value placed on skills in the labour market.

Source: Labour Market Dynamics of South Africa 2010, 2015 & 2019, own calculations.

Notes: Skill levels are classified according to occupational groupings: High-skill: managers, professionals; Semi-skilled: technicians, clerks, sales and services workers, skilled agriculture workers, craft and related trade workers, plant and machine operators; Low-skill: elementary workers, domestic workers.

Overall, the data suggests that those at the top-end of the wage distribution experienced the largest increases in wages between 2010 and 2019. Top earners typically have a post-secondary qualification and are employed in high-skill occupations. The increase in wages reflects the growing demand for high-skill occupations in the South African labour market. In the lower deciles, low and skilled workers are the majority, reflecting the low value placed on such skills when compared to those who are highly skilled.

5.3. Understanding future demand

5.3.1. Replacement demand

Replacement demand is defined as "the jobs resulting from the departures of workers that need to be filled by new workers" (Willems & de Grip, 1993:173). There are several reasons why workers leave a job, including retirement, death, debilitating sickness or injury, emigration, an offer of a better job elsewhere and, in the case of women especially, family formation (Cedefop, 2018). In South Africa, there is limited data availability on key variables such as emigration and number of retirements per year. Instead, the

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analysis provides a basic framework on what is required when estimating replacement demand, based on the work of Adelzadeh (2017).

To begin modelling replacement demand, one must first choose a beginning and end date. In general, the longer the period the better, as it provides more confidence in the results. The longer the time period, the more likely that large, irregular fluctuations in variables (like the number of people employed) cannot distort results in a meaningful way. To further extend that point, end and start dates should be carefully chosen so that they do not reflect irregular labour market conditions, such as at the trough of a recession or the peak of a boom.

After the finalisation of the dates, the size of the population cohorts must be compared across the two dates. If the size of the population cohort has decreased between the two dates, then we conclude there has been a net outflow of individuals, implying that some of these individuals need to be replaced. On the other hand, if the size of the population cohort has increased between the two dates, no outflows are assumed and hence no replacement demand. An important caveat of this method is that the cohorts are not identical—different individuals are tracked across the different years. However, this is not a problem as we are concerned only with the size of the various population cohorts.

If a net outflow has been established, the analysis then proceeds to estimate the number of job openings that arise from individuals leaving the workforce. To do that, data on gender and age across the workforce is needed, as these are key determinants relating to retirement and mortality (Cedefop, 2009). In an industry with a higher average age, a larger number of retirements can be expected than industries with a lower average age. Nonetheless, the effect of a lower number of expected retirements in industries with a young workforce is offset by higher inter-occupational mobility amongst a youthful workforce.

Table 5.8 provides an illustrative example of replacement demand in South Africa, focusing on only one aspect of replacement demand, namely retirements. It is assumed that, regardless of gender, the retirement age is 65 and that everyone who retires is required to be replaced. Based on this, the table presents the predicted number of retirements between 2022 and 2027, based on the number of 60 to 64-year-olds in QLFS Q2 2021.

Based on the above, the number of retirements will increase substantially between 2022 and 2023, with the number of retirements in 2023 more than 60.0 percent higher than in 2022. Between 2023 and 2024, there is a marginal decrease in the number of predicted retirements, however, this decline is short-lived as this figure is projected to increase by 15.7 and 19.0 percent in 2025 and 2026, respectively. Although the number of predicted retirements is small relative to the overall number of employed,[6] many of these potential retirees represent a wealth of expertise, institutional memory and expertise. As a result, companies may face difficulties in replacing such workers.

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6   In 2021, the proportion of the workforce who were predicted to retire in the next year relative to the overall number of the employed was 0.38 percent.

TABLE 5.8: Number of predicted retirements, 2022–2026

YEAR	NUMBER OF PREDICTED RETIREMENTS	YEAR-ON-YEAR GROWTH (%)
2022	51 107	–
2023	82 573	61.6
2024	81 324	−1.5
2025	94 105	15.7
2026	111 953	19.0

Source: QLFS Q2 (Stats SA, 2021)

In Table 5.9, the median age of the occupation groups at the 1-digit level is presented. Seven of the ten occupational groups have a median age of between 37 and 40 years. Domestic workers and managers have slightly higher median ages of 44 and 45, respectively. A potential explanation for the higher median age of domestic workers is that young people do not tend to choose this occupation as a career choice—many only consider it as a last resort. Managers tend to be older because years of work experience is usually a pre-requisite for managerial positions. Skilled agriculture and fishery workers have the oldest median age of 52 and this may point to an occupational grouping that is no longer attractive to young people for a variety of reasons.

TABLE 5.9: Median age at the 1-digit level

OCCUPATION	MEDIAN AGE
Managers	45
Professionals	40
Technical and associate professionals	40
Clerks	37
Services, shops, and sales workers	38
Skilled agriculture and fishery workers	52
Craft and related trades workers	39
Plant and machine operators	40
Elementary occupations	39
Domestic workers	44

Source: Q2 2021 (Statistics SA, 2021)

5.3.2. Expansion demand

Expansion demand refers to "net new job openings arising from change in industry demand for labour by occupation" (Gasskov, 2018:18). Industry demand can be influenced by the increase (or decrease) of sectoral GDP, technological change and productivity improvements, which may require fewer workers or different types of workers to be hired (Gasskov, 2018). Expansion demand plays an important role in skills planning as it is used to project future skills needs of the economy.

Expansion demand is the demand corollary of the skills supply pipeline. It is the flow that takes us from the current demand of skills to the future demand of skills, just like the skills supply pipeline takes us from current supply to future supply. However, unlike the skills supply pipeline, expansion demand cannot easily be observed: data on the number of students enrolled is easily available but firms' expansions plans are not. Furthermore, it is important to note that expansion demand is a concept that emanates from the labour supply and demand model—it is part of the mechanism that moves the model from the present to the future. The combination of these factors makes it difficult to easily quantify expansion demand. As a result, we will be required to rely on reports that make predictions about the future demand for skills in South Africa.

Every two years, the World Economic Forum (WEF) produces the *Future of Jobs* report, which provides a country-by-country breakdown on growing and declining occupations as well as emerging skills that are in high demand. The latest report produced by the WEF was in 2020.

The WEF results are based on the results of an online survey of large multinational and national companies, with a minimum number of 100 employees. Consequently, this excludes small- and medium-sized businesses and the informal sector, both of which are significant contributors to the South African economy. Overall, 291 companies were interviewed, representing 7.7 million employees (WEF, 2020). Primarily, respondents were from human resource departments (52.0 percent) with other respondents emanating from finance, operations and strategy (WEF, 2020).

Based on the WEF data, the list of occupations and skills expected to increase in demand between 2020–2024 in South Africa is presented in Table 5.10. These occupations and skills lists were based on how frequently they were cited by South African respondents to the survey.

TABLE 5.10: Emerging occupations and skills in South Africa, 2020–2024

EMERGING OCCUPATIONS	EMERGING SKILLS
Process automation specialists	Analytical thinking and innovation
Data analysts and scientists	Critical thinking and analysis
Social psychologists	Troubleshooting and user experience
Management and organisation analysts	Leadership and social influence
Business development professionals	Complex problem-solving
Big data specialists	Systems analysis and evaluation
Assembly and factory workers	Creativity, originality and initiative
Compliance officers	Technology use, monitoring and control
Chemists and chemical laboratory specialists	Quality control and safety awareness
AI and machine learning specialists	Persuasion and negotiation

Source: WEF (2020)

Emerging occupations is biased towards those who would be considered as highly-skilled individuals. The list is a combination of senior management positions and those related to innovative technologies associated with the 4IR (e.g., data analysts and scientists, big data specialists, etc.). The one exception in this list is assembly and factory workers, who are mostly low-skilled or skilled. Given the abundance of

low-skilled and skilled workers in South Africa, it is important to create jobs for this occupational group alongside the other occupations on this list.

The list of emerging skills is a combination of those related to technological occupations (e.g., technology use, monitoring and control, troubleshooting and user experience) and senior management positions (e.g., complex problem-solving, persuasion and negotiation).

5.4. Conclusion and implications for skills planning

Chapter 5 has shown that in terms of employment, all three sectors (primary, secondary and tertiary) experienced a decrease in employment between 2018–2021. However, the decreases were concentrated in the secondary (46.4 percent) and tertiary (53.6 percent) sectors. Manufacturing (−24.5 percent), CSP services (−21.6 percent) and construction (−18.8 percent) were individual sectors that experienced the biggest declines in employment.

The occupational distribution remained largely unchanged between 2018 and 2021. Elementary workers (24.1 percent), sales and services workers (15.5 percent) and craft and related trade workers (10.7 percent) were the three largest occupational groups. With the exception of managers (which grew by 115 000 jobs), all other occupational groups recorded a drop in employment. The semi-skilled occupations were particularly affected, with craft and related workers (408 000), sales and services workers (313 000) and clerks (230 000) losing many jobs over the course of the COVID-19 pandemic.

Our report then considered wages and found that wage inequality worsened between 2010 and 2019. For example, the 90th/10th percentile ratio increased from 16.13 in 2010 to 21.58 in 2019. We found that both education and skill level could explain differences in wages, with more educational attainment and higher skill levels associated with earning higher wages.

Finally, the report discussed two forms of skills demand – replacement and expansion – which are typically used to estimate the number of future job openings. Replacement demand arises from cases whereby workers need to be replaced because the previous individual retired, passed away or moved to another job. On the other hand, expansion demand arises from the expansion of the economy—which we noted was difficult to quantify. Based on the WEF (2020) report, emerging occupations and skills are closely associated with management and technology-based occupations.

The implications of these results for skills planning is that the skills needs of a country constantly evolve as the economy undergoes structural changes. To understand the skills requirements of businesses, post-secondary educational institutions need to enter in a more collaborative partnership with businesses, who are at the forefront of experiencing changes in their industry. A greater collaboration will ensure that the skills acquired by students will be relevant in the modern labour market, substantially increasing the chances they will obtain a job.

Skills Imbalances

The identification of skills imbalances is critical in providing a basis for the DHET (and other relevant authorities) to design and implement appropriate interventions. Indications of imbalance between demand and supply should translate into effective interventions that improve and adjust education and training in the country to be able to meet the skills requirements of the economy. Understanding skill imbalances is essential to assist in the decisions made by government, employers and individuals with respect to skill acquisition to ensure that the skills acquired today are relevant to address the needs of the future.

This chapter first presents the OECD's estimates of occupational shortages (and the skills shortages associated with these occupational shortages) in South Africa. It then proceeds to a discussion of unemployed graduates in South Africa, as this cohort may serve as an indicator of skills that are in surplus in the country (relative to the current level of demand). The chapter then discusses the migration gap – the difference between immigrants and emigrants in the labour market – and its implications for skills planning. Next, the chapter considers two indications of mismatch: qualification and field-of-study mismatch. The chapter concludes with a brief discussion of skills gaps in the South African labour market.

6.1. Occupational and skills shortages and surpluses

6.1.1. Occupational shortages and surpluses

Occupational shortages and the intensity of such shortages can be analysed using the OECD Skills for Job Database. The OECD's occupational shortage index is constructed by making use of weighted measures of change in:

○ Wage pressure, as proxied by hourly wage;
○ Employment pressure, represented by total employment, the unemployment rate and hours worked; and
○ Talent pressure, determined by underqualification growth, as measured by the number of individuals with educational levels below the modal level for all workers employed in that occupation (OECD, 2017).

The OECD then applies a Hodrick-Prescott (HP) filter to each of the five variables at the occupation and economy-wide level. The HP filter is used to separate each variable's short-term and cyclical component from its long-term trend (OECD, 2017). The long-term trend for each variable and occupation is compared to the long-term trend of the economy. The difference in growth rates between the two provides information on the existence and extent of a labour shortage (or surplus) for each occupation–variable combination considered (OECD, 2017). This process is repeated for each variable and the results are then aggregated into a composite measure of occupational shortage.

The aggregation of each variable requires each variable to be standardised. To do this, each variable is divided by its weighted standard deviation for each year (OECD, 2017). The composite indicator represents a weighted average of the five variables. The values for the index vary from −1 (surplus) to +1 (shortage), with 0 being the 'centre' (indicating neither a shortage nor a surplus for a specific occupation). The numbers obtained are a relative measure: the variables' long-term trend is compared to the economy's long-term trend.

Figure 6.1 shows the proportion of occupations that are in shortage at the 1-digit occupational level. This was calculated by grouping detailed occupations (which were associated with a score indicating whether the occupation was in shortage or surplus) within their respective broad occupational groups. In managerial and professional occupations, there are 94.2 and 78.2 percent shortages, respectively. These figures indicate the challenge that South Africa is facing in terms of creating a high-skill workforce. Other occupational groups experiencing a high proportion of shortages are clerical support workers (74.1 percent), plant and machine operators (69.8 percent) and services and sales workers (60.4 percent). The two lowest occupational groups experiencing shortages – elementary occupations (48.1 percent) and skilled agricultural workers (38.0 percent) – are dominated by skilled and low-skill workers. These figures are to be expected given that South Africa has an excess of skilled and low-skill workers.

FIGURE 6.1: Proportion of occupations in shortage per occupational category, 2020
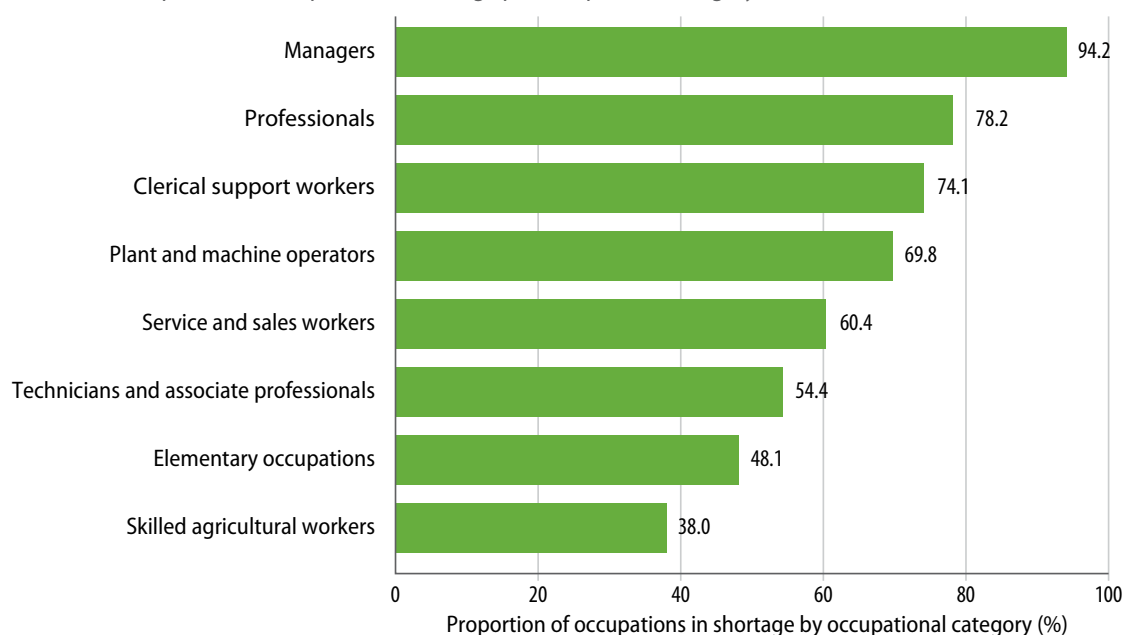
Source: Own calculations, OECD Skills for Job Database (2020)

While employment shortages may be widespread in particular occupational categories, these estimates are unable to shed light on the severity of such shortages. Figure 6.2 shows the intensity of skills shortages and surpluses across the occupational groups. Scores are normalised to be between −1 and +1, with higher (lower) scores representing a greater shortage (surplus).

Skilled agricultural workers experienced the greatest shortage intensity of 0.51, followed by professionals (0.46), managers (0.40) and technicians, and associate professionals (0.37). Of particular concern is that of the top four occupational groups experiencing the greatest intensity of shortages, three (managers, professionals and technicians, and associate professionals) are considered high-skill occupations, reinforcing the challenge facing recruiters in hiring highly-skilled workers.

In terms of surplus, the top three occupational groups are professionals (−0.61), elementary occupations (−0.47), and services and sales workers (−0.43). The fact that the professional occupational group is experiencing both a high level of shortages and surpluses suggests there is a large degree of mismatch within professional occupations. The large surplus figures for the elementary and services and sales worker occupational groups are to be expected, given that South Africa has a high number of skilled and low–skill workers.

FIGURE 6.2: Intensity of shortages and surpluses per occupational group, 2020

Source: Own calculations, Vandeweyer & Verhagen (forthcoming)

6.1.2. Skills shortages and surpluses

To obtain a measure of the skills shortages associated with the occupational shortages across various sectors and in the economy as a whole – in terms of competencies, knowledge or abilities – the OECD maps occupations to their skills competency content using the O*NET database.[7]

O*NET provides a set of skills, abilities, and knowledge for a large variety of occupations. O*NET codes each variable or skill (e.g., reading comprehension) for each occupation along two dimensions: importance and level. The OECD took the product of these two dimensions to provide a measure of each skill associated with a specific occupation. The OECD standardised the scores through the "min/max" method, with skills scores ranging from 0 to 1, where a bigger value indicates greater skill intensity.

The score for each skill is multiplied by the extent of the shortage for each occupation (calculated earlier), in order to obtain the final skills shortage indicator. For example, if there are strong shortages in certain occupations (e.g., ICT professionals) that use specific skills more intensively (e.g., systems analysis), then the skills shortage indicator will show those skills as a shortage.

The skills mapped to occupations using O*NET can be classified into six skills categories:
1. **Basic skills**, or skills that "facilitate learning or the more rapid acquisition of knowledge";
2. **Complex problem-solving skills**, or skills that are "used to solve novel, ill-defined problems in complex, real-world settings";
3. **Resource management skills**, or skills that are "used to allocate resources efficiently";
4. **Social skills**, or skills that are "used to work with people to achieve goals";
5. **Systems skills**, or skills that are "used to understand, monitor, and improve socio-technical systems"; and
6. **Technical skills**, or skills that are "used to design, set-up, operate, and correct malfunctions involving the application of machines or technological systems" (O*NET, 2019).

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7   It must be noted that the O*NET database is based on US occupational classifications, which may not be appropriate in the South African context. O*NET, however, is required to make use of the OECD methodology as it maps specific skills and capabilities to occupations. A crosswalk can be used to link South African occupational classifications such as OFO to O*NET; nevertheless, some concerns may remain about the mapping of occupations across different standards. OECD-calculated skills shortages that have not adopted the O*NET classification are reported here.

Figure 6.3 shows the shortages (positive values) or surpluses (negative values) for each of the 21 industries in the dataset. The figure indicates that 13 of the 21 industries (61.9 percent) are experiencing skills shortages. These shortages are most intense in education, financial services (finance and accounting services, banking, insurance), the public sector, utilities (energy and water), fibre-processed manufacturing and the ICT sector. A common thread amongst these industries is that they attract highly-skilled workers.

FIGURE 6.3: Shortages and surpluses by industry, 2020
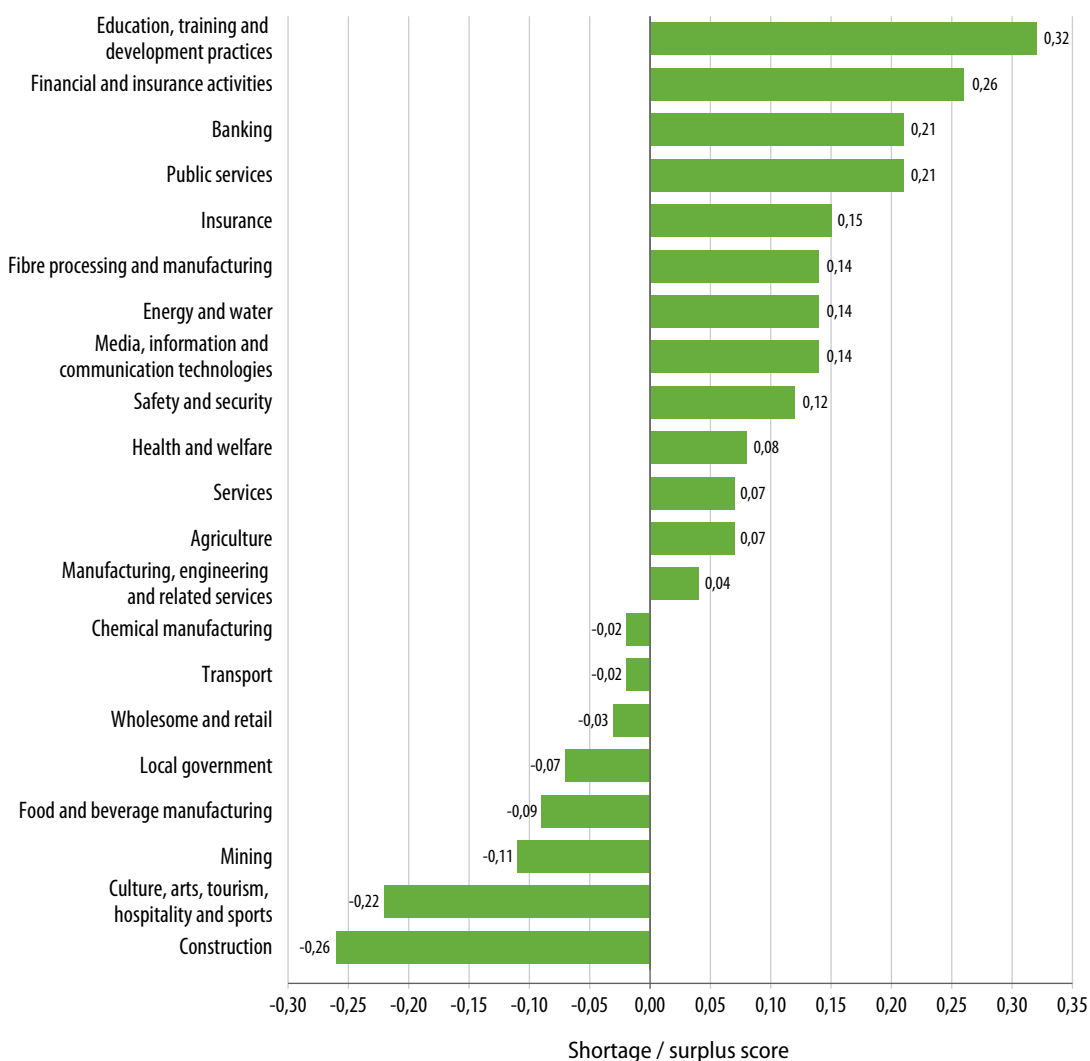
Source: Own calculations, Vandeweyer & Verhagen (forthcoming)

Construction, culture/hospitality/sports and mining are the three major industries experiencing the biggest skills surpluses. These industries typically attract a large contingent of skilled and low-skill labour, which could potentially explain why these industries are experiencing a surplus. In the case of mining, the surplus might also be as a result of the greater use of capital machinery in the mining process.

Figure 6.4 shows the shortages (positive values) or surpluses (negative values) of each of the six skills categories described in Section 6.1.1 for South Africa, and two other middle-income countries – Peru and Turkey – selected based on data availability and the similarity of their socio-economic profiles to South Africa's.

FIGURE 6.4: Skills needs indicators across selected countries, 2016
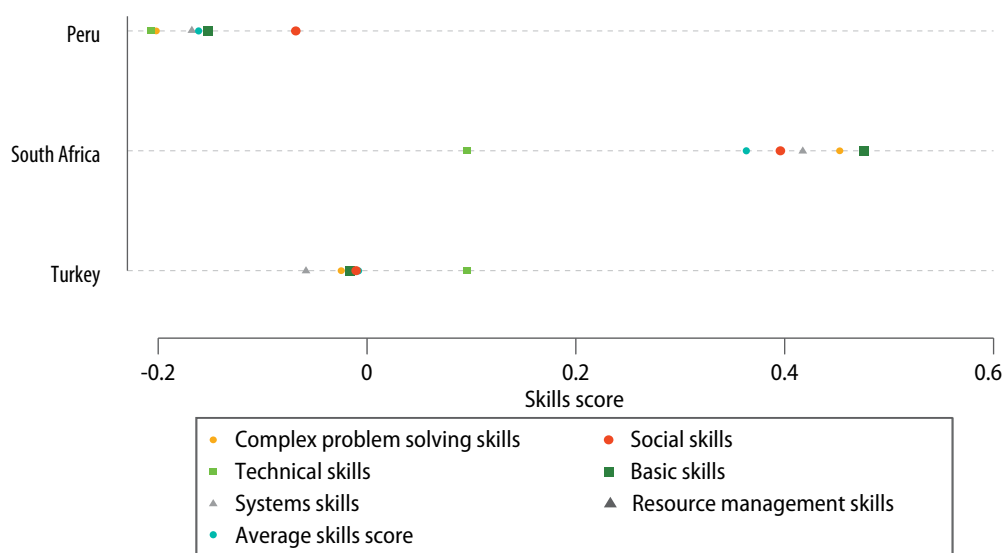
It is striking that South Africa has far greater skills shortages in terms of competencies across all skills groups compared to the other selected countries. Most skills groups in South Africa are around 0.40, implying that these skills are in shortage. By contrast, the other countries considered have an average score that is negative, implying a surplus of skills. The skills most in shortage are technical skills (two out of three countries recorded a shortage). Complex problem-solving skills, systems skills and resource management skills were the skills most in surplus, with only South Africa recording a shortage in these skills groups.

Finally, across all countries, clustering seems to be apparent, indicating that the skills shortages (or surpluses) are broadly similar across all skills groups. This could imply that different types of skills are linked to one another. For example, if a country has a shortage of complex problem-solving skills, then it is also likely to have a shortage of technical skills. However, further research needs to be undertaken on whether skills are correlated with one another or whether there is a stronger causal link.

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Figure 6.5 shows the skills shortages (positive values) and surpluses (negative values) in South Africa, as calculated by the OECD, for the constituent parts of each of the six skills groups described in Section 6.1.1. Out of the 35 individual skills considered, 27 (more than three quarters) are in shortage, while the remainder are in surplus.

FIGURE 6.5: Skills shortages and surpluses for skills types in South Africa, 2020
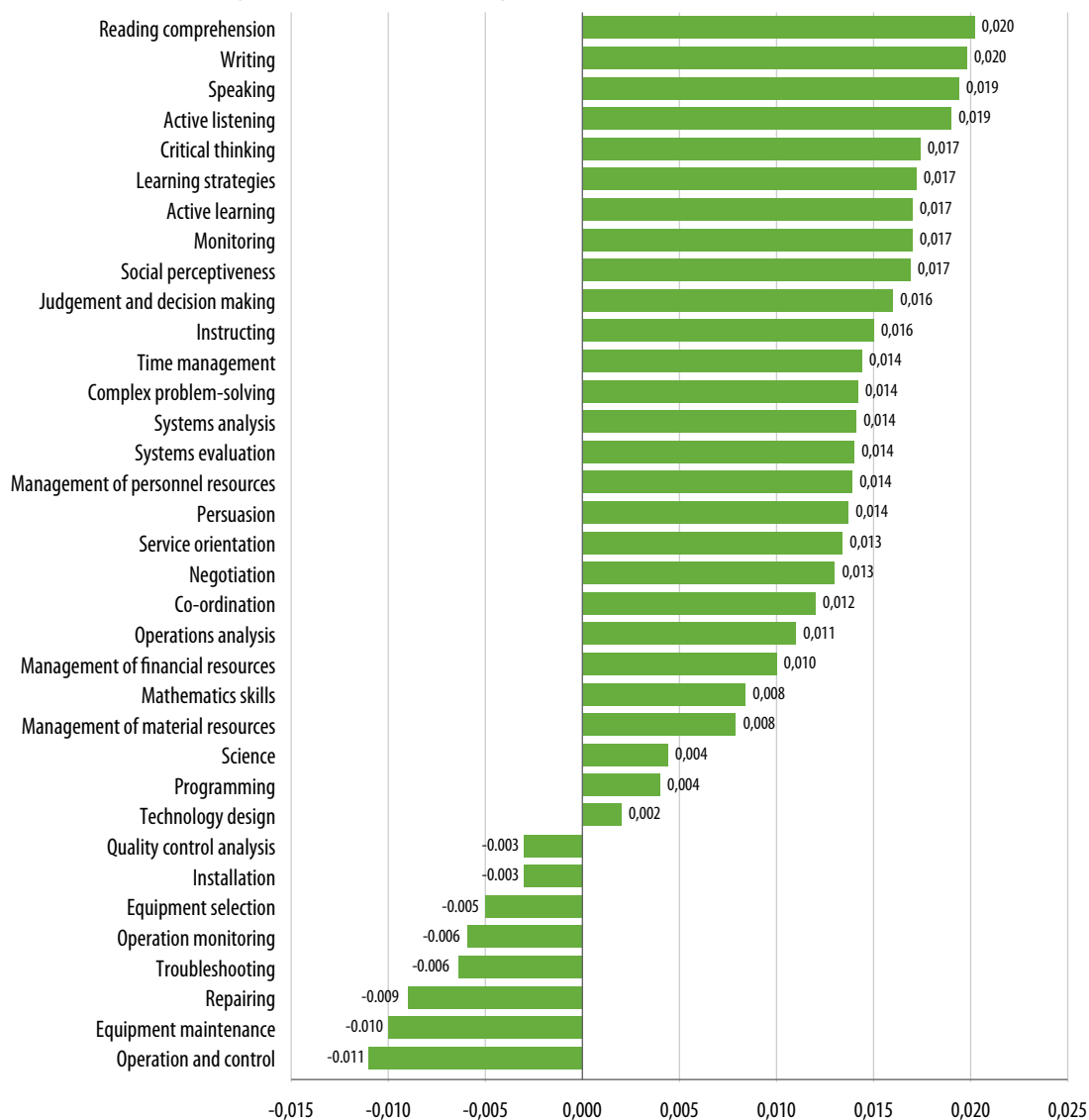
Individual skills shortages are particularly acute for reading comprehension, active listening, speaking and writing. Learning strategies, critical thinking and active learning are also marked by great shortages. What all these skills have in common is that they are considered basic skills. A lack of basic skills is worrying, as mastery of such skills is usually a prerequisite for obtaining more specialised skills.

The value of the skills considered in surplus are very small, suggesting they are only marginally in surplus. In addition, all these individual skills are considered technical skills, suggesting that South Africa may have a marginal surplus of workers in vocational occupations, such as plumbers or electricians.

6.2. Skills surpluses

6.2.1. Unemployment

Table 6.1 profiles the expanded unemployed in Q2 2018 and Q2 2021 by highest level of education. The number of unemployed persons with primary education as their highest level of education decreased by 210 000 from just below 1.3 million in Q2 2018 to just below 1.1 million in Q2 2021. This is in line with the changing educational profile of the working-age population. In contrast, all other educational categories saw increases in the number of unemployed persons. The largest absolute increase was for those who have completed matric (complete secondary): this group of unemployed increased by 1.3 million (or roughly two fifths) from almost 3.1 million in Q2 2018 to 4.4 million in Q2 2021. The expanded unemployment rate for people with matric also increased substantially from 36.5 percent to 46.0 percent. The expanded unemployment rate for the those with diplomas and certificates and those with degrees increased by 8.4 percentage points and 4.5 percentage points respectively; however, the highest levels of education are associated with the lowest rates of unemployment.

TABLE 6.1: Expanded unemployment by highest level of education attainment, Q2 2018 and Q2 2021

	UNEMPLOYED		CHANGE				SHARE OF UNEMPLOYED		UNEMPLOYMENT RATE	
	Q2 2018	Q2 2021		SHARE	AAGR		Q2 2018	Q2 2021	Q2 2018	Q2 2021
	'000's	'000's	'000's	(%)	(%)		(%)	(%)	(%)	(%)
TOTAL	**9 634**	**11 923**	**2 289**	**100.0**	**7.4**	*	**100.0**	**100.0**	**37.2**	**44.4**
Primary or less	1 270	1 060	−210	−9.2	−5.8	*	13.2	8.9	40.2	42.7
Inc. secondary	4 613	5 442	829	36.2	5.7	*	47.9	45.6	45.8	52.7
Comp. secondary	3 068	4 382	1 314	57.4	12.6	*	31.8	36.8	36.5	46.0
Diploma/certificate	501	743	242	10.6	14.0	*	5.2	6.2	19.9	28.4
Degree	125	217	92	4.0	20.1	*	1.3	1.8	8.2	12.7

Source: Own calculations, QLFS Quarter 2 (Stats SA, 2018 and 2021a)

Notes:
1. Education category numbers do not add up to total employment due to unspecified or no responses.
2. An asterisk (*) denotes statistically significant changes at the 95 percent confidence level, while a dagger (†) denotes statistically significant *changes at the 90 percent confidence level*.

6.2.2. Graduate unemployment

Table 6.2 shows the unemployed graduates by highest level of education attainment. The total graduate unemployment rate increased by 6.7 percentage points from 15.5 percent in 2018 to 22.2 percent in 2021. The increase can be explained by the slow economic growth that led to the economy not creating enough jobs for the new graduates that entered the labour market and the job losses due to COVID-19. As expected, the unemployment rate for persons with diplomas and certificates was significantly higher than for those with degrees in the period under review.

TABLE 6.2: Unemployed graduates by highest level of education attainment, Q2 2018–Q2 2021

	NUMBER OF UNEMPLOYED		SHARE OF UNEMPLOYED		UNEMPLOYMENT RATE	
	Q2 2018	Q2 2021	Q2 2018	Q2 2021	Q2 2018	Q2 2021
	('000s)	('000s)	(%)	(%)	(%)	(%)
Diploma or certificate	501	743	80.0	77.4	19.9	28.4
Degree	125	217	20.0	22.6	8.2	12.7
Total	**626**	**959**	**100.0**	**100.0**	**15.5**	**22.2**

Source: Own calculations, QLFS Quarter 2 (Stats SA, 2018 and 2021)

Notes: Unemployed graduates comprise all persons aged 15–64 years who have attained a post-matric qualification and are unemployed using the expanded definition of unemployment. Diploma or certificate includes the following levels of education: "N4/NTC 4", "N5/NTC 5", "N6/NTC 6", "Certificate with Grade 12/Std 10", "Diploma with Grade 12/Std 10" and "Higher Diploma". Degree includes the following levels of education: "Post Higher Diploma (Masters; Doctoral Diploma)", "Bachelor's Degree", "Bachelor's Degree and Post Graduate Diploma", "Honour's Degree" and "Higher Degree (Master's/PhD)".

Higher unemployment among individuals with certain qualifications can be used as an indicator of a surplus of particular skills that are associated with those qualifications. Here, the number of unemployed individuals with a HE or TVET qualification is analysed by field of study for the years 2018 to 2021. This provides an indication of current graduate skills surpluses, which can be used as an indication of imbalances between the number of graduates produced in each field of study and the demand for these skills.

Table 6.3 shows the number and share of unemployed graduates with HE qualifications by field of study in Q2 2018 and Q2 2021. Between Q2 2018 and Q2 2021, the number of unemployed individuals with HE qualifications has increased from 125 000 to 217 000. This represents an annual average increase of 20.0 percent per year over the three-year period. Most of the unemployed graduates are concentrated in business (80 000 graduates) and other humanities (46 000 graduates). Health and arts graduates account for the smallest number of unemployed graduates, each consisting of 7 000 and 2 000 graduates respectively.

TABLE 6.3: Number and share of unemployed individuals with HE qualifications by field of study, Q2 2018 and Q2 2021

	NUMBER OF UNEMPLOYED		SHARE OF UNEMPLOYED		CHANGE IN UNEMPLOYED		
	Q2 2018	Q2 2021	Q2 2018	Q2 2021	ABSOLUTE	SHARE OF CHANGE	AAGR
	('000s)	('000s)	(%)	(%)	('000s)	(%)	(%)
Business	40	80	31.9	36.7	40	43.3	25.9
Science	10	17	8.1	8.0	7	7.8	19.6
Engineering	14	14	11.0	6.4	0	0.1	0.2
Health	5	7	4.3	3.1	1	1.5	7.9
Arts	4	2	3.3	1.1	−2	−1.9	−16.4
Education	17	35	13.9	16.0	17	18.8	25.8
Other humanities	27	46	21.4	21.4	20	21.5	20.2
All other	8	16	6.2	7.4	8	8.9	26.8
Total	**125**	**217**	**100**	**100**	**92**	**100**	**20**

Source: Own calculations, QLFS Q2 (Stats SA, 2018, 2021)

Notes: A number of graduates are graduates in smaller fields that do not form part of the other seven larger categories. These are included in the 'All other' category. Numbers rounded to the nearest thousand, percentages rounded to one decimal point. The expanded definition of unemployment is used.

Business graduates account for the largest share (43.3 percent) of the total increase in unemployed HE graduates. A rise from 40 000 graduates to 80 000 graduates is observed over the three-year period. This equates to an average annual increase of 25.9 percent.

The share of unemployed graduates with other humanities qualifications accounts for 21.5 percent of the total change in unemployed HE graduates. This is the second largest share of the change in unemployed graduates. The number of unemployed graduates increased from 27 000 to 46 000 over the three-year period, which is equal to an average annual increase of 20.2 percent.

Education and science represent the next largest share of the changes in unemployed HE graduates, accounting for 18.8 percent and 7.8 percent, respectively. In terms of annual rates of change, the science and education fields experienced rates of 25.8 percent and 19.6 percent respectively. Although they experienced large rates of change, the absolute number of unemployed graduates in these fields is lower, resulting in a smaller share of the total change in unemployment.

The arts field was the only study field to experience a reduction in the share of unemployed HE graduates. The change in the number of arts graduates comprised 1.9 percent of the share of change in unemployed graduates. This equates to an absolute change of 2 000 arts graduates. The number of unemployed graduates with arts degrees declined from 4 000 to 2 000 between Q2 2018 and Q2 2021. This is a signal that the demand for these skills has increased over the period.

Table 6.4 shows the number and share of unemployed individuals with TVET qualifications by field of study in Q2 2018 and Q2 2021. For this group, unemployment has increased from 501 000 in Q2 2018

to 743 000 in Q2 2021. This represents an annual average increase of 14.0 percent per year over the three-year period. Most unemployed TVET graduates studied either business (281 000 graduates) or engineering (186 000 graduates). Similar to HE graduates, health (32 000 graduates) and arts (6 000 graduates) are the smallest study fields.

TABLE 6.4: Number and share of unemployed individuals with TVET qualifications by field of study, Q2 2018 and Q2 2021

	NUMBER OF UNEMPLOYED		SHARE OF UNEMPLOYED		CHANGE IN UNEMPLOYED		
	Q2 2018	Q2 2021	Q2 2018	Q2 2021	ABSOLUTE	SHARE OF CHANGE	AAGR
	('000s)	('000s)	(%)	(%)	('000s)	(%)	(%)
Business	193	281	38.6	37.9	88	36.2	13.3
Science	27	48	5.3	6.5	22	9.0	22.1
Engineering	112	186	22.3	25.0	74	30.6	18.5
Health	35	32	7.0	4.3	−3	−1.3	−3.2
Arts	8	6	1.6	0.8	−2	−0.9	−9.8
Education	32	44	6.5	5.9	11	4.6	10.3
Other humanities	38	43	7.5	5.7	5	2.1	4.3
All other	56	104	11.2	14.0	48	19.7	22.8
Total	**501**	**743**	**100**	**100**	**242**	**100**	**14.0**

Source: Own calculations, QLFS Q2 (Stats SA, 2018, 2021)

Notes: A number of graduates are graduates in smaller fields that do not form part of the other seven larger categories. These are included in the 'All other' category. Numbers rounded to the nearest thousand, percentages rounded to one decimal point.

The business and engineering study fields, which accounted for the largest absolute number and share of the unemployed, also accounted for the largest share of the increase in unemployment over the period in question. The number of unemployed business graduates increased by 13.3 percent per annum over the three-year period, equal to a total increase of 88 000 unemployed graduates. Amongst graduates in engineering, unemployment increased by 74 000 over the period at an average annual rate of 18.5 percent.

6.3. Skills mismatches

This section compares mismatch indicators for South Africa with similar countries with a similar socio-economic profile (based on data availability). The three indicators calculated by the OECD are field-of-study mismatch, underqualification and overqualification.

6.3.1. Field-of-study mismatch

The OECD's field-of-study mismatch indicator shows the proportion of individuals who studied in one field but work in another field. For example, an individual who majored in politics but works as a social worker would be considered a mismatched individual. Figure 6.6 shows the field-of-study mismatch indicator for South Africa, Peru and Turkey.

FIGURE 6.6: Field-of-study mismatch in South Africa and selected countries, 2020
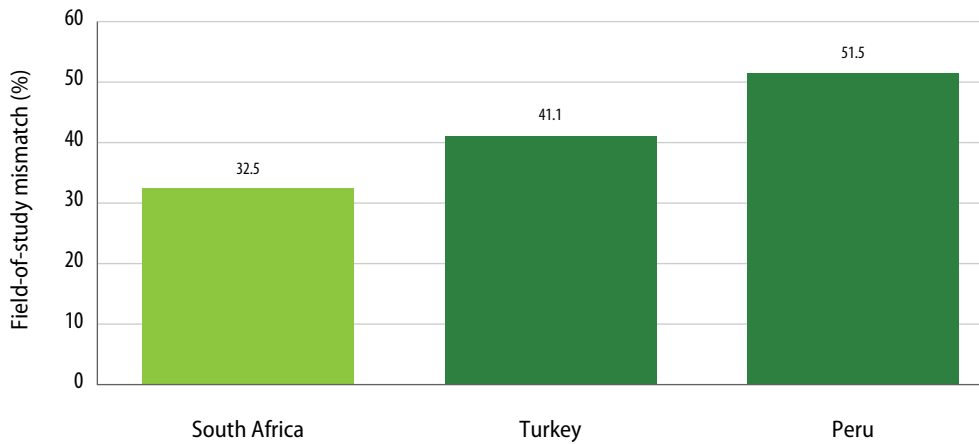
South Africa's field-of-study mismatch (32.5 percent) is lowest of all countries considered. Over half of Peru's workforce (51.5 percent) works in another field to which they studied, which suggests a high degree of skills mismatch. Despite South Africa's favourable figure, it must still be emphasised that South Africa's figure suggests that nearly one-third of people work in a field for which they did not study.

6.3.2. Qualifications mismatch

Qualification mismatch is calculated as follows: firstly, the modal qualification for each occupation for each country at a particular time was first computed. This figure was then used to determine whether an individual was under- or overqualified: an individual working in an occupation who had an educational attainment level below (above) that of the mode would be considered underqualified (overqualified). In Figure 6.7, the incidence of under- and over-qualification calculated by the OECD for 2020 is shown.

FIGURE 6.7: Incidence of qualification mismatch in South Africa and selected countries, 2020
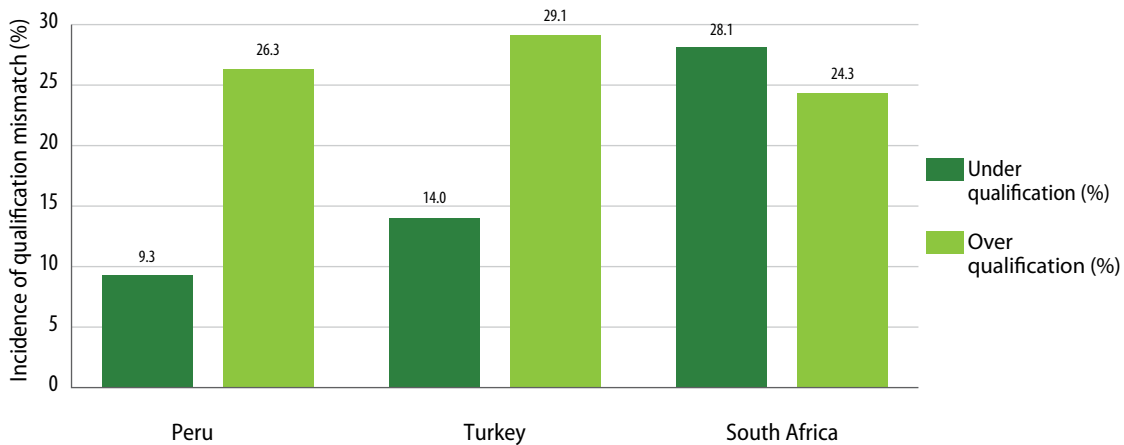
In South Africa, an estimated 28.1 percent of the employed in 2016 were determined to be underqualified, while 24.3 percent were overqualified. This is indicative of considerable qualification mismatch in the South African economy. Compared to the other two middle-income countries considered, South Africa has a far higher proportion of underqualified individuals: 28.1 percent compared to between 9.3 and

14.0 percent in Peru and Turkey, respectively. On the other hand, South Africa has the lowest incidence of overqualification (24.2 percent) compared to Peru (26.3 percent) and Turkey (29.1 percent).

6.4. Signals of field-of-study and qualification mismatch

In order to provide an indication of whether there is a mismatch in the qualification fields of individuals and the occupations and industries in which they are employed, this section considers the industries and occupations in which individuals with HE and TVET qualifications are employed. This qualification–job match analysis is a useful tool for obtaining signals on whether the correct quantities and types of qualifications are being produced to meet the demands of employers. It can also inform us as to whether or not individuals are working in industries and occupations linked to their qualifications.

Table 6.5 shows the distribution of employed individuals with HE qualifications across study fields and main industries. In Q2 2018, the majority of employed graduates worked in two industries: CSP services (52.7 percent), which includes government services, and financial and business services (26.4 percent). The share employed in CSP services increased between Q2 2018 and Q2 2021, indicating that graduates are increasingly being employed in this industry. The share of individuals working in financial and business services has also increased slightly. W&R trade is the next largest employer of HE graduates (5.5 percent in Q2 2021), followed by manufacturing (5.0 percent).

TABLE 6.5: Distribution of employed with HE qualifications across field of study and main industry, Q2 2018 and Q2 2021

FIELD OF STUDY	BUSINESS		SCIENCE		ENGINEERING		HEALTH		ARTS		EDUCATION		OTHER HUMANITIES		ALL OTHER		TOTAL	
	Q2 2018	Q2 2021	Q2 2018	Q2 2021	Q2 2018	Q2 2021	Q2 2018	Q2 2021	Q2 2018	Q2 2021	Q2 2018	Q2 2021	Q2 2018	Q2 2021	Q2 2018	Q2 2021	Q2 2018	Q2 2021
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Agriculture	0.6	1.9	8.9	2.9	0.4	0.8	..	..	..	..	..	..	1.2	0.5	..	..	1.1	0.9
Mining	1.3	1.7	..	..	4.9	2.3	..	..	..	..	0.4	..	0.5	2.0	3.9	2.8	1.4	1.1
Manufacturing	10.1	5.9	8.7	6.0	11.3	10.1	2.5	1.9	10.2	5.2	0.5	1.0	3.4	7.8	9.2	6.8	6.9	5.0
Utilities	2.0	1.3	1.2	..	9.8	2.0	..	0.9	..	..	..	..	2.2	1.0	4.8	..	2.4	0.8
Construction	0.9	3.9	1.2	3.5	11.5	8.6	1.4	..	..	..	..	0.5	1.3	2.1	1.7	5.8	2.1	3.0
W&R trade	6.5	8.9	2.4	4.7	7.9	5.2	3.7	4.5	7.9	..	1.0	2.9	8.5	3.6	9.8	8.9	5.5	5.5
Transport, storage, and communication	6.5	8.4	6.8	7.0	6.4	7.3	1.1	..	6.1	..	0.7	..	3.8	1.7	5.4	1.4	4.6	4.0
Financial and business services	41.4	46.1	35.6	38.1	31.9	43.4	8.4	1.6	19.3	21.2	3.3	1.6	18.1	23.5	28.4	42.0	25.9	26.4
CSP services	30.5	21.5	35.2	37.8	15.5	17.8	82.9	91.1	53.6	73.6	94.1	94.0	60.5	56.3	36.8	32.2	49.9	52.7
Private households	..	0.5	..	..	0.4	2.6	..	..	..	..	..	..	..	1.4	..	..	0.0	0.6
Other/Unspecified	0.3	..	..	..	..	..	..	..	3.0	..	..	..	0.6	..	..	..	0.2	..
	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Total ('000s)	472	404	108	122	166	180	120	169	36	27	268	350	150	170	86	68	1407	1491

Source: Own calculations, QLFS Q2 (Stats SA, 2018, 2021)

Notes: A number of graduates are graduates in smaller fields that do not form part of the other seven larger categories. These are included in the 'All other' category. Combinations with zero observations in the data are indicated by ".."..

PART 6

The share of employment in the CSP services industry increased for science, health, arts and education study fields between Q2 2018 and Q2 2021. CSP services employed the largest share of health graduates, accounting for 91.1 percent of employed health graduates in Q2 2021 (up from 82.9 percent in Q2 2018).

As in the case of health graduates, almost all (94.0 percent) education graduates were employed in CSP services in 2021. Only two sectors – W&R trade (2.9 percent of HE graduates), and financial and business services (1.6 percent) – employed more than one percent of education graduates. There may be some mismatch here, since a small number of individuals with education degrees are being employed in industries other than CSP services. However, given the very small numbers, this may simply reflect minor engagement in educational activities (such as worker training) in other sectors. Nevertheless, these numbers appear to be small and declining, which may be an indication that most individuals with an education degree are able to find employment in the correct industry.

Almost two-thirds (56.3 percent) of other humanities graduates were employed in CSP services in 2021, while 23.5 percent were employed in financial and business services. The share of other humanities graduates employed in financial and business services has increased from 18.1 percent in 2018. There was also a considerable increase in the share of those employed in manufacturing (7.8 percent, up from 3.4 percent in 2018). The increases are largely offset by decreasing shares of these graduates employed in W&R trade (3.6 percent, down from 8.5 percent in 2018), transport, storage and communication (1.7 percent, down from 3.8 percent in 2018), and CSP services (60.5 percent in 2018). Whether there is any mismatch here is unclear, since the other humanities group may include a variety of skills that are applicable to a number of different industries.

Almost three quarters (73.6 percent) of arts graduates were employed in CSP services in 2021, while 21.2 percent were employed in financial and business services, and 5.2 percent were employed in manufacturing. There was a substantial increase in the share of arts graduates employed in CSP services, which employed 53.6 percent of arts graduates in 2018. There was also an increase in the shares of arts graduates in financial and business services (19.3 percent in 2018) and a decline in manufacturing (10.2 percent in 2018). Again, the extent of mismatch in these industries cannot be ascertained. Arts graduates may possess skills that are needed within these businesses, regardless of a product/service being more technical, like in manufacturing.

In 2018 and 2021, almost equal proportions of science graduates were employed in CSP services (37.8 percent) and financial and business services (38.1 percent). The proportion in CSP services increased from 35.2 percent in 2018, and the proportion of graduates in financial and business services increased from 35.6 percent. The remaining science graduates were mainly employed in agriculture (2.9 percent), manufacturing (6.0 percent), construction (3.5 percent), W&R trade (4.7 percent), and transport, storage, and communication (7.0 percent). The extent of mismatch cannot be ascertained, as all of these industries could require the skills of science graduates.

There were three fields in which the CSP services industry was not the largest employer in 2021. Financial and business services employed the largest proportion of business (46.1 percent), engineering (43.4 percent) and all other (42.0 percent) graduates. CSP services accounted for 21.5 percent, 17.8 percent and 32.2 percent of the employment of graduates from these fields, respectively.

The remaining business graduates were employed mainly in W&R trade (8.9 percent), transport, storage, communication (8.4 percent) and manufacturing (5.9 percent). A smaller number of business graduates were also employed in construction (3.9 percent). Since all industries would require employees with the skills possessed by business graduates, the extent of mismatch among these graduates cannot be easily ascertained based on these shares.

The remaining engineering graduates were employed in manufacturing (10.1 percent), construction (8.6 percent), and transport, storage and communication (7.3 percent), while smaller proportions were involved in W&R trade, mining, utilities and agriculture. Apart from business graduates, engineering graduates appear to be employed across the broadest range of industries. This may suggest a skills mismatch, since individuals with engineering qualifications are not being employed in industries that are explicitly engineering-related.

Table 6.6 shows the distribution of individuals employed with TVET qualifications across industry and field of study. While the number of employed HE graduates increased slightly, the number of employed TVET graduates declined from 2 million in 2018 to 1.9 million in 2021. As was the case for HE graduates, the majority of employed TVET graduates were employed in either CSP services (40.0 percent) or financial and business services (19.2 percent) in 2021. However, these industries accounted for only 59.2 percent of employed TVET graduates (down marginally from 60.0 percent in 2018), compared to 79.1 percent of HE graduates.

As in the case of HE graduates, TVET graduates in the fields of health or education in particular are expected to be predominantly employed in CSP services. In 2021, 90.4 percent of TVET health graduates and 85.2 percent of TVET education graduates were employed in CSP services. However, 3.2 percent of health graduates were employed in W&R trade and 2.2 percent in agriculture, which is indicative of a skills mismatch.

A fair number of TVET education graduates were employed in non-education industries such as W&R trade (4.7 percent), financial and business services (4.5 percent), and transport, storage and communication (2.5 percent). TVET health graduates appear to be more concentrated within the correct industry (CSP services) compared to education graduates.

There has been a considerable increase in the number of employed individuals with arts qualifications in CSP services, from 20.0 percent in Q2 2018 to 28.7 percent in Q2 2021. There has also been a substantial increase in the share of arts graduates in manufacturing, from 6.4 percent in 2018 to 20.2 percent in 2021. Smaller increases in the shares employed in transport, storage and communication (3.7 percent in 2018 to 7.3 percent in 2021) and construction (5.0 percent to 5.6 percent) were also observed. This does appear to indicate some mismatch, as such high shares of arts graduates would not usually be expected to be employed in industries such as manufacturing or transport, storage and communication. However, as in the case of HE arts graduates, some TVET arts graduates' skills may be required by businesses in a wide range of industries. These shifts in the employment of TVET arts graduates were accompanied by declines in W&R trade, financial and business services, and agriculture. The reduction of these shares may indicate that some arts graduates are moving away from occupations that are not suited to their skills.

Just over half (57.6 percent) of employed TVET graduates with other humanities qualifications were employed in CSP services in 2021 (up from 53.0 percent in 2018). Large shares were also employed in financial and business services (13.7 percent), W&R trade (10.9 percent), transport, storage and communication (7.8 percent) and manufacturing (6.7 percent). It is uncertain as to whether there is any mismatch of skills here, since humanities graduates possess skills that could be applied to a range of industries.

Business graduates were largely employed in either CSP services (28.3 percent), financial and business services (26.2 percent) or W&R trade (22.1 percent). There were also considerable shares of these graduates in manufacturing (10.4 percent), and transport, storage, and communication (6.8 percent). As business graduates possess skills that are required for businesses in general, this is not necessarily an indication of any mismatch.

TABLE 6.6: Distribution of those employed with TVET qualifications across field of study and main industry, Q2 2018 and Q2 2021

FIELD OF STUDY	BUSINESS		SCIENCE		ENGINEERING		HEALTH		ARTS		EDUCATION		OTHER HUMANITIES		ALL OTHER		TOTAL	
	Q2 2018 (%)	Q2 2021 (%)	Q2 2018 (%)	Q2 2021 (%)	Q2 2018 (%)	Q2 2021 (%)	Q2 2018 (%)	Q2 2021 (%)	Q2 2018 (%)	Q2 2021 (%)	Q2 2018 (%)	Q2 2021 (%)	Q2 2018 (%)	Q2 2021 (%)	Q2 2018 (%)	Q2 2021 (%)	Q2 2018 (%)	Q2 2021 (%)
Agriculture	0.9	0.6	12.2	12.0	0.5	0.2	0.4	2.2	3.5	..	0.5	..	1.5	..	0.5	0.4	1.4	1.1
Mining	2.4	0.9	2.6	..	9.7	6.2	0.7	..	..	..	..	..	2.4	..	2.1	1.2	3.3	1.8
Manufacturing	9.4	10.4	10.3	2.3	16.8	13.3	2.1	1.9	6.4	20.2	2.2	0.6	8.3	6.7	8.1	10.1	8.9	8.4
Utilities	0.7	1.3	1.2	..	8.7	10.4	..	..	..	..	0.4	0.5	..	2.1	0.8	0.2	2.2	3.0
Construction	3.5	2.7	2.2	1.4	14.0	12.0	0.4	0.8	5.0	5.6	1.0	0.8	4.4	1.2	7.6	2.1	5.5	4.2
W&R trade	16.3	22.1	16.5	12.6	9.0	15.9	5.0	3.2	12.6	6.1	5.0	4.7	8.3	10.9	16.1	18.8	11.5	14.9
Transport, storage, and communication	7.6	6.8	10.0	5.3	9.2	11.3	0.8	0.4	3.7	7.3	1.1	2.5	4.6	7.8	9.5	4.9	6.5	6.4
Financial and business services	25.6	26.2	18.4	38.7	18.3	18.5	1.9	1.1	48.8	32.1	3.8	4.5	15.3	13.7	21.0	26.2	17.3	19.2
CSP services	32.6	28.3	26.6	26.5	13.0	12.1	88.8	90.4	20.0	28.7	85.8	85.2	53.0	57.6	33.8	32.4	42.7	40.0
Private households	0.8	..	..	1.1	0.5	..	..	..	..	..	0.3	1.2	1.2	..	0.5	3.6	0.5	0.7
Other/Unspecified	0.1	0.7	..	..	0.3	0.3	..	..	..	..	..	..	1.2	..	..	..	0.2	0.3
	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Total ('000s)	**588**	**554**	**115**	**100**	**407**	**433**	**209**	**192**	**25**	**19**	**280**	**223**	**115**	**117**	**271**	**229**	**2011**	**1868**

Source: Own calculations, QLFS Q2 (Stats SA, 2018, 2021)

Notes: A number of graduates are graduates in smaller fields that do not form part of the other seven larger categories. These are included in the 'All other' category. Combinations with zero observations in the data are indicated by "..".

The largest employer of science graduates was financial and business services (38.7 percent) in Q2 2021. Other industries with large shares of science graduates were CSP services (26.5 percent), W&R trade (12.6 percent), agriculture (12.0 percent) and transport, storage and communication (5.3 percent). This does not indicate any major mismatch, as science graduates are likely to possess skills that can be applied across these industries. However, the large shares of these individuals, especially in non-technical service industries such as W&R trade, is unexpectedly high.

The largest employer of TVET engineering graduates in 2021 was financial and business services (18.5 percent), followed by W&R trade (15.9 percent). The large shares in these industries may be indicative of a skills mismatch. Other employers of engineering graduates were manufacturing (13.3 percent), CSP services (12.1 percent), construction (12.0 percent), transport, storage and communication (11.3 percent) and utilities (10.4 percent).

Table 6.7 shows the distribution of individuals employed with HE qualifications across each occupation and for each field of study. The majority (86.8 percent) of all employed HE graduates were employed as managers, professionals or technicians in 2021 (86.7 percent in 2018). It is expected that degree holders would be employed in these higher-skilled professions. It does not seem that there is significant mismatch among these roles. Outside of these high-skill occupations, HE graduates were most often employed as clerks (8.0 percent). That almost 15.0 percent of HE graduates are employed outside of high-skill occupations may suggest evidence of occupational mismatch and over-qualification.

The education, health and arts study fields had the highest share of graduates involved in high-skill occupations. In 2021, these occupations accounted for 95.5 percent (94.0 percent in 2018) of graduates in the health field, 95.5 percent (91.1 percent in 2018) of HE graduates in the arts field, and 94.9 percent (98.0 percent in 2018) of HE graduates in the education field. The shift of arts graduates into high-skill occupations over the period was associated with a decline in their share of services and sales workers (2.8 percent in 2018) and clerks (from 6.1 percent in 2018 to 4.5 percent in 2021), which is suggestive of a reduction in skills mismatch.

For those with business qualifications, a substantial majority are employed in high-skill occupations: these occupations accounted for 85.3 percent of HE business graduates in 2021, up from 82.2 percent in 2018. This is indicative of a reduction in skills mismatch among these individuals. Business qualifications account for more than one quarter (27.1 percent) of employed HE graduates. Roughly one in ten (9.9 percent) of HE business graduates were employed as clerks, while 2.2 percent were employed in services and sales occupations. No other occupation accounted for more than two percent of employed HE business graduates.

For engineering, high-skill occupations accounted for 86.6 percent of HE graduates in 2021 (up slightly from 86.1 percent in 2018). However, this period saw a decline in the share of the individuals working in crafts and elementary occupations, suggesting that engineering graduates may be shifting into more suitable lines of work. Nevertheless, 7.0 percent of engineering HE graduates were employed in clerical occupations in 2021, with services and sales accounting for 2.1 percent.

TABLE 6.7: Distribution of those employed with HE qualifications across field of study and main occupation, Q2 2018 and Q2 2021

FIELD OF STUDY	BUSINESS		SCIENCE		ENGINEERING		HEALTH		ARTS		EDUCATION		OTHER HUMANITIES		ALL OTHER		TOTAL	
	Q2 2018 (%)	Q2 2021 (%)	Q2 2018 (%)	Q2 2021 (%)	Q2 2018 (%)	Q2 2021 (%)	Q2 2018 (%)	Q2 2021 (%)	Q2 2018 (%)	Q2 2021 (%)	Q2 2018 (%)	Q2 2021 (%)	Q2 2018 (%)	Q2 2021 (%)	Q2 2018 (%)	Q2 2021 (%)	Q2 2018 (%)	Q2 2021 (%)
Managers	35.4	41.6	26.5	23.2	35.9	29.5	9.9	12.1	31.8	41.1	11.4	8.9	23.9	24.2	34.2	23.0	26.6	24.8
Professionals	36.1	32.1	49.8	49.6	40.0	45.3	63.5	65.5	49.0	44.7	70.1	46.7	39.1	36.0	31.5	38.6	46.8	43.3
Technicians	10.7	11.6	12.3	11.1	10.2	11.8	20.6	17.9	10.3	9.7	16.5	39.3	15.4	10.4	11.9	13.3	13.3	18.7
High-skill	**82.2**	**85.3**	**88.6**	**83.9**	**86.1**	**86.6**	**94.0**	**95.5**	**91.1**	**95.5**	**98.0**	**94.9**	**78.4**	**70.6**	**77.6**	**74.9**	**86.7**	**86.8**
Clerical	11.9	9.9	2.5	8.6	1.5	7.0	2.2	3.3	6.1	4.5	0.3	3.7	16.5	16.3	12.0	13.8	7.3	8.0
Service	3.7	2.2	3.4	4.2	1.5	2.1	1.8	1.2	2.8	..	1.0	1.0	4.0	8.1	6.5	6.1	2.9	2.8
Skilled Agric	0.3	0.2	2.7	..	..	0.3	..	..	..	..	..	..	..	0.5	1.5	..	0.4	0.2
Crafts	0.8	..	..	2.3	8.4	0.5	1.9	..	..	..	..	..	..	1.7	0.6	3.0	1.5	0.6
Operators	0.7	0.3	2.1	1.2	..	1.0	..	..	..	..	0.5	..	0.5	0.6	0.9	2.0	0.6	0.4
Skilled	**17.5**	**12.5**	**10.7**	**16.1**	**11.4**	**10.9**	**5.9**	**4.5**	**8.9**	**4.5**	**1.8**	**4.6**	**21.0**	**27.2**	**21.5**	**25.0**	**12.7**	**12.0**
Elementary	0.4	1.8	0.7	..	2.1	1.5	..	..	..	..	0.2	0.5	0.5	1.3	1.0	..	0.6	0.9
Domestic Workers	..	..	..	..	0.4	..	..	..	..	..	..	..	..	..	..	..	0.0	..
Low-skill	**0.4**	**1.8**	**0.7**	**..**	**2.5**	**1.5**	**..**	**..**	**..**	**..**	**0.2**	**0.5**	**0.5**	**1.3**	**1.0**	**..**	**0.6**	**0.9**
Other	..	0.4	..	..	..	1.0	..	..	..	..	..	..	..	0.9	..	..	..	0.3
	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Total ('000s)	**472**	**404**	**108**	**122**	**166**	**180**	**120**	**169**	**36**	**27**	**268**	**350**	**150**	**170**	**86**	**68**	**1407**	**1491**

Source: Own calculations, QLFS Q2 (Stats SA, 2018, 2021)

Notes: A number of graduates are graduates in smaller fields that do not form part of the other seven larger categories. These are included in the 'All other' category. Combinations with zero observations in the data are indicated by "..".

Other humanities graduates were least likely to be employed in high-skill occupations. HE graduates in other humanities employed in high-skill occupations accounted for 70.6 percent of all employed other humanities graduates (78.4 percent in 2018). The remaining share of other humanities graduates were primarily employed as clerks (16.3 percent) and in services and sales (8.1 percent). Overall, these shares are suggestive of a mismatch, with other humanities graduates failing to gain employment in high-skill occupations, compared to other study fields.

The 2018–2021 period saw a decrease in HE science graduates employed in high-skill occupations (83.9 percent in 2021, down from 88.6 percent in 2018). By contrast, there was an increase in the share of science graduates employed in clerical and crafts occupations. 8.6 percent of HE science graduates were employed in clerical occupations in 2021 (up from 2.5 percent in 2018), while 4.2 percent were employed in services and sales, and 2.3 percent in crafts occupations. This suggests that these graduates are increasingly shifting into employment in occupations inappropriate for their skill levels.

Amongst employed HE graduates in all other fields, 74.9 percent were employed as managers (23.0 percent), professionals (38.6 percent) or technicians (13.3 percent) in 2021. A further 13.8 percent were employed in clerical occupations, while 6.1 percent were employed in services and sales occupations; in the case of the share employed in services and sales, this proportion is almost unchanged since 2018.

Table 6.8 shows the distribution of individuals employed with TVET qualifications, as well as the share of the employed in each occupation for each field of study. Almost half (54.3 percent) of all employed individuals with TVET qualifications were employed as managers, professionals or technicians in 2021. This share decreased from 56.4 percent in 2018. TVET graduates were most frequently employed as technicians (26.1 percent), managers (16.8 percent), clerks (16.1 percent), and services and sales employees (12.6 percent). Collectively, these occupational categories accounted for 71.6 percent of employed individuals with TVET qualifications in 2021. This suggests that most TVET graduates are employed in appropriate occupations for their level of qualification. However, the 5.7 percent in low-skill occupations are not appropriately employed for their level of qualification.

TABLE 6.8: Distribution of those employed with TVET qualifications across field of study and main occupation, Q2 2018 and Q2 2021

FIELD OF STUDY	BUSINESS		SCIENCE		ENGINEERING		HEALTH		ARTS		EDUCATION		OTHER HUMANITIES		ALL OTHER		TOTAL	
	Q2 2018 (%)	Q2 2021 (%)	Q2 2018 (%)	Q2 2021 (%)	Q2 2018 (%)	Q2 2021 (%)	Q2 2018 (%)	Q2 2021 (%)	Q2 2018 (%)	Q2 2021 (%)	Q2 2018 (%)	Q2 2021 (%)	Q2 2018 (%)	Q2 2021 (%)	Q2 2018 (%)	Q2 2021 (%)	Q2 2018 (%)	Q2 2021 (%)
Managers	21.9	22.3	27.8	23.0	20.2	23.0	9.3	5.0	..	..	8.0	10.7	10.2	4.8	14.3	12.3	16.7	16.8
Professionals	5.7	9.4	5.8	25.3	7.2	12.0	4.7	6.7	17.7	22.3	6.3	17.9	9.2	14.8	4.1	3.7	6.1	11.4
Technicians	16.4	12.2	33.3	15.2	25.8	15.5	66.6	72.8	45.4	48.1	72.7	58.8	18.0	10.4	22.3	19.7	33.6	26.1
High-skill	44.0	43.9	66.9	63.5	53.2	50.5	80.6	84.4	63.1	70.4	87.0	87.4	37.4	30.0	40.7	35.7	56.4	54.3
Clerical	32.4	32.3	12.4	10.5	6.1	5.5	2.8	3.4	16.9	17.9	4.0	3.8	33.1	43.5	13.9	7.9	16.3	16.1
Service	13.7	13.1	10.0	11.2	5.5	4.2	13.8	10.0	16.5	6.1	6.2	5.0	14.8	14.8	25.1	37.2	12.4	12.6
Skilled Agric	0.3	0.1	2.7	4.0	0.1	..	..	..	..	..	0.3	..	0.7	..	0.2	0.4	0.4	0.3
Crafts	1.5	2.3	1.5	1.6	23.6	21.3	1.2	0.4	..	5.6	1.0	0.2	2.9	1.6	10.7	4.8	7.2	6.5
Operators	3.7	2.8	2.8	0.7	6.4	9.0	0.9	..	..	..	0.4	1.3	2.6	5.5	5.1	4.5	3.5	4.0
Skilled	51.6	50.6	29.3	28.0	41.8	39.9	18.7	13.8	33.4	29.6	11.9	10.3	54.1	65.3	55.0	54.8	39.8	39.5
Elementary	3.7	4.7	3.7	7.3	4.6	8.8	0.8	1.8	3.5	..	0.8	1.7	7.3	3.4	4.2	6.5	3.5	5.2
Domestic Workers	0.6	..	..	1.1	0.5	..	..	..	..	..	0.3	0.6	1.2	..	0.2	3.0	0.4	0.5
Low-skill	4.3	4.7	3.7	8.4	5.1	8.8	0.8	1.8	3.5	..	1.1	2.3	8.5	3.4	4.3	9.5	3.9	5.7
Other	..	0.8	..	..	..	0.8	..	..	..	..	..	..	..	1.3	..	..	..	0.5
	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Total ('000s)	588	554	115	100	407	433	209	192	25	19	280	223	115	117	271	229	2011	1868

Source: Own calculations, QLFS Q2 (Stats SA, 2018, 2021)

Notes: A number of graduates are graduates in smaller fields that do not form part of the other seven larger categories. These are included in the 'All other' category. Combinations with zero observations in the data are indicated by "..".

Signals of possible mismatch can be seen in different fields. In 2021, considerable shares of individuals with business qualifications were employed in services and sales positions (13.1 percent), operations (2.8 percent) and low-skill occupations (4.7 percent). In total, almost one quarter (23.5 percent) of employed TVET business graduates were employed in occupations that may not explicitly be business-related. However, we cannot be certain of any mismatch, as business graduates have skills that may be required by many businesses, especially in services and sales occupations.

For science graduates, the share employed in services and sales (11.2 percent, virtually unchanged from 10.0 percent in 2018) and elementary occupations (8.4 percent, up from 3.7 percent in 2018) in 2021, is suggestive of graduates being employed in occupations unrelated to their field of study. Similarly, for engineering graduates, the share in elementary occupations (8.8 percent) and services and sales (4.2 percent) in 2021 is indicative of a mismatch.

For TVET health graduates, the share employed in services and sales (10.0 percent, down from 13.8 percent in 2018) and elementary work (1.8 percent, up from 0.8 percent in 2018) in 2021 indicates a mismatch. Similarly, for education, the share employed in services and sales, elementary, and operators were 5.0 percent, 1.7 percent and 1.3 percent, respectively. These are not occupations typically related to health or education.

For arts graduates, service workers accounted for 6.1 percent of the employed in 2021, down from 16.5 percent in 2018. There were increases in the share of clerks among this cohort, from 16.9 percent in 2018 to 17.9 percent in 2021, and the share of graduates employed in crafts was 5.6 percent. Although arts graduates only made up a small number (around 19 000) of all employed individuals with TVET qualifications, these shares do indicate a mismatch problem.

For employed TVET graduates with other humanities qualifications, possible mismatch is again suggested by the considerable share of graduates employed in services and sales (14.8 percent), as operators (5.5 percent), in crafts (1.6 percent) and elementary work (3.4 percent) in 2021. It is also possible that these graduates are overrepresented in clerical positions (43.5 percent, up from 33.1 percent in 2018).

For employed individuals with TVET qualifications in all other fields of study, 19.7 percent were technicians in 2021 (down from 22.3 percent in 2018), 12.3 percent were managers (down from 14.3 percent), and 3.7 percent were professionals (down from 4.1 percent in 2018). A large share of these graduates were employed in clerical positions (7.9 percent in 2021, down from 13.9 percent in 2018). It is reasonable that individuals with TVET qualifications would be employed in any of these four occupations. However, the substantial share of these individuals employed in services and sales (37.2 percent in 2021, up from 25.1 percent in 2018) is concerning. This, together with the smaller share of these individuals working in crafts, as operators, or in low-skill occupations, indicates that individuals with TVET qualifications in all other fields of study may be working in occupations below their skill level.

6.5. Conclusion and implications for skills planning

This chapter considered skills imbalances in South Africa. According to a methodology developed by the OECD, South Africa is currently experiencing a large degree of skills mismatch. Managers and professionals – two occupational groups which tend to attract high-skill workers – experienced the greatest shortages.

The OECD also mapped skills competencies to occupational shortages and industries. The data suggests that 61.9 percent of industries are experiencing occupational shortages, with education, finance, banking, public services, and insurance experiencing the most intense shortages. In contrast, both construction and culture, as well as arts, tourism, hospitality and sports are experiencing occupational surpluses.

In terms of individual skill competencies, reading comprehension, writing, speaking and active listening were the competencies that were most lacking. Of concern is the fact that these are all basic skills. This lack of basic skills suggests that it will be difficult for the workforce to acquire the more advanced skills that are required by the modern labour market.

In comparison to two other countries, South Africa has the lowest field-of-study mismatch. Nevertheless, almost one third of workers are working in a field different to the one for which they qualified. Under-qualification and over-qualification rates of 28.1 and 24.3 percent, respectively, further suggest a high degree of skills mismatch.

In 2021, the majority (79.1 percent) of employed HE graduates were employed in CSP services and financial and business services, which was also the case for employed TVET graduates (59.2 percent). The extent of skills mismatch could not be ascertained for most study fields, since the analysis was industry-level. The study field where potential mismatch appears most probable is engineering, since more engineering graduates are being employed in industries that are not explicitly engineering-related, while other study fields may have skill sets that are more widely applicable across industries.

The share of HE graduates employed in high-skill occupations has not changed over the three-year period and the majority are employed in high-skill occupations in 2021. The share of HE graduates being employed in skilled occupations was also almost unchanged over the period. However, there is a small percentage (almost 1.0 percent) employed in low-skill occupations, which suggests some mismatch.

The largest share of TVET graduates are employed in high-skill occupations, however, this share has decreased between 2018 and 2021. For health and arts TVET graduates, there was a slight increase in the share of these graduates employed in high-skill occupations. However, of concern should be the increasing shares of TVET graduates employed in low-skill occupations, suggesting an increasing skills mismatch. All study fields, except for arts and other humanities experienced increased shares of graduates employed in low-skill occupations. Science and engineering experienced the largest increases in shares of graduates employed in low-skill occupations.

The evidence presented in this chapter suggests that the South African labour market is characterised by high levels of skills mismatch. In order to reduce this level of mismatch, businesses should play a greater role in qualification curricula and career pathways so that students acquire those skills that are demanded by the labour market, which will help to set them on a path for a long and productive career.

PART 7

Reference list and Appendix

Reference list

Allen, C., Asmal, Z., Bhorat, H., Hill, R., Monnakgotla, .J., Oosthuizen, M. and Rooney, C. (2021). *Employment creation potential, labor skills requirements and skill gaps for young people: A South African case study*. Brookings African Growth Initiative Working Paper No. 26. Brookings: Washington, D.C.

Becker, G. (1957). *The Economics of Discrimination*. Chicago: The University of Chicago Press, 2nd edition.

Bernabe, S. (2002). Informal employment in countries in transition: A conceptual framework. CASE paper 56, Centre for Analysis of Social Exclusion, London.

Arntz, M., Gregory, T. and Zierahn, U. (2016). *The Risk of Automation for Jobs in OECD Countries: A Comparative Analysis*. OECD Social, Employment and Migration Paper No. 189. OECD Publishing: Paris.

Autor, D.H., Levy, F. and Murnane, R.J. (2003). The Skill Content of Recent Technological Change: An Empirical Investigation. *Quarterly Journal of Economics*, 118(4): 1279–1333.

Bhorat, H., Cassim, A., and Hirsch, A. (2014). *Policy co-ordination and growth traps in a middle-income country setting: The case of South Africa*, WIDER Working Paper, No. 2014/155. UNU-WIDER, Helsinki, Available at: http://dx.doi.org/10.35188/UNU-WIDER/2014/876-6

Bhorat, H., Goga, S. and Stanwix, B. (2014). *Skills-Biased Labour Demand and the Pursuit of Inclusive Growth in South Africa*. UNU-WIDER Working Paper No. 130/2014.

Bhorat, H., Lilenstein, K., Oosthuizen, M. and Thornton, A. (2020a). *Wage polarization in a high-inequality emerging economy: The case of South Africa*. UNU-WIDER Working Paper No. 2020–55.

Bhorat, H. and Rooney, C. (2017). *State of Manufacturing in South Africa*. Development Policy Research Unit Working Paper 2017/02.

Bhorat, H., Köhler, T., Oosthuizen, M., Stanwix, B., Steenkamp, F. and Thornton, A. (2020b). The economics of COVID-19 in South Africa: Early impressions. Development Policy Research Unit, UCT.

Bhorat, H. and Khan, S. (2018). *Structural change and patterns of inequality in the South African labour market*. Development Policy Research Unit Working Paper 201801. DPRU, University of Cape Town.

Bhorat, H., Oosthuizen, M. and Stanwix, B. (2021). *Social assistance amidst the COVID-19 epidemic in South Africa: A policy assessment*. South African Journal of Economics Vol. 89:1.

Botha, C.J. and Rasool, F. (2014) Developing a conceptual framework of skills immigration in South Africa. *Mediterranean Journal of Social Sciences*, *5*(20), pp.62–62.

Caunedo, J., Keller, E. and Shin, Y. (2021). *Technology and the Task Content of Jobs across the Development Spectrum*. NBER Working Paper No. 28681. NBER: Cambridge, MA.

Daniels, R.C., Ingle, K. and Brophy, T. (2021) *Labour market dynamics in the era of Covid-19: What we've learnt from NIDS-CRAM & the Quarterly Labour Force Surveys (QLFS)*. Report for the NIDS-CRAM. Available at: https://cramsurvey.org/wp-content/uploads/2021/07/4.-Daniels-R-C.-Ingle-K.-_-Brophy-T.-2021-Labour-market-uncertainty-_-dynamics-in-the-era-of-Covid-19.pdf

De la Rica, S. and Gortazar, L. (2016). *Differences in Job De-Routinization in OECD Countries: Evidence from PIAAC*. IZA Working Paper No. 9736. IZA: Bonn, Germany.

Department of Basic Education (DBE) (2020a). *National Senior Certificate 2020: Examination Report*. Pretoria. Available at: https://www.education.gov.za/Portals/0/Documents/Reports/2021%20 NSC%20Reports/2020NSCREPORT.pdf?ver=2021-07-19-142304-897

Department of Basic Education (DBE) (2020b). *Strategic Plan 2020-2024.* Pretoria. Available at: https://www.education.gov.za/LinkClick.aspx?fileticket=EM1AhnVfWG0%3d&tabid=92&portalid=0&mid=4358

Department of Basic Education (DBE) (2021). Annual report 2020/2021 Financial Year. Pretoria. Available at: https://www.gov.za/documents/department-basic-education-annual-report-20202021-28-sep-2021-0000

Department of Basic Education (DBE) (2022). 2021 National Senior Certificate: Examination Report. Pretoria. Available at: https://www.education.gov.za/Portals/0/Documents/Reports/2021NSCReports/DBE%20Matric%20Exam%20Results%20Report%202021.pdf?ver=2022-01-21-170016-397

Department of Higher Education and Training (DHET) (2013a). White Paper for PSET: Building an expanded effective and integrated post school system. DHET, Pretoria. Available at: https://www.dhet.gov.za/SiteAssets/Latest%20News/White%20paper%20for%20post-school%20education%20and%20training.pdf

Department of Higher Education and Training (DHET) (2013b). White Paper on Post-School Education and Training: Building an Expanded, Effective and Integrated Post-School Education System. Pretoria.

Department of Higher Education and Training (DHET) (2015). Sector Skills Plan Framework and Requirements: Sector Skills Plans and Annual Updates. Pretoria.

Department of Higher Education and Training (DHET) (2020). Statistics on Post-School Education and Training in South Africa: 2018. Pretoria. Available at: https://www.dhet.gov.za/SiteAssets/Statistics%20on%20Post-School%20Education%20and%20Training%20in%20South%20Africa%2C%202018.pdf

Department of Higher Education and Training (DHET) (2021a). *Statistics on Post-School Education and Training in South Africa: 2019*. Pretoria. Available at: https://www.dhet.gov.za/DHET%20Statistics%20Publication/Statistics%20on%20Post-School%20Education%20and%20Training%20in%20South%20Africa%202019.pdf

Department of Higher Education and Training (DHET) (2021b). *Post-School Education and Training Monitor*. Pretoria. Available at: https://www.dhet.gov.za/Planning%20Monitoring%20and%20Evaluation%20Coordination/Post-School%20Education%20and%20Training%20Monitor%20-%20Macro-Indicator%20Trends%20-%20March%202021.pdf

Department of Higher Education and Training (DHET) (2022). Statistics on Post-School Education and Training in South Africa: 2020. Pretoria. (*Forthcoming*).

DNA Economics. (2020). *The 2020 List of Occupations in High Demand: A Technical Report*. Produced for the Department of Higher Education and Training (DHET) as part of its Labour Market Intelligence (LMI) research programme.

European Centre for the Development of Vocational Training (Cedefop) (2009). *Future skill supply in Europe: Medium-term forecast up to 2020: synthesis report*. Office for the Official Publications of the European Communities: Luxembourg.

Etim, E. and Daramola, O. (2020). The informal sector and economic growth of South Africa and Nigeria: A comparative systematic review. *Journal of Open Innovation: Technology, Market, and Complexity*, *6*(4), 134.

Fields, G.S. (1975). Rural-urban migration, urban unemployment and underemployment, and job search activity in LDCs. *Journal of Development Economics* 2, 165–87.

Frey, C. and Osbourne, M. (2013). *The Future of Employment: How Susceptible are Jobs to Computerisation?* Available at: http://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf

Fourie, F. (2018). *Enabling the forgotten sector: Informal-sector realities, policy approaches and formalisation in South Africa*. The South African informal sector: Creating jobs, reducing poverty, 439–476.

Gasskov, V. (2018). *Analysis of Market Demand for Skilled Workforce and its Application to Vet Delivery Planning*. Available at: https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---ifp_skills/documents/genericdocument/wcms_628964.pdf

Goos, M. and Manning, A. (2007). Lousy and Lovely Jobs: The Rising of Polarization of Work in Britain. *The Review of Economics and Statistics*, 89(1): 118–133.

Hoftijzer, M. and Gortazar, L. (2018). *Skills and Europe's Labor Market: How Technological Change and Other Drivers of Skill Demand and Supply are Shaping Europe's Labor Market*. World Bank: Washington, D.C.

Hundenborn, J., Leibbrandt, M., and Woolard, I. (2016). Drivers of inequality in South Africa. Southern Africa Labour and Development Research Unit, Working Paper 194. SALDRU, University of Cape Town, Cape Town. Available at: http://opensaldru.uct.ac.za/bitstream/%20handle/11090/853/2016_194_Saldruwp.pdf?sequence=3

International Labour Office (ILO) (2010). *A skilled workforce for strong, sustainable and balanced growth: A G20 training strategy*. Geneva: International Labour Office.

International Labour Office (ILO) (2015). *Anticipating and Matching Skills and Jobs*. Geneva: International Labour Office.

International Monetary Fund (IMF) (2008). *Globalization: A Brief Overview*. Available at: https://www.imf.org/external/np/exr/ib/2008/053008.htm

International Monetary Fund (IMF) (2020). *World Economic Outlook, April 2020: Chapter 1*. International Monetary Fund: Washington DC .

Köhler, T. and Hill, R. (2021). *The distribution and dynamics of South Africa's TERS policy: Results from NIDSCRAM Waves 1 to 5*. Report for the NIDS-CRAM. Available at: https://cramsurvey.org/wp-content/uploads/2021/07/7.-Kohler-T-_-Hill-R.-2021.-The-distribution-and-dynamics-of-South-Africa%E2%80%99s-TERS-policy-Results-from-NIDS-CRAM-WAves-1-to-5.pdf

Leibbrandt, M., Woolard, I., Finn, A. and Argent, J. (2010). *Trends in South African Income Distribution and Poverty since the Fall of Apartheid*. OECD Social, Employment and Migration Working Papers No. 101. OECD Publishing: Paris.

Ligthelm, A. A. (2006). Size estimate of the informal sector in South Africa. *Southern African Business Review*, *10*(2), 32–52.

Malmberg, B., Tamas, K,; Bloom, D., Munz, R. and Cannning, D. (2006). *Global population aging, migration and European external policies*. Institutet för Framtidsstudier, Stockholm.

Mazumdar, D. (1976). The urban informal sector. *World Development* 4(8), 655–79.

Mbeki. T. (2003). *The second economy: What is it and what is needed to meet the growth and development challenges it presents*. Address by President Thabo Mbeki to the National Council of Provinces, Cape Town, 11 November 2003.

McCausland, W.D., Summerfield, F. and Theodossiou, I. (2020). The Effect of Industry-Level Aggregate Demand on Earnings: Evidence from the US. *Journal of Labor Research*, 41(1): 102–127.

Megersa, K. (2020*). The Informal Sector and COVID-19. K4D Helpdesk Report 890*, Brighton, UK: Institute of Development Studies.

Mincer, J. (1974). *Schooling, Experience and Earnings*. New York: Columbia University Press.

Morema, K., Rakgalakane, J., Alton, T. and Mjandana, P. (2019). *A novel supply-side approach to estimating the impact of load shedding on GDP growth in South Africa*. Occasional Bulletin of Economic Notes, SARB, Pretoria. Available: https://www.resbank.co.za/en/home/publications/publication-detail-pages/occasional-bulletin-of-economic-notes/2019/9477

National Planning Commission (NPC) (2011). National Development Plan. Government Printer, Pretoria.

National Planning Commission (NPC) (2012). *Chapter 3: Economy and Employment*. Available at: https://www.nationalplanningcommission.org.za/assets/Documents/NDP_Chapters/NDP%202030-CH3-Economy%20and%20employment.pdf

National Treasury (2021). *Medium Term Budget Policy Statement 2021*. National Treasury, Pretoria. Available at: http://www.treasury.gov.za/documents/mtbps/2021/mtbps/FullMTBPS.pdf

Nedelkoska, L. and Quintini, G. (2018). *Automation, skills use and training*. OECD Social, Employment and Migration Paper No. 2020. OECD Publishing: Paris.

Nicola, M., Alsafi, Z., Sohrabi, C., Kerwan, A., Al-Jabir, A., Iosifidis, C. and Agha, R. (2020). The socio-economic implications of the coronavirus pandemic (COVID-19): A review. *International journal of surgery*, *78*, 18–-193.

Organisation for Economic Co-operation and Development (OECD) (2017a). *OECD Employment Outlook 2017*. OECD Publishing: Paris.

Organisation for Economic Co-operation and Development (OECD) (2017b). *Getting Skills Right: Skills for Jobs Indicators*. OECD Publishing: Paris.

Organisation for Economic Co-operation and Development (OECD) (2019). *OECD Skills Strategy Latvia: Assessment and Recommendations*. OECD Publishing: Paris.

Organisation for Economic Co-operation and Development (OECD) (2020). Skills for Jobs Database. OECD Publishing: Paris.

Reddy, V., Bhorat, H., Powell, M., Visser, M. and Arends, F. (2016). Skills supply and demand in South Africa. Available at: http://lmip.org.za/sites/default/files/documentfiles/LMIP_SkillsSupplyandDemand Sept2016_Author_0.pdf

Reddy, V. et al. (2019a). *TIMSS 2019 Highlights of South African Grade 5 results in mathematics and science*. Pretoria: Department of Basic Education. Available at: https://www.timss-sa.org/publication/timss-2019-highlights-of-south-african-grade-5-results-in-mathematics-and-science

Reddy, V. et al. (2019b). *TIMSS 2019 Highlights of South African Grade 9 results in mathematics and science*. Pretoria: Department of Basic Education. Available at: https://www.timss-sa.org/publication/timss-2019-highlights-of-south-african-grade-9-results-in-mathematics-and-science

Shepherd, D. and Mohohlwane, N. (2021). *Changes in education: A reflection on COVID-19 effects over a year*. Report for the NIDS-CRAM. Available: https://cramsurvey.org/wp-content/uploads/2021/07/11.-Shepherd-D-_-Mohohlwane-N.-2021.-Changes-in-education-A-reflection-on-COVID-19-effects-over-a-year.pdf

South African Nursing Council (SANC) (2022). *Age Analysis of persons on the Register 2021*. Available at: https://www.sanc.co.za/wp-content/uploads/2022/01/Age-stats-2021.pdf

Spaull, N. (2020). The NIDS-CRAM team. Overview and findings: NIDS-CRAM synthesis report wave1. Contract No.: 1

Spaull, N., Daniels, R.C. et al. (2021) NIDS-CRAM Wave 5 Synthesis Report. Report for the NIDS-CRAM. Available: https://cramsurvey.org/wp-content/uploads/2021/07/1.-Spaull-N.-Daniels-R.-C-et-al.-2021-NIDS-CRAM-Wave-5-Synthesis-Report.pdf

Spence, M. (1973). Job Market Signaling. *Quarterly Journal of Economics*, 87: 355–374.

Statistics South Africa (Stats SA) (2010). Labour Market Dynamics in South Africa 2010. Dataset. Pretoria: Statistics South Africa.

Statistics South Africa (Stats SA) (2015). Labour Market Dynamics in South Africa 2015. Dataset. Pretoria: Statistics South Africa.

Statistics South Africa (Stats SA) (2015). Gross Domestic Product. Statistics South Africa, Pretoria. Available at: http://www.statssa.gov.za/publications/P0441/P04413rdQuarter2014.pdf

Statistics South Africa (Stats SA) (2018). *Quarterly Labour Force Surveys (QLFS) Q2 2018*. Available at: http://www.statssa.gov.za/?page_id=1854&PPN=P0211&SCH=72944

Statistics South Africa (Stats SA) (2019a). Labour Market Dynamics in South Africa 2019. Dataset. Pretoria: Statistics South Africa.

Statistics South Africa (Stats SA) (2019b). Gender Series Volume VII: Informal Economy 2013–2019. Report no. 03-10-23. Pretoria. Available at: http://www.statssa.gov.za/publications/Report-03-10-23/Report-03-10-232019.pdf

Statistics South Africa (Stats SA) (2021a). *Quarterly Labour Force Surveys (QLFS) Q2 2021*. Available at: http://www.statssa.gov.za/?page_id=1854&PPN=P0211&SCH=72944

Statistics South Africa (Stats SA) (2021b). Mid-year population estimates. Pretoria. Available at: http://www.statssa.gov.za/publications/P0302/P03022021.pdf

Stehrer, R. and Leitner, S. (2019). *Demographic Challenges for Labour Supply and Growth*, Research Report, No. 439, The Vienna Institute for International Economic Studies (wiiw), Vienna.

Strietska-Illina, O. (2008). *Skill shortages*. Office for the Official Publications of the European Communities: Luxembourg.

Van de Berg, S., Patel, L. and Bridgman, G. (2021) *Food insecurity in South Africa – Evidence from NIDS-CRAM Wave 5*. Report for NIDS-CRAM. Available at: https://cramsurvey.org/wp-content/uploads/2021/07/13.-Van-der-Berg-S.-Patel-L-and-Bridgeman-G.-2021-Food-insecurity-in-South-Africa-%E2%80%93-Evidence-from-NIDS-CRAM-Wave-5.pdf

WIEGO. (2019). *Counting the World's Informal Workers: A Global Snapshot*. WIEGO, UK. Available at: https://www.wiego.org/sites/default/files/resources/files/WIEGO-Global-Statistics-Snapshot-Pamphlet-English-2019.pdf

Willems, E. and de Grip, A. (1993). Forecasting replacement demand by occupation and education. *International Journal of Forecasting*, 9(2): 173–185.

World Bank (2021a). World Bank databank. Washington DC.

World Bank (2021b). COVID-19 leaves a legacy of rising poverty and widening inequality. World Bank blogs. Available: https://blogs.worldbank.org/developmenttalk/covid-19-leaves-legacy-rising-poverty-and-widening-inequality

World Economic Forum (WEF) (2018). *The Global Risks Report 2018*. WEF, Geneva. Available at: https://www3.weforum.org/docs/WEF_GRR18_Report.pdf

World Economic Forum (WEF) (2020). *The 2020 Future of Jobs Report*. Available at: http://www3.weforum.org/docs/WEF_Future_of_Jobs_2020.pdf

Yu, D. (forthcoming). *Investigating the impact of international migration on skills supply and demand in South Africa*, Labour Market Initiative (LMI) Project No. 20: Migration analysis.

Appendix

Informal employment rates by country grouping, 2018

	INFORMAL EMPLOYMENT (%)
By Global	
World	61
Developing	90
Emerging	67
Developed	18
By Region	
Sub-Saharan Africa (excluding Southern Africa)	92
Sub-Saharan Africa as a whole	89
Southern Asia	88
East and South-Eastern Asia (excluding China)	77
Middle East and North Africa	68
Latin America and the Caribbean	54
Eastern Europe and Central Asia	37
South Africa (2021)	28.2

Source: WIEGO (2021), Stats SA (2021)

PART 7

TABLE A.2: Occupation employment share by firm size, Q2 2018–Q2 2021

INDUSTRY	Q2 2018 (000S)	Q2 2021 (000S)	ABSOLUTE CHANGE (000'S)	Q2 2018 SHARE (%)	Q2 2021 SHARE (%)	SHARE OF CHANGE (%)	ANNUAL CHANGE (%)	
Micro (0–9 employees)								
Total	**5 779**	**5 434**	**−345**	**100.0**	**100.0**	**100.0**	**−2.0**	*
Managers	540	531	−8	9.3	9.8	2.4	−0.5	
Professionals	163	196	33	2.8	3.6	−9.6	6.4	
Technicians	305	237	−67	5.3	4.4	19.4	−8.0	†
High-skill	1 007	965	−42	17.4	17.8	12.2	−1.4	
Clerical	298	206	−92	5.2	3.8	26.7	−11.6	*
Service	935	846	−89	16.2	15.6	25.8	−3.3	
Skilled Agric	41	35	−6	0.7	0.6	1.7	−5.1	
Crafts	834	749	−85	14.4	13.8	24.7	−3.5	
Operators	341	374	33	5.9	6.9	−9.7	3.2	
Skilled	2 449	2 210	−239	42.4	40.7	69.3	−3.4	*
Elementary	1 366	1 377	11	23.6	25.3	−3.1	0.3	
Domestic Workers	957	880	−77	16.6	16.2	22.3	−2.8	
Low-skill	2 323	2 257	−66	40.2	41.5	19.2	−1.0	
Small (10–49 employees)								
Total	**4 210**	**4 151**	**−59**	**100.0**	**100.0**	**100.0**	**−0.5**	
Managers	369	412	44	8.8	9.9	−74.5	3.8	
Professionals	297	375	78	7.1	9.0	−132.9	8.1	†
Technicians	521	545	24	12.4	13.1	−41.0	1.5	
High-skill	1 187	1 332	145	28.2	32.1	−248.5	3.9	*
Clerical	558	530	−28	13.3	12.8	47.1	−1.7	
Service	781	760	−21	18.6	18.3	36.1	−0.9	
Skilled Agric	10	6	−4	0.2	0.1	7.6	−17.2	
Crafts	457	340	−117	10.9	8.2	199.8	−9.4	*
Operators	285	238	−47	6.8	5.7	80.6	−5.9	
Skilled	2 092	1 874	−217	49.7	45.1	371.2	−3.6	*
Elementary	917	928	11	21.8	22.3	−18.3	0.4	
Domestic Workers	15	5	−10	0.4	0.1	16.4	−29.0	
Low-skill	932	933	1	22.1	22.5	−1.9	0.0	

INDUSTRY	Q2 2018 (000S)	Q2 2021 (000S)	ABSOLUTE CHANGE (000'S)	Q2 2018 SHARE (%)	Q2 2021 SHARE (%)	SHARE OF CHANGE (%)	ANNUAL CHANGE (%)	
Medium and Large (50+ employees)								
Total	**5 238**	**4 473**	**−765**	**100.0**	**100.0**	**100.0**	**−5.1**	*
Managers	457	410	−47	8.7	9.2	6.1	−3.5	
Professionals	360	363	4	6.9	8.1	−0.5	0.3	
Technicians	531	444	−87	10.1	9.9	11.3	−5.8	†
High-skill	1 347	1 218	−129	25.7	27.2	16.9	−3.3	†
Clerical	705	627	−79	13.5	14.0	10.3	−3.9	
Service	723	583	−140	13.8	13.0	18.3	−6.9	*
Skilled Agric	11	4	−7	0.2	0.1	0.9	−27.3	
Crafts	563	394	−169	10.7	8.8	22.1	−11.2	*
Operators	611	528	−83	11.7	11.8	10.9	−4.8	
Skilled	2 613	2 135	−478	49.9	47.7	62.5	−6.5	*
Elementary	1 271	1 093	−178	24.3	24.4	23.3	−4.9	*
Domestic Workers	5	3	−2	0.1	0.1	0.3	−16.5	
Low-skill	1 276	1 095	−180	24.4	24.5	23.6	−5.0	*

Source: Own calculations, QLFS Q2 (Stats SA, 2018,2021)

Notes:
1. An asterisk (*) denotes a statistically significant change at the 95 percent level of confidence, while a dagger (†) indicates a statistically significant change at the 90 percent level of confidence.
2. Numbers do not add up to total because of unspecified/non-response.
3. High-skill includes the following occupations: "Manager", "Professional" and "Technician". Skilled includes: "Clerk", "Skilled agriculture", "Craft and related trade" and "Plant and machine operator". Low-skill includes: "Elementary" and "Domestic worker".
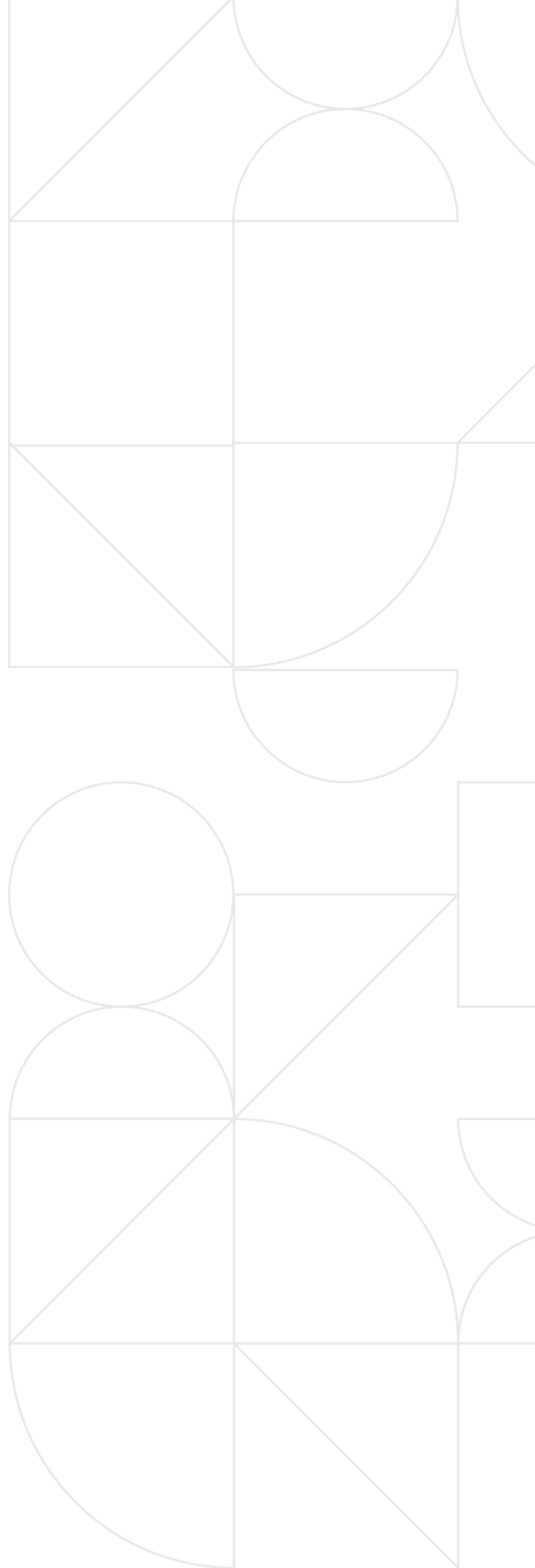
TABLE A.3: Expanded unemployment by demographic characteristics, Q2 2018 and Q2 2021

	NUMBER OF UNEMPLOYED						SHARE OF UNEMPLOYED		UNEMPLOYMENT RATE	
	Q2 2018	Q2 2021	CHANGE				Q2 2018	Q2 2021	Q2 2018	Q2 2021
	'000'S	'000'S	'000'S	SHARE (%)	AAGR (%)		(%)	(%)	(%)	(%)
TOTAL	9 634	11 923	2 289	100.0	7.4	*	100.0	100.0	37.2	44.4
By Race										
Black African	8 624	10 714	2 090	91.3	7.5	*	89.5	89.9	41.5	48.7
Coloured	658	820	162	7.1	7.6	*	6.8	6.9	27.7	36.7
Asian	107	165	57	2.5	15.3	†	1.1	1.4	16.4	25.2
White	245	224	−20	−0.9	−2.9		2.5	1.9	11.7	11.2
By Gender										
Male	4 644	5 784	1 140	49.8	7.6	*	48.2	48.5	33.7	40.6
Female	4 991	6 139	1 148	50.2	7.1	*	51.8	51.5	41.2	48.7
By Age Group										
15–24 year olds	2 453	2 474	21	0.9	0.3	*	25.5	20.7	67.1	74.8
25–24 year olds	3 707	4 630	923	40.3	7.7	*	38.5	38.8	43.2	52.3
35–44 year olds	2 057	2 859	802	35.0	11.6	*	21.4	24.0	28.6	37.7
45–54 year olds	1 102	1 513	411	18.0	11.1	*	11.4	12.7	23.9	29.3
55–64 year olds	316	448	132	5.8	12.4	*	3.3	3.8	16.8	22.6
By Education										
Primary or less	1 270	1 060	−210	−9.2	−5.8	*	13.2	8.9	40.2	42.7
Inc. secondary	4 613	5 442	829	36.2	5.7	*	47.9	45.6	45.8	52.7
Comp. secondary	3 068	4 382	1 314	57.4	12.6	*	31.8	36.8	36.5	46.0
Diploma/Certificate	501	743	242	10.6	14.0	*	5.2	6.2	19.9	28.4
Degree	125	217	92	4.0	20.1	*	1.3	1.8	8.2	12.7

Source: Own calculations, QLFS Quarter 2 (Stats SA, 2018 and 2021)

Notes:
1. Education category numbers do not add up to total employment due to unspecified or no responses.
2. An asterisk (*) denotes statistically significant changes at the 95 percent confidence level, while a dagger (†) denotes statistically significant changes at the 90 percent confidence level.