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STATE OF MANUFACTURING IN SOUTH AFRICA

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1. Introduction

South Africa's labour market is characterised by chronic and high levels of unemployment, poverty and inequality. In order to address these challenges, the South African government published the National Development Plan (NDP), with the aim of increasing employment from 13 million in 2010 to 24 million by 2030 (National Planning Commission, 2011). The government, recognising that manufacturing can play a pivotal role in achieving this goal, has highlighted the labour-intensive nature of manufacturing in a number of government policy documents, including the New Growth Plan (which forms part of the NDP) and the Industrial Policy Action Plan (Department of Trade and Industry, 2011).

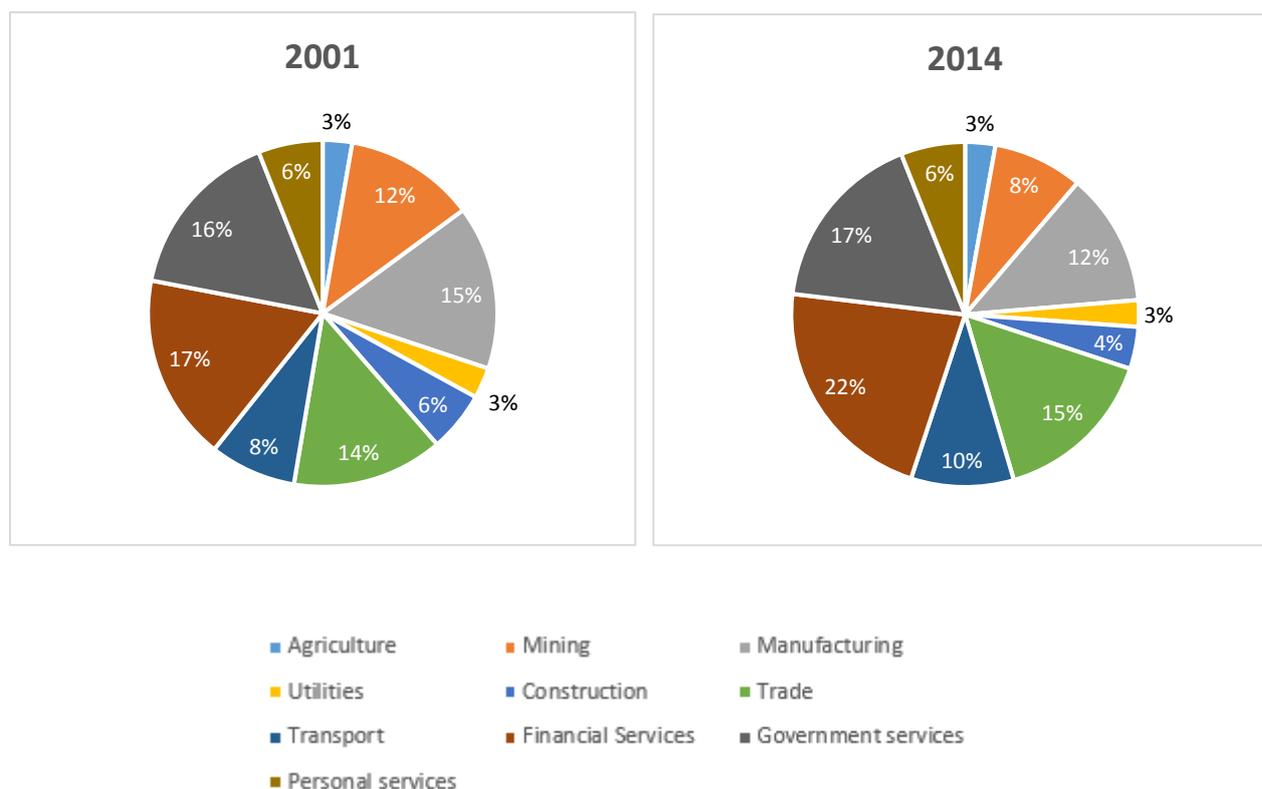
Despite this recognition, the manufacturing sector has continued to decline, both in terms of its contribution to economic growth and employment. The three factors which have historically made South African manufacturing competitive – low labour costs, a cheap and reliable electricity supply and government support through subsidies and tariffs – have slowly been eroded (Williams et al., 2014). Wages have risen faster than productivity, electricity prices have risen by an average of 20% per year since 2008 (MyBroadband, 2015) and the South African government, as part its World Trade Organization (WTO) obligations, is limited in scope in implementing protectionist policies. Furthermore, the world has become more globalised, with fierce competition from other developing countries, especially South-East Asia.

This paper proceeds as follows: Section 2 compares the manufacturing sector with other key sectors in the economy. Section 3 explores the manufacturing sector in more detail and Section 4 examines skill shifts within the manufacturing sector. Section 5 concludes.

2. Broad South African Economic Trends

With the inception of democracy in 1994, South Africa re-joined the global economy. Foreign capital, which had largely ignored South Africa as a result of apartheid, flowed into South Africa. Furthermore, as a member of the WTO, tariffs in most industries were slashed. Although the overall effect of these policies resulted in economic growth, the growth was uneven across sectors. Figure 1, below, provides a snapshot of the composition of the South African economy in 2001 and 2014. Broadly speaking, there has been a shift away from tradable sectors such as agriculture, mining and manufacturing towards non-tradable sectors and in particular, financial services. Between 2001 and 2014, the size of the financial services increased by 29% – by far the biggest increase in any sector. The transport sector also grew considerably – from comprising 8% of GDP in 2001 to 10% in 2014. Government services and retail and wholesale trade experienced more moderate growth.

Figure 1: Sectoral Composition of GDP (2001, 2014)



Source: SARB (2016).

The most marked change is that of the decline of the mining sector: from comprising 12% of GDP in 2001, it has now dropped to 8% - a decline of 33%. Although this decline indicates that South Africa is reducing its reliance on mining as a key driver of growth, it nevertheless still plays an influential role in the economy. The sector generates around half of South Africa’s foreign exchange revenues and its firms account for around a third of the market capitalization on the Johannesburg Stock Exchange (KPMG, 2015). Furthermore, it accounts for 20% of all investment in the country (KPMG, 2015).

Manufacturing has also declined by 20% since 2001. Since South Africa liberalised its markets, the sector has been unable to compete with manufacturing firms in other countries such as China, Vietnam and Bangladesh (Rodrik, 2006). Furthermore, the level and volatility of the real exchange rate have created uncertainty for potential investors (Rodrik, 2006). This lack of dynamism within the labour-intensive manufacturing sector is a cause for concern, as to date, no country has transitioned from middle to high-income status without the presence of a vibrant manufacturing sector.

Based on this sectoral analysis, it is evident that South Africa has become a services-led economy. 70% of GDP is concentrated in only five sectors – trade, transport, financial services, government services and personal services and it is fair to assume that this number will only increase in the future. Arguably, South Africa’s economic development trajectory depends on the intensive use of services. Having looked at the sectoral GDP composition, we now examine broad sectoral shifts in employment.

Table I analyses the sectoral employment growth trends in employment. The table shows absolute and relative growth numbers for each sector. The absolute growth numbers show the absolute increase or decrease in employment in each sector between 2001 and 2014, while the relative growth figures show the growth of the sector relative to overall employment growth over the same period. Relative growth is calculated by dividing the growth rate of the sector by the overall employment growth rate for the period. If relative growth is equal to one, sector employment grew as quickly as overall employment. If the relative growth figure is greater (lower) than one, sector employment grew faster (slower) than overall employment.

Table I: Growth in Employment by Sector, 2001-2014.

	Growth (2001-2014)		Employment Shares		Share of change (2001-2014)
	Absolute	Relative	2001	2014	
Primary	-644 392	-2.1	15.0	7.7	-23.4%
Agriculture	-499 135	-2.5	10.1	4.7	-18.1%
Mining	-145 257	-1.4	4.9	3.0	-5.3%
Secondary	466 669	0.8	21.3	20.4	16.9%
Manufacturing	-82 728	-0.2	14.7	11.3	-3.0%
Utilities	10 604	0.5	0.9	0.8	0.4%
Construction	538 793	2.8	5.7	8.3	19.6%
Tertiary	2 931 744	1.6	63.7	71.9	106.5%
Trade	482 557	0.8	22.0	21.2	17.5%
Transport	285 597	1.9	5.1	6.1	10.4%
Financial Services	837 767	2.8	9.1	13.2	30.4%
CSP Services	1 299 284	2.3	18.1	23.6	47.2%
Private Households	26 539	0.1	9.4	7.8	1.0%
Total	2 754 021	1.0	100.0	100.0	100%

Source: LFS 2001 and QLFS 2014, own calculations.

The data clearly indicates that the primary sector experienced the largest number of job losses between 2001 and 2014. Employment declined particularly sharply in the agricultural sector, with approximately 500 000 jobs lost. 145 000 jobs were lost in the mining sector. Both these sectors also showed large negative relative growth. As a result, the primary sector was the only broad sector which recorded negative relative growth over the period.

The secondary sector relative growth figure of 0.8 implies that although employment growth occurred, it was at a slower rate than overall employment growth. This figure, however, is driven almost solely by the construction sector: though the construction sector employed just 5.7% of the labour force in 2001, employment growth was 2.8 times larger than overall employment growth between 2001 and 2014. Utilities showed minimal employment growth, while manufacturing employment declined. The results for the manufacturing sector are of particular concern, since it was the third-largest

employment sector in 2001, accounting for 14.7% of employed individuals. As a result of its decline, manufacturing's share of employment stands at 11.3%.

The tertiary sector performed the best in terms of employment growth. Employment growth was 1.6 times larger than overall employment growth. In particular, financial services and Community, Social and Personal Services – effectively a proxy for public sector employment – grew by 840 000 and 1.3 million jobs, respectively. Together, these two sectors accounted for 78% of employment growth over the period.

The financial services sector, along with construction, saw the fastest increase in employment growth out of all sectors. The relative growth figure of 2.8 indicates that the sector grew almost three times faster than overall employment growth. This resulted in its share of employment increasing from 9.1% to 13.2% over the period. However, much of the increase can be attributed to a substantial increase in the use of labour-brokering services, who are classified as part of the financial services industry (Bhorat et al., 2016).

The CSP sector accounted for 47% of the employment growth in South Africa between 2001 and 2014. The relative employment growth in the sector was more than double the overall employment growth in the economy. This extraordinary growth, coupled with the slow growth of the trade sector, meant that the CSP sector overtook the trade sector as the largest employment sector in South Africa.

Overall, our sectoral employment analysis shows that between 2001 and 2014, relative employment growth was fastest in three sectors – financial services (2.8), construction (2.8) and CSP services (2.3). However, the increase in financial services employment can be mainly attributed to an increase in the use of labour brokers. Three tertiary sectors – CSP services, financial services and trade – accounted for 95.1% of the change in employment over the period, while construction accounted for a further 19.6%. Both agriculture and mining had a negative effect on employment levels. Together, these two industries accounted for a negative share of 23.4% in the change in employment for the period. The performance of manufacturing was lacklustre, with it being the only the secondary sector to lose jobs. We examine this sector in more detail below.

3. Manufacturing Sub-Sectors: GDP and Employment

This section considers the structure of the manufacturing sector and its impact on the trends in employment between 2001 and 2014. We divide the manufacturing sector into nine distinct sub-sectors, as shown in Table 2 below. We observe that manufacturing covers a broad range of sub-sectors, each with its own set of unique challenges and opportunities.

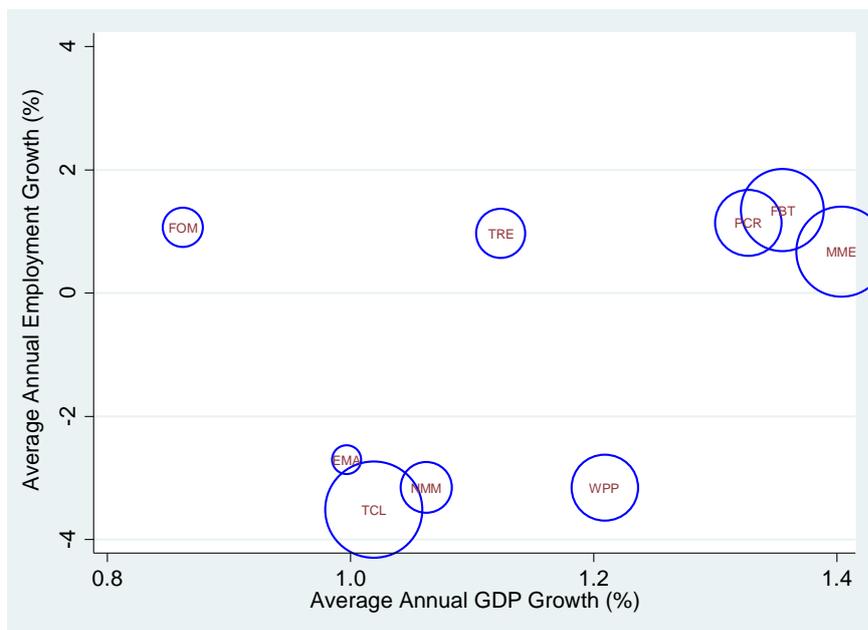
For example, in the Food, Beverages and Tobacco (FBT) manufacturing sub sector, tobacco companies' biggest challenge would be increasingly stringent regulation regarding the consumption, sale and

Table 2: Manufacturing Sub-Sector Descriptions

Sector Full Name	Sector Abbreviation	SIC Code
Food, beverages and tobacco	FBT	301 - 306
Textiles, clothing and leather	TCL	311 - 317
Wood and paper; publishing and printing	WPP	321 - 326
Petroleum products, chemicals, rubber and plastic	PCR	331 - 338
Other non-metallic mineral products	NMM	341 - 342
Metals, metal products, machinery and equipment	MME	351 - 359
Electrical machinery and apparatus	EMA	361 - 366
Transport Equipment	TRE	381 - 387
Furniture and other manufacturing	FOM	391 – 392

advertising of tobacco products. On the other hand, the biggest challenge in the Textiles, Clothing and Leather is competition from abroad, particularly from South-East Asia. Crucially, these challenges differ in their effect on GDP and employment of the various manufacturing sub-sectors, which is explored in greater detail in Figure 2.

Figure 2: Gross value-added and employment growth by manufacturing sub-sector, 2001-2012



Source: Quantec (2016) and SARB (2015), own graph.
 Notes: FBT = Food, Beverages and Tobacco; TCL = Textiles, Clothing and Leather; WPP = Wood and Paper; Publishing and Printing; PCR = Petroleum Products; Chemicals, Rubber and Plastic; NMM = Other Non-Metallic Mineral Products; MME = Metals, Metal Products, Machinery and Equipment; EMA = Electrical Machinery and Apparatus; TRE = Transport Equipment; FOM = Furniture and Other Manufacturing

Figure 2 shows the relationship between GDP and employment growth by manufacturing sub-sector. In sectors in which there was strong output growth, we would expect there to be strong job growth as well. On the other hand, declining sectors would shed jobs. The size of each bubble represents the relative size of employment in the manufacturing sub-sectors in 2001. The vertical axis shows average annual employment growth, while the horizontal axis shows the average annual growth in GDP.

Figure 2 shows that all manufacturing sub-sectors experienced positive GDP growth. However, growth was small and within a narrow range of 0.86% to 1.40%. Among the sub-sectors which experienced the best output growth in the period were MME, FBT and PCR. Importantly though, employment growth did not exceed GDP growth in any of these sectors, although the FBT sub-sector experienced employment growth that was almost as high as GDP growth. Specifically, while GDP growth was 1.36%, employment growth was 1.34%. Therefore, this sub-sector experienced labour neutral growth, while all other sectors experienced GDP growth which outpaced employment growth.

The discrepancy between GDP growth and employment growth was greatest in the TCL (4.54), WPP (4.37), NMM (4.22) and EMA (3.71) manufacturing sub-sectors. In particular, these sub-sectors experienced marginally positive GDP growth, but all experienced negative job growth, potentially indicating an increased use of capital to compensate for the loss of employees. These poor employment

results can, in part, be explained by the recession that South Africa experienced after the 2008/2009 financial crisis. Between 2008 and 2014, the manufacturing sector has shed 331 000 jobs, by far the largest of any sector (Statistics South Africa, 2016).

In 2001, the biggest manufacturing sub-sector was TCL, accounting for 23% of employment. However, it is also the sub-sector which experienced the highest rate of job losses over the period – around 15% over the period – and this mainly as a result from foreign competition from abroad. However, the next two largest employers in manufacturing in 2001 – MME and FBT – experienced employment growth. The MME sub-sector increased its share of manufacturing employment from 20% to 22%, surpassing the TCL sub-sector as the biggest employer in manufacturing. The FBT sub-sector marginally increased its share of employment from 17% to 18%. The PCR sub-sector also showed relatively strong employment growth, increasing its share of employment from 11% to 12% of manufacturing employment.

These three sub-sectors which showed the greatest employment growth – MME, FBT and PCR – differ substantially to the TCL sub-sector. Most importantly, they do not face the same degree of competition from other countries as the TCL sub-sector does. In addition, the FBT and PCR sub-sectors are partially insulated from the effects of economic downturns as these sub-sectors manufacture goods which individuals consume regardless of economic circumstances. However, despite these sub-sectors experiencing positive employment growth, the size of the growth remains a concern.

In summary, Figure 2 shows a manufacturing sector which is stagnating. Although all manufacturing sub-sectors grew, the growth was marginal. The TCL sub-sector's GDP contribution declined significantly, while the biggest gainers were the MME, FBT and PCR sub-sectors. On the other hand, employment growth showed greater heterogeneity: of the nine manufacturing sub-sectors, four saw a loss of jobs. In addition, the rate at which these four sub-sectors lost jobs was significantly higher than the rate at which other sub-sectors gained jobs. For a country like South Africa with its high unemployment rate, labour-intensive growth is important. However, only one manufacturing sub-sector – FBT – experienced labour-neutral growth. In every other sector, GDP growth exceeded employment growth, most notably in the TCL, WPP, NMM and EMA sub-sectors.

4. Occupational Manufacturing Employment Trends

This section considers occupational trends in the manufacturing sector. We begin with examining the occupational trends in the manufacturing sector and then provide a more detailed overview of the skills changes within the various manufacturing sub-sectors. Finally, we analyse the relationship between skill level and wage increases over the period.

Table 3 indicates that economic growth favoured the highly-skilled the most, followed by the unskilled and then semi-skilled. Employment growth for highly-skilled occupations was more than double the overall employment rate, while unskilled occupations saw moderate employment growth. Semi-skilled occupations saw negative employment growth. In other words, jobs were lost.

Table 3: Growth in Employment by Occupation in the Manufacturing Sector, 2001-2014

	Growth (2001 - 2014)		Employment Shares (%)		Share of change (2001 - 2014)
	Absolute	Relative	2001	2014	
Highly-Skilled	59 202	2.2	16.3	20.7	73.1%
Managers	41 100	3.8	6.2	9.0	50.8%
Professionals	18 102	1.2	10.1	11.7	22.4%
Semi-Skilled	-149 131	-1.6	67.0	61.3	-184.2%
Clerks	-48 032	-4.3	9.0	6.5	-59.3%
Service & sales workers	1 671	0.4	2.8	3.0	2.1%
Skilled agricultural and fishery workers	-595	-4.1	0.1	0.1	-0.7%
Craft and trade workers	-59 534	-1.6	27.5	25.2	-73.5%
Operators and assemblers	-42 641	-1.1	27.7	26.5	-52.7%
Unskilled	8 952	0.4	16.6	18.0	11.1%
Elementary occupations	8 952	0.4	16.6	18.0	11.1%
Total	-80 977	1.0	100.0	100.0	100.0%

Source: LFS (2001) and QLFS (2014), own calculations.

In absolute terms, 59 000 highly-skilled jobs in manufacturing were created in the South African economy between 2001 and 2014, while 149 000 semi-skilled jobs were lost, and unskilled jobs grew by 9 000. Overall, skilled workers benefited the most from a growing economy, both in absolute and relative terms. Semi-skilled workers were the big losers in this period, with it being the only occupational category to realise job losses.

The employment growth of managers was close to four times the overall employment growth rate, while professionals had a more modest growth rate of 1.2, or 20% above higher than the overall employment growth rate. Managers (50.8%) and professionals (22.4%) and elementary occupations (11.1%) accounted for 83% of the change in employment in manufacturing over the period. The extraordinary growth of both managers saw their share of employment increase to 6.2% in 2001 to 9% in 2014. Professionals saw a more modest increase from 10.1% to 11.7%.

With the exception of service and sales workers, which saw an insignificant increase in jobs, all other occupations in the semi-skilled category saw job losses. Clerks experienced job losses which were over four times the overall employment growth rate. Skilled agricultural and fishery workers

experienced the second biggest relative decline, however, given the very small number of workers in this category, this is not a figure that is greatly concerning.

Craft and trade workers saw the biggest absolute decline of approximately 60 000 workers. This was followed by operators and assemblers, who experienced job losses of approximately 43 000 workers. Consequently, their shares in manufacturing employment dropped from 27.5-25.2% and 27.7-26.5%, respectively. Nevertheless, these two occupations still command over 50% of manufacturing employment and were largely responsible for the manufacturing sector experiencing job losses overall.

The number of jobs in unskilled occupations increased marginally by 9 000. Given the job shedding in other occupations, this was enough to increase its share of employment from 16.6% to 18.0%.

These results provide evidence of the growth trajectory of the manufacturing sector on workers with different skill levels. Specifically, there was a large increase in demand for those in highly-skilled occupations – especially managers – between 2001 and 2014. Demand for semi-skilled jobs declined, both in absolute and relative terms. Finally, there was a marginal increase in the demand for unskilled jobs.

Table 4 provides more insight on the changes in skill shares in the manufacturing sector of the South African economy between 2001 and 2014. Out of the nine manufacturing sectors, six experienced a growth in the proportion of skilled workers. Both the EMA (16%) and TRE (13%) industries experienced double-digit increases in the proportion of skilled workers. In the three sectors which saw the proportion of skilled workers decline – NMM, MME and FOM – the decreases were small and insignificant.

In contrast to the skilled occupations, semi-skilled occupations saw a marked decline in the manufacturing sector. The average decline in sectors which experienced a decline in the proportion of semi-skilled workers was 6.4%. The biggest declines were in the TRE (-13%) and EMA (-10%) sectors, which as discussed above, also saw the biggest increases in the proportion of skilled workers. Despite this situation, however, semi-skilled workers remain the clear majority in these two sectors. The FOM sector bucked the sectoral trend and saw the proportion of semi-skilled workers increased by 8% – largely as a result of job growth.

Table 4: Changes in Skill Shares in Manufacturing Sector, 2001 – 2014

		Proportion (%)		Change in Proportion (%)
		2001	2014	2001 2014
FBT	Skilled	16	21	5
	Semi-skilled	56	53	-3
	Low-skilled	28	26	-2
TCL	Skilled	8	10	2
	Semi-skilled	83	75	-8
	Low-skilled	9	15	6
WPP	Skilled	17	21	4
	Semi-skilled	63%	57	-6
	Low-skilled	20%	22	2
PCR	Skilled	26	30	4
	Semi-skilled	57	53	-4
	Low-skilled	17	17	0
NMM	Skilled	13	12	-1
	Semi-skilled	68	67	-1
	Low-skilled	19	21	2
MME	Skilled	20	19	-1
	Semi-skilled	68	69	1
	Low-skilled	12	12	1
EMA	Skilled	21	37	16
	Semi-skilled	63	52	-10
	Low-skilled	17	11	-6
TRE	Skilled	14	26	13
	Semi-skilled	76	63	-13
	Low-skilled	10	10	0
FOM	Skilled	16	15	-2
	Semi-skilled	63	71	8
	Low-skilled	21	14	-6

Source: LFS (2001) and QLFS (2014), own calculations.

The trajectory for low-skilled workers is similar to that of semi-skilled workers in the manufacturing sector, although the job shedding is not as severe. Even in sectors in which the proportion of low-skilled workers increased – such as TCL – is not as a result of job growth. Rather, job losses in semi-skilled occupations were far greater than in low-skilled occupations. Indeed, the number of low-skilled jobs in the TCL sector remained stagnant over the period.

In four sectors – WPP, PCR, MME and TRE – there was either a minimal increase in the proportion of low-skilled workers or none at all. The EMA and FOM sectors saw the biggest decrease in the proportion of low-skilled workers of 6%. In EMA's case, this should not be a concern, as the decreasing proportion of low-skilled workers has been covered by the increase in skilled – and hence more

productive – workers. In FOM’s case, the decline in low-skilled workers has been matched by an increase in semi-skilled jobs.

In closing, we see an increase in the skills intensity in manufacturing. There is a greater demand for skilled jobs, with job shedding occurring in both the semi and low-skilled occupations. However, persistent challenges throughout South Africa’s education system – which results in low educational attainment for many students (OECD, 2015) – suggests that a growth path based on demand for skilled jobs is unsustainable.

5. Conclusion

This paper examined broad labour market trends in South Africa and the manufacturing sector, with a focus on the change in employment, GDP and skills over the period 2001 to 2014.

The South African economy has witnessed substantial job losses in the primary sector. Agriculture and mining together saw job losses of around 645 000. In the secondary sector, employment growth was driven primarily by the construction sector, with the manufacturing sector losing jobs. The tertiary sector was responsible for most of the overall employment growth in the economy, with the main contributors being financial services and CSP services.

Although all manufacturing sub-sectors saw GDP growth, the growth was marginal. In addition, the rate of job losses in certain manufacturing sub-sectors was far greater than in manufacturing sub-sectors in which jobs were gained, leading to an overall job loss.

Skilled occupations – such as managers and professionals - experienced the greatest employment growth in manufacturing. Semi-skilled occupations saw the greatest number of job losses, both in absolute and relative terms, while growth in low-skilled occupations was minimal.

The stagnation of the South African manufacturing sector is primarily as a result of two factors: the emergence of an abundant supply of cheap labour in countries such as China, India, Vietnam and Indonesia and South Africa’s skill shortage, which renders it unable to move up the value chain and produce sophisticated manufactured products.

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