Mining as a generator of wealth: potential conflicts and solutions

by Richard M. Auty

The economic under-performance of many mineral economies compared with some other developing countries poses problems for multinational mining companies (MNCs). MNCs will be attacked by "green ayatollahs", who will use natural capital and environmental damage to press for "social sustainability". But economic under-performance is not inevitable: mismanaged mineral economies are associated with specific types of political economy. Mining MNCs can mitigate the potential problems by encouraging institutions which enhance the quality of government, by improving the transparency of mineral rent flows and by accommodating reasonable requests from host communities.

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The thesis of this paper is that the tendency of mineral economies to under-perform over the past two to three decades compared with some other developing countries (LDCs), contains the seeds of future problems. But this under-performance is not inevitable (Daniel 1992) and the potential problems for multinational mining corporations (MNCs) can be mitigated. The thesis is developed in six propositions:

- the counter-revolution in development economics (which encouraged MNCs to reinvest in the LDCs), is not secure and is likely to falter in many countries,
- the continued under-performance of the *mismanaged* mineral economies will spur discontent against MNCs,
- differences in the mineral economies' performance are associated with specific types of political state,
- the problems of mismanaged mineral economies include ill judged mineral revenue deployment, unwise levels of protection for the non-mining tradeables (agriculture and manufacturing) and promotion of rent-dispersement over growth,
- a focus for anti-MNC policies is provided by natural capital depletion and environmental damage in mining,
- anti-MNC policies can be either ameliorated or blocked,

The counter-revolution in development economics is incomplete

Through the 1960s and 1970s, critics of mainstream development economics argued that the nature of the global political economy worked against the interests of the LDCs. The more moderate critics such as Prebisch (1963) argued that LDC governments needed to intervene in order to diversify their economies into manufacturing and to combat a relative decline in the prices of primary commodities. More radical critics such as Dos Santos (1969) argued that MNCs. in cooperation with local elites, spear-headed the developed market economies' (DMEs') exploitation of the LDCs and that nothing short of revolutionary change could improve matters.

Such assertions were difficult to prove or disprove prior to the assembly of a large data base during the 1970s by the major international financial institutions. The assertions encouraged an increasingly interventionist stance by many governments which took the form of cartels, nationalization, closed trade policies and expanded public expenditure. But such policies over-estimated both the skill and integrity of many governments. This was particularly damaging to mineral economies because the capital-intensive nature of mining tends to channel the sector's impact on the domestic economy through government revenue rather than through wages or backward and forward linkages (the supply of mine inputs or further processing, respectively). Whatever their theoretical merits, the interventionist policies proved ill-advised and led to declining investment efficiency, increasingly erratic and slower rates of GDP growth, and rising levels of foreign debt. The debt crisis of the 1980s created an opportunity for the international financial institutions, by then strongly backed up by empirical research at the World Bank by iconoclastic scholars such as Balassa (1982), Hughes (1989), Krueger (1993) and Lal (1993), to offer financial assistance in exchange for reforms which cut state intervention and gave a greater role to markets.

The new neo-liberal economic policy consensus as recently described by Williamson (1996), comprises ten principles, namely: fiscal discipline, targeting public expenditure and broadening and cutting tax rates; a competitive exchange rate, trade liberalization and removal of barriers to foreign direct investment; financial liberalisation, privatisation, deregulation and secure property rights for

the informal sector. The basic assumptions are that the economic policies required to achieve relatively high rates of per capita GDP growth with equitable income distribution have been clearly established. Recent research has also identified the policies required in order to achieve environmentally sustainable economic growth (World Bank 1992).

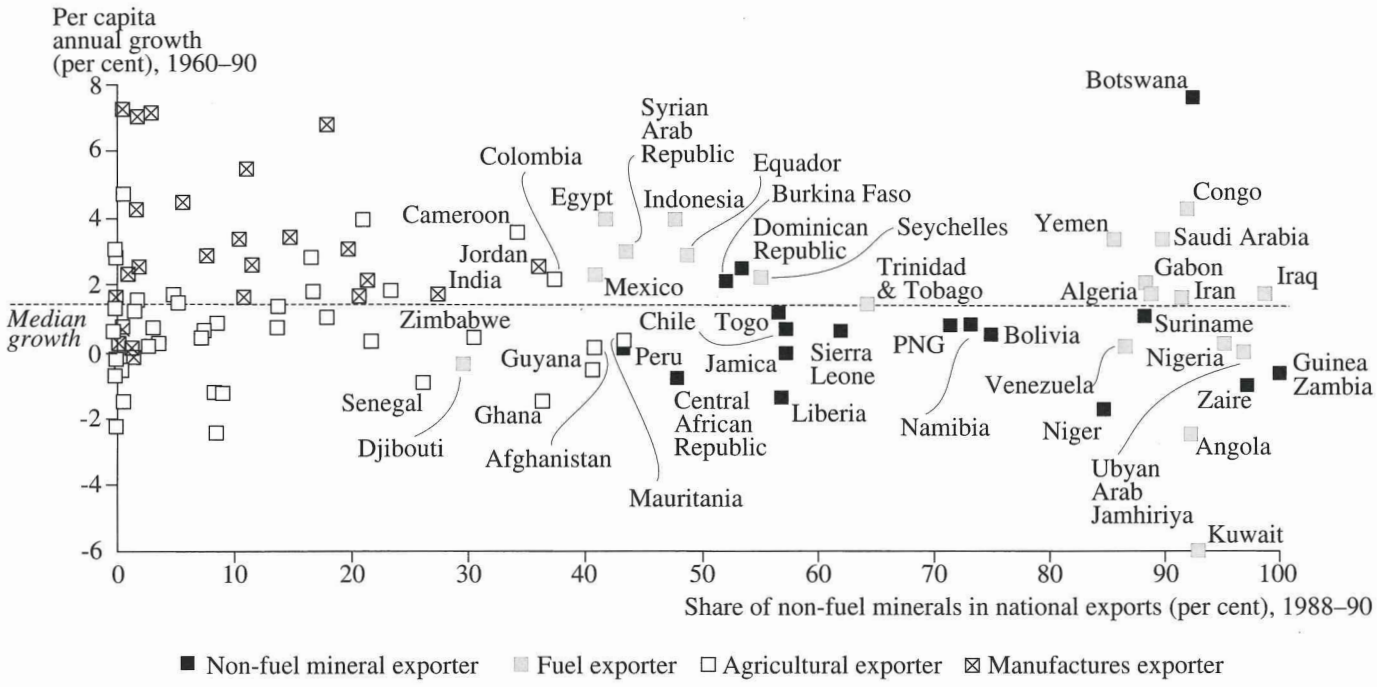
Nevertheless, the application of the consensus policies to the indebted LDCs has been problematic and improvement has been slow (Reed 1996). This is largely because a critical problem has been neglected by orthodox economists and that problem remains largely unresolved, namely: how to build the political coalition needed in each country to implement such policies. It is primarily for this reason that the mining MNCs will continue to experience risks on their investments in certain groups of LDCs.

The mineral economies' underperformance spurs discontent

The mineral economies comprise around one-quarter of all LDCs. They might be expected to out-perform other LDCs, given the additional import capacity and extra investment resources which their mineral exports provide (Sachs and Warner 1995). Yet most, but not all, of the mineral economies have performed disappointingly in recent decades. Figure 1 shows growth in per capita GDP 1960–90 for countries classified according to their dependence on mineral exports. The (resource-deficient) manufactured goods exporters achieved the highest mean per capita GDP growth rate and the hard mineral exporters the lowest rate. Moreover, Botswana alone accounts for half the mean growth rate for the hard mineral exporters and its exclusion from that group (on the grounds that its diamond resource has more in common with oil-driven growth) lowers the mean growth rate of the remaining hard mineral exporters to only 0.3 per cent. The agricultural exporting countries also grew relatively slowly, but the rate is slightly higher at 0.8 per cent.

These results appear to be robust in the face of variations in both the time period and the classification criteria used. For example, Table 1 confirms the weak performance of the mineral economies using data for per capita GDP over the years 1970–93 and a different resource endowment classification, based upon domestic market size in 1970 (World Bank 1995) and per capita cropland in 1970 (WRI 1994) (Auty 1997). This classification produces four basic categories of LDC and the one having the most countries in it (the small resource rich category), can

Figure 1. Economic growth and mineral dependency (106 developing countries)



Source: UNCTAD Secretariat.

be further sub-divided by taking account of the mineral dependence of the countries (Table 1).

The overall pattern from Table 1 is clear: first, both groups of resource-deficient countries achieved superior growth rates to all four resource-rich groups. Second, among the resource-rich countries, the mineral economies have the slowest growth. Third, that position is unchanged if the *large* mineral economies are re-assigned from the large resource-rich category to the oil-exporters and hard mineral economies groups (but the mean GDP growth rate of the six remaining large resource-rich countries rises to 1.6 per cent). The two main conclusions are however, that the resource-deficient countries out-performed the resource-rich ones and that among the latter group, the mineral economies recorded the most disappointing performance.

The under-performance of the resource-rich countries has received increasing attention (Ranis 1991, Mahon 1992, Ranis and Mahmood 1993, Sachs and Warner 1995, Lal and Myint 1996). Sachs and Warner (1995) find a positive relationship between inward-orientation and dependence on primary product exports. But the relationship weakens above the level at which primary product exports reach one-third of GDP (which they attribute to the dominance of this sub-group by the oil-exporters which display less concern for the protection of their non-mining tradeables). Consistent with this view, Ranis and Mahmood (1992) find the liberalization and depoliticization of the economy to be beneficial for the resource-deficient countries. Elsewhere, Auty (1994) and Lal and Myint (1996) show that resource-rich countries tend to leap-frog the critical labour-absorbing second stage of the successful East Asian model and to intervene excessively in order to upgrade skills and boost employment as the size of their resource rents shrinks in relation to GDP.

Summarising, the mineral economies are an important sub-group of a larger body of resource-rich countries which have under-performed. This is probably a result of policy failure arising from the fact that the government of a resource-rich country is prone to distort its economy by: restricting trade (to protect non-booming tradeables, especially manufacturing) and intervening over-ambitiously to upgrade worker skills and boost employment. The consequent failure to evolve a *competitive* manufacturing sector creates problems in sustaining economic growth when the resource rents shrink in size relative to the rest of the economy. In addition to these shared problems of resource-rich countries, the mineral economies tend to misjudge their mineral revenue deployment and thereby damage the economy. But not all resource-rich countries under-perform, as countries like Botswana, Indonesia, Chile and Malaysia show.

The type of political state affects macro performance

Lal (1995) has devised a useful typology of the political state with which to identify those LDCs most prone to policy failure. His typology is based on two criteria: the degree of autonomy which a government possesses and the nature of the objectives which it pursues (Table 2). The most effective type of state from the point of view of economic development is the (rather cumbersomely named) autonomous benevolent bureaucracy, which has

Table 1. Resource endowment and per capita GDP growth 1970–93

Resource endowment category	Number of countries	PCGDP growth 1960–90 (per cent /Yr)	1970 PCGDP	1970 GDP 000 MUSD	Cropland Ha/Hd
Resource-poor					
Large[2]	7	3.5	196	21.048	0.15
Small[3]	13	2.5	343	1.937	0.16
Resource-rich[1]					
Large[4]	10	1.6	574	22.988	0.56
Small					
Non-Mineral[5]	31	1.1	250	1.406	0.57
Hard Mineral[6]	16	0.8	304	1.227	0.66
Oil Exporter[7]	8	1.7	831	2.011	0.44
All Countries	85	1.6	362	5.666	0.48

Source: Auty (1997).

Notes: 1. Resource-rich = 1970 cropland/head > 0.29 hectares; 2. The seven large, resource-deficient countries comprise: Bangladesh, China, Colombia, Egypt, Indonesia, Philippines and S. Korea; 3 The thirteen small, resource-deficient countries comprise: El Salvador, Haiti, Hong Kong, Jordan, Kenya, Mauritania, Mauritius, Nepal, Singapore, Somalia, Sri Lanka, Taiwan and Tanzania; 4. The ten large, resource-rich countries comprise: Argentina, Brazil, Chile, India, Mexico, Nigeria, Pakistan, S. Africa, Turkey and Venezuela; 5. The thirty-one small, resource-rich, non-mineral economies are: Benin, Burundi, Cameroon, Chad, Costa Rica, Cote d'Ivoire, Ethiopia, Fiji, Gambia, Ghana, Guatemala, Guyana, Honduras, Lesotho, Madagascar, Malawi, Malaysia, Mali, Morocco, Nicaragua, Panama, Paraguay, Rwanda, Senegal, Sudan, Swaziland, Thailand, Tunisia, Uganda, Uruguay, Zimbabwe; 6. The sixteen hard mineral exporters comprise: Bolivia, Botswana, Burkino Faso, Central African Republic, Dominican Republic, Jamaica, Liberia, Namibia, Niger, PNG, Peru, Sierra Leone, Suriname, Togo, Zaire and Zambia; 7. The eight oil exporters comprise: Algeria, Congo, Ecuador, Gabon, Kuwait, Saudi Arabia, Syria and Trinidad and Tobago.

Table 2. Typology of political states (after Lal)

Autonomy	Character	Variants	Examples
Autonomous	Benevolent	Monarchy	Brunei
		Bureaucratic	Indonesia Chile 1975–90
	Predatory	Authoritarian	Zaire
		Bureaucratic	Peru 1968–78
Factional	Democratic	Consensual	Botswana Jamaica post-88 Namibia post-90
		Polarising	Jamaica 1972-88 PNG, Trinidad + Tobago
	Oligopolistic	Plantocracy	Namibia pre-90
		Populist	Peru post-1978

Source: Auty (1997).

the capacity to execute its policy and is likely to seek to boost long-term national welfare. It conforms closely (albeit not exclusively) to the developmental state (Leftwich 1995) and is most common in the resource-constrained peasant societies of East Asia. The various factional states, which have a limited capacity to formulate a coherent economic policy and tend to be distracted into diverting rents into coalition-building at the expense of long-term welfare, are less effective. Factional states are common in resource-rich Latin America and sub-Saharan Africa and take one of two basic variants.

In resource-rich Latin America, the landed oligarchy retained power long after independence and the plantation (or large-scale sector), played a prominent role in the political economy (Lewis 1978). Findlay (1988, 83) argues that large-scale, land-intensive agriculture "seems to produce social and political structures which are inherently resistant to change in a democratic direction." The oligarchies maintained power by manipulating elections or co-opting the military, and even urban groups under populist regimes such as Peron. Although in resource-rich sub-Saharan Africa peasant-dominated political systems are more common than plantocracies, the political states that have emerged have tended to be repressive and economic performance has been disappointing (Sachs and Warner 1996).

The disappointing political outcome in sub-Saharan Africa reflects ethnic conflicts within heterogeneous societies which quickly slipped from post-independence democracies into factional oligopolies with a strong tendency to regress into authoritarian regimes, invariably of the predatory type (Alesina and Perotti 1996). Many post-independence governments in sub-Saharan Africa used crop marketing boards not to stabilise peasant incomes but rather to extract revenues, initially on the grounds that the state would be a more effective saver and investor. The resulting squeeze on the rural sector often caused both output and state revenues to be lower than would be the case under a more rational system (Findlay 1988). Gelb et al. (1991) model with reference to Zambia how such a political system can depress the overall rate of investment below the level required to maintain per capita economic growth in about one decade. Sachs and Warner (1996) estimate that growth could be as much as four times faster in sub-Saharan Africa (6 per cent annually), with less intervention so that trade is liberalised, market efficiency is improved and incentives to save are boosted.

Even where democracy proved more robust in peasant-dominated societies, like Sri Lanka, Mauritius and Malaysia, the plantation sector was squeezed in order to transfer resources to a lagging peasant sector. This decapitalized the plantation sector in Sri Lanka within two decades (Bruton and Associates 1992) and led to a protracted economic crisis in the 1970s (Athukorala and Jayasriya 1994), as also occurred in Mauritius (Findlay and Wellisz 1993). In both cases, however, the political crisis transformed a polarised democracy into a consensual democracy with a strong commitment to more efficient resource use and to a development strategy of labour-intensive industrialization in line with the countries' natural resource endowments. Improvement can come out of economic crisis, as two mineral economies, Peru and Bolivia, have recently demonstrated.

Summarising, resource-rich countries like the mineral economies tend to be associated with factional or predatory states which may repress a potentially dynamic peasant society and deflect a country from pursuing a development strategy in line with its underlying comparative advantage. LDCs which are so deflected tend to underperform economically (Table 3).

Problems of mismanaged mineral economies

The new policy consensus calls for reform to reduce the economic distortions

Table 3. Per capita GDP growth and political state, 25 countries

State type	Resource endowment		PCGDP growth 1960–90 (per cent /Yr)
	Deficient	Rich	
Autonomous			
Benevolent	3	1	5.4
Predatory	1	3	2.2
PCGDP growth (per cent)	5.9	1.7	3.8
Factional			
Democratic	3	5	2.2
Oligopolist	3	6	0.7
PCGDP growth (per cent)	1.8	1.2	1.4
Autonomous and factional			
Autonomous states	4	4	3.8
Factional states	6	11	1.4
All states	10	15	2.2
PCGDP growth (per cent)	3.5	1.3	2.2

Source: Auty (1997).
Note: The 25 countries include five small resource-deficient countries (El Salvador, Kenya, Mauritius, Sri Lanka, Taiwan), five large resource-deficient countries (China, Colombia, Indonesia, Pakistan, South Korea), five large resource-rich countries (Argentina, Brazil, India, Nigeria and South Africa), five small resource-rich mineral economies (Namibia, PNG, Peru, Saudi Arabia and Trinidad and Tobago) and five small resource-rich non-mineral economies (Costa Rica, Guyana, Malaysia, Sudan and Zimbabwe).

created by earlier ill judged policies and thereby ensure sound macro management. These reforms are a pre-requisite for the successful management of a mineral economy. Within a soundly managed economy, policies to harness the mineral resource to advantage must be adjusted to each of the three main stages of the mineral cycle (youth, early-maturity and late-maturity). In larger countries, such as Brazil or Mexico, these stages are likely to affect the regional economy rather than the national economy. In smaller mineral economies, macro policy would indeed be relatively easy to pursue, as Davis (1995) argues, if the stages of the cycle occurred smoothly. But, the sequence may be anything but smooth: countries may find themselves moving abruptly through the entire sequence (Indonesia 1974–90); locked in a particular stage (post-1974 Jamaica); or even undergoing some regression (post-1990 Chile). With these reservations in mind, the ideal sequence through the mineral cycle is now briefly outlined.

The first (youthful) stage sees the rapid expansion of the mining sector, a real appreciation of the exchange rate and strong Dutch Disease effects (a weakening in the competitiveness of the non-mining tradeables, notably agriculture and manufacturing). The establishment of a mineral revenue stabilization fund (MRSF) can limit the Dutch Disease effects by slowing the rate of domestic revenue absorption and accumulating financial reserves. The reserves can be used to facilitate fiscal adjustment to any future unexpected loss of government revenue. In effect, the MRSF reinforces a bias towards cautious assessment of the mineral largesse. Such a bias is prudent because the damage arising from a cautious policy stance is much easier to rectify than the damage arising from over-optimism about the revenue stream.

The second stage, early maturity, is marked by a sustained slow-down in mining expansion, although the mining sector still exerts a major economic influence. Policies during this stage need to encourage diversification into alternative sources of taxation and foreign exchange, and also to manage cyclical fluctuations in mineral revenues caused by mineral price swings and output fluctuations. The third stage spans the long-term relative decline of mining which may be due to flagging competitiveness, depleting reserves and/ or a slower rate of mineral expansion compared with other sectors. This stage eventually sees the share of mining in GDP drop below 10 per cent and/or mineral exports drop below 40 per cent and the country therefore ceases to be a mining economy.

Adjustments to the mineral-driven cycle have historically been complicated for most mineral economies by the cumulative distortions in the economy that arise from past policy errors and by constraints arising out of differences in the structure of the economy when maturation occurs. Overall, the transition through the mineral-driven cycle appears easier: the, more autonomous and benevolent the political state; the less distorted the economy; the lower the per capita income at which the transition takes place;

Table 4. Stage of mineral– lead cycle. Nine Countries in late-1980s

	Youthful		Early-mature		Late-mature	
	Start	End	Start	End	Start	End
Oil exporters	Columbia		Trinidad & Tobago			Indonesia
Copper exporters	PNG		Chile		Peru	
Other hard minerals	Botswana		Jamaica		Namibia	

Table 5. Perspectives on sustainable development

Technocentric (overlapping categories)		Ecocentric	
Cornucopian	**Accommodating**	**Communalist**	**Deep ecology**
Green labels			
Resource exploitatlve, position.	Resource conservationist and "managerial" position.	Resource preservationist position.	Extreme preservationist positon.
Type of economy			
Anti-green economy, unfettered free markets.	Green economy, green markets guided by economic incentlve instruments (e.g. pollution charges, etc)	Deep green economy, steady-state economy regulated by macroenvironmental standards and supplemented by economic incentives.	Very deep green economy, heavily regulated to minimize resource-take.
Management strateqies			
Primary economic policy objective, maximize economic growth.	Modified economic growth (adjusted green accounting to measure GNP)	Zero economic growth; zero population growth.	Reduced scale of economy and population.
Taken as axiomatic that unfettered free markets in conjunction with technical progress will ensure infinite substitution possibilities capable of mitigating all "scarcity/limits" constraints.	Decoupling important but infinite substitution rejected. Sustainability rules: constant capital rule. Therefore some scale changes.	Decoupling plus no increase in scale. "Systems" perspective; "health" of whole ecosystem very important; Gaia hypothesis and implications.	Scale reduction imperative; at the extreme for some there is a literal interpretation of Gaia as a personalized agent to which moral obligations are owed.
Ethics			
Support for traditional ethical reasoning: rights and interests of contemporary individual humans; instrumental value (i.e. of recognized value to humans) in nature.	Extension of ethical reasoning: "caring for other" motive – intragenerational and intergenerational equity (i.e. contemporary poor and future people); instrumental value in nature.	Further extension of ethical reasoning: interests of the collective take precedence over those of the individual; primary value of ecosystems and secondary value of component functions and services.	Acceptance of bioethics (i.e. moral rights/interests conferred on all non-human species and even the abiotic parts of the environment); intrinsic value in nature (i.e. valuable in its own right regardless of human experience).
Sustainabilitv labels			
Very weak sustainability	Weak sustainability nature.	Strong sustainability	Very strong sustainability

Source: Turner et al. (1994).

and the larger (and more diversified) the non-mining natural resource base. This implies that the transition is especially difficult for a small economy with either a factional or an autonomous predatory government whose mineral revenue stream requires it to make the transition to maturity at a mid-income level. Table 4 provides examples of the position in the mineral cycle of nine mineral economies.

Natural capital depletion provides a focus for anti-MNC policies

The counter-revolution in development theory has combined with the collapse of the centrally planned economies to undercut the intellectual position of those who favour greater levels of state intervention in LDCs. But the market-sceptical constituency remains an important force among scholars and practitioners in both DMEs and LDCs like. It has aligned itself with the second "environmental revolution", which began in the late-1980s, often defending a "strong" sustainable development view. The adjective "strong" is used to distinguish that position from the "weak" sustainable development view of many conventional economists (Table 5) which is elaborated by the World Development Report (World Bank 1992) and more recently by Steer (1996).

Strong sustainability calls for rapid progress towards both the more efficient and the more frugal use of natural resources. It usually posits a timetable of mandatory targets in order to gain these ends, targets which must be set and enforced by the state. Its scepticism of markets rests upon doubts concerning consumer sovereignty which assumes, among other things, perfect information. It also argues that demand can be manipulated to create "positional" or status goods which by their very nature, encourage conspicuous and wasteful consumption but leave the majority perpetually dissatisfied because such goods can only confer the desired status on an elite minority (Hirsch 1977).

Strong sustainability also objects to the orthodox economists' relative neglect of physical limits on the use of environmental capital and the services which it provides. It strongly opposes the application of conventional discounting to environmental problems because discounting tends to weight the *costs* of environmental protection measures (which typically occur through the short- and medium-term) considerably higher than the *benefits* of environmental improvement (which typically cumulate over the very long-term, and are therefore subjected to greater discounting than the cost stream). Finally, and most importantly for mining, strong sustainability demands the swift achievement of intra-generational equity on the grounds that the natural resource consumption of the richer nations is excessive. It assumes that transfers (subsidies) from rich nations to poor ones will confer three important benefits. First, it will reduce rich-country resource use. Second, it will help to alleviate global poverty. Third, it will slow environmental degradation in poor countries.

The more pragmatic weak sustainability approach looks to economic growth rather than income transfers to equalise wealth. It seeks to at least maintain, if not enhance, the *total* capital stock passed on to future generations (Daly and Cobb 1989) which comprises three main elements: man-made (or "produced") capital, natural (or environmental) capital and human capital. It accepts that there may be critical thresholds beyond which natural capital assets (such as the ozone layer) should not be reduced. But it assumes, first, that much natural capital (such as mineral resources) may be consumed provided there are sufficiently close substitutes available; and second, that natural capital may be usefully transformed into produced or human capital.

Weak sustainability opposes the suspension of conventional discounting on the grounds that resources exploited now will raise welfare and that, especially in the LDCs, higher living standards are the key to lower population growth and limiting the environmental damage caused by the short time horizons engendered by extreme poverty. Rather, weak sustainability argues that the more effectively capital is used (i.e. the higher its social return) the faster the improvement in welfare and the greater the financial resources available to future generations. This in turn enhances the capacity of future generations to research for, and implement solutions to, environmental problems. It also creates a greater willingness to incur the expenditures required for environmental defence. Peskin (1993) claims weak sustainability is the more humanitarian approach of the two because it seeks to maximise human welfare and stresses medium-term policies which benefit the poor, rather than to reify the environment.

The main implications of this environmental debate for the mining sector are that:

- the income stream from the depleting mineral resource should be maintained by adequate investment of the rents in either human or produced capital;
- the costs of environmental degradation should be internalised by the mines in order to minimise environmental damage;
- adequate compensation should be paid to the host community for disruption during the life of the mine and the loss of livelihood upon its eventual closure.

In fact, most MNCs operating in well-managed economies have accepted these responsibilities, although state-owned firms and small-scale mines have tended to lag. The debate has, however, moved one sage further wit the emphasis shifting to the second strand of natural resource use, namely, the distributional effects. This centres on the so-called "social sustainability" of mining and the

need to "empower" local communities in resist the imposition of "top-down" solutions to development conflicts in which, as in the 1960s and 1970s, the MNC presents a tempting target.

Anti-MNC policies can be either ameliorated or blocked

This widening of the sustainability debate offers great scope for anti-market pressure group intervention. For example, Mikesell (1994) notes that the elements embodied in sustaining social welfare are wide-ranging and often non-quantifiable: they include per capita consumption, equity of income distribution, individual security and political freedom. He adds sagely, however, that their attainment depends not only on the legacy of producers (man-made) capita, natural resources and human capital, but also on technology and socioeconomic structure as well as on the effort expended by future generations themselves.

Recent conflicts in New Guinea illustrate the potential risks involved in mining, but they also suggest some lessons. The risks include the mine exposing the relative material poverty of local communities (which may supply only a few workers to the adjacent well-paid mining towns); MNCs being embroiled in power conflicts between local communities and the central government; and MNCs becoming a target for the enmity of liberals in the DMEs who may be attracted by notions of the "unquantifiable" existence value of "unspoilt" wilderness and non-western culture. Such problems are potentially more intractable than the environmental issues because they are more overtly rooted in conflicts of values and also less amenable to scientific measurement and technical solutions. International financial institutions like the World Bank need to be fully aware of the risk they run in extending their hitherto "rational" approach into such "soggy" issues.

One means of reducing such conflict is for the MNC to request that an external agency performs a "social audit and that it also evaluates the adequacy of compensation payments. A second, and closely-related, solution is to increase the transparency of the debate over the distribution of the mineral rents. This calls for the measurement of the mineral rents so that not only is their distribution among firms, mine workers and the various tiers of government clearly monitored, but also the effectiveness with which the rents are deployed is evaluated. For example, such an audit procedure, if applied to the recent dispute between Ok Tedi and local landowners, might have revealed that any increased transfer of resources to the landowners will occur, not at the expense of the MNC, but at the expense of much poorer regions elsewhere in PNG. The audit might also have drawn attention to the "leakage" to special interest groups in the deployment of mineral rents, more than four-fifths of which goes on immediate consumption (Banks 1997) rather than into the accumulation of productive or human capital which sustainability requires. In dealing with these issues it is important that MNCs adopt rational responses which stress the need to avoid boosting the dependence of communities on the depleting mineral resource.

A second means of ameliorating potential conflicts is to seek to improve the conversion of the mineral revenue stream into sustainable and equitable long-term economic growth. This calls for the encouragement of institutions such as a MRSF which enhance the transparency of the development process and restrict the extent to which politicians can divert mineral revenues to short-term political and personal gain. Encouragement should be given to institutionalising the targeting of welfare spending at lagging regions and poverty alleviation. But if the nature of the political state renders it impervious to such institutional changes, then MNC mines will need to reinforce the enclave character of their operations and pursue strategies (such as those of SPCC in Peru during the 1980s) which eke out investment in the expectation of political change bringing better prospects.

Conclusions

The resource-rich countries as a group, and the mineral economies in particular, have tended to under-perform over the past two to three decades compared with other LDCs. This renders mining MNCs vulnerable to attack by anti-market groups, once their new investments are sunk and their bargaining position thereby weakens. But under-performance is not inevitable. It depends upon the type of mineral (and scale of price shocks) and, most importantly, the capacity of the state to pursue appropriate policies. Problems for MNC mines will most likely occur in mismanaged economies and be triggered by distributional issues, wrapped in environmental rhetoric.

The mismanaged economies are associated with low-autonomy factional states and high-autonomy predatory states which thrive on social tensions linked to ethnic differences and high income inequality. The attack on MNCs will be spear-headed by advocates of strong sustainability, often ex-Marxists, and will focus on natural capital depletion and distributional aspects. The resulting conflicts may be mitigated by social audits to monitor the deployment of the mineral rents and the consolidation of institutions which safe-guard more rational economic policy-making, such as an MRSF. In the last resort, however, some MNCs will need to buffer the enclave nature of their operations and await for political change to bring better prospects.

Note

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References

Alesina, A. and Perotti, R. (1996) The political economy of growth: A critical survey of

the recent literature, *World Bank Economic Review* 8, 351–71.

Athukorala, P. and Jayasuriya, S. (1994) *Macroeconomic Policies, Crises, and Growth in Sri Lanka, 1969–70*, World Bank, Washington DC.

Auty, R. M. (1994) *Economic Development and Industrial Policy,* Mansell, London.

Auty, R. M. (1997) Natural resource endowment, the state and development strategy, *Journal of International Development,* 9, 651–663.

Balassa, B. (1982) Structural adjustment policies in developing countries, *World Development* 10, 23–38.

Banks, G. A. (1997) *Mountain of Desire: Mining Company and Indigenous Community at the Porgera Gold Mine, Papua New Guinea,* Unpublished PhD, ANU, Canberra.

Bruton, H. J. and Associates (1992) *The Political Economy of Poverty, Equity and growth: Sir Lanka and Malaysia,* Oxford University Press, New York.

Daly, H. E. and Cobb, J. B. (1989) *For the Common Good,* Beacon Press, Boston MA.

Daniel, P. (1992) Economic policy in mineral-exporting countries: What have we learned? In: Tilton, J. E. (Ed.) *Mineral Wealth and Economic Development*, RFF, Washington DC, 81–121.

Davis, G. (1995) Learning to love the Dutch Disease: Evidence from the mineral economies, *World Development* 23 (10), 1765–79.

Dos Santos, T. (1969) The crisis of development theory and the problem of dependence in Latin America, In: Bernstein, H. (ed.) *Underdevelopment and Development*, Penguin, London, 57–80.

Findlay, R. (1988) Trade, development and the state, In: Ranis, G. and Schultz, T. P. (Eds.) *The State and Development Economics,* Basil Blackwell, Oxford, 78–99.

Findlay, R. and Wellisz, S. (1993) *The Political Economy of Poverty, Equity and Growth: Five Small Open Economies,* Oxford University Press, New York, 219–55.

Gelb, A. H., Knight, 1. and Sabot, R. (1991) Public sector employment, rent-seeking and economic growth, *Journal of Economic Literature* 101, 1186–99.

Hirsch, F. (1977) *Social Limits to Growth,* Routledge and Keagan Paul, London.

Hughes, H. (1989) *Achieving Industrialization in Asia*, Cambridge University Press, Cambridge.

Krueger, A. O. (1993) *Political Economy of Policy Reform in Developing Countries*, MIT, Cambridge MA.

Lal, D. (1993) *The Repressed Economy: Causes, Consequences, Reform,* Edward Elgar, Aldershot.

Lal, D. (1995) Why growth rates differ. The political economy of social capability in 21 developing countries, In: Koo, B. H. and Perkins, D. H. (Eds.) *Social Capability and Long-Term Economic growth*, Macmillan, Basingstoke, 288–309.

Lal, D. and Myint, H. (1996) *The Political Economy of Poverty, Equity and Growth: A Comparative Study*, Clarendon Press, Oxford.

Leftwich, A. (1995) Bringing politics back in: Towards a model of the developmental state, *Journal of Development Studies* 31, 400–427.

Lewis, W. A. (1978) *Growth and Fluctuations*, London: George Allen and Unwin.

Mahon, J. E. (1992) Was Latin America too rich to prosper? Structural and political obstacles to export-led growth, *Journal of Development Studies* 28, 241–63.

Mikesell, R. F. (1994) Issues in environmental and resource accounting (ERA), Working Paper for EDF Meeting, Oregon. 17

Peskin, H. M. (1993) Sustainable resource accounting, In: RMNO (Ed.) *Sustainable Resource Management and Resource Use: Policy Questions and Research Needs,* Advisory Council for Research on Nature and Environment, The Hague, pp. 89–96.

Prebisch, R. (1963) *Toward a Dynamic Policy for Latin America,* UN, New York.

Ranis, G. (1991) Towards a model of development, In: Krause, L. B. and Kim, K. (Eds.), *Liberalization in the Process of Economic Development*, University of California Press, Berkeley, 59–101.

Ranis, G. and Mahmood, S. (1993) *The Political Economy of Development and Change*, Basil Blackwell, Oxford.

Reed, D. (1996) *Structural Adjustment, the Environment, and Sustainable Development*, Earthscan, London.

Sachs, J. D. and Warner, A.M. (1995) *Natural Resources and Economic Growth*, Mimeo, HIID, Cambridge MA.

Sachs, J. D. and Warner, A. (1996) *Sources of slow growth in sub-Saharan Africa*, Mimeo, HIID, Cambridge MA.

Steer, A. (1996) Ten principles of the new Environmentalism, *Finance and Development,* 33 (4), 4–7.

Turner, K., Pearce D., and Batemen, I. (1994), *Environmental economies. An elementary introduction*, Harvester Wheatsheaf, London.

Williamson, J. G. (1996) Lowest common denominator or neo-liberal manifesto? The polemics of the Washington consensus, In: Auty, R. M. and Toye, J. (Eds.) *Challenging the Orthodoxies*, Macmillan, Basingstoke, 13–22.

World Bank (1992) *World Development Report,* Oxford University Press, Washington DC.

World Bank (1995) *World Tables 1995*, World Bank. Washington DC.

World Resources Institute (1994) *World Resources 1994–95*, Oxford University Press, Oxford. ■