



*The interface between
the mining and manufacturing sectors in South Africa*

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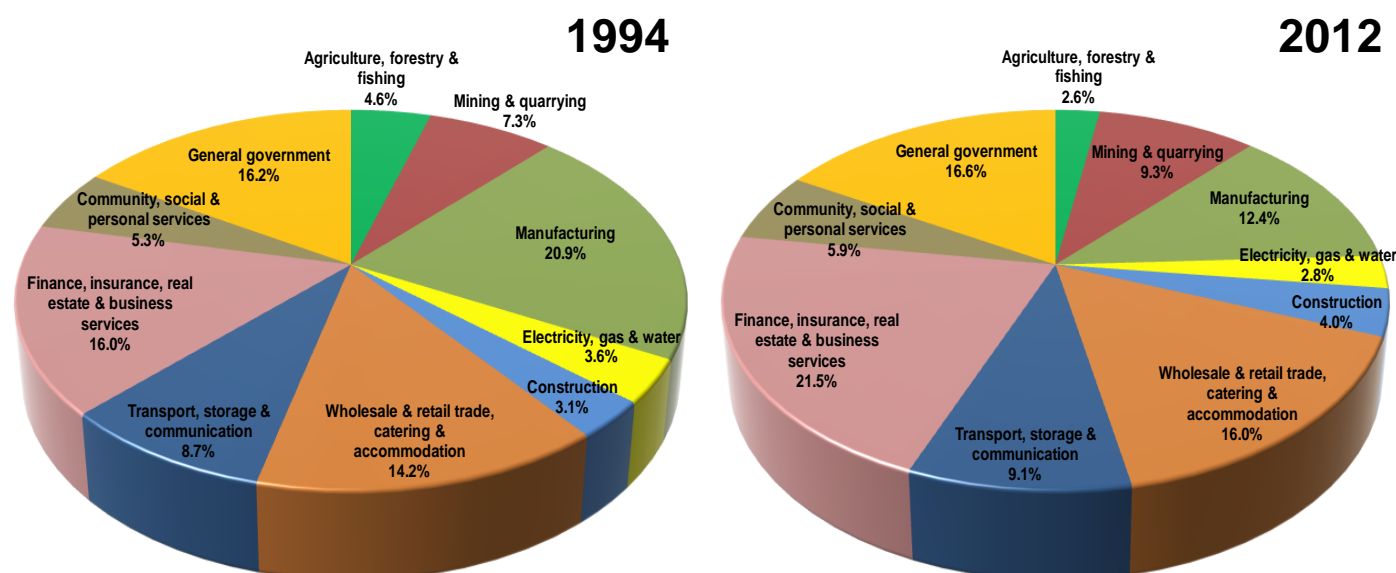


A changing economy

The structure of the South African economy has changed substantially over time. Gross domestic product (GDP) expanded at an average rate of 3.3 per cent per year (at constant prices) since 1994, with its level being 77 per cent larger in real terms in 2012 when compared to 1994. The pace of economic growth has been volatile though, and strongly correlated to the performance of the global economy.

The manufacturing sector claimed the dominant position in 1994, when it represented close to 21 per cent of GDP at current prices, as illustrated in Figure 1. By 2012, however, the sector was only the fourth largest in the economy, with a 12.4 per cent share of overall GDP. The broad financial services sector, largely driven by a strong banking services industry, had by then taken over the leading position. The mining sector's contribution to GDP, in turn, rose from 7.3 per cent to 9.3 per cent over this period.

Figure 1: Changing composition of the South African economy, 1994 and 2012
(sectoral contributions to overall GDP at basic or current prices)



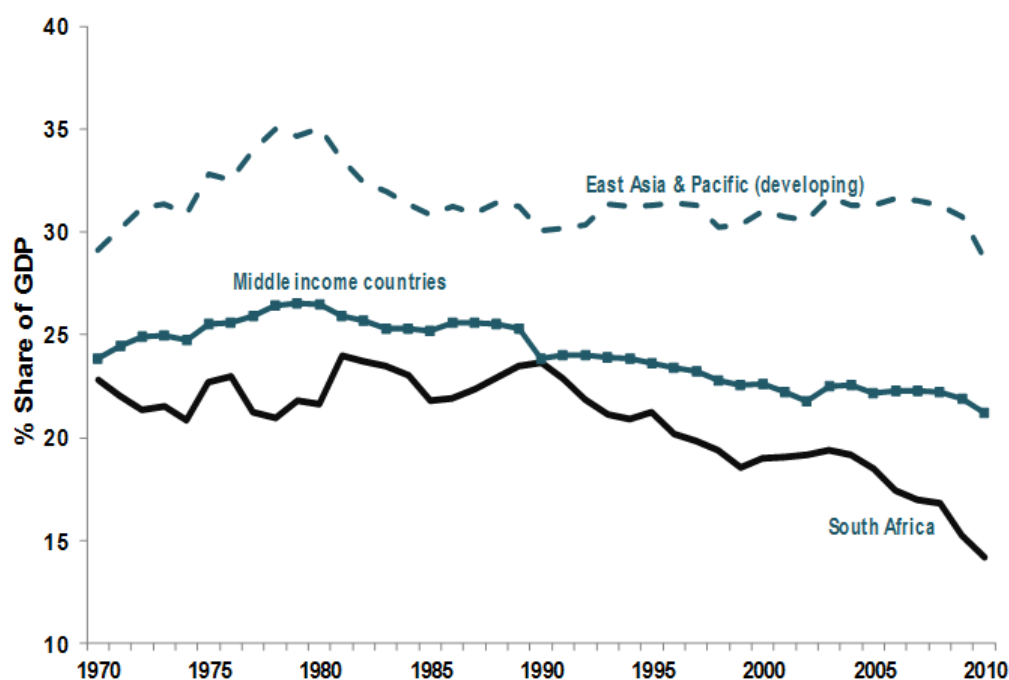
Source: IDC, compiled from SARB data

The relative decline of manufacturing as a contributor to overall economic activity has been a generic global trend. However, compared with the peer grouping of middle-income countries, South Africa's manufacturing sector saw its share of GDP decline at a faster pace over the period 1970 to 2010.

The developing East Asia and Pacific region contrasted sharply, as illustrated in Figure 2, with the manufacturing contribution rising until the onset of the global economic crisis, when the impact of collapsing world trade flows took a toll.

It should be noted, however, that the performance of individual sub-sectors of manufacturing in South Africa varied widely, although most have faced strong competition from foreign players in both local and external markets, amongst other challenges.

Figure 2: Manufacturing contribution to GDP, 1970 to 2010
(percentage contribution to overall GDP)



Source: IDC, compiled from World Bank data

The picture is completely different where services are concerned. The contribution made by the domestic services sector to GDP has mirrored the world average and trend, but has been substantially higher than the average for middle-income countries. The services sector has been the pillar of growth in the South African economy since the early 1990s, driven by a strong financialisation trend, the proliferation of business services and the substantial expansion of the telecommunications sector.

Mining and manufactured products within the export basket

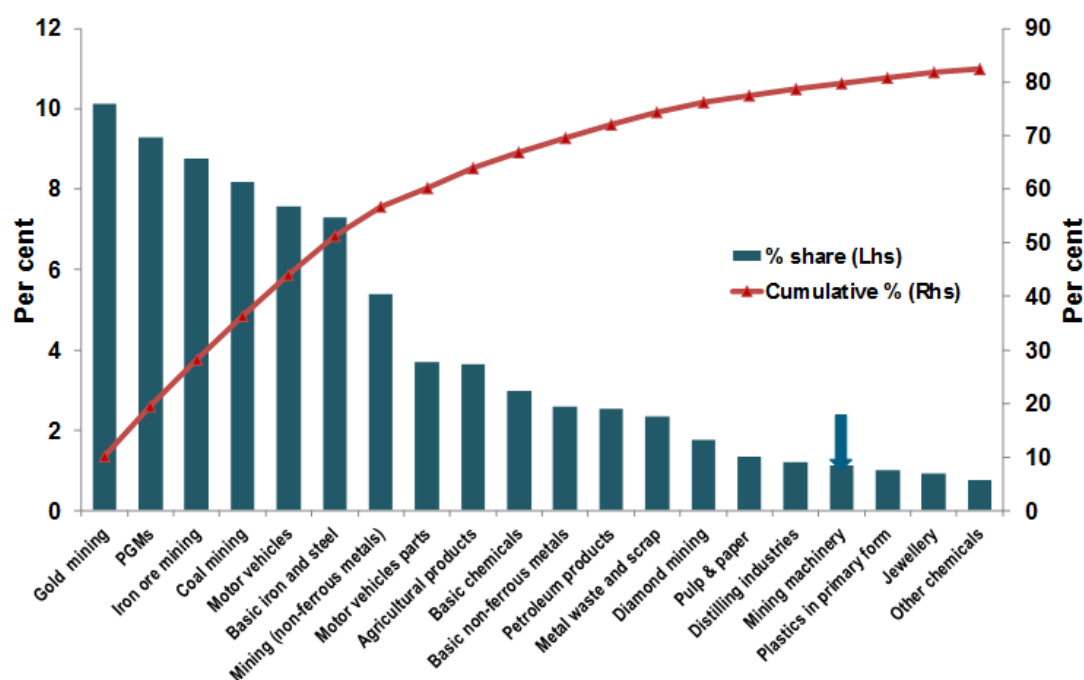
The share of mining sector products in South Africa's merchandise export basket fell from 53.8 per cent in 1994 to a low of 31.4 per cent in 2003, largely as a result of the successively smaller contribution made by gold mining exports. The rise of platinum group metals (PGMs), iron ore, coal and other mineral exports, complemented by higher commodity prices at least until the onset of the global economic crisis, boosted the contribution of mining exports to the overall basket to 46.8 per cent by 2011.

The ratio subsequently declined to 44 per cent in 2012, largely due to the sharp fall in the value of PGM exports as the domestic industry faced a very difficult year. Gold exports claimed a 10.1 per cent share of the overall merchandise export basket in 2012, followed by PGMs (9.3 per cent), iron ore (8.8 per cent) and coal exports (8.2 per cent).

Manufactured goods, in turn, claimed a larger share of the merchandise export basket at 51.6 per cent of the total in 2012, compared to 41.2 per cent in 1994. However, it fell short of the 64 per cent peak attained in 2003. The following were the leading manufactured export categories in 2012: motor vehicles (7.6 per cent of total merchandise exports); basic iron and steel (7.3 per cent); parts and accessories for motor vehicles (3.7 per cent); and basic chemicals (3 per cent).

Manufacturing exports are, therefore, highly concentrated, with the top 20 manufacturing sub-sectors, out of a total of 120, accounting for 77 per cent of South Africa’s manufactured export basket in 2012. Furthermore, as illustrated in Figure 3, almost 60 per cent of South Africa’s export basket consisted of gold, PGMs, iron ore, coal, motor vehicles, iron and steel, as well as non-ferrous metals exports. This highlights the imperative of diversifying the export offer by means of increased value addition to the country’s mineral resource wealth and effective re-industrialisation efforts.

Figure 3: Leading products in SA’s merchandise export basket, 2012
(percentage contributions to merchandise exports)



Source: IDC, compiled from SARS data

The geographical destination of South Africa’s exports has also changed considerably since 1994. New markets have emerged, while the relative importance of certain traditional export markets has declined. This is particularly the case with respect to the United Kingdom, Japan and Switzerland, whereas the relative importance of the United States and Germany as export markets has also been reduced, albeit to a lesser degree.

China emerged as South Africa’s most important export trading partner in 2009, with its share of non-gold merchandise exports measuring 12.9 per cent by 2012, compared to a mere 0.8 per cent in 1994. India claimed fifth place as an export destination in 2012, having overtaken both the United Kingdom and Switzerland. A number of African countries, such as Zambia, Mozambique, Zimbabwe and the Democratic Republic of the Congo, have also become increasingly important export markets, especially for South Africa’s manufactured goods.

As indicated in Table 1, 51.6 per cent of South Africa’s exports to the world at large in 2012 consisted of manufactured goods, with mining products representing 44.2 per cent of the total and agricultural exports claiming a mere 4.2 per cent share. However, the composition of the export basket varied considerably at the regional and individual country level, with commodity exports featuring strongly in countries such as China and Japan, while Europe, the United States and the rest of the African continent were important destinations for South Africa’s manufactured exports. This indicates that the country’s manufactured products can compete effectively in global markets, both in advanced and developing economies.

Table 1: SA's exports to selected countries/regions in 2012 (percentage contribution to merchandise exports)

Broad sector	World (total exports)	USA	European Union	Japan	China	Africa	Rest of the world
Agriculture	4.2	1.4	7.4	1.3	2.0	2.8	4.9
Mining	44.2	25.8	32.9	68.6	77.7	4.0	59.7
Manufacturing	51.6	72.8	59.7	30.1	20.2	93.2	35.4
Total exports	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: IDC, compiled from SARS data

To illustrate, exports of motor vehicles, parts and accessories represented 21.3 per cent of South Africa's relatively diverse merchandise export basket destined for European Union markets in 2012, with catalytic converters comprising a considerable portion of the components segment. Other important export products to this regional bloc included platinum, iron and steel products, agricultural products, coal, non-ferrous metal ores, iron ore, industrial chemicals, beverages, processed food and a variety of other manufactured and mining products.

Exports to the rest of the African continent in 2012 were far more diversified and, as previously indicated, were overwhelmingly dominated by manufactured products. The leading export categories included non-electrical machinery (14.9 per cent of total exports destined for African markets in 2012), particularly mining equipment; motor vehicles, parts and accessories (12.4 per cent); processed food (8.8 per cent); as well as iron and steel products (7.7 per cent). Industrial chemicals, petroleum and petroleum products, other chemical products, metal products, electrical machinery, as well as paper and paper products also featured strongly in South Africa's export basket to the continent.

The relative importance of mining equipment exports to African operations is illustrative of a successful aspect of the interface between South Africa's mining and manufacturing sectors over the decades, which led to the development of a globally competitive mining equipment industry. Understandably, the National Development Plan 2030, the New Growth Path and the various iterations of the Industrial Policy Action Plan all target the further development of the domestic capital equipment industry with a strong export orientation.

In sharp contrast to the two regional markets outlined above, exports to China in 2012 consisted overwhelmingly of mining products, particularly iron ore (47 per cent of the total); non-ferrous metal ores, excluding gold and PGMs (17.2 per cent); coal (11.2 per cent); and platinum (2.1 per cent). With respect to manufactured exports, iron and steel (7.5 per cent) and industrial chemicals (2.4 per cent) dominated, while motor vehicles, parts and accessories represented a mere 2 per cent of the export basket, and processed food products a miniscule 0.8 per cent.

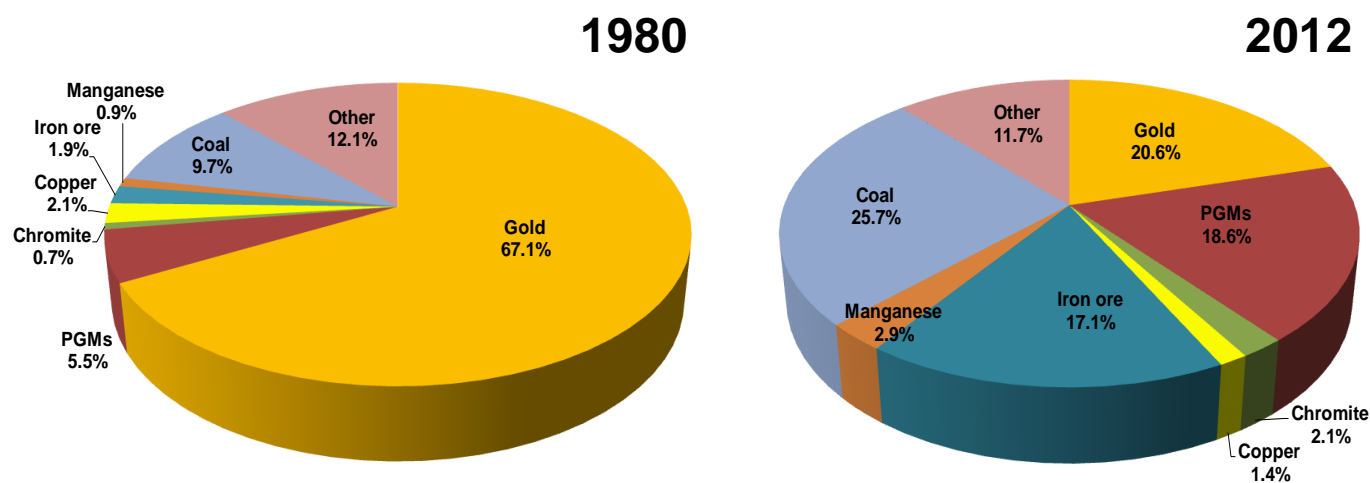
The challenge for South Africa's export sector is, therefore, to enhance its global competitiveness and value addition, to diversify its product offer and penetrate non-traditional markets, especially in rapidly growing emerging and developing economies.

The mining sector

The mining sector has become increasingly diversified over time, progressively exploiting South Africa's enviable mineral resources endowment. As illustrated in Figure 4, the gold mining sub-sector is a mere shadow of its past glory, accounting for only 20.6 per cent of mining sales in 2012 - a fraction of the 67.1 per cent recorded in 1980 or the 49.2 per cent claimed in 1994. Steeply falling gold production as deposits became increasingly difficult to access underpinned the adverse trend.

The PGMs segment, in turn, has grown notably in importance, representing 18.6 per cent of the mining sector's sales in 2012, compared to a mere 5.5 per cent share in 1980 (11.4 per cent in 1994). Similarly, the coal segment saw its contribution rise from 9.7 per cent in 1980 to 20.4 per cent in 1994, and further to 25.7 per cent by 2012, propelled by domestic power generation requirements and export demand. Iron ore represented 17.1 per cent of mining sector sales in 2012, with other important segments including manganese, chromite, copper, nickel, zinc, as well as quarrying products.

Figure 4: Changing structure of SA's mining sector, 1980 and 2012
(sub-sectoral contributions to overall mining sales)



Source: IDC, compiled from DMR data

The mining sector's relative contribution to South Africa's exports has declined since 1970, with the value of mining exports being somewhat lower in real terms. Mining exports amounted to R308 billion (at current prices) in 2012. Mining sector employment contracted enormously from the 1970s through to the 1990s, but has since recovered slightly to 524 000 by 2012. The mining sector's average share of overall GDP rebounded in the 2000s, largely on the back of the global commodities boom, which was supported by the emergence and expansion of new sources of demand for various minerals. The value added (GDP) by the mining sector in 2012 totaled R267 billion.

Key segments of the mining sector have been under considerable pressure since the onset of the global economic crisis. The platinum segment is a case in point, due to the impact of weaker demand for motor vehicles (and hence for catalytic converters) in world markets. The slowdown in China in recent times has also weakened demand for a variety of commodities and their respective prices, impacting on the domestic mining sector as a whole. Demand-side challenges have been compounded by production stoppages related to safety and industrial relations issues, particularly since 2012.

The mining sector plays an invaluable role in the South African economy, particularly through its contribution to foreign exchange earnings generation, but also in terms of value addition and employment. Moreover, it generated a total income of R497 billion in 2012, paid R101 billion in remuneration to its workers, contributed R21 billion in corporate taxes to the fiscus, and paid R12 billion in dividends to its shareholders. Its fixed investment expenditure totalled R75 billion in 2012.

The mining sector's linkages with the rest of the economy

More than 81 per cent of the mining sector's overall spending on its intermediate input requirements, valued at R169 billion in 2012, was sourced from domestic suppliers of goods and services. The import leakage (i.e. direct import requirements) was thus estimated at approximately R33 billion.

Its spending in the local economy, often referred to as "backward linkages", benefitted the following sectors supplying goods and services to the mining sector: machinery and equipment; transport equipment; wood products; fabricated metal products; non-metallic minerals (cement, bricks, etc.); chemicals and petroleum products; electricity; water; transport services; construction and civil engineering; finance and business services. The first six sectors are all manufacturing related, while the last few are services sectors.

The mining sector's "forward linkages", or its supply to consumers of mineral products, largely pertain to the following sectors: basic metals (mainly the basic iron and steel sector, which consumes iron ore); motor vehicles, parts and accessories (e.g. PGMs for catalytic converters); chemicals (e.g. phosphates for the fertiliser industry); petroleum refineries (e.g. coal for Sasol's operations); electricity (e.g. coal for Eskom's power generation); construction and civil engineering (e.g. building materials); and other industries such as jewellery manufacturing (e.g. gold, platinum).

The economy-wide impact of the mining sector in 2012 may be illustrated as follows:

- Its direct impact on GDP (value-add) amounted to R267 billion and the sector employed 524 000 workers;
- Its spending on the consumption of goods and services in the domestic economy, also referred to as the "first round impact", resulted in an additional R70.7 billion in value-add and the employment of 206 920 people directly linked to that procurement;
- These beneficiary sectors were in turn supplied by other sectors – the so-called "indirect impact" – with the value-add thereby generated being worth a further R43 billion and sustaining 126 970 jobs;
- The earnings expenditure by all of those employed (whether directly by the sector, or through its first round and indirect impacts) on the domestic economy (e.g. in retail stores, entertainment etc.) is known as the "induced impact", which in turn is estimated to have generated R155.5 billion in value-add and to have sustained some 487 620 jobs.

Adding all of this together reflects the direct plus indirect impacts of the mining sector across the economy – that is, a R536.1 billion contribution to GDP and sustaining 1.35 million jobs.

Through the substantial inter-industry linkages with supplying and supporting industries elsewhere in the economy, the sector's overall contribution to the South African economy is thus significantly larger than its own direct impact.

The impact of mining and its related activities throughout the economy is particularly evident in terms of job creation and value-add in the following sectors: financial and business services (around 10 per cent of the value added by this sector and 181 040 of its employment were either directly or indirectly associated with mining sector activities in 2012); trade, catering and accommodation (10 per cent of value added and 163 417 jobs); and, among others, transport, storage and communications (24 per cent of value added and 84 461 jobs).

The manufacturing sector

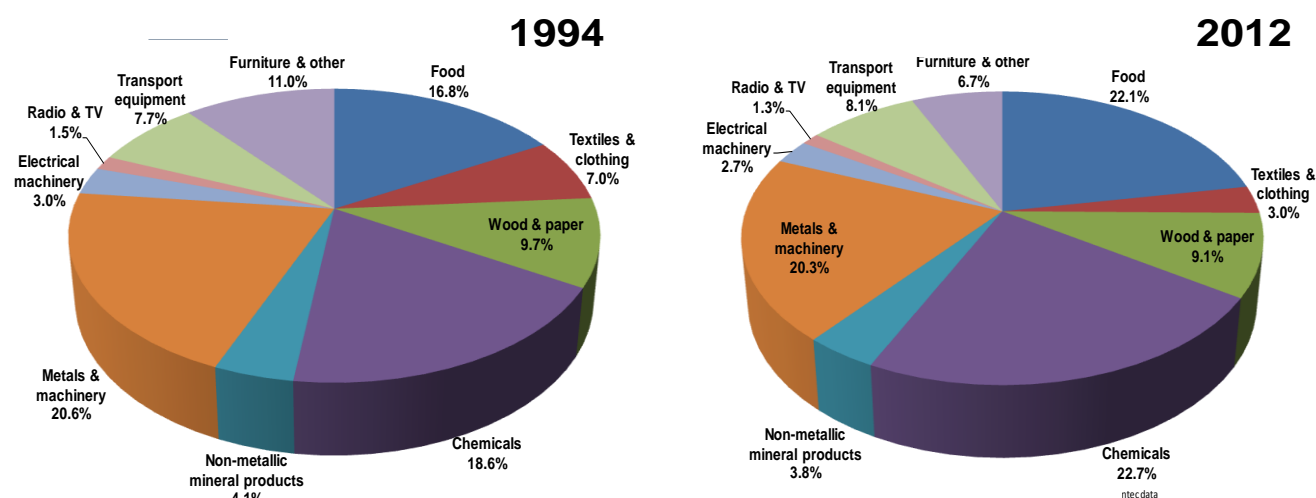
Although diversified, South Africa's manufacturing base is dominated by the chemicals, metals and machinery, and the food and beverages sectors, as illustrated in Figure 5.

The chemicals sector's contribution to overall manufacturing GDP increased from 18.6 per cent in 1994 to 22.7 per cent by 2012, while the share claimed by the metals and machinery sector remained basically unchanged at just over 20 per cent. The food and beverages sector saw its contribution rise substantially, from 16.8 per cent to 22.1 per cent, over this period. In contrast, the textiles and clothing sector, as well furniture and other manufacturing, contributed substantially less to manufacturing GDP in 2012.

The manufacturing sector's relative contribution to overall GDP and employment has declined over the past four decades. However, a contracting share does not necessarily imply a decline in output levels. Manufacturing GDP in fact tripled in real terms over the period 1970 to 2012. The sector also became increasingly export-oriented, with its share of total merchandise exports being substantially higher by 2012.

Manufacturing's declining share of overall GDP thus reflects an inferior growth rate (e.g. averaging a mere 2.8 per cent between 1994 and 2012) relative to those of other sectors of the economy. Nonetheless, various sub-sectors of manufacturing with substantial linkages to mining experienced relatively high average growth rates post-1994, at least until the recent economic downturn. These included chemicals; metals and machinery; transport equipment; and electrical machinery. However, certain manufacturing sub-sectors have indeed contracted over time, such as textiles and clothing.

Figure 5: Changing structure of SA's manufacturing sector, 1980 and 2012
(sub-sectoral contributions to manufacturing GDP)



Source: IDC, compiled from Quantec data

While several sub-sectors of manufacturing largely serve the domestic market, others are heavily reliant on export markets. Either way, competitiveness is critical to their success as fierce competition prevails across the board. Numerous factors have affected their performance over time, including: domestic and/or external demand conditions; currency movements; access to and cost of capital; labour related issues (wages, productivity, industrial relations, legislation); other input costs and pricing practises (e.g. import parity pricing); extent of technological upgrading; policy support; power supply and escalating electricity costs; transport infrastructure and logistics support; regulatory aspects; tariff protection; as well as competition/concentration issues, among others.

The interface between mining and manufacturing

The South African mining sector's demand for intermediate inputs rose from R129 billion in 1992 to R169 billion by 2012 in real terms (i.e. at constant 2012 prices). Domestic sourcing as a percentage of the total declined from 85.2 per cent to 81.2 per cent over this period, as indicated in Table 2, with the balance being imported from foreign suppliers.

The share of manufactured goods within the mining sector's intermediate input demand has fallen sharply over time, from 50 per cent of the total in 1992 to 30.6 per cent by 2012. In relative terms, spending on machinery and equipment - the largest component of intermediate demand for manufactured products in 1992 - fell substantially over the period.

In contrast, services-related activities saw their relative share of mining sector spend rise considerably, from a combined 49 per cent in 1992 to 68 per cent in 2012, with the transport and storage sub-sector claiming the bulk of the increase.

Table 2 : Mining sector demand for intermediate inputs, 1992 to 2012
(sectoral/sub-sectoral percentage shares of intermediate demand)

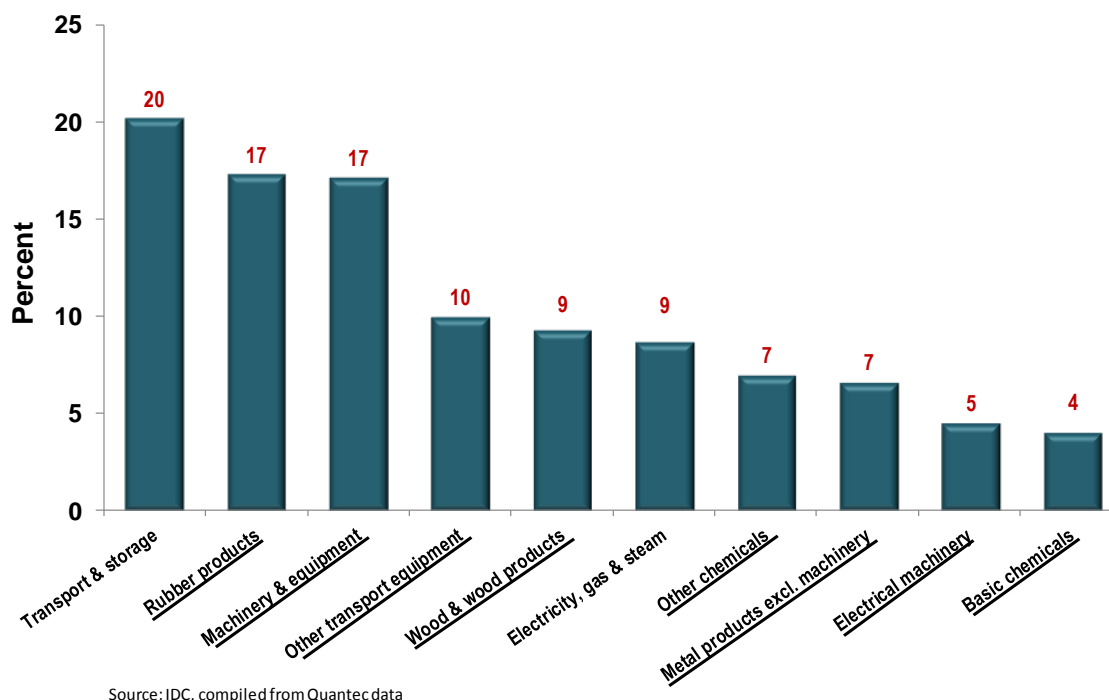
Sector	1992	1997	2002	2007	2012
Agriculture	0.10	0.07	0.07	0.04	0.05
Mining	0.72	1.14	0.75	1.29	1.30
Manufacturing	49.99	41.24	37.25	31.53	30.58
Machinery & equipment	16.47	12.78	9.61	7.69	8.94
Transport equipment	3.80	2.47	4.36	4.10	2.50
Wood & wood products	5.12	3.33	2.27	1.27	1.74
Chemicals, rubber & plastics	13.63	12.72	13.29	12.66	11.33
Non-metallic mineral products	0.94	1.45	1.31	1.07	0.94
Fabricated metal products	6.62	5.71	4.16	3.00	3.40
Other manufacturing	3.41	2.78	2.25	1.73	1.73
Services	49.19	57.55	61.93	67.14	68.07
Electricity, gas & water	14.75	11.05	6.24	5.35	6.81
Construction	3.12	2.69	2.13	1.37	2.08
Transport & storage	15.37	28.76	37.55	44.07	41.18
Finance & business services	3.31	4.86	6.12	6.16	6.64
Other services	12.65	10.19	9.89	10.20	11.36
Total	100.0	100.0	100.0	100.0	100.0
Total value in R billion (nominal):	15.3	33.5	76.8	117.5	168.8
Total value in R billion (Real 2012 prices):	129.3	182.4	181.0	186.5	168.8
Sourcing ratio – domestic : foreign	85:15	82:18	82:18	80:20	81:19

Source IDC, compiled from Quantec data

A number of sectors rely on the mining sector as a key source of demand for their respective products and services. Eight of the top ten illustrated in Figure 6 are manufacturing sub-sectors (underlined).

The rubber products and machinery and equipment sub-sectors each sold 17 per cent of their output to the mining sector in 2012. Additional manufacturing sub-sectors that relied significantly on mining sector procurement included other transport equipment; wood and wood products; other chemicals; and metal products, excluding machinery.

Figure 6: The importance of the mining sector for its top 10 supplier sectors, 2012
(percentage of supplier sector output sold to the mining sector)



The top ten supplying industries illustrated in Figure 6 employed 104 000 workers in 2012, or 14 per cent of their combined workforce, due to their direct linkages with the mining sector. Sixty thousand of these were in the transport and storage sector, and 20 000 in the machinery and equipment sub-sector of manufacturing. Including the indirect and induced effects, the total number of jobs in the leading ten supplier industries associated with mining sector activity amounted to 345 000 in 2012. More specifically, the identified manufacturing sub-sectors employed some 40 000 workers directly and an additional 145 000 economy-wide through demand for their output by the mining sector.

The importance of the inter-linkages between mining and manufacturing from an employment perspective is particularly evident through multiplier effects. The employment multipliers of the various mining sub-sectors are smaller than those of most of their top ten supplying industries. This is especially the case where the basic chemicals and other chemicals sub-sectors of manufacturing are concerned. The basic chemicals sub-sector has a multiplier of 11.2, implying that for every direct job in this sub-sector, a total of 11.2 jobs are being supported economy-wide. This illustrates the importance of enhancing the mining sector's linkages with other sectors of economic activity, particularly those with higher employment multipliers and value addition potential.

On the supply-side, mining sector sales to other domestic industries for intermediate consumption rose from R120 billion in 1992 to R319 billion in 2012 in real terms (i.e. at constant 2012 prices). Demand for mining products by the domestic manufacturing sector for further beneficiation/processing represented 77 per cent of the total in 2012, somewhat lower than the 86 per cent level recorded in 2002.

Positive spin-offs of an enhanced interface

A greater interface between mining and manufacturing would not only benefit the two individual sectors but the economy at large.

An increased supply of mining sector products for further processing or value addition by an expanding domestic manufacturing base would tend to reduce the mining sector's vulnerability to external demand conditions. In the process, it would lower the commodity concentration of South Africa's export basket, contributing to mitigating the susceptibility of the current account of the balance of payments to commodity price fluctuations, and potentially also reducing exchange rate volatility.

It would contribute towards expanding and diversifying the country's industrial base, as well as related services sectors. Economies of large-scale production could lead to improved competitiveness in a number of manufacturing sub-sectors, impacting positively on domestic procurement, including demand for mining sector products, potentially raising the export propensity of South African manufacturing and reducing import penetration. Domestic manufacturing competitiveness could be further enhanced if benefitting from more competitively-priced inputs, including those emanating from the mining sector per se.

Greater collaboration in research and development efforts with respect to mining technology, as well as in developing innovative applications of mining and/or beneficiated products could have positive spin-offs for sectoral competitiveness, again raising demand for both mining and manufacturing output. Such cooperation could also extend to infrastructure sharing and improved logistics co-ordination, potentially reducing the associated costs.

An enhanced interface between mining and manufacturing would thus tend to have positive implications for the domestic operating environment, including cost structures, thereby raising South Africa's attractiveness as an investment destination for both local and foreign investors. Significant employment creation and skills development would be amongst the likely outcomes, improving welfare and providing a greater degree of socio-economic stability.



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