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Outline

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Closing South Africa's High-Skilled Worker Gap: Higher Education Challenges and Pathways

Borel Foko[1]

Key Messages

- South Africa has a peculiar high level of unemployment especially among the youth, women and low-skilled workforce. This is partly due to constraints inherited from the apartheid era, such as the imbalance in the spatial distribution between jobs and people, as well as inequities in access to quality training for certain population groups.
- Unemployment is also persistent due to the progressive erosion of low-skilled jobs to the benefit of highly skilled jobs. This structural transformation in the economy poses a real risk of increased marginalization of low-skilled workers in the labour market.
- This paper focusses on the implications for the development of higher education in response to the growing demand for highly skilled workers. There is a relative shortage of highly skilled workers, which could increase in the future if higher education expansion maintains its current pace. Progress in diversifying training is relatively slow, with an increase in science and technology courses that remain inadequate compared to other middle-income countries. Racial disparities in access to higher education have been reduced markedly over the last 15 years, but remain significant, and gender disparities have widened in favour of women.
- There is a need to foster the development of high-level skills to support the economy's transition to high levels of productivity and innovation-driven growth. There are two improvement pathways: (i) in the short to medium term, attracting highly skilled workers by pursuing proactive immigration policies as well as improving domestic higher education opportunities to attract more foreign students; and (ii) in the medium to long term, extending higher education coverage, especially among the black and coloured people, and also the male population in general. This will require both upstream measures in basic and secondary education (improving quality and efficiency gain in service delivery), and complementary actions within higher education.

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1 | Introduction

The development of human capital is instrumental for economic growth, sustainable development and global competitiveness. South Africa's future will depend on its ability to ensure that all South Africans have the opportunity to reach their full potential. Post-apartheid, South Africa has achieved important strides in human capital development, yet important challenges remain with key milestones to be achieved. This foists novelty to South Africa's choices in shaping its transformation agenda so as to optimize its human capital potential and relevance in today's technological driven and competitive global order.

This paper provides an overview of the major challenges confronting South Africa's education system. South Africa has made tremendous progress in skills development, notably in terms of inclusion of people relatively excluded from the educational system owing to the political situation that prevailed up to the mid-1990s. Twenty years after the end of apartheid, social inclusion challenges remain, especially in higher education. High unemployment among the youth and low-skilled workers persist. Besides these structural challenges which are partly apartheid legacies, the authorities are confronted by the need to boost production and tailor human resources to the demands of South Africa's growing economic diversification. The challenges for the education system seem threefold: (i) close the high-skilled worker gap to support the economy's transition to strong innovation-driven growth, (ii) enhance technical and vocational training efficiency, by partially tailoring it to meet the urgent need to retrain the pool of low-skilled unemployed workers, thus making it ultimately more responsive to labour market needs, and (iii) improve primary and secondary education quality, which will contribute towards boosting the productivity potential of future labour market entrants and encourage enterprises to increase youth employment opportunities.

This paper focuses on the first of these three main challenges, since it dwells on the key drivers of high-level skills development to respond to the needs of a fast-changing economy, while promoting social inclusion of vulnerable population segments. The following questions are addressed: to support the economy's transition to high levels of innovation-driven growth, what role could be played by the educational system in general, and higher education in particular? What is the scale of the challenges in this regard and what are the policy options to enable the education sector's effective contribution to the growth and competitiveness objectives? By exploring these areas in depth, the aim is to contribute not only to development knowledge but also to help policymakers and development agencies device practical solutions to help tackle human capital building challenges in South Africa. This is aligned with the key target of the country's recent National Development Plan (NDP) specified as that of increasing employment and consequently eliminating poverty and reducing inequality by 2030 (National Planning Commission, 2013). South Africa's level of economic competitiveness against that of other emerging countries in Latin America, Asia and Europe will depend partly on how it addresses these challenges.

This paper comprises two main sections. The first provides an overview of South Africa's labour market and its trends over the past decade. It analyses the labour force absorptive capacity, the level of unemployment and on-going structural changes in South Africa's economy with the gradual erosion of low-skilled jobs. The persistent high level of unemployment, its characteristics, as well as the rapid transformation of the economy have significant implications for the country's skills development. The second section specifically addresses the implications for development of high-level skills that the country needs. In this regard, the determination of the scale of the high-skilled worker gap and its major implications is followed by an exploration of two improvement pathways: (i) in the short to medium term, attracting highly skilled workers and (ii) in the medium to long term, extending higher education coverage as well as equity in access to it.

2 | The National Labour Market, Barometer of Three Major Skills Development Challenges

2.1 High and quasi-structural unemployment, despite a relatively low labour force participation rate[2]

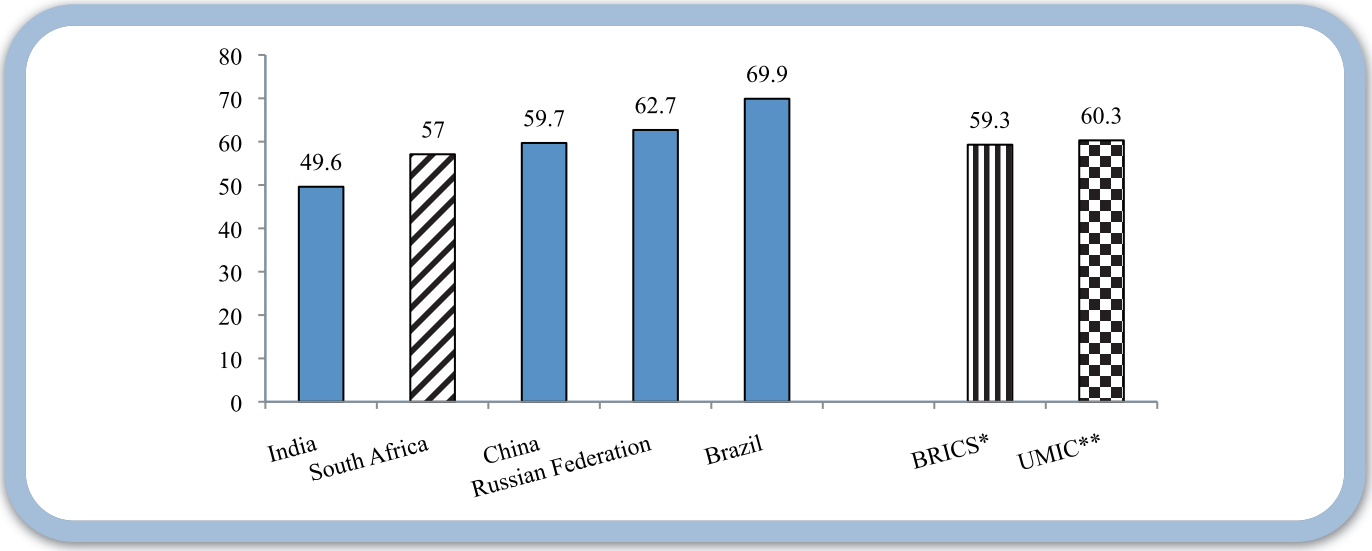
A relatively low and stagnant labour force participation rate: While the working age population (persons aged 15-64 years) has increased by 20% since 2005, the labour force has almost risen at the same pace (21% over the period 2005-14). This represents a de facto relative stagnation in the labour force participation rate[3] at 57%. The labour force participation rate is generally higher among men (64.2% on average since

[2] The analyses in this paper use annual data to assess long-term structural changes (instead of quarterly changes).
[3] The labour force (total population employed and unemployed) as a percentage of the working age population.

2005) than women (50.3% on average). Also, it is comparatively lower than in other middle-income countries[4] for which data is available (see Figure 1). Among the BRICS (Brazil, Russia, India, China and South Africa), the figure for South Africa is higher than that for India (57% against 50%), but lower than that for China, Russia and Brazil. However, despite the low labour force participation rates, South Africa is characterized by high unemployment levels.

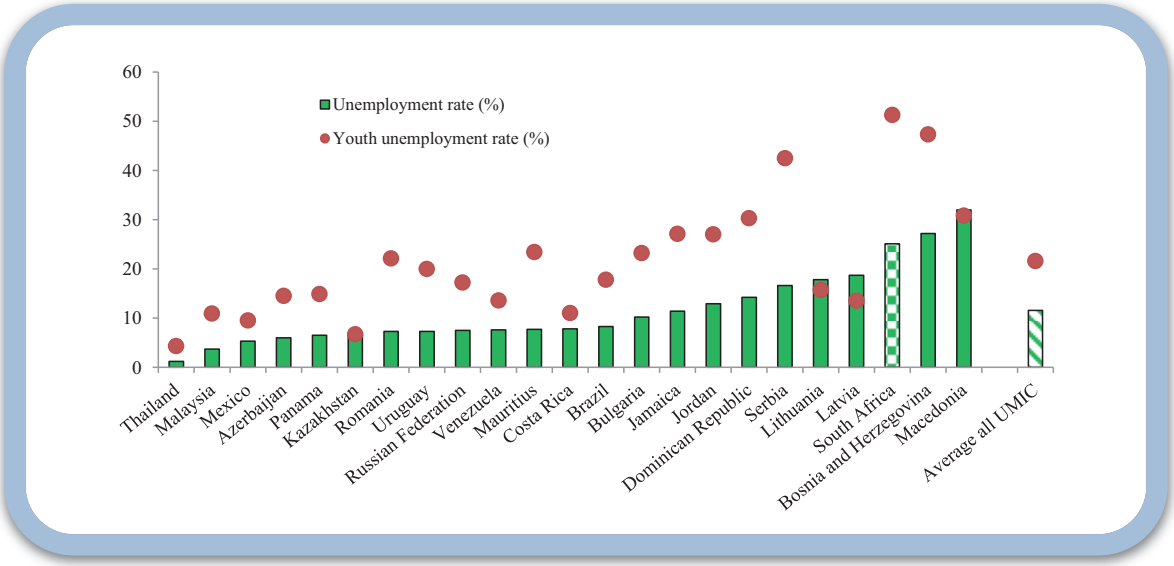
Unemployment level is among the highest in the world: After peaking at 30.5% in 2002 (up from 17.4% in 1995), the unemployment rate (for the whole active population) declined steadily to 22.8% in 2008, before rising again to 25.1% in 2014, or 5.1 million unemployed in 2014 in total. The latter figure is 824,000 more than in 2008 – the year of the global financial crisis (see Figure 2 for the cross-country comparison).

Figure 1 International comparison of labour force participation rates, as a percentage, 2010



Note: Data is for 2010; except China (2008) and South Africa (2013).
(*) Average for Brazil, Russia, India, China and South Africa;
(**) Average for all upper middle income countries in the world.
Source: Calculated using STATS SA and ILO data.

Figure 2 Overall and Youth Unemployment Rate in a Sample of Middle-Income Countries, 2010



Note: Data is for 2010; except for Thailand, Malaysia, Azebaijan, Kazakhstan, Uruguay, Venezuela, Costa Rica, Brazil, Jamaica, Jordan and Serbia (2009); Dominican Republic (2008) and South Africa (2014).
Source: Calculated using STATS SA and ILO data.

[4] In this document, the comparator countries are as much as possible upper middle-income countries, like South Africa. The classification is the same as that of the World Bank.

This increase is partly due to the knock-on effects of the global financial crisis of 2008 and could reflect a high vulnerability of employment to economic shocks. The country lost 391,000 jobs in 2009 (equivalent to 2.7% of total employment in 2008), whereas the GDP shrank by merely 1.5%. Job losses continued in 2010 (406,000 additional losses), representing a decrease of 2.9% of the stock in 2009, despite a 2.9% economic growth rate. The total number of jobs has nevertheless increased since 2010, reaching 15.1 million employed in 2014, which is now slightly beyond the 2008 peak (14.6 million jobs). The financial crisis has merely weakened an already adverse situation, given that South Africa stands out as one of the countries with the world's highest unemployment rates. This rate has remained above 20% over the past decade, and seems to have stabilized at around 25% since 2010.

Women, youth and people of African ethnicity remain the most vulnerable. One observes that in 2014, women were 20% more likely to be unemployed than men (see Table 1). Racial disparities are wide: people of African descent were 3.8 times more likely to be unemployed than white people, with an index of 3.2 for coloureds and 1.6 for those of Asian origin. Young people are particularly vulnerable. The youngest age group, 15-24 years, are seven times more likely to be unemployed than the oldest, 55-64 years. However, these are two diametrically opposed categories, since we may consider that the former is at the entry level, while the latter is in a relatively stable employment trajectory. In a bid to minimize this generational bias , the distinction made between young people aged 15-34 and adults aged 35-64 years showed that the risk of unemployment is higher for the former group, but only 2.3 times higher than that of the latter. The patterns observed since 2005 also illustrate a growing feminization of employment (with a decrease in the relative risk of female unemployment) and a reduced relative vulnerability of non-whites, as well as youth aged 15-34 years for whom the relative unemployment risk in 2005, was 2.9 times higher than that of adults.

High prevalence of long-term unemployment and particular vulnerability of some low-skilled workers. In 2014, two-thirds of unemployed (66%) went job hunting for at least one year. This is a structural feature of South Africa's labour market; this percentage has stood at 63% on average since 2005. We could thus conclude that effective access to employment is crucial from the very first year of entrance in the labour market. This message becomes all the more important considering that on average, 41.2% of unemployed are looking for their first job. This result corroborates the earlier observation about the relative vulnerability of unemployed youth, and has significant implications for both employment and skills development policies. The South African labour market, unlike that of most sub-Saharan African countries, is seeking to ensure better integration of a highly skilled workforce (Table 1). In general, the unemployment rate rises with the education level up to secondary school (from 22.9% for primary school level workers to 32.1% for those who did not complete high school) and decreases thereafter. The unemployment rate of workers that have completed secondary education is about 6 points lower than their counterparts who did not complete a level of education. Workers with a higher education level have the lowest unemployment rate (10.8% in 2014). That said, unlike the general pattern of the unemployment trend since 2005, workers with a higher education level have witnessed an increase in their unemployment risk over time, albeit from a relatively low level (7.3% unemployment in 2005).

The relatively high unemployment level is due to a combination of factors. First, one might assume that the rise in unemployment results from that of the labour force participation rate in the post-apartheid period. However, this argument is only partially valid. In fact, while the participation rate actually increased steadily between 1990 and 2008, it has been on the downtrend since then (from 59.3% in 2008 to 57.1% in 2014), whereas the overall unemployment rate is tending to stabilize around 25%. Secondly, the situation is also due to the regulation of the labour market, notably on account of the relatively high cost of labour[7] (which deters companies from recruiting relatively inexperienced youth - see especially The National Treasury (2011)), and the role of unions which would tend to protect the interests of current employees more than those of the unemployed. A third factor would be the imbalance between the spatial distribution of the workforce and the jobs, an imbalance that is an apartheid legacy, which leads to high job search costs for non-whites in particular, and therefore high reservation wages. A fourth factor, also inherited from apartheid, would be the deficiencies

[5] Especially since a significant proportion of young people aged 15-24 years are supposed to still be in school.
[6] Female are 43.8% of total employment in 2014, compared to 39.4% in 1995.
[7] The (average) minimum wage in South Africa (about 390 US$ PPP) is 18% higher than the average minimum wage in other upper-middle income countries (author's calculations based on ILO (2011) data for 35 upper middle income countries).

in the training of the least skilled workers (IMF, 2006 and 2011; Bhorat et al., 2012). Various other economic factors (e.g. the global financial crisis of 2008), but also and above all, the ongoing structural changes in South Africa's economy could explain the relative marginalization of low-skilled workers on the labour market.

2.2 Economic modernization means high demand for skilled labour

A changing economy: primary sector contraction and service sector development or 'tertiarization'. A close look at the long-term trends of the 2005-14 period shows that 2.3 million net new jobs were recorded nationwide[8]. This essentially reflects the dynamism of the service sector of the economy which has registered a net creation of 2.1 million jobs (89.2% of all new jobs), against merely 39,000 in the primary sector (mainly mining sector with 85,000 new jobs against a loss of 46,000 in agriculture) and a cumulative increase of 213,000 jobs in the industrial sector (499,000 new jobs over 2005-08 against a loss of 286,000 jobs over 2008-14). Contraction of industrial employment in the post-global financial crisis period may reflect problems of competitiveness in this sector and a stronger vulnerability to macroeconomic shocks. However, these aspects are not discussed here. Overall, the relative share in total employment fell from 8.5% to 7.4% for the primary sector, and from 22.6% to 20.5% for the industrial sector, but increased from 68.9% to 72.0% in the tertiary sector.

Table 1 **Unemployment rate according to certain social characteristics, 2005-2014**

	2005	2008	2014	2005	2008	2014
				Relative Indices		
Total	**23.8%**	**22.8%**	**25.4%**	**n.a.**	**n.a.**	**n.a.**
By Gender						
Women	28.2%	25.9%	27.2%	1.4	1.3	1.2
Men	20.0%	19.8%	23.3%	1.0	1.0	1.0
By Race						
African	27.7%	26.5%	28.1%	5.1	6.3	3.8
Coloured	22.1%	18.8%	24.0%	4.1	4.5	3.2
Asian	15.4%	11.6%	12.0%	2.9	2.8	1.6
White	5.4%	4.2%	7.4%	1.0	1.0	1.0
By Age						
15-24 years	48.3%	45.6%	51.3%	6.4	6.0	6.7
25-34 years	28.1%	25.8%	30.1%	3.7	3.4	3.9
35-44 years	14.7%	16.0%	19.1%	2.0	2.1	2.5
45-54 years	10.6%	10.3%	13.4%	1.4	1.3	1.7
55-64 years	6.9%	6.7%	7.7%	1.0	1.0	1.0
By Education						
No schooling	15.6%	15.0%	16.9%	1.6	1.4	1.6
Less than primary completed	22.8%	21.6%	22.9%	2.3	2.0	2.1
Primary completed	25.0%	23.4%	26.5%	2.5	2.2	2.4
Secondary not completed	30.3%	28.8%	32.1%	3.1	2.7	3.0
Secondary completed	24.5%	23.7%	25.8%	2.5	2.2	2.4
Tertiary	7.3%	7.6%	10.8%	1.0	1.0	1.0

Source: Calculated by authors using STATS SA data for various years.

[8] This figure reflects the creation of an annual average of 260,200 new jobs over the period. However, the average number of new jobs created decreased from 585,300 over 2005-08 to 97,600 over 2008-14.

Table 2 Trend of employment structure by occupation and by gender, 2005-2014

	Male		Female		Total	
	2005	2014	2005	2014	2005	2014
Highly skilled jobs	**20.9%**	**24.2%**	**21.8%**	**25.1%**	**21.3%**	**24.6%**
Manager	8.7%	10.7%	4.6%	6.3%	6.9%	8.8%
Professional	3.3%	5.5%	3.6%	5.6%	3.4%	5.6%
Technician	9.0%	8.0%	13.6%	13.1%	11.0%	10.2%
Semi-skilled jobs	**27.3%**	**24.8%**	**21.4%**	**20.4%**	**24.7%**	**22.9%**
Clerical	5.7%	5.9%	15.8%	17.3%	10.1%	10.9%
Craft and related trade	21.6%	18.9%	5.5%	3.1%	14.5%	12.0%
Skilled Agriculture	**0.6%**	**0.6%**	**0.9%**	**0.3%**	**0.8%**	**0.5%**
Unskilled jobs	**51.2%**	**50.4%**	**55.9%**	**54.1%**	**53.3%**	**52.0%**
Sales and services	12.8%	14.1%	13.6%	16.9%	13.2%	15.4%
Plant and machine operator	13.6%	13.0%	2.8%	2.6%	8.9%	8.4%
Elementary	24.7%	23.2%	39.5%	34.6%	31.2%	28.2%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Source: Calculated by authors using STATS SA data, for various years.

This sector diversification indicates a strong demand for highly skilled jobs. During the period 2005-14, the total net job creation is actually a combination of unskilled or low-skilled job creation of merely 222,000 jobs, more than offset by a net increase of 2,153 million skilled or highly qualified jobs[9]. The job losses were mainly the employment of crafts/artisans and farmers (especially among female). In relative terms, the share of highly qualified employment in total employment has increased by 3.3 percentage points between 2005 and 2014, against a decline of 1.3 points for the low-skilled or unskilled jobs (see Table 2). The share of semi-skilled jobs has also declined (by 1.8 points), due mainly to the erosion of artisan jobs. Compared to countries with an economic development level similar to that of South Africa (in terms of GDP per capita), the share of skilled jobs in all categories (semi-skilled and highly skilled), is slightly higher in South Africa (48.0% against 45.5% simulated for comparator countries).

The employment structure also varies by gender. Compared to men, women have relatively more low or unskilled jobs. However, their propensity to occupy highly skilled jobs is slightly higher than for men. On closer examination, this is due to a greater propensity of women to take up technician rather than senior management jobs.

2.3 What are the implications for skills development?

Thus far, two major facts have been established: (i) unemployment is high, especially among the youth and low-skilled or unskilled workers, (ii) the economy is undergoing a relatively rapid structural change, with low-skilled or unskilled job losses to the benefit of high-skilled jobs. In light of these facts, one could make the following conjecture: the probability of employment of the stock of low-skilled or unskilled workers may not be higher in the future, unless new medium- to long-term policies to improve basic and secondary education quality or short- to medium-term policies with direct intervention on the labour market to facilitate the absorption of the said stock into new and existing jobs are adopted. Complementarily, one could also query the education system's capacity to produce highly skilled human capital which the economy needs.

Three further questions are worth exploring. However, this paper focuses on the first one:

(i) To support the economy's transition to high levels of innovation-driven growth, what role could be played by the educational system in general, and higher education in particular?

[9] We consider in a relatively arbitrary way (but based on the 1988 Standard Classification of Occupations), that highly qualified jobs are those held by managers, professionals and technicians, and semi-skilled jobs concern administrative employees and craftsmen.

What is the scale of the challenges in this regard and what are the policy options to enable the education sector's effective contribution to the growth and competitiveness objectives?

(ii) Regarding employment-related challenges, notably for low-skilled workers, what is or what could be the role of technical and vocational skills development in retraining the available workforce for emerging jobs, on the one hand and, on the other hand, in providing a range of flexible vocational training opportunities that are responsive to labour market needs in general?

(iii) Lastly, while the need to match training with employment arises mainly for higher education and vocational training, such matching also hinges on the intrinsic quality of the workforce, and thus the capacity of primary and secondary education to provide young people with the required cognitive skills to pursue their schooling effectively and adapt as best they can to the labour market, especially in an educational environment that is as dynamic, open and competitive as that of South Africa.

3 | Coping with the Higher Education Level Skills Shortage

3.1 There is an improvement in the supply of human capital with higher education level, but it remains a far cry from the expected profile for an emerging economy

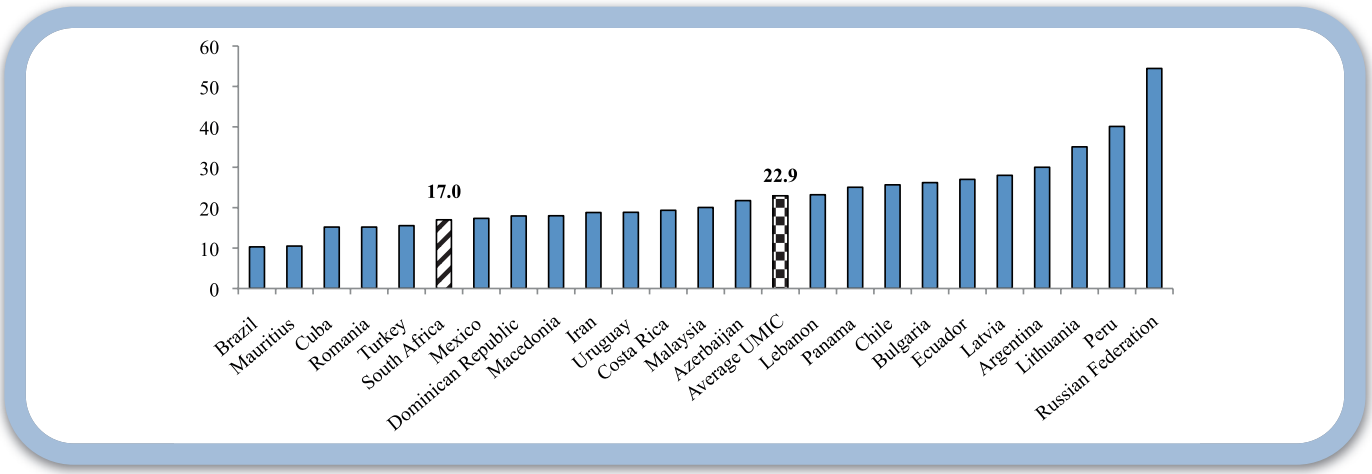
The human resources profile is improving, with a more high-skilled workforce. Although the overall labour force increased by 21% over the period 2005-14, the number of workers of a level below or equivalent to primary education has dropped by 33%, while those with high school level has increased by 360%. The number of workers with a higher education level has risen faster by 73% (see Table 3). Thus, in 2014, the labour force comprised 13.3% of workers with a level below or equivalent to primary education, 68.7% of workers who had been to secondary school (including slightly less than half of whom completed this level) and 17.0% of workers with a higher education level.

Table 3 **Trends of labour force structure by education level, 2005-2014**

	Total (000)			Percent distribution		
By Education	**2005**	**2009**	**2014**	**2005**	**2009**	**2014**
No schooling	823	609	449	4.9%	3.3%	2.2%
Less than primary completed	2,115	1,734	1,399	12.6%	9.3%	6.9%
Primary completed	1,080	964	834	6.4%	5.2%	4.1%
Secondary not completed	5,883	6,654	7,425	35.1%	35.8%	36.7%
Secondary completed	4,768	5,552	6,464	28.4%	29.9%	32.0%
Tertiary	1,987	2,893	3,445	11.9%	15.6%	17.0%
Other	109	191	200	0.7%	1.0%	1.0%
Total	**16,765**	**18,597**	**18,333**	**100.0%**	**100.0%**	**100.0%**

Source: Calculated by authors using STATS SA data, for various years.

Figure 3 **Share of Labour force with higher education, in percentage, in 24 middle-income countries, 009**



Note: Data is for 2014 (South Africa); 2010 (Romania, Turkey, Macedonia, Bulgaria, Latvia, Lithuania); 2007 (Brazil, Mauritius, Dominican Republic, Uruguay, Lebanon); 2006 (Ecuador, Argentina); and 2008 for all the remaining countries.
Source: Calculations based on STATS SA and IMF data.
(*) UMIC = Upper Middle Income Countries.

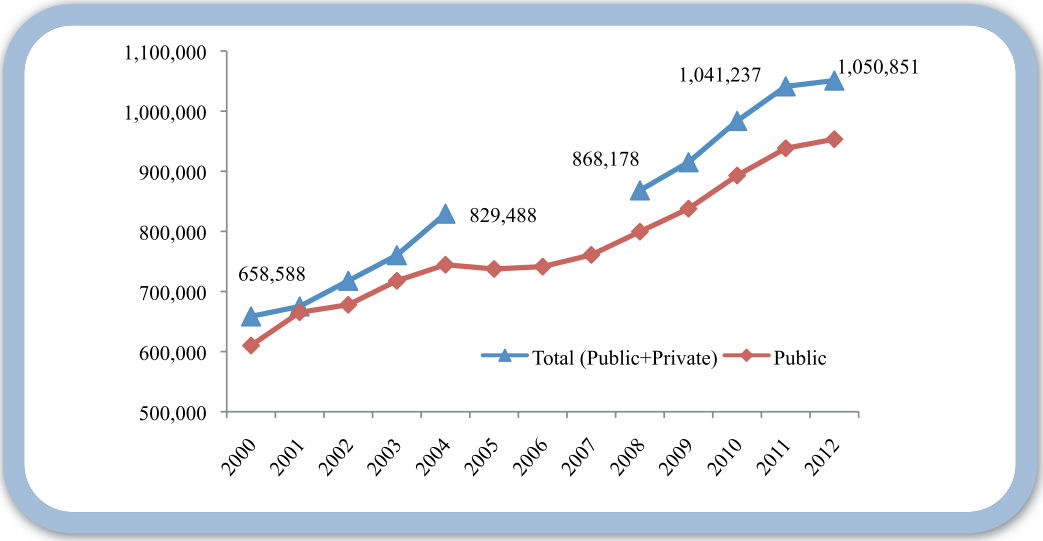
However, there seems to be a quantitative shortage in higher education level skills, of approximately 25%. The share of workers with a higher education level in the workforce has definitely risen rapidly over the past ten years (+5.2 percentage points) compared to workers who completed secondary education (+3.5 points) or did not complete it (+1.6 points). However, it remains lower than in countries with economic development levels comparable to that of South Africa[10]. Particularly in upper middle-income countries, the relative weight of the top level workers in the workforce varies from about 10% in Brazil and Mauritius, to 35% or more in Lithuania, Peru and Russia. The statistics for South Africa are both below the median value (20%) and the average (23%) for comparator countries (see Figure 3). This data suggests that South Africa could have a quantitative shortage in human capital of higher education level of between 15% and 25%.

3.2 Closing South Africa's High-Skill Worker Gap: Overview of Main Challenges

The student population growth in higher education is rather linear, especially since 2007. South Africa currently has 23 public higher education institutions[11], six of which are exclusively universities of technology (formerly Technicons), the others being either partially research-oriented universities (11), or mergers of research universities and universities of technology (6). There are also many private schools, but covered slightly or not by official statistics[12]. The country had a higher education student population of around 953,000 in public universities in 2012, 56% more than in 2000. Since 2007, there has been an average increase of 41,000 new students each year – or 49,200 students including those in private higher education institutions (see Figure 4). Therefore, in principle there is no accelerated higher education expansion trend. According to the country's latest 2014 Medium Term Budget Policy Statement (see. the National Treasury, 2014), there is a provision for an additional 116,000 university enrolments by 2016/17. It implies an average increase of only 29,000 new students over 2013-2016 (compared to 41,000 on average since 2007).

The quantitative higher education coverage is among the lowest among middle-income countries. In South Africa, 21.0% of the relevant age group had access to higher education in 2012, against a median value of 46% in a sample of twenty middle-income countries. South Africa's quantitative higher education coverage therefore seems over 50% below

Figure 4 Number of students in higher education institutions, 2000-2012



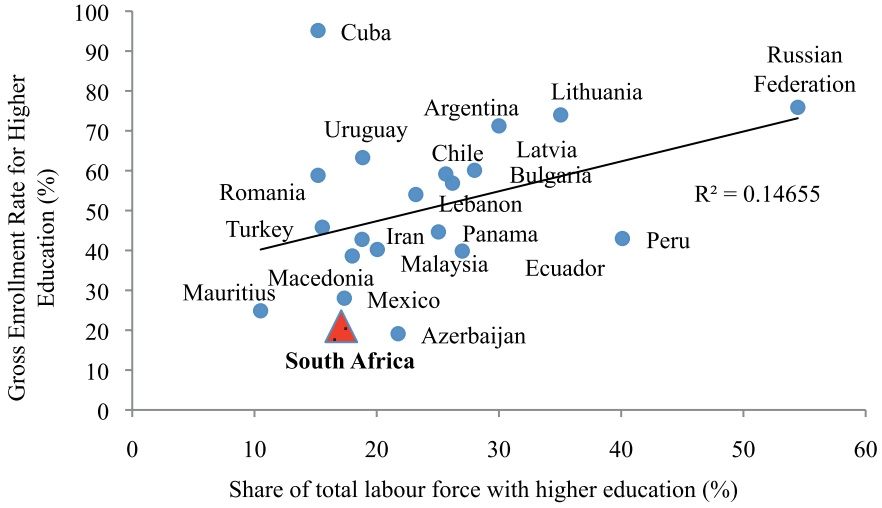
Source: Author's calculations based on DoBE, various years, Education Statistics in South Africa; and DoHET, 2014, Statistics on Post-School Education and Training in South Africa in 2012.

[10] We estimated an econometric relationship between the weight of the top level workforce in the working population (KHSUP) and GDP per capita (per capita GDP in USD) for a sample of 75 countries for which data is available: KHSUP = 6.453 * Ln (GDPPC) - 35.346 (R2 = 0.432). This relationship is used to simulate at 22% the weight of higher education level labour force for countries of a level of wealth comparable to that of South Africa. This suggests the existence in principle of a relative shortage of approximately 23% [= 17.0% / 22% -1] for South Africa.

[11] This figure does not include the two new public Higher Education Institutions established by 2014.

[12] However, based on available dispersed data, it seems that this is a booming sub-sector, the share of private sector students have risen from 7.4% in 2000 to 10.2% in 2004; and then from 7.9% in 2008 to 9.3% in 2012. There were (about) 119 private higher education institutions recorded by the Department of Higher Education and Training in 2012.

Figure 5 Higher education coverage rate (flow) compared to the share of highly skilled human capital in total labor force (stock), in a sample of 20 middle-income countries, 2009



Note: Data is for 2012 (South Africa); 2010 (Romania, MAcedonia, Bulgaria, Latvia, Lithuania, Turkey); 2007 (Mauritius, Lebanon, Uruguay); 2006 (Ecuador, Argentina); and 2008 for the 9 other countries.
Note: Data for South Africa are for the year 2012.
Source: Author's calculations based on DoHET and STAT SA data, and ILO and UNESCO data.

that of comparator countries. This also suggests the absence of a catch-up trend[13] in South Africa to build a stock of relatively highly skilled workers that is as large as that in these countries. As shown in Figure 5 below, some countries, such as Macedonia, Mexico, Romania, Turkey and Uruguay, whose share of the highly skilled workers in the labour force is currently comparable to that of South Africa, have a quantitatively more developed higher education system than South Africa. Under the current trends and policies, in the coming years, it is thus more likely that these countries will increase the share of the highly skilled workers in their labour force, and probably surpass South Africa.

Training opportunities are being diversified, although relatively slowly. During the period 2005-12, overall enrolment in public universities rose by 29%. The increase was greater for those in "education" and, to a certain extent, for those pursuing "business studies". Enrolment in the "humanities and social sciences" increased merely by 12%. There was thus a decrease in the relative weight of human and social sciences in the public higher education offering (from 28% to 24%) in favour of education sciences (increase of 14% to 18%). The relative importance of "science, technology and engineering" (29% in 2012), or business studies (30%) remained virtually unchanged. Compared to

[13] This document clearly recognizes ongoing efforts to boost enrolments (see for example the provision made in the 2014 Medium Term Budget Policy Statement to increase university enrollments). However, the comparative analysis made here do suggest that such efforts should be strengthened and maintained over a long period of time.

men, relatively more women continue to pursue social and human sciences, and education sciences, but relatively fewer science and technology studies (see Table 4). Moreover, there is an expansion of distance learning mode[14] – the preferred training mode for 2 out of 5 students in 2012, against 1 out of 3 in 2005.

Science and technology courses seem relatively less developed than in other comparable countries. The relative weight of science and technology courses in the higher education offering varies considerably across countries. For the most recent period (circa 2010), it is 30% for the entire African continent, 34% globally, and generally tends to increase with the level of economic development of countries. In upper middle-income countries, it is on average 36%, with a variation range from 22% in Algeria and Namibia to 50% or more in Iran and Malaysia (see Figure 6). This information suggests that science and technology in (public) higher education in South Africa as a whole, is quantitatively less developed than in comparator countries. The important benchmark, however, is the capacity of the different types of training to "fit" their graduates into the labour market.

Relatively minor employability problems do exist and also require further reflection on the fields of study to be promoted. It was earlier noted that unemployment among higher education level workers has generally increased since 2005. The 2011 labour market data also shows that 28.1% of working higher education graduates do not occupy highly skilled jobs (see Table 5). This figure may seem relatively low compared to the average probability of occupying an unskilled or low-skill job, which is 56.1% for the overall labour force. However, the 28.1% rate is in itself high if one makes the normative assumption that higher education graduates should occupy the bulk of highly qualified jobs. This diagnostic could be fine-tuned through an assessment of the labour productivity (e.g. salary or income) of higher education graduates holding unskilled or low-skill jobs. However data of this type is unavailable. Some courses of study seem more promising than others in terms of the probability of graduate employment. The study by Fisher et al. (2011) indicates that “hard” science and professional course graduates find jobs more easily than those from the humanities and social sciences. Similarly, Bhorat et al. (2006), discuss as key factors of employment of graduates: (i) the type of higher education institution, (ii) the course of study, and (iii) the quality of the qualification obtained.

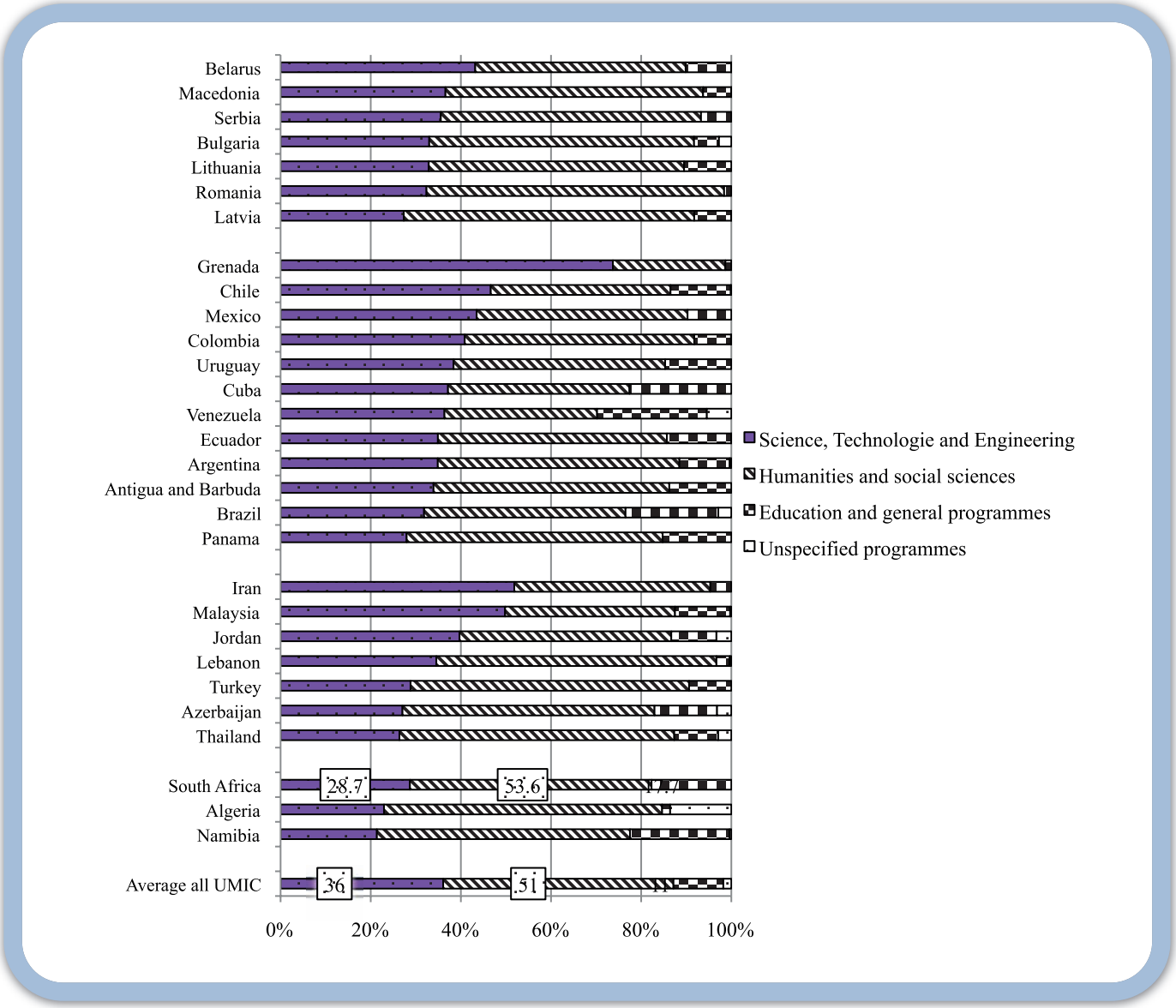
Table 4 Distribution of higher education students by major fields and modes of study, public sector, 2005-2012

	2005			2012		
	Male	Female	Total	Male	Female	Total
Major Field of Study						
Business	29.2%	29.2%	29.2%	30.6%*	28.9%*	29.6%
Education	9.1%	18.8%	14.4%	10.9%*	22.7%*	17.7%
Humanities and social sciences	25.6%	29.8%	27.9%	21.1%*	26.2%*	24.0%
Science, Engineering and Technology	36.0%	22.3%	28.5%	37.5%*	22.2%*	28.7%
Total	100.0%	100.0%	100.0%	100.0%*	100.0%*	100.0%
Qualification type						
Occasional students	2.4%	2.8%	2.6%	2.4%*	2.3%*	2.4%
Undergraduate certificate and Diplomas	34.3%	34.3%	34.3%	29.3%*	29.8%*	29.5%
Undergraduate Degree	47.2%	47.6%	47.4%	53.0%*	51.8%*	52.5%
Postgraduate, below Master's Level	7.2%	9.3%	8.4%	9.9%*	7.8%*	9.0%
Master's Degrees	7.2%	5.0%	6.0%	4.3%*	6.4%*	5.2%
Doctoral Degrees	1.7%	1.0%	1.3%	1.1%*	2.0%*	1.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Attendance mode						
Contact	67.1%	64.0%	65.4%	64.3%	55.8%	59,4%
Distance	32.9%	36.0%	34.6%	35.7%	44.2%	40,6%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Note: (*) Estimated by the authors and calibrated on the basis of 2010 data (most recent gender disaggregated data).
Source: Author’s calculations based on DBE, various years, Education Statistics in South Africa; and DoHET, 2014, Statistics on Post-School Education and Training in South Africa in 2012.

[14] It should be noted that 9 public universities out of 23 offer distance learning. The University of South Africa (UNISA) is the foremost and alone provided 87% of distance learning overall in 2012 (81% in 2005).

Figure 6 Distribution of higher education students by field of study, in a sample of middle-income countries, 2010*



Note: Data is for 2012 (South Africa); and 2010 for all other countries.
(*) Data for South Africa concern only public universities. International comparisons presented here remain valid, however, because a lower share of higher education students in South Africa (9.4% in 2014) are enrolled in private higher learning institutions.
Source: Table 4 for South Africa, and for the other countries, UNESCO's Institute for Statistics.

Racial disparities in access to higher education have reduced but remain significant, and gender disparities are widening in women's favour. The students' profiles have changed dramatically over the last 10 years. For instance, between 2000 and 2012, the relative share of white students or those of Indian origin in overall enrolment dropped respectively from 27% to 18% and from 7% to 6% (see Table 6). This drop occurred to the significant benefit of "'black" and, to a certain extent, coloured students, whose relative weights rose from 61% to 69% and 5% 6% respectively. Nonetheless, racial disparities remain significant if we take into account the relative demographic weight of each group in the overall population of the country. Based on that, it would seem that white students are 2.3 times more represented in higher education than black students. Coloured students are 20% less represented than black students. Similarly, there is an uptrend in the proportion of girls among the students, from 53% in 2000 to 58% in 2012. This tends to strengthen gender inequality, given that in 2012, women were 1.3 times more represented than men in South African universities.

Table 5 Labour force aged 15-64 years according to education level and job status, 2011

	Level of Education			Total
	Less than Matric*	Matric**	Tertiary	
Employed				
Highly qualified jobs	5.3%	18.3%	63.1%	19.0%
Manager	2.3%	7.2%	17.9%	6.4%
Professional	0.5%	2.9%	18.7%	4.3%
Technician	2.5%	8.2%	26.5%	8.3%
Other occupation	65.7%	54.7%	28.1%	56.1%
Total	71.0%	72.9%	91.2%	75.1%
Unemployed	**29.0%**	**27.1%**	**8.8%**	**24.9%**
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Note : (*) Less than matric includes: no schooling, less than primary completed, primary completed and secondary not completed;
(**) Matric corresponds to " secondary completed".
Source: Calculations based on STATS SA data.

Table 6 Distribution of public university students according to certain social characteristics, 2000-2012

	Distribution of higher education students			Total population in the country in 2011	Representativeness Index in higher education in 2012
	2000	2005	2012		
Total	**610,131**	**737,472**	**938,201**	**51,490,025**	**-**
Population group					
Black African	60.6%	61.0%	70.0%	79.6%	1.0
Coloured	5.4%	6.3%	6.2%	9.0%	0.8
Indian/Asian	6.6%	7.4%	5.5%	2.5%	2.5
White	27.4%	25.3%	18.3%	8.9%	2.3
Total	100.0%	100.0%	100.0%	100.0%	
Gender					
Female	52.8%	54.4%	58.2%	51.4%	1.3
Male	47.2%	45.6%	41.8%	48.6%	1.0
Total	100.0%	100.0%	100.0%	100.0%	

Source: Author's calculations based on DoBE and DoHET data (various years) and STATS SA data (2011 census results).

Overall, previous analysis suggest the need to explore channels for accelerating the expansion of higher education, to produce the highly skilled labour for which there is high demand. This should go hand in hand with increased diversification of training, and a focus on sectors with better job prospects for graduates. Given the scale of social disparities in higher education access, the best channels of expansion would definitely be found among the black and coloured population, as well as among males in general.

3.3 There are two pathways to improvement: increasing the higher education coverage and attracting highly skilled workers

Some short- or long-term pathways may be explored to address the challenges identified thus far. A short- to medium-term option would for instance be to attract highly skilled workers (to areas or sectors considered priorities). However, in the medium to long term, it would be necessary to quantitatively extend higher

education coverage in order to increase job opportunities for South Africans, especially those of African descent. Another possibility, which is not discussed in this paper, concerns labour force retraining: (i) training and retraining of the unemployed who are in principle adequately skilled to access highly skilled jobs[15]; (ii) in-service training to enable workers to adapt to new job opportunities within their enterprises or the economy in general.

3.3.1 Attracting highly skilled workers

Various studies underscore the importance of proactive labour force immigration policies in the South African context. Reza (2007) and Bhorat et al. (2012), for instance, underscore the importance of immigration of labour as a short-term solution to the shortage of skilled workers. They focus particularly on the institutional improvements required, to soften and shorten the time required by foreign workers to obtain work permits. They also stress the need to refine the selection of priority sectors (or skills) to better reflect economic objectives (improving the productivity and competitiveness of enterprises). In this regard, they recommend better coordination of interventions between the Ministry of Home Affairs and the Ministry of Labour (including the Department of Higher Education and Training)[16].

Attracting more foreign students. South Africa already hosts a large number of international students. The number of foreign students in South Africa represents the equivalent of 68% of all internationally mobile students[17] in sub-Saharan Africa, and it is estimated that 47% of foreign students in South Africa are women (UIS, 2012). While South Africa's "market share" may seem significant at the regional level, it is only 1.6% globally. However, there is no information about the propensity of foreign students to settle in South Africa, or return to their home country after completing their studies. According to Yunus (2012), South Africa could rely on its network of five top universities (Cape Town, Witwatersrand, KwaZulu-Natal, Pretoria and Stellenbosch) to attract more foreign students[18] – assuming that, other things being equal, there will be an increase in the number of those who will settle in South Africa (or contribute to skills transfer). However, to that end, various constraints should be removed with a view to developing in South Africa, a hub of world-class universities. That would entail, among others, overcoming financing challenges (increased State funding- notably for research and development as well as the industrial sector through public-private partnership agreements), expanding the intake capacity[19] and attracting the best teachers. This last point in particular seems to be an imperative for South Africa because of stiff competition from various other universities in the world (including China, Singapore and Saudi Arabia) which have also opted for an aggressive strategy to attract the best and brightest foreign students and teachers[20]. Reducing the crime rate could also be a factor of attractiveness.

3.3.2 Explore avenues for improving the quantitative coverage of and equity in access to higher education

Improving secondary education quality seems crucial in any higher education expansion strategy in South Africa. The success rate at the secondary school leaving examination (National Senior Certificate or NSC) can be used to predict the size of the higher education student population. In South Africa, since 2008, almost all candidates who pass the NSC are declared eligible for access to higher education. Such was the case, for instance, for 99.96% of those who passed the NSC in 2013. Furthermore, there is a strong correlation between the number of NSC passes in a given year and the number of students in universities (public) the following year. This correlation is estimated at +0.78 for the period 2000-12. Thus, the dynamics of student enrolments in higher education is highly dependent on NSC results. Although the number of NSC passes rose by nearly 55% between 2000 and 2013, the NSC success rate fell steadily from 73% in 2003 to 61% in 2009 and then rose to 76% in 2014 – 77.5% for male, and 74.4% for female[21] (see Figure 7). Over the past 20 years, the NSC success rate has almost always tended to decrease when the number of candidates increases (Rho=-0.25). Thus, improving secondary education quality is more crucial to expanding South Africa's higher education than increasing access to Grade 12 (which is the last grade of (general) secondary education).

[15] In 2014, for example, there was a pool of 2.0 million unemployed people (or 10.1% of the labour force) with at list a "qualification" equal or beyond secondary education. Within that pool, 18.3% (equivalent to 1.8% of the labor force) has a higher education level; and 81.7% (equivalent to 8.3% of the total labour force) has completed secondary education (has a "Matric").

[16] For instance, a list of skills "wanted" was published by the Ministry of Home Affairs in 2006. There was a need for approximately 47,000 workers (55% in the fields of science, technology and engineering). However, the reliability of this estimate has been questioned (Pauw et al. 2006). In 2008, the Ministry of Labour had put at around 500 000 the country's shortage of workers. It is estimated that between 2003/4 and 2007/8, only 80,000 skilled workers received a work permit (CDE, 2010, quoted by Bhorat et al., 2012).

[17] These are students studying in a country other than their country of origin.

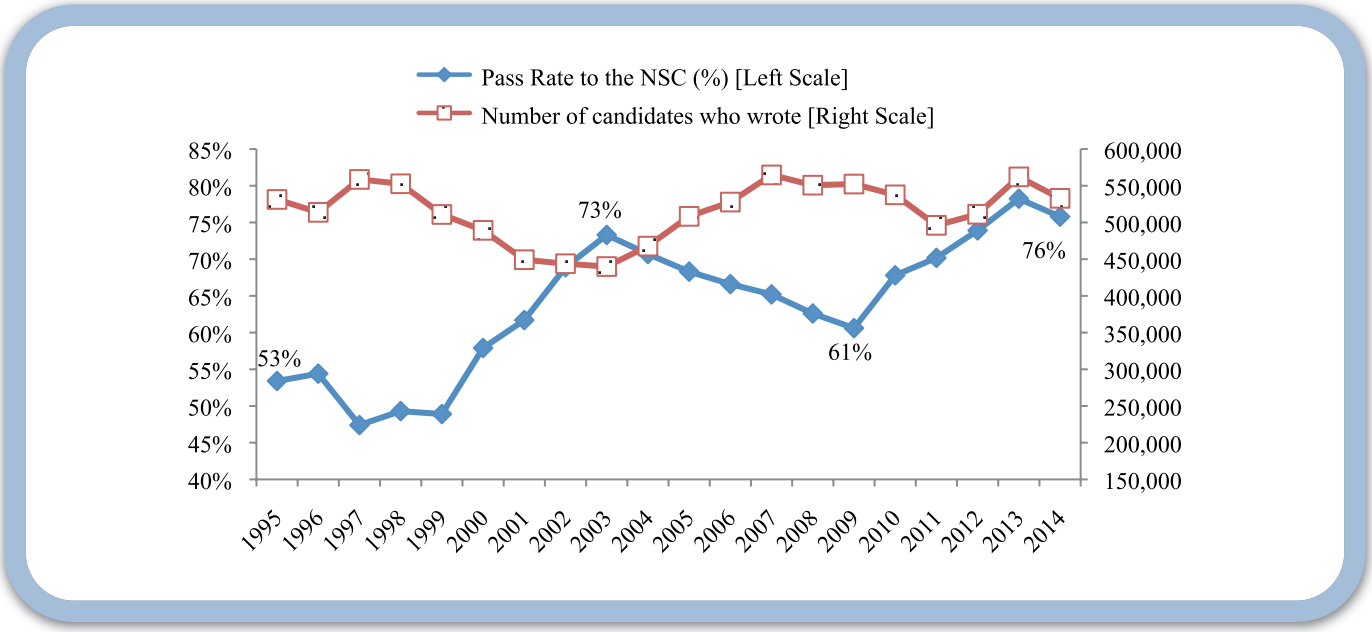
[18] It should be mentioned that in 2010, there were 257,000 internationally mobile students from sub-Saharan Africa; but only 24.4% of them studied in sub-Saharan Africa. Source: Authors calculations based on UNESCO data

[19] The average size of these five universities (37,500 students in 2011) is relatively lower than that of 18 other public universities (41,700 students in 2011).

[20] These universities offer notably attractive wages, better working conditions, the possibility of combining teaching and research (Yusuf, 2012).

[21] However, female are the majority among those who achieved (53.4%) because they are the majority among those who wrote (54.4%).

Figure 7 Correlation between the National Senior Certificate (NSC) pass rate and the number of candidates writing the examination in Grade 12, 1995-2014



Source: Based on DoBE, various years, Education Statistics in South Africa.

Many young higher education entrants have major gaps in mathematics and science. As mentioned above (§ 1.3), improving the primary education quality is among the structural challenges facing South Africa's education system. South African students have weak learning outcomes, which poses a major challenge for them to pass the NSC on the one hand, and meet the demands of higher education of international quality on the other. For instance, a significant proportion of students who pass the NSC have low scores in mathematics and science, which are key subjects for successful higher education studies in science, engineering and technology, business and management, among others. As a reminder, NSC candidates take seven subjects, four of which are compulsory (English, national language, "life orientation", and a choice between mathematics and literary mathematics) and three are at the candidate's discretion. To pass the NSC, a candidate must generally give at least 40% correct answers in three subjects, at least 30% correct answers in three others, and may have no more than 30% correct answers in one of the seven subjects. As such, the NSC pass requirements seem relatively flexible and low. However, the pass rate in mathematics and physical sciences are among the lowest, at about 47% - 48% in 2010 (and 54% - 62% in 2014), considering the minimum pass score of 30% in each of two subjects[22] (see Table 7).

Proper preparation of high school graduates for higher education requirements is essential. This implies, in the medium to long term, improving the quality of basic education and secondary education as well as the governance of the sub-sector, and strengthening stakeholder accountability. Complementary short- to medium-term actions could involve (i) the establishment of channels to non-university higher education, or to pre-university schools, or (ii) direct action in higher education to tailor courses to the academic level of newly admitted students (OECD 2008, Fisher et al 2012; Yunus 2012). On the first point, crossovers already exist in the form of technical and vocational training (called Further Education and Training (FET) Colleges), which admits high school graduates. This FET sub-sector is already facing major challenges[23]. However, there is a need to carefully consider and experiment how appropriate it is to assign it further tasks

[22] It should be noted that 9 public universities out of 23 offer distance learning. The University of South Africa (UNISA) is the foremost and alone provided 87% of distance learning overall in 2012 (81% in 2005).
[23] These questions, presented in § 1.3, are not discussed in this paper, however.

Table 7 **NSC Examination pass rate for selected subjects, by gender, in 2010 and 2014**

	Passed at 40% and above			Passed at 30% and above		
Subject	Female	Male	**Total**	Female	Male	**Total**
2010						
Mathematics	27.5%	35.0%	**30.9%**	43.5%	52.1%	**47.4%**
Physical Sciences	27.3%	32.3%	**29.7%**	45.7%	50.2%	**47.8%**
2014						
Mathematics	n.a.	n.a.	**35.1%.**	n.a.	n.a.	**53.5%**
Physical Sciences	n.a.	n.a.	**36.9%**	n.a.	n.a.	**61.5%**

Source: Derived from Department of Basic Education (2010 and 2014).

of enhancing the students' academic capacity. "Direct" actions within higher education also exist, be they actions on the sidelines in the form of "upgrading" courses or structuring actions (called "extended programs") with flexible long-term training. It seems that these flexible courses are comparatively more effective than upgrading courses, with a higher probability of success for students in such programmes (Garraway, 2010, quoted by Fisher et al., 2012). These results argue for greater flexibility of university courses.

The internal efficiency of higher education is low and could be improved through better preparation for higher education studies. Only 30% of freshmen graduate after five years of study (Fisher et al., 2011). These results are relatively better in science, engineering, technology and business courses, on the one hand, and for white students on the other.

The continued targeting of financially disadvantaged students for NSFAS assistance will contribute towards improving equity in access to higher education. Higher education funding is based on a model of cost-sharing between the State and students. In fact, besides a direct funding mechanism for higher education institutions (through performance contracts established since 2004/05), there is a student loan system, known as the National Student Financial Aid Scheme (NSFAS), which dates back to 1999. In 2012, 20.4% of students in public universities received student loans (NSFAS, 2012) . The average value of a loan is 50% of the country's GDP per capita, or about USD 3,700 in 2012. The NSFAS is designed to restore equity in access to higher education. People with the lowest probabilities of access to higher education are indeed over-represented among the loan recipients (see Table 6). For instance, African students are 12.1 times more represented than whites among student loan beneficiaries (while whites are 2.3 times more represented than blacks in higher education in general). Similarly, male recipients are 1.1 times more represented than females; however, by comparison, women are 1.3 times more represented in higher education than men. Additionally, some empirical studies show that the NSFAS has improved participation in higher education for students from poor backgrounds, most of who are of African descent (Gurgand et al., 2010)[25].

[24] It should be noted that in 2009, the NSFAS mobilized 12.3% of the higher education budget (Fisher et al., 2011). It is also important to emphasize that student in Further Education and Training colleges (FET or TVET) also receive loans. They were 53% among all the students awarded in 2013 (See NFAS annual report for the year 2014). The size of the loans for awarded FET students represents 16% of the GDP per capita (or USD 1,180 in 2012) compared to 50% of GDP per capita for awarded university students in 2012.

[25] Quoted by Fisher et al. (2011, p.40).

Funding higher education expansion will require raising the level of budgetary priority of this sub-sector in education expenditure. To support the expansion of higher education in the coming years, new resources will be required. Higher education currently receives only around 0.8% of GDP (2013), against 1.1% on average in middle-income countries. Higher education therefore seems relatively underfunded in South Africa. Given the macro-economic constraints (weight of the public sector in the economy; and overall public deficit), the increase in higher education resources is possible only by (i) increasing the share of higher education in "education and training sector" spending, (ii) increasing the share of education in the Government/State budget, or (iii) a combination of both factors. Available data suggests that increasing public higher education resources would to a large extent depend on the level of budgetary priority accorded to it in the intra-sector trade-offs (see Table 9).

On the one hand, higher education receives only 12.3% of public spending on education and training (in 2013), against 20.3% in upper middle-income countries. On the other hand, the education and training sector as a whole does not seem underfunded, as it boasts 6.6% of GDP against an average of 5.1% of GDP in middle-income countries. Therefore, these analyses suggest the existence of channels (room of manoeuver) for increasing higher education resources. Complementarily, they illustrate a need to improve efficiency in the use of resources in the other levels of education (primary, secondary, further education and training or TVET).

Table 8 The NSFAS mainly targets the populations that are most « excluded » from higher education

	Higher education student (% of total, 2012)	Students assisted (% of total, 2009)	Representativeness Index in higher education students (2012)*	Representativeness Index in students assisted (2012)**
Population group				
Black African	70.0%	92.1%	1.0	12.1
Coloured	6.2%	5.0%	0.8	7.4
Indian/Asian	5.5%	1.0%	2.5	1.7
White	18.3%	2.0%	2.3	1.0
Total	100.0%	100.0%	-	-
Gender				
Female	58.2%	56.0%	1.3	1.0
Male	41.8%	44.0%	1.0	1.1
Total	100.0%	100.0%	-	-

Note: (*) calculated with reference to the country's total population;
(**) calculated with reference to the total student population.
Source: Author's calculations based on Table 6, and NSFAS data.

Table 9 Public resource mobilization for higher education and international comparisons with upper middle-income countries

	Share of higher education		Share of education sector	
	In GDP	In total education and training expenditure	In GDP	In total Government expenditure
South Africa (FY 2012/13)	0.8%	12.3%	6.6%	21.0%
Upper middle-income countries, 2011*	1.1%	20.3%	5.1%	15.7%
	(34)	(34)	(36)	(33)

Note: (*) The number of comparator countries appears in brackets.
Source: Author's calculations based on data from the National Treasury for South Africa, and UNESCO for other countries.

4 | Conclusion and Policy Implications

South Africa has a peculiar high level of unemployment especially among the youth, women and the low-skilled worforce. This is partly due to constraints inherited from the apartheid era, such as the imbalance in the spatial distribution between jobs and people, as well as inequities in access to quality training for certain population groups. This unemployment is persistent due to the progressive erosion (or marginal increase) of low-skilled jobs to the benefit of highly skilled jobs. In this regard, the risk of marginalization of low-skilled workers in terms of access to employment could increase further. To this end, it would be important to focus on ensuring effective implementation of the national skills development framework. The framework is backed by financial resources through the skills development levy, but the implementation needs to be improved to ensure these resources are used effectively. This will require co-operation from key stakeholders. These specific issues were beyond the scope of this document however.

This paper has dwelt on the implications for the development of higher education in response to the growing demand for highly skilled workers. The conclusion is that there is a relative shortage of highly skilled workers, which could increase in the future if higher education expansion maintains its current pace. Progress in diversifying training is relatively slow, with an increase in science and technology courses that remain inadequate compared to other middle-income countries. Racial disparities in access to higher education have been reduced markedly over the last 15 years, but remain significant, and gender disparities have widened in favour of women. These analyses raise the need to accelerate the expansion of higher education in South Africa.

There are short-, medium- or long-term avenues which policy makers can explore to provide the country with highly qualified human capital to support the diversification of its economy and transition to high levels of productivity and innovation-driven growth.

(i) In the **short to medium term**, the country could focus on attracting highly skilled workers, by pursuing proactive immigration policies as well as improving domestic higher education opportunities to attract more foreign students. Regarding the first option, there would be a need to refine the selection of priority sectors (or skills) to better reflect economic objectives and thus improve the coordination of interventions between the Ministry of Home Affairs and the Ministry of Labour (including Higher education and Training). Regarding the latter option, the country could rely on its network of five leading universities (Cape Town, Witwatersrand, KwaZulu-Natal, Pretoria and Stellenbosch) to improve domestic higher education opportunities. Additional funding will be required in this regard to enable the country to better compete with other countries that have also opted for an aggressive strategy of luring the best foreign students and teachers. Higher education in South Africa appears currently under-funded. The channels for increasing resources will depend mostly on intra-sector trade-offs (reallocation) within the education and training sector than additional ressources to the education sector in general. For that to be effective there will be a need to improve efficiency in the use of resources in the other levels of education (primary, secondary, further education and training or TVET).

(ii) In the **medium to long term**, the most important channels for higher education expansion lies with the black and coloured people, and also the male population in general. Constraints on access of these groups to higher education should be addressed. Some actions identified are upstream of higher education, namely improving secondary education quality, which would reduce the dropout rate at this education level and enhance the pass rate in the National Senior Certificate, especially in the sciences. As already suggested, efficiency gains will be required in primary and secondary education to improve education quality as South Africa is among the poor performers in mathematics and science. Complementary actions are also required within higher education. These concern both the flexibility of training courses to improve the success rate of non-white populations and continued assistance by the National Student Financial Aid Scheme targeting poor students in order to improve equity in access to higher education.

What would be the implication for the Bank?

Along with continuous dialogue with the Government and other development partners[26] regarding avenues for higher education

[26] China recently announced that it will gradually increase the training opportunities for South Africa and will provide training for 2000 South Africans from the year 2015 through to 2020. China has committed to support South Africa's industrialization agenda by agreeing to assist in the development of science and technology and industrial parks, as well as in key areas, such as the ocean economy. There is an opportunity for the Bank to collaborate with China and other bilateral/multilateral partners in this space.

expansion in general, and science and technology in particular, the following specific elements should also be considered:

Pillar 1: Technical assistance and/or lending operations targeting the Technical and Vocational Education and Training (TVET or Further Education and Training, FET) sub-sector. With ongoing structural changes in the economy, characterised with a strong demand for highly-skilled labour, there is a real risk of increased marginalization of low-skilled workers in terms of access to employment. At the same time there is a pool of more than 4 million (unemployed) people with a level of secondary education or above. Also, there is a high prevalence of long-term unemployment which can be more damaging to the unemployed themselves, e.g., through the loss of skills, which makes it more difficult for individuals to re-enter employment. The Bank would assist the Government in two complementary directions:

(i) **Vocational skills development in retraining the available workforce for emerging jobs**. There are avenues for (a) training or retraining the pool of the unemployed who are in principle adequately skilled to access highly skilled jobs; and (b) providing targeted in-service training to enable workers to adapt to new job opportunities within their enterprises or the economy in general. Bank's assistance should be based on accurate needs assessment, e.g. by economic sectors facing a relative high skills gap.

(ii) **Support to policy reforms toward a more flexible and demand-driven TVET/FET system**. The issue here is to support the Government in designing policies oriented in providing a range of flexible training opportunities that are responsive to dynamic labour market needs. The support would also include a technical assistance and knowledge work on economics of TVET/FET in the country (financing, functioning, and relevance).

Pillar 2: Quality management and increased accountability in the schooling system. Young people should receive relevant cognitive skills to pursue their schooling effectively and adapt as best they can to the labour market, especially in an educational environment that is as dynamic, open and competitive as that of South Africa. Learning is not enough in the South Africa education system[27], but at the same time, the schooling system (primary and secondary) is not under-funded by international standards. Improving primary and secondary education quality will contribute towards boosting the productivity potential of future labour market entrants and encourage enterprises to increase youth employment opportunities[28]. There is room to provide technical assistance in:

(i) **Public expenditure review in the schooling system** to identify room for efficiency gains and potentials for improved equity in service delivery especially in a context where social services are decentralized; and

(ii) **Result-based service delivery monitoring and increase voice and accountability in service delivery**. For example, South Africa would be invited to join the "Service delivery indicator – SDI – initiative" which is a partnership between the Bank, the World Bank and the African Economic Research Consortium to develop and institutionalize the collection of a set of robust measures of social service delivery. It provides relevant information for policy making on knowledge (e.g. what teachers know, what teachers do), and effort of service providers as well as availability of key inputs.

It is important to emphasize that, in the current period, the Government of South Africa does not necessary borrow from the public window of the African Development Bank. Short term support are thus limited to technical assistance and policy dialogue through "Middle Income Countries (MIC) grants", in the framework of both the National Development Plan (NDP) and the Bank's Country Strategy Paper (2013-2017). In the medium term, however, evidence-based dialogue with the Government would pave the way for comprehensive support through lending operations as well.

[27] South Africa is among the poor performers in mathematics and science. International Mathematics and Science Study (TIMSS) shed light on learning achievement. South Africa demonstrates low performance at Grade 9 level. Its national scores (352 for mathematics and 332 for science) are among the bottom six countries and below the low-performance benchmark (NCES, 2014).

[28] Especially because the cost of labour is relatively high in South Africa (See Bhorat and Mayet, 2012). Also, the (average) minimum wage in South Africa (about 390 US$ PPP) is 18% higher than the average minimum wage in other upper-middle income countries (author's calculations based on ILO (2011) data for 35 upper middle income countries). For example, it is more than double that of Botswana, China, Gabon, Mauritius and Mexico; and 20% to 75% higher than that of Algeria, Brazil, Bulgaria, Romania, Tunisia, and Uruguay. It is 20% to 50% lower than in Argentina, Costa Rica, Ecuador, Turkey and Venezuela. According to the latest 2014 medium term budget policy statement, the employment tax incentive, which provides firms with incentives to hire young workers, is already supporting at least 209,000 young workers in about 23,500 firms.

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