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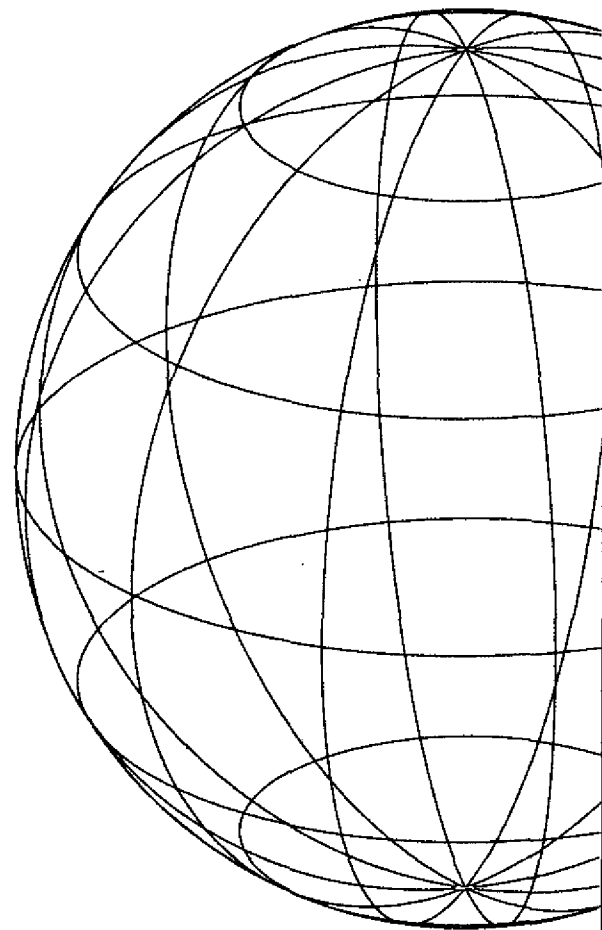
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UNIDO RESEARCH PROGRAMME

# Productivity Performance in Developing Countries

Country Case Studies

∴ South Africa



UNITED NATIONS  
INDUSTRIAL DEVELOPMENT ORGANIZATION

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# **Productivity Performance in Developing Countries**

Country Case Studies

## **South Africa**

Colin McCarthy



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION  
Vienna, 2005

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## Executive summary

South Africa is a middle-income, developing country. It is, furthermore, a society that, during the 1990s, experienced a fundamental political transformation and the adoption in 1994 of a system of democratic governance. Economic development and productivity performance specifically, have been substantially influenced by this transformation and the discriminatory practices of the apartheid system that preceded it.

The dominating force in economic activity is the formal sector, which has a formidable manufacturing capacity by African standards. From 1960 until the early 1990s this sector developed on the basis of activities that added value to the mineral resources of the country and through import substitution, which in time became an intensive effort to establish industries that were strategic to the survival of a beleaguered economy. An outstanding feature of South Africa's production activity is its growing capital intensity over time. This is revealed in increasing capital/labour and average capital/output ratios. The concomitant productivity performance has been poor. Until the mid-1990s the productivity of capital declined sharply, and the growth in labour productivity, in spite of the growth in real capital per worker, was meagre, and hence total factor productivity also performed weakly, often falling. Productivity performance turned around in the mid-1990s. The capital/output ratio started to decline, and labour, capital and total factor productivity showed some improvement, but at the cost of employment, with capital/labour ratios still increasing in a labour abundant economy.

In assessing the conventional determinants of productivity performance, the underlying forces that have made for poor productivity become clear.

- The political system of apartheid that prevailed during most of the study period had pervasive effects on productivity. It sustained economic and income inequality, bedded discriminatory practices into the labour market and labour use, discriminated severely in education and skills development, aimed industrial and trade policies at the needs of an internationally isolated economy, and polarised labour relations through the absence of the vote for black workers, forcing them from 1979 to use their labour power in efforts to gain political equality.
- The central thrust of economic growth came from rapid growth in the capital stock through fixed investment, which, until the early 1980s, was characterised by the growing share of public corporations, often associated with lower productivity performance, and a declining share by private business, which is generally regarded as a more efficient user of resources. Until about 1980, the share of fixed investment devoted to economic infrastructure remained high but, from then until the mid-1990s, declined sharply. Employment growth did not keep pace with capital formation. Investment took place mainly in the industries that were of a capital-intensive nature, in both physical and human capital. This process was encouraged by an industrial policy aimed at addressing international isolation and by an incentive structure and changes in relative factor prices that favoured capital intensive industries and the substitution of capital for labour through mechanisation in all industries, including agriculture and mining. The structure of production changed accordingly, with capital-intensive sub-sectors such as chemicals, basic metals and metal products growing in importance while labour intensive industries such as food processing and textiles and clothing declined in relative terms.



- The democratisation of South Africa has not only transformed the political system but has also removed international isolation of the economy and seen the adoption of policies of trade liberalisation. The integration of South Africa into the world economy has had important outcomes, such as an increasing openness to foreign trade (increasing trade ratios of exports plus imports to GDP), increases in import penetration in domestic markets, and, because of the latter development, the increasing price competitiveness of domestic producers. Growth in output has improved, but the improvements in factor productivity must, unfortunately, be linked to a lack of employment growth.
- The growth in import penetration ratios in manufactured goods has increased competition in a sector characterised by high and growing concentration ratios. In the production of non-tradable inputs such as electricity, and transport and telecommunications services, the degree of concentration is high and, in most cases, in the hands of monopolies.
- South Africa has a history of quality institutions that protected private property and the enforcement of contracts. However, these institutions operated within a discriminatory political environment. A major challenge for democratic South Africa is to remove the discriminatory bias of institutions. Political transformation has brought about a substantial improvement in the quality of political institutions. Drawing on the literature that addresses institutional change it is, however, possible to argue that the transition to the improved policies and institutions which could support higher income and productivity, could also have created uncertainty among investors. This could explain the absence of the anticipated large inflow of foreign direct investment. It is within this context that the possibility of uncertainty among investors suggests itself. This is an important question that cannot be addressed in this paper.
- In the field of money and finance, South Africa has advanced institutions. However, during the study period these institutions have failed to address the needs of the poor and micro enterprises.

Policies aimed at protecting an increasingly isolated economy during the apartheid years had a negative impact on the structure of the economy and on the productive use of resources. When the democratic government came to power in 1994, it inherited Africa's largest and most industrialised economy, but one suffering from gross inequities and a lack of international competitiveness. The new government adopted a wide range of policies to remove inequality and improve competitiveness. Productivity has improved, but at the cost of employment. It is also not possible to be precise about the link between the policy measures and productivity improvement. Looking ahead, it is clear that a social accord between a well-organised labour movement, business and government will be necessary to design and implement policy measures, including an active industrial policy, to enhance productivity growth in a society that places great weight on equity considerations. In the end, the crucial force will be politics and not economics.

## I. Introduction

Economic activity can be thought of as the sum of the efforts by all economic agents, operating within an organisational and institutional set of arrangements that defines the economic system, to convert the resources available to the economy – labour, capital and natural resources – into the output (goods and services) required by society. The relationship between input and output represents the productivity ratio, that is, output per unit of input. In a world of scarce resources, economic growth and the welfare of society are associated with a long-term improvement in productivity. Improvements in productivity raise standards of living by, *inter alia*, allowing economies to compete effectively in the international division of labour and the exploitation of comparative cost advantages through trade.

A narrative of South African productivity performance from the 1960s until 2000 requires the unravelling of an intriguing saga characterised by a major transformation in the economy, especially in trade and industrial and factor market policies, and a dramatic transformation in the political system with the substitution, in 1994, of inclusive democracy for the *apartheid* regime of racial discrimination. As the story unfolds, the links between political and economic developments will become clear.

The country's experiences of economic conditions and performance over the four decades have been many and varied. There were times of exceptionally high growth but also periods of stagnation. As may be expected, productivity achievements also varied, ranging from significant improvements, at times, to mostly poor performance. Underlying the process of economic growth and development, there have been significant changes in the structure (composition) of economic activity and a fairly radical, policy-driven change from an inward looking to an outward-looking economy. Political change in South Africa was also accompanied by, and was a major cause of, changes in factor markets, notably the labour market, which had previously been characterised by segmentation and discrimination. All these changes, and the underlying dynamics that caused them, impacted on the use made of resources and on the relationship between inputs and output.

Writing in 2005, and anticipating further changes in the South African economy during the remainder of this decade, one feels constrained by having, in line with the brief, to respect 2000 as the cut-off date. The year 2000 is only half a decade into the "new" South Africa and the implementation of new economic development policies for a country accepted back as a respected participant in the global market. During the post-1994 decade, policy has continuously changed and, given the lags in impact, including the impact on productivity performance, its effects will only be clear in the years to come. Since 2000 significant changes have taken place, for example, in the growth of output and, recently, employment, and it is possible to anticipate further changes. The point to be made is that South African society and the economy are in transition; trying to pin down developments now in a causal relationship is like trying to hit a moving target.

## II. Salient features of the economy and its development

A review of productivity growth in South Africa first requires an introductory description of the South African economy, its salient features, and the development path that has been followed in diversifying the economic base.

South Africa is a developing country with a per capita income that falls in the upper echelons of middle-income countries (Table 1). But average income is a misleading indicator of welfare, especially in South Africa's case where the distribution of income is very skewed. In the *World Development Report 2005*, the Gini index for South Africa is given as 59.3 (see also Table 7), which is not the highest in the table, but nearly in that bracket, and thus compares unfavourably with, for example, Ghana's 30.0, Egypt's 34.4 and Korea's 31.6. Absolute poverty is also pervasive, with 23.8 per cent of the population in 1995 living on less than US\$2 per day, which is about US\$7.40 if converted to a purchasing power parity value, using the applicable ratio for the gross national income estimates (World Bank, 2005).

**Table 1 Gross national income per capita, 2003 (US Dollars)**

	Exchange rate values	Purchasing Power Parity
South Africa	2,780	10,270
Low income economies	450	2,190
Middle income economies	1,920	6,000
High income economies	28,550	29,450

Source: World Bank, *World Development Report 2005*, Washington D.C.

The South African economy is not large. With a GDP of US\$159 886 million in 2003, it was significantly smaller than that of Korea's US\$605 331 million and the Netherlands' US\$511 556 million (World Bank, 2005).<sup>1</sup> However, when compared to the rest of Africa, especially Sub-Saharan Africa (SSA), the South African economy is relatively large and more industrialised. Table 2 shows that South Africa, with 6.6 per cent of the population of SSA, produces 45.5 per cent of the sub-continent's GDP and 75.7 per cent of its manufactured exports. These shares in relation to all of Africa are 5.5 per cent, 28.7 per cent and 51.1 per cent respectively.

**Table 2 The South African economy relative to the rest of Africa, 2001/2\***

S.A. Population (million)	45.35
% of SSA	6.60
% of All Africa	5.50
S.A. GDP (Constant 1995 US\$, mil.)	179,647.00
% of SSA	45.50
% of All Africa	28.70
S.A. Manufactured exports (US\$, mil.)	18,571.00
% of SSA	75.70
% of All Africa	51.10

\* The values in the table are the annual averages for 2001-2002.

Source: World Bank, *African Development Indicators 2004*, Washington D.C.

<sup>1</sup> It may be noted that, measured in purchasing power parity terms, the Gross National Income of South Africa at US\$465 000 million is about the same as that of the Netherlands' US\$464 000 million (World Bank 2005).

## Productivity performance

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South Africa is a mineral rich economy<sup>2</sup> with a fairly large and diversified manufacturing sector. The latter is largely the outcome of a process of import substitution. During the first centuries of colonial settlement, the economy of the area that in 1910 was united in the Union of South Africa remained an agriculture-based economy with little manufacturing. The discovery in 1867 of rich diamond deposits and, especially, a few years' later, of major deposits of gold-carrying ore, dramatically changed the nature of the economy. The export oriented mining boom had two positive spin-offs for the development of domestic industry. First, it attracted foreign capital and employed large numbers of workers, many of whom were immigrants from Europe. For the first time, there were relatively large urban concentrations of wage earning people and, hence, markets developed that provided adequate scale opportunities for manufacturing. To this must be added the fact that gold mining on the Rand (Johannesburg) led to the creation of South Africa's dominant metropolitan area in the interior, far from the coast in a country with topographic and geographic features that do not allow low-cost transport. There was, therefore, substantial natural protection for firms that were established to produce goods for the large and growing urban market.

The second benefit that manufacturing derived from mining was the backward linkages created by mining in the demand by the mines for products such as protective clothing, timber props and explosives. The establishment of a dynamite factory at Modderfontein in the early twentieth century initiated the establishment of the predominantly capital-intensive chemical industry in South Africa at a much earlier stage than that conventionally found in the sequential pattern of manufacturing development.

Mining gave domestic manufacturing a boost but simultaneously created the income that could support a substantial demand for imported goods. A change of government in 1924 led to the implementation in 1925 of an explicit policy of industrial protection through tariff protection to substitute domestic production for imported goods. The driving force of the new National Party/Labour Party coalition government in this policy was three-fold: first, to promote industrialisation as an objective of economic nationalism, second, to create jobs for the large number of poor whites, who, in the aftermath of the Boer War, formed the essence of what came to be known as the Poor White Problem, and, third, the desire to have economic activity in place that could eventually replace mining, which was dependent on a wasting asset. With the latter, the government of the day sought to achieve more or less what modern authors on the management of mineral rent exploitation would tend to prescribe – use the rents in a way that will provide for the future when the mineral assets have been run down.

To achieve these aims, the customs tariff was revised and selective tariff protection became part of South African industrial policy. But the government went further than tariff protection. In the absence of the desired private sector initiative, it established a steel industry, at the time widely regarded as a requirement for any economy that was serious about industrialisation. In 1928 a public corporation, the Iron and Steel Corporation of South Africa (ISCOR), was established as a domestic steel producer. This set the scene for a direct government role in the establishment of capital-intensive producers that focused on adding value to South African minerals. Later on, another notable exercise was the establishment of SASOL, the fuel-from-coal producer that diversified into the production of a much broader range of chemicals. Both corporations have since been privatised and currently operate as efficient listed public companies. These initial actions by the government are emphasised because they set the scene for what, in the contorted economic and

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<sup>2</sup> South Africa is ranked in top position in the world in reserves of gold, the platinum group metals, chrome ore, vanadium, alimino-silicates and manganese ore and has substantial reserves of vermiculite, uranium, coal, diamonds, nickel, iron ore and aluminium.

political history of South Africa, eventually evolved into efforts to protect a pariah state against the impact of international isolation.

The Second World War provided an impetus to industrial growth. The isolation of war conditions created an opportunity for South African firms to produce goods that, in peacetime, had been imported, while South African manufacturing industry, now with established clothing, steel and chemical (explosives) industries, could contribute war material to the Allied effort.

During the years after the Second World War, a number of developments contributed to the growth of the manufacturing sector and its diversification. One of these was the large South African mining houses that, under conditions of foreign exchange control, sought alternative investment opportunities in the manufacturing industry. Inward-looking industrialisation was further extended through tariff-jumping foreign direct investment. Foreign firms established subsidiaries in South Africa to produce goods for the domestic market, which was protected by import tariffs and significant levels of natural protection of location. Another was the increasing market isolation of South Africa, which led to perceptions of a siege economy and thus the need to develop domestic industries required for so-called strategic purposes and the survival of the economy. This objective took the economy further down the road of import-substituting industrial development than would have been the case under normal circumstances, with substantial further developments in the steel, engineering and chemical industries. Finally, a growing perception of the need for export-oriented growth, specifically for enhanced foreign exchange earnings, by adding value to natural resources for export purposes resulted in tax incentives to encourage investment in large capital-intensive projects producing products such as stainless steel and aluminium.

The democratic transition of 1994 brought an end to the isolation of the South African economy. In foreign trade, an outward-looking strategy with a focus on trade liberalisation and export orientation was adopted. This was accompanied by policy measures aimed at addressing the skew distribution of wealth, income and opportunity in the South African economy. At first the RDP (Reconstruction and Development Programme), with its broader emphasis on community development and social expenditure, formed the basis of the government's broad economic policy. However, in June 1996 the adoption of the GEAR (Growth, Employment and Redistribution) strategy became the focus of government policy. Attention has now shifted to macro-economic stabilisation and the acceleration of economic growth through investment in the export capacity of manufacturing industry.

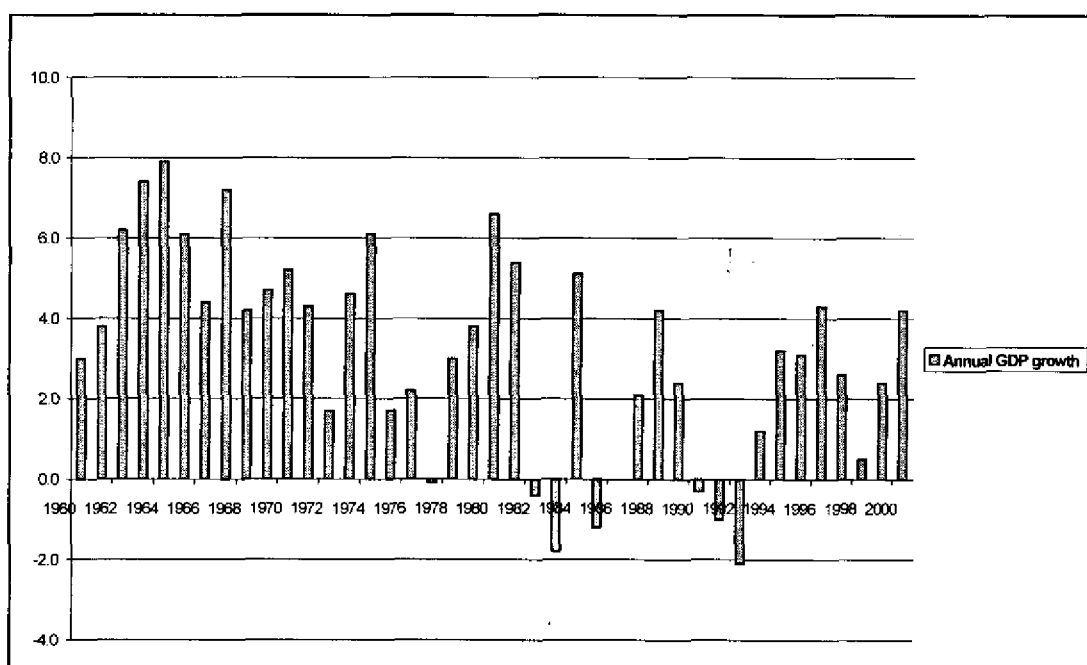
### III. Economic growth, factor use and productivity change

In this section, attention is given to Section I of the Terms of Reference and is aimed at: (a) examining the trends in productivity to interpret in broad terms the episodes of rapid growth and slumps in productivity; (b) considering the relationship between the growth of productivity and output, including a decomposition of output growth into contributions of capital deepening and productivity change; and (c) reviewing and explaining the change in South Africa's position relative to the USA, which is taken to represent the 'world technology frontier'.

#### 3.1 Growth in output and factor inputs

From 1933 the South African economy had gone through a long phase of virtually uninterrupted growth in total economic activity, and in manufacturing output in particular. This eventually culminated in the exceptionally fast growth of the 1960s, shown in Figure 1. Since then the growth performance of the South African economy has been rather pedestrian with negative growth in no less than seven years. The explanation for this poor performance need not detain us at this point. Suffice it to note that it can be linked to a slow down worldwide in economic growth and to the problems caused by South Africa's increasing international isolation and poor factor utilisation. Noticeable developments during this period of slower growth were the growth spurt during the early 1980s, which was initiated by the boom in the gold price during 1979/80, and the consistent positive growth after 1994.

Figure 1 Annual GDP growth



Source: South African Reserve Bank

The real growth rates, summarised for five-year periods in Table 3, show the slow down in growth from the 1970s onwards and also reveal that the initial growth of manufacturing had been faster than economy-wide growth. It is also clear that manufacturing lost pace with average growth from the 1980s, declining to lower levels than for the economy as a whole. The consequence of this

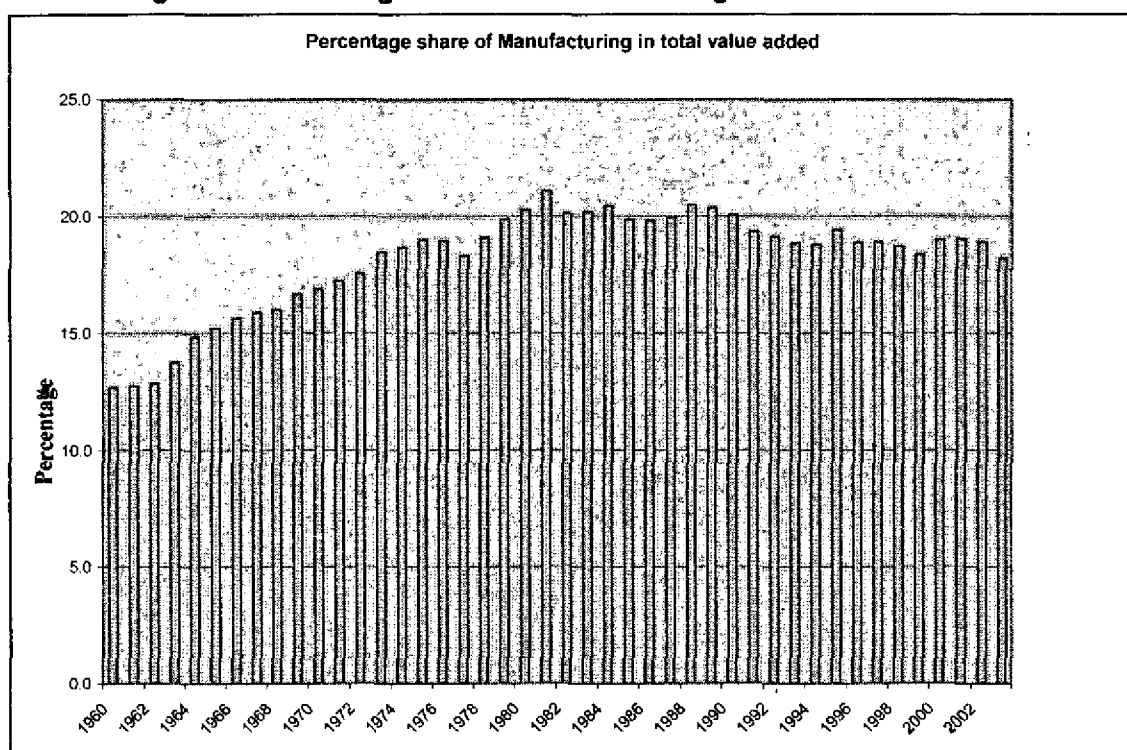
slower growth was that the contribution of manufacturing to total value added in the economy (Figure 2) levelled off during the 1980s and started a decline that fell below 20 per cent in 1990.

**Table 3 Average annual real growth in gross value added  
(Constant 1995 prices)**

	Manufacturing	Economy
1960-65	9.8	5.9
1965-70	7.4	5.2
1970-75	5.9	3.5
1975-80	4.5	3.1
1980-85	0.9	1.4
1985-90	1.6	1.4
1990-95	0.1	0.8
1995-2000	2.5	2.9

Source: South African Reserve Bank

**Figure 2 Percentage share of manufacturing in total value added**



Source: South African Reserve Bank

By definition, productivity performance is a reflection of the relative growth of factor inputs and output. In conventional growth accounting, using a Cobb-Douglas production function, the growth equation links output to the multiple of the capital stock, employment and technological progress, also described as total factor productivity, and the *growth* in output to the *growth* in the capital stock, employment and total factor productivity respectively. The growth in output and in the capital stock and employment can be measured and, with the sum of the input elasticities equal to 1 (i.e., constant returns are assumed), this leaves total factor productivity as the (Solow) residual, which is the difference between output growth and capital and labour growth. The growth

equation can be manipulated to show that changes in labour productivity are associated with changes in either total factor productivity or in the capital/labour ratio.<sup>3</sup>

The rate of growth of the real capital stock of the aggregate economy and the manufacturing sector has declined since the mid-1970s (Table 4). However, growth has remained positive, with the exception of manufacturing during 1985-88 when negative net fixed investment (depreciation of fixed capital exceeded additions to the stock) led to a decline in the capital stock. In 1988, after consistent annual declines, the real fixed capital stock of manufacturing was 9 per cent lower than in 1984 (South African Reserve Bank, 1999). In Figure 4 this experience of manufacturing is clearly revealed as an exception to an otherwise rising trend in the capital stock of the sector.

**Table 4 Average real annual growth in capital stock  
(Constant 1995 prices)**

	Economy	Manufacturing
1960-65	4.6	9.6
1965-70	5.6	6.9
1970-75	6.7	8.7
1975-80	4.7	7.7
1980-85	3.5	4.7
1985-90	1.1	-0.2
1990-95	0.7	3.0
1995-2000	1.4	2.3

Source: South African Reserve Bank

A comparison of the growth of the capital stock and employment (Tables 4 and 5) reveals that the fixed capital stock of both the aggregate economy and the manufacturing sector grew substantially faster than formal employment.<sup>4</sup> Since the mid-1980s the number of jobs in the non-agricultural economy has declined, a situation that was also experienced in the manufacturing sector during the 1990s. Falling employment and the resumption of moderate growth in output after 1994 (Figures 3 and 4) gave rise to the phenomenon of "jobless growth", which became a prominent topic for discussion in government, trade union and business circles during the latter half of the 1990s and the first years of the 2000s.

<sup>3</sup> Let  $Q$ ,  $L$ ,  $K$  and  $T$  denote the economy's output, employment, capital stock and total factor productivity respectively. We then have  $Q = K^\alpha L^\beta T$ , from which total factor productivity is derived,  $T = Q/K^\alpha N^\beta$ . Labour productivity becomes  $Q/N = (K^\alpha L^\beta T)/L = T (K/L)^\alpha$ , which means that changes in labour productivity are equal to changes in total factor productivity and/or the capital/labour ratio.

<sup>4</sup> Employment refers only to non-agricultural jobs. Agricultural employment is difficult to measure, amongst other reasons, because of seasonal employment. However, it is widely believed that formal agriculture, i.e. excluding subsistence farming, has shed labour. The reference to "formal" employment is meant to indicate that, for the sake of comparing factor inputs, estimates of informal employment are not considered since the capital stock is calculated, using the perpetual inventory method, for the formal economy only.



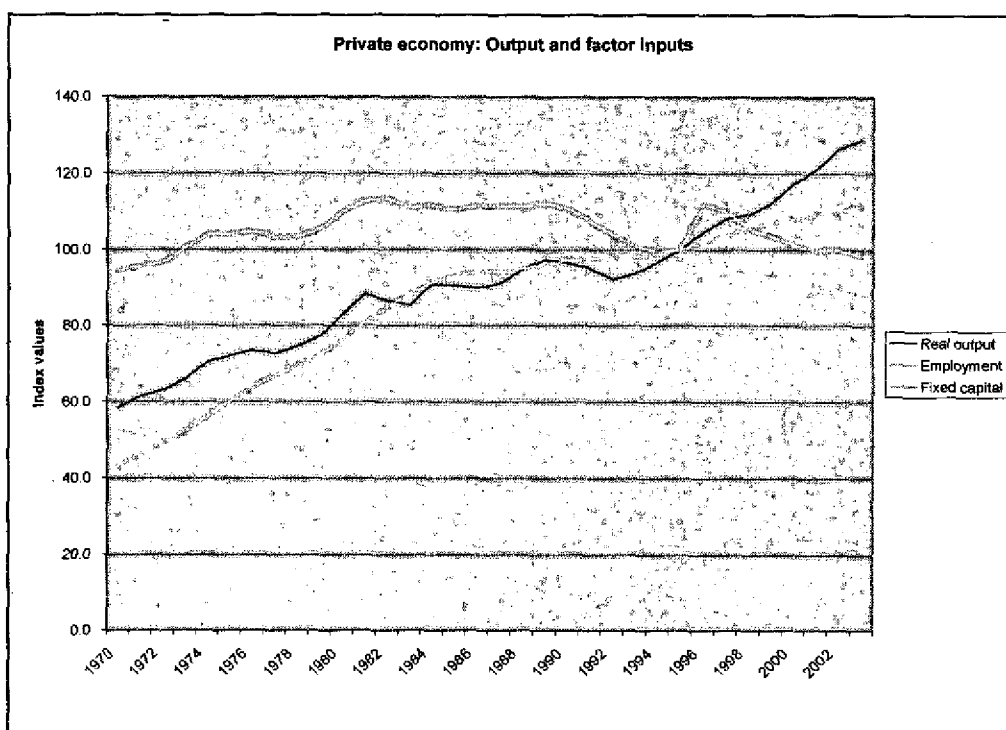
**Table 5 Average annual growth in employment**

	Non-agric. Economy	Manufacturing
1960-65	-	7.3
1965-70	3.7*	3.3
1970-75	4.2	3.3
1975-80	1.7	2.0
1980-85	1.4	0.3
1985-90	-0.9	1.7
1990-95	-1.6	-1.1
1995-2000	-2.2	-3.0

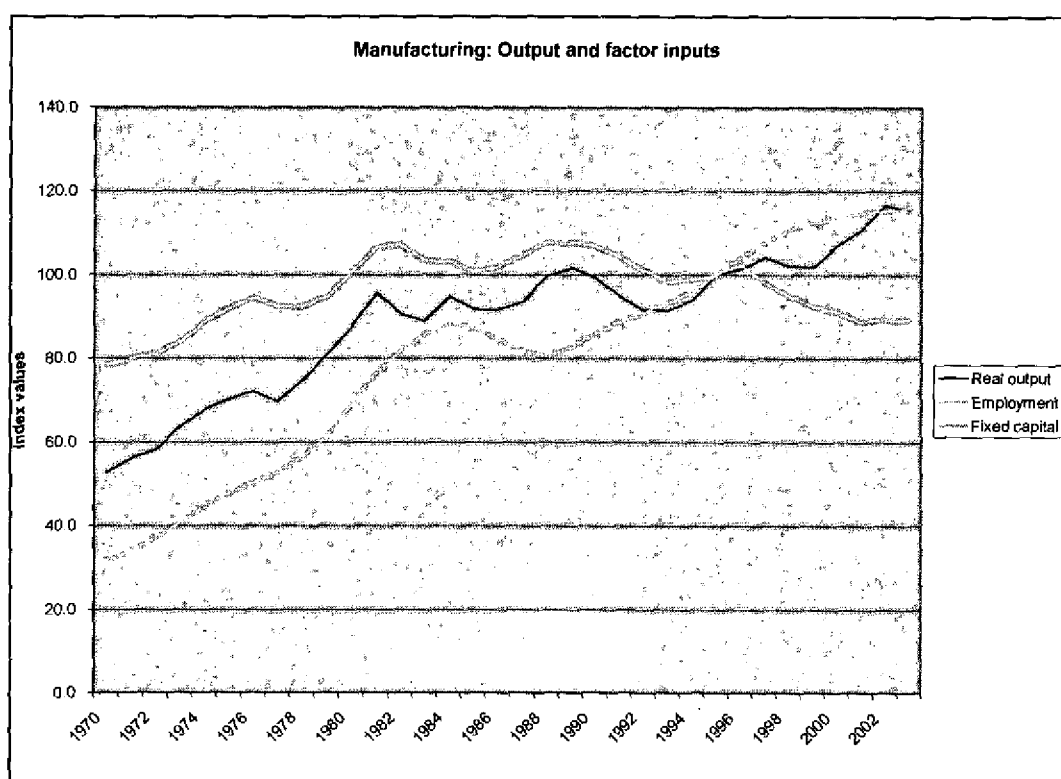
\*1967-70

Source: South African Reserve Bank

**Figure 3 Private economy: Output and factor inputs**



Source: National Productivity Institute of South Africa

**Figure 4 Manufacturing: Output and factor inputs**

Source: National Productivity Institute

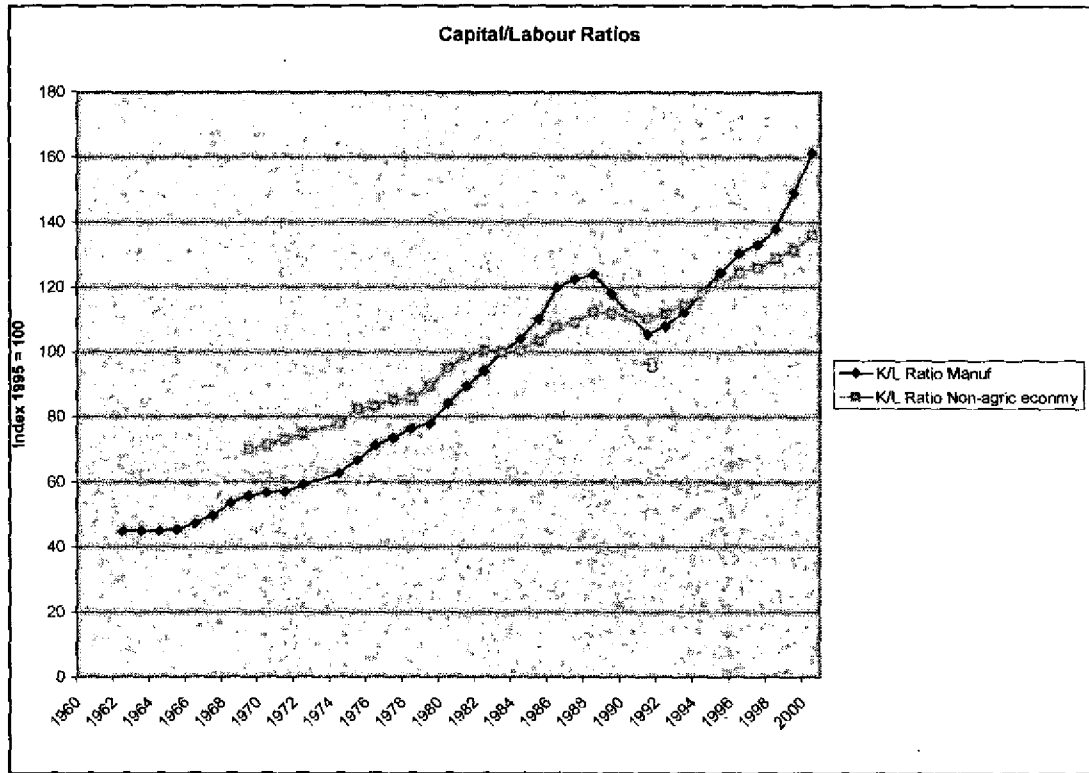
### 3.2 Factor use and productivity

Given the movements in factor inputs and output it follows that different indicators of relative factor intensity would reflect a tendency towards increasing capital intensity in the South African economy. The nearly consistent increase in the capital/labour ratio for the non-agricultural economy and the manufacturing sector is shown in Figure 5. Again, the impact of the low fixed investment in the manufacturing sector during the second half of the 1980s is reflected in the decline in the sector's capital/labour ratio during 1988-91. An increase in the capital/labour ratio (growth in the capital stock exceeding employment growth) can be attributed to a number of developments, but two, namely, structural change in the pattern of production in favour of capital-intensive industries and a process of capital/labour substitution, are of particular importance in a narrative of South African productivity performance. The increase in the relative importance of capital-intensive industries, to be discussed in Section 4, would indicate a role for structural change, while arguments can also be offered, as will be done in Section 4, that conditions have favoured a substitution of capital for labour. Substituting capital for labour through mechanisation could, for example, be a response of firms to increasing wage levels. The outcome could be an increase in labour productivity without a commensurate increase in total factor productivity. This could imply that a less than productive use is made of capital.<sup>5</sup>

<sup>5</sup> It could be important to note that capacity utilisation makes the measurement or conceptualisation of capital productivity a difficult exercise. In South Africa many firms operate single shifts on capital equipment designed for 24-hour use, which obviously has a negative impact on capital and total factor productivity.

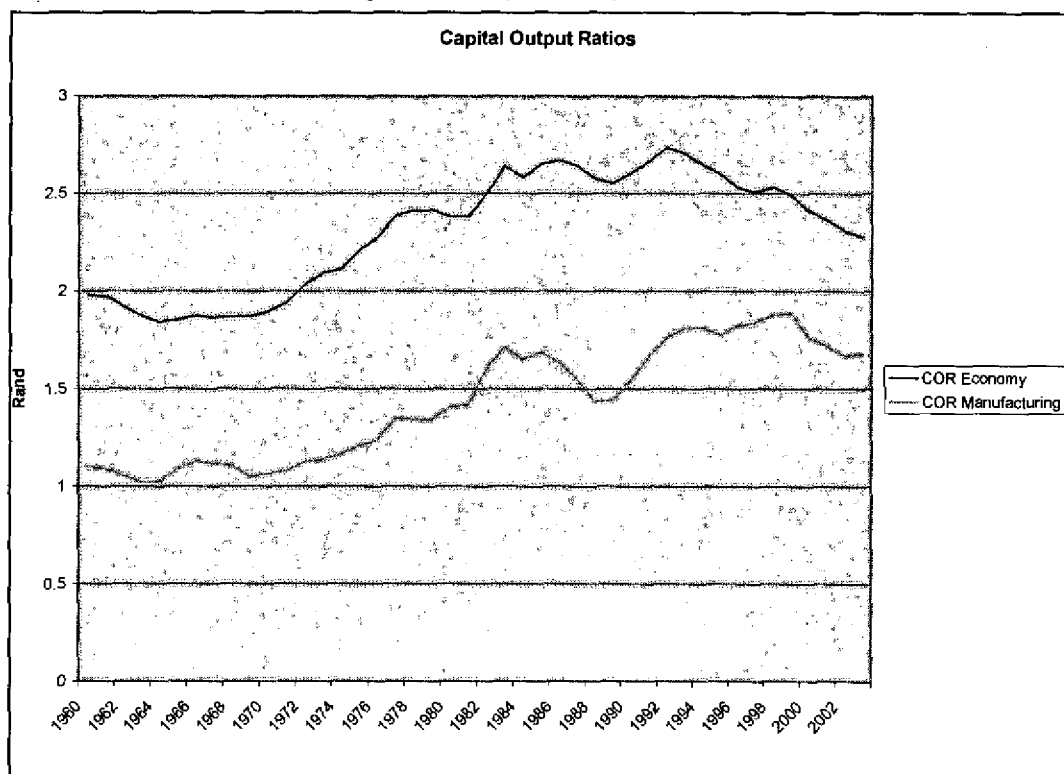
Relating capital input to output produces the capital/output ratio (COR in Figure 6). The long-term trend is upwards, thus revealing, on average, increasing real amounts of capital used in the production of a unit of output. The inverse of this is falling output per unit of capital, which indicates declining capital productivity. Within the four decade period, the effect of the relatively fast economic growth during the 1960s, the growth spurt during the first years of the 1980s, and the growth after 1994 are reflected in a decline in the COR for the economy.

**Figure 5 Capital/labour ratios**



Source: Calculated from South African Reserve Bank data

Figure 6 Capital output ratios

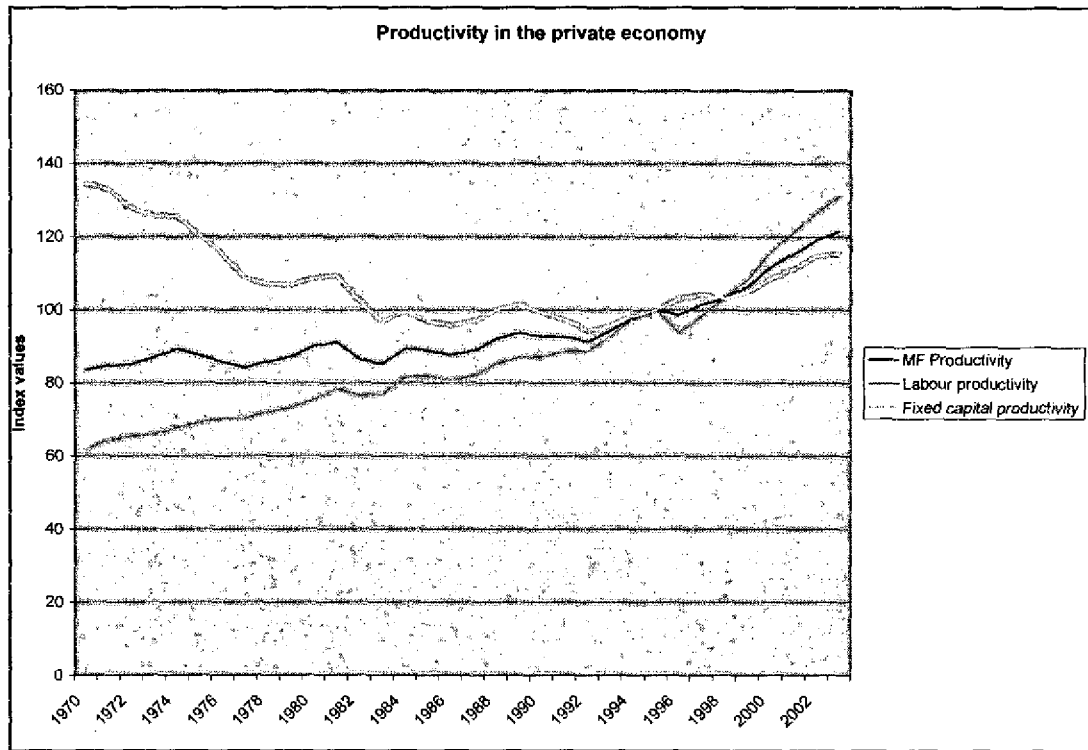


Source: Calculated from South African Reserve Bank data

Having dealt with output and input growth, and consequently the relative factor intensity of production, the next logical step is to consider the productivity of the factors of production. The story so far is one of growth in the capital stock and, during most years, growth in output without a commensurate growth in employment numbers. With the growth in capital stock exceeding the growth in employment, the virtually inevitable outcome of the resulting capital deepening has been growth in output per worker, that is, an increase in labour productivity. Figures 7-10 show the movement of factor productivity during 1970-2000 for the private economy, the goods-producing economy, excluding agriculture, and manufacturing. Figures 7-9 summarise the trends in labour, fixed capital and total factor productivity as derived from data published by the National Productivity Institute of South Africa (NPI).<sup>6</sup> Figure 10, based on data published by the South African Reserve Bank, reflects the trends in labour productivity for manufacturing and in the non-agricultural sectors of the economy. A comparison of the trend for manufacturing reveals a broad similarity between the two data sets.

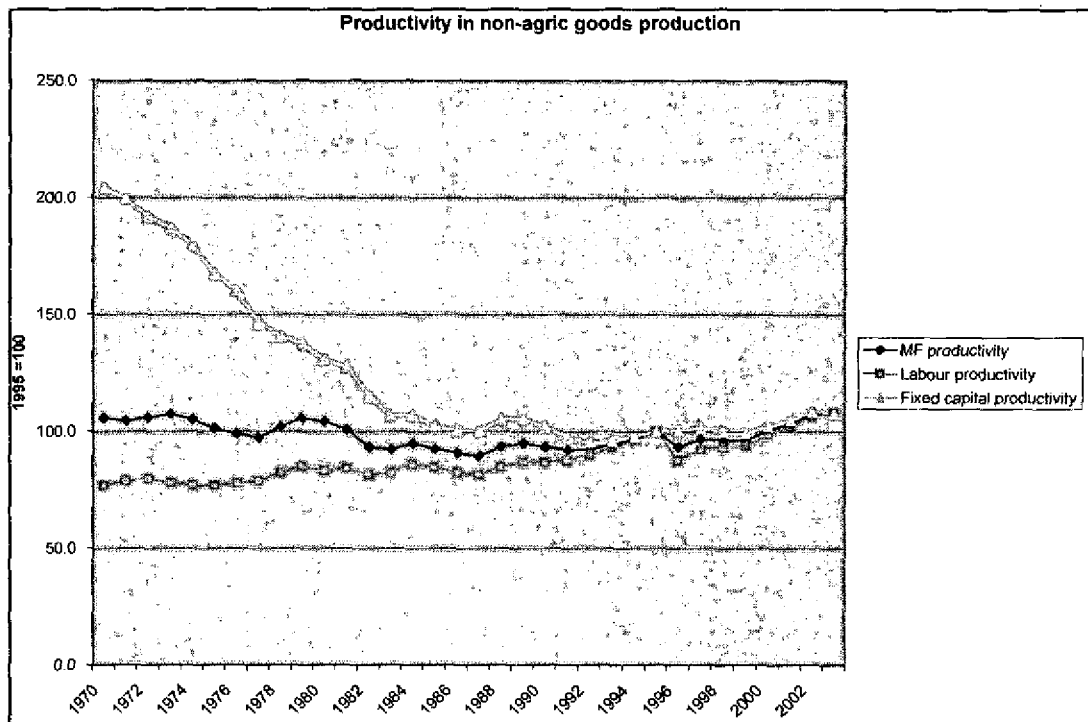
<sup>6</sup> The NPI constructs trend indices for labour productivity and total factor productivity, which the NPI refers to as multifactor productivity, using information supplied by Statistics South Africa (the official statistical agency of the government of South Africa) and the South African Reserve Bank. In its Technical Notes to their annual publication on productivity statistics, the NPI warns as follows: "Since the accuracy of these trends heavily depends on the accuracy of the original data, it is important to remember that although data are drawn for the sources thought to be most authoritative, these figures are still subject to considerable margins of error". Multifactor productivity is calculated using the conventional production function method. Labour productivity is measured as the ratio of real output to labour input, taken to be employment numbers, and capital productivity as the ratio between real output and the fixed capital stock used in production.

**Figure 7 Productivity in the private economy**



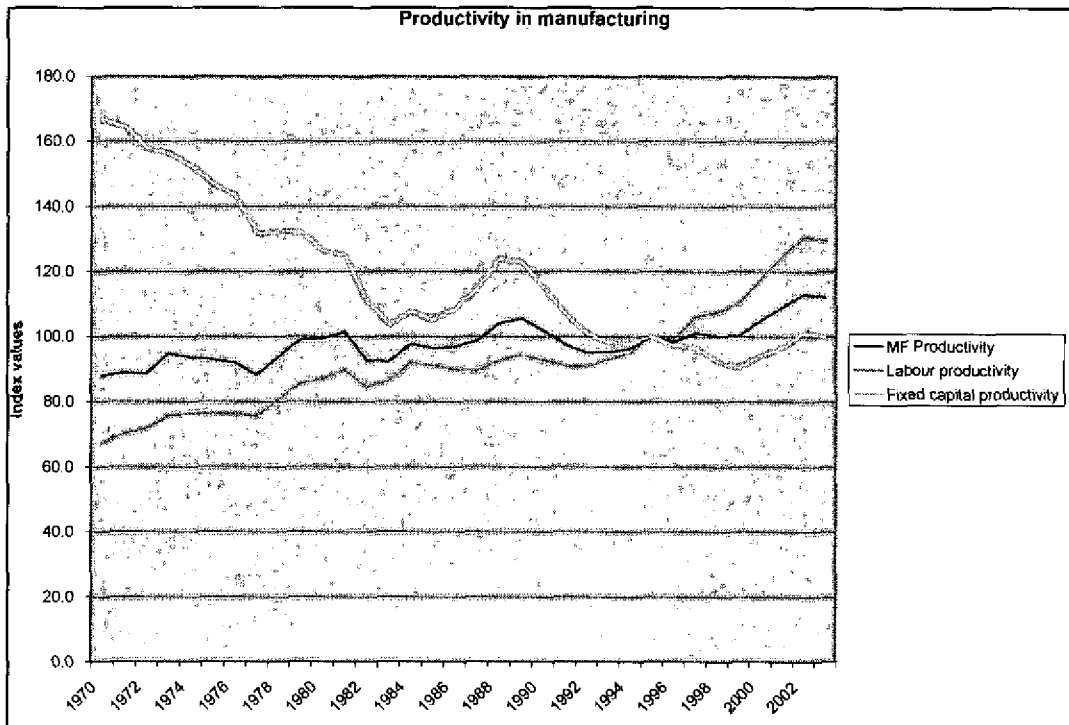
Source: Calculated from South African Reserve Bank data

**Figure 8 Productivity in non-agric goods production**



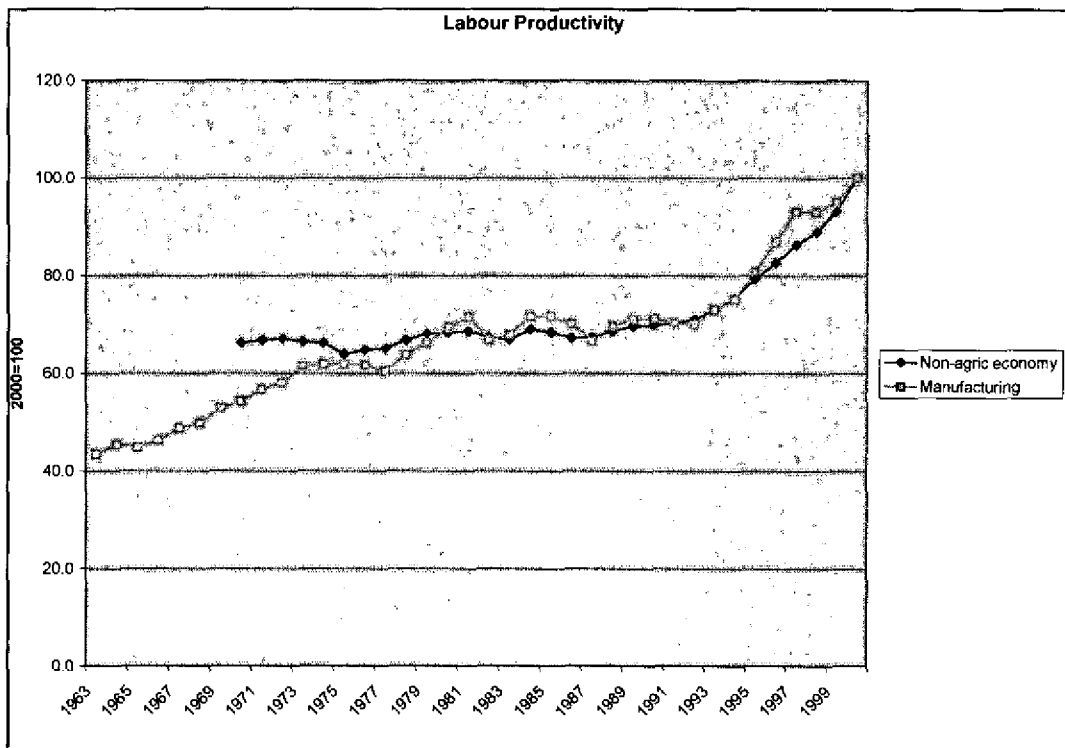
Source: Calculated from South African Reserve Bank data

**Figure 9 Productivity in manufacturing**



Source: Calculated from South African Reserve Bank data

**Figure 10 Labour productivity**



Source: South African Reserve Bank

The trends in productivity show certain important patterns, which may be expected if consideration is given to factor use. The growth in total factor productivity has been moderate and at times

negative. Labour productivity increased faster than total factor productivity, a differential that can be linked to the growth in the capital/labour ratio (refer to note 3), and thus it can be inferred that the growth in labour productivity had been at the cost of employment; the capital/labour ratio increased through labour shedding. However, in the process of capital deepening, the growth in labour productivity until the early 1990s was not remarkable. The outcome was a sharp fall in the productivity of fixed capital, which, like labour, is a partial measure of productivity. The picture that emerges is one of an inefficient use made of capital, the scarce factor of production in a developing country, in the non-manufacturing economy until the early 1990s and in manufacturing until the end of the 1990s. For the manufacturing sector, the unproductive use of capital is especially noticeable during 1973-77, 1981-83 and 1989-92. But manufacturing also produced a major exception to the general trend in the economy during 1983-89 when total factor productivity and capital and labour productivity improved significantly. This improvement was a deviation from the long-term trend in the growing capital intensity of production, as revealed in the decline of the fixed capital stock (Table 4) and the commensurate fall in the capital/labour ratio (Figure 5) and the capital/output ratio (Figure 6).

Developments since the early 1990s indicate an improvement in the productivity performance of the South African economy, which was especially pronounced during the early 2000s. However, the latter improvement falls outside the time period covered by this study. The growth in capital and labour productivity and total factor productivity in the private economy (Figure 7) has been significant. The growth in the services sector must have had an important role in this regard since data for the goods producing sectors, excluding agriculture (Figure 8), does not reveal a similar strength in productivity growth.

Further support for these views is found in Table 6, which summarises the results of a growth accounting exercise by Fedderke (2002) for the period 1970-97. It shows the declining growth in GDP (the 1990s until 1997), which was characterised by the falling contributions of factor inputs to output growth. The growth in GDP is characterised by an increase in total factor productivity, after a negative contribution during the 1970s. In manufacturing, a downward trend in total factor productivity growth is found during the 1980s and 1990s, which is the opposite of the increasing trends shown in Figures 7-9 and also found by the IMF (quoted by Edwards and Golub, 2003: 672).

**Table 6 Contributions to output growth of capital, labour and total factor productivity (TFP) (%)**

	Growth in GDP	Labour	Capital	TFP
<u>Economy</u>				
1970s	3.21	1.17	2.54	-0.49
1980s	2.20	0.62	1.24	0.34
1990s	0.94	-0.58	0.44	1.07
<u>Manufacturing</u>				
1970s	4.94	1.67	2.78	0.49
1980s	1.48	0.78	1.21	-0.52
1990s	0.43	-0.47	1.69	-0.79

Source: Fedderke, 2002

### 3.3 Comparison with the USA and conclusion

Two recent studies provide insights into South African productivity performance in comparison to that of the USA, the 'world technology frontier'. Van Dijk (2003) used unit value ratios as a conversion factor to compare the levels of output and labour productivity in manufacturing between South Africa and the USA. He found that, on average, South African labour productivity was 32 per cent of the USA level in 1970 and only 20 per cent in 1999 (Van Dijk, 2003: 137-138). A growth accounting exercise by Edwards and Golub (2003) also revealed a substantial productivity gap. Using adjusted data from the UNIDO Industrial Statistics Database at the 3-digit SIC level, they calculated labour productivity in manufacturing as 15 per cent the USA level in 1997, which was significantly lower than the 24 per cent in 1979. For total factor productivity, they calculated that the South African level was 28 per cent of the USA level in 1979 and 19 per cent in 1997 (Edwards and Golub, 2003: 608). The gap with the USA is not only substantial, as may be expected, but both studies show it to have increased over time.

The explanation for the gap could be found in the USA making better use of her capital stock with a higher skilled work force and access to more advanced technology.

In conclusion, the picture that has emerged on factor use and productivity performance in the South African economy is one of increasing labour productivity at a rate that outpaced the growth in total factor productivity. This difference between labour and total productivity growth is linked to the increasing capital deepening of production as revealed in the growth of the capital/labour ratio and the poor performance of the economy in maintaining and creating jobs. The only significant departure from the long-term trend occurred in the manufacturing sector during the late 1980s when the fixed capital stock and the capital/labour ratio declined in absolute terms. Studies show that the gap in labour and total factor productivity between South Africa and the 'world technology frontier', the USA, is large and has grown.



#### IV. Assessing the major determinants of productivity

Five groups of determinants are distinguished in the terms of reference for this paper:

1. Creation, transmission and absorption of knowledge, including research and development and technology transfers from abroad.
2. Factor supply and allocation, with factor supply incorporating human and physical capital and the infrastructure. Factor allocation encompasses structural change of production and the financial system and its effectiveness in the allocation of resources.
3. Institutions, integration and invariants. The existence and the quality of institutions and the country's integration into the global economy, and the impact of these factors on productivity, feature under this rubric. Invariants would cover factors such as geographic location and topography, natural resource endowment, the historical legacy and the size of the economy.
4. Competition, social dimensions and the environment represent the category within which one must consider the effect on productivity of the competitive environment, inequality in the distribution of assets and income, and the influence of environmental concerns.
5. Issues specific to the country being studied, which are the residual issues not discussed elsewhere.

On closer consideration it would seem that these categories cover the following 11 identifiable elements: the creation, transmission and absorption of knowledge, whether sourced domestically or through technology transfers from abroad; investment in physical and human capital and in the development of the infrastructure; structural change of production; the financial system and its effectiveness in the allocation of resources; the existence and quality of institutions; integration into the global economy; invariants, specifically geographic location, topography, natural resource endowment, historical legacies and the size of the economy; the degree of market concentration and the competitive environment; inequality in the distribution of assets and income; environmental concerns; and issues specific and unique to the country.

In his *The Wealth and Poverty of Nations*, David Landes (1998: 217) identified a number of characteristics that would make a "society theoretically best suited to pursue material progress and general enrichment". These are:

1. Knowledge of how to operate, manage and build the instruments of production and to create, adapt, and master new techniques on the technological frontier;
2. The ability to impart this knowledge and know-how to the young through formal education or training;
3. The allocation of people to jobs on the basis of competence and relative merit, and promotion and demotion on the basis of performance;
4. Allowing opportunity for individual and collective enterprise, and the encouragement of initiative, competition and emulation;

### 5. Allowing people to enjoy and employ the fruits of their labour and enterprise.

Such a society would have the political and social institutions that favour the achievement of these larger goals, for example, security of private property, enforcement of contracts, and an honest and responsive government that is not greedy in its demand on resources. Further corollaries would be no discrimination on the basis of criteria that are not economically relevant (such as race, ethnicity, gender and religion) and the geographical and social mobility that will allow people to exploit opportunities, wherever they exist, and to be rewarded or penalised according to success or failure.

The correlation and association between these standards and their inferred characteristics, on the one hand, and, on the other, the determinants of productivity listed above are apparent. Applied to South Africa, it is also obvious that the political system that reigned during the larger part of the study period represented a country-specific issue that negated these standards substantially. On the basis of first principles, it can be argued that the system had a negative impact on productivity. Apartheid and its aftermath have generated pervasive forces with an influence on a number of the determinants of productivity, which, for the logic of the story told, require us to begin with the last determinant on the list.

### Country specific issues

When the National Party (NP) came to power in 1948, it inherited an economy, and a manufacturing sector in particular, that had undergone a process of deracialisation during the years of World War II and its immediate aftermath (McCarthy, 1992: 453). The new government put an end to this and started a governing style characterised by growing perniciousness in discriminatory policies. Discriminatory segmentation of SA society had a severe influence on politics but also on economic activity. Apartheid impacted on the geographic and occupational mobility of labour, on the accumulation of physical and human capital, and consequently on the distribution of assets and income. Worldwide opposition to apartheid led to the isolation of the South African economy through sanctions and boycotts, put an effective end to foreign direct investment, and, in fact, caused foreign firms to disinvest. Since the latter mostly took place through the sale of South African assets to domestic firms and management, divestment did not have a direct impact on the capital stock. However, it had a psychological impact in that it did not favour new investment by domestic and foreign investors. All these factors combined to have a considerable impact on the structural development of the economy.

The speech by President De Klerk in February 1990 committed the government to ending apartheid and subsequently "returned the South African state to the route on which the NP had turned its back in 1948" (Lipton & Simkins, 1993: 13). The unbanning in 1992 of the African National Congress, the Pan African Congress and the South African Communist Party, and the release of political prisoners, of which Nelson Mandela was the most prominent, set the country irrevocably on the road of political transformation that culminated in the election of 1994 and the establishment of the democratic state.

The end of apartheid, in turn, brought about a structural change in the politics of South Africa, with important spill over effects on economic development policies, on the utilisation of resources and factor markets, and on economic performance. Within a very short period, the economy was released from the straitjacket of international isolation and inserted into the global economy, but with a system still suffering from the overhang of earlier inward-looking, protectionist policies. As will become clear in the course of this section, the fairly dramatic adjustments made to the

economy in an effort to remedy past injustices and to improve competitiveness in global markets have had significant effects on the determinants of productivity and on productivity performance.

A feature of the South African economy and productivity performance, linked to the particular political situation that has existed and still exists in the country, is the dualistic nature of economic activity. The economy is often described as consisting of a first and a second economy. The first economy is the high-income, developed sector, characterised by firms using modern technology to produce for a trading environment noted for its high degree of market concentration. The second economy is characterised by pervasive absolute poverty, unemployment and underemployment. In the agricultural sector of the second economy, subsistence production at low levels of factor productivity is dominant. The urban economy has, over many years, been characterised by increasing migration from rural areas to growing urban informal (squatter) housing areas. Rural-urban migration, urban unemployment, and absolute poverty existing in juxtaposition with urban splendour and affluence, starkly reveal, to even the most casual observer, the inequality in the distribution of income and wealth of South African society.

The broad economic literature seems to have reached the verdict that there is a positive impact of economic growth on poverty reduction. This relationship has been detailed in numerous studies, using different techniques and data sources. However, in a background paper to the 2004 World Employment Report (Centre for the Study of Living Standards, 2003: 6), the view is expressed that “consensus has not been developed on the relationship between productivity and poverty because there are so few studies on the subject”. Even so, the link would seem intuitive. A few important links can be identified. The absolute poor often suffer from poor nutrition, inadequate housing, frequent illnesses, low educational attainment and high fertility rates, which all impact negatively on their employability and productivity. The problem is to move beyond intuitive reasoning and to empirically test the link between poverty and productivity. Numerous problems arise with such testing, one of which would be the bi-directional causality between the two variables.

The link between inequality and labour productivity is even more ambiguous. Whether higher inequality would increase or would lower productivity growth is an empirical matter. Again, though, bi-directional causality complicates matters.

While the link between poverty, inequality and productivity could be regarded as ambiguous in general, there can be little doubt that the social tensions that could develop because of poverty and inequality will impede the productive use of factors of production. This is especially true in South Africa, where inequality is very high (see Table 7) and where poverty and inequality in modern history have always had an ethnic dimension: white people are mostly rich and black people are mostly poor. In 2001, Africans, who represented 80 per cent of the population, received 38 per cent of total income. The respective shares for Whites were 9 per cent and 48 per cent, for Coloureds 9 per cent and 9 per cent, and for Indians/Asians 3 per cent and 6 per cent (Leibbrandt *et.al.*, 2004).<sup>7</sup> Since these ethnic poverty and equality lines also coincided with the distribution of political power until 1994, the tensions that have developed are obvious. Poverty is a potentially explosive element in the social and political fabric of South African society.

**Table 7 National and population group income inequality, measured by Gini coefficient, 1975-2001**

	1975*	1991*	1996*	1996**	2001**
African	0.47	0.62	0.66	0.62	0.66
Coloured	0.51	0.52	0.56	0.53	0.60
Indian/Asian	0.45	0.49	0.52	0.48	0.56
White	0.36	0.46	0.50	0.44	0.51
National	0.68	0.68	0.69	0.68	0.73

\* Calculations by Whiteford A.C. & Van Seventer D.E. 2000. "South Africa's changing income distribution in the 1990s", *Journal of Studies in Economics and Econometrics*, Vol. 24(3).

\*\* Calculations by Leibrandt *et.al.*, 2004

Source: Leibrandt *et.al.*, 2004.

Research based on census data shows that poverty measured *in terms of income* increased between 1996 and 2001.<sup>8</sup> However, deprivation cannot consistently be measured in monetary terms, and in this respect it is significant that marked progress was made during the post 1994 period to provide the poor with access to housing, water, electricity and sanitation services, thus improving their quality of life. Nevertheless, 28 per cent of households fell under the widely used poverty line of \$2 per day, compared to 26 per cent in 1996. At a higher poverty line of R250 (at 1996 prices) per person per month, 8 per cent more households were under the poverty line in 2001 than in 1996.

What is disturbing is that inequality has increased. An increase in the real household income at the higher end of the income spectrum resulted "in an unambiguous widening in inequality, the first time since 1975 for the population as a whole" (Leibrandt *et.al.*, 2004: 1). A conspicuous feature of the increase in inequality is that it is taking place as a narrowing between ethnic groups but as a widening within all population groups. The most significant widening is for Africans and Whites for whom the respective Gini coefficients increased by about 40 per cent from 1975 to 2001.

To conclude this section on country specific issues, it may be observed that poverty and income inequality is not unique to South Africa. It is not even unique to find that the demarcation between rich and poor has a racial dimension. However, what is unique to South Africa is that poverty and inequality throughout the modern history of the country until 1994 coincided with a discriminatory distribution of political power, which reached its pinnacle during the apartheid years that commenced in 1948 and ended in 1994. Discriminatory practices permeated the whole of society and had a very substantial impact on the utilisation and productivity of resources.

### The knowledge factor

The creation, absorption and transfer of knowledge on the science and techniques of production, as is known from theory (endogenous growth theory in particular) and evidence, contribute significantly to TFP and to labour productivity. The question is: how is knowledge created, absorbed and transferred? The typical response to this question, which can help to identify relevant indicators, would list the following: public and private spending on research and development (R&D); foreign direct investment through technology spill-over; foreign trade that allows the importation of capital goods with their embodied technological improvements, access to a wider

<sup>8</sup> The information on poverty and inequality referred to in this paragraph has been derived from Leibrandt, Poswell, Naidoo, Welch and Woolard (2004).

range of intermediate inputs, and the exposure of domestic firms to foreign competition; and, to the extent that greater competition is a driving force of knowledge creation and absorption, the share of the private sector in economic activity, specifically investment in equipment and machinery.

It is generally recognised that R&D investment in South Africa is relatively low. Arora and Bhundia (2003: 9), in their analysis of productivity growth in post-apartheid South Africa, found that R&D did not play a major part in the significant growth of TFP after 1994. While difficult to pin down empirically, anecdotal evidence and observations of industrial growth indicate that the international isolation of South Africa and the pressure exercised on the regime encouraged spending on R&D in selected, so-called strategic sectors of industry. Specific examples are investment in defence-related and skill-intensive electronics and engineering industries and in the petrol-from-coal and petrol-from-gas and related chemical industries.

Foreign direct investment is regarded as an important growth agent in developing countries. Not only is it expected to contribute to the available savings pool to finance the investment required for growth and development, but is seen as an important source of knowledge transfer of both technology and managerial expertise. The irony is that these developments - the fruit of isolation - remain a mainstay of industrial growth and export production, as will be noted below.

As far as the composition of the capital stock, and the share of the private sector in fixed capital in particular, are concerned, conduits of influence that are of interest to this study can be identified. The first is the growth benefits that can be derived from an increase in the share of private business in the capital stock. This results from the higher productivity of capital in private business than in parastatals (public corporations) and general government, which is reflected in output-to-capital ratios (the inverse of the COR shown in Figure 6) that are higher in the private than in the public sector. This means that private business produces more output per unit of capital input. This element will be looked at when investment in physical capital is discussed as a determinant of productivity.

The second conduit is implicit in the argument that the private sector's share in the capital stock introduces a stronger knowledge component than that found in public sector capital. Private investment features more strongly in imports of equipment and machinery. These capital goods incorporate the latest technology, thus enhancing the transfer of modern technology to the economy. In their analysis of TFP growth in post-apartheid South Africa, Arora and Bhundia (2003) found that the revival in growth since 1994 can only be ascribed to TFP growth and not to growth in factor inputs. They link the TFP growth to the share of trade in real GDP, the share of equipment and machinery in investment, the share of private business in investment, and the share of private business in investment in equipment and machinery. With the latter two factors, they attached significance to the increase in the share of private business in investment from 60.1 per cent during 1980-93 to 72.1 per cent during 1994-2001 and to the increase in the share of private business in investment in equipment and machinery from 61.8 per cent during 1980-93 to 73.1 per cent during 1994-2001 (Arora & Bhundia, 2003: 14).

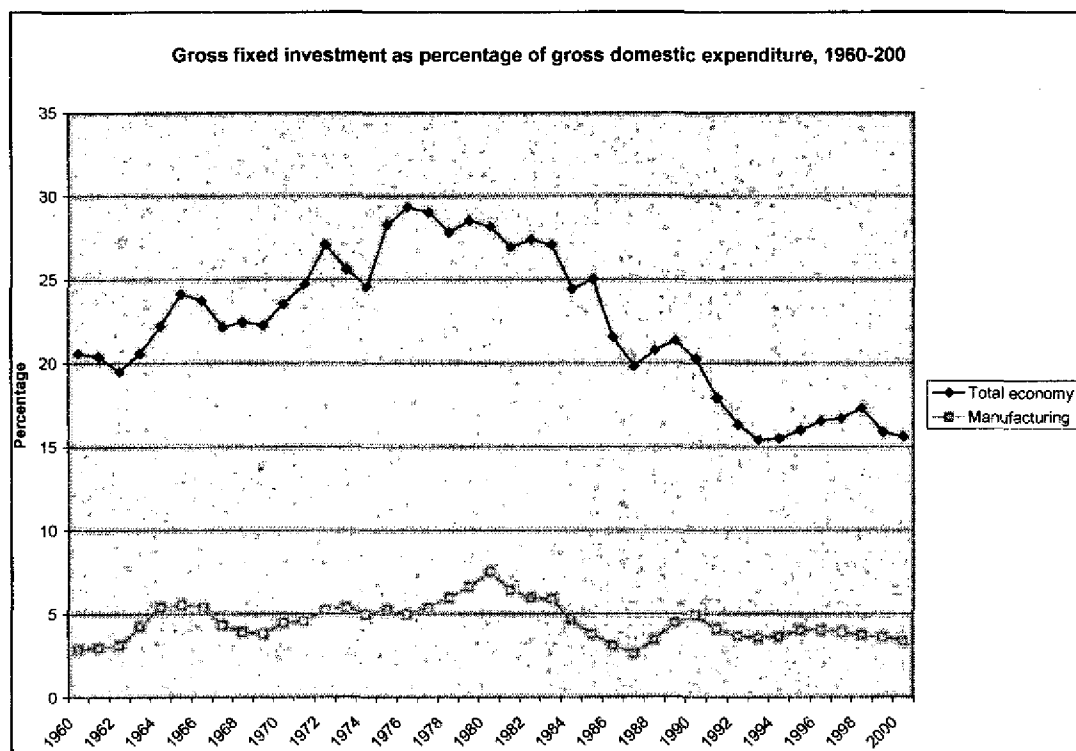
### **Investment in physical and human capital**

Investment in physical and human capital is considered an important driver of factor productivity. As far as physical capital formation is concerned, an underlying theme of the paper so far has been the increasing capital intensity of production in the South African economy. This tendency has been supported by a consistent net addition to the fixed capital stock of the economy as a whole. In

manufacturing, an increase in the capital stock can also be observed, with the exception of a period during the 1980s when this sector experienced a decline in capital stock because of negative net investment.

Building the economy's capital stock was supported by strong growth in total fixed investment after World War II and contributed to the high economic growth that lasted until the mid-1970s. However, as is shown in Figure 11, growth in investment peaked during the mid-1970s with the ratio of gross fixed investment to gross domestic expenditure (GDE) at just below 30 per cent. Since then the investment ratio has consistently declined during the remainder of the study period to levels of just above 15 per cent. The pattern is more or less similar for manufacturing, with the investment ratio peaking somewhat later, in 1981. During the first half of the 1960s, the growth of output kept pace with the growth in the capital stock, but, from the late 1960 until the mid-1990s, growth in the capital stock exceeded growth in output, which meant that the output/capital ratio (the inverse of the capital/output ratio of Figure 6), as a measure of capital productivity, declined significantly. As is known, a decline in capital productivity is often associated with fast growth in investment. Growth theory and experience postulate that increasing investment will cause economic growth to improve. However, the decline in the productive use made of the larger capital stock inhibits growth and can, at least in part, explain the weaker growth performance discussed earlier (see Figure 1).

**Figure 11 Gross fixed investment as percentage of gross domestic expenditure, 1960-200**

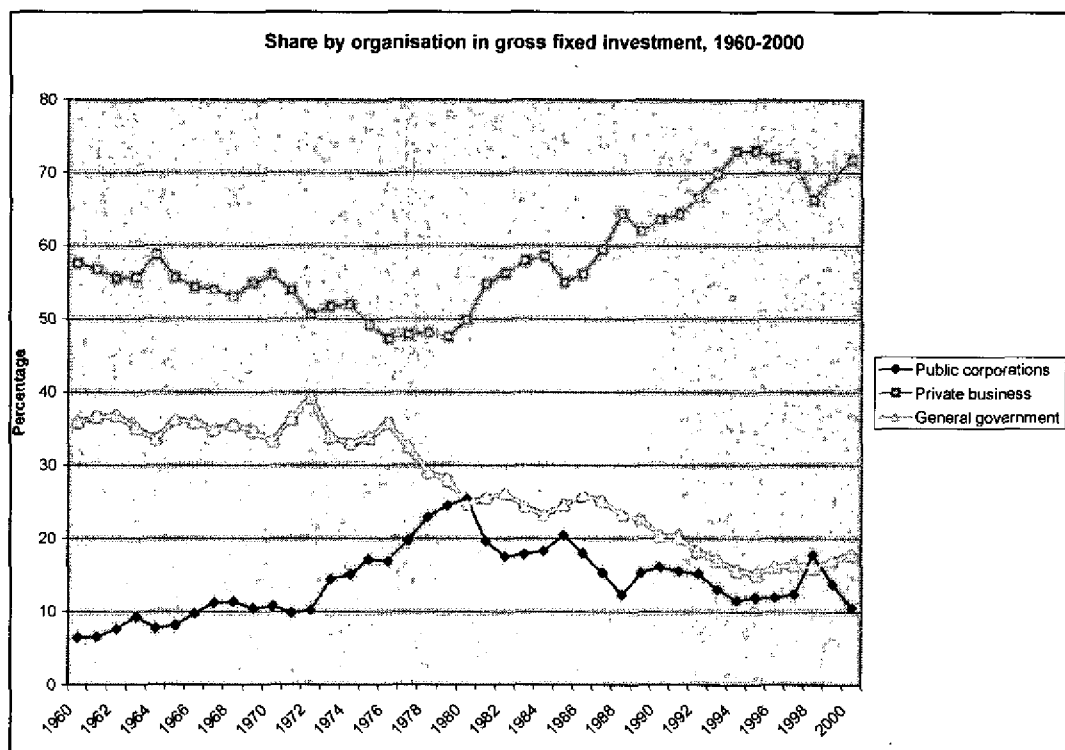


Source: South African Reserve Bank

What were the driving forces of the growth in investment and, eventually, the decline in capital productivity? The first consideration is the effort to invest in capital-intensive projects that were regarded as necessary for an isolated economy, an issue that has already been discussed. These included strategic investment by public corporations in chemicals, metals (including base metals, stainless steel, aluminium and machinery), and defence related industries. To this must be added

the growth in investment in economic infrastructure: roads, rail networks, harbours, bridges, dams and irrigation systems, electricity and water supply. As a consequence, as is shown in Figure 12, the pattern of investment changed from the mid-1960s onwards, with the share of private business in gross fixed investment falling until 1980, while the share of general government remained high, and that of public corporations (parastatals) increased significantly. As noted earlier, a decrease in the share of private business in investment and a commensurate increase in the shares of government and parastatals would explain a fall in capital productivity since the latter two organisations are often associated with a less productive use of capital. At the time, public corporations undertook the dominant portion of this investment. In a seminal report on South African economic policy, World Bank researchers commented on this: "Two sub-sectors which have accounted for the greatest increase in capital accumulation (basic iron and steel and chemicals) have tended to be among the worst performers in productivity. In many sub-periods these sub-sectors are three or four times less productive than the others. Clearly, these strategic investments were achieved at a cost in output and employment" (Fallon & De Silva, 1994: 280).<sup>9</sup> It is conspicuous that the increase in the share of private business in fixed investment since the early 1980s (Figure 12) coincides with a decrease in the capital-output ratio during the 1990s (Figure 6).

**Figure 12 Share by organisation in gross fixed investment, 1960-2000**



Source: South African Reserve Bank, *South Africa's national accounts 1946-2004 – An overview of sources and methods*, Supplement to the South African Reserve Bank *Quarterly Bulletin*, June 2005.

<sup>9</sup> There must be some irony in the fact that two major public corporations that featured prominently in this category, namely, the chemical firm SASOL and the steel manufacturer ISCOR, have since been privatised. SASOL is now highly rated by investment analysts as a profitable and productive company with world-wide operations, while ISCOR has come to be regarded as one of the lowest-cost steel producers in the world and has been taken over by the Mittal international steel conglomerate.

Another factor that favoured an increase of the capital intensity of South African industry was the incentives in place that encouraged capital formation in what were regarded as strategic industries and industries that would add value to South Africa's abundant mineral resources. In the report referred to above, the World Bank researchers focused, amongst other incentives, the effect of relative factor prices – i.e. the real user cost of capital and wages - on factor intensity (Fallon & De Silva, 1994). Essentially, the argument was that industrial incentives favoured capital-intensive industries. For example, it was observed that “an examination of the fiscal incentive framework shows a deliberate policy to encourage and direct investment into what were considered critical strategic areas” (Fallon & De Silva, 1994: 280).

To fiscal incentives must be added monetary policies that, for many years, produced low or even negative real interest rates (Figure 14), as measured by the prime overdraft rate adjusted for changes in the consumer price index. Relative factor prices were, on the other side of the equation, distorted by developments in the labour market, which was characterised by rising wages and increased labour unrest. African labour unions were legalised in 1979. This allowed black workers, who had previously been denied the benefits of organised labour negotiations, to use their labour power not only to improve wage levels and working conditions but also, in the absence of political rights under the apartheid regime, to achieve political goals.

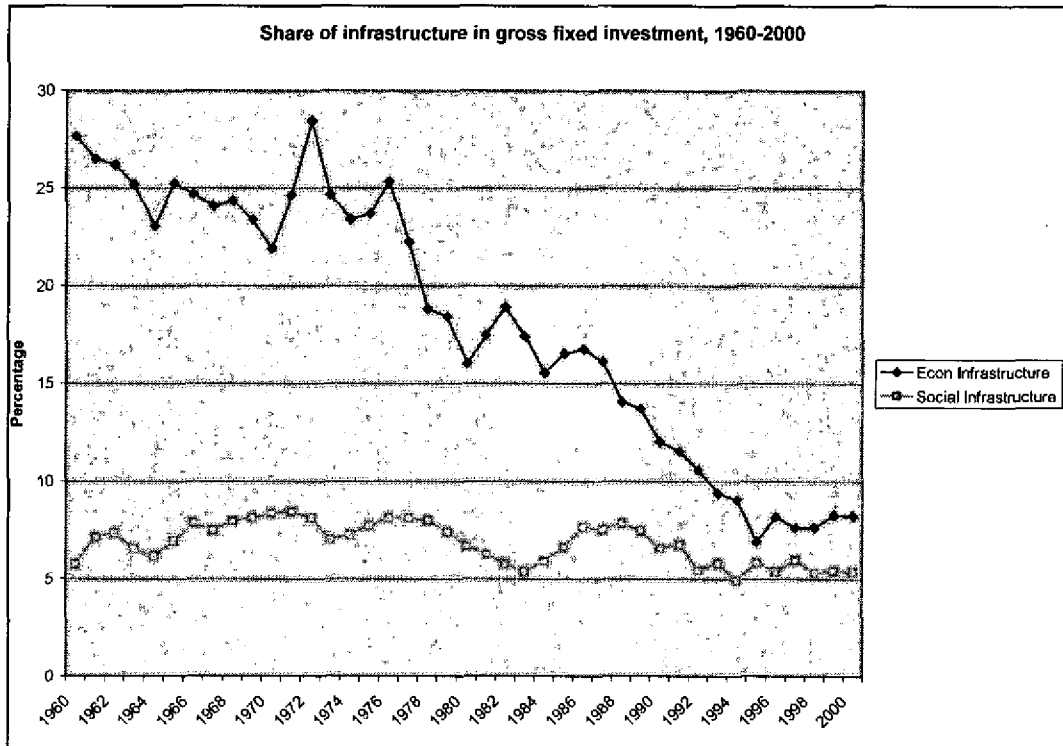
A factor that is not often given sufficient attention as a cause of increasing capital intensity is the lack of sufficient numbers of the skilled workers required by labour intensive growth. Under apartheid the restriction on the upward mobility of black workers and the absence of appropriate education and training for black people – the overwhelming majority of the population – obviously placed a severe constraint not only on the growth of the higher-skilled labour-intensive industries but also on the growth of unskilled labour-intensive industries. Workers and production need to be managed at different levels, which means that growing numbers of unskilled production workers can only be employed if sufficient numbers of line managers and supervisors are available; if not, as under labour market apartheid, growth is impeded. The problems created for productivity improvement by a lack of sufficient numbers of skilled workers are illustrated by the impact this has had on the operation of multi-shift operations, referred to in note 5. In a production survey, the question of the general absence of multi-shift production (that is, with the exception of production technologies that require continuous operations, such as float glass and steel production and petrol refineries) was addressed, and the broad response was that there were not sufficient numbers of supervisory workers to operate multi-shift systems. This illustrates how a shortage of skilled workers can be a bottleneck that prevents growth in capital and total factor productivity.<sup>10</sup>

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<sup>10</sup> I am indebted to Michael McDonald of the Steel and Engineering Industries Federation of South Africa (Seifsa) for this observation.



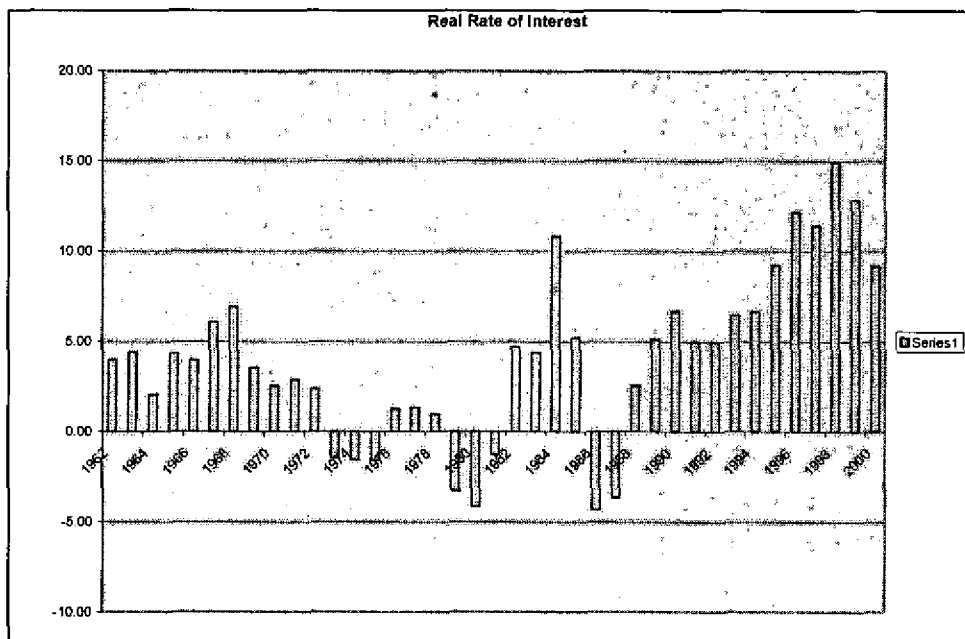
**Figure 13 Share of infrastructure in gross fixed investment, 1960-2000**



*Source:* South African Reserve Bank, *South Africa's national accounts 1946-2004 – An overview of sources and methods*, Supplement to the South African Reserve Bank *Quarterly Bulletin*, June 2005.

The change in relative factor prices in favour of capital benefited capital-intensive industries, but also, across industries, favoured the substitution of capital for labour through mechanisation. It is difficult to quantify the extent of capital/labour substitution, but extensive mechanisation has been observed in all sectors, ranging from agriculture, mining and manufacturing to financial services.

**Figure 14 Real rate of interest**



*Source:* Calculated from South African Reserve Bank data.

In assessing factor combinations in production and the impact on productivity, attention should not exclusively fall on physical capital. In fast-growing economies the importance of the contribution of the skills of workers to the growth in productivity and economic growth has been striking. The increase in skill levels and the commensurate increase in labour productivity then acts as an offset to the fall in capital productivity associated with rapid investment and, in this respect, has a positive effect on total factor productivity. The World Bank study referred to above concluded: "In South Africa, skill accumulation has been inadequate, and there has been a growing imbalance between the nation's stocks of physical and human capital. The work input of unskilled and even of some skilled workers may have deteriorated in the face of social tensions, locational distortions and growing industrial unrest" (Fallon & De Silva, 1994: 65).

The lack of sufficient investment in the skills development of the labour force has also contributed to poor productivity outcomes because of the mismatch that has developed between the supply of labour, which is *predominantly unskilled*, and the demand for labour, which has increasingly become focused on skilled workers. It is reported that in 1981 about 69 per cent of the work force in the metals and engineering industries was unskilled. By 2004 this share had fallen to 30 per cent.<sup>11</sup> There has been little change in the artisan percentage but a large increase in the middle range of skills. This shows that the skill composition of the work force does not reflect the skill composition of the labour force.

The apartheid system had a two-pronged effect on factor productivity. The exclusion of black people from the political process cultivated a climate in which labour rights and action served as a substitute for the absent political vote; labour unrest and wages increased, which led to a bias in favour of capital. But a perhaps more potent force, with severe implications for South African productivity performance in the long run, was the discriminatory system of education and the discriminatory labour practices that impeded the upward mobility of black workers.

South African human capital accumulation during the 20<sup>th</sup> century has varied considerably across the population, with white people benefiting from better quality education under colonial rule, a situation that was further accentuated after Union in 1910 and then, after 1948, under apartheid (De Villiers 1996). The apartheid-style education policies, especially under Hendrik Verwoerd, who implemented a system of education that did not provide African pupils with the skills needed for absorption into a modern work force, created a labour force of which the large majority were not suitably qualified to sustain job-creating growth at growing levels of productivity. Only recently has investment in human capital, specifically in education, increased to accommodate all South Africans. Since 1994 there has been a dramatic shift towards spending on black education (Van der Berg and Burger 2002).

But increasing expenditure on black education is not necessarily sufficient to obtain the required educational outcomes. Education is a typical field where neglect over a long period cannot be rectified in the short run. Supply bottlenecks in the availability of appropriately qualified teachers, the establishment of productive school management systems, and effective teaching systems and curriculum content are challenges that cannot be addressed by merely spending more money.

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<sup>11</sup> I am indebted to Michael McDonald of the Steel and Engineering Industries Federation of South Africa (Seifsa) for this information.

## Development of infrastructure

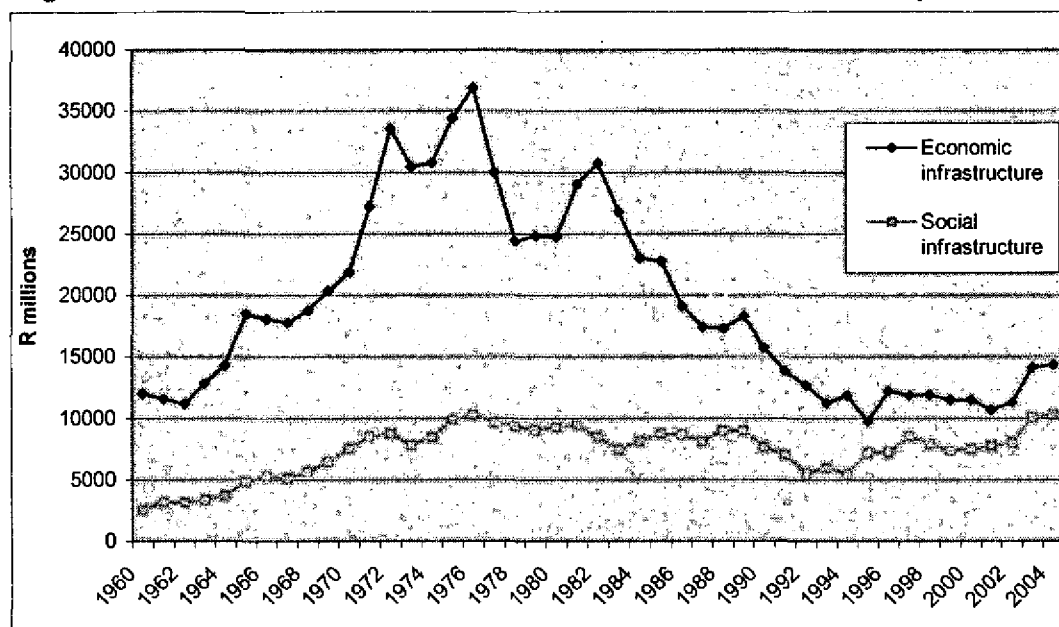
Figure 13 shows the contribution of economic and social infrastructure, respectively, to gross fixed capital formation and highlights the sharp decline by more than a half in the share of economic infrastructure in gross fixed investment since the mid-1970s, while the share of social infrastructure moved sideways at contributions that varied between 5 and 10 per cent of total gross fixed investment. Capital formation in economic infrastructure is an important element in raising productivity and the growth performance of the economy. It is an important source of intermediate inputs for production (for example, electricity, gas and water), zero rated if the Balassa method of calculating effective tariff protection is adopted, and, by providing a transport and communications network, it facilitates production, thus increasing the productivity of the labour and capital used in the production of goods.

Although South Africa's transport infrastructure is well developed in comparison to that of developing countries at the same level of development, the cost of transport is high. Because of the country's topography, it has no navigable internal waterways and more expensive road and rail transport has to be depended on. The problem of high domestic transport cost is exacerbated by the location of the dominant industrial area. South Africa must be the only country with a sizable manufacturing sector where the dominating industrial region – the Pretoria/Witwatersrand/Vereniging metropolitan area, which contributes more than 40 per cent to manufacturing and total GDP – is situated in the interior of the country, 1800 meters above sea level, far from the harbours and with no access to a navigable waterway. The outcome is that transport cost is a significant constraint on export-oriented industries and on industries that depend on imported inputs.

But it could be argued that investment in social infrastructure is equally important in raising labour productivity. Investment in school buildings, for example, does not, as implied above, necessarily mean that an effective investment in education has been made, but it can at least be argued that more class rooms and hospital beds could be a necessary condition for improving education levels and the health of workers. Better-educated and healthier workers represent an investment in human capital that will provide returns productivity improvement.

The sharp fall in the share of economic infrastructure is associated with an equally sharp decline from high levels in the real value of investment, as is shown in Figure 14. The long-term downward trend was interrupted during the first half of the 1980s when concerted efforts were made to develop new railway lines, harbours and electricity generation capacity in support of the export of primary commodities and processed commodities, such as coal, iron ore and aluminium. The contribution of social infrastructure to gross fixed capital formation remained more or less stable, supported by a near doubling in real fixed investment from 1960 until the mid-1970s, thereafter remaining at stable levels with the exception of a slump during the first half of the 1990s.

Considering the patterns and the absolute real levels of investment in infrastructure over time, it can be hypothesised that South Africa is an example of a mineral-rich economy that, in earlier years, invested its mineral rents heavily in physical economic infrastructure at the cost of investment in human capital. This contributed to poor outcomes in capital and labour productivity.

**Figure 15** Gross fixed investment in infrastructure, constant 2000 prices

*Source:* South African Reserve Bank, *South Africa's national accounts 1946-2004 – An overview of sources and methods*, Supplement to the South African Reserve Bank *Quarterly Bulletin*, June 2005.

### Structural change of production

Structural change in the composition and means of production is a defining feature of the process of economic growth and development. Growth in per capita income over the long run is conventionally associated with changes in the pattern of production, characterised by a shift in relative importance from primary production to manufacturing and, eventually, a process of de-industrialisation through a growth in services. During the period of industrialisation, a particular change in the pattern of production also reveals itself, with initial concentrations in technologically less-advanced and more unskilled labour-intensive production – typically in food processing, simple household goods, and textiles and garments – moving to technologically advanced and more capital- and skill-intensive sub-sectors of industry.

The changing pattern of production is also associated with shifts in productivity performance. The history of early industrialisation, for example, links the process of industrialisation and the accompanying urbanisation to growth in productivity on farms, which allowed food to be produced by fewer people for rapidly growing non-farm populations. Across all sectors, also, the growth in the real earnings of workers when economies proceed to higher levels of development is linked to the growth in labour productivity and rising levels of capital per worker.

Earlier it was alluded to that South Africa's economic development more or less fits the conventional changing pattern of production. A typically agrarian economy was boosted and transformed by a mining boom, which established mining as the growth engine and source of foreign exchange earnings. The demand for manufactured goods derived from mining, and the deliberate intervention by the government paved the way for the growth of the manufacturing industry and for changes in the structure of manufacturing. However, for many years mining remained the dominant sector of the South African economy, making major contributions to income generation, employment, foreign exchange earnings and tax revenue. The acceleration of

manufacturing growth, especially during World War II and the post-war period until the 1960s (Table 8), and the decline in absolute terms of mining GDP from the mid-1960s, has brought about a sharp fall in the relative contribution of mining to GDP and an increase in the contribution of manufacturing. The relatively high level of mining's GDP contribution in 1980, shown in Table 8, was the outcome of the very high levels of the gold price during that year.

**Table 8 Gross Value Added: contributions (percent) of commodity producing sectors, 1946-2000**

	1946	1950	1960	1970	1980	1990	2000
Agriculture	11.5	15.9	9.0	7.1	6.1	4.6	3.2
Mining	11.5	12.6	12.3	8.7	20.4	9.0	6.8
Manufacturing	16.5	18.1	19.9	22.6	21.4	23.3	18.9
Electricity, Gas, Water & Construction	3.9	4.7	5.4	7.4	6.1	7.2	5.8

Source: South African Reserve Bank, *South Africa's national accounts 1946-1998*, Supplement to the South African Reserve Bank, *Quarterly Bulletin* June 1999 and the *Quarterly Bulletin*, March 2003.

An important outcome of these developments, which are of particular importance for evaluating factor use and productivity in South Africa, is the increasing capital intensity of production. Mining, especially gold mining, initiated modern economic development in South Africa. Unlike nineteenth century gold mining in California and the initial alluvial diamond mining, which, in the late 1860s, started the mining boom in South Africa, the deep-level mining of South African gold ore deposits and the recovery of gold from crushed ore are capital-intensive by their very nature. The sinking of shafts, the digging of tunnels, and having to deal with dust, heat, ventilation and water disposal meant that the gold mining industry was capital intensive from the start, although large numbers of workers were employed, and it required underground engineering that applied scientific knowledge intensively (Houghton, 1971: 13; Webb, 1983: 179).

Initially, the manufacturing development that was encouraged by the mining boom and, later, the protectionist stance of the Coalition Government, tended to favour growth in labour-intensive industries producing non-durable and semi-durable household goods and relatively simple capital goods. During the post World War II period, industrial investment was dominated by the establishment and growth of plants that produced steel, including stainless steel, aluminium and chemicals, the latter as part of or linked to import-substitution of liquid fuel from coal and gas. Simultaneously, the electronics and metal engineering industries benefited from the armaments procurement and development programme of a beleaguered government. The general outcome of these developments, and of the development of the infrastructure that accompanied them, was an increase in the capital and skilled-labour intensity of production in an economy noted for its capital scarcity and abundance of unskilled labour.

As may be expected, given the efforts to reduce South Africa's external dependence through inward-looking protectionist strategies, industrial incentives favoured investment in selected strategic, capital intensive industries. Commenting on these policies, World Bank economists had the following to say:

"The industrial incentive structure essentially reflects the manner in which the tax regime has supported the industrial policy of 'strategic' investments aimed at reducing South Africa's external dependence. Not surprisingly, the fastest rates of capital accumulation have mainly been in natural resource based sub-sectors closely linked with the mining sector, and which faced the lowest user

costs of capital. Large, capital-intensive public sector firms dominate many of these industries, which helps to explain the increasing concentration of capital that has also occurred. ... An examination of the real user cost of capital across sub-sectors illustrates the links to 'strategic' investments, the bias of the tax regime towards highly capital-intensive sectors, and its inflexibility over time across sub-sectors..." (Fallon, et.al. 1993: 65 & 67)

Using the number of workers per R1 million of value added as an indication of relative labour intensity, the 1996 industrial census data reveals that mining and manufacturing have about the same ratio, namely, 14.4 and 14.6 workers per R1 million value added (Statistics SA, 2004). Within manufacturing the degree of labour intensity varies widely: for clothing it is 42.4, for fabricated metals 16.5, for motor vehicles 12.1, for chemicals 8.3, and for basic metals 7.7. In view of these indications of labour use, the decrease in the contribution to total manufacturing value added of sectors like textiles and clothing, food processing and metal products, and the increase in the contribution of chemicals, in particular, and, to a lesser extent, basic metals and motor vehicles, are out of line with what one would expect or hope for in a labour-abundant economy.

**Table 9 Contribution of selected sectors to total value added in manufacturing (percent)**

	1970	1980	1990	2000
Food	13.7	14.6	13.9	11.6
Textiles & clothing	7.6	7.2	6.3	5.1
Chemicals	8.2	11.7	14.7	21.2
Basic metals	8.9	10.3	8.7	9.9
Metal products (machinery included)	20.4	19.8	14.8	12.6
Motor vehicles	9.4	8.9	8.6	12.6

Source: Quantec Research, Pretoria

Compared to the experience of country groups (i.e. developed market economies, developing countries, and the world), real value added of nearly all the ISIC branches of manufacturing grew more slowly in South Africa during 1990-2000 (Kaplan, 2003: 8-9). The wood and wood products (ISIC 33) sector was the only significant exception, with its annual average growth of 4.1 per cent, but in aggregate this is a minor sector that only contributed 3.9 per cent to the aggregate value added of the manufacturing sector in 2000. Somewhat surprisingly, textiles and clothing (ISIC 32) registered positive growth, albeit at a very low rate of 0.1 per cent, while the three country groups all experienced negative growth in this sub-sector. However, textiles and clothing grew more slowly than other branches of manufacturing, and thus ended up with the lower share in manufacturing (Table 8).

The relatively faster growth of the capital-intensive branches of manufacturing contributed to the divergence in growth of the capital stock and employment numbers between manufacturing and the aggregate economy, as revealed in Tables 4 and 5. The outcome has been increasing capital intensity and falling numbers of jobs during the period under review.

## Integration into the global economy

Earlier, the inward-looking direction of South African development policy was emphasised, a process that continued apace as a consequence of the increasing isolation of the economy in global markets. A wider perspective requires an appreciation of the fact that diamond and gold mining opened the way for the South African economy's participation in the global market, creating jobs and income as well as bringing the foreign exchange earnings that could fund the increasing import bill. In time a dual economy of a particular nature developed: an export-oriented mining sector that allowed import-substituting industrial development through protection under the mantra of "moderate and selective" protection. When World Bank economists, in the dying days of the apartheid regime, visited and researched the South African economy, they encountered a trade regime that was "not overly protective, but far too fluid and complex, and also biased against exports" (Belli et.al., 1993: 1).

A protective tariff has been part of the policy scene since 1925. As noted earlier, this was supported by active participation in import-substituting production by public corporations. Until 1972, quantitative import restrictions, mostly to protect the balance of payments, provided a substantial degree of protection. From 1972 onwards, import quotas were removed and replaced by tariffs at levels that were lower than the tariff equivalents of the quantitative restrictions. Export incentives also came to be introduced in an effort to remove the bias against exports implicit in protection. Although some progress was made in liberalising trade, the beginning of the 1990s was characterised by a system of industrial protection noted for levels of protection that were not excessive for a developing country, but with tariffs that were subjected to very frequent changes on application by industry, an exceedingly high dispersion in the tariff schedule, and a very complex tariff structure of more than 12 000 tariff lines consisting of ad valorem, specific, combined and formula duties.

The pending political settlement and, subsequently, the transformation to democracy in 1994 permitted a major change in trade policy. Acceptability in world markets now made it possible for South Africa to change its policy track from inward-looking policies to an outward-looking strategy of trade liberalisation. The latter formed the basis for South Africa's negotiating position in the Uruguay Round of GATT negotiations. The outcome of this has been the phasing out of the very generous export incentives under the General Export Incentive Scheme (GEIS), the substantial simplification of the tariff structure, the lowering of tariff levels, both bound tariffs and, subsequently, applied tariffs, which were lowered to below bound levels, and the tariffication of quantitative restrictions in agriculture.

The outcome has been significant. The number of tariff lines fell from 12 500 in 1990 to 7 743 lines in 1999, of which 2 463 were positive. During the same period, the number of tariff bands fell from 200 to 45, the unweighted mean tariff rate fell from 27.5 per cent to 7.1 per cent and the maximum rate from 1 389 per cent to 55 per cent (Cassim, *et.al.*). An important feature of trade liberalisation has been the fact that the multilateral lowering of the MFN rate has been complemented by preferential trade arrangements. A three-column tariff for South Africa was the outcome, that is, in addition to the general tariff, a column each for the Southern African Development Community (SADC) and for the European Union, which is South Africa's dominant trading partner.

In spite of liberation, there is evidence that levels of effective protection have not declined in general, remaining constant in some cases and increasing in others (Fedderke & Vaze, 2001). But changes in effective rates of protection do not capture the impact of the removal of quantitative

import constraints, which formed an important element of South Africa's protection, on trade liberalisation. Also, the elimination of export incentives, with import tariffs, although lower, still in place, means that an anti-export bias remains under the more liberalised trade regime.

In trade theory, the efficiency and welfare gains from trade liberalisation are clear. Resources are reallocated from less productive use in less competitive sectors to more productive use in more competitive, export-oriented sectors, thus increasing specialisation and welfare. In the real world of protected economies, characterised by imperfect markets and domestic monopolists and oligopolists, opening the domestic economy to international competition places a constraint on producers to raise their prices above marginal costs. This creates price benefits for consumers. When the economy is exposed to international competition, a wider range of intermediate products, as well as technology and capital and skill flows, will add the dynamic benefit of productivity improvements and economic growth. The outcome of trade liberalisation, hence, is not only movements along the production frontier in a process of trade driven specialisation, which implies a change in the relative contribution of sectors to production (i.e. structural change), and an increasing openness of the economy, but also an outward shift of the production frontier that symbolises economic growth.

**Table 10 Imports + exports to GDP (Annual average %)**

1960-1	46.6
1964-5	49.0
1970-1	47.3
1974-5	43.2
1980-1	37.1
1984-5	32.5
1990-1	34.1
1994-5	42.9
2000-1	56.1

*Source:* South African Reserve Bank, *South Africa's national accounts 1946-1998*, Supplement to the South African Reserve Bank, *Quarterly Bulletin* June 1999 and the *Quarterly Bulletin*, March 2003.

To what extent has the trade liberalisation of the 1990s influenced the economy? A number of observations can be made about this.

The first concerns changes in trade flows, for which a clear pattern emerges in Table 10. The trade ratio declined from about the mid-1970s until the early 1990s. This is a reflection of international isolation and recessionary conditions, which saw GDP growth fall from 5.8 per cent during 1960-9 to 3.1 per cent during 1970-9 and 1.1 per cent during 1980-6 and then revive somewhat to 2.1 per cent during 1987-90. It is difficult to escape the conclusion that the sharp increase in the trade ratio to 56 per cent in 2000-1 was associated with faster growth during the 1990s, trade liberalisation, and, more specifically, the removal of the barriers of international economic isolation.

The removal of trade and investment sanctions in the early 1990s and the subsequent reintegration of South Africa into the world economy, multilateral and bilateral trade liberalisation, and the depreciation of the currency combined to increase export orientation, primarily in manufacturing sub-sectors, as revealed by the growth rates of exports to real sales ratios (Fedderke & Vaze, 2001). Manufacturing boosted economic growth, notably through the export performance of basic metals,



transport equipment, chemical products and electrical equipment (Smith, 2003). After 1994 these industries grew faster than other sub-sectors. Consequently, the combined share of basic metals, chemicals and transport equipment in manufacturing output increased from 44 per cent in 1994 to 47 per cent in 1999 and 50 per cent in 2002 (Smith, 2003).

The outcome of this particular pattern of industrial development is also revealed in the distribution of manufactured exports by factor intensity (Table 11). It is clear that intergration into global markets did not bring about a more intensive use of the country's abundant factor of production, namely, unskilled labour, but rather of skilled labour. Human-capital-intensive manufactured exports increased their share of manufactured exports from 49.5 per cent in 1992 to 58.5 per cent in 1999. Nevertheless, the growth in output and the poor performance of employment combined to produce the productivity improvements shown in Figures 6-10.

**Table 11 Manufactured exports by factor intensity (% distribution)**

	1992	1999
Natural resource intensive	24.0	19.6
Unskilled labour intensive	8.9	6.8
Technology intensive	17.5	15.1
Human capital intensive	49.5	58.5
Total	100.0	100.0

*Source:* Lewis Jeffrey D., 2001: 13

Further evidence of the inappropriate mix of South African exports was provided by a World Bank survey of large manufacturing firms in the Johannesburg metropolitan area. It was found that in Western Europe and North America, the largest destinations for South African export manufactures, the top five competitors for the South African firms were, with only one exception, firms from OECD countries, which are typically 'high-skills-high-wage' economies and relatively capital- and skills-intensive in their exports. The conclusion was: "The crux is that South Africa is unable to compete with comparable fast-growing middle-income Asian or Latin American exporters in these markets" (Chandra, 2002: 4)

As may be expected, the opening of the economy was accompanied by increased import penetration. During the 1990s, import penetration ratios (import values divided by total sales) increased significantly in sub-sectors of manufacturing such as clothing, textiles, glass and glass products, footwear and leather products, electrical machinery, basic chemicals, machinery and equipment, and television, radio and communication equipment (Fedderke & Vaze, 2001: table 4). However, the process of trade liberalisation has not been characterised by a general decline in effective protection, and it has been found that import penetration also increased in sectors that have not experienced a fall in effective protection (Fedderke & Vaze, 2001).

Finally, the impact of trade liberalisation on price competitiveness in an economy characterised by a high degree of market concentration (see below) needs to be considered. The increases in import penetration have had a significant effect in forcing industries to lower their mark-ups. It has been estimated that, during 1995-2002, one percentage point reduction in tariffs reduced the average mark-up in manufacturing by about 2 percentage points (Edwards & Van de Winkel, 2005).

### **Market concentration**

Theory predicts that competitive markets will encourage the most productive use of factors of production, since managers will be more likely to focus on efficiency and profitability and will be less inclined to strive, for example, to increase or maintain market share in oligopolistic markets. From this follows the postulate that a high degree of market concentration, which is a characteristic of the South African economy, will have a negative impact on productivity.

South African agricultural production is dominated by the formal farming sector, which, since the early 1980s, has progressively been deregulated in both production and marketing. Production is also not subsidised. Mining production is concentrated in the hands of large mining houses, but the commodities are sold at international prices and the mines, therefore, operate as price takers. This serves as a disciplinary force to encourage efficiency.

Concentration is very high in the provision of infrastructure inputs. Electricity generation is concentrated in the hands of a single parastatal, ESCOM. However, by world standards the price of electricity, because of abundant cheap coal, is not high and, for example, serves as a comparative cost advantage in the production of electricity-intensive products such as aluminium. The same cannot be said of telecommunications, which, in fixed line service provision, has always been a monopoly granted to a single corporation, Telkom. This organisation, which has been commercialised and partly privatised (Telkom shares are listed on the Johannesburg Stock Exchange), is regarded as effective in the provision of services but the prices of its services are high by international standards and are seen as a constraint on the ability of South African firms to compete internationally.

In transport, the dominating organisation is a parastatal, Transnet, which is the holding company of Spoornet, the monopoly supplier of rail services, Portnet, which owns and operates South Africa's harbours, and South African Airways, which is the dominating but not sole domestic airline. Inadequacies in the provision of rail services have contributed to a substitution of commercial road transport (trucking) for rail transport.

There is a high level of concentration in the South African manufacturing sector. Furthermore, there seems to be a rising trend in concentration ratios across a wide range of manufacturing industries, which can be regarded as impeding productivity. To determine causality, Fedderke and Szalontai (2004:17) estimated the patterns of association between two concentration ratio indicators and total factor productivity (TFP) growth in South Africa. They found that for 7 sectors, the direction of association runs from market concentration to TFP growth, for 2 sectors the inverse relationship holds, while in 4 sectors there is an ambiguous association.

### **Financial and other institutions**

The existence and quality of institutions are important for economic growth and development. In economic theory, the role that good economic and political institutions play in facilitating growth and development has become an important focal point of the New Institutional Economics. In his introductory overview of analytic narratives of a number of developing countries, Dani Rodrik derives the following observation from the experience of Vietnam and the Philippines: "At low levels of income, with reasonable institutions and reasonable policies, it may be easy to achieve high growth up to semi-industrialization. But the institutional requirements of reigniting growth in a middle-income country can be significantly more demanding" (2003: 17). For South Africa the

experience of the Philippines is very relevant. Although the quality of institutions improved in the latter with the transition to democracy after 1982, economic performance remained poor. In his analysis of the growth performance of Vietnam and the Philippines, Pritchett (2003: 148) concluded that "what trips countries up is the transition from one set of 'institutions' to another". On this transition he also observed the following: "In the transition to a new, better set of policies and institutions – that, if they functioned well, could support a much higher level of income – one can create deep uncertainty among both past and future investors." (Pritchett, 2003: 148).

These observations would seem to be applicable to the South African experience. The political transition of 1994 has significantly improved institutions, and economic policy has been successful in achieving macro-economic stability. However, economic growth and growth in total factor productivity and in employment have remained mediocre and have not, in the first decade of democracy, increased to the levels hoped for and demanded by the large number of unemployed and poor. Part of the problem is that the requisite investment, especially foreign direct investment, has not materialised.

South Africa has a history of quality institutions that protected private property and the enforcement of contracts. However, these institutions operated within a discriminatory political environment; a major challenge for democratic South Africa is to free the institutions of their discriminatory bias. It is within this context that the point raised above about the Philippines becomes relevant: to what extent has the transition of institutions created uncertainty? This is an important question that cannot be addressed in this paper.

Important institutions for economic growth are the institution of money and the accompanying institutions of credit and finance contracts and their enforcement. For a developing country, South Africa has a highly developed and complex financial sector with specialised institutions and sophisticated financial instruments. South Africa's commercial bank assets came to 87 per cent of GDP in 1990, compared to 68 per cent in 22 other middle-income countries (Schoombee, 2000). But recent estimates indicate that 48 per cent of South Africa's adult population, 83 per cent of the unemployed and 60 per cent of those employed in the informal sector, are unbanked (Development Bank of Southern Africa, 2005). The country's banking system developed along the lines of the British model with a few very large banks operating extensive branch networks throughout the country. It can be hypothesised that this system of branch networks linked to metropolitan headquarters, where the principal investment decisions are taken, has a strong metropolitan bias in funding, which stands in marked contrast to the American system of unit banking, which has a geographically more dispersed impact in its funding decisions.

It should also be noted that South African commercial banks have always been mainly in the market to provide short-term finance as bridging finance of a commercial nature, in contrast to industrial investment finance provided by banks in countries like Germany and Japan. Capital market transactions in South Africa are facilitated by specialised banks (merchant banks and corporate banking divisions of commercial banks) that underwrite share issues and arrange long-term loans. Shares of the major corporations are listed on the Johannesburg Stock Exchange, which is one of the leading emerging-market stock exchanges and by far the largest in Africa. Macroeconomic stability and having, in the rand, one of the most tradable currencies of emerging markets, have made South African financial assets a favourite for international portfolio investment.

However, the existence of such a sophisticated financial system in an economy where the majority of the population have very limited access to financial services illustrates the dual nature of the

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South African economy and the stark contrast between the first and second economies referred to earlier. During the period covered by this study, financial institutions functioned in support of the advanced first economy. Those that are excluded from the first economy and many of the working poor are poorly integrated into the country's financial system. Since the early 1990s South African banks have given increasing attention to serving the poor. The emphasis has, however, been on providing deposit and withdrawal facilities to the poor with formal employment, with a large number of rural and urban poor left out of the system.

But providing payment and deposit services to poor households is only one facet of financial intermediation. The other crucial one is to provide credit to small and micro enterprises and banks have failed in their attempts to provide loans to micro enterprises. To be productive, small enterprises need access to credit markets. For example, subsistence farmers and other micro enterprises need access to credit to mitigate the risks from adverse conditions and often to provide start-up finance. Without adequate credit markets, small enterprises are unable to invest in good times or borrow in bad times. The constraint in accessing credit from South African banks is obvious. Credit requires acceptable assets that can serve as security for loans, which is a major problem for most micro enterprises seeking start-up or commercial finance.

Access to banking services has become a major issue in banking and government circles, and, since the late 1990s, numerous efforts have been made to expand banking services to the poor and to informal and formal small and micro enterprises. The latter has become the sole purpose of designated public sector institutions that form part of the public sector as initiatives of the Department of Trade and Industry. Commercial banks have also extended their efforts to provide banking services to the poor through low-cost accounts.

## V. Policy and productivity

This section aims to address Section 3 of the terms of reference by (a) assessing the impact of past government policies on productivity performance, (b) identifying the constraints to productivity growth, and (c) suggesting ways to overcome these constraints.

### Problems in assessing policy outcomes in South Africa

It should be made clear at the outset that it is extremely difficult to assess South African policy on productivity performance. An underlying theme of the paper so far has been the dramatic related changes that have taken place in the fields of economics and politics in the country, from a political system of apartheid and international economic isolation to a democratic regime and the opening up of the economy to non-mineral production and trade.<sup>12</sup> The political change has had a substantial impact on the economic environment and policy; the South African economy can be described as being transformed and in transition. However, the study covers a period that terminates in 2000, which is only six years into the period of democracy, and even at the time of writing we have only one decade of the new dispensation behind us. Within this time horizon, the large number of policy measures adopted at macro and micro level that could have an impact on productivity performance, the significant policy lags that exist, and the problems experienced in properly evaluating the effectiveness of policy measures all combine to make a realistic assessment of the productivity impact of policy virtually impossible. In the end one is left with nothing more than speculative ideas.

What is obvious is that a clear perception of the importance of productivity growth exists in South Africa. At Nedlac, a statutory body where government, labour and business deliberate as social partners on economic legislation and policy issues, a clear definition of productivity as “the efficiency with which inputs of capital and labour are used” has been adopted and related to “the conversion of inputs (resources) into outputs (goods and services) efficiently and effectively with the optimum use of human capital and physical resources for the benefit of the society, economy, and environment” (National Productivity Institute, 2005). The key elements of productivity have been identified as performance improvement as outcome, which must be measurable; the key drivers of productivity as effectiveness, efficiency, optimum utilisation of human and physical resources, and elimination of all forms of waste; and the beneficiaries of productivity as the environment, the economy and society.

In addressing policy issues, the special circumstances that have prevailed and still prevail in South Africa make it more appropriate to move from broad, general policies to the more specific policies aimed at productivity improvement. The “special circumstances” refer to the dramatic political transformation that took place during the period under review. The political system has had a major impact on productivity performance since the inequality in political power existed in juxtaposition with, and in relationship to, inequality in the distribution of income, wealth and economic opportunity. With regard to participation in economic activity, apartheid impeded the access of the majority of the population to appropriate productivity-enhancing education, skills development,

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<sup>12</sup> South Africa’s mining industry has, since its inception in the second half of the nineteenth century, been export oriented and thus integrated into the world economy. However, for a significant part of its history it has been subjected to rigid foreign exchange control, which “forced” the industry to invest significant portions of its substantial revenue in manufacturing subsidiaries. Hence, South African mining houses in the post World War II period became conglomerates with controlling interests in mining, manufacturing and even farming.

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business opportunities and property ownership. Widespread absolute poverty and a high degree of income inequality along the dividing lines of race became a defining characteristic of South African society – the poor being mostly black and the rich mostly white.

This political ideology and the consequent social and economic policies have significantly affected the ability of the majority of workers, both actual and potential, to develop skills and business acumen, and have thus impacted directly on their productivity and their ability to improve their real income through an increase in productivity. Markets are supposed to recognise and reward relative scarcities of factors of production and abilities to produce and, where race is introduced as a determinant of factor use, the ability of markets to allocate resources in accordance with marginal productivity becomes constrained. Markets are then not able to operate effectively by allocating resources efficiently.

Racial discrimination had this effect in South Africa. However, politics also had a pernicious effect on the productive utilisation of resources through the policies and actions implemented in response to the reaction to discrimination, that is, international isolation and the use of labour power against apartheid practices. Earlier, the encouragement and protection of industries that were regarded as strategic, in response to increasing international isolation and sanctions, and the beneficiation of mineral resources to add value in the domestic economy were discussed. Increasing investment in these capital-intensive industries contributed to a decline in capital productivity. Some strategic industries (electronic and metal product industries) are also skill-intensive, and the development of these industries brought some pressure on the country's scarce pool of skilled and technologically advanced workers.<sup>13</sup>

But policy also has had a decisive impact on relative factor prices, with fiscal incentives and increases in wage levels that tilted the scale of preference in favour of capital and against labour. This not only benefited capital-intensive industries but also served to encourage the mechanisation of production processes, that is, the substitution of capital for labour.

### Constraints

Democratisation and the normalisation of international trade relations created a new policy environment that focused on trade liberalisation and on concerted efforts to enhance the economic participation of the previously disadvantaged population groups. In 1994 the new government took control of the largest and most industrialised economy with the most developed infrastructure on the continent of Africa. A further positive feature was that the production structure and the infrastructure were intact and had not been physically damaged by extensive strife and civil war. However, the challenges that faced the democratic government were daunting. Those relevant to this study as constraints on the productivity performance of the economy include the following:

- A dichotomy existed in the labour force with, on the one hand, a relatively small well educated group who possessed the advanced skills required by an industrialising economy and, on the

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<sup>13</sup> An anecdotal observation may be in order at this point. The cessation of military operations by the South African defence force and the movement towards democracy caused a cut back in military spending and hence in the production of the armaments industry. One outcome of this has been peculiar: the retrenchment of highly qualified engineers and scientists who had previously worked at the cutting edge of technology but now find that the demand for their skills and experience has been decimated, leading to a process of reskilling and the emigration of highly qualified workers.

other hand, a majority of working poor, unemployed and underemployed, who lacked education, often to the point of functional illiteracy, and skills.

- Urbanisation of the rural poor, settled in informal housing (squatter areas), has grown apace. This growing component of the urban population caused further strain on the social infrastructure, in particular education and health facilities. Most of the informal urban areas are also far from the areas of formal employment, which creates problems in providing urban transport and increases the cost of commuting for workers, both in money and time. Furthermore, people living in the informal areas are excluded from the legal framework governing property since they do not enjoy property rights embodied in title deeds.<sup>14</sup>
- The scourge of AIDS has taken on acute dimensions in South Africa, with a severe impact on the economically active population. The sharp fall in average life expectancy at birth from 63 years in 1983 (World Bank, 1985) to 46 in 2003 (Development Bank of Southern Africa, 2005) can, to a large extent, be ascribed to AIDS and AIDS-related diseases. The negative impact on labour productivity is obvious.
- The skew distribution, with its strong racial dimension, of income, wealth and economic opportunity had become an important characteristic of the South African economy. The link between economic inequality and productivity was discussed in Section 4. Absolute poverty affects the productivity of workers whose basic needs have not been satisfied and serves as a source of social tension.
- The democratic government inherited an economy that had been forged by the conditions of, and the responses to, international isolation and by efforts to add value to mineral resources. In a labour-abundant and capital-scarce economy, the growth in capital intensity of production, accompanied by a fall in capital productivity, is an undesirable development. Industry was protected and not competitive in international markets.

## Policies

When the new government came to power in 1994, it set itself the task of addressing the inequities and welfare of the whole of South African society. The central thrust of government policy in this regard was contained in the Reconstruction and Development Programme, which defined its central objective as being “to improve the quality of life of all South Africans, and in particular the most poor and marginalized sections of our communities”. The government proposed to achieve this in a number of ways, one of which was to boost “production and household income through job creation, productivity and efficiency, improving conditions of employment, and creating opportunities for all to sustain themselves through productive activity” (Quoted in Development Bank of Southern Africa, 2005: 30). As alluded to earlier, the Growth, Employment and Redistribution (GEAR) programme was adopted in 1996, but the emphasis this strategy placed on accelerated economic growth and macro-economic stability did not detract from the overall aim of the government to increase the productivity and real incomes of the poor and marginalised of society.

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<sup>14</sup> It has been argued that, while title deeds are important as security for loans, “the problem of economic empowerment based on the lack of a title deed is simplistic at best” since it does not take account of the alternatives to formal securitised bank loans that have arisen (Tomlinson, 2005).

In a review of development policy and poverty in South Africa, the Development Bank of Southern Africa (DBSA) acknowledged the benefits that have accrued to the poor from increased social spending on health, education and housing (the so-called social wage) and the very substantial improvements in the social security net, consisting of social grants such as old-age pensions, the child support grant and the disability grant. However, it finds that “underdevelopment appears to have worsened ... in terms of consumption-based poverty, with no sign of convergence between the incomes of the poor and the non-poor” (2005: 43). What this indicates is what elsewhere in the DBSA report is referred to as a duality that had been “hard-wired” over a long period into the economic system of South Africa, consisting of a globally integrated economy of production, exchange and consumption, on the one hand, and “a constrained world of informality, poverty and marginalisation” (2005: 89) on the other. This duality cannot be removed in the short to medium term.

The same applies to the structure of the developed sector of the economy. A capital-intensive production structure, established over a period of decades, has become imbedded in the economy and is unlikely to be changed by active government intervention in the near future. It is also unlikely that relative factor prices will change in a way that will encourage South African firms to become competitive in low-skilled, labour intensive goods in which firms in countries such as India and China excel. The stance of the government is that the economy should not try to compete in these industries and that growth opportunities should rather be sought in higher value added products that utilise skilled labour. In a policy document on industrial development strategy, the government has been quite explicit in its view on using cheap labour as a source of comparative advantage:

“...cheap labour is no longer a sustainable advantage. Increasingly, selective and demanding consumers, and the emphasis on technology, limit unskilled and semi-skilled labour creation and require skilled and adaptive labour and effective management capacity. In addition, as the large population countries, notably India and China, increasingly integrate into the global economy, the supply of unskilled and semi-skilled labour has risen dramatically” (Department of Trade and Industry, 2002: 16).

This is not the place to evaluate this approach by the government. However, it is worth noting that China and India are not only proving to be formidable low-cost producers of unskilled, labour intensive goods but are increasingly proving to be very competitive in the production of skill-intensive goods on the basis of low wage costs over the range of skill levels, which, in combination with production efficiency, translates into low unit labour costs. In the global economy, characterised by increasing trade integration, a developing country such as South Africa will face competition from China, India and other developing countries in Asia that have low labour costs in all the markets that South African manufacturers can reasonably aim for. An observation in a report on a World Bank survey of large manufacturers in Johannesburg, referred to earlier, is relevant:

“...to exploit manufactured exports as a source of growth requires ability to export labour-intensive goods that can compete with exports from newly emerging exporters such as China, India or other middle-income Asian exporters..... presently, South African exporters cannot compete with these countries in the OECD, North American or SADC markets. The political economy implications of an export strategy are enormous for South Africa if it chooses to opt for export-led growth” (Chandra, 2002: 4).



This interpretation, which seems to emphasise the need for South Africa to compete in labour-intensive goods against the Asian economies with their lower labour cost, can hardly be reconciled with the view of the South African government and its policy premises. Consider, in this respect, an official declaration of intention to adopt a systemic approach in eliminating constraints in the economy and improving its efficiency in the following way:

“Coordinated and concerted actions have to be taken to maximise the potential within our domestic economy, integrate beneficially into the global economy and build competitiveness based on increased knowledge intensity, value addition, wider and more equitable participation in the economy and regional production systems. At the core of the accelerated trajectory is knowledge intensity, which means utilising and developing the knowledge and skills of our people in order to integrate ICTs (Information and Communication Technologies), technology, innovation and knowledge-intensive services into the functioning of the economy as a whole” (Department of Trade and Industry, 2002: 5).

Given that, in the long run, economic growth and an all-round improvement in welfare will depend on the export-oriented growth of manufacturing output,<sup>15</sup> there are two paradigms at play: the *first* is to accept the challenge to compete with low-cost Asian producers and their low unit labour cost over the range of skill-intensive products, and the *second* is to pitch South African industrial development at the high end of value added, where knowledge, skills and innovation are the crucial variables. It would not be oversimplifying and simplistic to see the latter approach as putting South Africa on the same trajectory as the NICs and industrialised countries with regard to the nature of growth.

Why are these alternative development paradigms highlighted in a document on productivity performance? The reason is that they have important implications for the productive use to which resources are put and for the efforts and policy measures required to improve the productivity of labour and capital. Rather than adopting a paradigm that sees the comparative advantage of the economy in its abundant supply of unskilled labour, the paradigm supported by government policy is very human capital-intensive and more physical capital-intensive.

South Africa has, because of historical developments, a significant skill base, but one that is far too narrow to provide for broad-based industrial growth of a high value added nature. The adoption of the second paradigm will therefore require a dramatic expansion of available skills through substantial, effective investment in human capital over the short to medium term. Furthermore, industrial policy will have to encourage significant investment in the high value industries where wage costs are not a deciding factor in determining competitiveness in world markets. Access to modern technology required by such a strategy, as well as the amount of investment and the requisite managerial competency, will also make substantial foreign direct investment a necessary condition for success.

The first paradigm would adopt a development route originally used by the present NICs, that is, using abundant supplies of unskilled, low-wage workers to produce goods or undertake operations like assembly work that do not require high levels of skills. As the economy and work experience grow, accompanied by intensified efforts to expand human capital in the economy through education and training, the production structure also changes, with production moving up the

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<sup>15</sup> In the Integrated Manufacturing Strategy the following commitment is given: “The new government committed to avoid deindustrialisation, and to accelerate the growth of the manufacturing sector in South Africa as a key driver for growth and employment” (Department of Trade and Industry, 2002: 10).

ladder of value added and sophistication. Over time, real wages increase in line with productivity growth.

Political realities that have their origin in the history of the country preclude the first paradigm as a development strategy. In the fast-growing Asian economies, the early stages of development were characterised largely by an absence of strict labour rights. In South Africa the growth in and use of labour rights was part of the struggle against apartheid. Labour market regulations, which are believed by some to be a constraint on industrial investment, and adversarial labour relations, have become an ingrained element of South African society. These conditions are exemplified by the fact that the Congress of South African Trade Unions (COSATU) forms part of a formal alliance together with the governing party, the African National Congress (ANC), and the South African Communist Party, and it would be politically naïve to imagine that the government, which has a mandate to address the problem of poverty and inequality in society, will deregulate the labour market to a point where market forces will be allowed to dictate wage levels on the basis of supply and demand.

This leaves the second paradigm, which in turn means a focus on accelerated investment in human capital, access to the required technology, and encouragement of investment, notably foreign direct investment. In addition, special attention is to be given to issues of poverty relief, small and micro business development, and equity. Poverty relief and the development of small business is of particular importance since the chosen route of development, with its focus on industries that require higher level skills, will not create jobs for the majority of the working poor and the unemployed. If successful, total factor productivity will increase over a broad range of economic activities. If not successful, with output growth not matching or exceeding the growth of inputs, productivity will obviously fall.

### Policy outcomes

Since the new government came to power, it has acted resolutely to achieve the goals of improved economic performance and productivity, poverty relief, and equity in sharing in the fruits of economic development. It will serve little purpose to discuss and assess all these efforts individually. Viewed collectively, policy initiatives have been taken to improve the competitiveness and efficiency of South African industry, address past constraints on access to economic opportunity, and alleviate poverty.

Under the rubric of "competitiveness," one would give pole position to the deregulation and liberalisation of the production and trade regime, as discussed in Section 4. Trade reform through multilateral and bilateral trade liberalisation has been complemented by the adoption of a new competition policy to achieve greater competition in domestic markets, as well as by the introduction of a supply-side programme by the Department of Trade and Industry to improve competitiveness and to compensate for the reduction in demand side measures of lower import tariffs and the elimination of export subsidies.<sup>16</sup> Competitiveness has also been addressed through programmes in selected industries programmes, of which the Motor Industry Development Plan (MIDP) is widely regarded, on the basis of the rapid growth of motor vehicle and component

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<sup>16</sup> An example of a supply-side programme is the Department of Trade and Industry's Workplace Challenge that aims to improve productivity and competitiveness. The programme is managed by the National Productivity Institute and seeks to obtain collaboration between employers and workers and to improve workplace practices and productivity.

exports, as the most successful. Competitiveness, crucially, depends on the availability of skilled workers. Thus, skills development has been accelerated. The Skills Development Act was adopted to modernise skill definition and accreditation, and Sector Education Training Authorities (SETA's) for different economic sectors were established and funded. The end of apartheid and the subsequent normalisation of labour relations also brought about a decline in industrial action, with obvious benefits for productivity.

To improve competitiveness and productivity in a direct sense, the government also funds the National Productivity Institute (NPI), an organisation mandated to improve productivity. The NPI does research on productivity improvement, acts as a custodian of productivity-related information and knowledge, manages national programmes aimed at productivity improvement, and earns additional revenue through a programme that provides enterprises with productivity advisory services. Although the NPI operates at the macro level with respect to productivity improvement, its reputation is particularly strong as an organisation that provides productivity improvement advice at the micro level of production, i.e. at those levels where public agencies and private firms produce goods and services.

As may be expected, the government has given much attention to the removal of past practices of racial discrimination in the work place, to equity, and to improved access to economic opportunity. A broad programme of black economic empowerment that seeks to expand black ownership of existing business and the growth of black business, including the small business sector, is an important component of government development policy. Efforts to increase employment equity in the private and public sectors to the advantage of black workers (previously disadvantaged people from the African, Coloured and Indian/Asian population groups) have been launched, driven mainly by the Employment Equity Act of 1998. Account has also been taken of the fact that poverty and a lack of opportunity are concentrated in underdeveloped geographical areas. Hence, interventions have been instituted to encourage investment and production in marginalised geographic areas.

Poverty alleviation has also been high on the agenda of government. The increase in social security payments, referred to earlier, has become an important lifeline for poverty-stricken households under conditions of high unemployment. Access to basic services has received a boost through improved access to potable water, electricity and education. Spending on public works programmes has also been increased to provide income opportunities for the poor and unemployed.

What has been the impact of policy on productivity? In Section 4 it was shown (Figures 6-10) that capital productivity, labour productivity, and total factor productivity have been improving since the mid-1990s. Undoubtedly, the liberalisation of the economy would have contributed to this, but it is unfortunate that the improvement has been at the cost of job creation in the economy. The lowering of import tariffs has had a negative impact on labour-intensive industrial sectors like textiles, clothing and footwear, which lost ground in the domestic and export markets to a sustainable supply of lower cost goods from Asia, notably China.<sup>17</sup> This outcome is not unexpected. Trade liberalisation, by definition, is supposed to result in the relocation of resources from less competitive to more competitive sectors of production. In theory, moving resources along the production frontier is "costless", because the assumption is that resources made

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<sup>17</sup> It has been estimated that import penetration in the clothing market has increased from about 4 per cent in 1995 to about 13 per cent in 2000 and nearly 18 per cent in 2003. In 2000 nearly 50 per cent of clothing imports came from China. This has increased to nearly 75 per cent in 2004 (South African Clothing and Textile Workers' Union, 2005).

redundant in less efficient activities are absorbed in more efficient activities. In the real world this adjustment is not so smooth and is characterised by the fact that employment growth in more efficient sectors does not compensate for the job losses in the less efficient sectors. The need to learn new skills and the lack of geographic mobility impede the process of adjustment.

As far as the other policy measures are concerned, it is difficult to relate these causally to the growth in productivity. Industrial policies like the MIDP have been effective, contributing to growth of the motor vehicle sub-sector's to become the largest manufacturing sector. With the volume of production growing faster than employment, labour productivity improved in this sub-sector. However, the effectiveness of policies aimed at skills development and the promotion of small business, is not apparent and has been questioned. It is also not possible to assess the impact of the NPI's activities on productivity in any reasonably precise terms, apart from observing that the contribution must be positive.

Policies aimed directly at poverty alleviation have had a significant impact on the material welfare of the poor. Welfare payments and the reach of these payments have been expanded significantly as has access to services such as health care, water and electricity. It is impossible to measure the impact of this on the productivity of labour, but a positive impact can be assumed. A key element of government policy has been to redress inequities, which are to be expected from past policies of discrimination. It is impossible to assess the impact of policies aimed at black economic empowerment and affirmative action in employment on productivity performance. Since empowerment actions, as a matter of course, attach greater importance to equity than productivity (merit in terms of productivity) it could be expected that the impact on productivity would be negative. However, it could also be argued that this is a short-term, and at most medium-term, impact and that the counter argument would be that inequity is a likely source of instability, which, in the longer run, could be more damaging for productivity performance.

### Future directions

As noted earlier, South Africa is a society in transition with an economy that is going through a serious process of transformation. Addressing the inequities that have arisen because of past policies could easily lead to an emphasis on equity at the cost of efficiency. As an economy subjected to severe poverty, South Africa cannot, however, ignore the importance of efficiency. Therefore, when considering the efficiency/equity nexus, there is a need to emphasise the complementarity of the two economic criteria and not primarily the trade-off relationship between them.

This philosophical point is made to focus on the need to maintain an emphasis on efficiency, that is, the productive utilisation of resources, while addressing the challenge of equity. Productivity improvement, which is a synonym for greater efficiency, is a requisite for welfare growth in a poverty-stricken country. But in the special circumstances that apply in South Africa, where employment growth does not meet the growth in the demand for jobs, and where the social partners in the economy hold strict views on equity positions, an unqualified emphasis on efficiency will prove to be counterproductive.

An illustration of the delicate situation that applies is found in the position taken by COSATU that any productivity and equity agreement must meet the fundamental requirement of "a guarantee that no jobs would be lost as a result of productivity improvements. The effect of this is to ensure that productivity gains are translated into job growth, not job displacement or job loss" (COSATU,

1998). The insistence on an absolute guarantee of no job losses in a productivity and equity agreement would appear to be a non-starter, but what it does illustrate is the importance in South Africa of the close involvement of the three social partners – business (management), labour and government - in designing and implementing a productivity improvement strategy. It also demonstrates why productivity growth in an environment of falling job numbers will tend to taint the concept of productivity. The need for a social accord is often argued to be a necessary condition for the effective transformation of an economy such as that of South Africa (characterised by a need for faster growth, stability and equity in a dispensation where the social partners are well organised and have powerful constituencies). One of the elements of such an accord will have to be a consensus on productivity improvement and the sources of such an improvement. The latter would include, among other sources, the following:

- Training of workers at all skill levels;
- An understanding that productivity improvement is, in the first place, a management task, hence the need to develop managerial competencies;
- Access to and development of appropriate technology;
- Investment in human capital in the broad sense, including education and health (including preventative health care) and the provision of services such as housing, sanitation and transport;
- Incentives for producers to make optimal use of production capacity, for example, through an increase in the number of shifts and the proper maintenance of capital equipment;
- An understanding that flexibility in factor markets will be a requisite for productivity improvement and that the position of economic activities in promoting investment, employment and production cannot, in a dynamic world of change, be frozen into particular positions.

As noted earlier, the chosen approach to industrial development will have important implications for productivity improvement. Adopting a strategy that focuses on high value added production, which is the preferred option of the South African government, will not only require a substantial effort in expanding the skill and capital base of the economy, but it may also require the government to adopt a pro-active strategy of industrial intervention. A strategy of industrial targeting (“cherry picking”) could be adopted, and, if it is, this would necessitate the creation, through incentives, of a profitable environment for investment in the selected industries. But perhaps the most important requirement for such a strategy, as the Japanese experience, in particular, teaches, would be the creation of a cadre of competent officials to implement, monitor and critically assess development programmes. A fundamental criterion that would have to apply when policies are planned and evaluated is the improvement in total factor productivity.

In South Africa the experience of the Asian tigers is often pointed out as justification for an active industrial policy. The literature on the subject does not lead one to convincing conclusions on the net benefit of such an industrial policy, at least not that it was an unconditional success. In addition to a competent public sector, the Asian miracle was based on government intervention in support of markets rather than supplanting them. This point has been persuasively made by Joseph Stiglitz, who, in an assessment of the East Asian miracle, concluded as follows: “The real miracle of East Asia may be political more than economic...” (Stiglitz, 1996: 174). Achieving the miracle of improved productivity performance and rapid economic growth in a way that is perceived by all parties to be beneficial will be the South African miracle, which in this complex society will in reality be more political than economic.

## VI. Contribution by UNIDO

What can UNIDO as a specialised UN agency do to improve productivity performance in the South African economy? The complex nature of the situation, characterised by political and economic transformation, requires a holistic approach to improving the efficient utilisation of resources that will have to take cognisance of the political history of the country and the need to be sensitive to equity considerations.

In considering appropriate policy advice, further note will have to be taken of the need to improve not only the productivity of labour (and, with it, total factor productivity) but to do so while significant numbers of new jobs are created. Unemployment as a source of poverty is too pervasive not to consider the creation of productive jobs as a crucial goal. In this respect it seems critical that the contribution of manufacturing industry to economic activity has begun to move downwards from a peak of just above 20 per cent of GDP, a development that could reasonably be expected in a rich, industrialised economy but not in a middle-income developing country. Revitalising manufacturing growth in an economy, whose labour supply is predominantly unskilled and to do so through an outward-looking developing strategy and in competition with a developing world that produces goods at significantly lower unit labour cost, could set goals for labour market deregulation that is politically impractical, or the development of skills over a time period that is not economically feasible.

There are two forces that count in South Africa's favour. The first is an infrastructure that is relatively well developed by developing country standards, although it is under the pressure of having to be maintained and expanded. The second is that a substantial business sector exists with considerable entrepreneurial and managerial acumen.

The challenge facing South Africa is to lift economic growth significantly - in the policy discourse this is accepted to be an annual average of 6 per cent - in a way that is employment-creating and sustainable, which, in turn, requires a continuous improvement in productivity performance. What can be expected of UNIDO in this regard?

The first point to be made touches on the political sensitivity of the South African development challenge, which can, in a nutshell, be described as having to address efficiency and equity as necessary conditions in a transforming society with a sad history and a precarious balance between social forces and adversarial constituencies. As a UN agency devoted to industrial development, UNIDO has impeccable credentials to research and provide policy proposals that could not be questioned on political or ideological grounds.

As far as specific policy proposals are concerned, UNIDO is ideally placed to advise on the role that could be expected of manufacturing growth as a driving force in generating higher employment-creating growth. This advice will be informed by development theory and comparative analyses of growth experiences in the developing world. A review of alternative industrial development strategies relevant to the South African situation, with a special focus on productivity improvement in conjunction with employment growth, will be helpful in developing a sense for alternatives and a choice of the most appropriate strategy. Since industrial development challenges, in juxtaposition with democratisation and economic transformation, are not unique to South Africa, a review of experiences elsewhere, and the positive and negative lessons to be learned from these, would be a constructive input for South African policy makers.

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