

Enclave Development of Minerals: An Argument and an Illustration

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I. Introduction

Foreign investment in mining in developing countries has aroused considerable passion both in the host countries and among analysts of development. In the nineteenth century and the first half of the twentieth century, it almost inevitably led to what has become known generally as 'enclave development,' and the term has tended to become pejorative. A great deal has been written about the disadvantages of enclave development, and its unfortunate side effects, although often the alternative to which comparison is being made is not explicit. It is, sometimes, grudgingly admitted that the only alternative was no development, i.e. that foreign-financed mining projects would not have been undertaken in any other way. Nevertheless, the conventional wisdom would seem to be that enclaves are bad things, and that host governments should always to their best to minimize the cleavages between an export-oriented mining sector and the rest of the economy. The following quotation is representative:

"Moreover, care should be taken that mining ventures and plantations do not simply create enclaves of growth in an otherwise stagnant economy; they must generate opportunities for supporting and

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processing industries or they will create nothing but growth without development."²

Although this view is the conventional wisdom, it appears to be based more on impressions derived from some particular cases, and on prejudice, than on systematic analysis of the effects of mining projects in developing countries and the net advantages of alternatives. It closely parallels the view that it is no good to give the poor cash, one must ensure that they consume the right things. In both cases, a normative and paternalistic opinion replaces more conventional economic principles. In the anti-enclave view, the paternalism appears as an implied mistrust of the abilities and motivations of developing country governments. In the domestic welfare case, the paternalism takes the form of the assumption that society, through government, is better able to make consumption decisions for poor households than the households themselves. In both cases, the paternalistic assumption may be correct in at least some cases; but it is contrary to the central tendencies of mainstream Western economics to assume it is correct in all cases, denying that normally individuals, and governments, should be assumed to be the best judges of what is good for them.

The trouble with the anti-enclave view arises because it overlooks the questions of how the style of mining development affects revenues generated, and how those revenues are used. This paper argues that there should be a presumption that enclaves are potentially capable, in many circumstances, of generating more net revenues to government than more 'integrated' mining projects. The choice of style of mining development then turns on two questions: first, the costs and benefits of "de-enclaving;" and second, the use made by government of additional revenue. It seems likely that the conventional wisdom is only correct if it is paternalistically assumed, as it often implicitly is, that governments in developing countries are very inefficient in their use of incremental revenue to promote development.

The next section of this paper expands this argument. The argument is then illustrated by a case study of diamond mining in Botswana. The illustration will be seen to support the argument

² Wolfson (1978), p. 42.

that enclave development should not be ruled out without analysis of the specifics in each potential mining development, any more than cash transfers should be ruled out in favor of benefits in kind in individual income-support programs.

II. Costs and Benefits of Foreign Investment in Mining

In order to assess the impact of private direct investment (PDI) on recipient developing countries, one must first adopt a point of view.³ If we wish to assess the impact from the point of view of how it affects the development process, we need a definition of development. Two approaches are possible. One is to simply adopt one of the available definitions of development and use that;⁴ the other is to take at face value the stated objectives of the government of the developing country in question. Neither approach is wholly satisfactory. There is no consensus on a precise definition of development in the academic literature, and thus the adoption of a particular definition is necessarily arbitrary. Most popular definitions are also somewhat vague and qualitative since they accept the notion that development is a normative concept, associated in some sense with improvements in human well-being.

On the other hand, accepting government's goals as stated also involves problems. First, most governments' development goals are multiple, and involve elements which may be in conflict with one another.⁵ Governments are not usually explicit about how they weight the various subgoals within the overall goal of development, or in other words the rate at which they are willing to trade more progress on one dimension for less on another.⁶ Thus in

3 The analysis of PDI can be approached from several viewpoints. A good survey is found in Tharakan (1979). For a more extensive discussion of the characteristics of mining firms operating in developing countries, see Cobbe (1979), Chapters 2 and 3. For results of an extensive survey of the views of high officials of large multinational corporations, see Frank (1980).

4 On the variety of meanings that can be ascribed to 'development,' see, e.g. Todaro (1977), Chapter 6, and references therein.

5 E.g. 'growth' and 'improved social justice.'

6 E.g. "The objectives are not given in any order of priority since a satisfactory pattern of development must involve them all." Republic of Botswana, (1977), paragraph 2.6. Botswana is in fact much more honest in its handling of the multiple goal dilemma than most governments; in fairness one should note that the paragraph in question continues: "It is recognized that the objectives themselves may conflict ... conflicts are dealt with in this Plan by carefully spelling out the Government's priorities ..." However, this is done on an individual case basis, and it is not possible to discern if the implicit priority ranking is consistent.

practice the criterion for assessment will be vague under this approach, too. Second, there is the much more serious difficulty of the naive theory of the state implicit in assuming that the stated, or 'ceremonial,' goals of government correspond to the real, or 'functional,' ones.⁷ Any attempt to derive government's real goals, however, is either circular (assuming government efficiently achieved its real goals) or judgmental and inherently uncertain.⁸ On balance, it seems reasonable to adopt as the assessment criterion government's stated goals, at the same time recognizing that this greatly weakens any attempt to derive predictions about behavior from the analysis (since real goals may differ from stated ones).

Anticipating the illustration, let us assume that government's stated development goals are rapid economic growth; social justice (meaning that all citizens benefit from growth); economic independence (or the ability of government to influence economic outcomes); and sustained development (i.e. a pattern of development that will not produce later regression).⁹

Mineral production for export can contribute to these goals chiefly by (a) increasing national income, (b) generating additional employment directly and indirectly, (c) providing foreign exchange, and (d) generating government revenue that can be used to help achieve other goals.

There are in principle four alternative basic approaches the government of a skill-scarce developing country with a valuable unexploited mineral resource can take towards the exploitation of that resource. The first is to attempt to exploit the resource under wholly indigenous control, borrowing capital if necessary and hiring foreign expertise as necessary. The second is simply to wait; to choose not to exploit the resource yet since the net benefits at present do not seem worthwhile. The third and fourth both involve PDI, and in a sense represent choices of a different kind. The third is to permit PDI to exploit the resource, but to view this exploitation as a narrow income-generating activity; i.e., to develop the resource in a consciously "enclave" manner as a source of

7 On 'ceremonial' and 'functional,' a distinction attributed to Walter Bagehot writing about nineteenth century Britain, see Bhatt (1977); on economists' proclivity for assuming naive theories of the state, see Tony Killick, (1976).

8 For further discussion, see Cobbe (1979) Chapter 4.

9 These are taken from Republic of Botswana (1979), Chapter 2.

foreign exchange and government tax revenue. The fourth alternative is to seek to maximize the secondary effects of the project, to integrate it into the overall development of the economy, seeking to generate and exploit as many linkages and external benefits from the existence of the foreign PDI project as possible.

The choice between these four alternatives should depend on judgments about the probable consequences of each. Such judgments will be influenced by the technical aspects of the resource and the choices available for developing it, the location of the resource, the structure of the market for the resource-based product, the supply situation within the country and internationally for inputs required, and the potential linkage and external effects perceived. It is, of course important to emphasize that the judgments on which the decisions are based need not be correct projections of actual outcomes; the latter will depend on the detailed agreements negotiated with the foreign interests involved (if any), outside events over which the decision-makers have no control (such as changes in world market prices), and how the project affects the rest of the economy in practice, as opposed to on paper in a feasibility study. It is always easy to be wise after the event, and what looks questionable *ex post* may have seemed quite different *ex ante*.

Nevertheless, it is possible to make some general points about the strategic choices that much be made. In making the choice with respect to strategy to adopt, the first two possibilities are relatively simple to deal with. 'Going it alone' is unlikely to be a feasible alternative for skill-scarce developing countries, since in most cases both personnel and finance will be too difficult to obtain.¹⁰ "Waiting," on the other hand, is also unlikely to be an attractive option if the country is poor and the resource is a rich one, although the decision will no doubt be influenced by the terms on which exploitation can be arranged, expectations about future changes, and the degree of nationalism or xenophobia displayed by the government.¹¹

10 For elaboration, see Cobbe (1979), Chapter 1.

11 Probably the strongest argument against "waiting" is the uncertainty one, the possibility that technical or other changes may destroy the value of the resource during the waiting period. There are examples of governments explicitly choosing to wait; the governments concerned tend to be highly nationalist and xenophobic. See Smith & Wells (1975), pp. 17-18.

Supposing then that the decision has been made to involve PDI in the exploitation of the mineral resource, a whole range of choices must be made about various aspects of the form of involvement (e.g. extent and form of local participation, one or more foreign partners, technique of extraction, etc.) Many of these choices cannot, in practice, be made unilaterally by one side, but are the subject of a bargaining process between the government and potential foreign investors. However, the basic strategic choice between the two polar types of project identified above, between the "enclave" approach where the project is used to generate maximum revenue, and broader development objectives are sought through government use of the revenue, and the "integrated" approach, where an attempt is made to use the project directly to encourage a broader transformation of the local economy, would seem to be a strategic choice to be made by government in advance.

In making this choice, government should consider the package nature of much PDI, the fact that it usually involves not only capital as such, but also one or more of a group of other things to which foreign corporations have advantageous access compared to the host country.¹² The most important of these tends to be technology and skills, often embodied in personnel; access to markets for output and specialized inputs; and managerial experience and skills specific to the industry in question. It follows that to assess the appropriate strategy towards, and the eventual impact of, a particular instance of foreign investment, one needs to consider in detail the situations of both the recipient country and the investing foreign corporation with respect to these matters. However, in choosing between an enclave project and an integrated one, the three most important issues concerning the project are probably the location of the mineral deposit; the required non-factor inputs and outputs, in terms of both their physical quantities and their values; and the nature and size of factor inputs.

A mineral deposit is part of a nation's endowment of wealth which happens to be in a highly illiquid form. Converting that relatively useless wealth in the ground into more malleable and productive forms of capital stock--infrastructure, buildings, plant and equipment, institutions, knowledge, experience and skills--is fundamentally what mining for export is all about in developing

¹² See Streeten (1972).

countries. It can occur to the extent that the rents generated by the project--i.e. the excess of mineral receipts over extraction costs--can be retained in the country and channeled into forming physical and human capital. If PDI is involved, government cannot expect to capture all the rents generated; and the effective utilization of rents for development purposes does pose some particular difficulties for governments because of the typical characteristics of revenues derived from resource rents.¹³ Nevertheless, it seems reasonable to view the primary objective of mineral development in resource-rich developing countries as the conversion of illiquid endowment into more productive forms via the generation, taxation, and use of rents. If incidentally other benefits are generated, so much the better; but other benefits should not be sought if the costs will be too high. The consequences of extreme cases with respect to each of the three characteristics listed above illustrate how such benefits and costs can vary. There are sharp contrasts between situations tending to favor each of the two polar cases, the "enclave," thought of as a mining operation in which domestic value added other than profit and taxes (i.e., other than rents) is minimized (i.e. most inputs, factor and non-factor, imported; output exported with minimal processing; few or no beneficial side-effects from infrastructure investment multiplier effects, etc.), and the "integrated" approach, in which domestic value added other than rent is maximized (i.e. maximum use of local inputs; maximum processing before export and local consumption; conscious attempts to maximize beneficial side effects), almost certainly reducing rent below its potential maximum.

The physical quantities of non-factor inputs and outputs have a strong bearing on the infrastructure needs for the mining project, especially with respect to transport. If these are very small, little in the way of transport facilities will be needed. If, as is more usual, they are large, then usually investment in transport facilities is essential to the success of the project--railroads, harbors, roads may be needed. Such investments are lumpy and thus subject to considerable economies of scale; it would be unusual if transport facilities for a mine were incapable of lowering transport costs for other goods carried along the communication lines of a mine. Thus where this is the case, there are external benefits to be gained and an argument for avoiding an enclave, if the location of the deposit

¹³ Lewis (1980).

makes the transport cost point relevant.

One should also consider the values of non-factor inputs and of outputs, and the degree to which they can either be produced locally or used locally. If such inputs are highly specialized to the industry, difficult to produce outside a developed industrial complex, or subject to considerable economies of scale in production (e.g. some types of mining machinery), then there is little chance of useful backward linkages. If on the other hand inputs are used in many other industries, do not have great technical difficulties in their production, and are subject to economies of scale but without strong lumpiness so that expansion can be gradual and still enjoy the economies of scale (an example might be brick-making), then there are prospects of successfully encouraging backward linkages and an argument against the narrow enclave. Similarly with respect to outputs, although in most low-income developing countries, especially smaller ones, the main point here will most probably concern the cost advantages in transport and marketing following domestic processing, and the requirements of the processing industries, rather than the prospects for local final consumption, which for most minerals will usually be negligible.¹⁴

Location is important with respect to how the mining project fits into the spatial configuration of the existing economy, and thus (with the transport aspect), the prospects of obtaining external benefits from it, and of it stimulating other activities. Obviously, a project in a remote area with poor prospects is a better candidate for enclave treatment than one in, or close to, fertile regions with at least rudimentary commercial centers. Similarly with respect to factor inputs: if these are large, and with respect to labor also involve skill acquisition which is not industry-specific, there are arguments against an enclave; but if they are small, implying little additional domestic aggregate demand, or if skill acquisition will be largely industry-specific, an enclave may be more acceptable. The general point is that with respect to the mining operation alone, total investment cost is likely to be lowest, and rent largest, in something that is close to an enclave in the sense defined above; moves towards integration are likely to add to costs and reduce net rent from the mine itself. Government, therefore, must make judgements about the expected gains from integration moves compared to the probable costs in terms of reduced rent, and therefore

14 See Wall (1980) on the ambiguities involved here, however.

reduced tax revenues. It is worth noting that the optimal configuration from the point of view of government is likely to differ from that from the point of view of the mining company, and that one would expect government to be willing to sacrifice more than a dollar of before tax rent (accruing after taxes to a foreign company) in return for a dollar's worth of secondary benefits, since tax rates less than 100% imply that only a proportion of the fall in before tax rent actually works through to government revenue.

In the remainder of this paper, the plausibility of these assertions will be illustrated by an examination of diamond mining in Botswana, initially a pure enclave operation.

III. The Setting

Botswana is a large, sparsely populated semi-arid country in Central Southern Africa.¹⁵ In an area roughly equivalent to Arizona and Nevada combined, there is a population of about 750,000 people, the vast majority subsisting at a fairly low level from the proceeds of low-productivity dry-land cereal production, livestock raising, and remittances from migrant workers in South Africa. The country, and its development, were almost wholly neglected during the period of British protection, the apparent assumption until the 1950's being that eventually the territory would be incorporated into South Africa. British attempts to foster some national economic integration and development did not really get under way until relatively shortly before independence in 1966. In 1960, GNP for capita was probably less than \$70, in 1966 it was still probably less than \$100, and in 1969 less than \$110.¹⁶ Thereafter, mining developments (with some help from foreign aid and beef exports) led to very rapid growth, GNP per capita reaching \$290 in 1974 and \$540 in 1977. The average annual growth rate of GNP at constant market prices is estimated at 5.7% for 1960-1970, and 18.3% for 1970-77.¹⁷

15 By far the most comprehensive sources of information on Botswana are the government's own development plans, e.g. Republic of Botswana (1977). See also Hartland-Thunberg (1978), *South African Labour Bulletin* 5:5, January 1980, (special issue on Botswana), and Colclough & McCarthy (1980).

16 All national accounts estimates, and most other statistical estimates, for Botswana should be treated with considerable caution. These figures, in current market prices, are taken from IBRD (1976), pp. 58-59.

17 Republic of Botswana (1977), and IBRD (1980).

The impressive spurt in growth is largely attributable to two mining projects and their effects, and the considerable infrastructural investment requirements of one of them.¹⁸ These are several related diamond mines and the Selebi-Phikwe copper-nickel mines. This rapid surge in economic growth in Botswana was largely unexpected until just before it occurred; as late as 1969 Government expected to have to rely on UK budgetary grants-in-aid to finance recurrent expenditure for another seven to ten years. In fact, domestic resources were contributing to development expenditure only two years later.¹⁹

IV. Diamonds

De Beers, the largest diamond mining organization in the world, began prospecting for diamonds in Botswana in 1955. The first diamondiferous kimberlite pipe was discovered in 1967, and the discovery of a very large pipe near Orapa was announced in 1968. This is just south of the Makgadikgadi salt pan, on the edge of the Kalahari desert, 110 miles west of Francistown, the nearest point with reasonable transport links to the outside world. The area is not well suited to either arable farming or livestock raising, and was extremely sparsely populated prior to the discovery of diamonds.

In principle, most diamond deposits can be exploited by either large scale, capital-intensive methods or by labour-intensive methods.²⁰ Labour-intensive methods have the disadvantage of requiring very strict control of workers if government revenue is not to be lost as a result of smuggling and illicit dealing, in turn requiring considerable infrastructural development to facilitate such control. Given the inhospitable location of Orapa, and the revenue constraint on government at the time, it is not surprising

18 Three other events also assisted: the revision of the Southern African Customs Union Agreement in 1969, greatly increasing government revenues from this source after 1970; increasing export demand, and good supply conditions, with respect to beef; and an increased flow of foreign aid following independence. On the first two points, see Republic of Botswana (1977), Chapter 1; on the third, see Jones (1977), Part two.

19 Republic of Botswana (1977) pp. 7, 12.

20 The two methods are compared in the Sierra Leone case in Killick (1973), which concludes that there the less enclavish labor-intensive approach was socially more desirable than the capital-intensive approach involving PDI. Comparative recovery rates, security requirements, and both private and social profitability, are strongly affected by the technical characteristics of the deposits.

that the Botswana government explicitly opted for an enclave-type development of the mine by De Beers, recognizing that it would produce very little employment or linkage effects in the domestic economy, but hoping for large effects on government revenue.²¹

Although it is not specified in legislation, the government of Botswana has a firm policy that any mining operation in Botswana should give the government as a free grant at least 15% of its equity. This principle was observed in the arrangements for the exploitation of the Orapa deposit, a new company being created, De Beers Botswana Mining Company (usually known as Debswana), 15% owned by government, and 85% owned by De Beers. De Beers made an investment of about \$30 million to bring the mine into operation. Debswana was responsible not only for the mine itself, but also for water supply, electricity and necessary urban services. Transportation and communications facilities, in the form of an all-weather road and a telephone line to Francistown, were built by government, but financed by a \$3.15 million loan from the company, to be repaid from the dividends on government's share of the equity.

Initially, the only special taxation arrangement for Debswana was a royalty which, together with the normal company income tax of 30% and dividends on government's equity, gave the government about 50% of total profits. However the mine, which began production in July 1971, quickly established itself as highly profitable, in the first full year of operation (1972) producing over \$25 million of diamonds and about \$10 million of government revenue. Given that this implied an after-tax rate of return on De Beers' investment of about 30% per annum, it is not surprising that government imposed an additional 10% profits tax on the mine and also negotiated much more firmly against the company after the discovery of a second deposit, at Letlhakane, somewhat smaller than the original one but with a much higher expected proportion of more valuable gem stones.

This second set of negotiations took roughly two years, about twice as long as initially expected, agreement eventually being announced in July 1975. The new agreement covered both exploitation of the new deposit and the existing mine and its expansion. The new agreement called for De Beers to roughly triple its invest-

²¹ Republic of Botswana (1973), paragraph 10.22.

ment, half of the new funds being used to open up the new deposit before the end of 1976, the other half to double the capacity of the existing mine by early 1979. The government's equity stake in Debswana was raised to 50% at no cost to it, and government was given parity with De Beers on the board of Debswana. The special 10% profits tax was abolished, and differential royalty rates introduced on the two mines, the net effect being to give government between 65 and 70% of total profits, the exact proportion depending on profitability. In spite of the apparently large share of profits going to government, rough estimates suggest that the expected after-tax return on investment to De Beers is still of the order of 20% per annum.

In 1976, De Beers discovered another major pipe, at Jwaneng in south-central Botswana. Further negotiations ensued, with agreement in principle announced in early 1978 and final agreement reached in April 1978. The new mine will be operated by Debswana, but it and the associated infrastructure will have a much higher capital cost than the existing mines, initially estimated at about \$250 million. About 10 percent is expected to be financed by export credits, and the remainder mostly by De Beers; however, this time only 30 percent of the equity is being issued to the Botswana government gratis. The remaining 20 percent of Botswana's half share in the equity has to be paid for, and the Botswana government arranged to borrow some \$45 million on commercial terms from Canada in this connection. Details of the fiscal arrangements were not made public, but it was announced that when the mine was in production the Botswana government would, from royalties, taxes, and dividends on its equity, receive "substantially the same share" of the profits of the enlarged Debswana as it did before.²² Infrastructure requirements include power, water, a township, and a metalled access road from Kanye. Production is expected to start in 1982 at about 3.5 million carats a year, building up to about 6 million carats a year about the middle of the decade--a larger output than that expected from Debswana's other mines. Gem content and value per carat are expected to be higher than at Orapa but lower than at Letlhakane. By then, Botswana will probably be producing about 10 percent of the world's diamonds.

In terms of their impact on the Botswana economy, the effect

22 *Standard Chartered Review* (London), May 1978, p. 38.

of these diamond mines has been almost wholly through government revenue. Linkages with the rest of the domestic economy are almost trivial and the employment effects so far are very small. Furthermore, the employees of the diamond mines are as good an example of an 'aristocracy of labor' as is likely to be found in Africa.²³ This was demonstrated in late 1974, when the local staff at Orapa, already earning on average some 10% more than other industrial and mining workers, demanded wage increases. De Beers was evidently prepared to concede increases, but the government, in keeping with its policy of restraining income inequalities between urban workers and the rural population, requested that no increase be granted. The workers struck, and the government, perhaps conscious of the importance of its revenue from diamonds, agreed to wage hikes.²⁴ Some small attempts were made in the 1975 renegotiations to widen the developmental impact of the mines, by requiring Debswana to furnish water and electricity to a village near Orapa, and by setting up a joint venture to gradually take over sorting and valuing of the diamonds, initially performed largely in London. This focus was continued in 1978, and in the case of the Jwaneng mine employment and infrastructural development will be more substantial, with perhaps as many as 2,000 employees eventually, compared to only 600 initially at Orapa.²⁵

Orapa was an enclave-type project, and its effects on Botswana's development, other than its small employment effect, must be judged in terms of its contribution to government revenue. In this respect it has been spectacularly successful, having become immediately it started operation the largest single source of domestic revenue in return for very little outlay on the part of government. Furthermore, although Debswana is also highly profitable for De Beers, it is doubtful whether the government could realistically have obtained more revenue from its diamond deposits by any alternative arrangements. The insistence of government in 1975 on 50% ownership and parity on the board may well have been at least partly prompted by a desire to ensure that production

23 The hypothesis that certain groups of employees in Africa, particularly those of foreign-owned corporations, represent an aristocracy of labor was first raised by Arrighi (1970).

24 The total annual wage bill for local unskilled labor at Orapa was about \$500,000 at this time, compared to annual government revenue from the mine of over \$10 million. For a fuller discussion, see Simkins (1975).

25 *Africa* No. 82, June, 1978, p. 119. Total Debswana employment at the end of 1977 was 1,250 persons, of whom 158 were expatriates.

decisions took account of Botswana's revenue needs as well as De Beers' interest (De Beers, through its Central Selling Organization, is in a near-monopolistic position in world diamond markets, and is widely believed to occasionally reduce production rather than prices when demand for diamonds is slack). As time has passed, and diamond mining has expanded, Governments has put slightly more emphasis on side-effects, downstream linkages, and integrating infrastructural development into overall development plans, but the diamond mining projects are still largely enclave one, whose primary impact on development has been the generation of government revenue and foreign exchange earnings.

This impact has been spectacular. In Pula, Botswana's currency, diamond exports increased from P 32 million in 1975, to P 48 million in 1977, and to P 181 million in 1979. Published figures do not permit direct derivation of either Debswana's profits or government's revenue, but working costs through 1977 were less than 30% of export receipts. If government was receiving the announced 65 to 70% of profits, and profits were of the same order of magnitude as operating surplus, government's diamond revenue has probably been well over 5% of GDP in recent years (for fiscal years ending in June GDP at current market prices is estimated to have been P 276 million in 1975/76, P 299 million in 1976/77, and P 333 million in 1977/78).²⁶ By 1979 diamonds were accounting for over half of total exports, and this proportion is likely to rise after Jwaneng comes into production in 1982.

V. Government Revenue

Botswana's experience with Debswana strongly suggests that under ideal conditions a rich deposit with favorable market conditions can be developed on an enclave basis and thereby generate very substantial rents and revenue for the host government. Before a conclusion can be drawn about the potential advantages of enclave developments, however, three questions need to be raised. The first concerns whether alternatives to an enclave really existed; the second, whether diamond mining has had any undesirable side effects on the Botswana economy, in terms of

²⁶ Lewis (1980) and *Standard Chartered Review* (London), June 1980, p. 37. Annual average exchange rates were P 1 = \$1.36 in 1975, \$1.15 in 1976, \$1.19 in 1977, \$1.20 in 1978, and \$1.23 in 1979.

Botswana's development objectives; and the third, whether the government of Botswana has in fact used its share of the rents generated from diamonds efficiently and effectively to promote its development objectives.

The first question is difficult to answer with the information available. As noted above, it does not appear that government either seriously considered any alternative to the initial De Beers proposal, or pushed too hard for add-ons in the various expansions. It seems probable that although alternative procedures which would have involved greater domestic factor inputs might have been possible, they would have had a considerable cost in terms of reduced taxable rents. In the expansion negotiations, government may have been influenced by the rather disastrous experience of the other major mining project in Botswana, the Selebi-Phikwe mine, where maximum linkage, add-on, and integration attempts were made.²⁷

As to undesirable side-effects, the most important issues are those common to all mineral export economies, and concern the impact of large resource rents from capital-intensive mines on the foreign exchange rate and domestic costs, fiscal instability, excessive specialization and capital-intensity, dualism, and waste resulting from rapid expansion of government revenue and expenditures.²⁸ Botswana has probably suffered some increase in the level of domestic costs, in dualism and income inequality, as a result of the rise in incomes and wages of those in formal employment since mining began.²⁹ However, the government of Botswana can plausibly be argued to have dealt in general with these problems rather well so far.³⁰

Unfortunately, this success is not total, nor has the real test yet come. At independence, there was a colossal lack of physical and social infrastructure in Botswana, so that it was relatively easy to direct increased government expenditures into clearly worthwhile projects, and efficiency was reasonably well maintained. However, the mass of the rural population (only 10.7% of the population is urban according to the most recent estimate³¹) have received little

27 Cobbe (1979), Chapter 7.

28 Nankani (1979); Lewis (1980).

29 Parson (1980), p. 52.

30 Lewis (1980) p. 30.

31 IBRD (1980) p. 437.

in the way of direct benefit from mining revenues; an observer writing in late 1979 states flatly "it is generally agreed even in government circles that to date the transfer of mining revenue to rural development has not taken place."³²

The real test will come in the future when revenues increase as Jwaneng comes on stream; as the government attempts to channel the rents into directly productive activities in agriculture and the manufacturing sectors; and as resentment and pressure on the part of the less skilled formally-employed builds up. The problems are likely to be difficult for any government, however firmly committed to its stated goals, and to some extent they interact. The crux lies in the two-fold justification for restraint of real unskilled wages, and the pressures to which that policy is likely to be subjected.

Restraint on unskilled real wages is essentially unimportant to Debswana; a content and productive labour force is vital, but given total diamond exports well in excess of P 100 million a year, and an effective corporate tax rate of at least 65%, it makes little difference to company net profits after tax whether the 1000 or so relatively unskilled employees are paid P 800 a year or P 2000 a year. But it makes a big difference to the economy overall. Restraint on unskilled wages has two objectives: to prevent a widening of the income gap between the formally employed urban population and the rural and urban informal sectors; and to make other non-agricultural activities in Botswana profitable by holding down labour costs.

Unfortunately, the situation is full of paradox. Rural-urban income gaps have probably widened, even though wage growth has been restrained; but so has rural inequality, in all probability, and the wages paid to mine workers in Botswana probably remain lower in material terms than those earned by the over 30,000 migrants from Botswana working in South Africa (mostly in gold mines).³³ At the same time, Botswana has not been spectacularly successful at attracting manufacturing industry, and is a high cost location for production within Southern Africa regardless of wage levels.³⁴

³² Massey (1980) p. 20.

³³ Massey (1980) p. 19; Massey's estimate is that wages for comparable work are about one third lower in Botswana.

³⁴ Selwyn (1975).

The pressure for increases in real wages will come from two sources. One is the level of wages for similar work in South Africa (which will be well known so long as migration continues), and the other is the very existence of PDI itself, which produces problems recognized by the foreign investors themselves.³⁵ In skill-scarce ldc's large mining projects in materials not previously produced inevitably involve foreign skilled personnel at first. Such personnel must be offered remuneration and living conditions which will attract and retain them; this will normally mean of at least the standard personnel of such skill levels would receive in North America or Australia. Where, as in Africa, most such personnel are also racially distinct from the local population, this results in undesirable social tensions between local and expatriate employees, and in all cases leads to upward pressure on the levels of provision of social services and amenities and on local salary and wage levels for skilled workers, and also to the introduction of public and private consumption patterns which may be undesirable. It follows that the existence of a capital-intensive PDI project in a skill-scarce economy is likely to make it much more difficult to pursue policies of social justice in the sense of reduced inequalities of income, wealth, and access to public services.

Extractive industries of the Botswana type also have the effect of integrating the domestic economy more closely into the world market economy. This may or may not be desirable in principle; in practice, the increased dependence on conditions outside the control of the national government may run counter to national objectives and have undesirable effects which partially cancel the gains from trade. For example, for political and historical reasons, a major aim of Botswana government economic policy is to lessen dependence on South Africa. Debswana is, however, a partnership between Botswana and De Beers, a basically South African company, and given Debswana's dependence on inputs and expatriate personnel of South African origin, in ways dependence on South Africa is increased. Of more significance are the commodity specialization of exports, over half of Botswana's exports by value now being diamonds, the heavy reliance on a single source of government revenue, and the danger of increased overall specialization if diamond-induced wage levels and exchange rates reduce incentives for other kinds of production and encourage imports.

35 Oppenheimer (1976).

Nevertheless, so far the enclave development of diamond mining in Botswana seems to have generated more benefits than costs, and it holds out the promise of continued rapid transformation of the Botswana economy. For success, the Botswana government will have to continue to follow conservative policies with respect to expenditure, formal sector wages, and exchange rates, and will have to devise ways to channel more of its revenues from diamonds into rural development and other productive enterprise.

However, it is difficult to believe that a less enclave-style approach to diamond mining would have produced better results or greater promise for the future. The conventional bias against enclaves appears unjustified as a general policy approach.

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