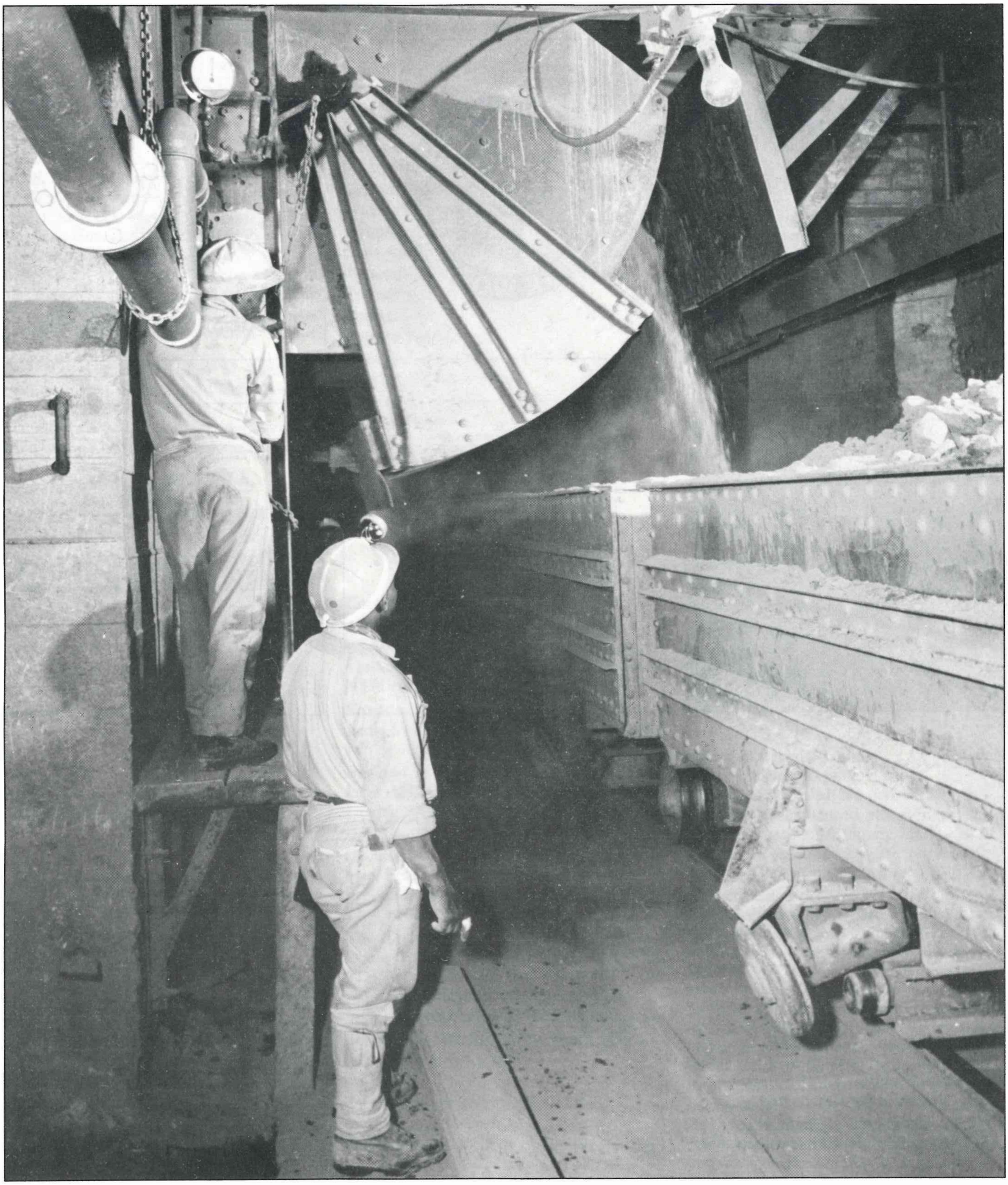

Gold mining in South Africa: priorities for restructuring

By Jean Leger and Martin Nicol

"By 1992 the South African mining industry is likely to have shrunk by one quarter, with enormous consequences for the whole country." Jean Leger and Martin Nicol give a background to the present profound crisis, with special reference to the gold industry. They examine recent government views and analyse those of employers. They also propose a mechanism of short term assistance to the industry and address the areas where fundamental restructuring is required.

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1. INTRODUCTION

South Africa has one of the largest mining industries in the world. Only China, India and the Soviet Union have larger mining industries. Mining is, and is likely to remain for the foreseeable future, South Africa's most important generator of foreign exchange earnings. A stable and wisely managed mining industry is an essential condition for economic development and wealth redistribution in South Africa.

In 1989 mining and quarrying contributed 25 913 million South African rands (ZAR) to the Gross Domestic Product (GDP), that is 12,3% of the GDP. Mineral exports accounted for 51% of total exports. If the various processed mineral products such as the ferro-alloys and steel are included, the mineral industry's contribution to both GDP and foreign earnings would be significantly increased.[1]

The major sectors of the mineral industry are gold and coal mining, 489 382 workers being employed in gold alone. In 1990, the average number of people in service and the value of production were as follows (Table 1).

1.1 Gold mining in crisis

Gold has long been the corner stone of the South African economy. Gold and other minerals are by far the largest single source of foreign exchange. In 1990, gold alone contributed 31% of total exports, the total for minerals amounting to 48% of exports. Yet today the gold industry is in a severe crisis. This crisis threatens to turn into a cataclysm unless the industry is appropriately restructured - in a process that will require the participation of all the parties concerned - the state, employers and workers and their unions.

If the gold price does not increase to levels of around 550 US dollars (USD) per ounce, gold mine production and employment is likely to fall drastically over the next four years. The following scenario provides an example of just how precipitously gold mine employment and production could decline:

A. Assume that gold recovers from the present band of 350-370 USD/ounce to 400 USD an ounce in 1995.

B. Assume that the Reserve Bank maintains its commitment to a firm Rand-USD exchange rate. Assume that the exchange rate is maintained at its present value of 1 USD = 2,79 ZAR.

C. Assume - optimistically - that the annual increase of ore milled is restrained to a (modest) annual increase of 10% per year.

Table 1
Employment and value of production in major sectors of South Africa's mining industry 1990.

	Employment (in service)	Total sales GZAR	Exports	% Exports
Gold	489 382	19.1	19,3	99
Coal	102 837	7.9	3.7	47
Other mining	128 829	11.0	6.2	56
Total minerals	721 047	38.0	29.2	77
Total exports (all commodities)			60.7	

Abbreviations: South African rand= ZAR, M = million; G = billion

These assumptions mean that the only mines still profitable in 1995 will be those which mined gold in 1990 at a cost of less than 22 275 ZAR/kg. If this were to be the case - and using Chamber of Mines data 3 - the following will result:

- Gold production will be reduced from the present 600 t to less than 200 t a year.
- Foreign exchange earned from gold will fall from 19 billion rands (19 GZAR) to 7.2 (GZAR). This will throw the country into a severe balance of payments crisis.
- Mineworkers will be the worst hit, employment declining to only 130 000 jobs from about 450 000, but all sectors of the economy will be affected by the knock-on effects of mine closures and the cut in mineworkers' spending power.

In short, the above scenario represents an economic catastrophe for South Africa. If the assumptions on the stable exchange rate and a 10% annual increase in working costs hold true, then only a gold price rising steadily to around 550 USD per ounce in 1995 will be able to sustain the gold mining industry at approximately its current size.

Of course no-one has a crystal ball which predicts what will happen to the price of gold a month from now, let alone in 1995. But what is clear is that the industry has entered a major profitability crisis and the need is for a major restructuring of the industry. In the short term, the government has to be persuaded to provide immediate relief so that the restructuring of the industry can take place in a rational manner before the resources of the industry are dissipated. In the longer term, all parties in the industry have to address restructuring in at least five key areas:

1. The extremely poor wages and working and living conditions of the majority of gold miners.
2. The low productivity of the industry, which is integrally related to the poor conditions of service and lack of training experienced by miners.
3. Co-ordinated efforts to increase the demand for gold.
4. The downstream processing of gold products to create a gold beneficiation industry in South Africa.
5. The lack of incentives for investment in new gold mines and obstacles to exploration.

The purpose of this restructuring must be to return the industry to profitability and international cost competitiveness, while providing a reasonable quality of life for the industry's employees. Measures must be taken to support the price of gold, to provide security of employment in mines and increase employment in gold related industries.

The gold mining industry has lurched into a profound crisis. Yet when one looks at the approach of the government and employers, one cannot but be struck by the narrowness of their vision for the future of the industry.

2. STATE AND EMPLOYER PERSPECTIVES

2.1 The government's view of gold mining

The Government appointed the Marais Committee of Inquiry into the Position of Marginal Profit Mines at the end of 1989. Its report was made public in July 1990. Crucial to the committee's deliberations was their assumption about the future gold price. The committee projected that "the gold price can be expected to show a moderate real increase in the nineties." [4] It is possible that this assumption - which has already been proved seriously wrong - is the key reason for the government's lack of concern in the face of the drastic cut-backs taking place now in the gold industry.

The Marais Committee ignored the sharp decline in the price of gold that occurred during its deliberations, and which has persisted since the committee made its report public. Thus the economic crisis that the gold mining industry finds itself in is much worse than anticipated by the committee. Since the committee expected the price of gold to rise, they gave minimal consideration to the much tighter cost squeeze marginal mines were likely to face as a result of a decline in the gold price coupled with the inexorable rise in working costs. Of the 13 mines that the committee considered marginal (a profit to revenue ratio of less than 6%), a number have only survived by massive etrenchments and restricting production to high grade ores. Despite measures of this nature, some are still mining gold at a loss.

The committee's gold price assumptions led them to anticipate that several of the marginal mines would probably close in the five years to 1995. If all thirteen mines closed, the committee estimated that it would lead to the loss of 77 600 jobs. [5]

This prediction has already been overtaken by reality. From 1987 to February 1991, 100 411 workers lost their jobs on the gold mines. Negotiations are underway now in respect of a further 20 000 retrenchments. And this has occurred when only one mine closure has been announced (Stilfontein). The downscaling that precedes actual mine closures affects all mines across the industry and is far more drastic than anticipated by the Marais committee. The "knock on" effects of the cut-backs in gold mining are also manifesting themselves. In March, six construction and engineering companies that supply the mines closed their branches in Welkom with a loss of 1 200 jobs. In May, Usko, a company for which the gold mines are an important market, retrenched 650 workers.[6]

The Marais Committee re-stated the long standing state policy of limiting government assistance to marginal mines to particular cases and of requiring that aid should be "in the national interest" and of a short-term nature only. While direct state assistance was permissible for the pumping of water, it was rejected in virtually all other cases. The committee believed that gold mines should not be singled out for special assistance but should operate in the context of an overall economic policy that promotes development. Such a policy would be focused on macro-economic variables, specifically interest rates, the exchange rate, general wage levels and tax rates. But no specific recommendations were made. In short, the committee had no vision of how the people and the sophisticated infrastructure of the mining areas that may be abandoned over the next five years could be put to alternative, productive uses.

At regional and municipal level the lack of planning to deal with the gold mining crisis is even more pronounced. Most of the towns where the gold mines are located are largely dependent on gold mining for their survival. Yet none of the local authorities have developed any meaningful plans about how they will deal with the crisis their residents already face or will shortly face. An example of the lack of thinking in this regard is provided by Virginia, one of the towns worst hit to date as a result of the retrenchments at Harmony gold mine. Over 4 500 workers have been retrenched, but the town council is spending millions on refurbishing their municipal offices!

The lack of a broader perspective in government thinking about the gold crisis, particularly the manner in which it will impact on labour, largely results from the ideology and practices of Apartheid. In the case of the Marais Committee, the composition of the committee impeded a broader perspective emerging. The committee was dominated by government appointments and had representatives from the Departments of Finance, Mineral and Energy Affairs and the Reserve Bank, as well as from the Chamber of Mines. Representatives from trade unions were noticeably absent.

2.2 Employers' perspectives - the oversupply argument

The dominant view amongst employers is that at present there is a world oversupply of gold which is keeping the price at low levels. For example, they point to the increase in new gold production between 1980 (959 t) and 1990 (1 734 t). Indeed, if account is taken of Eastern Bloc (380 t) and scrap sales (441 t), it is estimated that some 2 799 t of gold came on to the market in 1990. [7]

The corollary of the oversupply argument is that a cut back in production will cause the price of gold to rise. Thus closure of mines like Stilfontein have been seen as a prerequisite for a turnaround in sentiment in the gold market. Certain government officials also share the oversupply perspective. For example, Chris Stals, governor of the Reserve Bank, was recently quoted as saying that there was an oversupply of gold in world markets and that "we cannot artificially try to work against this trend". [8]

The argument that mine production of gold needs to fall before he price will rise is by no means proven. But the narrow application of such a belief will do untold damage to the South African economy.

Firstly, South Africa, as one of the world's higher cost gold producers, will bear the brunt of any production cut backs. Given that 2 799 t of gold were sold in 1990, a mere 5% cut in world supply would translate into 140 tons.

This represents a quarter of total South African production. A cut back of this scale would have major repercussions for the South African economy. Aside from the foreign exchange problems it would cause, 200 000 workers would lose their jobs on the gold mines alone.

Secondly, a major weakness with the "oversupply" argument is that it assumes gold is like any other commodity and neglects the reserves that have been stored by investors. Possible movements of these vast quantities of gold cannot be ignored. It is estimated that 35 000 tons of gold are held in monetary reserves alone. The amounts that could be released on to the market are equivalent to approximately 50 years of current world production. Thus, even if a large proportion of local production was to be closed down, it does not automatically follow that the amount of gold coming on to the market will decline substantially as dishoarding could maintain supply levels. [9] For example social and economic instability in the Soviet Union and the Middle East may encourage these areas to continue selling off large amounts of gold. The result would be the persistent depression of the gold price.

Nevertheless, there is value in conceptualising gold as a "commodity". This perspective focuses attention on the demand for gold. It also brings us to the third criticism of the "oversupply" argument. Seeing gold purely as a store of value in the past meant that producers only paid lip service to the marketing of gold. The hide bound view of "gold as a store of value" discourages the promotion of gold outside the bullion markets and has led to the neglect of local investment in gold beneficiation and fabrication.

But perhaps most important, it leads to the curious response to the crisis which sees the answer as the closing down of producers, rather than vigorous attempts to encourage demand and thus lift the price. Producers in most industries when faced with a low price for a commodity, explore possible ways of increasing demand, rather than destroying their production facilities. The question of ways to increase the demand for gold will be discussed in Part 4.

3. SHORT-TERM MEASURES TO ALLEVIATE THE CRISIS

While a marginal mine does not pay any tax directly, 10 the mine is nevertheless an important source of net revenue to the state and public authorities. We have identified five important sources of revenue:

A. Personal taxes paid by mine employees.

B. General sales tax (GST) paid by the mine and by mine employees when purchasing goods and services.

C. Regional service council levies on the wage bill.

D. Mine lease taxes.

E. Taxes paid by suppliers to the mines (GST and company tax) and by the employees of the suppliers (GST and personal tax).

Our estimates indicate that in 1990, while the gold mines only paid 896 M ZAR million in direct taxes, the public coffers swelled by an additional 2 316 MZAR through the taxes and levies generated from the personal taxes of mine employees and the taxes that flowed through the suppliers of the mining industry. [11]

This provides the basis for further calculations:

• Actual tax gain to the state per employee: 7 759 ZAR/year per employee.
• Actual tax gain to the state per kg of gold: 6 497 ZAR per kg.
• Actual tax gain per employee on a mine that makes no profit: 5 866 ZAR/year per employee.
• Actual tax gain per kg of gold produced on a mine that makes no profit: 4 912 ZAR/kg.

If a marginal mine closes, the income from these sources of tax - the mineworkers and the mine suppliers - are lost. The amounts outlined above in rands per kilogram represent a make or break difference for many mines. Based on 1990 data and the conditions pertaining under GST, our estimate is as follows. If the government contributes to a marginal mine an amount of 5 866 ZAR per employee per year, it will experience precisely the same loss of income which would be incurred if the mine were to be closed. The proposal is thus simply that the indirect and other taxes generated by the activities of a marginal mine be refunded so that the mine can remain a source of employment. The actual amounts per employee will be reduced somewhat when VAT is introduced in September 1990 - but mines will anyway be refunded the full amount of VAT they pay. [12]

Non-quantified advantages of this proposal include, firstly, the prevention of the cascade effects a mine's closure has on the suppliers who provide it with inputs. The profitability and economies of scale of these enterprises are threatened as their sales fall. Secondly, demands on state funds such as the Unemployment Insurance Fund will be limited as retrenchments will be fewer. Thirdly, workers will keep their jobs.

When a mine closes, not only does the state lose the above amounts of tax, but it may have to contribute to pumping costs to prevent other mines in the region from flooding. This, for example, will be the case for the Stilfontein Gold Mine which provides an instructive example. Stilfontein was closed by Gengold, although, as its managing director said "it was not 'mined out' It had a large, coherent body of reef which could profitably have been mined at the real gold price of five years ago."[13]

Press reports have put pumping costs for the mine at 1 MZAR per month, that is 12 MZAR for a year. It is not known what proportion the government will contribute to these, but let us assume the government pays half, that is 6 MZAR. Stilfontein's closure will result in some 2 500 retrenchments. According to our estimates, the closure will result in a total tax loss to the government of about 14,7 MZAR/year..

Taking these two figures together, the mine's closure will cost the state an effective 20.7 MZAR. Would it not have been preferable to explore the possibility of supporting the mine to the extent of 14.7 MZAR per year? If this support resulted in a viable operation, the support for the mine would represent no net cost to the government. Instead, the present situation will result in a 20.7 MZAR loss to the fiscus.

In summary, the mining industry has suddenly been hit by a major crisis that calls for its restructuring. The necessary changes, in such a vast and complex industry, cannot take place overnight and they need careful planning and wide participation if they are to be sustainable. Tax pay-backs, during a defined adjustment period, are a sensible way of easing and, indeed, promoting this transition. The merits of this proposal include:

1. No net fiscal costs to the state at a time where expectations for social and economic development are growing.

2. The cushioning of the crisis in gold mining so that the downscaling of the industry can proceed at a restrained pace.

3. The maintenance of a significant number of jobs that will otherwise be lost (in both the mine and in its chain of suppliers).

Table 2
Taxes paid because of gold mining in 1990 (in MZAR)

Direct tax and lease payments	896
Indirect tax on working costs (Appendix 1)	2 316
Indirect tax on capex (Appendix 1)	463
Total tax generated by gold mining	**3 675**

A blaster and his underground team at the Premier Mine charging a ring blast. Photo from the 1960s.

4. The maintenance of the viability and economies of scale of suppliers of inputs to gold mines, for example in electricity, food and engineering.

5. The prevention of a sudden decline in the country's most important source of foreign exchange earnings.

6. The opportunity to plan the use of the highly developed infrastructure of the mine and mining communities for alternative economic projects.

7. The opportunity to re-train mineworkers to perform other jobs once the mine closes.

The exact details of how support for marginal mines through tax pay-backs should be implemented would need to be established through consultation with all the parties concerned. This action can clearly be justified in the national interest if it is tied to a planning process and a specific adjustment period.

4. FIVE AREAS FOR LONG TERM RESTRUCTURING

4.1. Low wages and poor living and working conditions of gold miners

In the medium and longer term, the industry has to be restructured to bring local working costs into line with competitors in other parts of the world. For this to be achieved, the participation of workers and trade unions will be crucial. But workers' participation in the mining industry will require a fundamental change in the attitude of mine management and the government to black workers. Current managerial and supervisory approaches - all too often deeply permeated with racist views - see workers as simply another factor of production whose cost has to be minimised wherever possible. This view has to be transformed to one where workers are properly trained and can participate in production on equal terms. Workers must be seen, not as a cost, but as a valued resource whose skills, creativity and expertise are vital to successful mining operations.

If an altered role is to be played by workers in the future, the social framework within which workers work and live has to be tackled. Specifically, the inadequacies of the remuneration and working and living conditions of workers have to be resolved. If these issues are not adequately addressed, they will remain sources of formal conflict and informal resistance which will prevent technological and social innovations from succeeding in the workplace. There are five areas that require urgent attention:

4.1.1 Wages and poverty

Black mineworkers' wages are far below wages paid in manufacturing, although they are higher than those paid in agriculture. In all the other major mining countries of the world where trade unions are active, mining wages are above manufacturing wages. This is because of the hard and dangerous work miners do underground.

The average wage on the mines is 845 ZAR per month compared to 1 043 ZAR/month in manufacturing.[14]

The wages of most gold miners are regulated by the Chamber of Mines. Chamber wages are related to job grade: from grade 1 (lowest) to grade 8 (highest). Eighty eight percent of black workers work in grades 1 to 4, the so-called unskilled jobs. Grades 5 to 8 are called semi-skilled.

The minimum underground wage - for grade 1 - varies from as low as 420 ZAR to 532 ZAR per month, depending on the mining house (372 ZAR to 467 ZAR for surface). These minima can be compared to other industries (Fig 1).

The median wage for grade 1 in manufacturing industry (the lowest unskilled grade) is 781 ZAR per month.[15]

• Mercedes Benz pays the highest minimum in South Africa of 1 323 ZAR per month.

• The Steel & Engineering Industrial Council set a minimum wage of 815 ZAR per month in 1990.

• Woolworths stores pay a minimum of 800 ZAR per month.

• Eskom, where workers also live in compounds, have a minimum wage of 880 ZAR per month.

The largest number of miners work in grade 4. Their wages are also below the manufacturing industry equivalent of 1 129 ZAR in 1989.[16] Anglo American gold mines pay 796 ZAR, the highest grade 4 wage.

Figure 1. Minimum wages compared

Current rates: May 1991

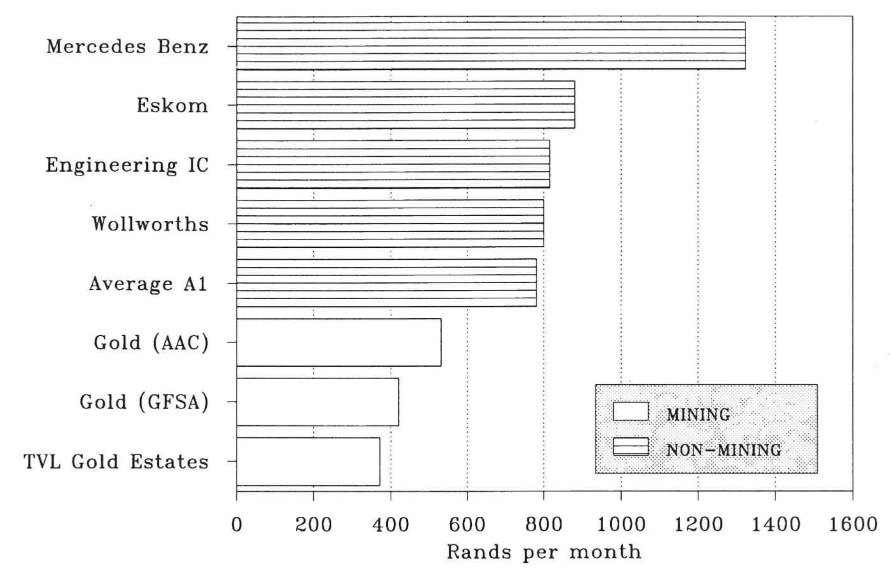
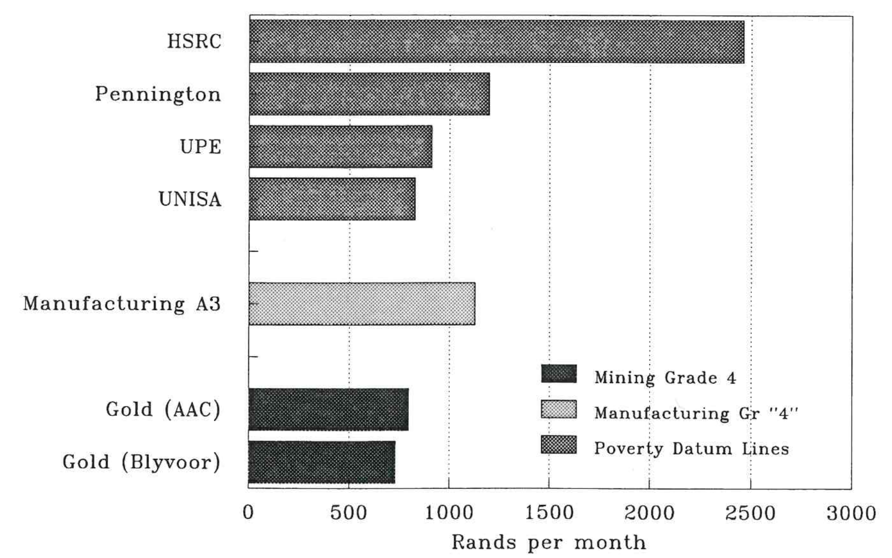


Figure 2. Poverty datum lines and upper-unskilled wages compared



In addition to being lower than manufacturing wages, black mineworkers' wages fall well below poverty datum lines, as shown in the graph. Poverty datum lines do not represent a living wage but claim to provide "a modest low-level standard of living" (Figure 2).

• UNISA's current poverty datum line is 828 ZAR per month.

• The *University of Port Elizabeth* (UPE) poverty datum line is 912 ZAR.

• The Pennington township survey says an average black family in Soweto needs 1 199 ZAR per month for "a very modest standard of living, a shade over the bread line" (March 1991).

• In 1986 the *Human Sciences Research Council* (HSRC) said that a family of five in Pretoria needed at least 1 257 ZAR/month to cover living costs. Today this would mean a wage of 2 462 ZAR per month.

Unlike black workers, whites on the mines earn more than whites in industry. The average wages for whites in gold mining is 4 253 ZAR/month. For whites in manufacturing it is 3 552 ZAR.[17]

The Chamber is not moving towards a living wage on the mines. The Chamber's wage policy up to 1990 has kept wages in line with inflation and market forces - mine wages follow manufacturing wages but at a lower level.

As shown in Figure 3, the buying power of the official Chamber minimum wage underground has not risen since 1975. The buying power of the grade 4 wage underground has increased, but very slowly.

Black mine wages are so low that the NUM is not demanding a living wage. The NUM is just demanding that the mining industry take the first steps towards paying a living wage. In the present circumstances, this requires a commitment to restructuring the industry.

In 1989 the NUM National Congress adopted a three-year wage policy. The policy includes a demand for a national minimum wage in the mining industry and for all mining houses to pay the same wage for each grade.

4.1.2 Safety and health

Over 68 000 miners have died in accidents since 1900 and more than one million have been permanently disabled, by far the greatest proportion of these deaths having occurred in the gold mines. Even today, mining remains an extremely hazardous occupation. In 1990 alone 530 gold mineworkers died in accidents. This is approximately equivalent to one worker dying and fourteen being seriously injured for each ton of gold that is mined. A mineworker who spends 20 years working underground risks one chance in 30 of being killed and a 50% chance of being permanently disabled. Table 3 gives the breakdown of the fatality rates in gold mines for the five-year period 1986 to 1990. No improvement in the rate has been achieved over this period.

The dangers of mines are much worse in the deepest mines because of rockbursts. For example, in 1990 alone 58 workers died at Western Deep Levels, the world's deepest gold mine. Most of these deaths were due to rockbursts. Figure 4 (page 12) shows how the fatality rate increases greatly with depth.

About 10% of the gold mine workforce work between 3 000 and 3 500 meters. These miners face a threefold increase in fatality rates. One out of eleven miners working for twenty years at these depths is likely to be killed in an accident.

The incidence of occupational diseases in the gold mines is increasing. A major factor is the stabilisation of the workforce since the mid 1970s.

Before 1975 most black miners spent relatively short periods of their working lives on the mines. But the economic recession, overcrowding of the bantustans and the prolonged drought closed off opportunities for employment in manufac-

Figure 3. Gold minimum wages
Real monthly minima: Grade 1 & 4 workers

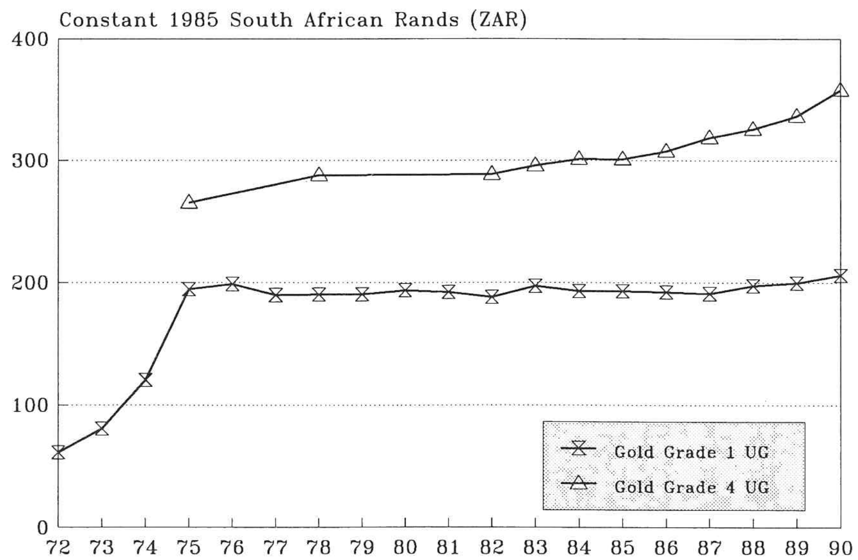


Table 3
Gold mine underground and total fatality rates

Year	Underground rate per 1 000	Total rate per 1 000
1986*	1.83	1.16
1987*	1.46	1.16
1988	1.36	1.09
1989	1.56	1.25
1990	1.56	1.25

* Chamber of Mines only

turing. Increasingly workers have returned after each contract, spending longer and longer periods in mine employment, even though they have remained migrant workers.

The result of stabilisation is that the average length of employment of the workforce is increasing steadily. Prior to stabilisation only a small proportion of workers worked long enough underground to develop occupational diseases. But because a large proportion of workers are now working for twenty years or more, diseases caused by dust, radiation or noise are much more likely. The increase in the incidence rate of silicosis is shown in Figure 5.

Tuberculosis rates have also escalated on many mines in recent years. Despite the claims about a non-racial "new South Africa," compensation payments for black miners remain discriminatory. For example, while white miners are awarded 50 410 ZAR in compensation for pneumoconiosis in the second degree, black miners are only awarded 3 695 ZAR.

Safety and health has always been a prime concern of the National Union of Mineworkers. The focus of the union's efforts is to negotiate safety and health agreements in which management recognise elected safety stewards. The NUM has met great resistance from mine managements as improved working conditions cost money and reduce profits. The recent passing of the Minerals Act by the government, with the support of the mining houses, has further "deregulated" mining legislation to reduce the powers of the Government Mining Engineer to monitor mine safety.[18]

4.1.3 Housing and migrant labour

The Chamber's gold mines employ some 400 000 migrant workers who live in single-sex compounds. Workers spend much of their working lives away from their families. This is one of the worst aspects of mine management policies.

The NUM has put forward the demand that every miner should be able to choose to live with his family in proper accommodation near to the mine he works on. Since some workers may not wish to bring their families to live permanently on the mines, the union also demands that hostels be upgraded and that there should be adequate facilities for visits by wives and families.

The mining houses state that they expect at least four out of every ten mineworkers to remain migrant workers in the future. No mining group intends building a family house near the mines for every worker. The Anglo gold division has only 2 000 black mineworkers in their house ownership scheme. Genmin, in

Figure 4 Effect of depth on the underground fatality rate

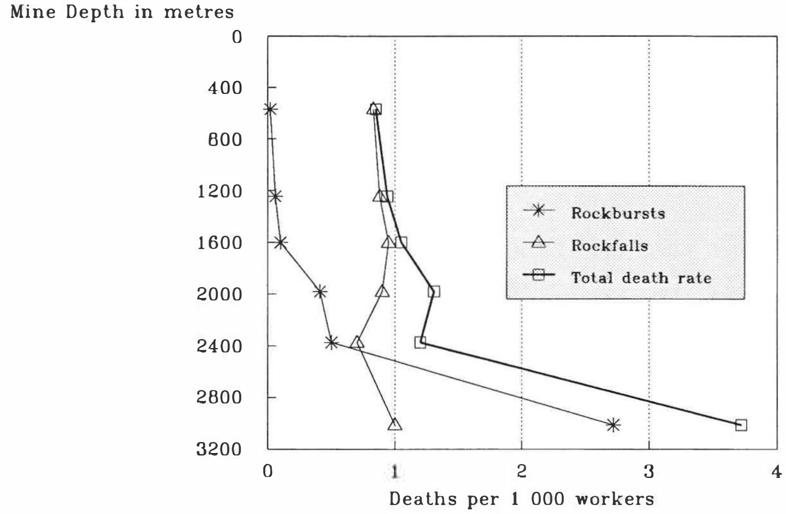


Fig 5
Silicosis simple and with tuberculosis

1989, had 350 out of 147 000 employees living in houses they had bought.[19] Amcoal, in 1990, still had no home ownership scheme for black workers.[20] Clearly mine management, despite its "wish" to move away from the migrant labour system, is not providing family housing on a mass scale. Only 8 000 new houses per year - for white and black workers - are presently being built.[21] At this rate it will take 60 years to build houses for all black mineworkers.

The provision of housing for miners is likely to prove a difficult issue. On the one hand, the cost of providing very cheap family housing for all black mineworkers on the gold and coal mines was estimated at 8 GZAR in 1989. On the other hand, because of the low levels of mine wages, most black miners simply cannot afford economic rentals or repayments on a house.

Up to now a major obstacle to mine housing development has been the government's refusal to finance infrastructure (eg roads, sewage, lights and water). The government has also refused to allow mine owners to use pre-tax revenue (as is usual for other capital expenditures) to meet town infrastructure or housing costs.[22]

Many workers are leaving the hostels and are finding places to stay with their families. One solution for these workers is to pay a "living-out allowance". But then there is the question of those workers who remain behind in the hostels. They also deserve proper accommodation and the ability to provide housing for their families.

The elements of a solution include:

- Basic wages must be increased sufficiently to allow workers to choose where to live. At the moment the wages are too low to allow workers to move to urban areas with their families.
- Continued free hostel accommodation for workers who choose to stay in hostels while they work. Hostels must be upgraded so that workers may live in humane conditions.
- Home loans for all workers to build houses where they hoose.

4.1.4 Hours of work

Miners work an 11 shift fortnight which means that every second week they have to work a full shift on Saturday. The official normal working hours per 11 shift fortnight are 96 hours (8 hours 44 minutes per shift) on the gold mines and 92 hours (8 hours 22 minutes) on the collieries. In practice, the working day varies considerably depending on travelling and waiting times. A NUM study of a marginal mine in 1990 revealed that 70% of workers spent between nine and ten hours underground per shift and 26% worked for longer than ten hours underground.[23] Furthermore, due to the low gold price many managements have encouraged workers to work their "free" Saturday shifts.

Hours of work for mineworkers in Europe, North America and Australia are between 35 and 40 hours per week. In Germany, the maximum length of a shift for manual workers underground is seven hours. In South Africa a shorter working week - at the most forty hours - is essential for three reasons. Firstly, as a way of reducing exhaustion of workers as a first step to improving productivity. The English Factory Acts of the nineteenth century and the work of industrial engineers such as Frederick Taylor long ago established the productivity improvements that could be achieved through a shortened working week. Secondly, to minimise the total time during which miners are exposed to unhealthy conditions underground. Thirdly, to give miners adequate leisure time for spending with their families, recreation and continuing education.

4.1.5 Racial discrimination, class differentiation and control

In 1987 the mining industry was the last industry in which statutory job reservation was abolished. The intensely hierarchical management structure and the reactionary attitudes of white supervisors have resulted in black miners experiencing racial discrimination in a particularly profound manner. Workers give dozens of examples of how they are discriminated against, whether it be in respect of accommodation, queuing for cages, ablution facilities, rest breaks, protective equipment, cap lamps, acclimatisation, security checks, assaults, abusive language and workers' compensation.

In 1990 workers engaged in numerous work stoppages in order to draw discrimination to management's attention. But beneath current discriminatory practices lie the more intractable structures of class domination. Even the ranks of white supervisors are highly stratified with "union men" (including blasting certificate holders), officials and senior management, each enjoying different facilities and privileges. Worker demands that discrimination be removed face the challenge of these class hierarchies as well.

Related to issues of race and class, is the central issue of control. In the regimented structure of managerial supervision, workers have a minimal degree of control over their working and living condition. Mine management have tightly curtailed the right of workers to organise, 24 and have refused even to negotiate key workplace issues such as safety and health. If the work experience of black miners is to change from one of repression and exploitation, then democratic structures which give workers meaningful control over their working lives and the way in which the industry is run have to be created.

4.2 Low productivity, training and work organisation

It is generally argued that productivity improvements in the gold mining industry have been minimal. However, while it is acknowledged that output per worker in the industry is low, productivity has improved substantially in recent years. Despite the severe cuts in the number of jobs, here has been a rise in the tonnage of ore milled. Tonnage milled rose by

3,3% between 1986 and 1990 in spite of an employment cut of 14%.

Rather than simply focusing on workers and productivity, the issue needs to be examined more broadly. Serious consideration must be given to why technological innovations have failed in so many cases. The millions of rands poured into the *Chamber of Mines Research Organisation's* (COMRO) programmes have produced limited results.

Major obstacles to the success of COMRO research were its aims and organisation. Many projects were explicitly undertaken to displace workers, rather than to provide improved conditions and shorter working hours alongside improved productivity. This did not provide a basis for encouraging the workforce to facilitate such initiatives. Workers have never been included in directing research, another factor which deepens worker suspicions of new technologies. The gruelling conditions of the underground workplace mean that innovations which require extra preparation - either to facilitate production or safety - such as the stope drilling rig developed in the late 1960s, were soon abandoned. 25 Much of the research was carried out in the "ivory tower" campus of the Research Organisation. As many research reports were kept confidential, there was often not even the pressure of publication to test the findings of researchers through public debate.

If productivity in the medium and long term is to be improved substantially, technological innovation as well as innovations in the organisation of the workplace are going to be vital. But little progress is likely until workers and their organisations participate meaningfully in the research and development process. A necessary condition for this to occur is that agreements between managements and workers be entered into which provide for security of employment when labour displacing technologies are introduced.

4.2.1 Training and work organisation

The mines need to develop a far broader commitment to skills training for black workers. This requires that mineworkers' problems with basic education be addressed. It is a fact that a minimum level of basic education is needed as a platform before further training is possible. Many members of NUM have been denied the possibility of training because of the Apartheid education system or the flawed education systems in the frontline states. The mines have trained them to speak and respond to Fanakalo, a language that absolutely bars technical training. We need a training system that provides these workers with a real way forward.

The industry already has extensive experience in the design and application of modular training courses for artisans and miners. A modular system of literacy courses must be developed which would allow for flexibility and clear possibilities for progression. These literacy modules should link with modules for training within a system of clear career paths. There should be paid time off for literacy studies and agreement on target dates for workers to achieve the first two levels of literacy:

Level One: mother tongue literacy and number recognition

Level Two: beginner's English and basic numeracy Such a system would obviously gain if it involved other sectors of industry and linked into the national education system.

The issue of literacy is one that the mining industry ought to have attended to years ago. A literate workforce can be trained to higher levels of skill and higher levels of earnings. Adult literacy is also one of the building blocks of a democratic and participative society.

A new training system, linked to fair grading system, can lead on to new patterns of work organisation that break down the intense hierarc of labour on the mines. A nationally regulated training system can ensure that workers' existing skills are recognised and that all qualifications are recognised in all mines and even outside the mining industry. This is clearly desirable in an industry based on a wasting resource. Many workers who begin their careers in the mines may end their working lives in other industries, when the mines have closed. Training should be broad-based so that minimal retraining is needed to equip a trained mineworker for productive work in another branch of industry.

4.3 Co-ordinated efforts to increase the demand for gold

Sanctions pressures effectively impeded Chamber of Mines' efforts in the early 1980s to continue marketing gold and krugerrands through its subsidiary, Intergold. As a result of these pressures, the Chamber was the prime mover behind the founding of the *World Gold Council* (WGC) in 1987. The WGC, based in Geneva, is concerned with promoting gold for use in jewelry, industry and investment.

Participating gold producers contribute 2.50 USD per ounce of gold mined and a voluntary premium of 0.50 USD per ounce. This means that South African producers must contribute of the order of 55-66 MUSD each year to the WGC, that is 155-185 MZAR. Two aspects of these contributions should be reconsidered. Firstly, the contributions represent a sizeable loss of foreign exchange. In planning for the post-sanctions period, the disadvantages of having the activities of WGC distant from the producers become more acute. While certain expenses will inevitably be incurred overseas in marketing gold, many of the activities associated with gold promotion, for example the production and printing of promotional literature and research into the industrial uses of gold, could be located in South A This would result in job creation in South Africa, savings in foreign exchange, and the deepening of gold research expertise within the country rather than abroad.

Secondly, consideration should be given to increasing gold promotional activities substantially. The major market for gold is jewelry fabrication, which finds a ready analogy with the marketing efforts of De Beers. Many authorities appear to be in agreement that there is much scope for expanding the size of the jewelry market. In 1989 the WGC's jewelry marketing totalled approximately 50 MUSD while gold jewelry fabrication worldwide amounted to 1 800 tons which had an intrinsic gold content of approximately 20 GUSD. Thus jewelry marketing represented approximately 0,2% of the total value of gold sold for jewelry fabrication. In comparison De Beers spent 130 MUSD on their world wide consumer advertising campaigns in elation to Central Selling Organisation sales of 4 GUSD. This means that De Beers spent 3,3% of the value of diamond sales on marketing, sixteen times more, in relative terms than was the case for gold marketing.[26]

4.4 Downstream processing of gold products

jewelry manufacture is a labour intensive, lucrative industry. While South Africa is the world's major gold producer, in 1990 only 5 tons of gold were fabricated locally into carat jewelry This represents less than 1% of local gold production and only 0.25% of world jewelry fabrication. However, it should be noted that in 1990 local jewelry manufacture more than doubled, largely in response to the removal of a 20% ad valorem duty on gold jewelry

An eloquent case for the development of a substantial jewelry manufacturing industry in South Africa has been made by Mintek.[27]

The potential for a local industry is demonstrated by its rapid development in the east Asian countries. From a minimal base involving the manufacture of a total of six tons in 1983 in Taiwan, Singapore, Hong Kong and South Korea combined, jewelry production reached 185 t in 1988! Value added to South African gold through its manufacture into jewelry in Italy and Japan in 1988 amounted to 11.3 GZAR, that is about two thirds the total revenue earned by the gold mining industry in that year.

The Mintek report proposes a target of 100 t of production per year by the year 2000. This would represent only 7% of world production. If 88% of production were exported, this could generate foreign exchange earnings of 3.8 GZAR. Of course, it should also be remembered that South Africa is a major supplier of diamonds and platinum, as well as a variety of precious and semi-precious stones. Thus the country has a real comparative advantage in respect of jewelry manufacture. Yet it is ironic that, given the diversification of the mining groups into a wide range of enterprises, local jewelry manufacture has not been developed. With the removal of the ad valorem duty on gold jewelry, the time appears ripe to reconsider the position.

4.5 Lack of incentives for investment in new gold mines

The Marais Committee and stockbrokers agree that if investment conditions are favourable and certain technical problems of mining safely at great depths can be solved, up to 15 new gold mines may be established in the coming ten years. These would absorb some 28 GZAR in investment capital and employ between 60 000 and 160 000 workers (depending on the assumptions made about the price of gold).[28]

Political and geological uncertainties combined with the difficulties of mining at great depth and a volatile gold price make mine owners demand a high rate of return on their investment in new gold mines. A new gold mine in South Africa is deep and very expensive. Some 2-3 GZAR is required to develop a new shaft. There can be a delay of five to ten years before any gold is mined. Profits are delayed still longer. In the light of present conditions, capital expenditure on existing mines has been slashed and major new projects have been shelved.

But it is clear that it is not only the gold price that will hold back the development of new mines. Several other structural issues need to be addressed.

4.5.1 Exploration

Exploration for new mineral deposits is vital to secure the future of the mining industry. South Africa has estimated gold reserves of some 40 kt - that is 57 years of production at current rates of mining. These amount to two thirds of the world's estimated gold reserves.[29] 23 kt of gold are in reserves in existing gold mines. 17 kt are in new areas.

Some 30 companies are active in South African gold exploration.[30] The present system of mineral rights, which promotes their fragmentation and sterilisation, seriously impedes the efficient exploration and use of South African mineral resources.[31] Mining houses keep their exploration data strictly secret and they are able to prevent people from exploring for ore deposits on land where they hold mineral rights. The whole system of mineral rights needs to be overhauled.

4.5.2 Investment code

A new South African government will have to develop an investment code to regulate mining investment and to develop a framework within which investors can feel secure.[32] This code needs to address the concerns of trade unions, mine workers and the wider community as well as those of the government and private investors.

There is no formal code that regulates mining investments at present. This has lead to a whole series of abuses and irrational actions.

An investment code should provide for careful planning of the mine over its whole life. It should deal with the provision of infrastructure, the housing of the workforce, skills training for workers and the encouragement of other industries in the area that can survive when the ore body is mined out. The plan should deal wierves to cushion the effects of variable commodity prices and manage its eventual closure. Mines that close should make a proper provision for their workforce. Before the Stilfontein gold mine announced its closure, it paid out a vast special cash dividend to shareholders - and then pleaded poverty in the negotiations over retrenchment packages for its workforce (Figure 7).

When the Vierfontein Colliery closed down, it left behind hundreds of houses which are now standing empty - despite the national shortage of 600 000 housing units. If people were to move into the houses, they would have nowhere to work. An investment code would guard against this waste of resources.

An investment code that only addresses the narrow demands of investors will end up failing to meet the overall requirement of a stable and secure environment for investment.

4.5.3 Ownership structures

The mining house system has enabled the growth and operation of South Africa's vast mining industry. But the performance of the economy in the last 20 years, under the increasing dominance of these conglomerates, raises questions about their future.

They have used their vast mineral profits to take over firms in every branch of manufacturing industry and the finance sector. They control the bulk of private industry and have acted as a brake on its further development. In mining, their huge success has hidden the inefficiencies that are embedded in them and the basic unsoundness of mineral extraction policies. The mining houses have become financial empires which look first to their own interests and last to the national interest of South Africa.

The inadequacies of the mining houses are well illustrated in the current crisis in gold mining. The downscaling of this key industry has enormous implications for the whole country. The industry is likely to have shrunk by one quarter between 1989 and 1992.

Yet the mining houses and the Chamber of Mines treat this national catastrophe as a series of small problems best dealt with mine-by-mine. Although the industry has all the infrastructure, all the committees and a common Chamber in place to address the decline of the industry in a co-ordinated way - they choose to tackle the crisis piecemeal.

The national interest calls for all mining operations to be co-ordinated. There should be national plans for the wise use of mineral resources in the long-term. A new structure of ownership and control needs to be developed that will incorporate worker participation and state involvement and promote the development of the minerals sector for the benefit of the people as a whole.

4.5.4 Taxation

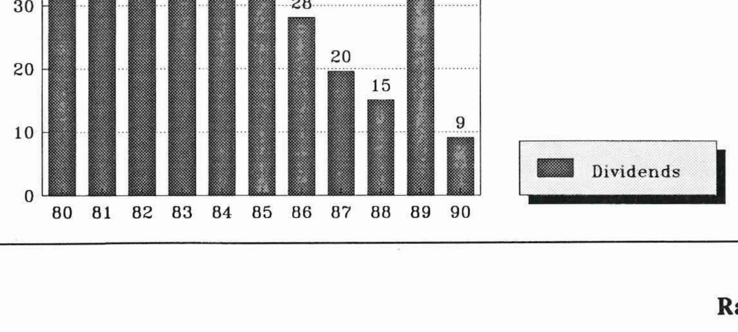
South African gold mining taxation is immensely complicated. Unlike in most mining countries, the mineral and tax laws treat each mine as an isolated unit, irrespective of whether several mines are owned by one company. All capital expenditure can be written off immediately against current or future profits (unlike in other enterprises, where assets are depreciated over a number of years). But the state places restrictions on the capital expenditure that can be offset against tax. In particular, the profits of an existing mine cannot all be used to finance the development of a new mining venture.

This makes sure that the government gets a share of the profits of every profitable mine. It prevents a mining company from sinking all of its profits into more and more mines, and deferring indefinitely the payment of tax. This restriction on the use of the surplus produced by profitable mines is known as "ring fencing".

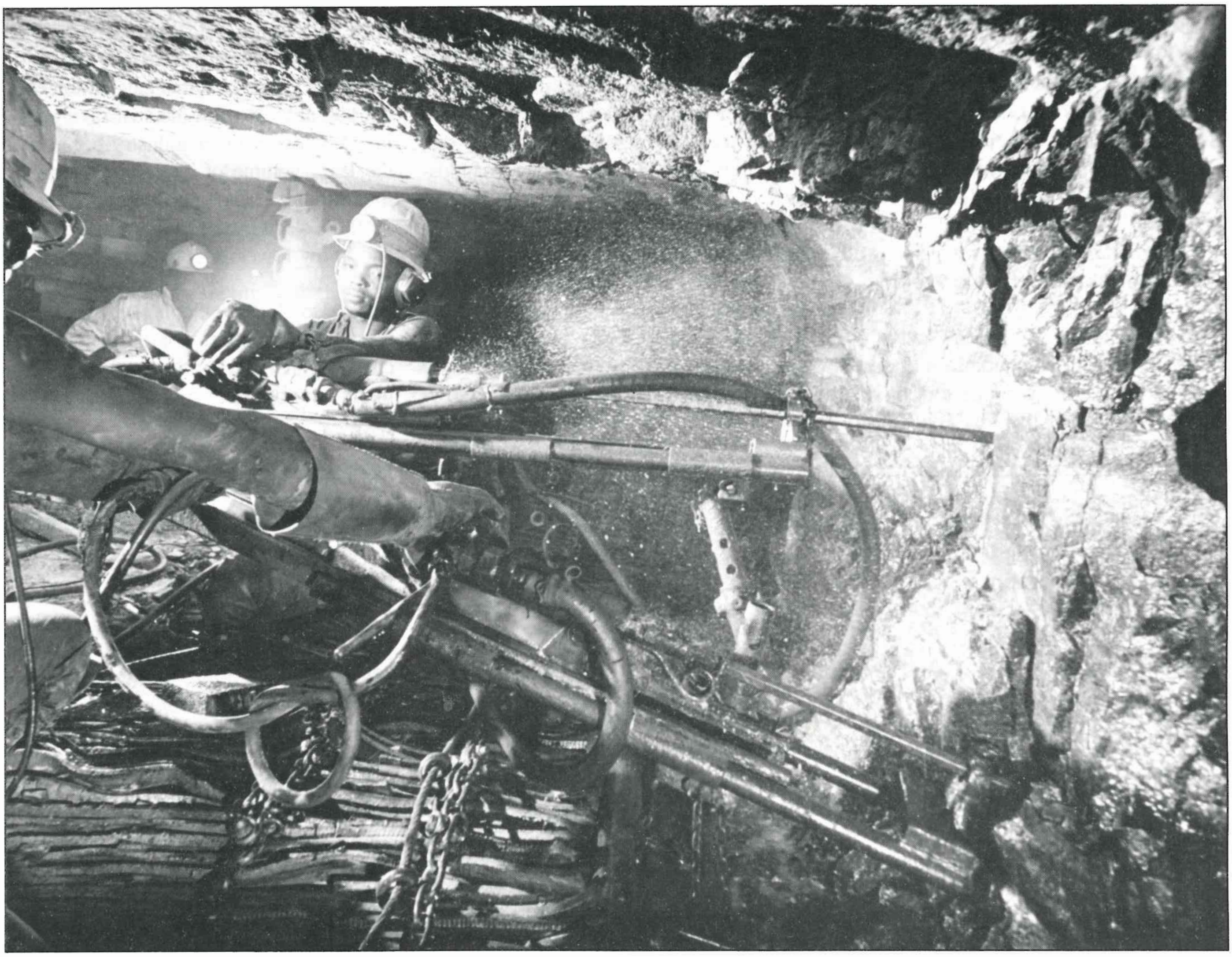
The mining houses want ring fencing abolished. They acknowledge that the government would lose out on tax revenues immediately, but in the long term, they argue, the state would gain as the tax base widened to include more mines.

In the 1990/91 budget, the government partially lifted ring fencing. It has agreed that 25% of the tax base of an existing mine can be used to write off a new mine's development costs in cases where both mines are the property of the same taxpayer.[33] In a further concession, the government stated that the tax shield of one type of mining operation can be used for another. So part of the taxes of a platinum or diamond mine can be used to develop a new gold mine.[34]

Figure 6. Stilfontein – dividend record



Vaal Reefs No 4 shaft underground.



The lifting of ring-fencing now, at the present price of gold, would probably have no influence on the opening of new gold mines. But this policy has clearly stood in the way of gold mine investment in the past.[35] From 1991, the tax rate of gold mines has been lowered significantly. This follows the government's adoption of the recommendations of the Marais Technical Committee on Mining Taxation. Lower tax means a higher rate of profit from gold mining and hence a bigger incentive to invest in new mines. The government hopes that this will lead to the development of many new gold mines which, in the longer term, will contribute more tax and increase mining employment. It also expects that a lower tax rate will induce the mines to be more cost-conscious.

The tax reduction is, however, structured in a way which gives most of the benefits to rich mines. The inducement to mine marginal ore on all mines is "reduced fairly substantially."[36] Some marginal mines will now pay tax, while the wealthy mines, such as Driefontein, Kloof, Vaal Reefs, Kinross and Hartebeestfontein will pay less.[37]

While this tax burden may have only a slight effect on the amount of gold produced, it will make marginal shafts on all mines less profitable and promote their closure. Such shafts employ proportionately more workers, whose jobs are now additionally threatened. The employment effects of the new tax formula have never been taken into account by the promotors of this reform. The reform means that the gold resources of South Africa will be managed to give prime importance to mining company profits, rather than to the interests of workers.

A review of taxation policies on the mines is needed, both to promote new investment and to ease, rather than exacerbate, the effects of declining profitability on marginal mining operations.

Appendix

HOW MUCH TAX DOES THE GOVERNMENT GET FROM THE MINING INDUSTRY?

Mining is the pillar of the SA economy. Because of the mines, and only because the mines exist, there are clothing factories, engineering works, lumber yards and food plants, towns and schools.

If the mines close, there is nothing to back all this other economic and social activity The government can justify spending a lot more tax than might appear wise to tide a mine over until the gold price rises, or until the mine has had an opportunity to re-structure its production and re-train its workforce so they can move into jobs in other mines or industries.

We can calculate this by "adding back" all the personal, company and sales tax associated with the inputs to the gold mines (see below).

So it is worth while for the government to pay back up to 5 866 ZAR per employee per year by way of an allowance to keep a gold mine going. This translates to a minimum of 4 912 ZAR per kg of gold.. And this calculation does not take into account the cost savings enjoyed by every other industry because of the large volume of inputs demanded by the mines. These create economies of scale in electricity, food, engineering etc and allow lower prices to be enjoyed by all.

It also does not consider the actual worth to the country of the foreign exchange generated by the gold sales from these "unprofitable" mine.

Gold mines 1990 (MZAR) / **The tax box: taxes raised only because of the gold mines**

Gold mines 1990 (MZAR)				Personal tax	GST	RSC	Company tax
Materials bought		7 712			404		
Stores	6 331			130	58		346
Electricity	1 381			36			
Salaries and wages		6 701				7	
Blacks	4 320			466	308		
Whites	2 381			405	138		
Working costs			14 413				
Mine tax and lease		896					
Capex		2 475					
Dividends less borrowing		847					
Surplus			4 219				
Total revenue			**18 632**	**Tax box total 2 316**		19	

Indirect tax on working costs	2 316 MZAR
Indirect on Capex	463 MZAR
Direct tax and lease payments	896 MZAR
Actual tax generated by the gold mines	**3 675 MZAR**
Actual tax gain to the state per employee	7 759 ZAR/employee
Actual tax gain to the state per kg of gold sold	6 497 ZAR/kg
Actual tax gain per employee on a mine that makes no profit	5 866 ZAR/year
Actual tax gain to the state per kg of gold sold from a mine that makes no profit	4 912 ZAR/kg

Notes:

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Chamber of Mines, 1988 Statistics, 1989 Statistics.

Chamber of Mines, "State of the Mining Industry", 1991.

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[1] *South Africa's Mineral Industry* (Seventh Edition), Minerals Bureau, September 1990.

[2] Minerals Bureau statistics. Note that a distinction should be drawn between "in service" and "at work" figures. "In service" represents the number of persons in employment, whether at work, or on leave. "At work" represents workers actually at work and is the appropriate figure to use when calculating rate data, for example accident rates and productivity.

[3] *Chamber of Mines Newsletter*, Jan /Feb 1991, "Profit margins under heavy pressure", p5.

[4] Marais, 1990:34. A similar proposition was accepted by the Melamet Commission in August 1990. In evaluating proposals to assist ERPM, the commission assumed "a gold price of 30 000 ZAR for the remainder of 1990, 34 000 ZAR for 1991, 42 200 ZAR for 1992 and thereafter increasing with the South African inflation rate", Report of the Commission of Enquiry into State assistance to the East Rand Proprietary Mines Ltd, RP 99/1990, p 43.

[5] Marais, 1990:38.

[6] *Sunday Times* 7 April 1991; *Business Day*, 29 May 1991. The stores purchased by members of the Chamber of Mines amounted to 9.1 GZAR in 1989, an increase of only 7% on the year before because of "cut-backs on unprofitable operations", *Sunday Times* 18 November 1990.

[7] *Gold 1987* ; *Gold 1991* ; *Weekly Mail*, 28 March 1991.

[8] *The Star*, 7 April 1991.

[9] *The Economist*, 19 July 1986; *Wall Street Journal*, 28 May 1991.

[10] Some marginal mines will have been brought into a tax-paying situation by the new tax formula announced in the 1991 budget. This reduces the "tax tunnel" from 6% to 5%.

[11] See Appendix 1: "The tax box". Sources: Chamber of Mines 1990 Presidential Address; 1988 and 1989 statistics; "State of the Mining Industry", 1991; 1990 Employment statistics. Tax calculations derived from JWS Koel, 1990, *Ring Fencing and the Tax Base in Gold Mining*, MBA thesis, University of the Witwatersrand.

[12] *Chamber of Mines Newsletter*, March/ April 1991. Tax experts estimate that mines costs will fall by as much as 8% when VAT is introduced - *Business Day*, 23 May 1991 [1076/831].

[13] *Financial Times Survey*: South Africa, May 1991 [4000/4308]. The real price of gold in 1986 would have been equivalent to R46 591!

[14] CSS P0200 13 February 1991 - manufacturing figure, September 1990; mining figure calculated from Chamber of Mines and CSS sources. CS no longer gives a racial breakdown of employment in the mining sector.

[15] *P-E Consulting Salary Survey*, September 1990.

[16] *P-E Survey*, September 1990.

[17] CSS P0200 13 February 1991 - manufacturing figure, September 1990; mining figure calculated from Chamber of Mines statistics for 1990.

[18] For an earlier analysis, see M Bachman, J Leger, I Macun and M Price, 1989. The privatisation of working-class health care, *SA Review* 5, Ravan Press: 357-377.

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[21] Chamber of Mines, 1990. *Annual Review* 1989.

[22] J Crush, 1989. Accommodating black miners: Home-ownership on the mines. *SA Review 5* , Ravan Press: 335-347.

[23] *Hours of Work in Chamber Mines*, National Union of Mineworkers, September 1990, p5.

[24] See NUM, 1988. *Collective Bargaining at Anglo American Mines - A Model for Reform or Repression.*

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[26] Also see "jewelry can put a shine back into gold", *Business Day*, 3 May 1991. 1017/1903.

[27] Mintek Corporate Marketing Department, 1990. *Project Minaura 2 - The Road Ahead: An outline of SA's potential for jewelry manufacturing as a result of the recent changes to the system of taxation.*

[28] Marais Committee p 55; Mike Brown, Davis Borkum & Hare.

[29] Economic Geology Unit, Wits University, cited in Lloyd Pengilly *"The outlook for SA gold production"* Martin & Co, 6 March 990 1017/1289.

[30] John Chadwick "South Africa - the search for more gold", *Mining Magazine* February 1991 [1017/1887].

[31] See FJ Kruger, MJ de Wit & G Levin "Equitable distribution and efficient use of Mineral Rights: The case for a South African Minerals Corporation", *Internal Affairs Bulletin*, 4 February 1991.

[32] See, for example, "Mining Investment Promotion", *Mining Journal*, 15 February 1991.

[33] 1990 Budget Speech, *Business Day* 15 March 1990 [4003/01/954].

[34] *Business Day*, 20 March 1990.

[35] See J W S Koel "Ring Fencing and the Tax base in gold mining", MBA thesis, Wits 1990.

[36] Technical Committee on Mining Taxation, December 1988, page 167.

[37] Mike Brown "SA Budget Summary 1991/92", Frankel, Max Pollak, Vinderine Inc, 20 March 1990. ■