

Restructuring of state mining enterprises in developing countries: a response to the crisis of the mining industries and failed expectations¹

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1. State mining enterprises in developing countries and in the world mineral industries

The mining industry in developing countries was largely built up by international mining companies, notably of US, British, Belgian and French origin (eg, in Chile, Peru, Brazil, Zaire, Zambia, Malaysia).² With the wave of nationalizations, mainly between 1969 and 1976, state mining enterprises have come to dominate the mining industry in most, if not all Third World mineral producers, in addition to a large state mining industry established earlier in countries such as China, India, Indonesia, Bolivia and Mexico. The market share of these enterprises in market economies has come to rival, and often exceed, those of the traditional mining companies, particularly in the extractive, but also gradually in the smelting and refining stages. In copper, tin, nickel, lead and zinc, iron ore, phosphates, diamonds and bauxite, state enterprises from developing countries are by now major, and sometimes the main actors.³

Their role is even more pervasive within the national economy of their respective home countries. In countries such as Zambia, Zaire, Chile, Peru, but also Ghana, Jamaica, Surinam, Guyana, Togo, Namibia, Angola, Botswana, Niger, Mauritania and Liberia, industry is more or less synonymous with the activities of the national mining companies. In these countries, government and foreign exchange revenues are dependent to an overwhelming extent on the national mining company. In addition, these enterprises provide directly a very large part of national employment in industry, and indirectly, through the multiplier effect, they support several times as many jobs.⁴ Quite apart from these direct effects, the role of state mining enterprises is in general to be a pole around which learning in industrialization takes place: work, organization and management habits, the coming into

being of an industrial culture revolving around technology, heavy financial investment and international markets, are closely related to the existence of the state mining company.

The difference between state-owned and private mining companies depends much on the specific circumstances: there are state companies which claim, sometimes with considerable justification, that they act more or less as private companies (eg, MMC, SOQUEM, Outokumpu, CVRD); on the other end of the range there are state companies who are and see themselves essentially as subdivisions of the national Ministry of Mines. Generally, differences pertain to the geographical scope of operations (state companies in general have to invest only, or mostly, within the country), to control (state companies in general are subject to closer control by the state), to social and employment objectives (state companies in general have to be more responsive to such objectives), to financing (state enterprises in general obtain most of their capital from government sources) and to competition (state companies in general enjoy a more monopolistic situation at least in the domestic market and are, largely, protected by an explicit or implicit guarantee by the state from bankruptcy).⁵

2. Origin of and expectations from third world state mining enterprises

The extensive and dramatic take-over of the mining sector by the state which occurred mainly in the 1970s, had three major reasons.

Firstly, the acquisition of political independence led to the subsequent call for economic emancipation, for the replacement of foreign ownership over the main pillars of national industry by the control of the newly independent nation. By liberation from the control of transnational corporations, long considered as obstacles to development, state enter-

prises in the strategic mining sector were expected to lead the way to industrialization.

Secondly, socialist modes of thinking in a number of developing countries favoured state ownership over the major means of production, and these happened to be the mines owned by the "transnational corporations". An alliance of economic nationalism and socialist thinking proved a rallying point in the internal political battle, particularly in Latin American countries, and the state enterprise was the outcome, and therefore the vehicle of the hopes and expectations of independent national economic development. Since private capital of national origin had not been engaged in any meaningful way in mineral investment in most developing countries, and due to its scarcity and underdeveloped state could not be a major force, the state enterprise was the logical focal point to accumulate capital and carry out promising capital-intensive mining projects.

Thirdly, the prevailing beliefs and attitudes of the early 1970s were characterized by great optimism about the potential of wealth inherent in mining. OPEC had had its first success in 1973, metal prices were at an all time high, mineral resources were considered finite and close to depletion, and ownership of mining properties appeared as a most profitable proposition. This belief was not limited to governments set on acquiring foreign-owned mining properties to manage great mineral wealth through state-controlled enterprises: international oil companies acquired at a similar rhythm mining companies and mining assets. National take-over of foreign mines appeared therefore not only politically appealing, a strategic step forward to win economic independence for the national destiny, but also an eminently lucrative business move.

Parallel to the emergence of Third World state mining enterprises, capital for mineral investment was easy to come

by: the oil price explosion had made large amounts of funds available to international banks for on-lending to developing countries; real interest rates were very low during a large part of this period. The prevailing, much advocated model of Third World development was public investment, managed by a state enterprise purchasing depackaged inputs (equipment, services, technology) from abroad on the basis of massive international lending.⁶

State enterprises had strong support from the new state classes emerging in developing countries:⁷ state enterprises in basically every country promise higher salaries and perquisites for civil servants moving over from the ministries, they provide often the major source for political and personal patronage. In case of foreign-owned companies, the surplus is either taxed and hence directly returned to the Ministry of Finance or if taxed ineffectively it is largely repatriated; on the other hand, the potential of surplus generated by a state enterprise is regularly subject to an internal process of distribution before formal transfer of the remainder to the Ministry of Finance takes place. Control over state mining enterprises is therefore a highly bounty in internal political struggles.

Some very important expectations from the national take-over of foreign mineral investment have come true: foreign control has been replaced by control exercised within the national power structure, national companies have emerged as important participants in the international mining industries and metals markets and control over the funds generated has passed into national hands. Also, in some countries state mining enterprises have become respected companies well able to hold their own in international competition.⁸

On the other hand, there is by now a worldwide perception that state mining enterprises have failed to a large extent the original expectations. Since percep-

tion of failure tends to dominate over success considered as acquired, the feeling of failed expectations is what makes us currently focus closely on state mining enterprises and their performance. The first most conspicuous failure is financial: state mining was supposed to be highly profitable — the parallel drawn between petroleum and non-fuel minerals had exacerbated this expectation —; it was expected that public investment and state mining companies would contribute richly to government income. Currently, the reverse is being noted.⁹ Many state enterprises require subsidies to stay afloat instead of contributing to government income. Ministries of Finance expected to milk a cow, and not to feed it.

This perception is not fully true: a closer examination of balance sheets of many state mining enterprises demonstrates large transfers over the years to the government.¹⁰ In fact, revenue has often become a priority of governments hard pressed for income overriding the companies' needs for rehabilitation and investment capital. Sometimes, state companies have had less leverage in fending off direct and quasi-taxes than private investors in a comparable situation.¹¹ However, it is true that government revenues were much less than what was expected, and in particularly much less in countries where no existing mining industry without debt could be taken over, but where public investment, financed by international debt, was necessary to build up state enterprises; for example, in Colombia, several hundred millions USD were borrowed by the government to finance its share in the Cerro Matoso nickel project, and well over one billion USD for the Cerrejon coal project.

The main cause for financial disappointment is said to be extraneous: metal prices collapsed in 1981, due to overinvestment resulting in a massive and lasting oversupply. This decline to price levels which in some cases (eg, copper)

descended up to 1986 to low points last seen (in real terms) in 1935, has (by end 1986) not been corrected by the economic upturn since 1984 as, according to the cyclical theory of metal prices, it should have been. While there is some debate over the contribution of state enterprises to this decline, it appears that easy credit on government guarantees, the reduced survival risk assumed by state enterprises and the pressure to maintain employment, production and debt service has not helped to alleviate the oversupply of minerals.

While disappointment with financial expectations is most easy to pinpoint, it can be (partly) blamed on an unfavorable international setting on which state mining enterprises, as all producers of export commodities, are irremediably dependent. There are other failed expectations supposedly inherent in the nature of a state-owned company which we will look into more closely. This diagnosis will open the perspective on the needs for restructuring.

3. Failed expectations

A fundamental criticism of state enterprises is an alleged tendency towards inefficiency. Inefficiency encompasses other, more detailed observations such as overemployment, underperformance, low productivity and profitability, unsatisfactory management and disruptive government interference in operations. State enterprises have no monopoly over inefficiency: several of the large old US mining companies have shown similar characteristics — but they are by now largely gone or fundamentally restructured. What is generally meant by inefficiency in this context is that state enterprises are particularly prone to inefficiency, are exposed to particularly little discipline over their inefficiency and are particularly unable to find out and reform sources of inefficiency.

Inefficiency means that the performance achieved is at too high a cost, or

that with the resources available, a much better performance could be achieved. It is not necessarily related to profits: state mining enterprises in general are favoured by monopolistic control over mineral deposits; profits may hence to a large extent reflect mineral rent, but not performance.¹² What are then the specific issues where state mining enterprises may be particularly prone to inefficiency?

3.1 Little care over costs

Reduced concern and discipline over costs are generally agreed to be a significant characteristic of state enterprises. A major reason is probably the fact that state enterprises have a limited responsibility for the funds they generate: if they make losses, there are manifold excuses to blame (social, employment and development objectives, political directives) and governments generally make up for such losses in ways which are not as bothersome and painful as capital markets do for private companies.¹³ If profits are made — in the mining industry more often than not due to a monopolistic control over mineral rent inherent in good-quality deposits in years of high metal prices —, governments usually capture most of such profits, by way of taxes, dividends or straight transfers to the Treasury. Any reasonable manager in that situation may try to avoid losses, but he is likely to prefer additional expenditures before transferring any surplus to the government.¹⁴

3.2 Overemployment

Overemployment is partly a facet of the fact that state enterprises are generally less compelled to minimize costs. However, there is an additional factor to explain that state enterprises, quite undisputedly, show heavy overemployment.¹⁵ In mining, trade unionism has, traditionally and worldwide, been powerful. An alliance between management and trade unions to maintain employment at all costs has been a characteris-

tic feature of state mining enterprises; the acquiescence of management to such maintained overemployment is usually due to the fact that the costs of overemployment can be transferred to the central government and union political influence can be mobilized for that purpose. In fact, such management/union alliance is particularly visible in the mining sector (even more in petroleum), where wages are usually higher and where the mineral rent due to the nation as such is largely appropriated by the enterprise and its staff in the form of higher salaries, wages and the manifold forms of special benefits.¹⁶

3.3 Stagnation and technological backwardness

A recent case study of three major state enterprises in developing countries born out of nationalization (Zambia, Venezuela and Indonesia), comes to the conclusion that in all three state mining enterprises examined entrepreneurial stagnation, absence of initiative and technological backwardness have been the ultimate results of nationalization. Other analyses¹⁷ also demonstrate that the newly formed state enterprises have been cut off from the continuous generation of new technologies in the process of international competition and emulation. Bureaucratic procedures obstructing initiatives, insufficient attention on long-term research¹⁸ and greater weight of political and employee concerns in corporate decision-making as compared to competitive pressures are said to result in gradual disappearance of the state enterprise from unprotected competitive international markets and finally in the liquidation of the enterprise, its assets, including the trained human resources.¹⁹

State mining enterprises have a primarily domestic orientation²⁰; their constituency (bureaucratic, political and unions) are unlikely to look much abroad or show much interest or enthusiasm for international activities. They are

actors compelled to compete on international markets, but without the international orientation which allows transnational mining companies to select opportunities, raise funds, recruit managers, obtain and compare technologies and open up markets worldwide.

4. Structural weaknesses

No general statement on inefficiency and weaknesses of state mining enterprises in developing countries as such can be made, since well respected and competitive companies can be found as well as underperforming ones. Many of the reported shortcomings are not much more than a reflection of underdevelopment per se ie, of the fact that an underdeveloped society and economy cannot generate and sustain an organization that will be fully competitive in international markets. However, some of the reported weaknesses may reflect the particular quality of state ownership in a developing country.

4.1 Overcentralization and bureaucratic structures of decision-making

To describe the specific qualities of state enterprises, a typically somewhat idealized — model of an efficient private company is used. While to some extent this may be useful, it must be borne in mind that large corporate organizations tend to display similar bureaucratic structures over time.

Quite generally, it is reported that state enterprises are less flexible than privately owned companies.²¹ Central ministries tend to influence both general policies and specific operations, be it directly or indirectly. Political patronage often extends into small operational details. Management structures are generally more bureaucratic and administrative than managerial and entrepreneurial, ie, less power is delegated, decisions require a much larger group for consensus and are harder and slower to obtain. Per-

formance is little encouraged by financial rewards, and risk avoidance becomes the main motive of management. Given the very thin insulation of the state enterprise from the political process, political influences tend to penetrate much easier than in the case of a privately held company which is subject to the countervailing, and thereby insulating influences by both owners and the capital markets.

4.2 Autarchy objectives

State mining enterprises, particularly in developing countries, tend to produce an overly large percentage of services and equipment needed within the enterprise, thus foregoing economies of scale and complicating organization, while modern, well managed companies tend to consist of a relatively small management structure coordinating decentralized production units and procurement from outside sources.²²

4.3 Weak investment capabilities

Since state mining enterprises tend not to produce much profit, and since they are exposed to heavy pressure from the government to transfer any surplus, their capability to finance new investment, particularly involving new technologies, labour-saving modernization and foreign operations, is hard to push through unions and the supervising ministries. Accordingly, state enterprises usually lag notably behind in the introduction of new technologies, forward integration and international operations.

4.4 Multiple objectives as major cause and excuse for underperformance

From the literature and case studies surveyed²³, it appears that a major cause for underperformance of state mining enterprises is the fact that a state enterprise is mandated to fulfill multiple objectives. While a private company is basically pursuing profits, with some other objectives as subsidiary and supportive elements, and while a private company's

performance is measured, and disciplined, by profits²⁴, state enterprises are usually expected to generate employment, produce revenues, develop national mineral resources and give attention to regional development and sometimes income redistribution; in addition, it is more often than not used for purposes such as patronage and financing specific needs of supervising agencies not covered by the general budget. These objectives are often contradictory, and they are enforced by formal and informal directions from often conflicting supervisory agencies.²⁵ Given that in practice it is virtually impossible to measure in any reliable way performance with respect to multiple, contradictory objectives²⁶, underperformance is easily caused and almost always excusable by reference to one of the many objectives and directives incumbent on the state company. The low status of the profit criterium among a multiplicity of official and non-formal objectives, the pervasive influence of central government intervention in enterprise operations and the parallel politicization of business decisions and the very limited financial insulation of the state enterprise from the government's consolidated fund appear to us hence as major reasons for any inefficiency specific to state mining enterprises.

5. Restructuring as response to the mining industry crisis and to failed expectations specific to state mining enterprises

Restructuring has become the order of the day for the world's mining industries, in particular to the companies in market economies fully exposed to competition. Without too much efforts at terminology, we define restructuring as an effort to bring about major changes in an enterprise's internal organization and its major external relationships (suppliers, customers, lenders, owners, supervising agencies) to respond to a severe deterio-

ration of the enterprise's conditions with the objective of improving the enterprise's survival capabilities, notably its financial conditions.²⁷ Restructuring of private companies is basically a response to ensure survival of the company — and its management and the economic value of shares of its owners. Restructuring of state companies is more often than not imposed from above, by the state, to act on the perception of serious malperformance in the political environment, and/or by the state as owner to respond to shortage of funds for continued needs for subsidization.

Given that capital markets react faster than the state as owner, we can conclude — and in practice observe — that restructuring of private companies tends to be earlier than restructuring of state companies as a result of financial or political pressure. Given the amount, intensity and political support of vested interests involved in maintaining the status quo of state mining enterprises, restructuring of state mining enterprise will often come at the very last minute, and often as a result of either external pressure, typically lenders²⁸, or because of the sheer inability of the Ministry of Finance to continue supporting ever mounting requirements by the state enterprise. In fact, real restructuring of state enterprises may be rare and hard to achieve, while the pretension of a serious reform is likely to occur frequently to provide a political justification for continued budget support from the government. Restructuring of state enterprises is likely to be much more costly as it will come very late, ie, when the shortcomings are very severe and when the enterprise and its politicized support groups have already come to rely very heavily not on self-generated revenues, but on continuous financial support provided by the government.

The normal response to the perception that an enterprise is in a crisis is to replace management. Such a measure is unlikely to solve the problem per se, ex-

cept in the rare situation that unqualified top management has by itself created the crisis. More often than not, replacement of top management is an often politically oriented move to maintain the status quo, with the result that the continued support required has to increase and that the next crisis will be more severe. However, replacement of top management, even if not sufficient, is usually necessary for successful restructuring, since only a new management will be able to provide the signals, liberate itself from vested interests and provide the requisite impetus for more far-reaching structural changes.

The next level of response to a crisis is to change the organizational chart of a company and to tackle the internal organization of the company. Should the cause for the crisis be a defective internal organization, then such measures might bring some success. In most cases of restructuring aimed only at revising internal structures, restructuring is likely to fail.²⁹ Successful restructuring must identify the causes of the crisis, both within the company, in the context of enterprise-government relationship and in the context of the enterprise's position in relation to its competitors, suppliers, financiers and customers. Failure of state mining enterprises is often unrelated to specific enterprise conditions, but conditioned by general government policies. Restructuring at the enterprise level without reform of macroeconomic government policies is in these cases a futile exercise.

In the following, we shall look therefore at methods and mechanisms of restructuring at the enterprise level, both organizational, contractual and financial, and at corresponding measures required at the level of government policies. To start and to give an impression of restructuring currently qualifiable as successful, we shall present a summary of the restructuring of the US mining industry in the last five years.

5.1 Restructuring of the ailing US mining industry: 1982-1987

The major restructuring of the mining industry that has taken place so far has been among the base metal companies in the US. The reasons for this early and far-reaching response have been twofold: firstly, US companies were hardest hit by the low metal prices compounded, over several years, by the very high rate of the US dollar. Low-grade orebodies and obsolete equipment had also undermined the competitiveness of the US mining industry. The strategy of the companies which appear to survive can be described as a concentration on their core business, focusing on such markets where a competitive advantage exists, introduction of cost-reducing technologies (in particular bulk leaching and electrowinning³⁰) and relentless cost-cutting, from overhead at headquarters up to labour costs; in a series of renegotiations, labour unions had to make substantial wage concessions reducing wages and labour costs.³¹ Numerous mines were closed, exploration efforts reduced, and non-essential services eliminated. Resistance by unions, employees and management were overcome by the threat of imminent bankruptcy.

A differentiation has evolved between a class of "winners" in the US and European mining industry and "losers". The winning companies have been characterized by their ability to maintain high profit margins in spite of the decline of metal prices, by diversification into promising areas (in particular gold and industrial minerals³²), and by the ability to become competitive again even in base metals.³³ Given the high cost of debt, these companies — in the absence of government support enabling inefficient structures to survive — had to pare down debt: spinning off unprofitable operations and taking advantage of the stock market's high valuation of gold deposits by floating in the stock markets separate gold subsidiaries managed by

the parent, but largely owned by new portfolio shareholders³⁴, debt was reduced or replaced by equity. Other methods exploited the innovative climate in the US financial markets to reduce the companies' debt burden.³⁵ Also, greater attention to markets and customers, provision of technical support to customers and greater flexibility in entering into, withdrawing from and managing large investment projects with a long lead-time has been a characteristic of successful mining companies.

Finally, in spite of the general climate of crisis, mining in Australia, Canada and the Western United States is characterized by the emergence of new, smaller and more agile companies as compared with the large base metals companies of the past. Such companies tend to be able to move fast and decisively, they carry less overhead in the form of a heavy corporate bureaucracy and they tend to be able to assume considerable risk. Also, their attractiveness to investors has made them capable of obtaining considerable investment funds both from private venture capitalists and from the various stock markets.³⁶ Such new and currently successful mining companies have exploited the crisis as well: purchases of the assets of bankrupt mining companies has allowed them to obtain mining properties and equipment at a price close to zero, without much of a financing burden. Efficient and decisive management allows them to reduce costs to a bare minimum and to re-enter the market with fully competitive operations.

To summarize: the mining industry crisis may have eliminated a good part of the mining capacities in the major Western mining countries. On the other hand, it has led to an industry-wide restructuring out of which leaner, more concentrated and more competitive actors have emerged or re-emerged. Cost-cutting, de-bureaucratization, an emphasis on new technical and financial innovations and greater proximity to consumers are the hallmark of this — so

far — successful restructuring.³⁷ While state mining enterprises are probably not able to emulate all of the methods employed for restructuring — eg, the aggressive renegotiation of labour contracts using the threat of bankruptcy, in particular chapter 11 of the US bankruptcy act facilitating termination and renegotiation of contracts —, it is hard to see how state mining enterprises without unusually attractive orebodies will be able to maintain their own without following this lead.

6. Internal restructuring on enterprise level

In dealing with a state mining enterprise's crisis, the first response is usually internal reorganization and change of management on the assumption that both are to blame for the crisis. A mere change of organization, the rotation of executives, a new chief executive and new labels for old posts is the usual, and usually futile response. In most cases, such action is merely for the sake of demonstrating energetic action and is unable to solve the real problems underlying a crisis. However, internal reorganization is often necessary: firstly, enterprises require the impetus of reform and a sentiment of change to mobilize their capacities, and secondly, an enterprise that has shown itself unable to deal with a gradually developing crisis on its own needs internal reform, if only to shake up apathy and experiment with a new pattern of decision-making.

Few enterprises are capable of an effective internal reform by an exclusively internal effort of management and staff: organizational patterns have usually been built up over time, are closely intertwined with internal or external vested interests and reflect a balance of power distribution inside the corporate bureaucracy. An attack on such established patterns based on rational and scientific management analysis is in general only feasible if carried out by an

outsider, eg, a new management team, a team of management consultants and outside advisers. While outside advisers, at least in the beginning, are indebted only to those who pay them and not part of the internal power structure, they require insider knowledge to understand the formal and informal workings of an enterprise, to identify shortcomings, reasons for inefficiency and to pinpoint solutions for reform. For these reasons, most corporate reorganizations are carried out by outside advisers, sometimes working for the existing, but more often working for a new management.³⁸ In most reorganizations, we can therefore observe external management consultants and advisers proposing a reorganization programme.³⁹

6.1 Management Reorganization

Management reorganization has to use available resources in an optimal way. In other words, a reorganization plan is of no use if the required management expertise is not available or cannot be developed within reasonable notice. Hence care must be exercised not to transfer from, for example, the developed world, models of management for which the resources simply do not exist. In general, state mining enterprises suffer from over-bureaucratization, ie, the existence of too many hierarchical levels involved in decision-making, concentration of very minor decisions on the chief executive, low levels of decentralization, too many approvals required for minor decisions and an undeveloped system of incentives and rewards for good performance. Modern management research indicates that successful companies run with very few hierarchical levels (eg, three levels of chiefs up to the chief executive) and not with seven or eight, as is sometimes encountered. Decentralization means delegation of decision-making responsibility in a way that credit for performance is possible, excuses claiming fault with higher levels and other divisions are minimized and success and

failure easy to recognize and monitor. Management incentives can consist in promotion, but a more quantifiable method is to tie salary directly to success achieved, eg, profits in a profit-center unit, or achievement of targets previously agreed upon and specified.⁴⁰

In developing countries, special issues of expatriate management often arise. Again, rewards should be very strongly tied to performance and ultimately profits.⁴¹ Indirect rewards, such as often found in state enterprises to compensate for a nominally low salary, are of dubious value, since they are usually unrelated to profits and performance.

Overhead costs in all "mature", or old enterprises, particularly if government-owned, are generally very high, reflecting decades of adding new functions, responding to patronage and creation of vested interests and internal power. They are related to the issue of overemployment and are particularly hard to eliminate. US mining and petroleum companies under the impact of the price decline have shown remarkable ability to cut deep into overhead: even central staff functions such as law, economics, public and governmental relations have suffered, most conspicuously with companies that are considered "winners". One method for many companies has been to contract such services out to consultants and consulting firms which may be a more flexible way to retain high-quality professional services when and if actually required; this method requires a close look at the costs when such services are requested.

Another feature has been the relocation of decision-making over mining operations to the site of the operations itself. Large headquarters staff have often been relocated to the site of operations, ie, away from popular capital cities to less pleasant mining towns; such forced relocation has often helped to reduce overhead substantially. Traditional, and still successful "mining houses" usually

have little staff at their corporate headquarters, while operations are managed by corporate subsidiaries. This method of creating a holding company focusing on a few functions (external relations, overall management, monitoring, financial and strategic planning) with decentralized subsidiaries seems to have worked in some cases, though the creation of a holding is no recipe for success per se.

6.2 Employment

The official mandate of state mining enterprises is generally "to contribute to employment". Contrary to appearance, this is a rather ambiguous objective, since the function of any business organization is to contribute towards employment. The mandate is often interpreted as if it meant to maximize employment, or to employ more than is actually required for operations. It is suggested that the best strategy to fulfill the employment mandate is not to overemploy, but to develop a competitive business which in the long term will be the best assurance that employment will be maintained at least cost. Using the state enterprise as a receptacle for otherwise unemployed requires either foregoing state revenues otherwise payable as taxes or direct government subsidies. This rarely fulfills a useful function, since a company forced to retain more than it needs is likely to lose in efficiency, even if it gets a financial compensation for the imposed excess of labour. Since mining companies are regularly fully exposed to a very competitive world market, imposing the burden of excess labour is likely to affect their competitiveness, causes technological backwardness and creates a climate of apathy and underperformance. We suggest therefore that on the basis of evidence available nothing is gained, but many valuable assets may be lost in the long run by mandating excess employment.

In the restructuring of the US mining industry, overemployment and overpay-

ment was ruthlessly eliminated by layoffs, forced-upon renegotiation of wage terms, often in the shadow of impending bankruptcy and liquidation. State mining enterprises are in general prevented, by law, will and political pressure, to follow a similar course. Mechanisms to achieve similar effects have therefore been developed: mandatory relocation to unpopular locations, but also liberal financial incentives for termination and early retirement; a combination of government support (eg, viability of early retirement, retraining, relocation to newly created jobs) and company support (adding to the reduced benefits of early retirement) is often used to encourage voluntary termination of employment, particularly when coupled with the threat of reduced wages and benefits and less pleasant working conditions for low performers. Separating low basic wages with substantial performance incentives is another mechanism which gradually increases productivity while reducing employment.

In a number of situations, where swollen ranks of underpaid workers had to be reduced, the enterprise, with the support of the government, created a receptacle for excess labour, eg, opportunities for work on company farms, creation of mining cooperatives, on agricultural plots leased by the company or in company-supported workshops.⁴² It appears much more effective to create and subsidize employment opportunities for excess labour in a separate entity — and therefore respond to political pressure and legal restrictions — than to maintain inefficiency through continuous overemployment within the enterprise itself.

Subcontracting of services to outside contractors has become a frequent method to reduce employment and at the same time simplify management. Such subcontracting is likely to reduce the bureaucratic weight of a state mining enterprise while at the same time creating new opportunities for local entrepreneurs. Subcontracting internal employ-

ment is hence a method currently pursued both in industrialized countries (there in particular with respect to professional services) and in developing countries (there mostly for support services such as construction, transportation, repair and maintenance).

6.3 Enhanced application of technology and research

Technological backwardness is an often made observation with respect to ailing state mining enterprises, while ability to develop and apply technological innovations to mining (eg, leaching, electro-winning) is cited as a quality of the winners. State mining enterprises — exposed primarily to pressure for employment, patronage and social activities — apparently spend relatively little on research, on exploration and on modernization of planning and decision techniques. In an industry fully exposed to international competition, such omission can only lead to stagnation and if not corrected over time to gradual liquidation, as the market and competitors penalize obsolete technology, as ore reserves decline in oregrade and volume and as the organization is unable to keep up with the modernization of management techniques supported by computers.

Effective rehabilitation accordingly includes new emphasis on exploration — if existing facilities require new supplies —, on developing and applying new technologies to reduce costs and achieve a product mix with better marketing potential and on simplifying, accelerating and improving corporate control, coordination, information-handling and decision-making. The new generation of personal computers allows the by-passing of the, at times stifling, control of the central computing department and enables direct users of information to handle, store and manage information directly, without professional training in electronic data processing (informatics). The quality of project evaluation (finan-

cial analysis, use of data, feasibility studies) can be greatly enhanced, its use and understanding widely spread and the results improved by the availability of personal computers to users.

6.4 Marketing

Successful enterprises are more closely attuned to the market than most mining companies were traditionally. Attention to the product mixes most in demand, support to customers and active market development require that the company has feelers directed towards customers and that the result of such observation penetrates into the company's production departments.

Trading is another aspect of minerals marketing. Quite a number of state companies have made conspicuous losses in metals speculation.⁴³ On the other hand, the understanding and use of modern trading techniques permits the increase of profit margins and creates insurance against the collapse of metal prices, and also currency fluctuations.⁴⁴ Accordingly, restructuring should always be undertaken with the marketing potential in mind, and specialized training in international marketing of metals may be useful for most state enterprises selling their output internationally.

6.5 Financial restructuring

Most mining companies, including the state-owned ones, have suffered heavily under the impact of the metals price decline, intense competition and an internal structure geared to overemployment. Debt incurred in times of high metal prices and low real interest rates is almost never repayable according to its original terms when real interest rates have moved up and metal prices further down. A large variety of conventional and non-conventional techniques for financial restructuring have been tried. Also, a work-out on the level of a state enterprise is difficult to separate from country-wide debt rescheduling.

A standard technique used in rehabilitation/restructuring has been to subordinate previous debt in relation to new debt, and of subordinating previous equity to new equity infusion (eg, in the form of preferred shares). Maturities are usually stretched out and interest is often rolled over and converted into principal. Banks have been traditionally reluctant — and sometimes prevented by banking rules — to convert debt to equity; however, the prospect of writing off debt altogether will make them more amenable to conversion of debt into equity. The debt/equity swaps currently popular in some Asian and Latin American countries are likely to encourage also some swapping of project debt into project equity. For wholly-owned state enterprises, this technique is difficult, since it assumes that a 100% government-owned, but foreign-funded enterprise will have to accept foreign lenders as shareholders. However, in the context of privatization policies, a number of companies (foremost CVRD of Brazil; also SOQUEM of Quebec, Canada) have admitted private shareholders.

To obtain new funds, new investors will generally insist and obtain a privileged position vis-a-vis previous lenders and equity investors. If the government is a creditor, it may forgive, subordinate and reschedule, or convert its claims against the state enterprise. Thereby, injection of new funds from non-public sources becomes in principle possible. Methods of refinancing often are based on financial innovations developed in the US. For example, for a large iron ore project with extensive previous expenditures, an offshore arrangement consisting of four priorities (operating costs — debt service — new investors' preferred shares — previous investors and governments) is currently considered.

While existing lenders and investors are generally unwilling to face the unpleasant fact that their commitment approaches a value of zero, such recognition is often necessary to obtain new

funds to keep a project viable and carry out rehabilitation. Subordinated debt instruments and equity can be a device to save face, and in fact give a fighting chance that some of the value sunk may be recovered should boom times for metals return some day.

6.6 Restructuring external commitments: contract renegotiation

The commercial and financial viability of a state mining enterprise does not depend only on its costs, its markets and its relationship to lenders, but also on the numerous external linkages and commitments, notably to suppliers of equipment, power and services, but also to marketing agents. Restructuring has to focus on long-term contractual commitments assumed in better times, particularly where the contractors did not participate in the commercial risk of operations. The situation of long-term contracts is roughly parallel to long-term debt: contractors have generally entered into a contract under more favourable circumstances and they are unwilling to adjust favourable terms — such as high marketing commissions, fees for technical assistance or rates for electrical power — to the impoverished condition of the enterprise. Contractors tend to rely on the principle of sanctity of contract to insist on fulfillment of contractual obligations. While deterioration of economic conditions is no excuse for non-performance or contract adjustment, a fundamental change of circumstances or commercial impracticability is considered in many legal systems as a legitimate cause for adapting contractual conditions. Also, a climate of serious restructuring will tend to result in a more serious review of contractual conditions and then reasons for termination or renegotiation sometimes surface.

Quite apart from the legal search for renegotiating long-term contractual commitments, an enterprise in serious crisis has, as any debtor, substantial le-

verage in persuading its contractors to lend a more willing ear to renegotiation: bankruptcy is the ultimate weapon of the debtor and the perspective of losing a valuable contract altogether is the shadow under which renegotiation will inevitably proceed. State enterprises supported by a legal or political survival guarantee by the government will have more difficulty of mobilizing the threat of bankruptcy to renegotiate contractual commitments down to what an enterprise can reasonably afford, but it may be possible to condition continuing financial support by the government to corresponding concessions by debtors and long-term contractors. The main principle to evoke is that in a situation of crisis there should be a mutuality of concessions to maintain investment that is still viable in principle. Viability in principle is likely to exist if — disregarding sunk capital costs and debt — the continuation can be expected to produce more benefits (direct and indirect, retained benefits) than the net operating expenditures.

A special word is necessary on power rates: power is a very important, sometimes the major cost element in mining and in particular smelting, refining and electrolytic treatment. Power is mostly supplied by a government agency and its marginal cost per production unit is often difficult to determine. Restructuring contractual commitments for a state mining enterprise hence inevitably means to attempt to renegotiate power rates. If the government agency is unwilling to renegotiate a power rate for fear of precedent, there are face-saving ways, such as converting debt into equity, subordinating and rescheduling debt or reducing the power rate to marginal costs excluding elements for capital and financial costs for an initial period of rehabilitation. Since mining projects are important and stable consumers of electricity, they have considerable leverage; the threat of bankruptcy and liq-

uidation can be equally effective in renegotiating power supply conditions.

6.7 Liquidation and bankruptcy

No serious analysis of restructuring options is complete if the possibilities for liquidation, partial or total, including bankruptcy is excluded. Indeed, the terminal ending is the most logical conclusion to a crisis without remedy. Formal bankruptcy is rare for large companies, and would be quite an exception for state enterprises, though there are preceding stages which are close to bankruptcy, are handled in a similar way and where negotiations take place under the shadow of bankruptcy law and practice. If the bankruptcy law is modern and allows the restructuring of viable units — such as in particular the US bankruptcy law — it may in fact make more sense to use such procedures in the context of fundamental restructuring. Large mining companies in crisis — including state enterprises — are regularly subjected to a process of partial or complete self-liquidation, usually under more or less friendly pressure from lenders seeking to increase repayment and security. In the large-scale restructuring of the US industry in the last five years — a most fascinating and illustrative process — self-liquidation by selling off assets has become one of the most important methods of management to prevent, or to defend itself against hostile take-overs, and by corporate conquerors to pay back debt contracted to fund the take-over battles.⁴⁵ Liquidations, mergers and acquisitions have thus enabled companies to survive, but also helped to create new and more competitive companies establishing themselves on the ashes left by bankruptcy.

Liquidation — of planned and committed investment projects, of projects already well underway with heavy expenditures incurred, of operating mines, existing subsidiaries — is a necessary, though somewhat grim part of any business operation. Traditional mining com-

panies used to stick through projects once decided upon, come rain or sunshine, on the theory that the metals market would inevitably improve some day. Today, with the experience of unusual volatility, reacting to the present theories of the long-term structural decline of metals consumption, and under pressure by capital markets and constant, computer-supported financial analysis, there is a greater readiness to envisage liquidation as a necessary part of the mining business, in fact as the form of action most likely to ensure survival of the company. Liquidation may mean a project, though heavy expenditures have been incurred, will be terminated; it may mean a mine or subsidiary or complete line of business closed altogether or sold to other companies who may have more optimism, or capability, or management interest or resources to continue running the project. According to Schumpeterian logic, it is expected that this process of restructuring of a whole industry will result in greater efficiency industry-wide.

State mining enterprises have more difficulties with a policy of explicit liquidation: a liquidation means a decision which took much time and effort to obtain has been futile. To remake such a decision may be as hard, or harder, than obtaining it in the first place. It often means a loss of face beyond the sphere of enterprise management. With the inertia characteristic of the more bureaucratic process of decision-making in state enterprises it is easy to live with a decision once made, even if everyone realizes it does not work, than to generate the difficult initiative for liquidation. Since state mining enterprises are also less worried about hostile take-overs, bankruptcy and the discipline exercised by capital markets, and protected by state-issued survival guarantees, liquidation is an abnormality for state enterprises. Observing (f)ailing state mining and steel enterprises, one is surprised how slowly the state-supported giant

moves to his manifestly inevitable end.⁴⁶ Such slowness is evidently very costly for government treasuries. A strategy of encouraging a withering away of hopeless cases may therefore be a politically more acceptable form of gradual liquidation.

An argument often used to bar liquidation is national interest, in particular the security of supply of strategic minerals. The coal industry in Western — and Eastern — Europe is an example of billions of public dollars poured annually into keeping non-competitive industries from liquidation. Also, low-grade orebodies which cannot possibly be commercially feasible, are kept alive with the national interest argument — and the vested interest tied to the industries. While in this paper we cannot quantify the value of “strategic national interest” which would justify the survival of otherwise moribund mines and companies, one should force a quantification of the cost of using the national interest to keep uneconomic mines in intensive care. It is suggested that short of a war-like situation, no country has so far had serious problems of security of supply with minerals, if it had the funds to pay for them. Funds to pay for required minerals are likely to be more amply available if non-commercial operations are liquidated and invested into more viable and promising industries.

Whatever the considerations of national interest, liquidation must be an option to be examined by state mining enterprises engaged in restructuring. While purely financial considerations may provide the most reliable criteria, they are not sufficient: other considerations may exist, but they should be quantified so that a proper cost/benefit analysis be made possible. As examples from private industry demonstrate, liquidation may paradoxically be the way to more efficient, leaner and competitive mining enterprises and mining industry.

7. Restructuring in the context of government-state enterprise relations

Given the close relationship between the government as such — represented by the office of the president, the ministries of mines, finance, planning, economy and the national bank — and state mining enterprises, successful restructuring cannot be successful if this vital relationship is not fully taken into account. The government — state enterprise relationship evolves around two opposing poles: full autonomy, usually sought after by the enterprise, and full control, intervening as far as operational activities, usually sought after, at least de facto, by the government agencies. Between these poles hybrid structures may exist: state enterprises may seek financial support and political coverage for unpopular decisions, while the government may assign special tasks and patronage to the state enterprise for which it does not wish to seek funding from the national treasury. In the history of state mining enterprises, periods of relative autonomy, often accompanied by a strong chief executive, have alternated with periods of close control, often after political struggles or a crisis of the enterprise.⁴⁷ Change of government often results in a tightening of state control, since the new party in power seeks to purge and acquire control over the state enterprise and the resultant resources.

From the literature and the experiences of successful mining companies surveyed, one can conclude that the most successful and respected state mining enterprises are managed at arm's length from government intervention and at parity with private companies, much as if it were a private company with widely distributed shareholding. A corporate culture of professionalism, a quite strongly felt and articulated distinction from the government's machinery and career and a strong feeling of corporate identity and common corpo-

rate purpose appears to be a characteristic quality of these successful state mining enterprises. Indeed, since the absence of insulation between enterprise and government and the ease of political penetration are hallmarks of underperforming state enterprises, modelling the state enterprise-government relationship on the example of a large, publicly held corporation may be an important factor of success.

Such a view necessarily results in a sharp distinction between government and enterprise funds: standard tax rules, non-concessionary and non-discriminatory credit facilities and an emphasis on full, extensive and mandatory public accountability will make a state enterprise more resemble a "normal" publicly held company. The logical next step would be to subject a state enterprise not only hypothetically, but actually to the discipline of capital markets. Such discipline will come about if a state enterprise goes public and accepts and seeks private shareholders.⁴⁸ Having a mixed public/private capital allows the government to retain a controlling influence, reduces the pressure on government funds, but most of all exposes management and the whole enterprise to scrutiny, discipline and performance pressure from investors and capital markets.

An arm's-length relationship also implies that the competent agencies — Ministry of Mines and Ministry of Finance — enforce without positive or negative discrimination applicable mining and tax law against the enterprise, thus replacing a cosy and in general detrimental relationship where general law is *de jure* or *de facto* not enforced against state enterprises and where the Ministry of Mines becomes a captive agency for the state mining enterprise.

Studies available⁴⁹ demonstrate that ultimately it is less the structure of legal ownership, than the discipline of capital markets and competition which is the major determinant of enterprise perfor-

mance. There seems to be nothing like competition — from state-owned or private companies — to counteract inertia, generate pressure for efficiency and reform and wake up management and staff. Competition among state enterprises and with private companies seems therefore the best way to obtain performance. A logical consequence would be to create competing state enterprises if possible and prevent the use of mining law⁵⁰ to create state enterprise controlling, but not effectively working monopolies (ie, exclusive mining rights) over existing and prospective orebodies. State enterprises exposed to public scrutiny, in particular by shareholders and competition are likely to fight much harder against unprofessional interference by the bureaucratic and political process.

To the extent state enterprises are assigned specific social and development objectives, the arm's-length approach would require a compensation agreement between government and enterprise specifying developmental obligations in return for compensatory benefits.⁵¹

The concept of separateness would also free state enterprises from civil services rules, regulations and salary levels to enable them to respond to market conditions in finding suitable management, staff and labour. The exercise of government ownership should be primarily through a board of directors, with management employed on the basis of long-term contracts with termination only possible in case of non-performance. Interposing multisectoral state holding companies may actually increase inefficiency, as an additional bureaucratic layer is added. The statutes of a state enterprise should provide for mandatory qualifications for top management to minimize the current extensive use of such positions as spoils of the political process. The selection process should be public, with due attention to search, evaluation and selection.⁵²

8. Economic policies of government as determinants for state mining enterprise performance

Many attempts at restructuring so far have failed, since they focused exclusively on the enterprise and its inner workings. Macroeconomic government policies seem in many developing countries to have been the major causes for enterprise failure. State mining enterprises in developing countries, often the main constituent of national industry, are heavily affected by macroeconomic policies. While national policies are sometimes judiciously designed to support the international competitiveness of such companies (such as monetary policies in Chile for some time), there are many cases where quasi-bankruptcy was due to such national policies as heavily overvalued national currencies, coupled with mandatory sale of mine production (gold) to the central bank, unavailability of foreign exchange required for spares, maintenance and reinvestment even to mineral exporters, clogged-up import licensing procedures and collapse of transport and power infrastructure. Mandatory government-set wages which provide no incentive for workers to actually work and government-set prices for inputs, and sometimes (rare in the export-oriented mining industry) production which does not reflect market conditions, may also impede performance. In the export-oriented mining industry performance obstacles are mostly found in the area of foreign exchange policies; in case of non-convertible currencies, national companies are often subject to heavy and unpredictable para-taxes in the form of mandatory conversion of export proceeds without corresponding foreign exchange allowance.

Fiscal policies regularly affect state companies more than private enterprises, since state companies, in addition to taxes, are subject to additional transfers of surplus earned. Overtaxation, in the

case of state mining enterprises effected through regular taxes, special state enterprise taxes, mining taxes, dividends and finally full consolidation of enterprise revenues with the government's budget provides no incentive for enterprises to maximize profits, makes reinvestment hard to finance and difficult to get authorized through the government's central budget process. On the other hand, the expectation of continued subsidies from the government has an equal effect in generating inefficiencies and discouraging performance. The best solution appears to subject a state enterprise to the standard tax treatment including corporate income and special mining taxes (royalties), combined with special rules responding to the specific investment conditions of mining (eg, accelerated recovery of investment, encouragement of early cash-flows and differentiated royalties according to metal, profitability and metal prices (eg, additional, return-oriented mining tax or graduated royalties). As for the available surplus, many mechanisms have been developed to balance the enterprise's need and interest in reinvesting its profit and the state's concern, as owner, to benefit from after-tax surpluses, such as special investment funds and reserve allowances. The worst scenario — frequently encountered — is that surplus is shifted from profitable enterprises through overtaxation and transferred to continuous loss-makers by way of a steady flow of subsidies. Such mechanism is likely to maximize the drain on revenues caused by the losers and to discourage the performance of winners.

State companies have realized that economic policies of the government have an important bearing on their performance. While in some countries policies for the mining sector are more or less made by the companies having turned into uncontrollable empires, in other countries state enterprises feel compelled to emphasize the function of lobbying for the interests of the com-

pany with the central government. There is nothing wrong in an enterprise lobbying for its interests. However, given the predominant role of many state enterprises in their countries, the risk is of the regulatory agency becoming captive to the state enterprise. Again, from the experience surveyed it appears that a competition between state and private enterprises is the most healthy state, one which allows the government to fulfill its central coordinating and regulatory role.

9. Conclusion: competition and privatization as the current direction for the state-owned mining sector

What is likely to happen in the future with state mining enterprises in developing countries? We will make the following predictions:

We expect the large, successful companies to maintain and expand their strength, intensifying forward integration and diversification into related fields. Also, we expect these companies to assimilate themselves more with international mining companies by raising funds to an increasing extent in international capital markets, investing abroad and becoming leaders in technological development in their fields.

With the remainder, we expect a differentiation between state enterprises serving primarily the domestic market and those dependent on exportation. Companies serving a — perhaps — protected domestic markets — may remain relatively unaffected by pressures from international competition and they may maintain many of the features today associated with state mining enterprises, with occasional restructuring. Their models will be mainly found in the evolution of domestic industry, be it state-owned or privately owned.

State enterprises dependent on exportation who do not occupy a leading role

in their industry will have a hard time. To the extent they cannot generate profits, pressure either to restructure and become profitable or privatize and liquidate will grow.

9.1 Privatization as an option for governments and state enterprises?

Privatization is advocated by international agencies such as the World Bank, largely under the influence of the current US administration, as a remedy for all ills. While most developing countries so far have designed — often with international assistance — privatization programmes, a survey by the International Monetary Fund⁵³ comes to the conclusion that so far relatively few state enterprises, and particularly very few in the mining sector, have actually been sold to the private sector; also, the scope for extensive privatization in the mining sector appears limited.

However, one should take a broader view of privatization: it does not only cover outright sale of complete companies to the private sector, but as well a growing cooperation between state enterprises and private companies, foreign or national. Such cooperation, whereby some mines are sold, others are amalgamated by the state enterprise into a joint venture with a private company and others again are assigned to long-term management by foreign companies, maintains the state enterprise as such, but reduces the operational responsibility, the financial, technical and commercial risk and it reduces the financial burden otherwise incumbent on national treasuries.

Contracting out of services previously provided within the enterprise and the release of promising mining areas held by state enterprises (as mining reserves or as mining titles assigned to the company) to private companies are other mechanisms of privatization which do not eliminate the role of the national company as such. In fact, experiences (such as SOQUEM's) demon-

state that partial privatization may be a mechanism for state enterprise to raise funds that are otherwise unavailable and to focus its investment programme on what it can reasonably achieve.⁵⁴

In many countries with rather marginal state enterprises — eg, in Tunisia, Thailand, Ghana, Tanzania, Angola, Mozambique — the current trend is not a complete abdication by state enterprises, but a relinquishment of much of the operational and financial burden by state enterprise returning to the model of a holding company with participation in fully nationally owned and partly foreign owned operations. This reduced role allows a state presence to be maintained, and it can accelerate a transfer of skills and know-how from the foreign partner to the state company. Given favourable circumstances, energetic leadership and ability to support international competition, the state company may at some time in the future again venture into more high-risk operations. On the other hand, the state enterprise can, while protected against international competition, concentrate its efforts in developing minerals supplies for the domestic economy in projects where foreign investment is not available.

A similar trend can be observed with the large-scale, expensive and not very cost-efficient service contracts used by petroleum producers, such as Saudi Arabia, Iran, Algeria, but also Angola to accelerate mineral development. Privatization is unlikely to mean that the state enterprises will fold and leave the field to private capital. However, in all these countries the state enterprises will seek to develop mineral investment in partnership with foreign companies; these latter are expected to contribute know-how, managerial talent, technological innovation, risk capital and access to markets, while the state enterprise contributes previous exploration and the deposit.

9.2 Diversity and competition as main factors for industry and enterprise performance

State mining enterprises are under attack. One has to concede the fact that the currently prevailing criticism is partly due to the collapse of metal prices and its financial repercussions on the state-owned mining industry. Also, it has to be recognized that state mining enterprises have been, and are likely to remain, important vehicles for starting mineral development where no local or foreign capital is available and interested. They have also proven their ability to inject an element of national control into a politically hard to bear situation where the country's most important industry is owned by foreign interests. In the future, we will expect more diversity: as national entrepreneurs develop, they are likely to take an interest in mining — provided it is profitable and not monopolized by heavy state enterprises. International companies can provide the technology, funds, market access and management resources which are essential for success in international markets; competition and emulation can serve to transfer their capabilities to national companies.

State enterprises in the mining industry will be exposed to growing pressure to show improved performance. Underperformance of the state-owned industry is a heavy mortgage on development and a waste of scarce national resources. The paper has surveyed a large number of methods and mechanisms for restructuring. It is, however, suggested that the major factor which makes state — or any — enterprises perform as they should is competition, both from national companies, private or public, and international investors. It is through cooperation and competition that capabilities are encouraged to grow and efficiency achieved, rather than through numerous restructurings, reorganizations and other measures simulating, but not imposing, competition. While a state-en-

terprise monopoly over mineral development may work well in an infancy situation, it develops apathy, inertia and inefficiency in more mature stages. Experience with many companies — public or private — has shown that breaking up the unwieldy elements of a huge enterprise into more manageable parts is likely to provide more productivity than the whole.

Notes and references

¹This paper represents solely the opinions of the author and not necessarily those of the United Nations. It is based, inter alia, on draft papers available at the Conference on "Role of State Enterprises in the Solid Minerals Industry in Developing Countries" organized from October 5 — October 10, 1987 in Budapest between the UN Department of Technical Cooperation for Development and the Government of Hungary.

²Bolivia being an exception, where a leading role in international tin mining was built up largely by national entrepreneurs (Patino, Aramayo, Hochschild).

³See the evidence presented by Marian Radetzki, *State Mining Enterprises*, Washington, D.C., Resources for the Future, 1985, and by Magnus Ericson in this volume.

⁴See a survey by Nathalia Yaich, Ecole des Mines de St Etienne, for NRED/DTC, July 1987, unpublished. We do not deal here with the role of petroleum, where the role of state petroleum companies in the international petroleum industry and in their home countries is as large, if not larger, than in the non-fuel mineral sector.

⁵See the paper by Hugh Roberts in this volume.

⁶Algeria in practice spearheaded this thinking with its purchase of industrialization by turnkey and "produit-en-main" contracts. The oil producing countries themselves invested a large amount of petroleum surplus in mining; Iran, for example, used the service contract method to develop the Sar Cheshmeh copper mine. In Saudi Arabia, billions of dollars were spent on mineral exploration carried out by foreign contractors (eg, RTZ, British Steel, BRGM, PREUSSAG, Selection Trust and Canadian companies).

⁷For the concept and its analysis see Hartmut Elsenhans, *Abhängiger Kapitalismus oder*

bürokratische Entwicklungsgesellschaft, 1981.

⁸One tends to cite such companies as CVRD (Brazil), CODELCO (Chile), MMC (Malaysia) and OCP (Morocco) in this context.

⁹Ghose notes in this volume the unusually low rate of return of state mining companies in India. This low return would probably become negative, if account is taken of the fact that the Indian economy subsidizes its state mining sector by high import duties on metals (approximately 30%).

¹⁰Chile, Peru and Bolivia have over the years obtained most government income (apart from petroleum income in Peru) from CODELCO, COMIBOL and CENTROMIN.

¹¹For example, in Guinea, the state-owned OBK pays considerable import duties and tax-like marketing commissions to a statal entity, while the privately owned CBG has been able to obtain an exemption.

¹²The concept of mineral rent, ie, the potential for a surplus over and above a normal return based on the specific characteristics of the orebody (high grade and quality, advantageous location, favourable metal prices) is essential in order to tackle the inefficiency question and to understand that profitability per se is not a sufficient indicator of efficiency. A company making an average profit using a high-class deposit is still likely to be highly inefficient, while a company just surviving on a marginal deposit may be highly efficient. In the case of state enterprises controlling low-cost petroleum reserves, it is easier to recognize that in today's non-fuel mineral markets profits based on mineral rent are not identical with profits based on business performance.

In fact, in today's depressed metal markets, profit is a much better yardstick for performance than in times of booming metal prices, since monopoly profits based on mineral rent may have been reduced significantly.

¹³Change of management, intervention by banks, loss of value of shares and hence threats of unfriendly mergers and acquisitions are the consequence of losses to a privately owned company exposed to capital market discipline.

¹⁴Indeed, the higher the mineral rent (eg, most spectacularly with state petroleum companies), the greater the "fat" build up inside the enterprise in the form of overemployment, including "storage" of employees, perquisites, luxury training, social, entertainment and other welfare expenditures, luxury construction, and other forms of "goldplating" and overinvestment. This became evident in the

relative ease of recent cost-cutting without basic changes in operations or technology, eg, the 30% cost-cutting achieved by PT Timah in 1985-86 by concentrating on overemployment and such benefits. See R. Wiryosudarmo's paper in this volume.

¹⁵This fact is recognized in the literature. We have examined a number of analyses mostly carried out by the World Bank or consulting firms funded by the Bank on state mining enterprises (Mauritania, Ghana, Zambia, Zaire); these case studies reflect overemployment which sometimes appears to mean the employment of twice or several times the number of employees required for the operations. For example, in 1984-85 SNIM, the Mauritanian iron ore producer, had several times as many employees per tonne of iron ore produced as comparable producers in Liberia. A recent study of the Austrian Voest-Alpine iron/steel state company illustrates the observation as well. The 1987 "Plan de Racionalizacion y Optimizacion" of CENTROMIN, Peru provides data on massive overemployment. The same is indicated by the Bolivian government's current policy to encourage a major part of COMIBOL employees to give up their job. Early retirement incentives have also been an element of restructuring policies in Indonesia for PT Timah.

¹⁶In such state mining enterprises, there seems to be no limit to the imagination when it comes to providing non-cash benefits, from food and services entitlements at below market prices (COMIBOL), to housing, schools, hospitals, and many forms of social, welfare and entertainment expenditures. In the absence of mineral rent, loss-sharing by the government without tight control over costs produces similar effects, such as, eg, in the mining industries for coal (West Germany) and iron (Austria, Voest-Alpine).

¹⁷Eg, "Plan de Racionalizacion y Optimizacion", *op. cit.*

¹⁸CENTROMIN, Peru, for example invested only about 0.15% of its sales in metallurgical and other mining research, with the result that its ore reserves are being depleted, its metallurgical processes obsolete and high cost.

¹⁹See Barrientos, *op. cit.*

²⁰There are exceptions, notably of state enterprises considered as successful, such as MMC investment in Australia, CODELCO investment in downstream joint ventures in Europe.

²¹See Roberts, *op. cit.*; Radetzki, *op. cit.*

²²See Wiryosudarmo (on attempts to reduce such autarchy within PT Timah) *op. cit.*; B.

Rocca, "Mining Company Staff Functions", *Mining Magazine*, October 1986; Phillip Crowson's paper in this volume.

²³See Radetzki, *op. cit.*; M. Ali Ayub and Sven Hegstad, "Public Industrial Enterprises: Determinants of Performance", Washington, World Bank technical paper, 1986.

²⁴In the capital markets low profits result in lowered share prices, and hence increased risk for management being dismissed as a result of an unfriendly take-over, and ultimately by bankruptcy.

²⁵See on this also the review paper by I. Dobozi in this volume.

²⁶There is a large literature on performance evaluation of state enterprises. However, recipes for using shadow, opportunity, fictitious export prices, etc. seem to be primarily academic concepts which have apparently never worked to any reasonable extent.

²⁷David Gulley in this volume defines restructuring as "reconfiguration and repricing of inputs such as labor and capital in response to deflationary pressures"; this definition may apply to basic changes due to a deflation-related crisis.

²⁸Most activities designated as "restructuring" in developing countries in recent times seem to have been the result of World Bank conditionality attached to lending to state mining enterprises (eg, the rehabilitation of GECAMINES, SNIM or COMIBOL), though the possibility of developing a loan project under the attractive title of restructuring may also have been a factor encouraging World Bank personnel to promote such loans.

²⁹A case in point is the Bolivian COMIBOL, a popular object for enterprise reform and restructuring studies for several decades, funded by the Japanese government, the World Bank and other international development agencies, involving, inter alia, the international accounting firm of Price, Waterhouse. Since COMIBOL's trouble are/were deeply rooted in its environment and its external relationships, it is not surprising that in spite of the many studies and restructuring advisers employed, COMIBOL is about to disappear from the world tin market as a significant player.

³⁰For example, operating costs for refined copper in the US in new leaching projects in general remain below 45 cts per pound which makes production competitive with the high-grade copper mines in Chile.

³¹See Roberts, *op. cit.* For example, Phelps Dodge, the US copper producer expects its

production costs for copper to decrease from 80 cts per pound to below 50 cts.

³²Eg, Rio Tinto-Zinc and Consolidated Goldfields.

³³Eg, Phelps Dodge, Newmont and Texasgulf in the US perhaps also AMAX.

³⁴Eg, St. Joe Gold, BHP gold, etc.

³⁵See Gulley, *op. cit.*

³⁶In particular the local stock exchanges in Vancouver, Toronto, Montreal, but also in the Western US and Northern Australia.

³⁷It is also interesting to note that companies that have focused on metals trading, eg, Metallgesellschaft, have survived rather well in comparison with traditional mining companies.

³⁸Outside advisers are hampered in an effort to objectively analyse and improve the organization if they are fully dependent on and allied with specific groups, eg, top management, the planning department or others. Their first role is to understand the enterprise in its internal and external relationships, its resources, competition and strengths. To understand the internal relationships, an analysis of objectives, rules and practices, but even more the ability to elicit required information from the enterprise's employees is necessary. Much of such information will only be given with specific interests (eg, in increasing benefits or power, or of struggling with bureaucratic competitors) in mind. The responsibility of a management consultant is hence to elicit such information on the real workings, to provoke an opening up of employees to provide creative and practical solutions, while understanding the bias usually involved in such information. It is suggested that in most organizations knowledge about what is wrong and what should be done, is basically available; the main task is to elicit such information, it will rarely be given in formal and public gatherings.

³⁹Often international accounting firms, well known management consulting firms and even investment banks. It is not easy to find the requisite combination of mining and management consulting expertise, coupled with understanding of operating conditions in developing countries. In fact, in our view, external reorganization advice given to state mining enterprises may have more often failed than worked.

⁴⁰In the US, for example, a large part of an executive's remuneration consists of company stock, options on company stock and

similar financial instruments directly tied to a company's success.

⁴¹To avoid cases, such as in a bauxite project, where the number of expatriates employed is 2.5 times higher than in a comparable project in the same country.

⁴²See Wirjosudarmo, *op. cit.* on the creation of alternative employment to reduce over-employment in Indonesian tin mining.

⁴³Eg, MINPECO in Peru with silver; Voest-Alpine in Austria with petroleum, similarly the government of Malaysia with tin.

⁴⁴See Christopher Stobart's paper in this volume discussing hedging as a 3-5 years insurance, option trading. Similar techniques allow the minimization of risks from currency fluctuations, eg, the considerable losses assumed by CVRD in developing the Carajas project on the basis of contracts denominated in non-US currencies.

⁴⁵Witness the spin-off of mining properties by the oil companies (eg, the spin-off of Cyprus Mines by AMOCO), the sale of gold mining assets by mining companies to their shareholders and the general public.

⁴⁶We do not wish to quote specific examples, but to the observer of the European steel industry or the international tin industry illustrative cases come easily to mind.

⁴⁷Eg, after the quasi-bankruptcy of the Indonesian state petroleum enterprise PERTAMINA.

⁴⁸Such as, inter alia, CVRD of Brazil, SOQUEM in Canada and a number of state companies in France.

⁴⁹R Hemming and A Mansoor, "Privatization and Public Enterprises", *IMF Working Paper*, 87/9 of 1987.

⁵⁰In particular the method of mining rights reserved for state enterprises, of mineral reserves excluding non-state activities, the prescription of specific concession and contract types favouring state enterprises and the toleration of large holding of mining titles by state enterprises without commensurate effort at exploration and development.

⁵¹This method has been examined and recommended in the 1985 Development Report of the World Bank.

⁵²The process of searching for top personnel in US universities could be a model, with extensive use of public search, evaluation and selection committees.

⁵³Hemming and Mansoor, *op. cit.*

⁵⁴See R Raby's paper in this volume.