RESPONSE OF STATE MINING ENTERPRISES TO THE METALS MARKET DEPRESSION OF THE 1980s

State mining enterprises into the 1990s – the corporate strategic response

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The mining industry has been through a crisis over the past half decade following an extended period of metals consumption growth and relatively high prices. A "decade of change" has however fundamentally altered the parameters under which the international mining industry operates and it will be the ability of companies to come to terms with the new external environment which will determine their success or failure as they enter the 1990s. Although private and state companies may have different priorities, the latter have not been insulated from those developments which have caused so much soul searching in the private sector. The medium-term viability of all organisations involved in mining will depend on the strategic decisions taken now and it must be hoped that they will be such as to encourage a return to stability and profitability or surplus, sufficient to underwrite the investment required for the future.

This essay will be concerned with the options facing companies regarding the scope and extent of their activities and will discuss the strategic choices available in the context of the changed outlook for demand growth, lower expectations for prices and the potential offered by new technology.

The industry crisis

The crisis in the industry which has been evident since 1982, with only a brief respite for some in 1984, has resulted in a most far reaching restructuring of the industry. Some major companies have virtually disappeared while others have lost their independence or have been broken up. New international relationships are being established, not only within the private sector but also including state enterprises. Comparative operating costs have been distorted by the extreme fluctuations in exchange rates (although some countries have maintained their competitive position in the international market by permitting their currencies to float downwards; this often at the expense of the economic well-being of their domestic economies). And above all else, prices of all metals have fallen in real terms to levels which only a few years ago would have been considered unthinkable. Although there is now some evidence of an improvement in the general situation for mining companies, the upturn in the fortunes of the industry evident in the first half of 1987 is fragile and will be undone easily unless the lessons of the past decade are heeded and form the basis of the strategic analysis to be used in planning for the next ten years.

Low prices have been the most prominent feature of the post-1982 crisis in the metals industry. The availability of surplus capacity has been at the core of the problem although many other factors have played a part in determining the length and extent of the recession. This build-up of mine, smelter and refinery capacity was, of course, neither sudden nor disguised. In fact, one can go back twenty years, to the late 1960s in seeking the roots of the crisis. This earlier period was characterised by a shortage, actual or perceived, of non-ferrous metals, and prices at the time reflected this fact. In addition, annual metal consumption growth of 4 to 5 per cent was not uncommon and mining industry profitability was such that it attracted a great deal of attention from both private and public sector investors.

The consequences of the wide investment appeal of the non-ferrous mining and metal refining industry manifested itself in a number of ways. Finance for mining was readily available from the equity markets, and non-traditional sources such as loans became increasingly attractive as real interest rates turned negative in the years of very high inflation after the 1973 oil price shock. New participants were enticed into the mining industry by the prospect of high returns and later an apparent "natural"

hedge against inflation. The most notable newcomers were the oil majors, seeking a haven for their large surplus cash flows and keen to acquire other profitable businesses for the day when the oil bonanza might end. Consumers of metals and speculators also played a part in maintaining this buoyant view, building stocks and bidding up prices in the expectation of long-term shortages.

This activity did not escape the notice of the governments of many countries which were beginning to exercise their new found political, and more important, economic powers. It seemed obvious that the enormous wealth associated with the ownership and exploitation of mineral assets should be retained for the benefit of their domestic economies and citizenry. Also, the thinking on economic development in the period before the first oil shock was such that active participation in very large-scale investments was encouraged as one of the preferred paths of overall economic growth.

All this new involvement in mining, set against the background of dire warnings of shortages of natural resources such as that produced by the Club of Rome, led to a surge in investment in mine and processing capacity. A feature of the mining business is the long lead times required to bring a mineral property into production; many of the projects planned in these earlier years therefore only came on stream much later, at a time when many of the projections relating, in particular, to metals' consumption growth were proving to be falsely optimistic. Even by the mid-1970s the experiences of many of the new participants were falling far short of their expectations and the oil companies especially came to rue some of their rasher investments. The belief that mining was somehow a risk free business, a licence to print money or create surpluses for the country hosting a mineral deposit, which have been evident as private and state enterprises had expanded their activity in this field, was finally dashed by the recession which set in at the beginning of the 1980s.

The collapse in the price of non-ferrous metals after the short-lived boom of 1979 and 1980 was not by itself a devastating blow to the mining industry. In fact, many saw the fall in prices as a normal part of the longer-term price cycle. The fall in consumption however, which in 1982 was down 13 per cent when compared with demand in 1979, coupled with the lower prices caused total revenues to plummet and absolutely essential cash flows to dry up. The extent of the fall was quite remarkable. Turnover for the industry as a whole[1] (both public and private companies) had been rising at a rapid rate from the previous low point in 1975 which had followed the rise in oil prices. The increases were over 20 per cent per annum in 1978 and 1979 and 15 per cent in 1980. Then in 1981 the bubble burst and revenue fell by 5 per cent. It fell another 6 per cent in 1982. These calculations have used figures adjusted for inflation, the real effect of the fall in revenues being considerably greater than the nominal values suggest.

A very large number of mining companies, both in the private and the state sector reported losses in 1982. The responses however to this setback were mixed. For many, the crisis was interpreted as only a temporary hiccup; many could only afford to see it as such. The new production capacity, which had been planned in the brighter days of the 1970s and has been brought on stream with borrowed money to satisfy the forecast of ever growing demand for metal, could not be allowed to stand idle. Above all else, cash flow was required to service the new debt which had accepted on apparently generous terms. Unfortunately, the period of near negative real interest rates had already passed since inflation was beginning to fall. Interest payments, for the industry as a whole, began to absorb an ever increasing share of total operating profits. From only 35 per cent in 1979, interest expenses, on aggregate, rose to 175 per cent of operating profits in 1982.[2] Many companies also found themselves in the position of having to further increase their debt in order to meet existing commitments relating to expansion programmes planned in earlier years but only now reaching fulfillment. In 1985 interest payments still accounted for over 70 per cent of operating margins.

The response of the industry in 1982 was, in general, not to recognize a fundamental change in the outlook for metal consumption. Action to undertake the essential structural changes, particularly relating to the problem of a growing surplus in production capacity, was postponed. Instead, the industry took the stance of "being well positioned to take advantage of an upturn in prices". And, indeed, it seemed for a while at least that the cycle was about to repeat itself, when by early in 1984 prices, in real terms, were already up 23 per cent when compared with the low point reached at the end of 1982. This however was a false dawn and soon prices started to fall again.

Naturally, not all companies were beset by the problems which were perhaps exemplified by the experiences of so many in the North American mining industry. Matters here had become so bad that at the end of 1984, *Business Week* magazine declared the "Death of Mining" in its leading article.[3] The strength of the US dollar in particular, but also falling ore grades and ageing plants, had all but destroyed the ability of the industry in North America to compete in world markets.

In attempting to isolate or describe those strategies or other features which enabled certain companies to survive the crisis virtually unscathed, while others were left struggling, one has to exercise a degree of caution. The precise circumstances of each individual company, the quality and location of its ore deposits and metallurgical plants, the nature of its

ownership and many other factors all played an important role in determining ultimate success or failure. In trying to suggest suitable strategies for the future one has to be especially careful. Clearly, actions which have proved very successful in the past may have little relevance to the scenarios which are being forecast for the future. In addition, strategies which may have been appropriate for private companies may not be applicable to the state sector. This, however, presupposes that there are fundamental differences in both the performance and operation of private and state mining companies; and further, in the context of this essay, that the situation of mining companies in the developing countries is in some way especially different from those in the developed economies.

Characteristics of state mining companies

Before suggesting possible strategies for the future it is necessary to examine some of the views on state enterprises particularly as they relate to mining. One of the effects of the metals crisis has been to limit the short-term strategic options available to many mining, smelting and refining companies. As both state and privately owned enterprises have taken action to cope with lower prices and the harsher, competitive climate, it may be time to reflect on whether the apparent differences between private and publicly owned companies in the mining industry have become blurred, or in fact in some cases have disappeared.

The most obvious distinction between the state and privately owned mining enterprise, which is fundamental to their overall strategy, is that, in general, the state-owned companies are not (or have not been) permitted to invest in operations outside their national boundaries. This has the direct effect of limiting some opportunities for beneficial integration offering the potential for achieving higher added values, market penetration and security. In addition, the dependence upon domestic raw materials for downstream processing facilities may not always be in the longer-term interest of a company. In recognition of this, the Finish state-owned Outokumpu has, over the past few years, been particularly active in acquiring interests in mines and deposits in a number of countries in order to ensure that its domestic smelting and refining operations will have secure supplies of concentrate when its domestic operations are exhausted.

Other characteristics of state owned companies have been described by Radetzki.[4] In the light of current experience however, it may be that some of the features identified are no longer appropriate for mining companies. As noted above, the deep recession felt in the metals industry has pushed many operations towards closure. In order to survive, management has had to address more narrowly defined issues relating to cost cutting, debt service and the delaying or cancellation of new projects. This has provided a focus for private and public companies alike and the goals of state-owned enterprises have had to become quite specific. The belief that the exploitation of a mineral deposit would provide the necessary resources for a number of loosely related economic and social objectives has had to be modified in the light of current experience. The conflict between public needs, political pressures and the actual management of a mining operation have had to be addressed.

Changes in the attitudes of international lending agencies and commercial banks in recent years have resulted in much greater emphasis being placed on competitive forces as the best means of achieving economic development. Policies which were designed to achieve a redistribution of wealth as well as growth have given way to those stressing large-scale agricultural and other major projects with potential for export earnings. Metals and minerals obviously meet this last requirement but, in general, the investment climate now is no longer as favourable for mining as it was in the 1960s and 1970s. Whereas then, state enterprises may have operated under less stringent financial conditions than their privately owned counterparts and benefitted from the availability of concessionary capital, the situation today, in some countries, may in fact be reversed. In order to prevent the closure of mines or metal processing facilities in areas of high unemployment, central or provincial governments in certain developed economies have intervened to provide rescue packages for private companies. These have included, for example, subsidised power tariffs and soft loans for the refit of ageing plants. Private shareholders in mining companies have also proved very patient during the course of the recession and even parent companies of mining subsidiaries have been remarkably indulgent of continuing losses. Recently many companies have returned to the stock markets to raise capital by floating off parts of their more attractive assets, primarily gold mines. This has been a popular and successful way of reducing crippling debt burdens. This option has, of course, been denied to the state companies, many of which continue to be constrained by developments in their domestic economies. The shortage of foreign exchange has been a particular problem with restrictions placed on the importation of critical spares and other essential items for maintenance and further development.

Another apparent feature of state enterprises was the implicit guarantee that governments would ensure their survival even in the face of chronically adverse economic conditions. The severity of the recession and more specific circumstances such as the collapse of the Sixth International Tin Agreement have tested this notion and one can now find a number of examples where governments have been forced to contract and even close mining operations. As mining is

unlike other activities, in that an orebody is a wasting resource and therefore one expects the termination of operations once the mineralisation is exhausted, this should not be surprising. Nevertheless, the final closure of a mine is always a difficult decision to make as there are usually some remnants of ore which could possibly be mined if economic conditions changed.

Governments have therefore been forced to impose mine closures even in the face of opposition from workers, a situation which may have been unthinkable in better times. Most recently, this change in attitude has been evident even in an Eastern European country with the Yugoslav government announcing the closure of the Suplja Stijena lead/zinc mine on economic grounds.

With regard to the features described above, the distinctions between state and privately owned mining companies may now be much less than was previously the case. Differences however, continue to exist. The hazy relationship between top management and ultimate owners (the state) discussed by Radetzki [5], is still a source of conflict for many companies. This is especially the case where the mineral resource may be seen as the legitimate booty of the ruling political party. This situation may also make management more risk averse in its decision making. Where this, for example, relates to the adoption of new technology or in marketing strategies, the effects could undermine the competitive position of the enterprise.

Finally, consideration must be given to the observation that the bureaucratic nature of state enterprises will lead to situations where emphasis will be on the volume of production rather than the overall profitability of operations. Rather than set financial targets which may be difficult to define (and, in any event, are outside the scope of local management), production, which is more easily monitored, becomes the measure of success or failure. A reading of the annual reports of a number of state mining companies will tend to confirm this view. However, in many cases, the commentary has more to say about the failure to meet production targets than success in surpassing them.

The most vociferous attacks on the nationalised companies came from the major US copper producers in 1982 and 1983. Phelps Dodge, in particular, cited "over-production" in the developing countries as the main problem facing the copper industry. After introducing this subject in its 1982 annual report, the company went on to devote a whole section in its 1983 report to analysing how foreign (non-US) production had continued to expand despite the fall in overall consumption. The argument is perhaps best summed up by this extract.

> "Because of this continued overproduction by foreign producers, most of them subsidized directly or indirectly by the multilateral development banks and the *International Monetary Fund* (IMF), the entire copper industry has been hurt by high inventories, leading to destructively low copper prices and a distortion of the economic cycle, with recovery delayed or lost because of the required liquidation of inventories."

What this analysis failed to address were the effects that the strengthening dollar and higher interest rates were having on many developing economies and how relative international costs within the industry were changing. This factor was acknowledged by Asarco the following year in its annual report, but the lending agencies were still under attack for continuing to make advances to foreign producers.

Although the US companies singled out Latin American and African producers as the cause of the over-production, the only major increase in mine output in this period came from Codelco in Chile. Zaire and Zambia were just about able to hold production steady while there were marginal increases in Mexico and Peru. To have cut back at this stage would have been extremely difficult in the light of the increasing demand for foreign earnings to meet the growing cost of dollar-denominated debts, and, in any event, some of these state companies were continuing to make operating profits and therefore had little incentive to reduce output. This profitability was, however, dependent upon maintaining economies of scale while mining increasingly difficult orebodies. Codelco, for example, has continued to expand production and has introduced new technologies in order to achieve even greater economies so that it can keep its position as the major low-cost copper producer in the world. This strategy has not sacrificed financial performance, as the company continues to rank among the "winners" in this regard in the industry.

The discussion in the above section has explored some of the apparent distinctions between state and privately owned mining companies. It is suggested that the impact of the adverse changes in the metal markets and economic climate over the past decade has been to force state mining concerns to be more cognizant of commercial realities. In addition, the surpluses of the 1960s and 1970s, which enabled these enterprises to support activities other than those immediately connected with mining or mineral processing, have disappeared. Unfortunately, despite these altered circumstances, there are still a number of companies which have been unable or unwilling to limit their social commitments or reduce unhelpful interference from central government. Accepting these limitations, however, it is still essential that the state sector understands the developments that have taken place in the private sector and, where possible, adopts or adapts some of the critical elements of their strategies for survival and future profitability.

Corporate response and the challenge of the 1990s

Two factors are fundamental to the corporate developments which have been taking place over the past two or three years. Firstly, there has been a realisation that the outlook for metal prices and consumption, at least until the mid 1990s, is not as buoyant as the forecasts of the mid- to late 1970s would have suggested; secondly, the pessimism which led to talk of the death of the industry has lifted. While many companies are still struggling to achieve satisfactory financial returns, the process of rationalisations and restructuring is now well underway. It is hoped that this will result in an industry better suited to current economic conditions.

The major changes to date have been among base metal companies in North America. A comparison of the performance of this sector with the overall industry aggregate highlights the extent of the problems experienced. Table 1 gives details of return on capital employed for three periods between 1976 and 1985. While, in general, companies in North America provided higher than average returns in the years leading up to the recession, their performance since 1982 has been significantly worse. In fact, in 1985, when the overall average return on capital employed was almost 7 per cent, the North American sector had slipped back to 0.7 per cent, which was even lower than the figure for 1982.

Although it took the rigours of the 1985 price slump, coupled with the extraordinary international strength of the US dollar, to finally set in motion a comprehensive change in attitude and outlook, the first elements of rationalisation had occurred earlier. Many of the mining operations which the oil majors had acquired in the 1970s and the first years of the 1980s, were idled or sold at substantial discounts. In addition, those companies which had diversified into a range of activities unconnected with their principal operations began a process which came to be known as a "retreat to core business". For some there has been a problem in determining the exact nature of their core business and as a result there have been a number of discussions on the merits of balancing on three or even four different business legs. Nevertheless, the recognition of the need to concentrate effort in those markets where a competitive advantage can be gained, held or extended, has given strength to companies previously dissipating their resources and talents across too many activities. The development of Amax since 1980 is a graphic example of this process. From a company with a range of interests which spanned fertilisers, iron ore, aluminium, base and precious metals, energy, molybdenum, nickel, tungsten and speciality metals, it has emerged from the recession with only four key businesses, proclaimed in bold on the front cover of its 1986 annual report; aluminium, coal, gold and molybdenum.

The redefinition of activities has not been limited to deciding which metals constitute core business. The degree of integration of the various stages of process from ore to metal, or even further downstream to semi-fabrication is a further factor that has been considered when developing corporate strategy. For the older base metals, copper, lead, zinc and tin, few producers are integrated beyond the smelting and refining stage and many limit their activities to either mining and selling concentrate, or smelting and refining. In some cases the nationalisation of mining operations broke the chain of vertical integration which had been established by multinational companies. These links had provided a means of transferring technology and management skills to the developing countries. It was suspected, however, that the costs of this transfer were too high relative to the rewards for the host country.

Economies of scale and the availability of power are the two main factors in determining the location of downstream processing facilities. The balance of the economic relationship between miner and smelter depends at any point in time upon whether concentrate supplies are in deficit or surplus; the treatment change varying to reflect the market conditions. Integrating mining and smelting removes one of the market uncertainties and can add value to the mined product. For this reason many developing countries have committed themselves to increasing their refined metal output, and thereby reducing concentrate exports. In the short term, this policy will exacerbate the problems of debt service and will make demands upon the limited number of local skilled personnel. In overcoming these difficulties some new partnerships have been established with private companies who have provided both capital and technical expertise in

Table 1
Base metal industry: Aggregate return on capital employed
(in %)

	1976-78	1979-81	1982-85
North America	10.0	15.0	2.3
Industry aggregate	8.6	13.1	5.9

Source:
MMRS MICA System.

return for minority equity stakes. The Japanese, in particular, have been active in this manner. These deals have obvious benefits for both parties and point to even greater integration, but on new terms, within the international mining community.

A number of European metal companies, who are facing the exhaustion of their domestic mines have moved in recent years to secure foreign concentrate supplies to ensure the future of their smelting and refining plants. Outright purchases, joint ventures and minority stakes have all been used to acquire some control over the destination of concentrates. A feature of the zinc market has been the emergence of a group of companies with linked cross holdings spanning all the continents. It is still unclear what degree of influence this group will choose to wield. Some of the larger European companies are themselves attempting to organise a plan to rationalise their production capacities; a move perhaps in response to a perceived threat.

These moves by the multinationals do not appear to pose any threat to the state mining enterprises. In fact, if they achieve price stability there may be a positive advantage to the industry. For the multinationals, apart from securing long-term and secure concentrate sales and purchase contracts, the greater degree of international diversification offers the benefit of reduced exposure to adverse economic conditions in any one country. For most publicly owned companies this strategic option is simply not available. Many companies are then further restricted in that their operations are limited to a narrow range of metals or minerals offering few opportunities for cross subsidisation of one division by another. This situation is often a result of the circumstances surrounding nationalisation. Or in other situations it may be that central government policy controls all off-mine exploration activities and therefore prevents organic expansion or diversification of the mining company. These problems stem from internal political uncertainties where it might be considered unhelpful to permit the growth of independent, large economic units within the country.

The arguments against international diversification are presumably that the benefits of the economic linkages arising from an operation are more likely to flow to the host, rather than the domestic country. There are circumstances however where the overall financial performance can be improved by involvement in a foreign investment. In general, such a holding would be in a downstream processing facility or semi-manufacturing plant. The object would be to add significant value to the resources produced domestically. A recent, small-scale example of such a development has been the acquisition by Venezuela's state controlled *Alumino del Caroni SA* (Alcasa) of a 50 per cent stake in a Belgium extruded aluminium and laminated products plant to supply markets in Belgium, France and West Germany. Proximity to final markets for such semi-finished products provides a competitive edge in terms of service and the ability to respond speedily to changes in specification.

A recognition that the markets and marketing must form a significant part of the strategic thinking and philosophy for mining and metals companies is evident in a letter to Amax shareholders from the company's President. In 1980, Amax's customers were referred to only once when their "continued loyal support" was sought. In 1986 there is an emphasis on satisfying customers' needs and seeking out their requirements. This renewed interest in the customer represents a marked shift in the attitudes of the industry. While demand was expected to grow at rates similar to or even higher than the increase in industrial production, the mining and metal refining industry did not feel the need to "market" its production. The primary role of the marketing department in many companies was to allocate output on the basis of previously negotiated long-term tonnage contracts. Technical support and research into new applications or products was generally limited to a very modest annual subscription to an industry research organisation.

This should be contrasted with developments in the industrial minerals industry where the extraction of minerals such as clay, talc, silica sand or even limestone is often associated with extensive technical support for the customer and research efforts to produce a wide variety of products and grades from essentially similar raw materials. This ability to produce a differentiated product and maintain a key technological advantage helps to explain the lack of success by base metal and primary energy companies in their attempts to gain a foothold in this industry. There are one or two notable exceptions to this observation, the most striking is RTZ. This company's growth in the field of speciality minerals has been largely through acquisitions. The entry into and rapid advance to a position as the major supplier of glass sand in the United States in recent years is typical of their strategy.

While the mining companies may have been deficient in providing enough technical support to their customers, they have, in recent years, been more open to organisational changes and new mining and processing technology, especially where it has offered the prospect of lower costs. The fact that prices have remained depressed for so long has not been due entirely to the existence of surplus capacity. For some metals the average cost of production has been falling, which is quite contrary to the expectations of the late 1970s.

The recession caused many companies to examine critically every part of their operations. Working practices which had been tolerated in better times were attacked by an embattled management, and, in the Unites States and to a lesser extent in Australia there have been

prolonged and, at times, bitter strikes by employees seeking to maintain the status quo. Events however were overtaking the industry and survival, at times in the face of bankruptcy proceedings, meant forced changes. Away from the operations there have been singeing cuts also in head office costs and other non-operational activities. These developments have all had an impact on lowering overall costs; but for some companies, of longer-term importance, has been the adoption of new processing technologies, such as bulk leaching.

This process has opened up the possibility of exploiting low grade, previously uneconomic deposits and the reworking of many tailings dumps. The success of heap leaching in gold mining operations is well known and has produced an explosion of new, often relatively small, ventures over the past five years. Perhaps equally successful, but generally on a much larger scale, has been the adoption of solution mining in the copper industry. Although the technology has been proven for many years, the market has been slow to accept electrowon cathode copper produced from various forms of leaching as a premium product. It had been believed that this copper performed badly in continuous cast rod-making plants. Once this myth had been dispelled and under pressure to take all possible steps to cut costs, there has been a large-scale re-assessment of reserves to determine their suitability for leaching. It is now estimated that over 10 per cent of all primary refined copper over the longer term will derive from solution mining. As both capital and operating costs for producing electron copper are generally significantly lower than the conventional process, overall average costs can be expected to fall. Few new leaching projects will have operating costs exceeding 45 cents/lb and a number are expected to be considerably lower. In the United States, these new plants will help to subsidize older, existing operations, so that average costs will begin to fall, perhaps to as low as 50 cents/1b. This will be a dramatic reversal of the trend of ever rising costs. In order to maintain relative margins, particularly in the face of declining grades, producers elsewhere will have to determine to what extent they too can adopt similar technologies. In Zambia, ZCCM has already installed significant leaching capacity and in Chile a 100 kt/y project will shortly be on stream.

If financial performance is to be the main measure of success, state enterprises will have to match the mining and processing technology of the developed countries in order to remain competitive. There are however barriers to this strategy. Scarcity of capital will be one obvious restraint upon their ability to proceed with the adoption of new technology; the other is often a chronic shortage of skills among the workforce. In the longer term it may be possible for the developing countries to take a lead in devising mining technology more appropriate to their situation with regard to labour and infrastructure. To date however, economic mining, with a few exceptions, has been dominated by relatively capital intensive methods with most equipment and many of the skills necessary for operation and maintenance found mainly in the developed countries.

The developments described above have been in response to a fundamental change in the industry's outlook, from one of expansion to consolidation or even retreat. The corporate culture of the large transnational organisation (which has to a degree been mimicked by the state enterprises) has been found to lack the necessary flexibility of response and companies have been slow to adapt to a climate which permits few frills and demands constant attention to the markets and changes in technology. There has, however, been a realisation by some of the current generation of management that simply being in the mining business does not guarantee profitability or a surplus; and in order to succeed it is even more vitally important that management is pro-active, anticipating changes, both economic and technical, and exploiting those advantages that timely decisions create, rather than being always on the defensive and reacting to events which have already run their course.

The improved fortunes in the industry which have been evident for the past year or so have not been reflected equally in the performance of all companies. In fact, an analysis of operating margins, for example, (see Table 2) shows how the better performing companies have been able to consolidate their competitive positions relative to the poorer performing companies. By selecting two groups of companies on the basis of their financial returns over the past two years it is possible to see how the group with currently the lowest margins have slipped relative to both the best companies, and indeed, the overall industry aggregate. Over the most recent years the better companies have managed to achieve margins not far below

The average for the years 1976 to 1978. In 1986 their aggregate margin was equal to the average for the boom years of 1979 and 1981. The poorer performers in the later period have, in contrast, been struggling to maintain even positive margins. This should be compared with the years 1976 to 1978 when margins were comfortably matching the overall industry aggregate and were not far below those companies whose performance in later years established them as "winners". Clearly, this latter group have been much better placed to survive the recession and have been able to find positive responses to the fundamental changes taking place in the external economic environment.

An examination of some of the top performers highlights certain features. Very broadly, two kinds of company are evident. The first depends for its success upon the exploitation of a single world class deposit; Palabora in South Africa and Greenex in Greenland being typical

examples. The second is the very large, extremely diversified, transnational natural resource corporation having substantial assets outside of the metals industry itself, much of their success appearing to come from well-timed and counter-cyclical investments. RTZ is perhaps the best example of this larger enterprise with a "winning" strategy.

The "losers", on the other hand, share common features with regard to ill-timed expansion programmes, undirected diversification and marginally economic or ageing deposits. Among the losers are many of the lumbering, monolithic, North American mining companies (some have recently undergone radical changes) as well as state enterprises such as ZCCM and Minero Peru. The privately owned companies in this group have suffered from a lack of clear vision and an often undeviating approach to the management of their assets. They have accepted, or even encouraged, extremely long lead times in the development of projects with far more imagination and effort being devoted to technical aspects of projects than to those of marketing potential products. Typically, the aim has been to secure long-term tonnage contracts with agreed penalties and premiums and based on free market prices. This approach, despite its apparent advantages, has obviously not been in the best interests of the industry and it has failed to establish any lasting balance between supply and demand. Interestingly, the trading houses, which will take concentrates, refined metal and even semi-fabricated metal products on a variety of terms, have been able to profit despite the recession and the antipathy of the industry in general. The lesson is clear: a new approach to marketing with a much greater degree of flexibility is needed for the industry to prosper in the 1990s. This flexibility is in addition to the need to understand better customers, as discussed earlier.

A change in marketing strategy however, cannot come about until there is a more general overhaul of restrictive and bureaucratic corporate culture. For some companies in the private sector, these changes are being forced by pressure from the financial markets and other external interests. Relatively small companies, which have no top-heavy management structure to support and are able to move fast and decisively, are becoming increasingly attractive to investors. Their success depends upon exploiting market opportunities where and when they appear. This will include both asset purchases as well as sales. (The latter being a particularly difficult course of action for the older mining companies to undertake because of conflicting vested interests. These may range from a traditional position in a particular locality with attendant employee loyalties and dependence, to more personal issues).

State enterprises and strategies for the future

Many of the issues raised above have relevance for both private and public sector companies involved in mining. Although there remain some important distinctions between the two kinds of organisation there are many instances where the differences have blurred or disappeared in recent years. Some of the state-owned companies in both the developed and developing economies have shown that they can compete on identical terms with the private corporations and have emerged from the recession as major players in the international markets. Key elements in their success have been the recognition of their fundamental internal strengths and weaknesses and a determination to develop a clear strategy to secure longer term financial returns. Outokumpu in Finland and Codelco in Chile both exhibit these characteristics.

A mining company in any country which is a net exporter of either concentrates or refined metal will have to respond to developments in the international market place. Any attempt to remain aloof from external events will carry a high risk of failure. An analysis of the current economics of the industry suggests that mining cannot be expected directly to support activities other than those which have an immediate bearing on its operations. If this in accepted then it follows that mining, if it is to make an economic contribution, must be allowed to adopt the most appropriate strategy for a return to profitability. The private sector, and some companies in public ownership, have demonstrated that it is possible to change structures, technology and culture and should enter the 1990s stronger and more capable of

Table 2
Base metal industry: "winners and losers"
Aggregate operating profit margins
(in %)

	1976-78	1979-81	1982-85
Winners	14.2	15.5	12.5
Losers	10.3	12.0	0.0
Industry aggregate	10.1	12.5	6.5

Source:
MMRS MICA System.

meeting the challenge of the market place.

Many different strategies can be adopted and if the political climate is appropriate, state enterprises could benefit from the more open and adventurous approach to mining as displayed by the smaller, privately owned companies. In the first instance, many opportunities must exist for exploiting gold deposits amenable to heap leaching. Such projects however, are unlikely to be able to carry the overhead associated with a very large organisation and the challenge therefore will be to develop new styles of organisation which will permit the small scale mine to flourish under the umbrella of state ownership. Such mines would have the advantages of low capital cost and fast payback, possibly extending the geographical areas for mining with benefits for local employment and the spread of technical knowledge and finally, at current gold prices, providing a healthy surplus cashflow.

In addition, state enterprises should consider the release to outside bidders of more of their inventories of dormant projects and exploration properties as well as encouraging joint-venture participation in existing projects. As conditions in the developed countries became more difficult, both with regard to finding new deposits as well as obtaining the necessary permissions to exploit, companies will become more willing to enter partnership agreements favourable to the host country.

Problems with foreign exchange allocations and the continuing skill shortage in developing countries will hamper some developments. The adoption of more narrowly defined commercial attitudes and a greater openness towards foreign participation and involvement could however, lead to a more rapid turnaround of state mining. The exploitation of ore deposits should then once again lead to the creation of real wealth rather than contributing to the steady erosion of the developing countries' terms of trade.

Notes and references:

[1] These figures and others quoted elsewhere in this essay are derived from *Metals and Minerals Research Services Ltd.* (MMRS), *Mining Industry Competitor Analysis* (MICA) system. This analytical database enables the aggregation of standardized financial records of, currently, over 100 major international mining and metal producing companies.

[2] MMRS MICA System.

[3] *Business Week*, December 17, 1984.

[4] M. Radetzki, *State Mining Enterprises*, Washington, DC, Resources for the Future, 1985.

[5] *Ibid*.