



The impact of mining TNCs on developing countries in Africa

By Jerker Carlsson

In a series of articles RMR will examine the mineral economies of the SADCC countries, with special reference to the nature and extent of the dominance exercised by South African mining capital. In this article a methodological approach for the study is outlined and discussed by Jerker Carlsson.

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During the post-war period transnational mining companies began to switch more and more of their attention to the Third World. High-quality ores and low labour costs created preconditions for low production costs and high profits. The objectives of the mining companies soon conflicted with the expectations of host countries regarding potential development effects from investments in the exploitation of their mineral resources. In order to increase their return from the activities of the companies host countries have adopted different tactics. The most important of these have been:

- Nationalization of the assets of the companies.
- Substantially tougher tax regimes and a range of demands on the companies for improving their socio-economic contributions.
- Joint ventures between host governments and foreign mining companies.
- The formation of producer association.

Producer associations

This alternative has proved to constitute the least serious threat to the companies. A successful association must control a raw material with no close substitutes, and supplies outside the association should be scarce. It is an advantage if there are only a handful of countries controlling production and reserves. These countries furthermore should be politically compatible, with common interests. This last precondition for a successful association is also the crucial one and, as it has turned out, the weakest link in the chain. The producer associations have often failed to adopt a common pricing policy or adopted a policy which has affected the final customers rather than the companies themselves.

Nationalizations

This first alternative has been fairly limited in its application (between 1956

and 1972 foreign mining companies had around 20 per cent of their foreign assets nationalized). Furthermore, they were usually generously compensated and given the management responsibility.

Joint venture

This could be seen as a development of the nationalization strategy. It provides a means for governmental control over operations through joint stockholding. The joint venture concept may be less effective than anticipated from the point of view of increasing host country returns from an operation. The major reason would be the role of the government as an owner of the company. This may sometimes give rise to conflicts of interest, since what is good for the company may not always be good for the national economy. Needless to say this situation may impose certain restrictions on the formulation of effective mining policies.

Increased taxation

This alternative has turned out to be the most viable one from the point of view of maximizing the developmental impact a mining operation may have on the host economy. It is this option which will be analysed here.

What is a mineral economy?

How do we recognize a mineral economy when we see one? This may at first sight seem to be fairly simple, but certain definitional issues nevertheless need to be clarified. A mineral economy is a developing economy, highly dependent on the extraction of one or two minerals for its survival. Qualifying criteria for such dependence may be the share of mineral production in total GDP (at least 15 per cent), the share of total export earnings (at least 40 per cent). These are economic criteria. But dependence also has a political dimen-

sion, therefore the nationalities of those who extract the minerals are interesting. The extent to which the mining sector is dominated by foreign mining companies clearly conditions the formulation and implementation of economic policies in the host country.

Structurally, there is very little difference between a mineral economy and any other primary producing economy. However, the type of raw materials produced — for example cocoa or tin — to a large extent determines the terms of integration into the world economy. The production and marketing of tin, for example, is largely taking place within the framework of transnational mining companies, while cocoa is less tied to transnational companies for its production, but definitely so for its marketing. In general then, it is safe to say that mining activities in developing countries are more integrated into transnational company networks, than the production of other primary commodities.

Mineral economies in Southern Africa

Southern Africa forms a very interesting region from the point of view of host country — mining company relations. Most of the countries in the region retain the characteristics of mineral economies, while at the same time being almost completely dominated by mining capital from the Republic of South Africa. The lessening of economic and political dependence on the Republic has been a major objective in the policies of these countries for many years. Obviously the presence of South African mining capital forms a major obstacle to such a process and largely explains why so little has been achieved. Even within the SADCC a very cautious attitude of the formulation of more far-reaching policies has been noted.

The role of South African mining firms in the region of Southern Africa is the topic of a research project presently carried out by the Raw Materials Group.

The purpose of the project is twofold:

- To establish empirically the respective country's status as a mineral economy;
- To outline the nature and extent of the dominance exercised by South African mining capital in the mining sector and the economy as a whole in each country.

The development objectives of a mineral economy are of course not really different from those of other developing countries — to sustain high growth rates, to achieve a balanced distribution of income to alleviate poverty and the generation of productive employment for the economically active population.

But in addition another objective often receives high priority — the transformation of the economy from a singular dependence on one or two minerals to a more diversified range of economic activities. This objective highlights one of the most crucial problems for a mineral economy, the realization of the potential developmental impact of the mining sector on the economy as a whole through the formulation of appropriate mining policies.

To achieve such an objective it is of utmost importance for the national government to be able to correctly assess the socio-economic impact emanating from the mines. However, when listing possible impacts it is important to realize that quantifiable impacts are not an enough basis for the formulation of a mining policy. An impact measure must also include nonquantifiable variables, as for example ownership structures, in order to become useful as a tool for policy-makers.

THE ECONOMIC AND POLITICAL IMPACT OF A MINING PROJECT

Before we discuss suitable ways and means of measuring different kinds of impacts, it is necessary to list what can be reasonably expected from an investment in the exploitation of a mineral resource.

Income-generating effects

This is by far the most important impact exercised by a mining company on the host economy. The mining sector usually shows substantial financial linkages. The designing of taxation packages are the prime means by which such effects can be realized.

This is a very delicate balancing act for the host government. Although it has a natural interest in filling its coffers, this can not be done to the extent that a reasonable return to the investor is threatened. The government is thus in the position that it can only tax what is above a reasonably expected return on investment. Profits in excess of an appropriately riskadjusted rate of return on funds employed are known as economic rent.

It is possible to distinguish between five different types of rent in the mineral industry:

- *Scarcity rent*. This is determined by the rate of consumption of the mineral relative to total reserves. Thus, as reserves diminish, scarcity rents increase.
- *Differential rents*. Differences in the quality of ores, in the ease of mining, or in location give rise to differential rents.
- *Monopolistic rents*. These can arise in two ways: through producer-country associations, or as a result of the structure of the international mineral market. In the first case it is possible for the mineral economies to increase excess profits by in effect taxing the consumers as the OPEC price rise in 1973 showed. In the second an increase in excess profits, or rent, takes place at the expense of the mining company itself, i.e. if the mineral market is competitive then it is difficult to tax the consumers and tapping excess profits will take place at the expense of the mining company itself.
- *Quasi-rents*. Since capital is immobile in the short-run, and the mining industry is very capital-intensive, capital enjoys a sizeable quasi-rent. Other fac-

tors, such as managerial and technical know-how, also enjoys quasi-rents.

- *Windfall rents.* These occur periodically and may be caused by sudden demand increases in the presence of low short-run supply elasticities.

Employment

In most SADCC countries labour intensity in the mining sector is too low to make it significant in direct employment generation. Further, the employment implications of these industries go beyond themselves. They give rise to high wage enclaves which encourage high open unemployment and migration. But the question of their capital-intensity and the related employment effect must be qualified. Could the invested capital in mining have been used in alternative, more labour-intensive, activities? If not, then employment resulting from mining has a positive impact irrespective of its size. Could, or should, mining investments be more labour-intensive? This is usually not possible if the demand for a reasonable return on investment shall be satisfied. Profit-maximization therefore requires capital-intensive units.

Linkage effects

This is the second most important impact, especially when it comes to a direct impact on other productive activities in the economy. This occurs through the creation of a demand for goods and services (backward linkages) and by supplying inputs to other industries (forward linkages). Opposition to this view stress that mining companies are enclaves with sales and purchase patterns geared towards the international market and in particular towards affiliated companies within the same corporate structure. The strength of the linkages is also determined by the level of development of the host country. An insignificantly developed manufacturing indus-

try gives very few opportunities for establishing linkages.

Practically, these impacts may be studied on two levels. On the micro-level by analysing the purchasing pattern of a company. It is then important to distinguish between direct imports, purchases of imports through local retailers and wholesalers and, finally, purchases of locally produced goods. It is of course the last item which is the most important when considering stimulus to local development. On the macro-level an input-output matrix is very useful for analysing intersectorial linkages. It provides information on the relations of the mining sector with other economic sectors (for example agriculture and manufacturing) as well as the final domestic and export markets. However, in practice this option is rarely available, since the necessary statistical data is seldom produced. The input-output analyses that are sometimes published are usually based on more or less well-informed guesstimates. No input-output matrix has been available for the SADCC countries.

Balance of payments effect

To many developing host countries this is one of the most important effects of a direct foreign investment. The strength of this impact has, however, been questioned. It depends not only on the mining project itself, but to a large extent also on the structure of the economy, i.e. the degree of interlinkages between the mining sector and other economic sectors. In other words, the creation of export incomes is not the relevant criteria for assessing such an effect. As we shall show below the retained value concept offers a better possibility for determining the net foreign exchange inflow.

External (dis)economies

A mining investment usually means substantial construction activities as infrastructural facilities are not usually at

hand. A problem here, of course, is the extent to which such investments has a relevance also for the surrounding society and its economic activities. A mining investment may also create certain diseconomies in the sense that it can absorb resources that could have had been used in other economic sectors. The mining company often acts as a drain on local capital. It may also create unwanted consumption patterns, i.e. a preference for imported, often luxury, consumer goods, in the country.

Income distribution impact

It is very likely that a mining investment has a very negative impact on income distribution in several ways:

- It affects the return on local capital which will move to the mining industry and its connected industries, rather than alternative investment possibilities.
- It tends to increase income differences between labour employed in different sectors.
- It causes a biased regional income distribution.

Environmental impact

A mining activity usually has a profound impact on the surrounding environment. Pollution of the air, waters and forests are sometimes of such magnitude that entire ecological systems may be threatened.

It is therefore tragic that the environmental impact has almost always been seriously neglected by host governments and, less surprising perhaps, by the mining companies themselves. When investment conditions are negotiated in the early stages of a project environmental matters are seldom on the agenda. The host government may perhaps wish to avoid creating unnecessary disincentives for the investors. Consequently, when assessing the total impact of a mine, the environmental factor is almost never considered. This is a serious shortcoming and any future im-

pact analysis must contain quantitative as well as qualitative assessments of environmental conditions around a mine.

Political impact

The danger of foreign intervention in the political affairs of a host country is of course real. A dominant foreign investor may damage the socio-economic development of a host country by strengthening class forces that are regressive by nature. A natural harmony of interests can develop (and quite often does) between mining capital and groups directly dependent upon the mining companies. The traditional ruling class may in fact benefit from the rise of groups that are economically tied to the well-being of the mine. Thus, the sitting regime may benefit not only in economic terms, but also through a broadened socio-political base.

But even if a mining investment has a supporting effect on the ruling class, the analytical point of departure should nevertheless be the assumption that a foreign direct investment means a reduction in the sovereignty of the host country.

The impact on national sovereignty is determined by a bargaining relationship where the strength of the participants are determined by factors such as the uniqueness of the ore, the economic position of the country in question etc. It is common that the negotiation advantage is tilted in favour of the mining company before the investment has got underway. When operations are in full swing, the scale is gradually moving over in favour of the host country government which improves its leverage. To counteract this tendency mining firms sometimes have:

”therefore tried to broaden and deepen their bargaining power by undertaking projects in consortia with other firms and financial interests, including such public agencies as the IMF . . .¹

The relations between host country and mining company are also determined by the institutional frame within which the company operates. If it is a subsidiary with a weak link to its parent company, it is likely that the subsidiary's acceptance of changes in government policies is similar to other domestic firms. On the other hand, if the subsidiary has a strong parental linkage — for example being integrated into a global production network — the sensitivity to changes in host government policies are probably quite low.

An assessment of the bargaining situation is important as a mining investment affects matters that are of vital importance to the host country: the geographical localization of the mine; decisions regarding extension or cutbacks in production; availability of credit facilities; withdrawal of funds in times of balance of payments difficulties etc.

In conclusion then, the political dimension is of critical importance for the long-term development of the host country. The tendency of foreign investments of such magnitudes, as is common in the mining sector, to strengthen status quo usually means the preservation of social forces not conducive with a development towards more egalitarian structures. This kind of impact is hardly measurable in quantitative terms, instead it has to be incorporated in the analysis of the economic impacts through an investigation of the social and political developments of the host country. Of particular importance in this regard is an understanding of class configurations in the host country.

MEASURING THE IMPACT

We have so far listed different kind of impacts that are likely to occur in the host developing country from a mining investment. Let us now turn to discussing a comprehensive approach for measuring the size of this impact. We concluded earlier that a major benefit from a mining investment arose from

Government tax revenues, rather than from payments to labour and for goods and services. But even so a comprehensive measure should incorporate all possible impacts to the extent that they are quantifiable.

One such measure is the so called *Retained Value* (RV). The concept takes into account (a) expenditures for labour, local materials and equipment and services domestically; (b) net contributions to Government revenues; (c) net contribution to national foreign exchange income. The gross foreign exchange contribution is thus the same as the retained value.

However, goods and services purchased by a mining company have a substantial import content. Therefore, only perhaps 90 per cent of the retained value constitutes net foreign exchange. An improving effect on host country balance of payments thus depends upon an increase of domestic value-added content in the market expenditures of the mining companies. The Retained Value can be expressed as follows:

$$(1) RV = W_n + W_e - SE + DP + T + MD + OT$$

W_n = wages and salaries of national citizens.

W_e = wages and salaries of expatriates.

SE = share of salaries of expatriates accruing abroad.

DP = domestic purchases of goods and services.

T = income tax paid to nationals.

MD = import duties paid to national Government.

OT = other taxes paid to Government.

A serious limitation to using the concept concerns its nature as a flow concept and that it disregards the fact that the host country has obtained a valuable mine. Also depending on the fiscal arrangements under which the company is obliged to work it may be necessary to disaggregate the RV. Furthermore, the category (DP) above definitely needs to

be made more specific as purchases made by the company needs to be subdivided into those that are bought locally but are imports, and those that are locally produced. In such a way the import content of (DP) can be accounted for. Such a more detailed breakdown was designed for the Bougainville copper mine by Mikesell and is expressed in the following way:

$$(2) RV = W - SE + DP - Md + RD + L + DD + CT + WT + CU$$

where:

W = total wages, salaries and salary supplements.

SE = salaries of expatriates accruing abroad.

DP = domestic purchases of goods and services.

Md = import content of DP.

RD = royalty payments.

L = payments to landowners.

DD = dividends paid to government and resident equity holders.

CT = corporate income tax.

WT = withholding tax on dividends to non-residents.

CU = customs duty.

The RV shall be related to the gross revenue of the mining company. It is probably quite low during the first years of operation, perhaps around 30 per cent. In the case of the Bougainville mine the RV was 24 per cent during its first years, because of a tax holiday and accelerated depreciation.²

But generally speaking it should reach a level of 50—60 per cent when full production is reached, which can be regarded as a satisfactory level. The relative importance of each variable building up the RV is also an important performance criteria. It cannot be argued that a planned RV target should be reached by an arbitrary combination of RV variables. The relationship between gross revenue of the mine and the RV is expressed below:

$$(3) R = RV + M + I + L + P + SE + U$$

where:

R = export value fob (excluding marketing expenses).

RV = retained value.

M = imports.

I = interest paid on external loans and credits.

L = loan repayments.

P = profits transferred abroad.

SE = salaries of expatriates accruing abroad.

U = unidentified items.

Taxes paid to the national Government forms a substantial part of the RV. A breakdown of the retained value of the Toquepala mine in Peru and the Bougainville mine in Papua New Guinea shows this very clearly.

The importance of tax payments in determining the size of the RV therefore makes it necessary to discuss further the options available to the Government when designing an effective tax system. From the point of view of the mineral economies the objective of mineral taxation is simple: to capture all scarcity,

differential, monopolistic, quasi and windfall rents, while letting the investor make the return necessary to induce him to invest.

However, it is impossible for a government to collect all rents. The major difficulty is that of distinguishing rent from supply price. Thus, all *ex ante* taxes on rents are plagued by uncertainty. On the other hand, *ex post* taxes amount to a marginal tax rate of 100 per cent, which has obvious consequences for incentives, even if transfer prices were controlled by the company. Therefore all rents suffer from uncertainty, varying with risk and involve actual cost of collection. Let us therefore look at the policy options available when designing a tax package:

- *Royalty*. The specific royalty is based on tonnage and is independent of ore quality and price. It therefore taps only the scarcity rent. An ad valorem royalty taxes differential rent and is therefore better, in addition of being more easily administrated.

Table 1

Distribution of the retained value — Toquepala and Bougainville mines

Category	Toquepala 1960—72	Bougainville 1973
Wn	18	16 (Wn + We—SE)
We—SE	3	
DP	24	10
T	43	71 (T+OT)
MD	6	1
OT	4	
RV/R	43	62

Source:

R Mikesell, 1975: p 69 and 109.

- *Income and excess profits taxes.* Excellent in capturing mineral rents and minimizing the excess burden of taxes. They impose few constraints on operating decisions, are more sensitive to rents and allows for exploration and development expenditures. Their disadvantage is connected to the difficulties of calculating income and excess profits.

- *Resource rent tax.* A profits tax that begins to be levied when a certain threshold rate of return on investment has been realized, and may be made progressive. It of course suffers from the same weaknesses as an excess profits tax when it comes to assessing a threshold rate of return.

- *Taxes on the value of the final output.* Taxing the mineral in proportion to the market price, or if there exist an open price. A central problem when designing an efficient tax system, as has been indicated above, is the calculation of a return on investment in order to determine the size of the economic rent available for taxation.

It is of utmost importance for the government to possess a knowledge of the applied accounting methods of the mining company in order to accurately determine its viability and avoid misunderstandings due to conceptual differences.

Many host governments calculate profitability in terms of the accounting rate of return, i.e. the ratio of after-tax earnings to net book value of assets. This method is today seldom used by mine companies themselves. The most important reason being its inability to take into account the long period of mine exploration, the construction phase etc during which the investor receives no return on his investment.

Not surprisingly then, today most mine companies estimate profitability by using the discounted cash flow method. This means in essence an estimation of capital expenditures prior to the beginning of production, and a projection of cash inflow less capital expenditures after production is initiated.

This is known as the net cash flow and expressed as:

$$(4) \text{NCF} = \text{R} - \text{C} - \text{I} - \text{T} - \text{L} - \text{CE}$$

where:

R = revenues from operations.

C = operating costs.

I = interest on indebtedness.

T = tax payments.

L = principal payments on debt.

CE = capital expenditures for maintaining output.

The discounted cash flow is estimated by calculating the interest rate which would give the company the same amount of money, if for example the money had been put in a bank instead, had the cash flows been accumulated and reinvested each year at the same interest rate.

The crucial question here is of course how the discounting has been done in order to calculate the discounted cash flow rate. By calculating a projected discounted cash flow profit rate on each investment project, a mining company can handle the problem of risk by seeking a higher profit rate on high-risk projects. The company may also use as an investment guide the payback period, or the estimated length of time it takes to completely recover its investment.

The methodology confronted with the real world

An analysis of the relationship between a host mineral economy and a foreign mining company must be carried out on several levels at the same time. Political, social and economic impacts have to be evaluated separately and then integrated in order to obtain the full picture. From this point of view the methodology outlined above is optimal. As usual, however, when confronted with reality the situation is different.

The researcher is then faced with a number of problems where perhaps theoretical and conceptual issues are the least troublesome. Instead, accessibility to data must be regarded as the major

stumbleblock. This is also something which is experienced by the host government when trying to establish an empirical base for its policy formulation. Company information is seldom easily obtained, not even for governments. The published annual reports hardly provide the disaggregated figures needed for calculating a RV and the researcher is often left with highly aggregated figures to be combined with scattered pieces of information obtained elsewhere.

National statistics are usually not very helpful either, partly because they are not designed for our purpose as host governments not always realizes the importance, or possess the capacity, of calculating a RV, partly because individual company data are hidden behind aggregates.

Thus, a full implementation of the methodological approach suggested here requires access to internal company documents. Such permission is not easily obtained as is well known. Given these circumstances the RMG project will be based upon material normally available to researchers and exemplify the extent to which the methodological approach suggested here can be applied.

Notes:

¹ Michael Tanzer, *The Race For Resources*, Continuing struggles over minerals and fuels, Monthly Review Press, London 1980.

² R Mikesell, *Foreign Investment in copper Mining*, Case studies of mines in Peru and Papua New Guinea, Baltimore 1975.

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