Sustaining Development in Mineral Economies

The resource curse thesis

Richard M. Auty

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SUSTAINING DEVELOPMENT IN MINERAL ECONOMIES

It is widely believed that natural mineral resources are desirable. However, there is growing evidence that this may not always be the case. Indeed, it seems that this 'natural asset' can distort the economy to such a degree that the benefit actually becomes a curse.

In *Sustaining Development in Mineral Economies,* Richard Auty highlights these drawbacks and the devastating effect they can have on developing economies. With reference to six ore exporters (Peru, Bolivia, Chile, Jamaica, Zambia and Papua New Guinea) he outlines how things can go badly wrong. He particularly stresses the need to avoid 'Dutch disease' whereby competitiveness is drained out of the agriculture and manufacturing sectors so that in the long term growth falters.

Sustainable development in mineral economies requires rapid economic growth so that resource-conserving technology can be adopted and diversification is encouraged to complement the depleting mineral asset. In the course of examining the interaction between macroeconomic policy and sectoral performance, clear prescriptions for avoiding these dangers emerge. While accepting that overly-interventionist policies lie at the root of the mineral economies' disappointing performance, the author also rejects fashionable orthodox policies in favour of more pragmatic ones. He argues that the mineral cycle can be smoother and competitive industrialization promoted to ensure that the growth and diversification of the economy will persist through boom and downswing alike. *Sustaining Development in Mineral Economies* offers a systematic examination of the resource curse thesis and the inter-disciplinary approach synthesizes neo-liberal, political, institutionalist and environmentalist approaches.

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THE RESOURCE CURSE THESIS AND MINERAL ECONOMIES

RESOURCE ENDOWMENT AND ECONOMIC GROWTH

The conventional view concerning the role of natural resources in economic development has been that the resource endowment is most critical in the early low-income stages of the development process. It assumes that, as development proceeds and a population acquires more and more skills, those skills are deployed with increasing effectiveness to counteract any resource deficiency (Ginsburg 1957). For example, Maddison (1991) notes that although the resource advantage of Australia and North America influenced their total gross domestic product (GDP) rate of growth by attracting a large inflow of migrants, its influence on per capita GDP levels and rates of growth has been declining over the long term. Moreover, Maddison notes that Australia has a lower per capita income than Japan despite the fact that its per capita resources (based upon land area as a proxy for resource endowment) are 150 times those of Japan and that it also secured a head start in economic development.

However, a growing body of evidence suggests that a favourable natural resource endowment may be less beneficial to countries at low- and mid-income levels of development than the conventional wisdom might suppose. Two important pieces of this evidence are the developing countries' postwar industrialization efforts and the performance of the mineral-rich developing countries since the 1960s. The new evidence suggests that not only may resource-rich countries fail to benefit from a favourable endowment, they may actually perform worse than less well-endowed countries. This counter-intuitive outcome is the basis of the resource curse thesis.

Taking the developing countries' postwar industrialization first, large country size (defined in terms of a combination of geographical area and population) is potentially beneficial to industrialization. This is because large size implies a large domestic market with which to overcome the barriers to new entrants in sectors where there are economies of scale; a diverse resource base with which to generate the foreign exchange required to purchase the capital goods which industrialization requires; and the presence of complementary inputs (including domestic energy sources) for a wide range of industrial processes. Yet Perkins and Syrquin (1989) can find little evidence that the large countries have outperformed small ones in terms of economic growth.

In fact, among the larger newly industrializing countries, the biggest countries like China, India, Brazil and Mexico have made slower progress with industrial diversification than the smaller resource-deficient countries like Korea and Taiwan (Auty 1992). All six countries were pursuing an autarkic (i.e. strongly self-sufficient) industrial policy (AIP) in the 1950s, but the two smallest countries abandoned that policy in favour of a more outward-oriented competitive industrial policy beginning with Taiwan in 1958 and Korea in 1963. The deficient resource bases of the latter two countries meant that they ran up against the foreign exchange shortages of AIP much sooner than the largest newly industrializing countries. These shortages arise out of the slow maturation (i.e. emergence of the ability to compete internationally) of the overly protected manufacturing sectors under AIP.

Instead, Taiwan and Korea reverted to competitive manufactured exports sooner than the larger countries in order to overcome their foreign exchange deficiencies. This meant that, relative to the larger countries, they were deflected from their natural comparative advantage for a shorter period of time so that fewer distortions built up in their economies. By the time the larger countries encountered the AIP foreign exchange constraint in the late 1960s (as their primary product exports shrank relative to the size of the rest of the economy) their industrial policy was difficult to reform. This was due to entrenched powerful vested interests that benefited from the rents (returns in excess of normal profits) which were created by the protection of more and more industrial sectors from international competition.

The second important example of the resource curse thesis is provided by the mineral economies, one subset of which is the

subject of this book. The mineral economies are defined as those developing countries which generate at least 8 per cent of their GDP and 40 per cent of their export earnings from the mineral sector. As such they comprise around one-quarter of all the developing countries. They include two main categories, the hydrocarbon producers and the hard mineral exporters (producers of ores such as copper and tin). Nankani (1979) shows that the mineral economies' economic growth and their social welfare are inferior to those of non-mineral economies at a similar level of development. Yet, this is a counter-intuitive finding since, compared with countries that are deficient in minerals, the mineral resource provides the mineral economies with additional foreign exchange, taxes and an extra route to industrialization. That additional route is via resource-based industrialization which is the downstream processing of the ore into metal and finished products.

The roots of the mineral economies' under-performance *vis-à-vis* other developing countries lie in the mining sector's production function (i.e. ratio of capital to labour), domestic linkages and deployment of mineral rents (Auty 1985). Unlike most (but not all) developing country primary product exports, mineral production is strongly capital intensive and employs a very small fraction of the total national workforce with large inputs of capital from foreign sources. Consequently, the mining sector displays marked enclave tendencies. This means that it yields modest local production linkages (i.e. few local factories are established to supply inputs or to further process the ore prior to export). It also displays low revenue retention since a large fraction of export earnings flow immediately overseas to service the foreign capital investment. Under these circumstances, and in sharp contrast to most other primary product exports, fiscal linkage (i.e. taxes) may dominate the mining sector's contribution to the national economy (Hirschman 1977).

The frequent existence of substantial rents (revenues in excess of production costs and a normal return on capital) on mineral ores can, however, when captured by the government through taxation, destabilize the economy. In particular, the imprudent domestic absorption of mining sector rents is capable of rendering much agricultural and manufacturing activity internationally uncompetitive. This occurs through a process known as 'Dutch disease'. It results from a strengthening (appreciation) of the exchange rate as a consequence of the over-rapid inflow of mineral rents into the

Table 1.1 Investment and growth rates by developing country group

Measure		*Hard-mineral exporters*		*Oil exporters*		*Other middle-income countries*		*Other low-income countries*	
		1960–71	*1971–83*	*1960–71*	*1971–83*	*1960–71*	*1971–83*	*1960–71*	*1971–83*
Investment-to-GDP	Mean	0.21	0.23	0.21	0.28	0.20	0.24	14.3	17.2
	σ	0.06	0.05	0.10	0.10	0.05	0.05	4.1	6.1
Gross IOCR[a]	Mean	0.28	0.07	0.34	0.12	0.32	0.17	0.26	0.17
	σ	0.05	0.02	0.06	0.05	0.02	0.01	0.03	0.04
Growth of GDP per capita (%)	Mean	2.5	−1.0	2.9	1.9	3.7	2.0	1.3	0.7
	σ	1.1	1.2	1.7	3.7	1.8	2.3	1.4	2.2
Number of countries		10	10	10	10	29	29	20	20

Terms of trade indices (relative to unit value of manufactures imported by developing countries)	*Metals and hard minerals*	*Petroleum*	*Agriculture*
1960–62	100	100	100
1970–72	104	92	91
1980–82	78	636	84

Source: World Bank: World T
Note: [a] Incremental output-to Tables database, Commod -capital ratio. dity Price Forecasts

domestic economy. In some cases, such as Mexico, Venezuela and Nigeria during the 1979–81 oil boom, virtually no non-mining activity remained internationally competitive.

In an analysis of Dutch disease Krugman (1987) argues that competitive activity lost during exchange rate appreciations may not be easily restored during subsequent downswings. This is indeed a principal finding of Gelb's (1988) analysis of the windfall deployment of six oil exporting countries during the 1974–8 and 1979–81 oil booms. Gelb concludes that, far from improving economic performance, mineral booms may be particularly harmful. This is because the economic gains made during the upswing are frequently more than offset by the damage done during downswings. The oil exporters experienced a marked deceleration in economic growth during the oil booms. In fact, the oil exporters were strongly outperformed through the oil booms by the low-income Asian and East Asian oil importers (Table 1.1).

This book examines the resource curse thesis with reference to the second group of mineral economies, the hard mineral exporters (which, it will be recalled, are the producers of copper, bauxite and tin). It analyses their response to the series of economic shocks which impacted the post-1960s world economy. It complements Gelb's analysis of the oil exporters' response to mining *booms* by examining the response of the hard mineral exporters to the extended price *downswing* which the oil shocks triggered in the case of most hard minerals.

Table 1.1 confirms that, like the oil-exporting countries, the hard mineral economies tended to under-perform compared with the developing countries as a whole. Despite sustaining significantly higher investment levels than the low-income non-mining economies in 1971–83 (at 23 per cent and 17 per cent of GDP respectively), the growth in per capita GDP of the hard mineral economies was –1 per cent compared with +0.7 per cent for the non-mineral economies. Although, as Table 1.1 shows, the terms of trade (i.e. the ratio of export prices to import prices) declined slightly more for the mineral economies through the 1970s, the difference is not great enough to explain the variation in per capita economic growth rate—especially given the mineral economies' significantly higher rate of investment. Table 1.1 suggests that the cause of the under-performance of the hard mineral economies lies not so much in a lack of investment resources as in the inefficiency with which those investment resources were deployed.

The hard mineral economies are geographically concentrated in the developing Americas and sub-Saharan Africa. The present study focuses on the developing Americas since their economies are more sophisticated than those of sub-Saharan Africa and their data sources are more reliable. Four such countries are examined: two are copper producers (Chile and Peru); the others are producers of tin (Bolivia) and bauxite (Jamaica). The selected countries span the full range of experience in mineral sector management, from the strong recovery of Chile to the protracted decline of Peru, with Jamaica and Bolivia occupying intermediate positions. However, in order to test the general validity of the conclusions drawn from the developing Americas' sample and to facilitate cross-cultural comparison, two other producers (both copper exporters) are included: one from sub-Saharan Africa (Zambia) and the other from developing Asia (Papua New Guinea (PNG)).

THE OBJECTIVES AND PRESENTATION OF THE STUDY

This study seeks to explain why the hard mineral economies have performed less well than the developing countries as a whole and to draw policy lessons. It uses inter-country comparison because that approach isolates those problems which a set of countries share from those which are specific to one country. In this way, it is possible to overcome the principal weakness of the case study approach, namely doubts about its general applicability.

Chapter 2 examines the literature on the performance of the mineral economies in more detail. It pays particular attention to the research on Dutch disease effects and to the dispute over appropriate policy responses between structuralists and orthodox economists. But it goes beyond the macroeconomic level on which that dispute is normally conducted to consider the sectoral implications for both mining and the non-mining tradeables (i.e. those traded activities such as agriculture, manufacturing and tourism whose competitiveness is so strongly impacted by fluctuations from the mining sector). A key consideration here is the role of industrial policy since many mineral economies have used their mineral windfall to underwrite a more autarkic industrial policy than would otherwise have been possible in the absence of the mining sector's foreign exchange earnings. In this respect there is an interesting parallel with

the largest newly industrializing countries which, as noted earlier, also used their rich resource endowment to pursue AIP.

Chapter 3 turns to empirical analysis with a comparison of the economic and political pre-conditions during the late 1960s and early 1970s. It asks how resilient the non-mining economy of each country was prior to the mid-1970s price downswing. It uses three criteria: the political resolve of the government, the degree of mineral dependence (including the extent of Dutch disease) and the growth performance of the economy. The chapter ranks the four developing American economies in terms of their potential to ride out adverse external shocks.

Chapter 4 completes the overview with an examination of the variation in the external conditions which each of the four developing American countries faced in 1974–90 and how they reacted to them. It measures the severity of the external shocks (caused by abrupt changes in the price of their exports and imports and the interest charged on their foreign debt). The size of the price and interest rate shocks is measured as a fraction of GDP for each country. The differing responses to the shocks are measured in terms of trends in each country's economic growth and structural change through the 1970s and 1980s. The results are summarized in terms of two basic economic trajectories: one is a cumulative decline and the other is a rebound into sustained improvement.

Part II examines the macroeconomic adjustment of each of the developing American countries in four separate chapters. It traces the intensification of the adjustment problem through the debt crisis as mineral prices fell and foreign borrowing became a less feasible option for cushioning reform. The analysis focuses on the macroeconomic response to the external shocks, and especially the speed with which real exchange rate and fiscal corrections were made in response to the external deterioration. The accumulation of external debt is described along with the degree to which it could be serviced.

The analysis of the individual country responses begins with Bolivia in Chapter 5, the only one of the four developing American countries to experience strong positive shocks through both the mid-1970s and the early 1980s. Consistent with the resource curse thesis, Bolivia was unable to turn its windfalls to good use, even when political and economic pre-conditions were relatively favourable. This underlines the dominance of the policy variable in determining the outcome.

Chapter 6 turns to Peru and focuses on the debate over orthodox and structuralist policies which was particularly sharp in that country. Although Peru faced the first shock with potentially the most favourable combination of political and economic conditions, it experienced the most severe deterioration. Chapter 6 reviews this outcome in the light both of Sachs's (1989) speculation concerning the impact of a polarized income distribution on policy choice and of Lago's (1990) lament over the apparent absence of a learning curve in Latin American culture.

Chapter 7 contrasts the accelerating decline traced out by the Peruvian economy under vacillating policy conditions with the sustained economic progress of Chile under persistently orthodox macroeconomic policies. Chile became the model Latin American economy as its tradeables sector reaped the benefits of the economic adjustment which it had launched in the mid-1970s. But the Chilean experience suggests an important qualification to the endorsement of orthodox macroeconomic policies. It suggests that the volatility of the mineral sector and its distinctive economic linkages (with fiscal linkage likely to dominate) render it a risky lead sector. This implies that policy should therefore not be sector neutral, as doctrinaire orthodoxy insists. Rather it should recognize the need to ensure competitive diversification of the non-mining tradeables, and especially manufacturing. In other words, the mineral sector should be used as a bonus with which to accelerate structural change.

The analysis of the macroeconomic policy responses of the four developing American countries concludes with Jamaica in Chapter 8. This chapter also anticipates the transition towards the micro studies in the next section of the book (Part III). This is because Jamaica's long-delayed recovery from the mid-1970s external shock confirms the inadequacy of doctrinaire orthodox policy noted in the preceding chapter and underlines the need for a more active supply-side commitment to the non-mining tradeables. Jamaica consistently underestimated the scale of the adjustment it was required to make and neglected the competitive diversification of key non-mining tradeables sectors, above all manufacturing.

The supply-side factors are analysed in Part III. Chapter 9 examines the resilience of the mining sector in the face of external shocks (and in response to the macroeconomic policies which they engendered). Success is measured in terms of the mining sector's capacity to retain global market share, to match international productivity trends and

to generate adequate levels of investment (*and* effectively deploy them). An interesting phenomenon which is examined is how the mining sector may be severely damaged even after it has become the sole prop for the economy. The answer lies in the transfer of financial resources to the non-mining sector in a misguided effort to staunch rising unemployment by propping up the latter.

Chapter 10 analyses the non-mining tradeables sector. Trends in each country's mineral dependence and Dutch disease indices are measured along with shifts in sectoral competitiveness, including the changing structure of exports. Given the prolonged mineral price downswing experienced by most countries, these sectors needed to grow in relative importance in order to offset the loss of foreign exchange and taxation from the mining sector. Marked differences in country performance emerge which can only be partially explained by macroeconomic analysis.

Part IV turns to the non-American countries and analyses PNG in Chapter 11 and Zambia in Chapter 12. While the disappointing performance of Zambia echoes that of other sub-Saharan African countries, notably Zaire, the experience of Botswana (Harvey 1987) cautions against strict cultural determinism of the type advanced by Lago (1990). PNG has more in common with Botswana than with either Zambia or any of the developing American mineral economies.

Like Botswana, PNG benefited from a late start (it entered copper mining in the early 1970s) and also from the dominant position of land-owning groups (who were able to oppose the entrenchment of rent-seeking industrial interests) in policy formulation. However, despite these advantages, the PNG trajectory of economic growth is one of treading water: the country failed to promote a competitive diversification in its non-mining tradeables sectors. As with Chile and Jamaica so with PNG: orthodox macroeconomic policy appears insufficient on its own to achieve competitive diversification of the economy.

Zambia's economic trajectory is one of cumulative economic decline which, in its scale, outstripped even that of Peru. This is especially worrying since Zambia's main copper resource is expected to be exhausted within two decades. In fact, Zambia's decline was already identifiable during the pre-shock years as, echoing the largest newly industralizing countries, an urban elite became entrenched which greatly impeded downswing adjustment. Zambia permits a careful exploration to be made of the negative synergy between tardy

macroeconomic adjustment and the corrosion of the economy's lead sector.

The policy lessons for sustained development in mineral economies through the 1990s are examined in the concluding chapter. They stress the importance of a pragmatic orthodox macroeconomic policy—which includes the important proviso that the mineral sector's capacity to trigger extreme and damaging shifts in the real exchange rate must be muted. This requires the abandonment of doctrinaire orthodoxy's sectoral neutrality: instead, the mineral sector should be regarded as a bonus with which to promote competitive economic diversification rather than as the backbone of the economy.

Part I

COPING WITH MINERAL PRICE DOWNSWINGS

2

MANAGING MINERAL ECONOMIES

The literature

MINING LINKAGES AND MINERAL-BASED DEVELOPMENT

In the preceding chapter it was argued that the capital-intensive production function of mining results in a configuration of economic linkages which has proved especially difficult for the governments of most mineral economies to manage. Of the four sets of economic linkages identified by Hirschman (1977), namely backward, forward, final demand and fiscal, the latter has tended to dominate. Historically, this has meant that, prior to the postwar emphasis on global development, mines in developing countries tended to function as economic enclaves. They transmitted a strong growth stimulus to distant metropolitan regions but their local economic impact was only modest.

More specifically, productive linkages for both inputs into mining and further mineral processing prior to export have been disappointing. Meanwhile, final demand linkage (the activity stimulated by the domestic spending of the profits and wages generated by the mines) has also been small. This results from two factors: first, the sector's typically heavy dependence on foreign capital which creates large external revenue flows to service equity and loan capital; and second, the modest local spending which arises from the fact that, although the workforce may be highly paid, it is also highly productive and invariably small. Consequently, fiscal linkage (taxation) has been the mining sector's principal domestic economic stimulus.

One structuralist explanation for the under-performance of the resource-rich developing countries which became increasingly fashionable through the 1960s was the negative role attributed to

multinational corporations (MNCs). For example, Girvan (1971) argued with reference to Jamaican bauxite that less than 3 per cent of the total added value created by the bauxite-aluminium production chain accrued to the mining country. He attributed this to a combination of the aluminium MNCs' vertically integrated product strategy (in which bauxite was mined, refined, smelted and fabricated by a single firm) and an oligopolistic market (dominated by six large corporations).

Girvan claimed that this permitted the MNCs to set prices so that they could limit their tax liabilities through transfer pricing and also sub-optimally locate bauxite processing outside developing mining countries. In this way the absence of a fully competitive mineral market denied the mineral economies the beneficial linkages from both taxation and the downstream processing of their mineral resource. In a similar vein, Evans (1975) has argued that MNCs negatively impacted Brazilian industrialization.

Yet two highly successful resource-poor countries, Singapore and Korea, each in very different ways, proved very adroit at tapping MNC technology and investment for rapid economic diversification (Hughes 1988; Haggard 1990). Moreover, the conclusions of Girvan concerning the aluminium MNCs are flawed. They rest largely on the assumption of minimal price competition (arising from the oligopolistic structure of the aluminium market). His conclusions therefore ignore the intense cost competition between aluminium producers in which operation at a low-cost location is a key advantage. Such considerations on the part of the corporations dictated a geographical distribution of investment which, before the oil price rises, favoured OECD market locations for downstream bauxite processing (Auty 1983b). Similarly, following the higher energy prices since the mid-1970s, the aluminium MNCs increased their investment at cheap-energy locations in developing countries.

In fact, postwar developing country governments have successfully boosted the share of mineral benefits accruing to the host economy, so that the role of fiscal linkage has been strengthened (Mikesell 1975; Kessel 1977; Thoburn 1977; Ayub and Hashimoto 1985). The developing countries' mining sectors have become capable of supplying a large share of foreign exchange and taxes. But they employ only a small fraction of the labour force. The revenues can be substantial in the presence of significant mineral rents. Ironically, the increasingly successful capture of revenues from mining MNCs

brought largely unforeseen problems of making effective use of the taxes for development.

The problem has been exacerbated by the fact that such revenue flows have become increasingly volatile since the 1960s (Auty 1987; Daniel 1990). The roots of this volatility lie in the international mineral markets which exhibit short- and medium-term rigidity in response to changing demand (Auty 1985). This reflects the difficulty of adjusting large sunk investments with high fixed costs to unexpected changes in global and regional demand (Auty 1987). The net result has been to intensify the extent to which the economic contribution from mining takes the form of a series of booms and downswings. In the absence of measures to smooth out the injection of mineral revenues into the economy, such revenue swings impart a negative synergy to the non-mining tradeable sectors. That negative synergy has become known as Dutch disease and, while it can result from a boom in most commodities, it tends to be particularly damaging in the case of mining (Wheeler 1984).

DUTCH DISEASE AND SUSTAINED DEVELOPMENT

Dutch disease manifests itself in the premature shrinkage of the agricultural sector compared with non-mineral economies at a similar stage of development and also the under-development, or extreme protection, of the manufacturing sector. It is especially damaging in the case of mining, as opposed to most 'soft' commodities, because during mineral booms agriculture as well as manufacturing can become uncompetitive and dependent on import protection and subsidies. The resulting insulation of a large segment of the non-mining tradeables from import competition then makes it especially difficult to generate the foreign exchange and tax revenues needed to substitute for those lost from mining during a mineral downswing.

Yet, as interest mounts in the issue of sustainable development, it is evident that the literature in that field has neglected the central importance to mineral economies of the minimization of Dutch disease (Auty and Warhurst 1991). That importance arises from the fact that the more conventional requirements of sustainable development, namely provision for depletion of the mineral asset and reduction of environmental degradation, are difficult to achieve in an economy which has been damaged by Dutch disease as a consequence of severely unstable foreign exchange flows and tax revenues.

El Serafy (1981) has shown that with a 5 per cent discount rate the fraction of net mineral revenues (i.e. the revenue remaining after covering all costs) which must be allocated to investment in order to replace the depleting mineral resource is less than one-third when twenty years of reserves remain. This approximates to the Zambian case in 1990 or to that of Trinidad and Tobago in 1985 on the eve of the sharp oil price decline. The fraction of net receipts which can be regarded as true income (as opposed to that required for the creation of substitute income-earning assets) rises as the longevity of reserves increases.

For example, under El Serafy's assumptions, countries with more than fifty years of reserves (the more typical hard mineral economy case and also the situation of the low-absorbing oil-exporting countries like Saudi Arabia) need invest less than one-tenth of net receipts to replace the depleting asset. However, in economies where Dutch disease problems are not contained, the resulting macroeconomic problems cause a significant weakening of the non-mining tradeables upon which long-term growth depends. Moreover, the resolution of these problems inevitably takes priority over any consideration of environmental improvement. Consequently, for most mineral economies, sustainable development means first muting the potentially corrosive impact of the mining sector on agriculture and manufacturing. Attention can *then* be directed at replacing the depleting asset and reducing environmental degradation.

That corrosive impact of Dutch disease has been traced by Corden and Neary (1982) in terms of a three-sector model which is adopted in the present study. The model comprises the lead (mineral) sector, a lagging sector (the non-mining tradeables such as agriculture and manufacturing) and a non-tradeables sector (construction and services). Corden and Neary see two effects at work, the spending (demand-side) effect and the resource movement (supply-side) effect. During a mineral boom the domestic spending effect of the mineral windfall causes the price of non-traded goods (mainly services) to rise relative to the price of imports and of domestically supplied traded goods (which are subject to price restraints by way of international competition). Real currency appreciation (strengthening) occurs so that the exchange rate is overvalued for producers in the lagging sector. This makes it more difficult for agriculture and manufacturing to compete with imports.

The second effect of a boom according to the Corden and Neary model, the resource movement effect, is triggered by the prospect of

higher returns in both mining sector and service businesses. It takes the form of a shift in labour and capital out of the lagging traded sector, causing its output to grow more slowly or even to contract. Although such boom problems are faced by all primary commodity exporters, they are more acute in mineral economies. As noted earlier, this is because of the volatility of mineral prices; the concentration of the windfall gains on the government (assuming effective taxation policies to capture resource rents) and the small highly paid mine workforce (aptly described as a labour aristocracy); and the rigidity (slow adjustment to improved prices) of much of the non-mining tradeables sector.

Developing country governments find commodity windfalls difficult to deploy prudently. They tend to promote too rapid a rate of domestic absorption so that they amplify the boom effects. This in turn expands the service sector and corrodes the attraction for both investors and employees of the lagging (non-mining tradeables) sector. Such amplification of boom conditions is also fed through the demonstration effect of high mining sector wages which feeds popular pressure for the immediate consumption of the windfall (Seers 1964).

The net effect is an expansion of subsidies and spiralling non-mining wage increases that are unrelated to productivity. Such increases are particularly easily transmitted from mining and services into the manufacturing sector when that sector enjoys import substitution protection, as is the case under an autarkic industrial policy. Similarly, the potential for unemployment during the boom in the increasingly uncompetitive agricultural sector may lead to subsidies and protection there also. In this way a sizeable fraction—and in some case all—of the non-mining activities may be rendered internationally uncompetitive and consequently sluggishly responsive to market signals. Yet mineral price downswings tend to emerge quickly and require rapid compensatory expansions from the lagging sectors.

THE POLICY RESPONSE TO MINERAL PRICE VOLATILITY

The volatility of the mineral-driven exchange rate lies at the root of the Dutch disease corrosion of the non-mining tradeables sectors. Wheeler (1984), in an econometric analysis of sub-Saharan African countries, demonstrated that the mineral economies had greater

difficulty in handling commodity price volatility than did non-mineral economies. Gelb (1988) confirms the problems of mineral price volatility and explains the difficulties in a study of six oil-exporting countries during the 1974–8 and 1979–81 oil booms. He found that even strong governments have difficulty resisting pressure both for over-rapid windfall absorption during booms and for delayed adjustment to price downswings.

According to Gelb, effective mineral sector management encounters four critical problems: an insufficiency of saving during booms; the establishment of unsustainable patterns of consumption and investment during booms; the neglect of the competitiveness of the lagging non-mining tradeables sector (agriculture and manufacturing) during the booms; and tardy adjustment to post-boom downswing.

Taking windfall saving first, Gelb shows that none of the so-called high-absorbing (or capital-deficient) oil producers accumulated sufficient reserves during the booms. Yet the accumulation of savings performs two important functions: it slows the rate of domestic windfall absorption through investment in overseas financial instruments and it provides a cushion to ease adjustment through any subsequent downswings. As shown below, the over-rapid absorption of windfalls triggers inflation and establishes unsustainable patterns of consumption and investment.

Figure 2.1 plots the absorption of the oil windfalls in the six high-

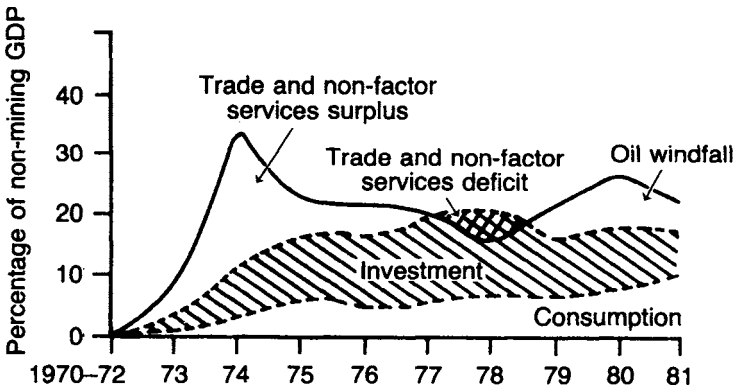

Figure 2.1 Oil windfalls and their uses, 1973–81: unweighted average of Algeria, Ecuador, Indonesia, Nigeria, Trinidad and Tobago, and Venezuela
Source: Gelb 1988

absorbing countries and shows that only the unexpected second oil shock saved them from moving deeply into deficit in 1979. In fact, far from accumulating savings, some countries actually built up sizeable debts during the booms by using their oil reserves as collateral for foreign loans. When oil prices failed to conform with the optimistic projections of 1979–80, such oil exporters faced especially harsh adjustment. Their problems strongly resemble those of the hard mineral economies studied here which relied heavily on foreign loans, rather than adjustment of their production structure, to adapt to the mineral price falls during the mid-1970s.

As to the second critical problem identified by Gelb—the patterns of consumption and investment during the oil booms—the oil exporters imprudently allowed consumption to expand by allowing tax rates and key prices to lag inflation. The prices of domestic goods such as energy and basic foods fell well below international levels. Import prices also declined in real terms on account of real exchange

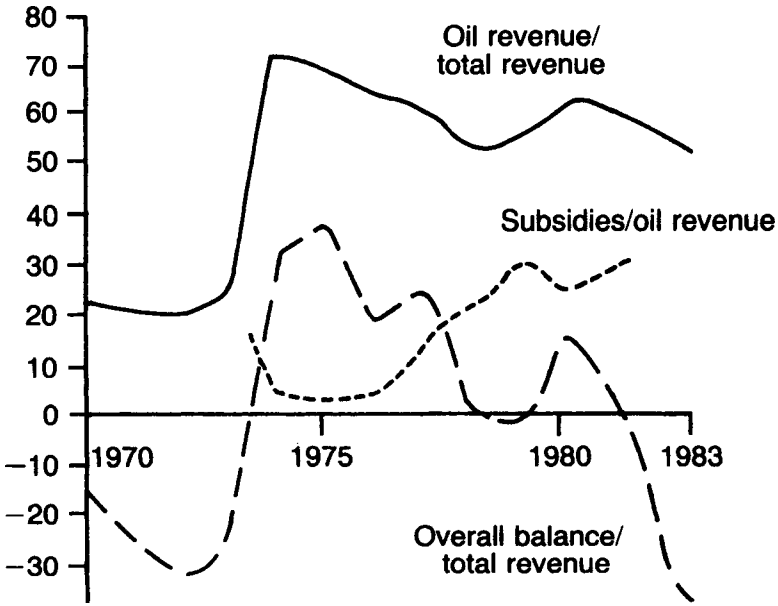

Figure 2.2 Trinidad and Tobago: fiscal evolution
Source: Gelb 1988:283

rate appreciation, increasing the capacity of the local population to consume imported goods. Figure 2.2 traces the trend in government expenditure for Trinidad and Tobago through the booms, showing the ominous growth of subsidies.

As for investment during the booms, although investment levels rose above pre-shock rates, the projects constructed performed poorly (Auty 1990a). The oil exporters showed a marked preference for downstream mineral processing (resource-based industry (RBI)), the competitiveness of which depended heavily on the persistence of resource rents from the energy input. Their over-ambitious RBI projects, along with an expansion in infrastructure provision, invariably breached domestic implementation capacity. There simply were not sufficient workers (skilled and unskilled), materials and transport facilities to prevent sharp cost inflation. The resulting cost overruns of from 50 per cent to more than 200 per cent impaired the viability of the completed projects. In the case of RBI (which was intended to provide an additional stream of export earnings), such cost overruns along with chronic overmanning and the failure of the expected resource rents to match expectations turned the projects into resource sinks which lost money rather than generated new foreign exchange, taxes and capital (Auty 1990a).

The failure of many RBI projects to meet expectations compounded the third problem, neglect of the non-mining tradeables sector. In fact, the neglect resulted in part from over-optimistic expectations for both mineral prices and RBI output and partly from reliance on real exchange rate appreciation (i.e. strengthening) to cheapen imports and thereby dampen inflationary pressures. But the resulting Dutch disease effects in terms of the relative (and even absolute) shrinkage of agriculture and the additional loss of competitiveness by import substitution industry were significant. They intensified the rigidity of the non-mining tradeables and thereby impaired the resilience of the mineral economies through the oil price downswing.

The fourth and final difficulty encountered by the oil exporters was that their adjustment to the oil price falls was invariably too little too late (Auty 1990a). The weakened non-mining tradeables sector rarely compensated for the diminished stream of foreign exchange and tax revenues from oil. Nor could the faltering RBI fill the gap since the potential rents upon which much of its profitability depended evaporated when energy prices collapsed. The consequences

of the badly faltering supply-side response were compounded by the inability to rein back demand.

The required real depreciation of the exchange rate, cuts in public expenditure and increases in non-oil taxes were difficult to implement. Perhaps governments expected to be rescued from such unexpected and difficult decisions by a renewed oil boom. Overall, the resulting high costs of downswing adjustment in most oil-exporting countries swamped any gains made during the booms.

The problems of *downswing* adjustment in mineral economies are analysed more closely here than by Gelb (1988) who, of necessity, focused more on the mineral booms. In addition to examining producing country responses to mineral price *decline*, the present study extends Gelb's work in two other ways, both of which are examined in more detail in subsequent sections. The second way is through a more detailed examination of the political economy of individual country responses. In particular, this study employs the concepts of positive and negative feedback loops to trace the cumulative interaction of three key variables: government resolve, policy choice and external shocks. Such an approach provides a long-term perspective which yields insights additional to those derived from the more conventional economic viewpoints.

A striking feature of the policy response of governments in mineral economies is the persistent tendency towards over-optimism concerning future mineral prices. This proved especially damaging for the hard mineral economies during the 1979–81 mineral boom, as was also the case after that boom for the oil exporters (Auty 1988). The misplaced optimism had high costs in terms of resource misallocation which showed itself in an incautious attitude towards maintaining the competitiveness of the mining sector as well as in the tolerance of entrenched rent-seeking interest groups, usually urban-based, which retard competitive economic diversification.

A third extension of Gelb's work arises from a more detailed examination of micro aspects, notably the response of the mining and non-mining tradeables sectors to price swings. Gelb was unable to explain the unexpectedly weak supply-side responses of the oil-exporting countries because of the predominantly macro focus of his study. The weak supply-side response partly reflects the adverse impact of Dutch disease and its associated macroeconomic upheaval arising from mineral price swings. It also reflects the failure to safeguard the mining sector and non-mining tradeables from damaging politically driven intervention, such as the imposition of

mining taxes which are not related to profitability. The fact that this damaging form of intervention may persist in the mining sector, even after macro mismanagement has rendered mining the economy's only viable sector, is further testimony to the relentlessness of cumulative economic deterioration.

THE CONTROVERSY OVER DOWNSWING MACROECONOMIC POLICY

Although some sort of consensus concerning the appropriate macroeconomic responses to the mineral economies' problems had emerged by the 1990s, for much of the previous two decades the issue has been controversial. Basically, the debate has been polarized between a rather doctrinaire orthodoxy, associated with dominant groups in the World Bank, and the Latin American structuralists like Singer and Prebisch (Daniel 1990). The former have argued for the primacy of market forces with the government concentrating on the correction of fiscal and trade gaps and intervening to assist structural change only in response to market failure.

The structuralists are less enamoured with market-driven solutions, arguing that international trade encouraged the developing countries to concentrate on primary product exports whose terms of trade declined *vis-à-vis* manufactured goods. Such exports often displayed undesirable patterns of linkages (of which the mineral enclave has been an extreme form). Government intervention was required to restructure the economy and to promote domestic manufacturing through a policy of import substitution. The protection afforded from international competition to infant industry was intended to be temporary and tariff barriers were to be lowered when competitiveness had been achieved. Export-led growth was not favoured on the grounds that it drew resources away from the domestic market and therefore from domestic consumption.

The Latin American structuralists reject orthodox macroeconomic prescriptions and favour an enlarged government role in sectoral promotion. They argue that the developing countries differ from the industrial countries because their traded sectors characteristically display a lagged response to macroeconomic incentives, notably exchange rate shifts (Schydlowsky 1986). There is some empirical support for the structuralist view concerning sectoral rigidity and, as a result of this, orthodox economic prescriptions which require a

real depreciation of the exchange rate and public expenditure cuts in the face of a mineral price downswing) may require some modification.

The structuralists argue that bottlenecks in the economy hamper the required smooth adjustment to a downswing which a currency depreciation and public expenditure cuts are meant to achieve. Moreover, such measures feed inflation. Schydlowsky (1986) argues that the rapid adjustments which market-based solutions require can be made by very few Latin American economies. His view receives some support from recent research, including work done within the World Bank itself. That work suggests that the orthodox perspective overestimates the capacity of pre-newly industrializing developing countries to respond flexibly to exchange rate shifts and that dominant mineral sectors exacerbate such problems (Faini and de Melo 1990).

If this is correct then, instead of adhering to sectoral neutrality, orthodox policy in the mineral economies should guard against the mineral sector's potential to inflict structural damage. The abrupt exchange rate shifts which the fluctuations in revenue flows from the mineral sector trigger must be muted. The diversification into competitive non-mining tradeables which will be capable of responding promptly to market signals needs to be enhanced. In this way the potential damage which mineral price swings inflict on the non-mining sector by either causing once-for-all closures during booms (Krugman 1987) or triggering excessive levels of protection can be minimized. Such diversification is also consistent with sustainable long-term development.

In contrast, the doctrinaire orthodox view sees past Latin American state intervention as the root cause of the region's economic problems, not the least of which is precisely that rigidity of sectoral response which the structuralists cite in their defence. In the orthodox view, such rigidity arises from state intervention that has been both excessive and misguided. Developing country governments are therefore an important source of the very market failures upon which structuralists base their case *against* the orthodox approach (Lal 1983).

Moreover, the structuralists' impatience with recession and the associated desire for 'growth-based' solutions has prompted counter-productive populist reflations. Sachs (1989) has drawn attention to the recurrence of such populist booms in postwar Latin America and to their self-defeating nature. He ascribes their origin to the large income inequalities characteristic of many Latin American

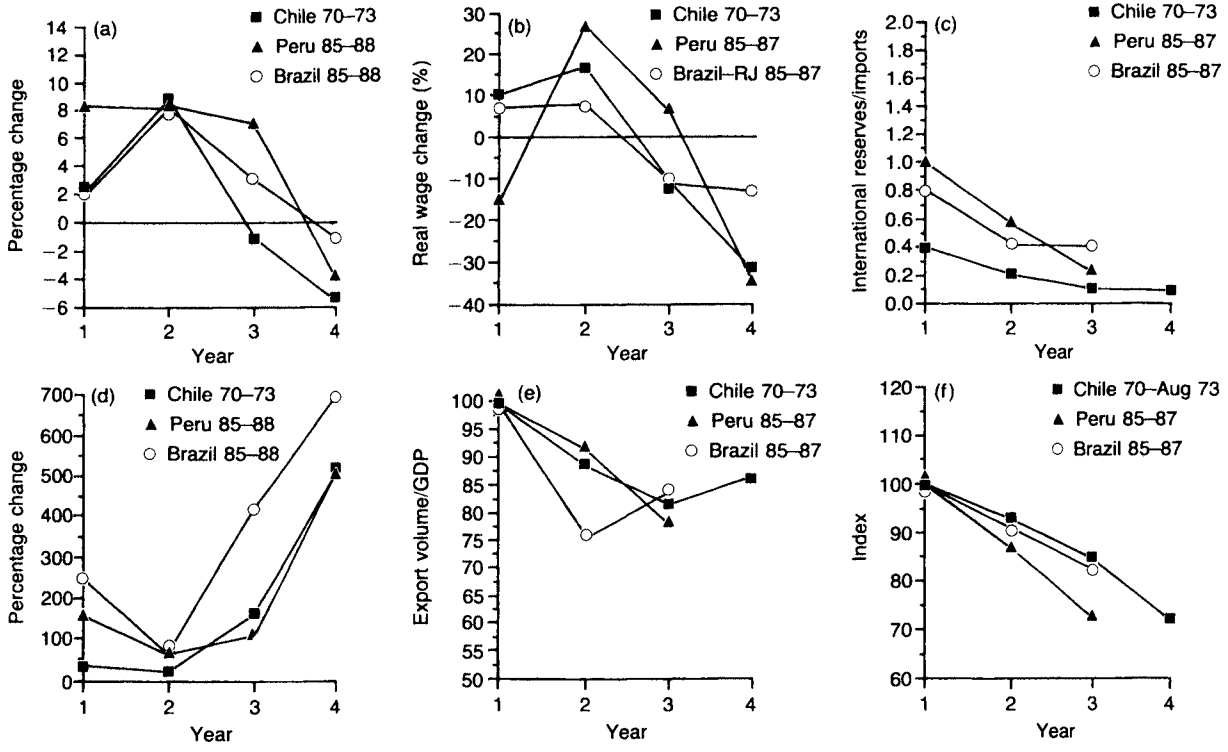

Figure 2.3 Three populist booms in Latin America; (a) GDP growth; (b) real wages; (c) ratio of international reserves to imports; (d) inflation (consumer price index); (e) index of export volume to GDP; (f) real exchange rate index (average of each period)

countries and the resulting political pressure to avoid the deflationary and growth-retarding stabilization policies associated with economic orthodoxy.

Figure 2.3 traces out the stylized facts of the populist boom sequence: an initial surge in real wages and public spending leads to rapid economic growth as idle capacity is used. However, inflation accelerates and the trade gap widens as imports surge and some exports are diverted to the home market. As inflation surges and the fiscal deficit expands, the loss of business confidence prompts capital flight out of the country. The initial growth proves unsustainable and, within around four years of the launch of the sequence, incomes fall back below their level at the onset of the populist boom. It is the recurrence of such counter-productive policies which leads Lago (1990) to query the existence of a learning curve in Latin American economic development.

The orthodox view calls for prompt adjustment as the successful resolution of the mineral economies' macroeconomic crises. The exchange rate will adjust to achieve the required expansion of non-mining tradeables during a mineral downswing. Governments merely need to keep a careful eye on mineral price trends and estimate the 'permanent' income from the mineral sector. In several recent studies, the importance of the twin orthodox policy pillars of fiscal prudence and a commitment to a competitive exchange rate has been demonstrated (Pinto 1987; Gelb 1988; Auty 1990a). The evidence includes a cross-comparison of small economies that embrace PNG as well as Botswana and Malawi (Harvey 1987). But such orthodoxy, while a prerequisite for sound macroeconomic performance, is not a sufficient condition. The estimation of permanent income is exactly what the governments of mineral economies have been unable to perform well. In addition, the lagged supply-side response, noted by Faini and de Melo (1990), underlines the need to consider the role of micro policy variables which might complement an orthodox macroeconomic stance.

MICRO POLICY: MINERAL SECTOR AND INDUSTRIAL POLICY

As outlined above, the orthodox case assumes that the exchange rate will elicit an appropriate supply-side response provided that government policy has been fiscally prudent and encouraged competitive markets. Interventions in the pursuit of sectoral goals

such as an industrial policy or the domestication of ownership in the primary sector (notably farms and mines) are viewed as likely to be damaging.

However, other empirical evidence cited earlier suggests that in economies whose leading sector is subject to price volatility, such as mineral exporters, the commodity-driven exchange rate shifts require muting. An important instrument for achieving such an outcome is the mineral stabilization fund. Two other important elements of a sound mineral sector policy are a tax regime which is sensitive to profitability and measures to safeguard the commercial autonomy of both private and state-owned enterprises.

Attempts to control price fluctuations through producer cartels such as OPEC and the International Bauxite Association (IBA) have encountered great difficulty in securing agreement in the face of the differing interests of the member countries. An alternative is for the producer country to create an internal buffer with which to shield its economy from unexpected revenue shifts. The mineral stabilization fund provides such a buffer, usually by segregating mineral revenues from other sources of government taxation. Such a fund works by targeting an expected price (preferably a cautious one) and accumulating reserves if the actual price outcome exceeds that expected. Such reserves can be sterilized through overseas investment and brought back into the country to bolster public funds during a downswing and thereby lengthen and facilitate the period of adjustment to below-target revenues.

A mineral stabilization fund assumes a taxation regime which effectively creams off windfall revenues without deterring long-term investment in the mining sector. The prospect of *ex post* changes in the tax regime will cause investors to seek higher returns than would otherwise be the case and this will reduce the likelihood that projects proceed (Daniel 1990). The solution lies in a tax regime which assures an appropriate percentage return on the capital at risk, but takes a proportionately greater share for the host government if the return exceeds the target. The conditions are established in advance of the mineral project negotiations (Mikesell 1975).

The fact that such taxation regimes have been by no means common reflects the antagonism shown by many developing countries to their foreign-dominated mineral enclaves. Such antagonism triggered a wave of nationalizations of mining firms in developing countries which reached a peak in the late 1960s and early 1970s. Radetzki (1985) has been optimistic about the outcome: he suggests

that, although the initial performance of state enterprises might be disappointing, over a ten to fifteen year learning curve levels of efficiency would rise towards those of the MNCs. In fact, in many instances the nationalization led to a cumulative decline in performance as managerial turnover increased, investment was skimped and a militant labour force tested the depths of the new state owner's pocket. Central to this deterioration has been insufficient autonomy for the management to pursue commercial policies (Auty 1990a). There are important policy implications in this.

Similarly counter-productive nationalistic policies lie at the root of the rigidity of the lagging (non-mining tradeables) sector. There is evidence that a large agricultural sector facilitates adjustment to mineral price downswing (Auty 1990a). One consequence of this, which is important for the predominantly mid-income-level countries of Latin America, is that middle-income mineral economies are more vulnerable to price swings than low-income ones. The Dutch-disease-induced shrinkage of the agricultural sector tends to be very large in such mid-income countries in relation to the historical (Syrquin and Chenery) norms. The problem of a weak agricultural sector becomes critical in mid-income mineral economies whose manufacturing sector has been promoted primarily through overly-protectionist import substitution.

As noted in Chapter 1, resource-rich countries (whether they are mineral economies or not) have a predilection to tolerate the tardy maturation of the manufacturing sector compared with resource-deficient countries. In most mineral economies there is a strong case for regarding much of the manufacturing sector as part of the non-mining tradeables sector (Lewis 1982). This has been an important source of rigidity in resource-rich developing countries like the mineral economies. The response of the doctrinaire orthodoxy school to this situation has been to eschew industrial policy, except in the case of an 'infant economy' where there may be too many market failures and factor distortions to support the spontaneous growth of manufacturing.

A slightly less cautious position has been taken by Frischtak (1989) who advocates the pursuit of a 'competitiveness' policy in which governments seek to remove barriers to domestic and export competition. More recently, the pendulum has swung even further back towards industrial policy as, under pressure from the Japanese directorate at the IMF, a critical study of the position of the doctrinaire orthodoxy school *vis-à-vis* industrial policy has been produced. The

new view recognizes the significance of the competitive industrial policy pursued by Korea and Taiwan in which sectors of emerging comparative advantage receive time-constrained protection from foreign competition. Significantly, the Japanese directorate considers that such policies may not be appropriate outside Asia.

For the purpose of the present study it will suffice to note some reservations about the role which the doctrinaire orthodox theorists assign to exchange rates and to suggest that a pragmatic orthodoxy may be preferred. Such a position recognizes the importance of sound macro management with its commitment to fiscal prudence and a competitive exchange rate, but builds on that through some intervention to mute the damaging impact of exchange rate shifts and to promote competitive diversification into agriculture and non-mining tradeables.

3

THE EARLY 1970s PRE-CONDITIONS

INTRODUCTION

This chapter examines the resilience of the four developing American mineral economies in the early 1970s, on the eve of the external shocks. It asks which of the four countries was best equipped to face the problems engendered by the subsequent mineral price swings. The answer to that question is sought in the political complexion of the government in each of the four countries, in the strength of their economies and in the capacity of their administrative systems to implement policy. Given that the pre-conditions of the early 1970s are then used to predict change over an eighteen year period (from 1973 to 1990), it is useful to structure the analysis with a model of cumulative change. The model is based on positive and negative feedback loops which are constrained by the three basic sets of factors, i.e. political, economic and administrative (Figure 3.1).

After outlining the model, its political and administrative components are examined in the third section of the chapter in order to establish the potential political strength of the four countries to withstand the consequences of adverse mineral price shifts. The discussion draws upon the assumptions of the new political economy (Bates 1988) which views governments not as benevolent maximizers of national welfare but rather as arbitrators between conflicting interest groups. Under such circumstances, mineral rents represent an important source of political capital. The political arbitration may be at the expense of long-term national welfare and it may also have serious repercussions for the ethics and efficiency of the administrative system.

Attention then turns to the economic pre-conditions. The

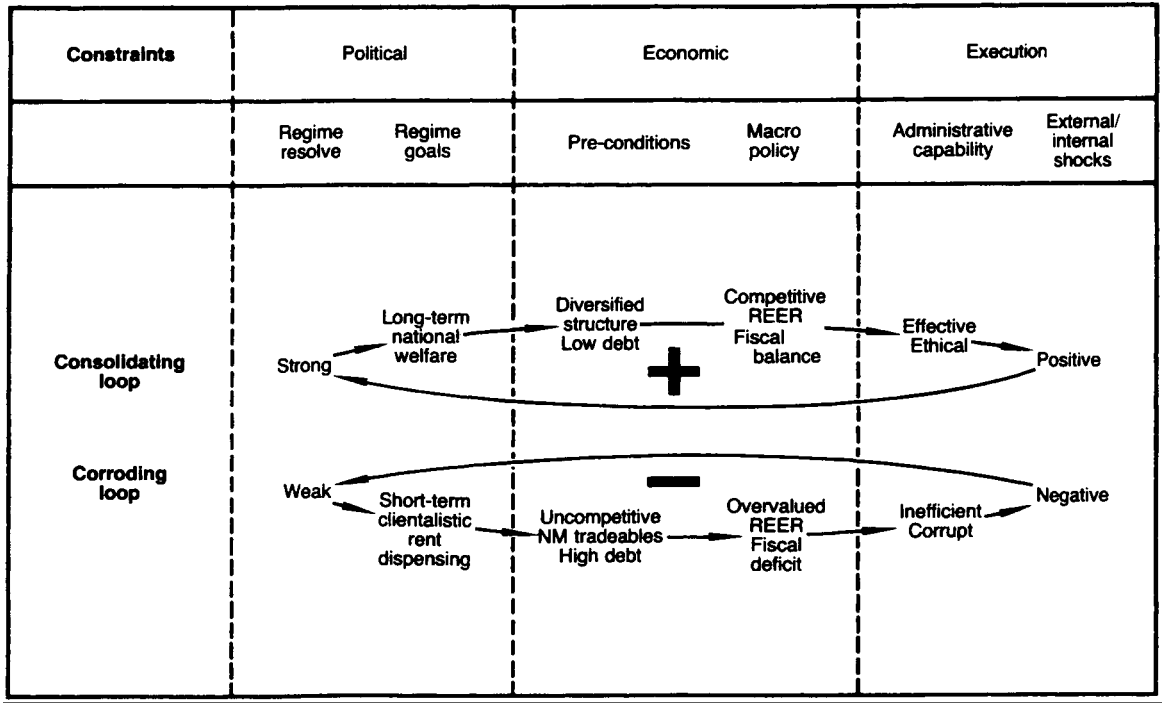

Figure 3.1 Cumulative feedback loops: polar cases
Notes: REER, real effective exchange rate; NM, non-mining

discussion in Chapter 2 suggested that high mineral dependence is difficult to manage, that competitive diversification facilitates adjustment and that pragmatic orthodox policies provide the most appropriate macroeconomic framework in which to pursue these objectives. It is in this context that the structure of the economy is examined in the fourth section. That section establishes the role of the mining sector (focusing on the degree of mineral dependence), its competitiveness and the inherent strength of the non-mining tradeables sector. It then focuses on the macroeconomic policy and performance of each country prior to the external shocks, tracing trends in the fiscal and current account balances and in the rate of economic growth. Finally, the political, administrative and economic indicators are synthesized to form an overall assessment of pre-shock resilience.

A MODEL OF CUMULATIVE CHANGE IN POLITICAL ECONOMY

Three sets of constraints

Figure 3.1 summarizes the components of the cumulative model of change in political economy. To simplify the exposition, polar examples are used to illustrate the functioning of the feedback loops (i.e. one loop is strongly positive and the other strongly negative). The model's starting point is the political resolve of the four regimes.

A strong regime might draw its authority from its legitimacy, say as a consequence of winning a large democratic majority or from a military coup which opened real prospects for economic and political recovery after previous deterioration on these fronts. At the opposite extreme, a weak regime might reflect a frail democratic coalition or it might be a dictatorship whose assumption of power could not be legitimized either because its own record in office was tarnished or because the regime which it overthrew was not widely deemed to have been a failure.

The key goal of the weak regime is to shore up political support and it has to expend much political effort and economic resources on that goal. Consequently, the weak regime's time horizon tends to be short term and its welfare concerns become dominated by those key political groups whose support it sees as essential to its continued survival. In bidding for this political support the weak regime establishes clientalistic relationships with targeted groups. It bids

for their support through the provision of rent-seeking opportunities (Figure 3.1).

For example, Shafer (1983) uses just such an analysis to explain the divergent performance of the Chilean and Zambian mining sectors through the 1970s. He argues that a strong regime is less preoccupied than a weak one with imminent threats to its survival. Compared with the weak regime, the strong regime is under less pressure to reward its closest supporters at the expense of the pursuit of more broadly based long-term national welfare objectives. It should be noted, however, that a strong regime may still opt to serve small but powerful interest groups, especially if its authority does not depend on elections.

The second set of constraints on the feedback loops relates to the strength of the economy and the soundness of the economic policies adopted. The discussion in Chapter 2 has provided several indicators of economic strength. One set of indices relates to the structure of the economy and includes the mineral dependence index and the Dutch disease index. Mineral dependence is usually measured in terms of the fraction of GDP, exports and tax revenues which each country draws from its mining sector. The mean percentage for these three criteria provides a single index of mineral dependence.

The mineral dependence index is complemented by the Dutch disease index which compares each economy's production structure with a comparator or reference group norm. Following Gelb (1988), the present study uses the Syrquin and Chenery (1989) norms as the comparator group. The norms are based on the developmental experience of more than a hundred countries analysed over the period 1950–83. It may be recalled from Chapter 2 that Syrquin and Chenery focus on the relationship between per capita income and the changing structure of production and also the composition of absorption (i.e. the breakdown of GDP between consumption and investment).

The Dutch disease index is calculated by measuring the degree to which an actual country departs from the norm for a country of its size and level of development. A negative index indicates under-development of the non-mining tradeables sector and, as such, reflects Dutch disease effects. However, the Dutch disease index must be interpreted cautiously since it assumes that the tradeables are competitive when, as indicated in Chapter 2, this may not be the case. The Dutch disease index must therefore be supplemented by

additional measures such as the effective rate of protection for each of the key economic subsectors.

A second set of economic indicators relates to macroeconomic performance and it includes the GDP growth rate and trends in both the fiscal and current account gaps (expressed in terms of GDP). They can be linked to economic policy which, for the purpose of the present study, is seen as falling within a spectrum from doctrinaire orthodoxy on the right to structuralist populism on the left. Clearly, even a regime of political strength which inherits a sound economy (with a low Dutch disease index and healthy fiscal and trade gaps) may embark on a negative spiral if it targets imprudent policies.

In the context of the global economy of the early 1970s, leftward policies associated with the structuralists were in vogue, especially in Latin America. They stressed state intervention to achieve income redistribution, national ownership of the means of production and industrial autarky through heavily protected infant industry policies. While all three objectives might be politically desirable and economically feasible, their incautious pursuit can adversely affect both the level and efficiency of investment. In particular, the net result is likely to increase the rigidity of the response of the economy to the abrupt changes generated by external shocks. In contrast, orthodox economic policies had lost their ascendency by the 1970s although periodic attempts were made to revive them under right-of-centre regimes.

The final set of constraints on the feedback loop concern the efficacy of policy execution and have internal and external components. The endogenous (internal) aspect of the efficiency constraint is strongly influenced by the specific combination of regime resolve and political objectives (Haggard 1990). The strong regime is more able to insulate administrators from political pressures to show favour to specific-interest groups. This makes it likely that ethical standards will be higher and that the corrosive effect on efficiency arising from rent-seeking under weak political regimes will be avoided (Figure 3.1).

In contrast, administrators working for a weak regime are exposed to corrosive pressures, opposition to which may cost them their livelihood. The administrative system of weak regimes is further undermined by the short time horizon of such regimes which heightens uncertainty over policy stability and thereby discourages long-term initiatives. Rent-seeking behaviour

flourishes under such conditions and corrodes civil service integrity and efficiency. It does so through the heavy workload associated with the proliferation of state intervention, the ethical erosion implicit in the prostitution of state resources and the temptation of personal gain from the dispensation of favours. A civil service so affected lacks the insulation from the short-term pressures of political arbitration which effective policy implementation requires. Because of the close link between political regime and administrative efficiency, the latter is subsumed under the former in subsequent discussion.

The exogenous (external) constraint on administrative efficiency is reflected in the external shocks whose impact provides the central focus of this study. Such shocks, by abruptly voiding the assumptions upon which policy had previously been formulated, are clearly a source of substantial disruption and damage. More specifically for the mineral economies, the work of Gelb (1988) reported in Chapter 2 shows that even *positive* external shocks can destabilize and undermine both macroeconomic management and administrative efficiency. This is because even strong regimes find political pressures for the over-rapid absorption of windfall gains in booms and the tardy adjustment to downswings difficult to resist. Negative shocks submit the political economy of mineral producers to potentially even greater stress.

Some implications of the model

It will be clear by now that if most constraints are favourable then a strong regime is more likely to adopt a long-term horizon than a weak one and that this creates favourable prospects for economic success which improves economic resilience in the face of external shocks. There is a high probability that the resulting economic success will strengthen the political regime in power and also bolster the regime's commitment to sound political goals and economic objectives. Yet this does not preclude the possibility that even within a successful political coalition shifts in power may sow the seeds of future decline. Moreover, a negative impact from any of the three pairs of constraints can slow a positive feedback loop or even reverse it.

A weak regime is likely to pursue short-term policies which sap economic strength and leave little resilience to cope with external shocks. However, an intriguing feature of the negative feedback loop

which figures in the present study is that a severe negative shock may galvanize sufficient political resolve to unseat hitherto entrenched vested interests and open the real prospect for reform and a phoenix-like economic renaissance.

Three additional implications of the cumulative feedback loop model may be noted. First, the pre-conditions at the outset of the period studied can profoundly affect the response to external shocks. This provides the rationale for the present chapter. However, a second feature of the model which counters this is the potential instability of the political economy of development. Oscillations can occur in any of the three sets of parameters which may briefly modify the sign of the feedback loop or, *in extremis,* profoundly reverse it. Third, the model shows that economic success requires several constraints to be held at satisfactory levels simultaneously. This implies a bias towards a less than optimal outcome. Attention now turns to an explanation of the conditions in the four developing American countries on the eve of the oil shocks.

THE POLITICAL PRE-CONDITIONS

Leftward political shifts occurred in all four developing American countries in the early 1970s. This reflected evolution in the case of Peru and sharp changes of regime in the other three countries. Peru was the most politically stable country in the early 1970s. There, the strong leftist military dictatorship which seized power in 1968 continued to consolidate its position. The Peruvian military government sought simultaneously to boost its popular support and to revive the flagging economy which it had inherited from its civilian predecessor. It did so by greatly expanding the role of the public sector. It accelerated land redistribution, increased protection for import substitution manufacturing, promoted nationalization and expanded state-owned enterprises. Such measures were initially widely popular.

Jamaica also had a strong government as a result of the 1972 election which brought to power a popular left-of-centre government led by Michael Manley. The new government, like the Peruvian military, favoured redistributive policies. As in Peru, the initial pursuit of these objectives consolidated the Jamaican government's power. Manley inherited a society which had become increasingly polarized during the preceding decade of rule by the more conservative Jamaican Labour Party (JLP). Although GDP growth averaged 6 per cent under

the JLP, unemployment doubled to 24 per cent and the share of the poorest two-fifths of the population in personal income shrank from 7 to 5.5 per cent (Ambursley 1983). Meanwhile, the rapid GDP growth of the 1960s had increased the dominance of foreign investment within the economy. By the early 1970s foreign investment accounted for 100 per cent of mining, 75 per cent of manufacturing and 50 per cent of tourism.

There were also changes of government in the early 1970s in Chile and Bolivia. In both countries, the changes placed a stronger regime in power after previous political turmoil. This was most spectacularly the case in Chile, the fragility of whose democracy had been previously underestimated. The unexpected breakdown in political relations between the reforming centrist Frei government and the political right in Chile was the prelude to the election in 1970 of a left-of-centre government under Allende. However, the new regime was not powerful since it secured only 36 per cent of the popular vote. Nevertheless, Allende emphasized redistributive policies which led to a brief populist boom that was followed by a sharp economic deterioration (Figure 2.3). The resulting economic decline and mounting civil strife was halted by the bloody coup which installed Pinochet's right-wing military dictatorship. Much therefore depended on the ability of the Pinochet government to consolidate its illegal seizure of power.

Bolivia, like Chile, also experienced political instability and a leftward shift following the death of President Barrientos in 1969. However, two further changes of government brought Banzar to power in 1971 and he initially pursued right-of-centre policies (Casanovas 1990). The new government presided over a remarkably inflexible socioeconomic system which had been fossilized by the revolution of 1952 when the mines were nationalized and land was redistributed.

The power secured by the miners as a result of the revolution hampered the pursuit of commercial policies by the state mining enterprise. The tin mines, which were already past their peak in the early 1950s, continued to be starved of funds. Nor did land reform trigger productivity advances among the Bolivian peasant farmers. On the bleak Altiplano (where two-thirds of the population lived but barely one-third of farm output was produced) the farms remained too small and backward. Meanwhile, political tensions assumed a regional dimension which pitted the tropical eastern lowland frontier against both rich and poor on the Altiplano. One

consequence of these divisions was that the Banzar government was the weakest among those of the four developing American countries in the early 1970s.

Recapping, Peru and Jamaica were led by strong left-leaning governments in the early 1970s. Their governments were intent on the redistribution of income and the shift of resources from the private and foreign sectors into public and domestic control. Such policies were expected to further consolidate their popular support. However, the implementation of such ambitious reform programmes risked straining the government's implementation capacity in both cases.

The governments in both Bolivia and Chile were less stable, but Chile's floundering government was abruptly replaced by a right-wing military regime intent on curbing the role of the state. Elsewhere radical economic experiments were in various stages of implementation. In Peru, where the left-wing military regime was consolidating its position, and Jamaica where a popular leader was embarking upon reforms, the experiments reflected the prevailing structuralist fashion.

ECONOMIC PRE-CONDITIONS

Mineral dependence

A simple index of mining sector dependence can be calculated from the mean contribution of minerals to GDP, exports and revenue. The pre-shock indices for the four countries are shown in Table 3.1. They are generally lower than those of the oil-exporting countries. For example, in 1972 the oil exporters' mineral dependence indices ranged upwards from 31 for Indonesia through 54 for Nigeria and 57 for Venezuela to 82 for Saudi Arabia (Auty 1990a). Among the hard mineral exporters, Bolivia was most mineral dependent with an index of 47 while Peru, with an index of 21, was least dependent. The indices for Chile and Jamaica were 33 and 28 respectively.

The mineral dependence index is dominated by the foreign exchange component, followed by government revenue and then the sector's contribution to GDP. It shows that Peru was potentially in the strongest position of the four countries because it depended least on its mining sector for foreign exchange and was strongly diversified into a range of primary product exports.

Table 3.1 Mineral dependence index (%)

	Bolivia	*Chile*	*Jamaica*	*Peru*
Mineral share of				
GDP	20.1	7.4	10.8	10.1
Exports	77.0	85.7	63.5	47.6
Revenue	44.0	6.7	10.0	6.7
Index	47.0	33.3	28.1	21.5

Sources: CEPAL, Government Finance Ministries and Central Banks

Minerals generated less than half of Peru's total exports in 1970–3: some 47.6 per cent compared with 23.4 per cent from fish and 17.4 per cent from agriculture. Peru not only depended less on minerals than the other countries, it was also less dependent on any single mineral. Although copper was the principal mineral export, Peru also exported iron ore, lead, zinc and silver. Copper production in 1970–3 averaged 212,000 tonnes compared with 346,000 tonnes of zinc, 173,000 tonnes of lead, 1,255 tonnes of silver and 9.1 million tonnes of iron ore (Ministerio de Energia y Minas 1989).

Moreover, Peru entertained high expectations of oil discoveries in the northeastern Amazon region which would reinforce its export diversity. Testimony to the hydrocarbon potential is provided by the fact that Peru attracted much private drilling activity even though it had nationalized the leading oil exploration company in 1969. Nor had nationalization deterred investment in hard minerals: the MNC ASARCO invested in a large new mine using part of the cash flow from the Toquepala opencast copper mine which opened in 1962. ASARCO escaped nationalization even though Toquepala's domestic revenue retention coefficient (the ratio of domestic expenditures to total export revenues) was a modest 43 per cent during its first decade (Mikesell 1975). Peru's terms of trade improved through the early 1970s (Table 3.2) and its

Table 3.2 Terms of trade, 1967–87 (1989=100)

	1967–9	*1970–4*	*1975–9*	*1980–3*	*1984–7*
Bolivia	51.1	62.1	83.2	94.3	71.6
Chile	234.8	192.6	103.4	87.3	80.1
Jamaica	109.2	115.6	118.3	95.6	99.8
Peru	127.4	139.6	104.8	89.9	75.8

Source: World Bank 1989a

diversified export sector was an important source of economic strength.

In contrast to Peru, Chile was highly vulnerable to mineral price shocks. Its mineral dependence index of 33 understates the country's dependence upon mining for two reasons. First, as Table 3.1 shows, unlike Peru the mining sector dominated Chilean exports and one product, copper, dominated mining. The mining sector earned nearly 86 per cent of Chilean exports in 1970–3 of which copper alone was responsible for around 79 per cent. Second, Chile's overall dependence on copper had been steadily increasing. This reflected government success in increasing the domestic revenue retention coefficient which had been 25 per cent in 1925 but had risen to 80 per cent by 1970 (Weil 1982).

The process of enhanced mineral dependence intensified through the late 1960s and early 1970s. The Frei government, which lost office in 1970, renegotiated the mineral agreements with the MNCs and secured state equity in the large mines, including a majority of 51 per cent in El Teniente. It also negotiated a windfall tax in 1969 and reached agreement on mine expansion. The latter was intended to reverse Chile's loss of global market share, which had fallen below 12 per cent compared with 17 per cent in the 1930s (well below Chile's estimated 25 per cent of world copper reserves).

The Allende regime (1970–3) pushed the Frei government's domestication policy even further when it nationalized the MNC copper mines in 1971. But at the same time it weakened the sector since it determined that the two MNCs (Anaconda and Kennecott) merited no compensation. The Allende government calculated that the mines had earned excess profits that had exceeded 15 per cent of book value through the preceding fifteen years. Nationalization of the copper mines deterred foreign investment throughout the economy and disrupted copper production, jeopardizing the expansion strategy (Sigmund 1980). Such disruptions depressed the mineral dependence index: for example, the sector's contribution of 6.7 per cent of government revenue in 1970–3 (Table 3.1) masks an abrupt decline from 20.1 per cent in 1970 that largely reflected the disruption arising from rapid forced nationalization. This implies that with less radical policies Chile's mineral dependence index would have been close to 40, rather than the 33 shown in Table 3.1.

Jamaica, like Chile, also increased its mineral dependence in the early 1970s. Jamaican bauxite production was expanding rapidly mainly to feed new alumina refining capacity that was coming

onstream. Bauxite and alumina earned 63.5 per cent of Jamaican exports in 1970–3. However, tax concessions granted to encourage the US MNCs to construct refineries at the mines depressed the sector's contribution to government revenues. The reforming Manley government, influenced by structuralists like the dependency theorist Girvan (1971), suspected that transfer pricing unfairly deprived Jamaica of revenues. It renegotiated the MNC mining agreements and unilaterally imposed a bauxite levy in 1974 which sharply raised Jamaican mineral dependence.

Bolivia had the highest mineral dependence index of the four countries, but the importance of hydrocarbons within the mining subsector initially masked the risks of that dependence. At 47, the Bolivian mineral dependence index was more than twice that of Peru (Table 3.1). Mining accounted for 77 per cent of Bolivian exports in 1970–3 and generated 44 per cent of government revenues. However, the share of the hard mineral sector in both revenues and exports declined through the early 1970s as hydrocarbon output expanded. As a consequence, Bolivia's problems until the mid-1980s were those of managing a sustained mineral price upswing, as its improving terms of trade through the 1970s indicate (Table 3.2).

Overall, Peru's relatively high degree of export diversification enhanced the advantage of its strong government, while Chile's extreme reliance on a severely disrupted copper sector was a further source of weakness. Between these extremes, the strong Jamaican government was increasing its dependence upon what was to prove a vulnerable bauxite sector whereas the weaker Bolivian government had its high mineral dependence masked by expanding hydrocarbon production.

Structural diversification

Table 3.3 shows the structure of production for the four countries in 1972 and compares it with the Syrquin and Chenery norms for countries at similar levels of development. The countries span the World Bank mid-income range of per capita incomes. Measured in 1980 dollars, the per capita incomes varied from $495 in Bolivia, through $1,057 in Peru and $1,580 in Chile to $1,915 in Jamaica.

The Dutch disease index in Table 3.3 measures the extent to which the size of the four countries' non-mining tradeables sector is smaller than the Syrquin and Chenery norms. It shows that the

Table 3.3 Structure of production and Dutch disease index, 1972 (% GDP)

	Bolivia 495[a]		*Chile* 1,580[a]		*Jamaica* 1,915[a]		*Peru* 1,057[a]	
	A	*N*	*A*	*N*	*A*	*N*	*A*	*N*
Agriculture	17.5	31.7	6.2	18.5	7.1	16.1	13.8	22.4
Manufacturing	13.2	14.8	26.4	19.8	18.3	20.7	21.8	18.3
Construction	4.7	4.9	5.4	5.8	11.8	6.1	6.3	5.5
Services	44.5	41.9	54.6	48.3	52.0	49.6	48.3	46.1
Mining	20.1	6.6	7.4	7.6	10.8	7.5	10.1	7.7
Dutch disease index	15.8		5.7		11.4		5.1	

Sources : CEPAL 1989; Syrquin and Chenery 1989
Notes: [a] Per capita GNP (1980 $). A, actual; N, norm.

two smallest economies, Bolivia and Jamaica, had been more adversely affected by Dutch disease than the larger economies. Peru with a Dutch disease index of 5.1 was the least affected. The indices of 11.4 for Jamaica and 15.8 for Bolivia compare with figures for the oil-exporting countries of around 1 for Indonesia, 9 for Nigeria and 14 for Venezuela (Gelb 1988).

However, as noted in Chapter 2, some caution is required in interpreting the Dutch disease index because its assumption of a fully competitive non-mining tradeables sector is seldom met. It therefore tends to understate the extent of Dutch disease where protection against imports is extensive. Closer inspection reveals that in all four countries it is the agricultural sector which shows the greatest shrinkage from the norms and not the manufacturing sector. Such an outcome is consistent with the predilection of all four countries for strongly protective infant industry strategies.

In relative terms the agricultural shrinkage is largest for the two richest countries, Jamaica and Chile. Chile's agricultural sector was scarcely one-third of its Syrquin and Chenery norm whereas that of Jamaica was 45 per cent of its norm and those of the two poorest countries, Bolivia and Peru, were both around two-thirds of their norms. Given the capacity of a sizeable and competitive agricultural sector to cushion downswing adjustment, Chile's potential resilience (already low through the weakness of its government and its high copper dependence) was further weakened.

The low overall Dutch disease indices for both Chile and Peru reflect manufacturing sectors that were significantly larger than their

norms. That of Chile was one-third larger and that of Peru one-fifth bigger while the manufacturing sectors of Bolivia and Jamaica were both close to their respective norms (Table 3.3). But much of this manufacturing was internationally uncompetitive and might more accurately be classified as non-tradeables (Lewis 1982). For example, in the case of Chile, the average rate of effective protection (which measures the degree to which prices in the protected domestic market exceed world prices) was an astonishing 177 per cent in 1967, with a standard deviation of 279 (Corbo and de Melo 1987). Further evidence of the weakness of Chilean manufacturing comes from the fact that the sector accounted for less than 5 per cent of exports.

Manufacturing accounted for a similar low fraction of Peruvian exports. Although, paradoxically, manufacturing exports were higher for Bolivia (9.1 per cent) and Jamaica (47.5 per cent) than for the two largest countries, this reflected resource-based industry (mineral processing such as alumina refining in the case of Jamaica) rather than diversified competitive manufacturing. Such weakly developed manufacturing sectors mean that the Dutch disease indices of all four countries are at least one order of magnitude out. Expressed another way, they exaggerate the extent to which alternative tradeables could be substituted for a mineral downswing by a significant margin. Consistent with the overall emerging pattern, the Chilean economy was especially vulnerable to mineral price downswing (because of its more shrunken agriculture) whereas Peru was least vulnerable.

Macroeconomic performance

The Chilean economy was undoubtedly the weakest of the four in the early 1970s. Its rate of growth averaged barely 2 per cent in 1967–73 and the economy was moving steeply into recession in 1972–3 as the Allende populist boom evaporated (Figure 2.3). Chile's rate of investment was particularly low in the early 1970s (Table 3.4) and reflected the unusually high levels of private consumption through the Allende boom. As that boom evaporated, triple digit inflation took hold and the fiscal and current account deficits averaged 2.9 per cent and 16.1 per cent respectively of GDP in 1971–3 (Corbo and de Melo 1987).

The Peruvian economy was also weakening through the early 1970s as private investment faltered in the face of the regime's preference for co-operatives and communes in agriculture and

Table 3.4 Composition of absorption, 1970–2 (% non-mining GDP)

	Bolivia	*Chile*	*Jamaica*	*Peru*	*Syrquin and Chenery norms*		
	495[a]	*1,580*[a]	*1,915*[a]	*1,057*[a]	*500*[a]	*1,000*[a]	*2,000*[a]
Private consumption	56.9	82.5	80.8	77.9	70.2	66.4	63.1
Public consumption	12.1	13.7	12.7	11.4	13.5	13.7	14.4
Private investment	8.3	18.2	36.1	15.2	20.8	23.3	25.0
Public investment	11.2			4.9			
Total	88.5	114.2	129.6	109.4	104.5	102.4	102.5
Growth in non-mining GDP 1970–3 (%)	4.3	0.9	3.6	4.7			

Source: CEPAL 1989; Syrquin and Chenery 1989
Note: [a] Per capita GNP (1980 $).

worker directors in manufacturing. The nationalization of key mining firms such as Cerro de Pasco, the International Petroleum Company and W.R. Grace cut foreign investment in mining to 11 per cent over 1968–75 (Scott 1990). The sharply higher public investment and GDP growth which had heralded the new policy shift faltered through the early 1970s in the face of an unsustainable expansion of subsidies to loss-making state-owned enterprises. The fiscal deficit averaged 2.1 per cent in 1970–3 (Schydlowsky 1986) on a rising trend while the current account deficit deteriorated sharply through 1973 to 2.6 per cent of GDP, also on a rising trend (World Bank 1989a).

Although Jamaica recorded the highest rate of GDP growth of the four countries in 1967–73 at 4.9 per cent, that growth was faltering in the early 1970s as major construction projects wound down. The high rate of domestic absorption within the Jamaican economy (Table 3.4) reflects the tail-end of the investment boom in alumina refining which had pushed the share of construction in GDP to be more than twice the Syrquin and Chenery norm (Table 3.3). The level of Jamaican indebtedness was high: at 66 per cent of GDP it was one-third larger than that for Bolivia and almost twice the levels of Chile and Peru. Both the fiscal and current account deficits deteriorated sharply, yet the restoration of balance required deflation which clashed with the new government's redistributive mandate.

The Bolivian economy outperformed that of Peru as well as Chile in 1969–73 with a GDP growth rate of 4.7 per cent. This was despite Bolivia's relatively high debt, its strong mineral dependence and its weak government. But political weakness caused a decline in business confidence in the early 1970s which forced the new Banzar government to devalue and adopt an austerity programme. Consequently, all four economies were experiencing difficulties during the early 1970s, especially Chile.

CONCLUSION: PROSPECTIVE DOWNSWING RESILIENCE

A striking feature of all four countries prior to the external shocks is the lack of commitment to competitive economic diversification. The expansion of domestic manufacturing via infant industry protection was the principal diversification vehicle. However, the absence of a competitive industrial policy was establishing a slow-maturing, high-cost sector dependent upon protection and therefore upon transfers from other sectors.

Such a development strategy assumes that the primary sector in general, and mining in particular, can generate sufficient foreign exchange and revenue indefinitely. It presumes that any downswings will be temporary and followed by a compensatory boom. Yet, only in the case of Bolivia, which was in the early stages of a long and sustained improvement in its terms of trade, did that come anywhere near the reality for the decade after the first oil shock (Table 3.2).

Peru and Jamaica were most favourably placed to ride out external shocks. Both countries had strong governments and economies which were performing moderately well even though some deterioration was already discernible by 1973. Of the two Jamaica was the more vulnerable since it had a much greater dependence on the mining sector than Peru and a much higher debt-to-GDP ratio. In addition, Jamaica had a weaker agricultural sector with which to cushion downswings than Peru as a consequence of cumulative Dutch disease effects.

Although it had a larger agricultural sector than Jamaica and a more diversified mining sector, Bolivia was more vulnerable. It had a relatively weak government in the early 1970s, a very high mineral dependence and the second highest level of foreign debt. Within Bolivia's protected and fossilized tradeable sector, few activities were internationally competitive apart from mining which, as far as hard minerals were concerned, was rapidly running down.

But Chile was the most vulnerable of the four countries to external shocks: it shared with Jamaica the problem of a shrunken agricultural sector and very high dependence on a single mineral. Chile's economy was the weakest of the four and was contracting sharply in 1973 as government revenues collapsed and the current account abruptly deteriorated. Its government, elected with little more than one-third of the popular vote and beset by mounting civil unrest, was abruptly overthrown in 1973 by a right-wing military regime that had yet to consolidate its support.

4

GROWTH AND STRUCTURAL CHANGE, 1973–90

INTRODUCTION

This chapter provides an overview of the external shocks, growth trajectory and structural change with which to explore the impact of macroeconomic policy (Part II) and micro policy (Part III) before turning to the cross-regional comparisons in Part IV.

Its principal objective is to establish the degree to which variations in the economic performance of the four countries can be explained by the resilience of their early 1970s political economy and the severity of the subsequent external shocks. The previous chapter has established significant differences in the pre-condition resilience. It shows that in the early 1970s Chile was potentially the most vulnerable, then Bolivia and then Jamaica while Peru was the most resilient. This chapter begins by measuring differences between the four countries in the size of their external shocks.

Attention then turns in the third section of the chapter to indices of economic growth, focusing on the rate of change in GDP. The growth rates in GDP over those years for the four mineral economies are compared with both the pre-shock trend and the average GDP growth rate for the developing countries. The trend for each of the four mineral economies is summarized in terms of an overall growth trajectory, 1974–88. Next, the accuracy of the two predictor variables (the early 1970s pre-conditions and the size of the external shocks) is tested against the growth trajectories. The question is asked: how well do the pre-shock conditions and the severity of the external shocks explain the variations in the economic growth trajectories—and to what extent are other factors important?

The fourth section of the chapter examines the structural change which occurred in response to the external shocks. It focuses first

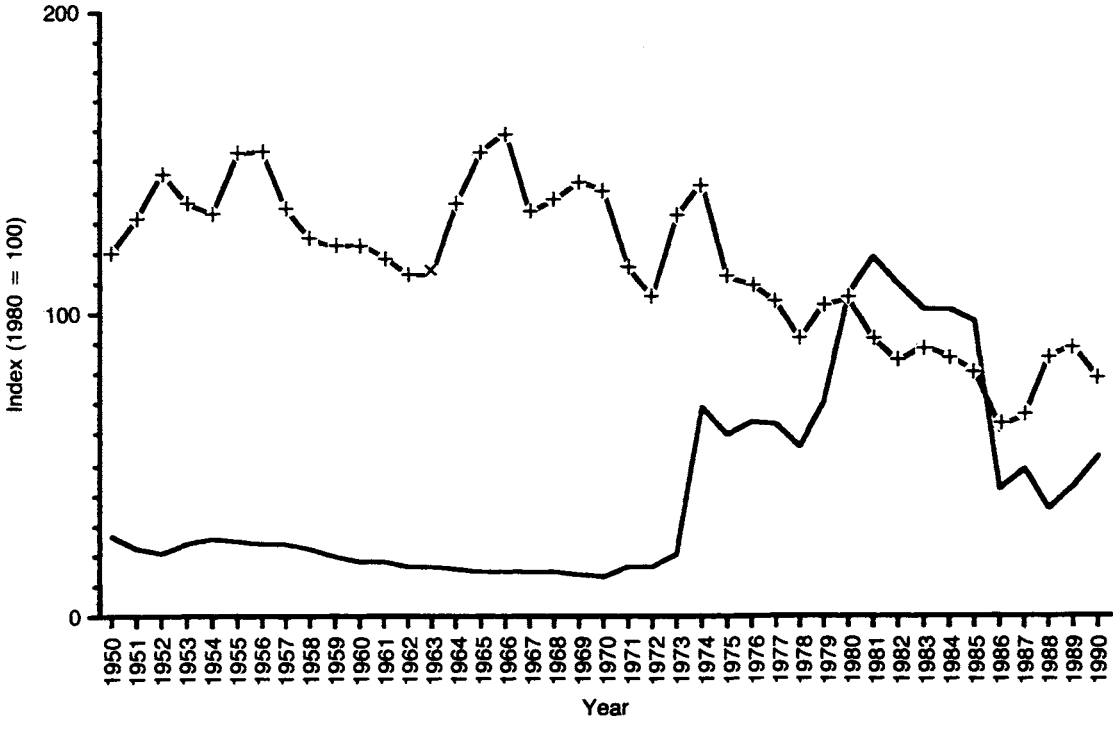

Figure 4.1 Petroleum and mineral/metals: real price trends, 1950–90; –, petroleum; +, metals and minerals

on the extent to which mineral dependence decreased in those countries experiencing a sustained downturn. The mineral dependence index, the Dutch disease index and the degree of competitive diversification are calculated in order to assess the changing role of the mining sector. This leads into the final section of the chapter which examines the changing resilience of the mining sector in response to the external shocks. It asks how effectively the most mineral-dependent countries ensured the effective operation of their mining sectors.

SCALE OF THE 1973 AND 1979–83 EXTERNAL SHOCKS

Figure 4.1 compares the change in the real price of petroleum with that for minerals/metals over 1950–90. The relative stability of the pre-shock petroleum price contrasts with the volatility of the minerals index. A sharp deterioration in the minerals index in the early 1970s is interrupted by a brief price spike that was triggered by the first oil shock. A second blunter spike shadows the second oil shock before giving way to sustained decline through the 1980s. The collapse of the oil price in 1986 proved to be the prelude to a mineral boom which lasted from 1987 until 1990.

Table 4.1 focuses more specifically on three constituents of the mineral price index (copper, tin and bauxite) through the pre-conditions and into the second oil boom. It contrasts the steep and sustained real decline of copper prices with the more stable patterns for bauxite and tin. The collapse in the prices of the latter occurred in 1982 and 1985 respectively. Consequently, the first shock was potentially most traumatic for Chile, followed by Peru, whereas Jamaican problems would be expected to multiply through the early 1980s and those of Bolivia from the middle of that decade.

Table 4.1 Trends in mineral prices, 1965–82 (constant 1980 $/tonne)

	1965–7	*1968–70*	*1971–3*	*1974–6*	*1977–9*	*1980–2*
Copper	4,462	4,634	3,317	2,575	1,883	1,858
Tin	12,193	11,486	10,302	12,290	15,848	15,062
Bauxite	35	41	32	41	42	40
Metals and minerals index	164	163	128	127	100	102

Source: World Bank 1985

The changing terms of trade

The terms of trade measure the change in import prices compared with export prices for a particular country: a decline in the index indicates a weakening in export prices relative to those for imports. Table 3.2 traces the trends for the four countries through each of four periods from the late 1960s until the mid-1980s. Consistent with the degree of mineral dependence and the mineral price trends in Table 4.1, Table 3.2 shows that Chile experienced the most severe overall deterioration, followed by the other copper producer, Peru. In contrast, Jamaica experienced more modest changes while Bolivia experienced a sustained improvement in its terms of trade (reflecting both hydrocarbon and tin price trends) until the catastrophe of the mid-1980s.

Chile, the country most vulnerable to external shocks at the outset of the period, did experience the harshest external deterioration. The decline in Chile's terms of trade persisted from the late 1960s until the late 1980s and was especially severe after the first oil shock. By 1984–7 the terms of trade for Chile were barely two-fifths of their level in the early 1970s. By comparison, Peru had been experiencing some improvement in its terms of trade through the early 1970s. However, it then encountered a sustained decline which by 1984–7 had depressed its terms of trade to scarcely half the level of the early 1970s.

In contrast to Chile and Peru, Bolivia experienced a sustained and significant improvement in its terms of trade through all the periods covered except the final one (1984–7) when a decline of around 25 per cent occurred. Jamaica also met with initial improvement, albeit of more modest degree compared with Bolivia. Thereafter, the decline in the Jamaican terms of trade associated with the second oil and interest rate shock was around one-fifth but some improvement occurred in 1984–7 which continued into the late 1980s.

The size of the external shocks

An indication of the impact of these changes in the terms of trade on the economy is provided by measuring their scale in relation to GDP. In its simplest form, this is calculated by multiplying the share of a country's imports in GDP by the percentage change in its terms of trade. A more comprehensive index of external impact can be calculated for the 1979–82 shock where the initial effect of higher

oil prices was amplified by the debt crisis. This is done by adding in the contribution of higher interest rates after Sachs (1985). It is achieved by expressing the external debt as a percentage of GDP and then calculating the increased interest rate costs in terms of GDP. Balassa and McCarty (1984) calculated a third, and even more comprehensive, measure by incorporating a trade volume component.

Turning now to the actual impacts, the larger size of the Peruvian and Chilean economies may be expected to moderate the impact on those countries of external shocks compared with the smaller and more open economies of Jamaica and Bolivia. Table 4.2 shows that the external shocks were both negative for Peru and Chile and confirms that their impact on GDP was muted somewhat by their larger economies. It also shows that Jamaica enjoyed a modest positive shock in the mid-1970s and a severe negative shock in the mid-1980s. Finally, Bolivia's two shocks were both positive but tapered off significantly.

Table 4.2 External shocks 1974–8 and 1979–83 (% GDP)

	Trade shock 1974–8	*Trade and interest shock 1979–83*		
		Trade	*Interest*	*Total*
Bolivia	12.1	4.5	−1.5	3.0
Chile	−10.6	−1.9	−4.2	−6.1
Jamaica	2.4	−10.2	−3.7	−13.9
Peru	−4.3	−3.2	−2.7	−5.9

Source: World Bank 1989a

Combining the pre-shock resilience of the four economies and the differing magnitude of the shocks they experienced, it might be expected that Peru (resilient and with modest shocks) would outperform Chile (weak but with large shocks). Within such a schema, Jamaica's initial resilience should benefit from the positive first shock while Bolivia's positive shocks might be expected to offset its initial political weakness. In fact, there is little correlation between the timing and size of the external shocks and the overall economic trajectory of the four countries (Table 4.3).

More specifically, for copper-dependent Chile, the first oil shock was very severe, being negative to the tune of more than 10 per cent of GDP (Table 4.2). The second shock was equivalent to a loss of 6.1 per cent of GDP, but the principal component was the sharp

Table 4.3 GDP growth rages (%)

	1967–73	*1973–80*	*1981–8*	*1973–88*	*% LDC mean*
Bolivia	4.7	3.3	(1.1)	2.2	49
Chile	2.2	2.4	2.2	2.3	51
Jamaica	4.9	(3.0)	0.9	(2.1)	(153)
Peru	3.8	4.0	0.9	2.5	56
Mean of four mineral exporters	3.9	1.7	1.0	1.2	27
All LDCs	6.5	5.1	3.9	4.5	100

Per capita GNP (1980 $)

	1972	*1980*		*1987*		
	Actual	*Actual*	*Projected*	*Actual*	*Projected*	*Actual/ projected (%)*
Bolivia	495	490	613	415	613	59.0
Chile	1,580	2,110	2,105	954	2,279	41.9
Jamaica	1,915	1,160	2,641	699	2,928	23.9
Peru	1,057	990	1,339	1,042	1,444	72.2

Sources: CEPAL 1989; World Bank 1989a
Note: LDC, less developed country.

rise in real interest rates rather than the fall in the copper price (Balassa and McCarty 1984). The large interest rate component reflected the rapid accumulation of external debt during the country's disadjustment to an expected copper boom in 1979-82. That is, the high level of debt accumulation resulted from domestic policy error. Yet the Chilean economy traced out a sustained recovery form the Allende nadir.

The first shock was less severe for Peru than for Chile, being equivalent to the loss of around 4 per cent of GDP. This reflected Peru's more diversified export structure, although the country's expanding hydrocarbon production could not offset the declin in hard mineral prices and fish revenues. During the second shock, oil again failed to neutralize the effect of the price decline in hard minerals. Meanwhile, higher real interest rates pushed the net impact of the second shock to a loss equivalent to almost 6per cent of GDP. Inclusion of the trade volume effect for peru, however, halves the impact of the second oil shock in terms of GDP. Yet despite superior initial pre-conditions and less severe external shockl compared with Chile, the Peruvian economic trajectory was one of accelerating decline.

For Jamaica the 1974 rise in bauxite taxes triggered by the levy

rendered the first shock positive but the second shock was very severe, being equivalent to the loss of almost 14 per cent of GDP in 1979–83 (Table 4.2). If the trade volume effect is added, then the second shock was equivalent to the loss of 21 per cent of GDP. This is the second highest figure recorded by Balassa and McCarty (1984) in their sample of thirty countries. Yet, the Jamaican economy declined precipitately after the *first* oil shock and then experienced a very hesitant and protracted recovery. Once again, neither the pre-conditions nor the external shocks proves a reliable predictor.

Nor did Bolivia benefit from the fact that both its shocks were positive. The trajectory traced out by the Bolivian economy over 1974–88 is one of an accelerated weakening with only a tentative recovery following the sharp decline of the mid-1980s. This overall trajectory is similar in character and duration to that of Peru, albeit about two or three years ahead of the latter country.

Summarizing, since Chile was in the most vulnerable position in the early 1970s but experienced a strong economic improvement, while Peru was in the strongest position and underwent the most spectacular deterioration, neither the pre-conditions nor the scale of the external shocks is the critical parameter for explaining country performance. In fact the actual responses of Peru and Chile were the reverse of those expected. Nor were the predictor variables any more accurate for the smaller economies: the Jamaican economy collapsed during a mild *positive* shock and Bolivia made poor use of its positive shocks.

More specifically, Chile recovered quickly from its first (and severely negative) shock, while although Jamaica's first shock was positive it was associated with a severe economic decline. The two positive Bolivian shocks were associated with an accelerating economic weakening—as were Peru's two negative shocks. There is an echo of the resource curse thesis in these counter-intuitive findings: favourably placed countries do less well than the most vulnerable ones. The findings strongly suggest that policy is the overriding explanatory factor.

ECONOMIC PERFORMANCE

Patterns of economic growth

More evidence for the resource curse thesis emerges from a comparison of the average rates of economic growth for the four

mineral economies before the first oil shock. GDP growth had been relatively slow in all four mineral economies: their mean growth rate was only 3.9 per cent in 1967–73 compared with 6.5 per cent for the developing countries as a group (Table 4.3). Clearly—and consistent with the resource curse thesis—even when mineral prices were relatively buoyant, there is little evidence of any significant benefit from the mineral sector. Moreover, when global economic growth decelerated in 1973–88, the growth rate of the mineral economies declined even faster. Although the GDP growth rate of the developing countries as a whole averaged barely two-thirds of its pre-shock level in 1973–88, that of the four developing American countries fell to only one-quarter of its pre-shock rate.

Examining the overall trend in more detail, the GDP growth rate in 1967–88 in the developing countries as a whole decelerated, a trend which the mineral economies followed at a more precipitous rate. For the developing countries as a whole, the 1980s was a decade of slightly slower growth compared with the period 1973–80. The developing country growth rate averaged 3.9 per cent in 1981–8 compared with 5.1 per cent in 1973–80. For the four developing American mineral economies, average GDP growth slowed from 1.7 to 1.0 per cent over the same period.

A second index of the mineral economies' economic underperformance is provided by a comparison of the actual per capita gross national product (GNP) in 1988 with the pre-shock figure. The latter is projected on the assumption that growth in 1973–88 had equalled that of the developing countries as a whole. The actual 1988 level for both Bolivia and Peru was around two-thirds of the projections (Table 4.3). The earlier economic collapse and slow recovery of Chile and Jamaica resulted in an actual per capita GNP figure for Chile in 1988 that was only two-fifths of the projection while that for Jamaica was less than one-quarter (Table 4.3). Despite its initial advantages of a strong government and a mild positive shock in the mid-1970s, Jamaica underwent the steepest decline in living standards measured in terms of constant 1980 US dollars GNP per capita. These disappointing figures for the four mineral economies reflect not only slow economic growth but also differing rates of population increase (ranging upwards from 1.4 per cent in Jamaica to 2.7 per cent in Bolivia) and varying degrees of exchange rate depreciation.

Looking more closely at the GDP growth rates of the individual countries, those for Chile, Peru and Bolivia in 1973–88 averaged

barely half the developing country mean while that for Jamaica fell well short of the mean. The GDP growth rate turned strongly negative for Jamaica through the late 1970s whereas erstwhile slow-growing Chile maintained its modest rate over 1973–88. In the cases of Peru and Bolivia, the GDP growth rate decelerated by, respectively, one-third and more than a half (Table 4.3).

The economic growth figures for the four countries trace out two distinct sets of trajectory. The Chilean and Jamaican economic trajectories are *an abrupt decline followed by sustained recovery* (however hesitant) whereas the trajectories of Bolivia and Peru display *an accelerating weakening*. It is consistent with the primacy of the policy variable that in each case the trajectories are linked to severe economic crises triggered by populist economic policies.

Chile's nadir was caused by the Allende populist boom, described in the previous chapter. Although Chile had the most resilient political economy of the four developing American mineral economies by the late 1980s, it experienced a relatively slow rate of recovery from the Allende populist boom (see Chapter 7), in part on account of policy errors in 1978–82. Jamaica's economically debilitating populist boom occurred under Manley in 1974–6, about three years later than that of Chile. Its recovery was even more protracted than that of Chile and remained hesitant at the close of the 1980s.

Turning to the two countries which experienced an accelerating weakening, the Bolivian growth trajectory culminated in a nearcollapse of the economy in the mid-1980s as political weakness blocked repeated efforts at stabilization. The country's dramatic plunge into the nadir of 1985–6 was followed by an equally startling stabilization. For Peru, whose economy deteriorated particularly dramatically some three years after that of Bolivia during Garcia's populist boom in 1985–8 (traced out in Figure 2.3), there was little evidence of recovery by the close of the 1980s.

Further insight into the overall economic performance of the four countries is provided by changes in their foreign debt ratios. This is because foreign loans provided an important means of adjusting to external shocks: debt service capacity has been a significant indicator of economic health through the 1980s.

External debt

The debt-to-GNP ratios of all four countries increased substantially through the period 1970–87 (Table 4.4). Chile was the only country

Table 4.4 Debt ratios, 1970–87

	1970–4	*1975–9*	*1980–3*	*1984–7*
Debt-to-GNP ratio				
Bolivia	0.49	0.65	0.98	1.32
Chile	0.34	0.44	0.52	1.02
Jamaica	0.66	0.49	0.70	1.38
Peru	0.35	0.43	0.38	0.54
Debt service ratio				
Bolivia	0.04	0.10	0.20	0.18
Chile	0.06	0.11	0.27	0.31
Jamaica	0.18	0.14	0.16	0.35
Peru	0.18	0.25	0.19	0.13

Source: World Bank 1989a

among the four which was capable of retiring a significant fraction of its debt by the late 1980s. The two smallest countries, which it will be recalled initially experienced the most favourable external conditions, built up the largest debt in relation to their GDP. Meanwhile, although Peru accumulated the lowest level of external debt in relation to GDP, its debt traded at the largest discount to face value in the late 1980s.

In fact, the Chilean debt trend ran counter to that expected if its foreign debt had functioned as a cushion against adverse external circumstances. Overall, Chile tripled its debt-to-GNP ratio between the early 1970s and the mid-1980s. But the fastest rate of increase occurred not after the severe first shock but rather in the aftermath of the milder second shock. The first shock raised long-term debt from $3 billion to $4.5 billion while through the milder second shock Chile's total long-term debt rose from almost $6 billion in 1978 to $17.2 billion in 1984. The rise through the second shock largely reflected a policy error during 1978–82 which increased the debt service ratio from a manageable 11 per cent of exports in the late 1970s to a problematic 31 per cent through the period 1984–7. The nature of Chile's policy error is examined in detail in Part II.

Like many hydrocarbon-exporting countries during the oil booms of 1974–8 and 1979–81, Bolivia accumulated a large external debt (Table 4.4) despite the improvement in its external terms of trade during 1970–84 (Table 3.2). Instead of prudently accumulating overseas savings during the boom years as Gelb (1988) recommends, Bolivia paralleled Mexico and Nigeria and borrowed abroad. The

Bolivian debt-to-GNP ratio was already relatively high in the early 1970s at around 50 per cent. Yet, thanks to the concessional nature of much of Bolivia's debt, its debt service was initially negligible (at 6 per cent of exports). The debt service ratio rose, however, to the equivalent of 23 per cent of export earnings following sharp rises of foreign debt in 1976–8 and exceeded the country's capacity to service it in the 1980s.

At first sight, Table 4.4 suggests that Jamaica was initially more prudent than Bolivia since it also started the early 1970s with a high debt-to-GNP ratio but reduced it through the rest of the decade. This did not, however, reflect a cautious fiscal response to moderately favourable external conditions. Rather it resulted from the lack of credit-worthiness of the Manley government. The repression of debt which occurred under Manley was abruptly released following the election of a right-of-centre government in 1980. The Jamaican debt-to-GNP ratio jumped sharply: it tripled in 1979–86 to stand at 1.56. The debt service ratio, which had declined from just below 20 per cent in the early 1970s to a modest 14 per cent in the late 1970s, also rapidly increased and reached a very onerous 39 per cent of exports in 1985 (Robinson and Schmitz 1989).

Peru's debt-to-GNP ratio remained significantly below that of the other three countries throughout the period studied. Although the ratio doubled after the first oil shock to plateau at around $7 billion in the late 1970s and doubled again in 1982–7, the debt-to-GNP ratio was still only 54 per cent. The debt ratios of the three other countries exceeded unity, and by significantly more in Bolivia and Jamaica. Peru's low debt ratio, like that of Jamaica in the late 1970s, reflected neither economic strength nor prudent policy. Its low debt service ratio in the late 1980s (Table 4.4) was not the result of its relatively low overall level of debt but rather reflected the restriction of debt service payments to less than 10 per cent of exports after 1985.

The changes in the four countries' levels of foreign debt and in their debt service ratios indicate that foreign borrowing did not, on the whole, act as a smooth lubricant between worsened external circumstances and restored domestic equilibrium. In fact, there is much to suggest that, even in the case of Chile, internal policy flaws were the chief cause of debt service problems. Further evidence of unsatisfactory economic management is provided by an examination of structural change and mineral dependence through the period of external shocks.

TRENDS IN MINERAL DEPENDENCE AND STRUCTURAL CHANGE

Mineral dependence

Given the overall decline in mineral prices, sustained economic growth required diversification into competitive non-mining tradeables and a consequent reduction in mineral dependence. Table 4.5 traces trends in the contribution of minerals to GDP, exports and revenues from the early 1970s to the mid-1980s. It shows that only Chile succeeded in steadily reducing its mineral dependence, and

Table 4.5 Trends in mineral dependence, 1970–88 (%)

	1970–2	*1979–81*	*1986–8*[a]
Bolivia			
Share of GDP	20.1	15.8	13.2
Share of exports	77.0	87.6	82.2
Share of revenue	44.0	23.7	47.7
Mineral dependence index	47.0	42.2	47.7
Chile			
Share of GDP	7.4	8.6	9.1
Share of exports	85.7	56.2	51.4
Share of revenue	6.7	12.5	7.6
Mineral dependence index	33.3	25.8	22.7
Jamaica			
Share of GDP	10.8	14.2	8.8
Share of exports	63.5	75.1	49.2
Share of revenue	10.0	20.1	22.2
Mineral dependence index	28.1	36.5	26.7
Peru			
Share of GDP	10.1	15.2	10.6
Share of exports	47.6	62.6	52.3
Share of revenue	6.7	13.5	3.5
Mineral dependence index	21.5	30.4	22.1
Share of manufactured exports in total exports			
Bolivia	2.3	5.1	2.0
Chile	5.0	8.6	9.1
Jamaica	46.6	60.0	65.8
Peru	1.5	16.3	20.4

Source: Country Ministries; manufactured exports data, World Bank.
Note: [a] 1986–7 only for Peru and Jamaica.

that it did so by a substantial amount. On the other hand, Bolivia, Peru and Jamaica ended the period with levels of mineral dependence similar to those which they had in the early 1970s. In the case of Bolivia that dependence was very high: Bolivia's mineral dependence index, at 48, was around twice that of the other three countries (Table 4.5).

The decline in Chile's mineral dependence index mainly reflects a sharp fall in mineral exports rather than any change in the sector's contribution to GDP or revenues. The bottom part of Table 4.5 suggests that agriculture accounted for the bulk of the increased non-mineral exports and that the contribution of manufacturing remained modest. However, more detailed statistics show that manufacturing accounted for 30 per cent of total exports by the late 1980s compared with only 5 per cent in the early 1970s.

The discrepancy between the two sets of figures arises because the bulk of Chile's manufactured exports came from the processing of natural resources, a category which the figures in the bottom part of the table treat as primary exports. Yet, whereas Jamaican manufactured exports were dominated by alumina refining, metals comprised less than 4 per cent of Chile's total exports. Agro-industry (12 per cent) and wood products (6 per cent) were both more important than mineral processing in Chile (Ministereo de Industria 1989). By the late 1980s, both the size and the range of Chilean manufactured exports were expanding rapidly, in contrast with the three other countries.

Peru and Jamaica did make some progress in diversifying into manufactured exports but with less speed and persistence than Chile. Peru lifted its exports of manufactured goods from negligible levels in the early 1970s to about one-quarter of the total in the late 1980s. The bulk of the increase, however, took place in the late 1970s, with minimal expansion thereafter. Food processing, textiles and heavy industry (chemicals and metals) each contributed more than 5 per cent of total Peruvian exports (Sub-Gerencia del Sector External 1989). Non-traditional exports also expanded to more than one-quarter of the Jamaican total by the late 1980s. But most of these were re-exports of oils and lubricants and, after a mid-1980s spurt pushed clothing to 12.5 per cent of Jamaican exports, the momentum was lost (World Bank 1989b).

Bolivia alone remained overwhelmingly mineral dependent at the close of the 1980s. Although the contribution of mining to GDP had declined from a fifth in the early 1970s to one-eighth in 1986–8, the

contribution to mineral exports rose slightly to exceed four-fifths of the total while the mineral sector's share of revenues also rose slightly to almost one-half. Bolivia could draw consolation from the fact that some diversification did take place *within* the mining sector as hydrocarbons expanded to equal hard minerals in their contribution to GDP and exports. However, the new balance did not extend into tax revenues, where hydrocarbons became dominant. The lack of progress in reducing mineral export dependence in three out of the four countries is reflected in trends in structural change.

Changing competitiveness of non-mining tradeables

By 1988 Chile's economy had undergone a remarkable economic transformation. The change was associated with accelerating GDP growth and export expansion, especially after 1984 which allowed some debt retirement through the late 1980s. Chile began to open up its economy after the first external shock. The effective rates of protection (EPRs) for manufacturing fell sharply through the mid-1970s (Table 4.6). Most of the tariff reduction occurred in 1975–6 when domestic demand was flat so that domestic manufacturers had little option but to turn to exports.

A marked decline occurred in the output from the erstwhile protected manufacturing sectors, notably textiles, footwear, leather goods and transport equipment—all of which saw their output

Table 4.6 Protection and trade openness in Chile

	Effective protection		
	1967	*1974*	*1979*
Consumer goods	138.8	189.7	13.2
Intermediate goods	172.9	139.6	14.0
Machinery and transport equipment	265.3	96.0	13.0
Equally weighted arithmetic mean	176.7	151.4	13.6
Standard deviation	279.0	60.4	1.7

Openness

Year	1929	1951–5	1965–70	1971–3	1974–9	1980–2
Foreign trade as % GDP	66.3	21.7	24.0	20.3	36.1	32.6

Source: Corbo and de Melo 1987:114.

Table 4.7 Trends in the composition of absorption, 1970–88

	1970–2	*1979–81*	*1986–8*[a]
Bolivia			
Per capita GNP (1980 $)	495	490	415
Private consumption	46.2	69.9	76.3
Public consumption	9.8	13.5	16.1
Investment	15.9	15.7	9.6
Total	71.9	99.1	102.0
Chile			
Per capita GNP (1980 $)	1,580	2,110	954
Private consumption	76.5	71.8	64.1
Public consumption	12.6	12.8	10.7
Investment	16.7	16.6	15.2
Total	105.9	101.2	90.0
Jamaica			
Per capita GNP (1980 $)	1,915	1,160	699
Private consumption	72.0	70.6	85.4
Public consumption	11.4	21.9	21.5
Investment	32.2	17.3	18.6
Total	115.6	109.9	125.5
Peru			
Per capita GNP (1980 $)	1,057	990	1,042
Private consumption	69.8	58.8	70.9
Public consumption	10.1	10.4	10.7
Investment	16.9	23.2	21.3
Total	96.8	92.4	102.9
Syrquin and Chenery norms			
Per capita GNP (1980 $)	500	1,000	2,000
Private consumption	70.2	66.4	63.1
Public consumption	13.5	13.7	14.4
Investment	20.8	23.8	25.0
Total	104.5	102.4	102.5

Source: CEPAL 1989.
Note: [a] Jamaica 1986–7, World Bank 1989.

halved in 1973–80. On the other hand, metals, refined products, wood-based goods and construction materials all expanded by 40 per cent or more (Gwynne 1985). A set-back occurred when the real exchange rate appreciated by some 50 per cent over 1976–81 and caused a sharp economic contraction in 1982. But manufacturing output expanded strongly again once a competitive exchange rate had been re-established (Wood 1988). Table 4.7 shows that, although

the rate of investment in Chile declined (as did those of the other three), the improved rate of GDP growth in the late 1980s meant that Chile by then was making by far the most efficient use of scarce capital resources. In contrast, the slightly higher rate of Peruvian investment was deployed with declining efficiency and therefore resulted in slower GDP growth.

Yet Peru also attempted to liberalize its economy, but its policy began later (1976) and was less consistent than that of Chile because of changes in government. Although Peruvian efforts may have shadowed those of Chile in 1976–85, they moved at a slower pace and were abandoned after 1985 for a populist boom (Figure 2.3). As that boom collapsed efforts to maintain a multi-tier exchange rate discriminated increasingly against competitive exports, including mining. The EPR for manufacturing averaged 78 per cent in 1988 and was closer to 140 per cent if the exchange rate overvaluation is included. The average EPR figure masks large variations which ranged from up to 304 per cent on consumer goods, through 160 per cent on capital goods to only 29 per cent on intermediates (World Bank 1989c). These figures confirm the Peruvian economy's waning competitiveness in the late 1980s.

EPRs were also high in Bolivia through the oil booms: in the early 1980s they averaged 94 per cent in manufacturing and ranged up to 195 per cent. For the primary sector the average EPR was 21 per cent with a high of 32 per cent (Morales 1987). It is not surprising that mining dominated Bolivian exports and few other activities were internationally competitive in the late 1980s. Jamaica began to reform its manufacturing sector a decade earlier than Bolivia after output had fallen sharply through the 1970s (manufacturing output declined 6.6 per cent annually over 1976–80). By 1980 the average EPR for Jamaican manufacturing was 58 per cent with a very wide dispersal about the mean. Rates were negative for textiles and wood products, goods in which Jamaica might be expected to hold competitive advantage. Quota restrictions were reduced from 1982 and tariffs were lowered from 1985. Growth in manufacturing output resumed but was barely 2 per cent annually over the period 1981–7 for the sector as a whole. Food processing (5.5 per cent) and textiles (13 per cent) grew faster than the average but faltered towards the close of the decade (World Bank 1989b).

These changes in competitiveness do not show up strongly in the trends in structural change (Table 4.8). Paradoxically, given the overall strengthening traced by the economic trajectories of Chile

Table 4.8 Trends in production structure, 1970–88

	Norm	*Actual, 1972*	*Actual, 1980*	*Actual, 1988*	*Norm*
Bolivia					
Per capita GNP	500	495	490	415	410
Agriculture	31.7	17.5	18.4	22.8	35.3
Manufacturing	14.8	13.2	14.6	10.6	13.7
Construction	4.9	4.7	3.7	2.9	4.7
Services	41.9	44.5	47.5	50.5	40.4
Mining	6.6	20.1	15.8	13.2	5.9
Chile					
Per capita GNP	1,600	1,580	2,110	954	950
Agriculture	18.5	6.2	7.2	8.3	23.6
Manufacturing	19.8	26.4	21.4	21.0	17.8
Construction	5.8	5.4	5.2	5.6	5.4
Services	48.3	54.6	57.6	56.0	45.5
Mining	7.6	7.4	8.6	9.1	7.6
Jamaica					
Per capita GNP	1,900	1,915	1,160	699	700
Agriculture	16.1	7.1	8.2	8.3	28.2
Manufacturing	20.7	18.3	16.6	18.2	16.1
Construction	6.1	11.8	5.8	6.4	5.1
Services	49.6	52.0	55.2	58.3	42.8
Mining	7.5	10.8	14.2	8.8	7.0
Peru					
Per capita GNP	1,000	1,057	990	1,042	1,000
Agriculture	22.4	13.8	10.2	13.3	22.4
Manufacturing	18.3	21.6	20.2	20.0	18.3
Construction	5.5	6.3	5.7	5.8	5.5
Services	46.1	48.3	48.7	50.3	46.1
Mining	7.7	10.1	15.2	10.6	7.7
Dutch disease index					
Bolivia		15.8	13.5	15.5	
Chile		5.7	7.6	12.1	
Jamaica		11.4	15.4	17.8	
Peru		5.1	10.3	7.4	

Source: CEPAL 1989

and Jamaica, those countries' Dutch disease indices increased sharply while the index for Peru rose only fractionally and that for Bolivia remained stable (Table 4.8). The large rises in the index are associated with sharp falls in real per capita income measured in US dollars (in Jamaica and Chile) and the more modest changes reflect the stagnation of real per capita income (in Peru and Bolivia).

As per capita income falls, the Syrquin and Chenery norms suggest that an expansion of agriculture will offset a contraction in manufacturing. In the cases of Chile and Jamaica, the shrinkage in the size of their manufacturing sectors was only modestly compensated by agricultural expansion. The farming sector (grossly shrunken in both countries by Dutch disease effects at the outset of the period studied) failed to expand back to anywhere near the levels indicated by the norms. But the pre-condition decline in agriculture's share of GNP in Jamaica and Chile did stop and some expansion did occur, albeit modest.

In fact, as noted in Chapter 3, the Dutch disease index is not a reliable guide to healthy diversification since it assumes that the non-mining tradeables are competitive and this is not warranted where infant industry protection has been excessive and persistent. Trends in industrial competitiveness (outlined above) are more insightful; they show that by the late 1980s Chile's non-mining tradeables were internationally competitive and Jamaica was moving slowly in that direction, whereas Bolivia had still to embark on that process and Peru was experiencing regression. Consequently, by the late 1980s, Chile alone had succeeded in building a diversified competitive economy. The three other countries retained a high dependence on mining. It is therefore important to determine trends in the efficiency of that sector through the period studied.

MINING SECTOR RESILIENCE

Changes in global market share over 1972–88 provide an index of the competitiveness of hard mineral production. Chile and Peru both increased their global market share through that period, each country doubling its share to, respectively, 21 per cent and 6 per cent. In contrast, both Jamaica and Bolivia lost their earlier market dominance and each suffered a loss in world market share of around two-thirds. In the late 1980s, Chile continued to improve the competitiveness of its mining sector while both Jamaica and Bolivia adopted improved policies towards their sectors, but Peru experienced regression.

Changing copper competitiveness

The changing competitiveness of the Chilean and Peruvian copper industries is traced to the mid-1980s in Table 4.9. The figures are

Table 4.9 Changing copper mining competitiveness, Chile and Peru, 1975–85 ($/lb)

	Direct cost[a]	*Indirect cost*[b]	*Interest*[c]	*Gross cost*	*Co-by-product credit*[d]	*Net cost*	*Percentage of global average*[e]
Chile							
1975	36.5	14.1	2.1	52.7	5.5	47.2	96.5
1980	50.8	25.4	0.6	76.9	20.1	56.8	113.8
1985	40.2	6.3	4.5	51.0	8.8	42.2	83.4
Peru							
1975	87.3	22.1	2.2	111.6	60.5	51.1	104.5
1980	90.2	30.6	9.2	129.9	88.8	41.4	82.4
1985	66.6	12.4	6.4	85.2	44.2	41.2	81.4

Source: Takeuchi *et at.* 1987:60, 77

Notes: [a] Direct cash operating costs including mining, refinery, freight and marketing.
[b] *Administration and corporate overhead, royalties, research and exploration.*
[c] *All interest expenses.*
[d] *Revenue from by-products.*
[e] *Representing 80% of global production.*

sensitive to exchange rate shifts. For example, after cutting administration costs through a reorganization of the state-owned mines in the mid-1970s (Fortin 1984), Chile's competitiveness was eroded by an appreciation of the real exchange rate. Production costs in 1980 were some 10 per cent above the global mean (Table 4.9). A sizeable real exchange rate depreciation in 1982, coupled with an aggressive expansion by the state mines, restored Chile to the ranks of the cheapest world producers.

Peru's copper sector moved in the opposite direction, its falling competitiveness being synchronized with the country's deteriorating economic trajectory. Table 4.9 shows that Peruvian copper mining relies on by-product credits to offset its relatively high costs. Consequently, some improvement occurred through the late 1970s exchange rate appreciation because the rise in by-product credits more than offset increases in direct mining costs. Thereafter, as the rest of the economy deteriorated the mining firms experienced mounting losses, estimated at $200 million in 1986 alone (*Financial Times* 1986a). The leading MNC producer (responsible for two-thirds of Peru's copper production) deferred investments needed to sustain productive capacity while the leading state-owned mine was decapitalized.

A parallel deterioration occurred in Peru's state-enterprise-dominated hydrocarbon sector. Peru became a net oil exporter in 1978 and oil production averaged 180,000 barrels per day (bpd) through the decade to 1988 of which one-third was exported. The state oil corporation was decapitalized through a combination of low domestic prices and high taxation, so that exploration expenditure lagged requirements. Disputes with the remaining oil MNCs in the late 1980s also retarded exploration and Peru became a net oil importer in 1988. The corrosion of mining sector efficiency even as the economy's dependence on the sector increased also occurred in Bolivia and Jamaica, which both lost market share.

Market share loss

The roots of the mid-1980s crisis in the Bolivian tin sector lay in the declining tin content of its ores which had fallen from around 15 per cent in the early 1900s to 1 per cent when the mines were nationalized in 1952 and to 0.5 per cent by the 1980s (Smith 1983). After nationalization, the Bolivian mining sector fossilized as successive governments attempted to maximize revenue extraction.

Table 4.10 Comibol cost trends, 1980–6

	1980	*1981*	*1982*	*1983*	*1984*	*1985*	*1986*
Cost ($/lb)							
Mine cost	4.06	5.51	5.24	6.65	7.83	9.40	4.05
Royalties	1.81	0.64	0.68	0.91	0.47	0.50	0.04
Realization	1.16	1.76	1.76	1.93	1.34	1.47	0.78
Cost at market	7.10	7.99	7.68	9.49	9.65	11.37	4.86
Average LME price	7.17	6.39	5.69	5.89	5.53	5.32	2.57

Production (tonnes)	*1982*	*1986*
Tin	17,493	4,232
Zinc	23,726	3,915
Lead	7,233	1,319
Silver	131	34
Copper	2,833	165
Bismuth	5	–
Tungsten	1,321	77

Source: Suttill 1988:46

By the 1980s most tin was produced from deep mines, many below 500 metres, and from veins less than 25 centimetres wide. The high altitude and inaccessibility of most mines compounded the low ore content problem.

Bolivia was therefore a very high cost producer by the 1980s because of unfavourable geology, weak management and poor policy. The country's competitiveness deteriorated sharply during 1980–5 (Table 4.10). By 1985 the state venture's cumulative losses exceeded $700 million while debt was more than $400 million and debt service more than 25 per cent of revenues (Suttill 1988). Even after closures and devaluation in 1986 Bolivia's leading state mining firm remained an uneconomic producer.

Fortunately, Bolivia's state oil corporation proved easier to reform than its leading state hard mineral firm. It was able to transfer the bulk of its operating surplus to the government after 1985 while still attracting foreign loans to cover its own investment needs. This provided an invaluable insulation against the abrupt revenue losses which the Bolivian government experienced when tin and oil prices crashed. Natural gas had accounted for a growing share of revenues and export earnings prior to the 1986 price fall, providing more than half of Bolivia's exports in 1985.

Although Jamaica left its bauxite production largely under MNC control, it still eroded the competitiveness of the mining sector by

overestimating the rents on its bauxite. The unilateral imposition of a bauxite levy in 1974 resulted in a sixfold tax increase on the aluminium MNCs. It marginalized the sector just when Jamaica's market in the southern United States was in relative decline and more distant markets were being captured by large new mines in Australia and West Africa (Auty 1983b). Despite joining Jamaica in a producer cartel neither of the country's main rivals, Australia and Guinea, imposed levies, while the newest competitor, Brazil, declined to join the cartel.

The MNCs relegated Jamaica to the role of swing producer: they scaled back production at high-cost locations like Jamaica during the mid-1970s recession and drew firstly on the more competitive new locations during subsequent expansion. The second oil shock intensified the Jamaican problem because it marginalized several more Jamaican-sourced US smelters and further eroded the fuel-intensive Jamaican alumina refineries' viability. Two Jamaican alumina refineries were mothballed and two more reduced capacity by 25 per cent while a large bauxite mine closed permanently in 1984. Jamaican bauxite output halved during 1980–6 to 6 million tonnes compared with 15 million tonnes before the levy.

Jamaica shows how the mining sector in a deteriorating economy can be corroded, even as its economic role becomes more crucial. This is one important component of the negative feedback loop that lies behind the disappointing economic trajectories. A similar pattern of increased dependence on a mismanaged and weakening mining sector is evident in Bolivia and Peru. Once again, Chile proves the exception: it continued to expand its global copper market share even as competitive diversification proceeded apace in the non-mining tradeables.

CONCLUSION

There is little relationship between the economic trajectory of individual countries and either their pre-conditions or the external shocks. The overall economic trajectories of the four countries over 1972–88 show a pattern of abrupt decline and sustained recovery in Chile and (more falteringly) in Jamaica. The pattern traced by Bolivia and Peru is one of accelerating weakening from which Bolivia alone appeared to be escaping in the late 1980s. These patterns indicate that, in relation to their pre-shock potential and the nature of the external shocks, Jamaica, Bolivia and Peru under-performed whereas

Chile did rather better. Such counter-intuitive conclusions echo the resource curse thesis: the most favoured do least well. They also underline the importance of the policy variable.

The Bolivian economy performed poorly, despite the fact that it enjoyed positive shocks after 1973 and 1979. Meanwhile, although the first shock was also positive for Jamaica and the second shock was strongly negative, Jamaican GDP declined significantly *before* 1979 and Jamaica had by far the weakest GDP growth over 1972–88. Peru also failed to take advantage of its stronger pre-shock resilience and milder shocks to outperform Chile. The size of the first external shocks makes the Chilean performance even more remarkable. However, that country's response to the potentially milder second shock depressed its long-term growth trajectory and raises doubts about its policy.

Even so, Chile made most progress towards reduced mineral dependence and the competitive diversification of its economy. At the other extreme Peru regressed sharply in the late 1980s and, although its mineral dependence index changed little, its mining sector was severely weakened as a consequence of inappropriate policies. In contrast, although Chile reduced its mineral dependence, its mining sector emerged as the strongest of the four countries.

The two smallest economies remained the most mineral dependent at the close of the 1980s, with every prospect of that dependence increasing. Jamaica, which ironically damaged the competitiveness of its mineral sector through its attempts to increase its contribution to the economy in the mid-1970s, had made little progress towards competitive manufacturing in the late 1980s. Bolivia made least progress with the competitive diversification of its non-mining tradeables. Like hydrocarbon exporters elsewhere, it made disappointing use of its windfalls from the two oil shocks.

Compared with other developing countries, the economic growth rate of all four mineral economies was slower than the developing country average and the mineral economies' subsequent growth slowdown was even steeper than the developing country average. Yet, disappointing as the overall response of the four countries to the price shocks was, the resource curse thesis is not a law, merely a tendency. For example, the resource-rich Asian countries like Malaysia and Indonesia made better use of their endowment in terms of economic growth, export diversification and structural change (Auty 1990a). Both this fact and the differences between the four developing

American mineral economies underline the role of policy as the dominant factor controlling economic performance through the mineral price swings. Macroeconomic policy is analysed for each of the four developing American countries in Part II and microeconomic policy in Part III. Thereafter, in Part IV, we return to the inter-cultural comparison.

Part II

MACRO POLICY IN FOUR DEVELOPING AMERICAN COUNTRIES

5

BOLIVIA

Accelerating weakness despite positive external shocks

OVERVIEW OF PART II

The previous section established an inverse relationship between a country's economic trajectory and both the potential pre-shock resilience of the country and the nature of its external shocks. It thereby underlined the significance of the policy variable to which attention now turns in this section (Part II) with specific reference to macroeconomic policy. The discussion examines the macroeconomic policies of the four developing American countries, focusing on the debate between structuralism and orthodox theory. The variations within each policy viewpoint, notably that between doctrinaire orthodoxy and pragmatic orthodoxy, are also analysed. It will be recalled that the doctrinaire orthodox view advocates minimal state intervention and relies heavily on the exchange rate to restore equilibrium following disruptive shifts in mineral revenues. In this context, pragmatic orthodoxy and structuralism offer alternatives to doctrinaire orthodoxy which represent increasing levels of interventionism.

The argument in Part II is developed through the sequencing of chapters which begins with the countries that experienced an accelerated economic weakening despite having either strongly favourable external shocks (Bolivia) or highly favourable pre-conditions (Peru). Bolivia (this chapter) provides a clear example of the resource curse thesis. Bolivian governments repeatedly overestimated trends in mineral prices and failed to make adequate provision for a mineral downswing. Bolivia also illustrates a corollary of the resource curse thesis, namely the emergence of the political will to reform under appallingly harsh circumstances (the mineral

price collapses of the mid-1980s). In the case of Peru (Chapter 6), the other country which underwent accelerated economic decline, the initial advantages (of a strong government and diversified economy) were vitiated through vacillation between orthodox and structuralist policies. The economy declined especially rapidly after the espousal of a populist boom in the mid-1980s.

In contrast, the two countries which experienced sustained recoveries from populist booms both adopted orthodox policies, albeit reluctantly in the case of Jamaica under the second Manley government (1976–80). Although Chile (Chapter 7) persistently adhered to orthodox policies and performed better than the three other countries, there is clear evidence that its recovery was delayed by doctrinaire policy errors during the price upheavals of the second external shock. Finally, in Chapter 8, the hesitant recovery of Jamaica casts further doubt on the efficacy of the doctrinaire orthodox prescription and sets the scene for an analysis of supplyside microeconomic policies in Part III.

Within this overall context, the present chapter evaluates Bolivian economic policy in the period 1972–89 in three steps. It begins by showing how the 1974–8 windfall triggered the premature relaxation of stabilization measures and ushered in a profligate deployment of the mineral windfall. The third section explores the country's response to the second oil shock which caused a lurch first into political instability and then into economic crisis, tracing the reasons for Bolivia's failure to evade the vortex of the 1984–5 hyperinflation. Finally, the fourth section examines the abrupt and bold stabilization policy which emerged from the harsh conditions of the mid-1980s. The pragmatic nature of Bolivia's orthodoxy establishes the theme for much of the remainder of Part II.

THE MISHANDLED 1974–8 BOOM

Triggering the cumulative downward spiral

Bolivia experienced a substantial improvement in its external trade after the first oil shock. A combination of the doubling in the world tin price and a quadrupling in the oil price in 1973–4 caused Bolivia to have a 40 per cent gain in its terms of trade in 1974–8 compared with 1970–3. Given the ratio of exports to GDP, this meant an improvement equivalent to 12.1 per cent of GDP in 1974–8. This positive shock compares with negative ones over the same period of

4.3 per cent for Peru and 10.6 per cent for Chile (Balassa and McCarty 1984). The second shock was also initially positive, albeit more modestly so, with an impact about one-quarter the size of the first shock. Despite these favourable shocks, the long-term economic trajectory traced by the Bolivian economy is one of accelerating weakness.

This disappointing outcome reflects the experience of many other high-absorbing oil-exporting countries through the 1970s and 1980s where the resource windfall turned out to be a curse rather than a blessing (Gelb 1988). It is the more disappointing for Bolivia given the scope for reform which the windfalls provided and the improving political pre-conditions in 1972. Taking each of the principal elements of the cumulative model in turn (Figure 3.1), in 1972 a military government was established under Banzer which proved capable of at last launching a stabilization programme. The successful completion of that programme would have enabled the government to focus upon long-term development goals rather than the short-run dictates of coalition-building.

Turning now to the economic pre-conditions (Figure 3.1), it may be recalled from Chapter 4 that Bolivia was a highly mineral-dependent economy which, despite fairly rapid GDP growth (Table 5.1), was experiencing mounting fiscal and current account deficits. These trends reflected the legacy of the 1952 revolution which established state capitalism in place of internal colonialism (wherein a local elite allied with external capital exploits the country). The new system did not lead to rising productivity. Although public investment was typically half or more of total investment through the 1960s and 1970s, the state lacked the capacity to execute its lead role in the economy. Yet that lead role remained intact, even when from 1964 the United States tried to push military governments towards neo-liberal policies (Bailey and Knutsen 1987).

Two fundamental flaws in Bolivia's civil administration (Figure 3.1) were, first, an inability to expand domestic taxes to a level commensurate with the enlarged state commitments and, second, inadequate commercial autonomy for the key state enterprises like those in mining. The fiscal failure reflected an unresolved social conflict in which the efforts of workers to expand social spending were successfully resisted by those with wealth (Pastor 1991). However, the social conflict was repressed and the inflationary impact was dampened—provided foreign lending bridged the fiscal and current account gaps. An important source of the weakness of

Table 5.1 Trends in key economic parameters, 1970–88, Bolivia, Chile, Jamaica and Peru

	1970–3	*1974–8*	*1979–82*	*1983–8*
GDP growth (%)				
Bolivia	4.2	4.4	(1.2)	(0.8)
Chile	1.7	1.9	1.9	4.3
Jamaica	4.6	(3.2)	(1.4)	0.9
Peru	5.0	3.2	3.8	0.5
Terms of trade (1980 = 100)				
Bolivia	56	81	96	76[a]
Chile	202	113	93	81[b]
Jamaica	116	119	100	99[b]
Peru	137	113	93	77[a]
Real effective exchange rate (1965 = 100)				
Bolivia	86.6	101.3	128.1	212.3[b]
Chile	88.2	64.6	83.1	65.0
Jamaica	87.2	96.5	72.8	77.9[c]
Peru	87.0	73.6	76.8	70.2
Balance of payments (% GDP)				
Bolivia	(0.3)	(4.8)	(10.4)	(11.0)[c]
Chile	(2.5)	(3.9)	(9.4)	(7.4)[a]
Jamaica	(11.6)	(6.0)	(9.9)	(11.3)[a]
Peru	(0.6)	(6.4)	(2.9)	(2.9)[a]
Fiscal gap (% GDP)				
Bolivia	(3.1)	(2.8)	(6.2)	(10.5)[c]
Chile	(10.2)	(1.0)	3.0	(1.7)[c]
Jamaica	(3.6)	(11.4)	(13.9)	(6.2)[b]
Peru	(2.1)	(7.3)	(4.8)	(5.9)[a]
Debt-to-GDP (%)				
Bolivia	0.50	0.59	0.87	1.29[b]
Chile	0.29	0.43	0.46	0.94[a]
Jamaica	0.66	0.53	0.61	1.26[b]
Peru	0.35	0.40	0.39	0.52[a]

Source: World Bank 1989a; real effective exchange rates, Wood 1988; fiscal gap, 1978–87, Inter American Development Bank 1990

Notes: [a] 1983–7.

[b] *1983–4.*

[c] *1983–6.*

Bolivia's state capitalism was that investment was not only relatively low, but also poorly applied.

It was the sixth and final constraint in the cumulative model (Figure 3.1) that proved the destabilizing element, namely an external shock—and a strongly positive one at that. The first mineral shock deflected the Banzer government from the prudent stabilization policy upon which it had embarked in 1972. But Banzer failed to adopt a prudent policy for the deployment of the mineral windfall. Bolivia needed to sterilize its mineral windfall in order to complete its stabilization programme and minimize real exchange rate appreciation. It could then finance those long-term investment projects which would accelerate economic growth. Such investment would include the elimination of the country's infrastructural backlog, the updating of mining sector equipment and colonization of the eastern lowlands by Altiplano peasant farmers.

The windfall deployment, 1974–8

Instead of maintaining prudent policies, Banzer took advantage of the favourable external trends to backtrack on stabilization and boost immediate consumption. Far from saving a part of the windfall, Bolivia did not take advantage of it to reduce its already sizeable debt. At 50 per cent of GNP in 1970–3, Bolivian debt was significantly higher than that of either Chile (29 per cent) or Peru (35 per cent). Instead, Bolivia used its hydrocarbon reserves as collateral to increase foreign borrowing. In so doing, it amplified the mineral windfall and increased upward pressure on the exchange rate which caused further corrosion of the competitiveness of the non-mining tradeables sectors (Table 5.1).

Yet even though domestic absorption was high, Bolivia failed to take advantage of its windfall to make investments that would arrest the long-run fossilization of its economy. In fact, little improvement in the country's investment ratio occurred, even though in the early 1970s it was only 15 per cent of GDP, some 5 per cent below the Syrquin and Chenery norms for a country of Bolivia's size and level of development.

The Banzer government did attempt to use the mineral windfall to diversify hydrocarbon exports through substantial investments in the eastern region. It presented a five-year development plan in 1975 which favoured Banzar's home province of Santa Cruz (Morales and Sachs 1988). By 1978 the rate of public investment

had expanded to two-thirds of total investment after having fallen below two-fifths during the 1973–5 stabilization package (Morales and Sachs 1988). Although some of the investment was successfully deployed in constructing a gas pipeline to Argentina, that which was expended on oil exploration and development failed to yield positive results.

The windfall was *not* used to reverse the neglect of investment in the hard mining sector on the Altiplano (Casanovas 1990). The mines had been running down since the 1930s and conditions had got no better through the first two post-revolutionary decades. In fact, the windfall from higher tin prices was taxed away from the leading state enterprise, which accounted for two-thirds of Bolivian output, though not from the smaller private companies (Ayub and Hashimoto 1985). Far from being strengthened through the boom, the state enterprise began to register pre-tax losses and ceased to publish accounts from 1977. By 1980 Bolivian tin production costs were very high by world standards and production began to decline from 1981 (CEPAL 1989).

The resources which were allocated to investment in the hard minerals sector were used to establish a state-owned tin smelter which was intended to improve domestic value added. The smelter proved uneconomic, however, and suffered sizeable losses. It was sub-optimal in size because of low ore volumes and technical problems connected with Bolivian ore quality and high-altitude operation (Hennert 1986). Meanwhile, the mineral boom was associated with a strengthening in the real exchange rate by around one-sixth during the second half of the 1970s. This rendered the non-mining tradeables sector even less competitive than before the boom, effectively intensifying mineral dependence.

The bulk of the mineral windfall went into higher consumption. One way it did this was through substitution for direct taxes as part of the relaxation of fiscal discipline which occurred after the first oil shock. Even with the extra resources, the initial progress in shrinking the fiscal deficit under Banzer was reversed. The fiscal deficit, having narrowed from 3.1 per cent of GDP to 0.8 per cent in 1974–5, deteriorated rapidly to average 4.9 per cent in 1977–8 (UN, various years). Aid expanded to meet a growing share of the fiscal deficit, up from one-fifth to one-third by 1974–6 (Casanovas 1990).

A second way in which consumption was increased was through higher import purchases, made cheaper by the appreciation

(strengthening) of the real exchange rate. The real exchange rate appreciated by 44 per cent in 1973–4 and remained around that level until the second oil shock. As with the fiscal deficit, initial progress in closing the trade deficit was reversed (Table 5.1). It widened *despite* the sharp increase in export earnings brought about by higher mineral and oil prices. Imports grew even faster than exports. The balance of payments deficit, which had averaged the equivalent of 0.3 per cent of GDP in 1970–3, deteriorated to average 4.8 per cent of GDP by 1974–8 (Table 5.1).

Driven by the growing fiscal and trade deficits, foreign debt expanded rapidly in 1975–8 to reach 76 per cent of GNP. Its growth outstripped that of debt service capacity—despite the large increase in Bolivia's export earnings. The debt-to-export ratio which had averaged barely 5 per cent in 1970–3 on account of a sizeable aid component reached 16 per cent in 1978. Meanwhile, GDP growth experienced a continuous deceleration from its 1975 level of 6.6 per cent, reaching 3.4 per cent in 1978 (and turning negative after 1980 (Tables 5.1 and 5.2)).

Table 5.2 Public revenue and expenditure, Bolivia, 1975–85 (billion 1980 pesos)

Year	*Revenue*	*Expenditure*	*Deficit*
1975	0.435	0.489	(0.054)
1976	0.495	0.596	(0.101)
1977	0.519	0.743	(0.224)
1978	0.539	0.725	(0.186)
1979	0.388	0.696	(0.308)
1980	0.481	0.877	(0.396)
1981	0.466	0.796	(0.330)
1982	0.235	0.566	(0.331)
1983	0.153	1.157	(1.004)
1984	0.122	1.064	(0.942)
1985 (estimate)	0.306	1.445	(1.139)

Source: Bailey and Knutsen 1987:48

The unwise use of the windfall to boost consumption reversed the gains of the 1972 stabilization package. Perversely, the deployment of the windfall amplified the fiscal and current account deficits while boosting, rather than retiring, debt. The Bolivian economy continued to suffer from under-investment through the 1974–8 windfall and, aside from the investment in gas development, to fall behind best practice technology. The pattern of windfall deployment also

undermined political support for the Banzer government because the consumption boom failed to benefit low-income groups. Banzer's increasing dependence on elite factions in the eastern farmlands and private Altiplano mines brought US pressure for him to step down in 1978.

FROM BOOM TO CRASH, 1979–85

The second boom, 1979–81

The second oil boom was weaker than the first because oil exports had fallen to negligible levels, and, although gas exports expanded, the share of hydrocarbons in exports was only 23 per cent in 1980 compared with 30 per cent in 1975 (Bailey and Knutsen 1987). Hard minerals increased their dominance of exports from 57 per cent to 63 per cent. Against this background, the resignation of Banzer meant that Bolivia's weaker second mineral boom coincided with a period of political instability. The leftist coalition under Siles which won the 1978 election was prevented from assuming office by military and political manoeuvres. The ensuing struggle between civilian politicians and between left and right led to nine changes of government over the four years from 1978 to 1982.

Political weakness precluded stabilization because the latter was expected to have adverse consequences for income redistribution (Morales 1988). None of the Bolivian governments which briefly held power in 1978–82 was able to enlist support for the fiscal reform needed to boost state revenues in line with expenditures. Public expenditure grew rapidly, almost doubling in real terms between 1975 and 1980 (Table 5.2). Accelerating inflation, however, caused domestic revenues first to stagnate in real terms and then to decline sharply in 1980. The fiscal deficit jumped to average 6.2 per cent of GDP in 1979–82 (Table 5.1).

Levels of tax evasion were very high. Successive Bolivian governments were forced to continue their reliance on trade taxes for revenue, rather than direct taxation. At first, foreign finance was used to cover both public investment needs and the fiscal deficit. It contributed the equivalent of 4.9 per cent of GDP towards the fiscal deficit in each of 1980 and 1981 (Morales 1988). The debt burden increased correspondingly and the debt-to-GDP ratio jumped by half to average 87 per cent of GDP in 1979–82, significantly higher than the levels for Jamaica, Chile and Peru (Table 5.1). The trade deficit

widened further, despite higher export prices, and averaged 10.4 per cent of GDP in 1979–82. This was more than twice the level for 1974–8.

An emergency debt rescheduling with the commercial banks broke down and both the World Bank and the IMF ceased lending in 1981. By the end of 1981, Bolivia effectively ceased to have access to international private credit. The cut-off in international finance greatly accelerated the cumulative deterioration of the political economy and triggered Bolivian hyperinflation (Sachs 1987). The Bolivian government resorted to seigniorage (inflation tax) which jumped sharply in 1981 and pushed inflation (which had traditionally not been high by Latin American standards) from 25 per cent to 300 per cent by October 1982. The real exchange rate appreciated much faster than in the mid-1970s and was around 27 per cent higher over 1979–82 than over the period 1974–8 (Table 5.1).

In the absence of a secure government, an inexorable compounding of the economic deterioration occurred. By 1982, the current account deficit was 15 per cent of GDP and the fiscal deficit 16 per cent of GDP. Yet the misallocation of much of the windfall from 1973–82 meant that the domestic production with which to substitute for the lost foreign exchange and overseas budgetary contributions was not forthcoming.

The mining sector continued to weaken during the second hydrocarbon boom. The official exchange rate appreciated and effectively taxed export activity such as mining. By the 1980s Bolivia's tin sector had been decapitalized and was high cost with chronic supply-side rigidities (Ayub and Hashimoto 1985). Bolivian tin mines ranked among the world's most high cost, with mine operating costs in 1984 some 50 per cent higher than most producers at $6.40/lb. By-product credits closed the gap only fractionally, being worth only $1.20/lb. The output of tin concentrates fell from 29,830 tonnes in that year to 16,136 tonnes by 1985.

The ominous long-term trends in Bolivia's tin and oil production did not elicit compensating diversification within the non-mining tradeables sector. Although a modest fall took place in the Dutch disease index in 1972–80 (from 15.8 to 13.5 per cent), the manufacturing sector was still heavily protected. The agricultural sector had shrunk further, to little more than half the Syrquin and Chenery norm for a country of similar size and level of development. In fact, the contribution of agriculture to official exports actually declined during 1975–80 from 6 to 4 per cent and the sector needed subsidies

Table 5.3 Economic indicators, Bolivia, 1980–9

	1980	*1981*	*1982*	*1983*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*
GDP growth (%)	(1.4)	0.9	(4.4)	(6.5)	(0.3)	(0.2)	(2.9)	2.1	2.7	2.5
Consumer prices (%)	47.2	29.0	132.6	269.0	1,281.6	11,747.8	276.4	14.6	16.0	15.9
Real effective exchange rate (1980 = 100)	100.0	120.6	126.4	120.3	138.5	164.2	78.4	74.0	66.1	64.0
Current account (% GDP)	(1.5)	(12.7)	(5.6)	(5.5)	(5.1)	(9.2)	(10.7)	(12.2)	(7.8)	

Sources: World Bank 1990s

to protect it against imports. Since the 1952 revolution, Bolivian agriculture had become a convenient conduit for political favours, especially under the Banzer regime. Yet it required considerable investment if the lowland Oriente frontier was to ease pressures on the poor soils of the Altiplano.

The slide into hyperinflation

Sachs (1987) calculates that the shift in net resource transfer to Bolivia in 1980–3 resulting from the cut-off of foreign credit was equivalent to the loss of 10 per cent of GDP. Siles finally emerged as president at the head of a left-of-centre coalition after the withdrawal of the military in 1982. But his government lacked the support to restore economy stability. It launched six stabilization packages which were each overturned by public protest. It pressed for public spending programmes which it lacked the political base to finance. Trade accounted for 55 per cent of government revenues in 1981–5 (Morales 1988) and while revenues continued to decline in real terms, public expenditure grew rapidly (Table 5.2).

The negative economic impact of the rapid cut-off in foreign capital flows which occurred in 1981–3 was worsened by adverse weather conditions which cut GDP by around 7 per cent (Table 5.3). These weather conditions included severe drought on the Altiplano as well as floods in the eastern lowlands. The resulting foreign exchange shortages further curbed imports with detrimental effects on manufacturing. These adverse factors in turn interacted with the country's immature tax system (which was heavily dependent on export levies) to trigger hyperinflation.

A sizeable part of the ballooning fiscal deficit was financed by printing money. Inflation accelerated to levels in excess of 500 per cent and approached 20,000 per cent at one point in 1985 (Table 5.3). Meanwhile, the investment rate (which at 15 per cent of GDP had been barely three-quarters of the Syrquin and Chenery norm) declined even further to 12 per cent of GDP in 1982–5 with private investment halving to scarcely 3 per cent. At first the government attempted to maintain foreign debt payments, but in 1984 it limited foreign debt repayments to one-quarter of export earnings.

Hyperinflation caused chronic currency overvaluation. By mid-1985, the official exchange rate was 75,000 pesos to the dollar (compared with just 25 pesos in 1981) while the parallel market rate was 300,000. Although trade generated 20 per cent of Bolivian GDP

in the early 1980s, the country had very few activities which were competitive at world prices. The exchange rate overvaluation meant that Bolivia's mining sector became even more marginal, both for metal and hydrocarbons. Nor was exporting encouraged by the introduction of a dual exchange rate system in 1982 which called for exporters to convert 40 per cent of their earnings at the overvalued, and therefore unfavourable, official exchange rate.

Under these conditions, the informal economy played an increasingly important role (Blanes 1989). Per capita income fell by 25 per cent in 1980–4 and official unemployment jumped to one-fifth of the workforce: more and more people turned to the trade in drugs and smuggled goods and circumvented official channels (*Economist* 1985a). By the mid-1980s some three-quarters of Bolivian economic activity was estimated to occur within the rapidly expanding informal sector. As miners and other city dwellers returned to the countryside, land (which had been liberally redistributed after 1952) served as a cushion against recession.

At least one family in ten was thought to depend directly or indirectly on coca production. Coca exports were valued in excess of $600 million in 1980 or more than 50 per cent of the official export total. By the mid-1980s cocaine and related activities accounted for an estimated 12 per cent of GNP (Morales 1988) while the value of illegal cocaine exports by that time was thought to exceed that of mineral exports.

Meanwhile, within the formal sector, efforts by workers to secure wage increases to offset inflation centred on indexation. Their attempts at last broke down in 1984 and strikes underlined the government's loss of labour support and also gave a renewed push to inflation. Siles called an election for July 1985, one year early (Pastor 1991).

RAPID STABILIZATION, 1985–9

Just as, counter-intuitively, a positive shock reversed Bolivia's stabilization policy in 1974 and launched the country on its cumulative economic decline, so it was a negative shock in 1985 which triggered recovery. The frightening and rapid deterioration of the Bolivian economy welded together a political consensus in the mid-1980s that abruptly halted the spiral. That consensus found expression in the New Economic Policy (NEP) which took a hybrid approach to Bolivia's internal and external economic problems. The

new policy was an imaginatively pragmatic form of economic orthodoxy. It brought about a remarkable transformation of the Bolivian political economy which opened up the prospect of the political economy embarking on a positive feedback loop.

The hybrid stabilization package

The 1985 election provided the catalyst for change, but the bold reforms of the NEP launched in August of that year had to be implemented under extraordinarily adverse external circumstances. The tin market collapsed late in 1985, with prices falling by 60 per cent. Then hydrocarbon prices declined sharply in mid-1986. The net effect was a 45 per cent decline in Bolivia's terms of trade over 1984–8. Meanwhile, in the informal economy wholesale coca prices also fell from $65,000/kg to $40,000/kg in 1982–7 and they went lower still in 1988 (*Financial Times* 1988b).

The key to the new political consensus was the re-election to the presidency in 1985 of the left-of-centre leader Paz Estenssoro who had led Bolivia on its statist revolution in 1952. Within days of taking office the new president adopted his defeated opponents' orthodox economic reform programme, but applied it in a pragmatic fashion. The two main pillars of that programme were a commitment to currency convertibility (following devaluation of the peso) and a balanced budget (through a combination of across-the-board expenditure cuts and taxation diversification). These two pillars of orthodox policy were later buttressed by a third most unorthodox measure, namely a refusal to meet full debt repayments.

The first critical measure was devaluation. The peso was devalued by 1,500 per cent and prices were liberalized while salaries were frozen. Sachs (1987) argues that prior to devaluation the US dollar had been acting as the unit of account and that Bolivian inflation was made to revert to dollar inflation levels by stabilizing the exchange rate. The devaluation halted the depreciation of the currency on the parallel market. Long-term confidence in the stabilization programme was then cemented through a dramatic improvement in the fiscal balance.

Fiscal prudence was essential to the consolidation of confidence in price stabilization. The improved fiscal balance followed from the second critical move, the freeing up of public sector prices (especially hydrocarbon products) backed up by a wage freeze.

Expenditures were contained by reductions in public sector employment, lagged public sector pay rises and tighter borrowing conditions for state enterprises. The leading state firms, including the debt-burdened mining enterprise, were decentralized and made more accountable.

Higher revenues accrued for state services through the inflation-correction of prices. Government revenues rose from 5 to 17 per cent of GDP over 1984–8 with import duties accounting for one-tenth and the rest split evenly between taxes from the hydrocarbon state enterprise and the new tax system (World Bank 1989d). A 10 per cent value added tax was introduced and applied to property sales and employment contracts, along with a linked 10 per cent income tax. Luxury goods attracted higher tax rates. Wealthier members of the society also paid more through rural real estate taxes, a property tax on vehicles and a tax on the presumed income of enterprises related to their net worth. Even so, the left saw the package as strongly regressive (Pastor 1991).

The price liberalization programme included, in addition to the removal of price ceilings, the elimination of quantitative restrictions on international trade. Import tariffs were set at a uniform 20 per cent with the prospect of a further reduction to 10 per cent. Almost all exporters were granted a uniform tax rebate on inputs equivalent to 10 per cent of the f.o.b. value of their exports. These measures were accompanied by financial liberalization (the removal of interest rate ceilings/floors and full currency convertibility). Similarly, restrictions on firing and on minimum wage levels were eased. Wage indexing was removed and ministerial supervision of management/union bargaining was eliminated.

For the third pillar of its policy, the Bolivian government adopted an unorthodox stance towards foreign debt. The United States and the IMF urged the Bolivian government to recommence commercial debt service in mid-1986 but the government refused, convinced that such action would undermine its entire strategy (Morales and Sachs 1988). Interest payments on external debt had been equivalent to 25 per cent of total exports in 1985 but dropped to 10 per cent in each of 1986 and 1987.

Bolivia took full advantage of the relatively small size of both its economy and its total debt to maximize the concessions from the international financial community. The Bolivian government secured US and IMF support for negotiations with creditor banks to buy back 38 per cent of Bolivia's $670 million commercial bank debt at

11 cents in the dollar. The deal was financed with Western funds held for Bolivia in escrow by the IMF (*Economist* 1988a, b). Sachs (1988) argues that an important gain from such a sizeable debt reduction is the swift removal of the debt overhang which bedevilled stabilization programmes elsewhere, like that of Jamaica.

Bolivia's selective debt service strategy kept up an inflow of resources from the multilateral institutions once the stabilization programme was in place. However, total foreign debt was still $3.9 billion in 1989 (*Financial Times* 1989a) and total debt service (now primarily paid to the global institutions) rose to more than one-fifth of export earnings.

The social costs of Bolivian stabilization were high. In this context, the government's refusal to service its foreign commercial debt prevented opponents of the orthodox stabilization policy from portraying it as dictated by foreign banks (Morales and Sachs 1988). Open unemployment reached 20 per cent (higher still in the Altiplano cities where public employment had been significant). Under-employment was estimated at 50–60 per cent (Morales 1988). Some workers trapped by the wage freeze experienced a sharp decline in their real income. Per capita incomes continued to fall while the country's already poor nutritional standards were further eroded.

The displaced state miners and many among the private sector unemployed drifted into the Chapare coca growing region. Coca cultivation had tripled during 1983–6 (Bailey and Knutsen 1987). The foreign exchange earnings from coca were estimated at more than $1 billion by the mid-1980s, but only a quarter of that was thought to remain in the country—mostly as army and police bribes (*Financial Times* 1985a).

To mitigate the worst conditions within the formal sector, the Bolivian government favoured an employment-intensive public works programme, drawing on foreign aid. However, the government was still forced to adopt a tough line on public sector pay awards, one consequence of which was rioting in La Paz in November 1989 that prompted the declaration of a state of emergency. Renewed economic growth became an elusive priority.

Restoring economic growth

GDP, which had fallen slightly in 1985, declined a further 2.9 per cent in 1986 (Table 5.3). This mainly reflected sizeable declines in

mining output as a result of both export price falls and the restructuring of the large state mining firm. Manufacturing output fell by almost one-tenth in 1985 but by only 1 per cent in 1986 when agriculture (adversely affected by rain and floods) declined by 1.9 per cent after growing by 3 per cent in 1985. Without a significant improvement in the GDP growth rate there seemed little prospect of a rapid reduction in the debt-to-GDP ratio.

Mining remained indisputably the lead sector and seemed likely to be so well into next century despite improvements in output from the manufacturing and agricultural sectors. The remoteness of much Bolivian economic activity combines with infrastructural neglect to require the country to export high value-to-weight products (Morales and Sachs 1988). The recovery of the mining sector required renewed investment and that called for a redefinition of the rules for foreign investment.

Exchange rate overvaluation also emerged as a constraint on renewed economic growth. Although the huge divergence between the official exchange rate and parallel market of the mid-1980s had been removed, the exchange rate was used to combat inflation and was around 10–20 per cent overvalued by late 1987 (Pastor 1991). This was one reason why the positive economic growth which resumed in 1987 proved weaker than expected. GDP growth was 2.1 per cent in 1987, although inflation was a modest 11 per cent. Nor was growth in 1988 much better: the projection of 4 per cent was cut to 2.8 per cent in the middle of that year because of drought (*Financial Times* 1988a). The same occurred in 1989 when GDP growth of 4.5 per cent was expected and the outcome was nearer 2.5 per cent. Moreover, inflation remained steady rather than dipping below 10 per cent as had been hoped (*Financial Times* 1989b; Inter American Development Bank 1990).

A second reason for the disappointingly slow economic growth rate was the extraordinarily low investment level prior to hyperinflation. The 1985–7 public investment freeze added to the investment backlog. Given the limits on foreign capital for new projects, the investment rate reflected the low level of domestic saving (9 per cent of GDP) and remained at barely 12 per cent of GDP. Even that low rate of saving required high real interest rates to sustain it and these dampened economic growth.

The restoration of per capita income to its 1980 level by the late 1990s requires an annual growth rate of 6 per cent and this in turn is estimated to need an investment rate of 16.5 per cent of

GDP. Yet only then will it be possible to *commence* an overall reduction in the debt-to-GDP ratio for multilateral loans (World Bank 1989d). The Paz government hoped to boost investment by the equivalent of 7 per cent of GDP annually through employment-intensive infrastructure rehabilitation. It drew resources from growing government revenues as well as from aid (given mainly by the United States in exchange for tightening restrictions on coca production).

CONCLUSION

Bolivia's experience with external shocks points to a strong inverse relationship between favourable shocks and prudent policy-making. It shows how the resource curse thesis works: a rich resource base discourages the pursuit of disciplined policies. Instead of repaying debt and accumulating overseas funds, Bolivia took advantage of the favourable external trends to backtrack on Banzer's new stabilization policies and boost immediate consumption. It expanded its foreign debt, even though it had already accumulated high levels of debt in relation to the size of its economy (Table 5.1). Such a use of the oil windfall was not uncommon: Venezuela, Nigeria and Mexico also accumulated debt. In each case, a high level of indebtedness made subsequent adjustment through the 1980s much more difficult.

The political pressure for rapid consumption proved too much for even a relatively strong political regime to resist. The Banzer government was unable to increase investment efficiently, let alone save through a mineral stabilization fund. It presided over a rapid real exchange rate appreciation which increased Bolivia's dependence on mineral exports even as the competitiveness of Bolivian tin was eroded and its oil reserves were depleted.

Just as a counter-intuitive outcome resulted from Bolivia's positive shocks, so the mid-1980s negative shock stopped the downward spiral: the corollary of the resource curse thesis is that straitened circumstances may engender prudent policies. It seems clear that Bolivia's traumatic experience of hyperinflation acted as a catalyst to weld a political consensus on reform.

In extremis, Bolivia managed to execute a recovery strategy in the late 1980s which combined orthodox domestic economic management with an unorthodox *external* policy (the refusal to service commercial debt). In regard to the latter, the relatively small

size of Bolivia's economy and the poverty of its people appear to have been used to good effect to escape more onerous debt service conditions. This raises the question for other mineral economies like Jamaica (also a small country whose maladroit policies brought economic weakening) of whether it might have deployed its small size and dire problems to better political effect or whether the Bolivian experience was unusually opportune and, as such, unique.

The principal features of Bolivia's pragmatic orthodox economic policies (as in Chile) survived a change in government. The Bolivian election of 1989, like that in 1985, denied power to the leading right-of-centre party even though it received the largest share of the votes. This helped to promote compromise by constraining the ability of the left-of-centre government to accede to the more extreme factions within its own ranks. Moreover, neighbouring states influenced the outcome: the success of orthodox policies in Chile contrasted sharply with the failure of structuralist policies in Peru, to which attention now turns in Chapter 6.

6

POPULIST POLICIES AND ACCELERATING ECONOMIC WEAKNESS IN PERU

ORTHODOX VERSUS STRUCTURALIST POLICIES

Despite the striking differences between Bolivia and Peru in terms of the pre-conditions of their political economy and subsequent external shocks, both traced economic trajectories into the mid-1980s that were characterized by an accelerating weakening. This chapter examines the role that populist policies, grounded in structuralist assumptions, played in this process for Peru. It does so with reference to the debate over the relative merits of orthodox and structuralist policies.

From an orthodox perspective, the key adjustments to the loss of tax revenues and foreign exchange caused by a mineral price decline are a reduction in public expenditure and a real depreciation in the exchange rate. Smooth adjustment requires the rapid expansion of non-mining exports in order to compensate for mining sector shortfalls and to service any debt accumulated during the bridging period. The failure of such adjustment to occur is attributed by the orthodox to the legacy of state intervention.

Latin American intervention is seen as having been both excessive and misguided, creating the very market failures upon which structuralists base their case *against* the orthodox approach (Lal 1983). In this vein, Lago (1990) traces the origin of Peru's poor economic performance to excessive state intervention that began under the military in 1968–74. He argues that unusually favourable external conditions in 1970–4 masked growing difficulties arising from botched reforms. Those reforms intensified the inward orientation of the economy, curbed foreign investment and set the scene for a long recession.

The structuralists strongly contest the orthodox prescription for

responding to a mineral price downswing. They argue that bottlenecks in the economy not only hamper the required smooth adjustment but also feed inflation. With reference to Peru, Schydlowsky (1986) rejects market-based orthodox solutions because they require rapid adjustments via both stabilization policies and devaluations which few Latin American economies can make. Thorp (1987) shares Schydlowsky's view that Peruvian state intervention was not excessive. She attributes the post-1950s problems of the Peruvian economy to the end of the 'easy' extensive phase of primary exportled growth: she notes that Peruvian export volumes failed to expand significantly after the 1950s.

Structuralist impatience with the deflationary orthodox prescription to mineral price downswing has prompted growth-based solutions to macroeconomic disequilibria, often through populist reflation. As noted in Chapter 2, however, Sachs (1989) has traced the recurrence of such populist booms in postwar Latin America and analysed their self-defeating nature. He ascribes such booms to the large income inequalities characteristic of many Latin American countries and the resulting political pressure to avoid the growth-retarding stabilization policies associated with economic orthodoxy. However, a second factor behind the Latin American structuralist criticism of orthodoxy which Sachs neglects is the rigidity of the tradeables sectors. This argument has merit, even if the rigidity is in part due to the region's misguidedly protracted import substitution policies, for the rigidity of response in pre-newly industrializing economies is also partly due to a high dependence on volatile commodity exports, notably minerals (Faini and de Melo 1990).

A second theme which can be clearly traced with reference to Peru is the problem of adjustment during the debt crisis. The onset of the debt crisis in 1982 marks a hinge point since it both deepened the mineral price downswing and constrained the degree to which new external funds could be used to ease adjustment. The debt crisis turned the net resource transfer to Latin America negative. Between 1976 and 1981 the net capital inflow to Latin America doubled to almost $38 billion while net repayment of profits and interest almost tripled to $28 billion. This still left a net positive transfer of $10 billion in 1981 which, however, turned into a net outflow of $18.4 billion in 1982 and swelled to $30 billion in 1983 (Griffith-Jones and Sunkel 1989).

The onset of the debt crisis in the different countries was less synchronized than the aggregate data suggest. For the two smallest

countries (Jamaica and Bolivia) the debt crisis began earlier. Jamaica exhausted its foreign exchange reserves and commercial bank lending in 1976. It had therefore been labouring under various IMF-funded structural adjustment programmes for five years by 1982. As noted in the previous chapter, the debt crisis broke for Bolivia in 1981 when political deterioration caused foreign commercial banks to terminate new loans. Chile's debt crisis commenced a few months before Mexico defaulted while Peru was impacted slightly later.

The debt crisis was accompanied by a global recession which drove mineral prices well below the optimistic forecasts that had been formulated during the 1979–81 oil boom. The mineral economies therefore faced the problem of higher debt service with sharply diminished foreign exchange and tax revenues from mining. Since further commercial borrowing was precluded, successful adjustment under an orthodox programme required a cut in consumption in order to increase domestic saving and transfer resources into exports and debt service. This in turn required cuts in public expenditure and/or extra taxation to close the fiscal gap along with a depreciation of the real exchange rate to expedite the resource transfer.

Of Balassa's four means of adjusting to external shocks (import substitution, export growth, foreign borrowing and slower growth) the first three were ruled out for the mineral economies in 1982 by resource constraints, leaving a protracted economic slowdown as the principal means of adjustment. This measure bore down heavily on the poor (Glewwe and de Tray 1991). It proved an unacceptable solution for Peru, a country which, like Brazil, was impelled towards growth-based policies by repeated failure to tackle its highly unequal income distribution adequately (Sachs 1989). Peru reluctantly embraced orthodoxy: it drifted towards a doctrinaire orthodoxy in the late 1970s and then backtracked until eventually, under Garcia in 1985–9, it abandoned it in favour of structuralist remedies.

The chapter begins by tracing the adjustment of Peru to the copper price downswing over the period 1974–8. In line with the resource curse thesis, Peru pursued less far-reaching reforms than Chile because the impact of that downswing was less severe for Peru than for the already weakened Chilean economy. The third section examines the doctrinaire orthodox disadjustment in 1978–82 which resulted from a combination of erroneously optimistic expectations of mineral price improvement and mismanagement

of the exchange rate. Attention then turns in the fourth section to the post-1982 phase of debt-burdened adjustment and analyses the disintegration of Peru's orthodox policies through the mid-1980s. Finally, the 1985–9 populist boom and its unfortunate consequences is examined.

TARDY PERUVIAN ADJUSTMENT, 1974–8

The sudden rise in oil prices in 1973–4 and the lagged decline in the copper price required cuts in public spending and a downward adjustment of the Peruvian exchange rate. Prudent foreign borrowing could be used to cushion adjustment—provided that the resources so acquired were applied to competitive economic activity which enhanced the country's long-term capacity to service the resulting debt. However, the borrowing would have been less if, during previous mineral booms, the windfall had been sterilized in a mineral stabilization fund.

Peru adjusted more slowly than did Chile. The Peruvian delay partly reflected a failing consensus over policy formulation. But it was also due to the continued willingness of foreign lenders, impressed ironically by Peru's abundance of natural resources, to supply funds without IMF guarantees (Paredes 1990a). Peruvian policy coherence improved from August 1975 when Bermudez replaced Velasco. It also became more orthodox in character only to falter in the early 1980s (Scott Palmer 1984).

The mid-1970s mineral price decline forced the Peruvian military government to retreat from its role as the motor of the economy. An IMF agreement was eventually signed in 1978 which included the two basic orthodox tenets of an exchange rate correction and public expenditure cuts (combined with public sector price rises and large tax increases). The government was forced to shift resources not only from traditional areas of concern (social services and infrastructure) but also from the directly productive activities which it had increasingly favoured during 1969–75. Having almost doubled the share of public investment in GDP to 8.8 per cent in 1974–6, the military regime cut back to 5.5 per cent in 1977–9 (Thorp 1987).

Peru's initial stabilization measures were milder than those adopted by Chile and were also slower in restoring balance (Table 6.1). The exchange rate depreciation was smaller than that of Chile and less progress was made in curbing the fiscal and trade deficits.

Table 6.1 Trends in key economic parameters, Peru and Chile, 1970–88

	1970–3	*1974–8*	*1979–82*	*1983–8*
GDP growth (%)				
Chile	1.7	1.9	1.9	4.3
Peru	5.0	3.2	3.8	0.5
Terms of trade (1980 = 100)				
Chile	202	113	93	81[a]
Peru	137	113	93	77[b]
Real effective exchange rate (1965 = 100)				
Chile	88.2	64.6	83.1	65.0[b]
Peru	87.0	73.6	76.8	70.2[b]
Balance of payments (% GDP)				
Chile	−2.5	−3.9	−9.4	−7.4[b]
Peru	−0.6	−6.4	−2.9	−2.9[b]
Fiscal gap (% GDP)				
Chile	−10.2[c]	−1.0	3.0	−1.7[d]
Peru	−2.1	−7.3	−4.8	−5.9[b]
Debt to GDP (%)				
Chile	0.29	0.43	0.46	0.94[b]
Peru	0.35	0.40	0.39	0.52[b]

Sources: World Bank 1989a; real effective exchange rates, Wood 1988; fiscal gap, Peru, Banco Central de Peru 1989

Notes: [a] 1983–4.
[b] *1983–7.*
[c] *1972–3.*
[d] *1983–6.*

The IMF required the policy to be intensified in 1978 under a new and strongly orthodox financial team. By early 1979 a marked improvement had occurred in both the fiscal deficit and the current account. The public sector deficit fell from 7 per cent of GDP in 1977 to 0.6 per cent in 1979 while the current account swung strongly into surplus as exports surged to almost twice their 1977 level and two-fifths of GDP. Non-traditional exports such as manufacturing raised their share of this much larger export total to one-fifth.

Peruvian GNP grew at almost twice the rate of Chile over 1974–82 (Table 6.1), but the average figure flatters Peru. There are two reasons for this. First, the Chilean figure is depressed by a sharp contraction in 1975–6: GNP grew at more than 7 per cent in each of the next four years. Peru's milder stabilization averted a sharp

Table 6.2 Economic indicators, Chile and Peru, 1980–9

	1980	*1981*	*1982*	*1983*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*
GDP growth (%)										
Chile	7.3	5.2	(13.1)	(0.5)	6.0	2.4	5.3	5.4	7.1	9.9
Peru	4.4	4.3	0.3	(11.8)	4.7	2.3	9.5	6.9	(8.8)	(10.4)
Consumer prices (%)										
Chile	31.2	9.5	20.7	23.6	23.0	26.4	17.4	21.5	10.9	
Peru	60.8	72.7	72.9	125.1	111.5	158.3	62.9	114.5	1722.3	2755.3
Government spending (% GDP)										
Chile	40.9	37.9	37.9	37.2	39.2	41.9	40.4	37.9	36.6	30.8
Peru	49.7	45.9	47.6	53.6	45.5	45.6	43.0	37.5	33.6	21.6
Fiscal balance (% GDP)										
Chile	5.5	2.9	(2.3)	(3.0)	(3.6)	(3.7)	(1.6)	(0.3)	3.4	3.0
Peru	(2.4)	(3.9)	(6.7)	(9.8)	(4.2)	(2.4)	(9.0)	(11.6)	(10.6)	(6.2)
Real effective exchange rate (1978 = 100)										
Chile	116.3	137.0	120.1	100.4	98.6	78.6	66.4	63.4	60.0	62.6
Peru	127.5	139.3	137.7	124.0	120.0	99.6	86.8	74.9	91.2	59.0
Current account balance (% GDP)										
Chile	(7.1)	(14.5)	(9.5)	(5.6)	(11.0)	(8.3)	(6.8)	(4.3)	(0.8)	(3.6)
Peru	(0.5)	(6.9)	(6.3)	(4.4)	(1.1)	0.3	(6.0)	(7.2)	(7.4)	(1.0)

Source: World Bank 1990a

GDP contraction, but it also slowed the growth rate to 1.3 per cent in 1976–8. Second, Peru's economic rebound was less robust than the Chilean recovery; GDP growth peaked in 1980 and fell steadily thereafter. Peruvian growth in 1979–82 was twice the Chilean rate only because of the severe Chilean contraction (13.1 per cent) in 1982 (Table 6.2).

Schydlowsky (1986) criticized the IMF-backed orthodoxy as counter-productive because of its insensitivity to Peruvian conditions. It assumed a smooth substitution of domestic output for imports which failed to materialize. Although non-traditional manufactured exports did grow, aided by export subsidies, there was a mis-match between credit, import licences and under-utilized domestic capacity. The net result was that the IMF devaluation was accompanied by an acceleration in inflation which reached an annual rate above 70 per cent in 1978 (Table 6.1) while real incomes declined by almost 10 per cent in the late 1970s.

Paredes (1990b) rejects the structuralist interpretation (that orthodox policies were inappropriate) and identifies the key problem as the persistence of high levels of public expenditure through the mid-1970s. The efficiency with which those funds were deployed left much to be desired, as is shown in Part III (Chapter 10). Meanwhile, foreign lenders grew increasingly reluctant to underwrite more Peruvian loans.

THE 1978–82 DISADJUSTMENT

Erroneous projections of long-term improvements in mineral prices from 1979 undid progress with stabilization in all four of the developing American mineral economies. Optimism over mineral demand eased the foreign exchange constraint so that inflation appeared to be the principal threat as mineral revenues rose sharply. Meanwhile, the unpopularity of the late 1970s austerity programme undermined the authority of the military government in Peru but not that of Chile. The Peruvian election of 1980 restored to power the civilian leader, Belaunde, who had been deposed in 1969. He disbanded the doctrinaire orthodox financial team and adopted a laxer fiscal policy. Belaunde continued some aspects of the reversion to a more outward-oriented economy but he also boosted public spending in order to bolster his political support.

Disadjustment under doctrinaire orthodoxy

Peruvian disadjustment in 1979–82 was based on unfounded optimism over the duration of the mineral boom, misplaced fears about the inflationary effect of the expected mineral windfall and the simultaneous pursuit of stabilization and liberalization (begun in 1978). As in Chile, a relatively uncompetitive manufacturing sector was exposed to international competition under highly unfavourable circumstances. But whereas the 1979–82 disadjustment heralded a shift towards more pragmatic orthodoxy in Chile, it broke policy continuity in Peru.

The Peruvian government of the late 1970s, like that of Chile, overestimated the prospective mineral windfall and its impact on the domestic economy. The optimistic interlude lasted long enough to encourage a lethal combination of a pegged exchange rate and more outward-oriented policies. Fearing inflation as a result of the accumulation of foreign funds, the exchange rate was pegged to the US dollar. This aggravated matters when the dollar appreciated through the initial years of the Reagan presidency, and accelerated Dutch disease in the non-mining tradeables sector.

In fact the inflation risk from a mineral boom was probably exaggerated because of the Peruvian mineral sector's linkages with the rest of the economy. The capital-intensive production function of mining along with the distinctive pattern of mine ownership automatically muted the impact of the multiplier from a mineral boom (Schydlowsky 1986). The bulk of the windfall was sterilized since only one-fifth of it accrued to small miners, the principal group with a high propensity to spend immediately on domestic goods. One-quarter went to the dominant copper-mining MNC which used much of it to service its capital and the rest to meet additional government taxes. The net result was that around two-thirds of the mineral windfall accrued to the Peruvian Treasury so that it could be sterilized. Barely two-ninths of the windfall was likely to be spent on domestic goods. Even then, according to the structuralist Schydlowsky (1986), such spending in Peru would occur within an economy that was depressed and working with relatively low levels of capacity utilization.

Yet Peru's doctrinaire finance ministry encouraged import liberalization in order to mute inflation. Import duties were first consolidated to remove *ad hoc* rates and then quantitative restrictions were repealed in favour of exclusive reliance on tariffs. Complementary

measures to restrict export credit were introduced. It was at this critical juncture that the military government gave way to the first civilian regime in twelve years and the policy thrust began to backtrack from orthodox policies, but in a less restrained and coherent fashion than in Chile.

Disadjustment under Belaunde

The new centre-right Belaunde government saw the expected mineral boom as a chance to consolidate political support. It unwisely boosted domestic windfall absorption through the launch first of a consumer boom and then of a public investment boom. The latter took the form of an ambitious $14.5 billion public sector investment programme just as government revenues from both internal and external sources were increasingly constrained. The investment programme pushed public spending to almost 50 per cent of GDP in 1980–2 compared with barely 24 per cent in 1969–73 (Paredes 1990a). When the expected boom stalled, public investment could only be sustained through a large fiscal deficit which reached 8 per cent of GDP in 1982.

The Belaunde government also persisted with some elements of the liberalization policy. It removed food and price subsidies, boosted real interest rates and lowered tariffs. Import tariffs were cut from an average of more than 100 per cent to just 40 per cent. But import liberalization failed to prevent a strong inflationary stimulus which kept annual price rises at 60–70 per cent in 1980–3 and exacerbated the Dutch disease effects.

Over-optimism concerning mineral price trends meant, however, that both the public sector expansion and the trade liberalization proved premature. Belaunde assumed that the 1981 export price decline was temporary and borrowed heavily to maintain his public sector investment programme, attracting $2.6 billion in 1982 alone (Paredes 1990a). The expansion of public consumption and investment entailed inflationary finance (Lago 1990; Paredes 1990a). Yet the failure of trade liberalization to slow inflation caused the real exchange rate to rise significantly.

Table 6.3 traces the resulting sharp reversal in the hitherto rising levels of effective protection in Peruvian manufacturing during the phase of disadjustment. The sol was pegged to the appreciating dollar in 1979–82 so that it experienced a sharp real appreciation of almost 50 per cent. The resulting declining level of effective

Table 6.3 Effective rates of protection, Peru, 1973–88

	1973	*1979*	*1982*	*1985*	*1988*
Agriculture	−21.2	8.7	−17.6	24.5	−20.6
Mining	−40.7	−36.1	−33.6	−11.9	−34.7
Oil and refining	−40.5	−32.2	−31.7	−2.2	−24.1
Food processing, beverages	17.0	142.5	50.5	83.7	−12.1
Textiles	−33.9	6.3	−6.4	33.3	6.9
Chemicals	−0.7	22.4	−3.0	63.0	4.5
Steel	22.2	27.1	−0.3	59.7	19.1
Capital goods	−3.8	33.3	4.8	83.5	155.0
Other manufacturing (33, 34, 36, 39)	18.5	32.5	6.7	57.7	40.8
Average	−28.4	37.6	2.5	69.4	58.8
Coeficient of variation	−196.9	259.9	1714.8	180.2	321.6

Source: Armas *et al.* 1989

protection for manufacturing was associated with a surge in imports so that, far from expanding, many domestic manufacturers actually lost market share. Table 6.3 also shows the persistence of negative effective rates of protection for the mining sector, both for hard minerals and for petroleum.

Negative effective protection spread rapidly from the traditional primary export sectors to many industrial import substitution subsectors and was accompanied by Dutch disease effects. The diversification of non-traditional exports, which had been such a striking and welcome feature of the late 1970s, was terminated. Meanwhile, the negative impact of the copper price decline was amplified in 1982 by the debt crisis and flooding in the north (which depressed agricultural output and closed oil and mining facilities towards the end of 1982).

The unexpected decline in export revenues led to a squeeze on imports which adversely affected Peru's import-dependent domestic manufacturing output. Estimates suggest that each $1 of Peruvian manufacturing output required $0.50 of imports (Webb 1987). The brunt of adjustment was borne by those on low incomes. Some 900,000 jobs were lost from a workforce of 6 million, barely half of which was fully employed (*Economist* 1983). Real wages declined to three-fifths of their 1973 level (Scott 1990). Such adverse social trends fatally eroded the Peruvian government's capacity to persist with orthodox policies.

The decline in export revenues was also accompanied by increased

food imports. This entailed increased subsidy payments which was one factor which caused the public sector deficit to increase to 7.3 per cent of GDP in 1982 on a rising trend (World Bank 1989a). Growing internal violence brought military opposition to cuts in defence spending which absorbed 6 per cent of GDP (Scott 1990). Inflation accelerated above three digits while the current account deficit remained at 1.6 per cent of GDP despite a decline in imports. External debt expanded to $11.5 billion. Against this background of rising inflation, increasing public deficit, deteriorating current account and mounting debt, the Belaunde administration sought IMF assistance.

The overvaluation of the exchange rate in 1979–82 was associated with sizeable debt accumulation. Many hard-pressed manufacturers were forced to seek high-cost loans or close down. Meanwhile, large foreign loans were required for the launch of Belaunde's public works and defence programme as revenues from income and trade taxes fell (Scott Palmer 1984). The ratio of external debt to GDP, which had averaged just over 30 per cent in the early 1970s, rebounded to the 50 per cent level in 1983.

The economic deterioration associated with the overvalued exchange rate was exacerbated by external events. Sachs (1985) estimates that the real income effect of the deterioration in Peru's terms of trade over 1979–83 was equivalent to a 3.7 per cent loss in GDP. The interest rate shock had an additional negative impact equivalent to more than 2 per cent of GDP. On top of this, adverse climatic events towards the close of 1982 severely depressed agricultural and fishery output by the equivalent of 5 per cent of GDP in 1983 (Webb 1987). The Belaunde government was unable to meet either the devaluation or the public sector deficit cut required by the IMF in 1982.

DISINTEGRATING ORTHODOXY 1982–5

Peruvian reluctance to comply with IMF measures contributed to the prolongation of the adjustment period. An agreement was reached with the IMF to keep the public deficit to 4.5 per cent of GDP in 1983 in return for new loans under the extended fund facility. Instead, the public sector deficit out-turn was closer to 10 per cent because of depressed tax receipts (as GDP declined by 12 per cent in 1983) and high defence spending connected with the guerrilla insurgency. A

debt refinancing scheme was delayed while the IMF pressed for measures to raise more revenue and for a further devaluation.

The Peruvian government cited structuralist arguments to justify its reluctance to devalue. It claimed that devaluation would have a minimal impact on primary commodity export earnings but would have detrimental effects for dollar-indebted domestic companies. Peru did eventually devalue, however, by around 25 per cent in real terms. It also repealed liberalization measures, but unlike Chile it did not do so as a temporary measure. Rather, Peru permitted levels of protection to rise and re-established quotas in 1984, beginning a process which left the country with an even more protectionist policy at the close of the 1980s than it had had before the liberalization (Paredes 1990b).

Excessive public sector deficits terminated both the 1983 IMF agreement and a second one a year later. The 1984 budget deficit was 8.1 per cent, almost double the target sought by the IMF. In 1985 sales and wealth taxes were increased and the prices of basic consumer goods were also raised in an effort to bring the 1985 public sector deficit down to 7.1 per cent of GDP. Interest rates were raised and an effort was made to channel financial resources from the public sector to private sector exporters in mining and agriculture.

As the term of office of the Belaunde government ended, there were some solid macroeconomic achievements. A $1 billion trade surplus was generated in 1985 as the IMF austerity measures almost halved the level of imports to $1.9 billion. The current account recovered from its deficit in 1981 to be broadly neutral. Moreover, after contracting at almost 2 per cent annually over 1980–3, GDP again increased, by 4.7 per cent and 2.4 per cent in 1984 and 1985 respectively. International reserves were strong, the exchange rate was competitive and public sector prices had been raised to realistic levels (Lago 1990).

But inflation exceeded three digits in 1984 and 1985, compared with around 70 per cent in 1980–3 and half that rate in 1972–9. Further austerity was required, but after a decade of orthodox economic prescriptions that course was rejected by the Peruvian electorate. Explanations such as the one that past impatience had prolonged the slowdown or that the 1979–82 disadjustment to erratic foreign exchange earnings had thrown policy off course cut no ice. Nor did the argument that external debt required servicing in order to maintain access to external funding.

The electorate lost patience with orthodox policy and the Belaunde government was replaced by the centre-left Alianza Popular Revolucianaria American (APRA) under Garcia in July 1985. Garcia took office with 53 per cent of the vote. Per capita incomes were below 1972 levels, half the manufacturing capacity was idle, more than half the workforce was officially underemployed and inflation was approaching 200 per cent (*Economist* 1987).

THE GARCIA POPULIST BOOM, 1985–9

The new government reversed the waning orthodox thrust of the post-1975 economic policy in favour of a structuralist approach which involved large-scale state intervention. Growth would be restored via a boost to domestic capacity utilization while inflation would be checked through price control. The resources for this policy were to come from pegging debt service to 10 per cent of export earnings.

The structuralist case

The structuralist approach to stabilization rejects the assumption that inflation is demand driven (mainly by excessive public spending) and sees cost push factors as critical. It assumes an inertial inflation which reflects the ability of economic agents to adapt to, and anticipate, inflationary expectations (Anglade and Fortin 1990). The resulting indexation of the economy makes inflation self-perpetuating. It requires a shock, reinforced by wage and price controls, to eliminate inflationary expectations. Aggregate demand then expands because the elimination of the inflation tax transfers resources from the public to the private sector. Increased spending mops up unused capacity and eases cost push pressures, allowing the economy to grow out of inflation.

In the structuralist view, the public spending cuts demanded by orthodox policy are too high, given the large fraction of public funds assigned to service overseas debt. Such large debt service payments when combined with relatively low export-to-GDP ratios require a reduction in imports on a scale likely to elicit a sharp contraction in manufacturing output. Taken with public spending cuts this leads to sharp recession which causes capacity under-use and thereby stokes the inflationary cost pressures it is designed to curb. Such reasoning

lay behind Garcia's ceiling of 10 per cent of export revenues on external debt service.

At the micro level, the structuralist approach discriminates strongly between economic sectors on the basis of their national priority and their elasticity of demand. Priority items receive very high levels of effective protection where domestic productive capacity exists, or a favourable exchange rate where importation is required. This results in discrimination against 'low priority' activity (intermediate manufactures in the case of Peru) and also against those sectors deemed to face elastic demand (notably the mining sector). The combination of nominal tariffs, quotas and multiple exchange rates can lead to very high levels of distortion (eliciting vigorous rent-seeking behaviour) and consequent misallocation of resources.

Politically, the structuralist solution has strong popular appeal because of its growth-based nature. Low-income groups expect to benefit since they suffer from the deflationary remedies under orthodoxy because of their vulnerability to unemployment. Also, they have least protection in inflationary times because of their limited use of financial instruments. The APRA government expressly targeted assistance to the peasant farmers on the Sierra and to the large urban informal sector (Lago 1990). A further political appeal of the populist strategy is its reliance on measures under national state control, an especially important aspect during a period of deteriorating external trading conditions (Scott 1990).

Peru's structuralist experiment

Garcia's populist boom delivered a massive stimulus to the economy by boosting both real wages and public spending. A price freeze was accompanied by cuts in indirect taxes and interest rates. Subsidies on agriculture and credit directed at the poor were increased. The exchange rate was devalued and then re-pegged with an increasingly complex multiple tier system while the import of goods that competed with domestic producers was barred.

These measures were intended to last for twelve months, the time it would take to activate spare productive capacity. Thereafter, growth would be export led and investment driven using the funds made available by limiting foreign debt service. However, the initial measures were kept in place longer than planned and the resources for long-term growth were not forthcoming since the second stage of the policy had not been clearly thought through.

Figure 2.3 shows that Peru's 1985–8 boom displayed a four-year sequence common to the Latin American populist cycles (Sachs 1989). Earlier cycles include those of Bolivia in 1982–5, Jamaica 1973–6 and Chile 1971–3. Additional Latin American examples include Brazil 1985–8, Nicaragua 1980–7, Mexico 1979–82, Argentina 1946–9 and Chile 1952–5. In the first two years of the populist cycle growth proceeds rapidly, real wages rise sharply and inflation slows. But the ratio of export volume to GDP also shrinks, international reserves decline and the real exchange rate appreciates. Finally, the exchange rate collapses while prices accelerate and real wages and growth fall sharply.

Certainly, the results in Peru were initially spectacular. In 1986 GDP expanded by 9.5 per cent, real wages increased by 30 per cent and employment rose by more than 4 per cent (World Bank 1989c). Inflation, which had dropped abruptly below 50 per cent in the final quarter of the previous year, then rose before it stabilized and averaged 63 per cent for 1986 as a whole (Table 6.2). The current account turned negative, however, and the deficit widened to 5 per cent of GDP. The real exchange rate appreciated by 15 per cent on a rising trend, yet the terms of trade deteriorated by 18 per cent. This was part of an overall decline of some 35 per cent over 1984–6 which mainly reflected a fall in oil prices.

Within eighteen months of its launch the populist boom began to falter. Foreign exchange shortages curbed the rapid growth in manufacturing output through 1987 and inflation accelerated. The multi-tier exchange rate system devised to ration foreign exchange discriminated against primary product exporters. They received around 16 intis to the dollar compared with a rate above 22 intis for labour-intensive manufactures using local raw materials (cotton, woollen and alpaca garments, canned fish, crafted gold and agro-industry). Imports of foods, medicines and some agricultural inputs were purchased at the official 14 inti rate while all others attracted the financial rate of 17 intis. At its extremes the combined system of incentives was capable of yielding net effective protection equivalent to 300 per cent on domestic consumer goods production and negative protection of more than 60 per cent on food imports—a combined ninefold real price distortion (World Bank 1989c).

Government revenues failed to keep pace with inflation as prices accelerated. Real prices in the public sector shrank to one-third of their level of 1985. State enterprise revenues fell from 26 per cent of GDP to 7 per cent of GDP while government revenues dropped to

less than 13 per cent of GDP in 1989 compared with 41 per cent in 1985 (Lago 1990). The limit on debt service precluded recourse to external finance, the safety net which Peru had used during the 1970s (Paredes 1990a). The IMF had declared Peru ineligible for further loans in August 1986 for non-payment of interest and principal. Substantial capital flight occurred and by the end of 1988 accumulated arrears on the total external debt of $14.7 billion were $1.7 billion (National Westminster 1987).

As in Bolivia, such deterioration in the formal economy was accompanied by increased activity in the informal sector. Although official statistics do seek to allow for the informal sector's presence, they are thought to underestimate its size. Unofficial estimates suggest that the non-drug informal sector may employ almost half the workforce and generate two-fifths of GDP. It is highly labour intensive because it is largely prohibited from official loan finance (which requires a tax certificate for eligibility) and faces black market interest rates up to four times commercial levels.

In March 1988 the government acknowledged the failure of its structuralist approach and announced a 27 per cent devaluation of the official exchange rate, steep public sector price increases (including a near-tripling of sales tax to 20 per cent) and a six month wage freeze. Although presented as a move towards freer prices, the measures brought significant government control. Thus, food prices were raised by 40 per cent on average and were then frozen for 120 days while the minimum wage was increased by 60 per cent. Interest rates were raised to 55 per cent but remained strongly negative as inflation neared 250 per cent. Finally, the number of goods purchased at the preferential exchange rate was reduced. However, the multi-tier foreign exchange system, with its inherent distortions, was retained (*Economist* 1988b).

GDP fell 9 per cent in 1988 and 10 per cent in 1989 while inflation accelerated to four digits in 1988 and the public sector deficit reached 13 per cent of GDP (*Financial Times* 1988c). Debt arrears were $8 billion—three-quarters the size of total public debt when Garcia came to power in 1985 (*Economist* 1989a). Without renewed stabilization and external adjustment Peru faced hyperinflation, a collapse of the price system, dollarization of the modern economy and recourse to barter in the rural economy. Meanwhile, the poor bore the brunt of the economic collapse as falling real wages and declining social expenditures were reflected in deteriorating health and nutrition measures.

The late 1980s mineral price rise appeared to ease the urgency of stabilization (Figure 4.1). One 1988 estimate conservatively projected that Peru would gain a copper windfall in that year of just over £300 million, of which about one-tenth would leak abroad via the mining MNC profit repatriation. The bulk of the windfall would accrue to the government via the state mining enterprises (one-sixth) and higher taxes (two-thirds). In the absence of adequate sterilization measures, it was feared that such an inflow would fuel inflation and widen the current account deficit.

In the event, mineral production fell short of expectations as strikes cut zinc output by 120,000 tonnes in 1988 while copper output was reduced by 100,000 tonnes. The combined revenue loss was estimated at $400 million (*Financial Times* 1989c). Subsequent efforts at stabilization without multilateral assistance failed because public spending cuts did not eliminate the fiscal deficit, indexation undermined the required wage and price freeze, the non-floating exchange rate policy retained a pro-appreciation bias and interest rates could not be liberalized. Meanwhile, cumulative deficiencies in public investment (and in private sector investment in key areas like hydrocarbons) depressed long-term growth prospects while socio-political deterioration constrained firm policy-making. Elections brought a return to orthodoxy in 1989.

CONCLUSION

In line with the resource curse thesis, Peru failed to build on its initial advantages of a relatively diversified economy, strong government and modest terms of trade deterioration. Instead, Peru used part of its advantage *vis-à-vis* Chile to adjust to external shock more slowly and with less rigour than Chile did. Peru eventually stepped up its stabilization measures in 1978–80 under a strongly orthodox finance ministry which, however, erred when the 1979 oil shock struck.

The policy error was partly based on virtually universally inaccurate forecasts for global economic growth and inflation made during the second oil boom. The prospect of higher mineral prices encouraged the use of an appreciation of the real exchange rate to curb inflation. However, the error was also based on insufficient appreciation by the advocates of doctrinaire orthodoxy of the imperfect adjustment of the non-mining tradeables sector to abrupt

and sizeable exchange rate shifts. In that respect, the structuralists were correct.

Peru erred by engineering a real exchange rate appreciation (to promote stabilization) while persisting with trade liberalization. It exposed activity in the non-mining tradeables to external competition under difficult conditions which triggered Dutch disease. This in turn weakened the capacity of the economy to cope with the 1981–2 price and debt shocks.

The 1978–82 disadjustment damaged the orthodox macroeconomic case in Peru by appearing to confirm structuralist views concerning sectoral rigidity. The onerousness of debt service after the real interest rate rises of 1981 further weakened the orthodox case and strengthened the appeal of populism. The harsh austerity which orthodox structural adjustment called for appeared to benefit overseas institutions while penalizing most of those who had often had no say in the policies which led to the excessive accumulation of debt. Under these circumstances, nationalistic solutions that stressed domestic economic growth and set limits on foreign debt service held greater appeal.

Peru turned to a structuralist experiment which then exposed the cumulative weakness of its economy. That weakness arose not only from impatience with orthodox macroeconomic policies but also from microeconomic failures. Peru had jeopardized its long-term economic growth prospects from the late 1960s because it paid insufficient attention to the productivity of the resources which the reformers redeployed under Velasco into the expanding public sector. In this way, the pursuit of an understandable concern with redistribution impaired the long-term efficiency of resource use.

Structuralists (Scott Palmer 1984; Thorp 1987) argue unconvincingly that this disappointing outcome of redistribution reflected the small size of the Peruvian civil service. However, they are on stronger grounds in citing the damage done to a rigid non-mining tradeables sector in an economy subject to mineral-driven exchange rate shifts. The doctrinaire orthodox disadjustment of 1978–82 relied excessively on market-driven solutions.

The crucial lesson from the Peruvian experience is therefore not simply that orthodox approaches are superior to structuralist approaches but that a high dependence on volatile mineral prices is dangerous and requires market-muting safeguards. During booms the exchange rate shifts can quickly corrode the competitiveness of

non-mining tradeables, while compensating downswing expansion by the non-mining sectors is frequently lagged. This leads to a wariness concerning the central tenet of doctrinaire orthodox policy, namely sectoral neutrality. That wariness is reinforced by the experience of Chile which is examined in Chapter 7.

7

CHILE'S SUSTAINED ECONOMIC RECOVERY TO BEST PRACTICE

MINERAL PRICE SWINGS AND POLICY ERROR

Chile was the only one of the four developing American mineral economies which by the end of the 1980s had made substantial progress in growing out of debt. Indeed, by 1990, Chile had emerged as 'best practice' for Latin American economic performance and evoked favourable comparisons with the successful Asian countries on the Pacific Rim. In contrast with Peru, which drifted into and out of orthodox policies over 1975–85, Chile remained committed. Consequently, Chile provides an example of policy consistency which is rare in most developing countries. But that consistency needs to be qualified: Chile, like the other copper producer Peru, disadjusted under doctrinaire orthodoxy in 1978–82.

The case for orthodox policy draws support from the divergent economic trajectories traced by the two large South American copper producers: Chile's sustained economic strengthening under orthodox policies contrasts with the accelerating weakness of Peru. The case is reinforced when it is recalled from Part I that both the pre-conditions and the scale of the subsequent external shocks favoured Peru over Chile. The Pinochet government risked alienating political support as it sought to consolidate its power in the mid-1970s whereas the Peruvian military government's redistributive policies were popular. Chile's economy was also weaker because it was more mineral dependent and had deteriorated sharply through the Allende populist boom.

Unlike Bolivia or Peru, Chile was heavily dependent upon a single mineral, copper, and this makes it easier in the case of Chile to trace the impact of mineral price changes on macroeconomic performance. Chile clearly demonstrates how unexpected shifts in mineral prices

void the assumptions underlying macroeconomic policy. More specifically, the uncertainty concerning the likely duration of each new changed set of mineral-driven parameters (foreign exchange earnings, taxes and the exchange rate level) provides considerable potential for substantial misallocation of resources. Trends in copper prices illustrate this potential very well.

The postwar trend in copper prices widely established what proved to be an over-optimistic expectation of future trends by the late 1960s. The price of copper averaged slightly more than $1/lb (in constant 1980 dollars) over 1950–64, but then rose to average $1.78/lb in 1965–9. This new level encouraged unwarranted optimism. In fact, far from holding steady, let alone rising, the subsequent trend in real copper prices was one of prolonged decline. When a strong rebound finally occurred in the late 1980s it was, ironically, quite unexpected.

More specifically, when copper prices fell from the late 1960s peak, they did so in three stages and reached levels well below those of the 1950s (Table 4.1). The first stage took the average price down to $1.40/lb in 1970–4, the second to $0.74/lb in 1975–82 and the third to $0.67/lb in 1983–6 (Ayub and Hashimoto 1985; Comision Chilena del Cobre 1989b). Of particular significance is the fact that the 1979 oil shock triggered a brief recovery in copper prices in 1979–80 which proved especially damaging. This is because it was widely interpreted as a return to higher levels. It caused some relaxation in the mid-1970s adjustments to lower prices in the expectation of higher copper revenues. The fact that the actual outcome was even lower prices than those which preceded the 1979–80 price spike made the subsequent adjustment to lower revenues *and* the debt crisis even more difficult to make. Similar broad post-shock price trends were evident in most minerals and metals (Figure 4.1), as the case of Jamaican bauxite shows in the next chapter. Tin alone bucked the trend (Table 4.1) as the leading producers successfully maintained prices through the 1970s, only to experience a more abrupt collapse in 1985.

This chapter proceeds in four steps. The first section traces the Chilean economy's strong early progress as the Pinochet government promptly and boldly implemented the then-unfashionable orthodox policies following the Allende populist boom. Attention next turns to the policy disadjustment which Chile made towards the close of the 1970s and the economic damage which that disadjustment inflicted on Chile's recovery

trajectory. The third section examines the stabilization measures adopted to cope with the disadjustment. The final section analyses the dramatic rebound in economic performance which took place in the last five years of the 1980s.

PROMPT ORTHODOX ADJUSTMENT, 1974–8

The incoming Pinochet government faced an economy already in depression and disrupted by civil disorder. The annual rate of inflation exceeded 100 per cent, copper revenues were falling in the wake of nationalization and the trade imbalance was severe (Table 5.1). The government adopted orthodox policies and also pushed the Frei government's cautious liberalization much further in what amounted to a bold economic experiment. The experiment drew heavily on the Chicago School both for inspiration and for technocrats to implement the new policy.

At the heart of the new policy was a promptly implemented stabilization programme which reduced public spending and set a competitive exchange rate. The new policy resulted in a dramatic economic rebound, following a sharp economic contraction in 1975. The share of public spending in GDP declined from 45 to 24 per cent in 1973–8 and the fiscal deficit contracted from 25 per cent of GDP to 0.8 per cent over the same period (Ministry of Finance 1989). Curbs on government spending included a freeze on public sector wages, redundancies and the privatization of many small state enterprises. The state development corporation, Corfo, disposed of more than 400 such firms in 1973–9. But some fifty public firms with an estimated total worth of $3.3 billion, dominated by copper, remained under state ownership (Harvey 1980). A series of tax reforms complemented the expenditure cuts and included a 10 per cent tariff on most imports, a 20 per cent value added tax and a standard 49 per cent corporate tax.

As to the exchange rate, the initial policy entailed an immediate effective devaluation of two-thirds in 1974 followed by a crawling peg (that is, incremental) devaluation to compensate for domestic inflation in excess of international levels. Meanwhile, the bold liberalization experiment eased price controls in 1973–5 and freed interest rates from 1975 (Harvey 1980). The economic recovery was led by the manufacturing sector—even though import quotas had been removed in 1975 and the average tariff (which had been in excess of 100 per cent in 1973) was progressively reduced to 10 per

cent by 1979. The reforms brought a one-third increase in Chilean global export market share over 1974–6 with the fastest growth coming from non-traditional exports and manufactures (Balassa 1985). Interestingly, some import substitution also occurred despite the rapid liberalization of the trade regime.

The early achievements are the more remarkable because the government's stabilization and liberalization policies were executed under difficult external conditions. Table 5.1 shows that Chile's terms of trade declined dramatically in 1974–8 compared with 1970–3. Much of that fall occurred abruptly during the Pinochet government's first full year in office. The external shock, which it will be recalled from Chapter 4 was equivalent to the loss of 10 per cent of GDP, resulted from a combination of the 1973 oil shock and the lagged fall in copper prices. The fall in copper prices reinforced the deflationary impact of the public spending curbs and brought deep recession in 1975 as real GDP declined by 13 per cent. GDP growth then averaged more than 8 per cent annually over 1976–9, but the recession meant that it averaged barely 2 per cent over the period 1974–8 (Table 5.1).

Inflation, however, remained stubbornly high and the exchange rate was used from 1976 (Fortin 1985) to mute inflationary tendencies. This was achieved through an appreciation of the real exchange rate which intensified the external competition faced by the domestic tradeables sectors. The appreciation was secured through periodic revaluations and depreciations (intended to break inflationary expectations) with the devaluations tending to lag the revaluations (Moran 1987). The policy was based on the assumption that as the Chilean economy opened up to external competition its inflation rate was a function of external inflation and the exchange rate. That view contained the seeds of a serious policy error which occurred during the aborted mineral boom in 1978–82, as the next section shows.

The Chilean economic experiment of the 1970s carried a high social price which raises doubts about the practicality of such a policy for non-authoritarian governments. Chilean per capita income only regained its 1970 level by 1978, and there was some redistribution against lower income groups. Urban unemployment rose sharply when GDP declined in 1974–6. The poorest one-fifth of Chileans experienced a significant decline in income, nutrition, health, housing and education. Trade union reform contributed to this process since it weakened union power in an attempt to make

wages reflect productivity changes. Although wages were indexed to the cost of living in 1975, that index did not reflect the faster growth in prices of low-income goods. The exclusion of fringe benefits from indexation also depressed real wage levels. Wages accounted for 45 per cent of GDP in 1979 compared with 52 per cent in 1970 (Harvey 1980).

The regression in income distribution went against tradition since Chile had one of the lowest income spreads in Latin America. The income ratio of the highest to lowest quintile for Chile was 11 compared with 15 for Mexico, 21 for Colombia and 32 for Peru (Sachs 1989). It seems unlikely that a democratic regime, facing an election by the late 1970s, could have sustained such tight fiscal policies or overseen such a swift restructuring of the manufacturing sector as occurred in Chile. Yet it is also clear that, consistent with the cumulative model of political economy (Figure 3.1), the economic success of the regime contributed to its legitimization among the country's more well-to-do social groups. But that same success may also have contributed to over-confidence in orthodox prescriptions.

CHILEAN DISADJUSTMENT, 1978–82

Chile's use of the exchange rate to control inflation led Enders and Mattione (1984) to characterize Chile as a disadjuster in their analysis of the policy response of Latin American countries to the early 1980s debt crisis. The disadjustment began when a sharp two-thirds increase in copper prices in 1978–9 moved the trade balance into sizeable surplus. The copper price rise promised to boost copper earnings by $1 billion in 1980 and, as in Peru, triggered fears that the recent gains in controlling inflation would be reversed. But it also allayed apprehension about the country's ability to service its $7 billion external debt. In 1979 debt service had absorbed a crippling 38 per cent of the country's foreign exchange earnings, a level which almost halved through the exchange rate appreciation of the next two years.

A real appreciation of the exchange rate was engineered from 1978 by allowing the crawling peg exchange adjustment, which had steadily lagged domestic inflation from 1976, to adjust even more slowly. Between 1978 and 1981 inflation averaged more than 25 per cent and pushed the exchange rate up by almost 50 per cent (Wood 1988), but the inflation reached almost zero in early 1982. The lower

rate of inflation proved only temporary (Table 6.2), however, since the real appreciation of the Chilean peso which had achieved it proved too large in the face of weakness in both the non-mining tradeables and copper sectors.

The revaluation had triggered a substantial foreign capital inflow which proved fickle. Yet Chilean policy-makers relied heavily on the foreign capital inflow as well as public saving to finance investment. This is because domestic private saving, at less than 3 per cent of GDP, was remarkably low. Meanwhile, the public sector surplus shrank as GDP growth decelerated in 1981 with the result that gross national saving declined by over 6 per cent of GNP in 1980–1.

The policy caused imports to surge and exports to flag and, as Chile's trade gap widened, the inflow of foreign funds slowed as foreign lenders became alarmed. The deficit on current account increased from 5.6 per cent in 1977–8 to 9.1 per cent in 1979–81 (Corbo and de Melo 1987). One reason for the flood in imports was that a rise in the asset values of the wealthy had stimulated consumption and the currency appreciation encouraged them to purchase imports whose real price declined. Domestic interest rates rose substantially in response to capital flight, increasing pressure on domestic companies already unfavourably placed to compete with liberalized imports.

Chilean policy-makers had expected that the exchange rate would quickly adjust the economy to changed external circumstances, but this required real cuts in wages and profits which the process of indexation made impractical. As the current account deteriorated (Table 6.2) the capital haemorrhage pushed interest rates higher and caused a massive fall in GDP of 13 per cent in 1982, one year earlier than the Peruvian contraction. Meanwhile, total external debt more than doubled through the appreciation policy and reached $17 billion. The debt service ratio, which had been falling as the currency appreciated, returned to an onerous 38 per cent in 1982, prompting the Chilean government to approach the IMF (World Bank 1988).

The failure of the expected copper boom to materialize required a change in policy. Enders and Mattione (1984) estimate that the 1979–82 trade and interest rate swings inflicted a negative shock equivalent to 4.6 per cent of GDP on the Chilean economy. But unlike the position in the mid-1970s, it was the hike in interest rates, rather than the fall in copper price, which was most important. This meant

that the size of the external shock increased sharply towards the close of the 1979–82 period, reflecting the almost simultaneous fall in copper prices and rise in interest rates. Corbo and de Melo (1987) calculate that the impact in 1982–3 was equivalent to a negative shock of 12.2 per cent of GNP, with the interest rate hike accounting for almost two-thirds of this.

Consequently, despite the severity of the external deterioration, domestic policy errors were the prime problem (World Bank 1990b). The real appreciation of the exchange rate reflected the pursuit of trade liberalization before domestic stabilization was complete. Corbo and de Melo (1987) conclude that this was a mistake and that Chilean liberalization was premature. They argue that countries with high inflation (in excess of 25 per cent) should not proceed simultaneously with stabilization and liberalization. The former should precede the latter because stabilization calls for a contraction of the economy which, when combined with liberalization, hampers the adjustment of hitherto protected manufacturing industry.

The use of the exchange rate appreciation to contain inflation had unexpectedly detrimental consequences for newly unprotected activity, like manufacturing. Even at an early stage (1979) in the Chilean sequence of exchange rate appreciation the average effective rate of protection for Chilean manufacturing had declined to only 13.5 per cent compared with 151.4 per cent just five years earlier. Subsequent appreciation (Table 6.2) further eroded competitiveness and put the entire liberalization programme at risk. Another problem arising from the simultaneous pursuit of stabilization and liberalization was that inflation distorted both interest rates and also prices, with differing lags between sectors in the case of the latter.

It is ironic but salutary that the optimism engendered by the expected post-1978 mineral boom prompted self-defeating policies. The exchange rate appreciation which was designed to curb inflation swiftly corroded competitiveness within the non-mining tradeables sector whose rapid expansion was then required to offset the loss of copper revenues when the mineral boom stalled.

The general lesson is that stabilization should precede liberalization. Periods of high inflation provide poor signals for the effective reallocation of resources which liberalization requires. However, the deflationary period which stabilization requires has proved anathema to most Latin American governments which have tended to regard economic growth as essential for the resolution of

political problems. The more specific lesson for mineral economies is that mineral booms and their attendant Dutch disease damage must be muted.

DEBT-BURDENED STABILIZATION

The doctrinaire orthodoxy of 1978–82 was replaced with a more pragmatic orthodoxy. The new policy stressed stabilization and favoured greater state intervention. A temporary reversal of the liberalization measures was part of this shift. Although the thrust of macroeconomic policy became less liberal after 1985 as economic growth began to accelerate, important new institutions were introduced designed to mute the disruptive impact of mineral price shifts. They included a mineral stabilization fund and greater autonomy for the Central Bank. Their specific purpose was to limit the extent to which governments could amplify the mineral cycle of boom and bust. By the late 1980s, a political consensus was emerging in favour of pragmatic orthodox economic policies which gave Chile the brightest economic prospects in Latin America.

A second example of the inherent damage in mineral price fluctuations is provided by the repeated changes in Chile's dealings with the IMF during 1982–5. The initial absence of a mineral stabilization fund hampered Chile's adjustment to the debt crisis. The unexpected sustained fall in copper prices through the mid-1980s (Table 4.1) rendered the country's first two year agreement with the IMF (covering 1983 and 1984) inadequate. The new agreement assumed a copper price of 75 ¢/lb (against an actual outturn of 61 ¢/lb) as well as interest rates of 9.5 per cent which proved over-optimistically low.

A second consequence of the unexpectedly severe copper price decline was that although Chilean copper production expanded rapidly through the mid-1980s (reaching 1.38 million tonnes in 1986) copper export earnings remained stable at around $1.9 billion annually. This is because higher levels of copper production merely compensated for the low mid-1980s price levels which were less than half the early 1970s levels in real terms.

Central to Chile's IMF-backed stabilization programme were a steep exchange rate devaluation and sharp public expenditure cuts. Chile abandoned its appreciating exchange rate policy in June 1982 and devalued by more than 50 per cent. A crawling peg formula was adopted which involved small daily adjustments and regular larger

corrections. This was intended to ensure against slippage or the deliberate abandonment of a competitive exchange rate, as had occurred in 1978–82. The net effect of the devaluations over 1982–5 was to reduce the peso to two-thirds of its 1982 value.

A second important departure from doctrinaire orthodoxy was a bail-out of the banking system. This became necessary because the 1982 exchange rate devaluation virtually bankrupted the Chilean financial sector (Loser 1987). The banks had borrowed large sums denominated in dollars and on-loaned them to domestic borrowers who proved unable to service them when the value of the peso collapsed. Many banks functioned as conglomerates linked to manufacturing firms cheaply acquired during the late 1970s privatization, so that the banks' problems were intensified by the decline and collapse of manufacturing which accompanied the period of real exchange rate appreciation from 1978. In order to stimulate investment under such adverse circumstances, both the banking system and the tax system were reformed.

Under its more pragmatic policy the Chilean government intervened to rescue the financial sector. The Central Bank rescheduled the banking sector's debt and took over its bad debts (though shareholders were forbidden to receive dividends until such debts were bought back). The income tax code was changed to exempt more savings and to provide tax relief on undistributed profits to companies. Corporation tax was lowered to 10 per cent which together with a 55 per cent tax on dividends encouraged reinvestment (*Financial Times* 1988b). In order to provide a compensatory boost to government revenue for the taxes so lost, import tariffs were raised from 10 to 20 per cent in 1983 and then to 35 per cent in 1984 before being lowered to 20 per cent in mid-1985. This return to higher levels of protection, albeit temporary, marked a third pragmatic departure from doctrinaire orthodox prescriptions.

The tax changes were accompanied by further cuts in public spending. The new cuts were politically difficult to implement because the severe recession of 1982 had sharply raised unemployment to 25 per cent. The cuts fell on pensions, unemployment benefits and child benefits (*Economist* 1985b). Consistent with the more liberal stance, the budget deficit was allowed to rise to 3.5 per cent of GDP (from 3 per cent of GDP in the preceding year) in order to cope with damage caused by the March 1985 earthquake.

The trade and fiscal gaps left by lower copper prices and higher interest charges were covered by IMF guarantees which generated

fresh capital inflows. The resources were scarcely adequate, given the increasing severity of the copper price downswing: the trade balance was barely positive in 1984 whereas a surplus of $1 billion had been expected (*Financial Times* 1985b). The current account deficit reversed its narrowing trend and almost doubled in 1984 to a level similar to that in 1982 (*Economist* 1985b).

Supply-side improvements finally occurred on a sufficient scale in 1985 to improve the trade surplus, and the current account deficit declined by one-third to $1.3 billion, still 7.6 per cent of GDP. But total foreign debt, which had risen sharply during the 1978–82 disadjustment to $15.7 billion, rose further to $20.4 billion in 1985. On a per capita basis Chile had the highest debt in South America. The wisdom of Chile's orthodox economic stance was far from clear at the time: weaker governments would surely have been deflected from their course.

ATTAINMENT OF BEST PRACTICE

A new agreement was reached with the IMF in August 1985 (Anglade and Fortin 1990). The exchange rate was devalued further (Table 6.2) while the 1982–4 import tariff increases were reversed. In order to assure a real depreciation of the exchange rate and thereby ensure export competitiveness, wage moderation was secured through lagged indexation of public sector wages and collective bargaining in the private sector. Public expenditure was curbed further. GDP growth was to run at between 3 and 5 per cent over 1985–7 with inflation declining to 15 per cent (Tables5.1 and 6.2). The agreement aimed to shrink the current account deficit to 4.5 per cent of GDP by 1987 and to eliminate the fiscal deficit.

An unexpected upswing in copper prices brought relief towards the end of 1987. Given the competitiveness of Chilean copper production, it yielded a large fiscal windfall. Some evidence of the scale of this windfall is provided by the estimate that a 1¢/lb change in the copper price would raise/lower Chilean copper earnings by an annualized $30 million (*Financial Times* 1988d). In 1986 the average export price for copper was 56 ¢/lb compared with 67 ¢/lb in 1987 and $1.05/lb in 1988 (Comision Chilena del Cobre 1989a). The state copper mining enterprise's net profit doubled to $267 million in 1986–7 and approached $1 billion in 1988 (*Financial Times* 1988e).

The potential damage from the mineral boom was muted by the

activation of the copper stabilization fund in 1987 which had been established under IMF prompting in 1985. The stabilization fund worked by setting a reference price each year for copper equal to that used in the annual budget of the non-financial public sector (Central Bank 1989). Deposits to the fund were determined by the difference between the reference price and the f.o.b. price multiplied by the volume of copper actually exported. In 1987 the reference price was 59.5 ¢/lb, but it was raised to 70 ¢/lb in 1988 and 75 ¢/lb in 1989.

The price differential was separated into three tranches with the first one requiring no deposit into the mineral stabilization fund, the second requiring 50 per cent of the windfall while the third called for 100 per cent. In 1988 and 1989 the first tranche covered the initial 4 ¢ excess, the second the next 6 ¢ and the third the remainder. Deposits into the fund were only $26.4 million in 1987, but in 1988 the deposit was $496 million and for the first six months of 1989 $774.6 million was deposited. Table 6.2 shows that the real exchange rate appreciated only modestly during the late 1980s boom, in contrast to the situation through the aborted boom of a decade earlier.

A second institutional measure taken to dampen the destabilizing effect of mineral windfalls involved an increase in the autonomy of the Central Bank, modelled on the Bundesbank (*Financial Times* 1989d). An autonomous Central Bank reduces political control over money supply and foreign debt. In Chile decisions of the Central Bank are made by the vote of a five-man council appointed by the president. Each member serves ten years and retirements occur every two years. The timing of the measure (planned since 1980) meant that Pinochet nominated the first council. This increased the risk of conflict between the Central Bank and the first civilian government. The voting procedures of the council, however, gave increasing authority to the senate in proportion to any lack of unanimity among the Bank council. Moreover, in a conciliatory gesture Pinochet appointed two council members from the opposition.

The Chilean economy improved through the late 1980s and, despite the copper boom, all sectors participated strongly. Growth in GDP averaged almost 7 per cent in 1986–9 (Table 6.2) on an accelerating trend, with manufacturing and agriculture especially strong as exports from these sectors outperformed those even of the booming mineral sector in 1983–8 (Central Bank 1989). Import tariffs

were cut again to 15 per cent which further cheapened imported inputs while exporters also benefited from a rebate on value added tax and special credit facilities (Stallings 1990). Unemployment declined from 25 per cent in 1982 to less than 10 per cent by 1987 and real incomes rose strongly in 1988–9 as elections loomed.

Chile achieved a fiscal balance in 1987, despite tax cuts which amounted to $1 billion in 1983–8 (Stallings 1990). By 1988 the public sector accounted for only 35 per cent of GDP, a fall of 10 per cent in a decade. Meanwhile, inflation dipped to 11 per cent in 1988 after averaging 22 per cent over the preceding five years. However, some deflation and currency depreciation were required in 1989 as unusually rapid economic growth ahead of the elections that restored civilian government nudged prices upwards.

The improved economic performance of the late 1980s permitted some progress in reversing the build-up of debt. Medium and long-term debt fell by $6 billion over 1985–9 (to $16.7 billion) as a result of conversion and swap arrangements (*Financial Times* 1988d, 1989e). Within the global figure, commercial medium- and long-term debt more than halved from its $7 billion peak as the multilateral institutions increased their credit for Chile. The debt service ratio, which had reached almost 50 per cent in the mid-1980s, declined to a manageable 22 per cent by 1988 (Table 7.1) and the debt-to-export ratio fell from 450 to 200 per cent over 1985–9.

These economic gains had a positive feedback on the political system. A consensus emerged which recognized the merits of the post-1982 pragmatic orthodoxy with its emphasis on competitive growth and the targeting of benefits on the neediest. As an example of this consensus, when the restoration of democracy brought a left-of-centre government to power, the new government agreed a tax reform package with the right-wing opposition. The package would generate an extra $550 million annually to meet the government's electoral pledge to boost spending on social schemes including pensions, family benefits, school meals and health. The package would raise corporate tax from 10 to 15 per cent in 1991–4, lift value added tax by 2 per cent to 20 per cent and increase personal income tax for higher earners (*Financial Times* 1990a).

The new consensus would clearly be tested by a fall in the copper price. But even though copper prices did begin to decline through 1989 and 1990, levels were still above the mineral stabilization reference price so that reserve accumulation continued. By 1990, the discount on the face value of Chilean debt was around 40 per cent,

slightly higher than that for Mexico, the region's other star economic reformer. A year later the discount was 70 per cent, indicating a further strengthening of the confidence of the international financial community in the Chilean economy.

CONCLUSION: CASE FOR PRAGMATIC ORTHODOXY

Chile's prompt implementation of stabilization and liberalization measures in the mid-1970s contrasts with the reluctance of governments elsewhere, whether military or democratic. It has more in common with the Bolivian response to hyperinflation in the mid-1980s, suggesting once again that adverse circumstances may be more likely to elicit timely policy responses than when conditions are easier. Whatever the reason, an important consequence was that Chile embarked on measures designed to encourage competitiveness while other mineral economies were still extracting rents from their mining sectors to promote inefficient import substitution manufacturing or ill-conceived land reforms.

A second unusual feature about Chile is its persistence with orthodox measures—even after the massive setback of 1982. Chile was therefore in some respects fortunate in the longevity of its government. Stallings (1990) notes that unfavourable external events sorely test the capacity of democratic governments to sustain policy continuity. This is illustrated by the increasing impatience of Peru's civilian government with orthodox policies from 1980. That impatience contrasts with Chile's military regime which retreated from the doctrinaire orthodoxy of 1978–82 but persisted with more pragmatic orthodox policies.

A third conclusion, however, is that doctrinaire orthodoxy shows insufficient concern for competitiveness within the non-mining tradeables sector. Reflecting the essentially macro focus of doctrinaire orthodoxy, Chile engineered an exchange rate appreciation that was intended to assist with stabilization by muting the potential inflationary impact of an anticipated mineral boom. Scant concern was shown for the severe Dutch disease effects inflicted on the non-mining tradeables sector, especially the manufacturing sector which in the Chilean case was undergoing a restructuring away from the protected domestic market towards full competitiveness.

The rapid loss of economic activity under such conditions is less easily compensated than doctrinaire orthodoxy assumes (Wheeler 1984; Krugman 1987; Faini and de Melo 1990). The 1978–82

disadjustment rivalled the severest of external shocks (World Bank 1990b) and gravely set back Chile's overall economic recovery. Because of the damage which volatile mineral revenues can inflict, a central tenet of doctrinaire orthodox policy, namely sectoral neutrality (i.e. an indifference to the economic implications of changes in the relative size of sub-sectors of the economy), should be rejected. Rather, the mineral sector should be regarded as an economic bonus with which to advance the competitiveness of the non-mining tradeables.

Further evidence of the negative impact of mineral price swings is provided by the frequent modifications that were required of the post-1982 IMF adjustment. Yet although a copper boom eased external constraints from 1987, there is clear evidence that by then Chile had learned the policy lessons of mineral dependence. It established institutional mechanisms to capture mineral benefits while minimizing the costs. The institutions (Central Bank autonomy and a mineral stabilization fund) were designed to limit the scope for government amplification of the mineral cycles. By the 1990s Chile had become a model for other Latin American economies to follow. But behind that outcome lies a hard learning curve in which doctrinal orthodoxy imposed a severe set-back on the recovery.

8

JAMAICA'S PROTRACTED RECOVERY UNDER ORTHODOX POLICY

THE JAMAICAN ENIGMA

Like Chile, the Jamaican economy trajectory was one of abrupt decline and sustained recovery (Table 5.1), albeit a very fragile recovery. Both countries launched a populist boom in the early 1970s which, consistent with the stylized facts (Figure 2.3) traced by Sachs (1989), brought an abrupt economic deterioration in its wake. Also, they both embarked on orthodox adjustments in the mid-1970s, Chile some three years ahead of Jamaica which began in 1977. Yet whereas Chile had recovered strongly by the late 1980s, Jamaican recovery was still fragile. At first sight the inferior Jamaican trajectory appears the more puzzling because, unlike Chile, Jamaica experienced a gain in its terms of trade after the first oil shock, if only a very modest one (Table 5.1). Jamaica also enjoyed potentially more favourable political and economic pre-conditions in the early 1970s than Chile did.

Yet closer inspection shows that the Jamaican advantages were not what they seemed. Certainly, comparing 1970–3 with 1974–8, Jamaica experienced a 3 per cent improvement in its terms of trade which, given the Jamaican ratio of exports to GDP, yielded a gain equivalent to 2.4 per cent of GDP in 1974–8. Moreover, this compares with negative shocks over the same period of 4.3 per cent of GDP for Peru and 10.6 per cent for Chile. However, Jamaica's terms of trade improvement resulted largely from the imposition of a bauxite levy whose beneficial price effect was more than offset by the reduced bauxite output which, with a two year lag, came in its wake.

This chapter asks why Jamaica's orthodox policies took so long to stabilize the economy. The answer is important because, as shown

in the previous chapter, the most successful adjuster (Chile) also relied on orthodox macroeconomic policies. Was Chile's greater success due to its earlier adoption of orthodox policies? Was it due to greater diligence in the pursuit of those policies? Was it a result of the extreme severity of Jamaica's 1982 debt shock? Or does the answer lie outside an analysis of macroeconomic policy? Was Jamaica's protracted recovery rooted in an excessive reliance on bauxite rents coupled with a failure to execute microeconomic reform?

The chapter begins by examining the Manley populist boom in 1973–6 and its abrupt collapse. It then analyses the continuing failure of IMF-backed adjustment to restore strong economic growth prior to the 1982 debt crisis. Relatively speaking, conditions before that crisis were more favourable than those which Jamaica subsequently experienced through the mid-1980s. The third section examines the impact of the remarkably severe external shock which impacted the Jamaican economy in 1982–3 and the immediate Jamaican response. The final section critically evaluates the contention of Robinson and Schmitz (1989) that Jamaican economic recovery commenced in 1985.

JAMAICA'S SELF-INFLICTED RECESSION, 1973–6

Misjudged mineral rent

Jamaica, like Bolivia, experienced a favourable shift in its terms of trade through the mid-1970s, but the improvement was far less than that which Bolivia enjoyed (Table 5.1). In fact, Jamaica escaped a negative impact from the first oil shock only by the imposition of a levy on domestic bauxite production. The bauxite levy more than offset higher oil prices, but it soon proved counter-productive.

The reformist Manley government sought to evade growth-slowing stabilization measures and sustain its reforms by higher taxes on bauxite. The demand for bauxite was seen as highly elastic by structuralist advisers of the government, like Girvan (1971). The government hoped to renegotiate the tax holidays under which US MNCs built three new alumina refineries in the late 1960s. When the aluminium MNCs balked at the scale of the levy, the government unilaterally imposed the new tax in 1974. The government estimated the rent on its bauxite at up to twice the c.i.f. price, basing its conclusion on the proximity of Jamaica to the US market and the

low capital costs of Jamaica's relatively long-established mines. Moreover, in order to limit the MNCs' scope for reducing the levy through transfer pricing, the levy was linked to the world aluminium price rather than to the profitability of the alumina refineries. The new tax yielded 22 per cent of total Jamaican government revenues in fiscal years 1974–6.

The aluminium MNCs balked at the levy which they estimated was around one-third higher than the true rent on Jamaican bauxite. They argued that the levy marginalized the Jamaican alumina refineries whose major market in the southern United States was in any case approaching maturation. Meanwhile, new bauxite/alumina markets elsewhere were captured by the larger, newer producers like Australia, Guinea and Brazil which did not match Jamaican tax hikes.

The aluminium MNCs relegated their high-cost Jamaican refineries to the role of swing producer: during a downturn Jamaican production was among the first to be cut and it was among the last to be expanded through an upswing. The output reductions began during the mid-1970s and they halved government revenues in 1976–7 compared with 1974–6. Whereas the Jamaican government had planned to use the bauxite levy to invest in long-term economic diversification, it quickly transferred the resources to current expenditure in the face of chronic fiscal weakness and the lack of a credible mineral stabilization fund.

The Manley populist boom

The bauxite levy was meant to permit the new Jamaican government to proceed with its electoral mandate for income redistribution without being delayed by the stabilization which was required by the faltering economy that the new government had inherited. Like the contemporary Allende government in Chile and the later Garcia government in Peru, the Manley government engineered a populist boom. The boom was intended to bestow benefits rapidly on the lower income groups, especially those in the urban areas.

The Jamaican populist boom boosted urban consumption through a combination of high wage rises, food subsidies and a rise in the real exchange rate (Table 5.1) which lowered the relative cost of imported goods. The real exchange rate appreciated by 40 per cent between 1973 and 1977. The boom doubled nominal wages over 1972–7 while real wages increased by 30 per cent, even though GDP

declined 11 per cent in real terms (Kincaid 1981). This is because the boom pushed the share of consumption in GDP to 90 per cent by 1976 (at the expense of investment) compared with 81 per cent in 1972.

The boom adversely impacted all sectors of the economy. Some of the initial gains made by the urban workforce were at the expense of rural workers as agriculture weakened (Sharply 1983). For although some rural workers did initially benefit from land reform when the government set up co-operatives on the two largest sugar plantations, the land reform was poorly implemented and failed. In fact the agricultural sector barely maintained a positive growth rate as a sharp decline in export crop production was just offset by expanded domestic food crop production.

The loss of foreign exchange from farming was compounded by the decline in the second mainstay of the economy, tourism, which was adversely affected from 1976 by a curfew imposed in Kingston to control mounting social tensions. Meanwhile, the output of the excessively protected manufacturing sector also declined in the face of declining investment, foreign exchange shortages and, eventually, shrinking domestic demand. Finally, the fourth and most important pillar of the export-led economy (bauxite) also contracted in response to the misjudged bauxite levy.

Consequently, after its initial stimulus, the economy soon deteriorated. The fiscal deficit ballooned to 19 per cent of GDP in 1976 compared with an average of 3.6 per cent in 1970–3 (Table 5.1). The rate of investment fell from 28 per cent of GDP to 17 per cent between 1972 and 1976—despite a rise in public investment to 4.5 per cent of GDP—as both domestic and foreign private investors reacted unfavourably to government policies. Direct foreign investment, which had averaged almost 10 per cent of GDP over 1968–72, fell to one-tenth of that level in 1973–6 and was negative in the last two years (Dipchand 1983). Net foreign exchange reserves became negative in March 1976 and reached –6.5 per cent of GDP for that year, whereas they had been a positive 7 per cent of GDP four years earlier (Dipchand 1983).

By 1976 economic stabilization was urgently required but it was postponed yet again because that year was an election year. The economic deterioration continued ahead of the elections. Almost J$300 million of government expenditure was financed in 1976 by domestic money creation since foreign lending had all but ceased. The Manley government won a landslide victory in December 1976.

It took almost 57 per cent of the popular vote and captured 47 of the 60 seats in parliament.

Ironically, the size of the majority further postponed economic adjustment since it strengthened the left wing of the party which demanded the rejection of a secret pre-election agreement with the IMF. That agreement had called for a large devaluation accompanied by a wage freeze and fiscal curbs. The conflicting views within the two wings of the government over economic policy hindered the execution of the subsequent stabilization packages that were negotiated with the IMF. Consequently, in contrast with Chile, Jamaica's initial adjustment to the aftermath of a populist boom was not only delayed: it was also reluctant.

RELUCTANT ORTHODOX ADJUSTMENT, 1977–82

Jamaica's reluctant espousal of orthodox policies persisted into 1983, even after a new and more conservative government had been elected late in 1980. In effect, this meant that Jamaica squared up to its macroeconomic problems almost a decade later than Chile. One important consequence of this was that Jamaica's productive assets were run down for far longer than those of Chile. Furthermore, the Jamaican failure to address stabilization and long-term adjustment promptly was cumulative as the task grew increasingly more daunting the longer it was postponed. In this respect, Jamaica has much in common with Zambia, whose problems are examined in Chapter 12.

Reluctant adjustment under Manley

Following the 1976 election the Jamaican government increased the controls on foreign exchange and imports and it temporarily suspended foreign loan repayments while it looked to the Eastern bloc for help. Friendly countries such as Cuba, Trinidad, Venezuela and the USSR advised a return to the IMF. In July 1977 Jamaica reluctantly signed a two year standby agreement under which the IMF accepted Jamaica's two-tier exchange rate in return for Jamaican acceptance of tight wage and fiscal restraint. The IMF concessions may have been the result of political pressure by Britain, Canada and the United States.

The IMF standby funds were expected to attract foreign loans equivalent to 5.5 per cent of GDP and to offset the large deficits in

the budget and current account. However, the foreign capital inflow was only one-quarter of that expected and by 1977 the fiscal deficit was 16.3 per cent of GDP compared with a target of 9.1 per cent and the agreed maximum pay increase was breached (Sharply 1983). The IMF agreement broke down amid criticism that it offered too little assistance over too short a time period. Meanwhile, the fiscal deficit was once again met by expanding domestic credit. Accelerating wage—price pressures further undermined Jamaican competitiveness and deterred investment (Kincaid 1981).

Jamaica's second IMF adjustment scheme was agreed in May 1978. It was on a larger scale than the 1977 agreement, extended over a longer period and incorporated much more flexibility in the face of potential domestic political pressures. It sought to boost domestic output by switching resources from consumption to investment and from the public to the private sector with a greater reliance on market allocation rather than administrative controls. The Jamaican dollar was devalued by 13.5 per cent and a monthly crawling peg was introduced. To assure a real depreciation of the exchange rate, the government espoused a 25–30 per cent reduction in real wages. The budget deficit was targeted to fall from 16.3 per cent of GDP to 11 per cent in the first year of the agreement, although subsidies equivalent to 2 per cent of GDP were introduced to soften the impact of the devaluation and food price rises.

The economic deterioration continued despite the more flexible and long-term approach. This partly reflected adverse external factors such as Hurricane Allen and the 1979 oil shock, and partly continued poor economic management. There was no consensus within the government and departures from the IMF targets increased. Wage increases were greater than agreed with the IMF and excess domestic demand expanded the current account deficit to 6.8 per cent of GDP and doubled arrears on international payments. Meanwhile, the public sector deficit was 13.7 per cent of GDP against a target of 8.9 per cent and had to be financed by domestic credit expansion. The foreign capital inflows needed to finance the current account deficit dried up and GDP continued to decline, albeit at a slower rate. Early in 1980 the government decided to seek a new mandate from the electorate and the policy drift extended through the rest of that year.

The Manley government lost the November 1980 election and its representation in parliament was reduced to nine seats out of sixty, though the party received 41 per cent of the popular vote. The new JLP government inherited an economy that had declined

19 per cent in real terms over 1972–80, with inflation and unemployment both running around 27 per cent and with net foreign exchange reserves of –$433 million (Bank of Jamaica 1982). External debt had quadrupled during 1972–80 to $1.3 billion, equivalent to 60 per cent of GDP. Yet economic growth did not quickly resume under the new government: the penalty for delayed adjustment had still not been paid for the decline in real incomes continued.

Reluctant adjustment under Seaga

The JLP government failed to achieve a rapid improvement in the Jamaican economy. This is the more surprising because it held three important advantages compared with its predecessor. The first advantage was that the 1980 US elections returned a strongly sympathetic president ready to assist Jamaica in taking export advantage of its proximity close to the large North American market. Second, the JLP had a reputation for sound economic management epitomized by Seaga, its Prime Minister and Minister of Finance. Consequently, the prospects of attracting domestic and foreign capital for the task of economic rebuilding were good. Third, an aluminium boom was widely predicted: global aluminium production was expected to grow by 50 per cent during the 1980s. The latter factor turned out to be most critical of the three because, as elsewhere, the expected mineral boom promised a more benign external environment than proved to be the case.

The JLP government, like those of the three other developing American mineral economies, anticipated higher mineral revenues and it too disadjusted. The Jamaican dollar, having halved in value in 1977–9, was pegged to the US dollar. The real exchange rate was allowed to appreciate by a sizeable 31 per cent over 1980–3. One consequence of this move was that the current account deficit doubled to 12 per cent of GDP. Meanwhile, public finances failed to improve: the public sector deficit remained at pre-election levels of 15 per cent of GDP (Robinson and Schmitz 1989).

The new government launched a two-stage recovery programme with IMF backing. The first stage aimed to halt the economic decline by harnessing the substantial slack within the Jamaican economy. It sought to achieve rapid export expansion by restoring investor confidence and providing foreign exchange for essential imported inputs. The second part of the JLP strategy addressed the longer

term issue of structural adjustment. In view of the poor administrative record of the previous government within the expanded state sector, the recovery programme drew on technical assistance from the World Bank and other international agencies. The new government also committed itself to reducing regulation and curbing its role in directly productive economic activities other than the public utilities.

The establishment and maintenance of a competitive exchange rate and the gradual removal of protective tariffs were central to the adjustment process. But, in contrast to the Pinochet government in Chile, the opening up of the economy was further delayed and instead initial emphasis was placed on adding to the capacity of traditional foreign exchange earners (mining, agriculture and tourism). The reform of the manufacturing sector was seen as a longer term goal and the sector's under-investment persisted.

Although Jamaica did receive a substantial inflow of new capital resources following the 1980 election, it did not secure economic recovery. That capital flow was initially directed at correcting the damage done by diminished import capacity over the preceding five years (Nelson 1990). Investment rose from 16 to 21 per cent of GDP, inflation abated and economic growth turned weakly positive (Table 8.1). However, the appreciation of the exchange rate did little to help generate exports from the non-mining tradeables sector, notably the manufacturing sector which remained weak. The overvalued exchange rate was consistent with neglect of reform of the manufacturing sector.

Manufacturing output had slumped by one-quarter during 1973–80 in an over-protected environment, but employment stayed constant. As a result, labour increased its share of sectoral added value from 40 to 50 per cent and the corollary was a decline in profitability and a halving in the annual rate of investment to J$30 million in *nominal* terms (World Bank 1989b). The average rate of effective protection for manufacturing in 1980 was 58 per cent, but it varied widely and was negative in the cases of textiles and wood products, in which Jamaica might have expected to hold comparative advantage.

Although the government committed itself to the phasing out of the sector's protective tariffs by 1987 with the objective of switching to competitive export manufacturing, it failed to win investor confidence for its strategy. This was hardly surprising considering the lack of commitment to an exchange rate which made manufacturing

Table 8.1 Economic indicators, Jamaica, 1980–8

	1980	*1981*	*1982*	*1983*	*1984*	*1985*	*1986*	*1987*	*1988*
GDP growth	(5.7)	2.6	1.2	2.3	(0.9)	(4.6)	1.8	5.2	2.5
Consumption growth	(3.2)	1.7	2.8	1.2	2.4	(2.4)	(0.1)	4.9	8.4
Inflation rate	28.2	12.0	6.3	11.3	27.8	26.0	14.8	6.7	8.2
Domestic saving (% GDP)	4.2	7.8	6.5	12.0	9.9	10.0	13.4	17.3	
Foreign saving (% GDP)	11.5	12.6	14.4	10.3	13.1	15.0	5.1	5.3	
Total investment (% GDP)	15.7	20.4	20.9	22.3	23.0	25.0	18.5	22.6	24.9
Public deficit (% GDP)	17.8	16.0	15.7	19.6	15.3	14.2	6.7	8.4	13.3
Debit service-to-exports (%)	19.3	31.2	32.8	30.7	31.5	43.4	47.8	49.4	46.7
Foreign debt (% GDP)	70.0	77.2	81.8	82.6	135.8	180.3	150.2	140.4	122.9
Current account deficit (% GDP)	6.3	13.0	13.2	11.8	10.7	12.2	5.3	5.9	0.6
Real effective exchange rate	100	107	111	104	73	64	69	68	68
Terms of trade	100	94	94	95	95	95	109	100	97
Bauxite levy (% GDP)	4.8	5.7	5.0	4.2	2.5	1.5	2.5	2.1	3.2
Bauxite output (million tonnes)	12.1	11.7	8.2	7.7	6.8	6.2	7.0	7.7	7.3

Source: World Bank 1989b. 1990a

competitive. The expected supply-side response was not forthcoming, apart from some improvement in tourism. The country's agricultural sector also remained weak, being largely dependent on preferential agreements with the Commonwealth.

When the expected aluminium boom not only failed to materialize but actually turned into a pronounced downturn, the Jamaican economy was severely damaged. The failure of the aluminium boom to materialize voided the assumptions on which IMF adjustment was based (the recovery of a key under-used sector). Instead of expanding, Jamaican bauxite production slumped in 1982 to two-thirds of its 1980 level while prices also declined. Mineral exports had been projected to run in excess of $600 million annually through the mid-1980s, but in fact they fell to half that level (Table 8.1). In the absence of a mineral stabilization fund for the receipts from the bauxite levy, the most appropriate adjustment mechanism to mineral downswing was missing. After more than six years of reluctant stabilization, the Jamaican economy had yet to bottom out.

DEBT-BURDENED RECOVERY

The negative external shock which Jamaica experienced in 1979–82 from the combined effects of interest rate rises, price shifts and volume effects was the second largest among thirty countries analysed by Balassa and McCarty (1984). According to Balassa and McCarty, the Jamaican negative shock was equivalent to a loss of 21 per cent of GDP compared with negative shocks equivalent to 7 per cent of GDP for Chile and 3.5 per cent for Peru, while Bolivia experienced a small positive shock at that time. Balassa breaks down the principal components of the shock. He calculates a negative effect of the interest rate shift (which, however, eased through 1983) equal to 3.3 per cent of Jamaican GDP. He also estimates that the trade volume effect (the collapse of bauxite exports) accounted for two-fifths of the Jamaican shock, i.e. 8.8 per cent of GNP, and the trade price effect at around 9 per cent of GNP.

A decade of mismanagement and neglect had left agriculture and manufacturing too weak to compensate for the abrupt collapse of the bauxite sector. Non-mining GDP, which had declined at 2.6 per cent annually over 1977–80 and then expanded by 2.6 per cent in 1981, declined again. A new IMF agreement in 1983 called for cuts in the public sector and current account deficits, actions which had been postponed in view of the anticipated

mineral upswing. The fiscal deficit in 1983 was 16.5 per cent of GDP against an IMF target of 10.5 per cent while the balance of payments registered a deficit equivalent to 14.5 per cent of GDP in place of a targeted 5 per cent surplus. Non-compliance with the IMF targets led to the breakdown of the IMF agreement in October 1983, six months before its expiry and a few weeks before a snap general election.

The snap election was called to capitalize on the popularity of the government's hard-line response to the Grenada crisis. It was followed by sizeable cuts in public expenditure which shrank the overall public sector deficit to around 5.5 per cent of GDP through the mid-1980s. The second plank in the new IMF package required the dual exchange rate which had been inherited from the previous left-of-centre government to be unified and shifted to a much lower level. The Jamaican dollar, which had halved in value over 1978–82, halved again through the next three years. The official rate was realigned to the lower black market rate at two-thirds of the late 1970s value (Table 8.1). To ensure a sizeable real depreciation of the exchange rate, inflation was curbed by limiting wage increases through a new arbitration procedure, freezing public sector employment, limiting monetary expansion and adjusting interest rates.

The third key reform under the 1983–5 austerity policy involved trade liberalization, but still at a very cautious rate. Import licensing was abolished on most goods in 1984–5 and most price controls were eliminated by 1987. In that year it was announced that tariffs would be streamlined to four bands ranging from 5 to 30 per cent by 1992. In addition, the granting of import duty exemptions was abolished in favour of an export incentive package which included an import duty rebate or duty deferral for exporters. The cautiousness of the trade reform reflected the very weak manufacturing sector (examined in more depth in Chapter 10) which had been spawned under the overly-protectionist import substitution policies by the Jamaican Industrial Development Corporation (JIDC). The JIDC had been a production-oriented parastatal rather than a commercially oriented one.

The economic deterioration continued as Jamaican external indebtedness rose to $3.1 billion or 180 per cent of GDP in 1985. The debt service-to-export ratio, which had been 19 per cent in 1980, had reached 49 per cent by 1987. This was almost twice the maximum sustainable level, according to the IMF. Meanwhile, the fiscal deficit

persisted in excess of 4 per cent of GDP in 1984–5 while the current deficit remained around 10 per cent of GDP. Inflation also accelerated through those years towards 30 per cent (Table 8.1). The damage inflicted by the aborted bauxite boom underlined the persistent weakness of the protected sectors of the economy, manufacturing and agriculture.

A LATE 1980s REBOUND?

Robinson and Schmitz (1989) suggest that sustained economic recovery began for Jamaica in 1985 and that a set-back in 1988, caused by Hurricane Gilbert, was only temporary. Their case finds some support from the facts that the public sector deficit was virtually eliminated in the late 1980s while the current account deficit also shrank to less than 2 per cent of GDP by 1989. Moreover, gross domestic investment held steady at around 22.5 per cent of GDP while domestic saving increased sharply from its 10 per cent low of the 1985 hurricane year to reach a respectable 17 per cent by 1987. Assuming an incremental capital output ratio (ICOR) (which compares the investment input required to produce a unit of output) of 4 (close to 'normal' years in the mid-1980s), this suggests an underlying potential economic growth rate of more than 5 per cent. Yet real GDP growth averaged only 0.9 per cent in the 1980s, only a modest improvement on the annual decline of 0.5 per cent over 1972–9 (InterAmerican Development Bank 1990).

The inefficiency of Jamaican investment explains why GDP growth was weak in the face of a relatively high rate of investment through the 1980s. External shocks certainly disrupted the effectiveness of Jamaican recovery measures in the mid-1980s. The hurricane of 1985 caused widespread agricultural damage while bauxite production continued to contract. Relations between Jamaica and the IMF were difficult and broke down and, after an external review of government policy, there followed a difficult dialogue from April to December 1986.

Tax reforms were introduced through 1986 and 1987 along with the much postponed liberalization of the trade regime. The reforms removed many of the poorest from payment of income tax, reduced the formerly high marginal tax rates (to boost incentives), broadened the tax base and simplified tax administration. Further improvement in public finances were expected from measures to improve the

performance of state enterprises which included lay-offs, productivity targets and divestment of state assets.

A critical change was reform of the bauxite levy which was halved to 3 per cent of the aluminium price and made allowable as a cost while firms also became eligible for corporation tax at 33 per cent. This strengthened the link between the levy and profitability. The bauxite levy, which had been expected to yield the equivalent of 6 per cent of GDP when it was introduced, delivered barely 2 per cent by 1986 as a result of the sector's depression (Table 8.1). A rapid improvement in sectoral performance followed which restored export earnings to levels last seen in 1980.

Manufacturing output, which had merely held steady through the first half of the 1980s (an improvement over the sharp contraction in 1976–80), also began to pick up. The growth was spearheaded by textiles, with food processing also prominent. Apparel exports jumped tenfold over 1983–7 to around $180 million, mostly reflecting the import of US materials for assembly in the export processing zones. Domestic added value was estimated at barely $25 million, mostly in the form of local labour who were paid around $25 for a forty hour week (*Financial Times* 1990b).

Despite the expansion of free trade zone exports such as garments, the manufacturing sector did no more than hold its share of GDP constant at around 16.5 per cent over 1980–9. Sectoral labour productivity continued to decline, falling by more than one-third through the decade. This partly reflected structural adjustment as uncompetitive capital-intensive import substitution industry was displaced by cheaper imports and the more labour-intensive subsectors (such as textiles and garments in which Jamaican competitive advantage lay) expanded. Consequently, the decline in labour productivity was accompanied by a marked rise in manufacturing employment which increased by two-thirds during 1981–9 to 131,000.

Even so, by the late 1980s the Jamaican manufacturing sector was still incapable of providing the major growth stimulus required of it. Since the Caribbean region as a whole has limited inherent international competitiveness in export agriculture, this left tourism and bauxite as the twin pillars of the Jamaican economy—as they had been in the 1960s. Not only did the mid-1980s 'recovery' show hesitancy in 1988–9, it also depended heavily on an unexpectedly strong revival in the fickle bauxite sector. As bauxite and alumina prices recovered in 1986–8 the Jamaican terms of trade improved by

more than 12 per cent. Bauxite output advanced from its low point in 1986 of 6 million tonnes (just under half the 1980 level) to reach 12 million tonnes in 1990.

The Jamaican recovery looked far from secure at the close of the 1980s. It depended on resource rents from the traditional twin pillars of the economy, tourism and bauxite, especially the latter. The Jamaican electorate remained sceptical about economic recovery. The hesitant economic growth of the late 1980s (Table 8.1) was combined with reductions in public spending which left little trickle-down to the poorer workers. An election in early 1989 returned the People's National Party to office with 54 per cent of the vote and Manley as its leader. Consequently, the chastened instigator of the disastrous 1973–6 populist boom and 1974 bauxite levy once more inherited a mining sector that was growing strongly alongside a weak non-mining tradeables sector—and amid growing pressure for income redistribution.

CONCLUSION

External shocks certainly contributed to Jamaica's retarded recovery, especially that inflicted by the collapse of the expected bauxite boom in 1983. External shocks led to intensified adjustment efforts not only in 1983 but also in 1985 and 1988. The hurricanes of 1985 and 1988 each significantly reduced growth with knock-on effects through crop damage. Yet the intensity of the negative shock from the collapse of bauxite underlines the excessive reliance on bauxite rents to prop up the country's uncompetitive agricultural and manufacturing sectors.

The Jamaican trajectory for economic growth over 1972–88 was one of sudden decline and protracted recovery. The roots of Jamaica's disappointing economic trajectory lie in its attempts to avoid a growth-reducing stabilization policy by extracting rents from the bauxite sector. It misjudged the scale of those rents and as a consequence increased the economy's dependence on bauxite even as it undermined the competitiveness of the sector. Meanwhile, like the Velasco government in Peru, the Manley government in Jamaica paid insufficient attention to the productivity with which the rents were redeployed.

The initial economic decline was largely self-inflicted and reflected structuralist efforts to redistribute income. Jamaica confirms the Peruvian lesson: reluctant orthodoxy weakens recovery and so

prolongs adjustment as to make it much more expensive to achieve than with more thorough measures, promptly applied. The Manley government's hostility to international capital made it reluctant to adopt IMF-backed adjustment. Yet that reluctance persisted under the new conservative government, partly because an aluminium boom was expected to ease the external constraint through the 1980s. Consequently, although the new government attracted substantial foreign resources, its IMF-backed orthodoxy remained hesitant and uncertain.

In fact, Jamaica lagged Chile by almost a decade in squaring up to structural adjustment and paid a very high penalty for the delay in terms of income forgone. Sharply (1983) estimates that Jamaica could have increased its GDP by 2–3 per cent per annum if it had applied a larger share of revenues to productive investment. Even modest growth such as that would have left the country's real GDP some 50 per cent higher than it was in the early 1980s, a figure that provides some measure of the size of the country's loss.

When Jamaica did bite the bullet in 1983 it was less skilful than Bolivia in exploiting the advantages of its small size for debt renegotiation. It did not secure similar levels of debt reduction to Bolivia. Its debt service ratio rose from 19 to 50 per cent over 1980–6 and its debt service capacity remained weak. Although Jamaica's outstanding external debt began to decline as a fraction of GDP, it was still 123 per cent in 1988 (compared with 180 per cent in 1985). The ratio of debt service to exports also fell but it was still 45 per cent in 1988.

Jamaican adjustment reinforces the Chilean lesson, namely that while orthodox macroeconomic policies (resolutely pursued) are a necessary condition for economic recovery, they are not a sufficient condition. Attention also needs to be given to the relationship between the mining sector and the non-mining tradeables. In particular, the sustained strengthening of the competitiveness of the non-mining tradeables, especially manufacturing, is crucial. This demands a pragmatic orthodoxy which mutes the mineral-driven swings in the real exchange rate and sustains the competitiveness of the non-mining tradeables.

Jamaica postponed the reform of its manufacturing sector for a decade, whereas Chile had embarked on reform in the mid-1970s. By the time Jamaica began reform, the compensation required for a decade of neglect proved formidable and, ironically, required industrial incentives which by then found little favour among the

belated converts to macroeconomic orthodoxy. In 1990 Jamaica was still dependent on the twin resource-based economic pillars of bauxite and tourism, as it had been in 1972 when the country was more prosperous and had more grounds for optimism.

In fact, all four developing American countries underestimated the importance of competitive non-mining tradeables, notably the three least successful ones. The mineral economies, like the larger newly industrializing countries, used their resource bonus to prop up uncompetitive manufacturing. Part III turns to the supply side, beginning with an examination of mining sector resilience in Chapter 9.

Part III

SECTORAL RESILIENCE IN THE DEVELOPING AMERICAS

9

CONTRASTS IN MINING SECTOR RESILIENCE, 1972–90

DETERMINANTS OF MINERAL SECTOR PERFORMANCE

This chapter analyses the resilience of the mining sector of the four developing American countries through the period 1972–90. It focuses on the interaction between the macroeconomic trajectory traced by each of the four developing American countries and the performance of the mineral sector. It asks whether there is a simple correlation between mining sector resilience and the overall economic trajectory traced by each country. Or is the relationship more subtle than this, and if so, in what way?

A simple correlation would suggest that the mining sectors of Chile and Jamaica would outperform those of Bolivia and Peru. A basic index of mining sector resilience is ability to retain market share. Table 9.1 traces changes in market share for the four developing American mineral economies. It shows that both Chile and Peru increased their share of the global copper market—and by a considerable margin in each case. In contrast, the two smallest economies, Jamaica and Bolivia, experienced steep falls in their

Table 9.1 Mineral production and market share

Country	*Output (tonnes)*			*Market share (%)*	
	1970–3	*1985–8*	*ratio*	*1970–3*	*1985–7*
Chile (copper)	0.713	1.407	1.97	10.5	21.3
Peru (copper)	0.209	0.365	1.75	3.1	5.9
Bolivia (tin)	0.030	0.011	0.38	16.3	6.0
Jamaica (bauxite)	12.598	7.050	0.56	20.1	7.3

Source: Comision Chilena del Cobre 1987, 1989b; ECLA 1989; Ayub and Hashimoto 1985; Jamaica Bauxite Institute

market share (for bauxite and tin, respectively), of around two-thirds. The performances of Chile and Bolivia are consistent with the simple hypothesis concerning the relationship to the underlying economic trajectory. But those of Jamaica and Peru are not. The two anomaly countries provide important clues concerning the factors capable of overriding the macroeconomic environment as the prime determinant of mineral sector performance.

As the previous chapter shows, Jamaica's loss of market share was triggered by a misjudged tax policy, testifying to the importance of this variable. It may be recalled from Chapter 2 that the critical requirements of an effective tax regime are a strong link to profitability and a mechanism for the host government to syphon away a fraction of any windfall gains above a basic target rate of return (the return being commensurate with the investment risk). Stability is a further requirement of a desirable tax regime and it is fostered by pre-investment agreement between the host country and investor as to how any significant changes in revenues are to be allocated. It minimizes tensions over the division of any rents and allows firms to discount the risk of unexpected retroactive imposts.

Figure 9.1, based on the concept of the obsolescing bargain developed by Vernon (1971), traces the potential friction between a foreign investor and the host country. During the feasibility stage, when the terms of the mining project are being negotiated the

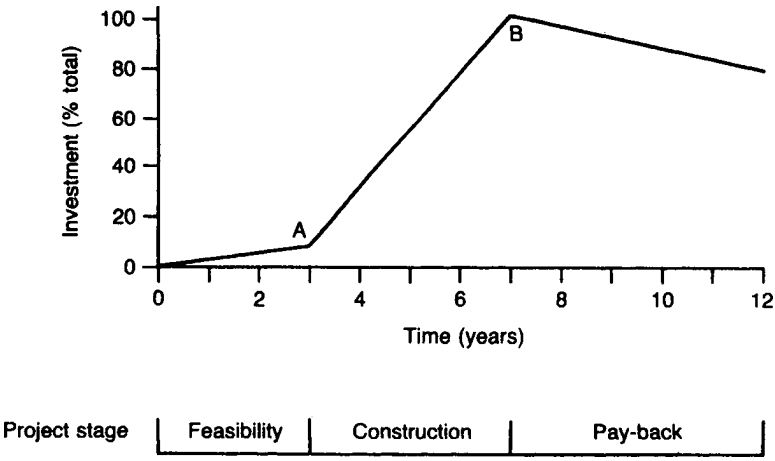

Figure 9.1 Vernon's obsolescing bargain

mining firm has the strongest bargaining position: it has most information and only a modest financial commitment, whereas the government is keen not to deter new investment. By the time the investment has been completed (B) the government has the stronger position: much of the secrecy surrounding the prospects for the project has lifted and the host country can seek renegotiation of the concession secure in the knowledge that the corporation is now vulnerable because it needs to secure the return of its capital, with a profit. Yet both sides can gain by eliminating such potential friction through transparent taxation agreements.

As for the lesson from the other anomaly country, Peru, an important reason for its expanded market share was the dominance of the copper sector by a large MNC subsidiary. That company proved more adroit at limiting the damage from macroeconomic disruption than the numerous Peruvian state-run mining enterprises, including the state oil corporation. State mining enterprises also performed poorly in Bolivia, but that leaves the puzzle as to why the Chilean sector performed so well despite the fact that the balance between state and private firms in its copper sector was the reverse of that in Peru. The literature on state enterprises in developing countries provides some clues.

Radetzki (1985) has developed a model of the post-nationalization performance of developing country mining firms (Figure 9.2(a)). His model suggests that, after an initial dislocation following the state take-over, the performance of the state mining firm improves over a ten to fifteen year learning curve. It stabilizes at a level which is only slightly inferior to that of a private mining firm. Radetzki concludes that this is a satisfactory outcome since the under-performance of the state firm compared with the MNC is not great and is likely to be amply compensated by the full benefits of national ownership. These benefits include acquisition of technological skills, greater knowledge of the functioning of the sector and a higher internalization of sectoral linkages. It is important to note, however, that Radetzki based his conclusions on three state enterprises only one of which came close to his projection. Moreover, in most developing countries, state enterprises have performed particularly poorly in the mining sector.

An alternative model to that of Radetzki, based on Caribbean experience, has been more typical. It posits a relatively smooth state take-over followed by an accelerating decline (Figure 9.2(b)). In the Caribbean model (Auty 1986) the initial take-over has little overt

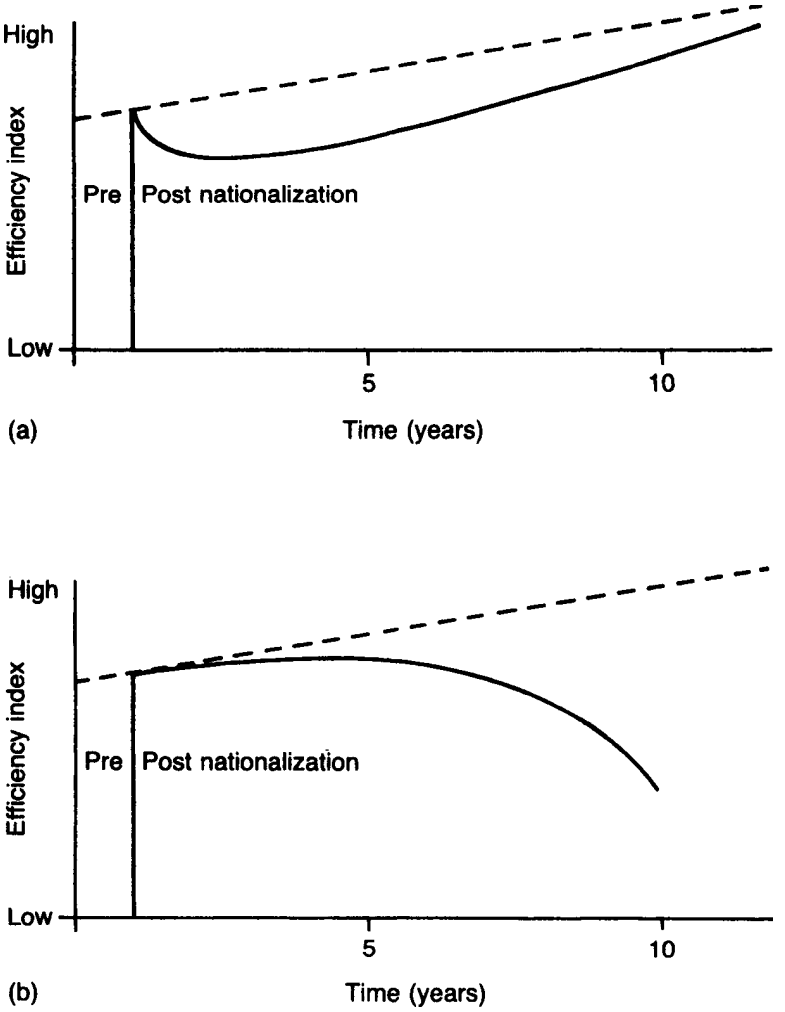

Figure 9.2 Two models of the impact of nationalization on mining enterprises (efficinecy levels: – – –, private firm;——, state enterprise): (a) Radetzki model; (b) Caribbean model

impact on performance but a cumulative deterioration occurs in the financial structure, investment efficiency, managerial autonomy and labour discipline of the nationalized firm. Profits are declared at the expense of maintenance and exploration. Management turnover accelerates and replacements are chosen more for political allegiance than for technical skill while the labour force tests the (apparently limitless) depths of its new (state) employer's pocket. The resulting corrosion of the firm renders it vulnerable to shocks, whether internal (such as a prolonged strike) or external (such as a sustained steep price decline). The post-nationalization pattern is therefore not one of substantive recovery but rather one of accelerating decline.

In seeking to explain why some state enterprises, like Chile's state copper firm, have not conformed to the general tendency towards poor performance in developing countries, Shafer (1983) has identified the strength of the political regime as the key factor. He contrasts the political strength of the Pinochet government in Chile with the weakness of the Kaunda regime in Zambia, and suggests that the weaker government sapped the efficiency of the state mining firm by using its resources to buy political support. Gelb *et al.* (1986) have shown with reference to Zambia how the appeasement of the urban unemployed can gravely corrode economy-wide investment efficiency within a decade.

Auty (1990a) presents evidence from the oil-exporting countries that it is not state ownership *per se* which is the problem, but the degree of autonomy which the management of state enterprises is given. A way of conceptualizing how management performance is so affected has been developed by Kelly Escobar (1982) with reference to state enterprises in Venezuela and Brazil, She makes a distinction between managers who are technocratic (efficiency oriented) and those who are politically oriented (commissars). She suggests that state enterprise performance is a function of the strength of these two factions. Low autonomy state enterprises are likely to have a preponderance of commissars in key managerial positions.

The interaction between macroeconomic trajectory, taxation policy and enterprise autonomy will now be applied to analyse mining sector resilience in each of the four countries, beginning with Bolivia. The Bolivian example shows how low autonomy state enterprises can become decapitalized where they function with a poor tax regime in a deteriorating economy. The theme of enterprise

autonomy is further developed in the third section with reference to the varying ability of Peruvian mining firms to cope with economic deterioration. The fourth section analyses why the Jamaican mining sector, which eschewed large-scale state ownership, still performed disappointingly in an improving economy. Finally, the satisfactory performance of the predominantly state-owned Chilean mining sector is explained.

BOLIVIAN STATE MINING DECAPITALIZED

The Bolivian mining sector was decapitalized even though it experienced boom conditions through the decade following the first oil shock. One problem for the mining sector was the steep real appreciation of the exchange rate, which doubled through that period. That would have been less of a problem if the sector had been taxed in line with profitability and if the dominant state mining firms, Comibol and YPFB, had retained sufficient autonomy to pursue a commercial mandate. Unlike Peru, Bolivia's private mining sector was too small to compensate for the failure in the public sector.

Decapitalization of Comibol

The 1985 tin price collapse reflected the breakdown of efforts by leading producers to maintain high and stable prices (Table 4.1). Over the previous two decades the tin price bucked that of other leading metals which declined in real terms (Baldwin 1983). However, one consequence of the relative rise in tin prices was a very slow rate of demand growth (scarcely 0.5 per cent per annum) as consumers found cheaper substitutes. A second consequence was a reduction in the pressures for cost competitiveness on producers like Bolivia. A third consequence was the emergence of new low-cost producers like Brazil.

The four leading producers limited output and accumulated tin stocks to support the floor price (*Financial Times* 1985d). Their share of global output dropped from almost 80 per cent in the 1960s to 71 per cent in 1981 and 57 per cent in 1985. Tin stocks increased from 23,000 to 62,000 tonnes over 1981–5 and incurred annual interest payments in 1985 in excess of $50 million. When the cartel members ceased defending the target price they triggered the price collapse.

Table 9.2 Comibol financial performance, 1980–8 ($ million)

	1980	*1981*	*1982*	*1983*	*1984*	*1985*	*1986*	*1987*	*1988*
Tin output (tonnes)	18.6	18.6	15.5	16.0	12.5	10.1	4.2		
Workforce (× 1,000)	26.5	25.7	26.1	27.7	27.7	27.6			
Sales	352.8	378.1	278.8	280.3	224.6	135.1	50.7	17.9	42.0
Costs	301.9	379.4	340.3	340.9	369.2	383.1	71.6	22.6	46.9
Operating profit	50.8	5.3	(61.7)	(60.6)	(144.5)	(248.0)	(20.9)	(4.7)	(4.9)
Net income	(30.0)	(45.5)	(51.9)	(51.6)	(68.4)	n.a.	(10.4)	(3.5)	(5.9)
Total assets	475.7	528.2	490.4	500.0	529.9	573.5	530.5	519.3	528.7
Equity	117.6	72.7	101.5	58.3	23.9	34.7	441.0	480.1	435.1
Tin cost ($/lb)	3.1	4.5	5.0	5.0	8.0	9.8	4.1		
LME price ($/lb)	7.6	6.4	5.8	5.9	5.6	5.4	2.6		
Labour/costs (%)	3.9	4.1	4.0	4.6	5.5	4.9			

Source: Comibol 1989

The bottom part of Table 9.2 traces the diverging trend between Comibol tin production costs and London Metal Exchange (LME) prices through the 1980s: even with sharply lower costs in 1986 Comibol remained uneconomic. Only one of Comibol's twenty-one divisions, the 3,500 tonnes per annum (tpa) Huanuni mine complex near Oruro, operated profitably in that year. Its ores were the richest with some 1.7 per cent tin content (Suttill 1988). Comibol's second largest mine at Catavi-Siglo Veinte, southeast of La Paz, faced closure because it required prices of $6/lb (*Financial Times* 1986c). Yet 60,000 people were estimated to be directly or indirectly dependent on that mine alone, posing severe social adjustment problems.

Comibol had ceased to publish accounts in 1977 and its losses grew steadily as its mineral production declined by more than two-fifths over 1981–5 (Table 9.2). Comibol's cumulative losses over the same period exceeded $500 million. Its tin smelting subsidiary, built in the 1970s, lost money in every year but 1979 and it too had accumulated large debts which in 1985, at $450 million, rivalled those of its parent (Suttill 1988). Debt service was more than 25 per cent of revenues when the government took over most of the mining debt after the 1985 tin crash.

As noted in Chapter 5, the debacle of 1985 had its roots in the prolonged decline of a mining sector which had flourished during the first half of the twentieth century when ores were rich and profits large. Nationalization in 1952 failed to improve the tin sector's competitiveness since new political goals overwhelmed commercial ones. Comibol acquired the character of a mini welfare state in which employment, bonuses and social needs (including health, education, housing and food) took little account of the firm's ability to pay.

Exploration lagged production and contributed to declining ore grades while Comibol's monopoly of reserves precluded private exploitation of those reserves that Comibol failed to prospect. Foreign loans were then unwisely used during the first oil boom to lift the sector's added value through increased domestic refining and smelting. The added value from the loss-making smelter accounted for less than one-tenth that of mining and less than 0.6 per cent of GDP in 1980 (Ayub and Hashimoto 1985). The resources would have been better invested in renewed exploration and improvements to mining technology since Bolivia's fossilized mining sector was incapable of adjusting to the appreciation of the real exchange rate through the two oil booms (Table 5.1).

Restructuring the hard mineral sector

The restructuring of Bolivia's mining sector in the late 1980s was as bold as its hybrid macroeconomic policy. Comibol was restructured into five geographical units (Quechisla in the zinc and copper mines of the south, Oriente for the eastern Mutun iron ore, Potosi for tin and silver, Oruro for tin and La Paz for tin). It slashed its labour force from 27,000 to 7,000 in the face of bitter opposition. Severance payments totalled $70 million but strikes against the reforms cost Comibol $85 million in 1985 alone (*Financial Times* 1986c).

Most mines ceased production in 1987 while Comibol deployed accumulated unused equipment to minimize the cost of mine refurbishment. The Vinto tin smelter cut its workforce by one-sixth to 500 and engaged consultants to explore conversion of the plant to a high-grade tin converter. The antimony smelter and the uncommissioned Karachipampa lead-silver smelter remained mothballed.

Privately produced minerals such as tungsten, antimony, lead and precious metals exhibited more dynamism than those minerals in the state sector even though many private firms had also been saddled with debt as a result of pre-1985 exchange rate overvaluation. The medium-scale mines, comprising around twenty-four companies, operated with poorer reserves than Comibol but produced the bulk of Bolivia's zinc, antimony and tungsten. However, some mines were closed and the workforce shrank to one-third. The small mine sector also contracted—to 615 mines in 1987 compared with 6,300 earlier.

Comibol secured greater autonomy in an effort to match private sector levels of profitability and efficiency. But its long-term role was redefined to that of a promotional force in joint ventures with private mining firms. A vital component in the reform was modification of the tax regime as part of the government's trade liberalization. A uniform 20 per cent import tariff was introduced along with a 15 per cent value added tax. In addition, taxes were levied on net mining proceeds after a 1.5 per cent royalty, instead of upon the notional difference between world prices and assumed production costs. All capital allowances and reinvested profits became allowable against income, so that the new tax regime encouraged investment at the start-up of production and became more onerous towards the end of the mine life.

Private, especially foreign, capital was required to rebuild the sector which, according to the Ministry of Mines, needed $1.3 billion to sustain growth through to the year 2000. The government could finance barely $150 million of this (*Financial Times* 1989d). To increase foreign investment in Bolivian mining, foreign private firms were allowed to hold more than half the equity in Comibol joint ventures and to repatriate profits freely subject to a 10 per cent withholding tax (Suttill 1988). A new mining code was drawn up which streamlined procedures and harmonized them with those of competing countries. However, the enactment of the new regulations was much delayed and foreign confidence grew only slowly. Meanwhile, hydrocarbon revenues provided a crucial bridge through the post-1985 stabilization and reform of Comibol.

The hydrocarbon lifesaver

That the Bolivian government did receive a continued revenue flow after the tin collapse owed much to the rapid revitalization of the state hydrocarbon firm YPFB that occurred under the more commercial mandate it was given in 1985 (Table 9.3). YPFB halved manning levels to around 5,000 over 1985–8 and although gas prices halved over the same period (to $2.45 per thousand cubic feet (MCF)) it boosted domestic revenues. The reform of YPFB set domestic oil prices at $45/bl and limited its tax liability on gas sales to the equivalent of 30 per cent of the $18/bl post-1986 world oil price. The $12/bl revenue which YPFB retained did not meet the company's investment needs but the reformed firm's efficiency commanded sufficient respect to enable it to borrow some $300 million from foreign institutions.

Yet, like hard minerals, Bolivian hydrocarbon production was initially adversely affected by the nationalization (which occurred in 1969). Oil reserves declined through the 1970s due both to

Table 9.3 YPFB profit and loss, 1983–8 (1,000 bolivianos)

	1983	*1984*	*1985*	*1986*	*1987*	*1988*
Total sales	0.131	1.644	306.009	1,180.494	1,113.260	
Net profit	0.084	0.875	175.758	439.663	413.837	
Taxes	0.066	0.792	202.833	425.984	307.515	
Share of total revenues (%)	11.7	14.0	59.2	37.2	49.2	55.2

Sources: YPFB; share of total revenues, Banco Central

Table 9.4 Mineral and hydrocarbon output, value added and exports, Bolivia, 1970–88

	1970	*1971*	*1972*	*1973*	*1974*	*1975*	*1976*	*1977*	*1978*	*1979*	*1980*	*1981*	*1982*	*1983*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*
Production volume																				
Crude (1,000 bpd)	24.2	36.2	43.7	47.3	45.5	40.4	40.7	34.7	32.4	27.9	27.5	27.5	30.5	28.4	26.5	25.7	23.0	24.5	24.7	25.8
Gas (MCF per day)	83.7	222.2	331.3	414.4	395.0	384.6	430.7	416.9	431.2	438.3	461.0	481.0	515.0	488.0	473.0	450.0	441.0	441.7	464.1	
Tin (1,000 tonnes)	29.4	30.3	30.3	28.4	29.8	31.8	30.6	33.9	30.8	27.3	27.3	29.8	26.7	25.3	19.9	16.1	10.5	8.1		
Value added (1980 bolivianos)																				
Hydrocarbons	2.00	3.01	6.09	7.77	7.58	7.31	7.46	7.22	6.98	6.42	6.73	7.07	7.48	6.84	6.87	6.73	6.47	6.56	6.88	
Minerals	12.50	13.16	12.90	14.04	13.30	13.41	13.29	14.51	14.16	13.06	12.68	13.07	12.05	11.78	9.47	7.55	5.59	5.69	7.57	
Total value added	83.84	88.08	95.10	100.56	103.52	111.08	116.21	121.99	124.49	124.66	122.95	124.08	118.67	110.94	110.61	110.45	107.21	109.48	112.55	
Exports ($ million)																				
Hydrocarbons	13.2	23.9	41.6	67.0	193.1	153.9	167.5	134.9	122.2	149.7	245.2	346.6	398.4	420.1	388.9	374.3	332.5	256.0	218.9	203.1
Minerals	204.7	173.4	174.1	225.9	387.3	304.3	366.9	492.7	315.6	591.9	641.1	556.0	419.4	347.3	364.0	263.7	196.8	207.2	270.5	375.3
Total export	228.6	216.0	240.4	338.3	650.5	521.4	625.3	715.4	725.3	857.2	1036.2	995.3	898.2	817.5	782.1	672.5	637.8	569.5	600.5	719.5

Sources: Asociation National de Mineros Medianos 1978, 1987, 1988: YPFB: Banco Central 1989

insufficient exploration and to low domestic prices (which encouraged wasteful domestic consumption and reserve depletion). YPFB overproduced in order to generate revenues faster, but the deployment of much of the revenue was not efficient, as noted in Chapter 5. YPFB's inadequate cash flow meant that it lacked adequate investment funds and was forced to borrow in order to expand refining capacity.

The discovery of large natural gas reserves by US MNCs improved the hydrocarbon sector's prospects, although the value of the gas was reduced by lack of large markets. Plans to use the gas in combination with adjacent high-grade iron ore for heavy industry languished for lack of markets (domestic demand was only 100,000 tonnes) and of capital. Most of the gas was exported to Argentina and that country's financial difficulties resulted in pressure to renegotiate the gas contract when prices fell in 1986 (Latin American Bureau 1987). By then the Bolivian government depended on the hydrocarbon sector for the bulk of its exports and revenues (Table 9.4), a trend set to persist.

Following the resolution of a dispute between the Bolivian government and the oil MNCs, an agreement was reached in 1989 to build a gas-fired power station in Bolivia to supply 3,000 MW to Brazil over a twenty-five year period (*Economist* 1988c). Scheduled to start up in 1992 and reach full capacity by 1996, it would earn at 1988 prices some $270 million annually—50 per cent of total export earnings (*Financial Times* 1989b). More controversially, Bolivia also planned to build a 330,000 tpa gas-based urea fertilizer plant and a petrochemical plant, both to supply Brazil.

One optimistic projection put the contribution of hydrocarbons to exports at $830 million by the late 1990s, compared with almost $1 billion for a revived hard mineral sector (Ministerio de Planeamiento y Coordinacion 1989). By then, non-traditional exports (dominated by soya, wood and electricity) were projected at $1.2 billion, or just over one-third of the total. This implies that, even under optimistic forecasts, Bolivia will remain dependent on mineral exports through the long term. Those exports depend heavily on expanded foreign investment and the retention of competitiveness and commercial autonomy by YPFB and Comibol.

OWNERSHIP CONTRASTS IN THE PERUVIAN MINERAL SECTOR

Peru discriminated against its mining sector: it extracted resources from the sector without sufficient care for either the efficiency with

which they were redeployed or the negative consequences of such a transfer for the long-term viability of mining. Resources were extracted through a combination of extensive state ownership, multiple exchange rates (which penalized mining) and inflexible taxation.

Nor was the mining sector (with its commitment to massive investments over a long time period) helped by the erratic changes in state support through the 1970s and 1980s. That period began with a wave of nationalizations which was followed by an accommodatory interlude for both private domestic and foreign investment before the Garcia regime renewed the emphasis on extracting financial resources. Even during the accommodating phase (the decade from the mid-1970s) there were steady and sizeable increases in indirect taxes on mining.

Peru suggests that a mining firm's capacity to cope with an adverse policy appears to be inversely linked to the degree of state ownership. This conclusion is consistent with evidence elsewhere in Latin America (Auty 1990b). The thesis is developed with reference to three enterprise case studies in Peru: the state-owned Petroperu which distributed oil products; Centromin, the largest state-owned hard mineral firm; and SPCC, a large MNC copper producer.

The decapitalization of Petroperu

The Velasco military government looked to the mining sector to earn the necessary foreign exchange to accelerate import substitution industrialization. It sought to boost the mining sector's economic contribution through a spate of nationalizations in 1969–73 (intended to raise domestic revenue retention) and through additional investment in new mines and mineral processing.

Like Bolivia prior to 1985, Peru decapitalized its state hydrocarbon firm, Petroperu. In the early 1970s Peru expected to discover oil comparable in domestic importance with that of Ecuador (*Financial Times* 1985c). Although less oil was found than had been hoped, the Amazon oil reserves did transform Peru into a net oil exporter over 1978–88, with output averaging 180,000 bpd through the mid-1980s of which approximately one-third was exported.

The initial production contracts favoured the MNCs which received half the production and paid no taxes. Costs were typically 13 per cent of revenues in the late 1970s so that the producers

Table 9.5 Petroperu performance indices

	1970	*1971*	*1972*	*1973*	*1974*	*1975*	*1976*	*1977*	*1978*	*1979*	*1980*	*1981*	*1982*	*1983*	*1984*	*1985*	*1986*	*1987*	*1988*
Total sales	7.355	7.157	7.741	9.002	13.397	12.612	18.989	19.970	32.241	50.160	48.495	47.425	52.302	52.307	53.086	73.055	45.740	31.640	
Taxes	–	0.407	0.440	0.602	0.728	0.470	1.332	1.174	13.681	19.893	25.124	19.643	23.782	22.245	24.560	36.487	26.679	15.372	
Gross investment	1.091	1.669	1.804	4.849	9.287	18.394	16.201	7.364	3.291	1.915	1.660	3.751	5.667	4.010	4.755	4.503	3.574	1.914	
Surplus/deficit	0.369	0.260	(0.089)	(3.023)	(13.520)	(20.695)	(15.386)	(5.016)	1.289	9.932	1.549	0.127	0.268	4.376	1.933	4.457	(3.137)	(0.572)	
Taxes ($ million)											715.6	793.7	824.9	737.6	815.9	1069.3	982.3	887.4	406.4
as % total taxes											20.2	22.6	23.7	32.9	32.8	44.0	31.2	22.4	15.4

Sources: Banco Central 1989; Petroperu

effectively received 37 per cent of revenue as profit (*Financial Times* 1986a). In 1979, the outgoing government sensibly renegotiated the contracts to capture a share of the second oil windfall. It reduced the contractor's share of revenues to 12 per cent after deducting costs and income tax—though tax credits were provided in 1980 to encourage new investment.

Less wisely, part of the windfall was passed directly to domestic consumers in the form of cheap fuel prices. This was intended as an anti-inflation measure, but it accelerated domestic energy consumption and undermined Petroperu's commercial efficiency. The state oil firm had to finance an increasing share of exploration costs from a shrinking financial base. Its investment was inadequate and the country's oil reserves fell by more than half in 1982–9 to stand at 400 million barrels. By then production had dropped to 130,000 bpd and the country had an annual hydrocarbon trade deficit of $60 million.

Table 9.5 shows the dramatic change in Petroperu's economic contribution as oil production expanded. In 1978 taxes jumped to 42 per cent of the state firm's total sales and by 1980 government revenues absorbed more than half of Petroperu's income. The state enterprise provided one-fifth of government revenues by 1980 and that ratio topped 30 per cent in 1983–6. Thereafter, the share fell sharply to 15 per cent in 1988 as Petroperu's revenues collapsed. Unable to raise domestic prices, the state oil firm incurred net losses of more than $400 million in 1987. It expected to lose $500 million in 1988 even with a 50 per cent rise in petroleum prices. The company had sought a price increase three times larger because more than half of any increase went in taxes (*Financial Times* 1988g).

The Ministry of Energy estimated by the late 1980s that Peru needed to invest £800 million annually just to maintain self-sufficiency in oil. Yet the Garcia government's exchange rate policy of discrimination against the mining sector depressed foreign investment and worsened Petroperu's problems. The Garcia government also cancelled existing oil contracts and renegotiated new ones. Petroperu was unable to finance either its oil exploration or its $600 million share of the pipeline needed to exploit Shell's large gas deposits (2.5 billion barrels of oil equivalent) in the southern Amazon (*Financial Times* 1988h).

Peru hoped to produce 100 MCF per day by 1993 (doubling by 2000) and to substitute gas for 17,000 bpd of oil consumed for

Table 9.6 Composition of mining value added, Peru, 1980–9 (%)

	1980	*1981*	*1982*	*1983*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*
Wages	22.6	38.2	47.3	28.1	27.1	26.7	61.5	42.1	61.6	57.6
Interest	12.1	23.2	41.4	43.1	29.9	29.9	20.7	35.4	29.6	21.8
Taxes	30.0	14.3	11.1	15.6	15.8	15.5	14.8	10.7	29.6	19.8
Depreciation	10.2	12.5	14.2	11.7	11.8	13.5	26.7	26.6	14.2	11.7
Reserves	8.6	3.1	4.1	6.3	10.5	6.4	5.4	8.7	8.7	1.9
Profits	16.5	8.7	(18.0)	(4.8)	(14.5)	8.1	(29.1)	(23.5)	(43.7)	(12.9)
Real exchange rate (1978 = 100[a])	83.0	71.0	71.0	78.0	81.0	104.0	87.0	79.0	77.0	61.0

Source: Idem 1991
Note: [a] A fall in the index reflects a strengthening.

electricity. Optimists even suggested that by the mid-1990s Peru's increased oil and gas exports would boost *total* exports by $1.5 billion, equivalent to 60 per cent of late 1980s exports (*Economist* 1989b). But these forecasts assumed the restoration of commercial pricing policies and incentives to state and private mining firms alike.

Decapitalization of Centromin

Velasco established four state mining firms of which the largest was Centromin, nationalized in 1973 (Sigmund 1980). The others were Mineroperu, Tintaya and Hierroperu. The state firm Minpeco acted as a purchasing agent before 1979 and again after 1987. Taxes from the mining sector rose over 1973–5 (despite the slump in mineral prices) from an initial 2 per cent of exports to 6 per cent in 1974–5 and then to more than 18 per cent in 1976–80. The taxes paid then slid to 7 per cent in 1981–4 before increasing again to 12.5 per cent under Garcia. Overall, the share of the mining sector in government revenue increased from around 6 per cent in 1971–5 to average 10.7 per cent in 1976–80 before, as prices deteriorated further, tailing off to 6 per cent in 1981–4 and to barely 5 per cent in 1985–7.

Table 9.6 traces changes in the composition of value added within the Peruvian mining sector as a whole for the years 1980–9. It shows that losses were recorded in seven of the ten years: 1985 was the only profitable year after 1981. Yet during those unprofitable years, taxation absorbed between 11 and 30 per cent of value added. Meanwhile, the profitability of the mines was strongly correlated

Table 9.7 Competitiveness of Peruvian copper mining 1975–85 (¢/lb)

Year	*Direct cost*[a]	*Indirect cost*[b]	*Interest*[c]	*Gross costs*	*Co-/by-product credit*[d]	*Net cost*	*Percentage of world average*[e]
1975	87.3	22.1	2.2	111.6	60.5	51.1	104.5
1980	90.2	30.6	9.2	129.9	88.8	41.4	82.4
1985	66.6	12.4	6.4	85.2	44.2	41.2	81.4

Source: Takeuchi *et al.* 1987:60, 77

Notes: [a] Direct cash operating cost, including mining, refining, freight and marketing.
[b] *Administrative and corporate overhead, royalties, research and exploration.*
[c] *All interest expenses.*
[d] *Revenue and by-product sales.*
[e] *Representing 80 per cent of global output.*

Table 9.8 Centromin performance indices, 1974–88

	1974	*1975*	*1976*	*1977*	*1978*	*1979*	*1980*	*1981*	*1982*	*1983*	*1984*	*1985*	*1986*	*1987*	*1988*
Mineral output (million tonnes)	4.56	4.47	4.69	5.02	4.87	5.29	5.26	5.19	5.81	6.79	7.68	7.81	6.86	7.22	4.81
Net profit (1988 $ million)	91.0	22.9	19.3	50.3	19.8	105.4	68.3	(9.8)	(98.5)	71.5	29.0	14.1	(99.8)	38.5	(17.3)
Taxes ($ million)	34.6	4.1	22.3	52.8	55.1	165.1	160.6	97.0	71.8	44.6	53.7	75.6	56.0	32.8	49.2
LME copper price (1989 $/lb)	1.96	1.08	1.17	1.03	99.5	1.28	1.24	0.91	0.76	0.80	0.68	0.70	0.70	0.88	1.24

Sources: Centromin 1989; Comision Chilena del Cobre 1989b

with the real exchange rate (Table 9.7): profits declined as the exchange rate appreciated through 1982, they improved after the sharp real depreciation of 1985 only to evaporate once more as the real exchange rate appreciated strongly through the Garcia populist boom (Idem 1991).

Centromin contributed cumulatively more than $821 million in taxes in 1974–85 and furnished around one-fifth of mineral exports, or 9 per cent of total exports (Centromin 1987). Table 9.8 traces the substantial fluctuations in the net profits of Centromin over 1974–88 and shows that Centromin's taxes bore little relationship to these profits. For example, in constant 1988 dollars, annual tax payments exceeded $49 million in all four deficit years.

Centromin paid profits and taxes at the expense of its future operations. Exploration expenditures fell to 0.15 per cent of total sales compared with a target level of between 1 and 2 per cent (Centromin 1987). Operating costs were sensitive to the exchange rate, falling below $90 million in 1978–9 (in constant 1980 dollars) and again after the 1983 devaluation. Under the squeeze, unit costs per tonne of rock extracted were cut, declining from $23.4 to $9.1 over 1975–84, with labour costs sharply lower.

Consistent with the Caribbean model, Centromin had insufficient commercial autonomy so that it failed to retain the MNC managers after nationalization, employed too many workers, skimped on exploration and neglected equipment maintenance. Even the simplest of purchase orders required elaborate administration with its attendant opportunities for rent-seeking. Centromin's problems became critical in the mid-1980s when the unfavourable exchange rate combined with low metal prices to reveal the cumulative neglect within the company.

The perverse response of the Garcia government to a further deterioration in the terms of trade was to assign the mining sector a relatively unfavourable exchange rate within the new multi-tier system. The effective protection rate for mining deteriorated to the levels of the disadjustment period prior to the 1983 devaluation, falling from –12 per cent to –35 per cent in 1985–8 (Armas *et al.* 1989). Peru's low grade opencast mines were relatively high cost by world standards (Table 9.7) and needed by-product credits to offset this (Takeuchi *et al.* 1987). Competitiveness was further eroded under Garcia by foreign exchange constraints on the import of spares, by the severe labour unrest as inflation cut real wages and by higher taxes.

For the mining sector as a whole, overvaluation of the exchange rate brought losses to Peruvian firms estimated as high as $800 million in 1988 (*Financial Times* 1985b, 1986a, 1990c). Yet, in line with the cumulative compounding feedback model, there was no compensating boom as mineral prices rose in 1987–8 because output was reduced by strikes arising out of the decline in socioeconomic conditions. In 1988 strikes cut Peruvian output by 120,000 tonnes of zinc and 100,000 tonnes of copper. The combined revenue loss to the mining sector from production shortfalls in that year alone was estimated at $400 million (*Financial Times* 1989b).

A multinational subsidiary: SPCC

The largest private mining firm, SPCC, managed the deteriorating conditions more satisfactorily than the state enterprises. SPCC had built Peru's first large copper mine at Toquepala in 1960 (Mikesell 1975). It evaded nationalization because such a course would have jeopardized the $700 million it was raising for a new mine at Cuajone which began production in 1976. This boosted Peruvian copper capacity from 230,000 to 400,000 tpa. The new mine took SPCC's share of Peru's copper output to two-thirds and it was the principal reason for Peru's growth in global market share.

But Cuajone experienced less favourable markets than Toquepala. SPCC contracted to pay tax at the rate of 55 per cent on Cuajone profits compared with 69 per cent from the depreciated Toquepala mine (Lago 1989). In fact, it recorded net losses in most years so that indirect taxes were the principal source of government revenue. Even so, data for 1979–88 indicate that out of cumulative SPCC sales of $4.51 billion the domestic revenue retention coefficient was a fairly high 0.60. Of the domestic revenue retained, taxes comprised 27.4 per cent, local purchases of goods and services 56.3 per cent and wages and salaries 16.3 per cent (SPCC Annual Reports).

Prior to the Garcia government SPCC generated sufficient revenue to maintain its operating efficiency. However, production costs rose sharply from 60 ¢/lb to 82 ¢/lb in 1986–8, reflecting unfavourable exchange rate trends and restrictions on imported input purchases. SPCC was forced to buy inferior domestic inputs at prices twice or more of those for imports. Relations with the government deteriorated further when state officials challenged the 1969 agreement for profit remittance from Cuajone. SPCC responded by freezing its investment plans which included $100 million to boost Cuajone concentrator

capacity by 25 per cent; $400 million to upgrade Toquepala and $100 million for a new leaching process to raise Toquepala's output by one-third.

Hard mineral taxes fell to $95 million over 1985–7 compared with $190 million in 1980–4 (Ministerio de Energia y Minas 1989) and compounded the fiscal problems arising from Petroperu's demise. Garcia's policies extracted resources from the mining sector and rapidly weakened it even while, as shown in Chapter 10, they did nothing to strengthen the non-mining tradeables sector. A similar policy brought similar results in Bolivia and Jamaica.

JAMAICA'S ONEROUS BAUXITE LEVY

Although Jamaica pursued a policy of confrontation with the subsidiaries of the aluminium MNCs, it did not proceed far with state ownership. The Manley government negotiated 51 per cent state equity in the bauxite mines and around 7 per cent in the alumina refineries, leaving management to the MNCs. Jamaica thereby largely avoided the pitfalls of under-performing state enterprises encountered by those developing countries which did nationalize on a large scale. Yet the country still inflicted considerable damage on itself through policy error. Basically, the Jamaican government unilaterally imposed an inflexible tax on the alumina refineries which was not linked to profitability.

The disputed bauxite levy

The Jamaican government unilaterally imposed a bauxite levy equivalent to 6.5 per cent of the realized price of ingot in June 1974 and made it retroactive to the beginning of the year. The new levy had little relationship to the profitability of alumina refining which was, in any case, depressed during the prolonged period of excess refining capacity which lasted to the late 1980s. The Jamaican government expected that the formation of a producer cartel (the International Bauxite Association) would underpin higher bauxite prices, but other members failed to match the Jamaican levy.

The Jamaican government aimed for a sixfold rise in bauxite sector revenues while the MNCs were unwilling to concede more than two-thirds that amount. The levy marginalized the Jamaican alumina refineries because it overestimated the rent which accrued from Jamaican proximity to the large US market. A real appreciation of

the exchange rate through the mid-1970s (Table 5.1) further diminished Jamaican competitiveness. Jamaica thereby transformed its long-term loss of relative market share (due to the combination of the maturation of its market and increasing competition from new mines) into an absolute loss. By the 1980s the Jamaican alumina refineries had been allocated the role of a swing producer. The MNCs concentrated their production cut-backs on Jamaica during downswings and during upswings they expanded production faster from the more competitive mines in Australia and Guinea, neither of which set prices high enough to neutralize the Jamaican levy (Auty 1983a).

The disadvantageous position of the Jamaican mining sector was compounded by the second oil shock which, together with the appreciation of the American dollar, further marginalized the US smelters which used Jamaican alumina and bauxite. The second oil shock also pushed up the costs of the fuel oil used by the Jamaican alumina refineries. Yet, despite the onerous nature of the bauxite levy, even the Seaga government did not repeal the levy until 1988, when a price upswing was under way.

Refinery capacity reductions

Based on pre-levy trends, the Jamaican Ministry of Mines (1973) projected that the island's total bauxite production would rise more than one-third to 17.75 million tonnes by 1977 of which just over half would be used to produce 3.5 million tonnes of alumina. The outcome was for a slight decline in Jamaican alumina output to 1977 compared with a 27 per cent increase in non-communist production. By 1980, Jamaican alumina output had expanded by one-quarter from the 1972 level (Table 9.9) but global production had grown by almost half.

Far from bauxite production expanding through the 1980s, as the first Seaga government had expected, Jamaica once more experienced cut-backs. Jamaican bauxite production halved in 1980–5 to 6 million tonnes, barely one-third the 1977 expectation (Table 9.9). Spot alumina prices, which had been expected to hold above $200/ tonne, fell below $100/tonne and rendered Jamaica's two newest refineries uneconomic. Alpart and Alcoa mothballed their alumina plants while Alcan cut back to 75 per cent of capacity. Reynolds Metals permanently shut its large north coast mine in 1984, removing 3 million tonnes of export bauxite capacity.

Table 9.9 Bauxite/alumina output and revenues, Jamaica, 1973–89

	1970–73	*1974*	*1975*	*1976*	*1977*	*1978*	*1979*	*1980*	*1981*	*1982*	*1983*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*
Production (million tonnes)																	
Bauxite	12.598	15.328	11.379	10.285	11.434	11.716	11.574	12.053	11.682	8.157	7.724	8.505	6.219	6.958	7.702	7.261	9.652
Alumina	2.052	2.781	2.275	1.647	2.048	2.117	2.094	2.456	2.556	1.758	1.853	1.751	1.512	1.578	1.822	1.514	2.221
Exports																	
Bauxite ($/million)	91.2	104.6	149.6	187.5	205.3	234.0	213.5	197.4	172.1	170.0	109.2	159.7	77.5	90.1	112.5	111.8	111.0
Alumina ($ million)	145.4	297.8	324.8	237.8	323.2	348.3	368.2	554.7	588.1	343.8	314.63	283.8	212.2	205.4	224.0	354.9	474.9
Bauxite ($/tonne)	12.15	13.4	27.2	29.8	32.1	36.6	33.4	32.6	32.0	41.7	41.7	35.30	33.3	30.7	30.4	32.3	26.3
Alumina ($/tonne)	72.02	106.4	135.3	148.6	161.6	165.9	175.3	226.6	230.6	196.5	165.6	165.0	131.0	120.0	136.0	201.0	212.0
Value added																	
Bauxite/alumina (1974 J$ billion)	0.147	0.187	0.148	0.117	0.139	0.143	0.142	0.158	0.161	0.112	0.113	0.114	0.092	0.098	0.103	0.098	0.136[a]
Bauxite/alumina (J$ billion)	0.131	0.187	0.213	0.229	0.302	0.504	0.615	0.671	0.526	0.331	0.268	0.664	0.569	0.902	1.146	n.a.	n.a.
Levy (J$ billion)	–	0.131	0.146	0.180	0.110	0.208	0.233	0.230	0.300	0.198	0.194	0.481	0.281	0.464	0.336	0.390	0.368[a]
Mining (% GDP)	9.9	9.1	8.4	8.7	7.4	7.6	7.6	8.9	8.8	6.2	6.1	6.2	5.2	5.2	5.4	5.0	6.7
Mining (% total exports)	63.7	58.0	60.4	69.8	70.4	73.3	71.4	78.0	78.0	65.2	61.8	63.1	50.9	50.1	47.5	52.9	58.7
Levy (% GDP)	–	–	6.1	5.6	3.0	3.7	7.2	5.4	4.9	5.7	3.5	5.1	2.5	3.5	2.1	3.0	2.1
Levy (% total revenue)	–	–	23.2	21.3	13.2	16.9	25.8	20.5	19.3	20.2	12.2	17.9	8.9	10.5	5.9	6.6	4.6[a]

Source: 1970–87, World Bank 1989b; 1988–9, Jamaica Bauxite Institute;[a] IMF 1991.
Note: n.a., not available.

Deployment of the bauxite levy

Unfortunately, the proceeds from the levy were not put to sensible use. They were initially used to purchase government equity in the mines and refineries. However, a study undertaken in the late 1970s suggested that the alumina glut made such investment a relatively unattractive use of scarce capital resources (Hashimoto 1983). Even if more of the levy had been invested in other directly productive economic activity, it is unlikely that it would have been efficiently applied. The government favoured the Luana Point heavy industry growth pole and entertained hopes for its construction for some years after it had been marginalized by the first oil shock (Reid 1978; Davis 1982). Elsewhere, state investment in key sub-sectors such as sugar and tourism was associated with loss of efficiency and deteriorating output.

The levy was increasingly diverted to current expenditure but in the absence of a mineral stabilization fund it did not prove to be a reliable source of government income. The levy initially contributed 23.5 per cent of government revenues in 1974–5 and was around 6 per cent of GDP (Table 9.9) but revenues then declined in real terms. Yet the levy contributed about one-fifth of total government revenues before the 1982 price decline. Consequently, the fall in alumina production through the mid-1980s shrank the bauxite levy's contribution to GDP from 6 per cent to 2 per cent and thereby cut 12 per cent from government revenues (Table 9.9).

It proved difficult to reduce the levy because other sources of revenue also declined. Yet a cut in the levy offered the best prospect for restoring Jamaican competitiveness. In the mid-1980s the levy comprised 30 per cent of alumina costs with other local inputs 25 per cent and the rest comprising imported inputs at world prices.

Repeal of the bauxite levy

The unexpected revival of the global aluminium industry in the late 1980s finally eliminated the global alumina capacity glut and pushed spot alumina prices over $600/tonne. The Seaga government effectively halved the levy and linked the new rate to profitability: it set a base levy of $5/tonne at an aluminium price of 60 ¢/lb or lower and raised the levy proportionately with higher prices. A doubling of the ingot price doubled the value of the levy.

The MNCs also paid corporation tax at the standard rate of

33.3 per cent. Alumina prices were set in relation to the principal markets served by each refinery. In the case of the Alcoa plant, which the Jamaican government had re-opened after Alcoa mothballed it, the government negotiated a 50 per cent equity ownership as the price of allowing Alcoa back in. Unfortunately, the government was unable to make a satisfactory return on its sales and could not fund its share of a planned expansion to 1 million tonnes.

The lower levy combined with energy conservation and lower oil prices to shift the Jamaican alumina plants towards the mid-point of global competitiveness. Compared with Australian refinery operating costs of $100/tonne and a global average of $130/tonne, Jamaica's Clarendon plant had trimmed costs to $124/tonne while the older Alcan plants had costs of $125/tonne and $139/tonne. The Alpart refinery (with fuel costing $30/tonne more than in the Alcoa plant because Alpart consumed twice as much oil) had average costs estimated at around $160/tonne.

Expansion plans (combined with plant upgrading) were expected to lower Alpart's costs and lift Jamaican alumina output to 3.6 million tonnes by the mid-1990s. Although bauxite output would rise to 13.5 million tonnes this would still be below its peak level. Yet an important omission from Jamaican government policy in the late 1980s was a mineral stabilization fund with which to smooth the flow of mineral revenues into the economy.

CHILE: COMPETITIVE COPPER EXPANSION

Competitive copper expansion

Contrary to most developing country experience with state mining firms, Codelco remained an efficient world producer and grew rapidly. It expanded the huge state opencast Chuquicamata mine by 50 per cent to 750,000 tonnes, four-fifths of which was refined prior to export. Improvements in the 370,000 tonne El Teniente mine pushed its costs below those of the opencast operation (*Financial Times* 1986b). More controversially, Codelco continued to operate two smaller subsidiaries, especially the Salvador mine which suffered the twin weaknesses of low ore grades and small size. However, a reorganization of Codelco in the late 1980s raised the autonomy and accountability of each mining division, thereby limiting the opportunity for future cross-subsidization.

In contrast with state mining enterprises elsewhere, cash flow shortages did not adversely affect Codelco which invested $3.51 billion in 1988 dollars between 1976 and 1988 (Codelco 1988). Around one-quarter of that investment went into services and the rest into production with two-thirds expended on reducing costs and one-third on capacity expansion. The firm's labour productivity increased by 60 per cent, rising from 27 tonnes per man-year to 44 tonnes, and labour costs declined by one-third in real terms—from almost one-half of operating costs to barely one-third. Although manning levels are still higher than in a private firm, this trend stands in sharp contrast to the accumulation of excess labour associated with many developing country state mining firms. Continued falls in operating costs were expected despite a decline in ore grade.

In the late 1980s, the Comision Chilena del Cobre projected continued growth in the country's output to between 2.1 and 2.6 million tonnes by the mid-1990s. It expected private mines to play the lead role in further expansion—as had also been the intention in the mid-1970s (Sigmund 1980). Private production did begin to expand in the late 1980s at two existing mines (Anglo-American's Mantos Blancos and Exxon's Disputada) and at the greenfield Escondida mine. Production projections for Disputada and Escondida were 525,000 tonnes by 1993 compared with 1.29 million tonnes for Codelco. Escondida was expected to undercut Codelco with operating costs around 40 ¢/lb through its first decade and financial charges of 10 ¢. Its projected copper grade was 2.2–2.7 per cent compared with 1 per cent for Codelco's Chuquicamata (*Financial Times* 1988d, 1989e).

Yet, mindful of the nationalization risk (demonstrated by the Allende government), the capital structure adopted by the private mines reflects efforts to minimize exposure to a state take-over. Disputada is financed entirely from loan capital while only 15 per cent of Escondida's $1.1 billion capital is equity (BHP, RTZ and Mitsubishi). Moreover, half the finance for Escondida is in the form of Japanese and North European loans tied to long-term sales contracts while the International Finance Corporation also has a sizeable stake (*Financial Times* 1988f). Two decades after the Allende nationalizations, private investors remain cautious about making sizeable equity investments in Chilean mining.

The post-Allende convergence of exchange rates from the multi-tiered system and the sharp reduction in manufacturing effective protection rates over 1974–9 eliminated one policy bias against the

Table 9.10 Codelco production costs, 1974–88 (¢/lb)

	1974	*1975*	*1976*	*1977*	*1978*	*1979*	*1980*	*1981*	*1982*	*1983*	*1984*	*1985*	*1986*	*1987*	*1988*
Gross operating cost	73.9	42.1	37.9	37.3	36.8	42.3	57.3	62.1	43.5	41.5	3.63	34.2	35.3	42.8	50.3
Administration + sales	12.6	13.0	4.0	3.5	1.2	1.4	2.0	2.4	1.8	1.5	1.5	1.2	1.4	1.6	1.8
Gross costs	86.5	55.1	41.9	40.8	38.0	43.7	59.3	64.5	45.3	43.0	37.8	35.4	36.7	44.4	52.1
By-product credit	4.3	6.5	5.1	8.4	8.8	19.0	20.6	13.5	9.5	9.5	8.6	7.0	6.0	8.9	10.4
Net operating cost	82.2	48.6	36.8	34.4	29.2	24.7	38.7	51.0	35.8	33.5	29.2	28.4	29.9	35.5	41.7
Depreciation & finance	9.5	1.8	7.7	7.3	7.8	6.9	6.6	8.9	8.2	12.8	9.5	11.3	13.5	14.0	15.1
Pre-tax	91.7	50.4	44.5	41.7	37.0	31.6	45.3	59.9	44.0	46.3	38.7	39.7	43.4	49.5	56.8
Taxes	10.5	7.3	14.7	6.4	7.5	29.4	28.3	10.0	12.3	13.8	8.2	12.1	12.0	18.0	39.5
Output (million tonnes)	0.76	0.68	0.85	0.89	0.88	0.91	0.91	0.89	1.03	1.01	1.05	1.08	1.10	1.09	1.09
Investment ($ million)	n.a.	n.a.	111	100	161	178	267	307	234	201	276	370	378	323	345
Investment (1987 $)	n.a.	n.a.	187	158	237	232	306	322	240	204	273	368	388	323	332

Source: Bande and Ffrench-Davis 1989.
Note: n.a., not available.

mining sector. Table 9.10 summarizes trends in the production costs of Codelco. It shows the sensitivity of these costs to the exchange rate. For example, a marked erosion of competitiveness occurred through the period of disadjustment 1978–82. Codelco temporarily lost its status as a relatively low-cost producer as its net costs rose from 97 per cent of the world average in 1975 to 114 per cent in 1980 (Takeuchi *et al.* 1987).

However, under more pragmatic policies Chilean net costs had declined to 83 per cent of the world average by 1985. Exchange rate depreciation was responsible for three-quarters of this improvement (Bande and Ffrench-Davis 1989). The remaining gains came from technical advance, expanded output and a 20 per cent cut in the workforce from the 30,000 level plateau after nationalization.

Partial enterprise autonomy

Some qualification must be made concerning the degree of autonomy enjoyed by Codelco since its management was overridden on strategic decisions. The Pinochet government decided to expand output in order to realign Chilean production with its one-fifth share of global copper reserves, but not through Codelco. It compromised between the neo-liberals and the nationalists by retaining Codelco but looking to foreign investment for major additions to capacity. Codelco's overall investment strategy was therefore determined by political rather than commercial factors.

Having first blocked Codelco expansion, the government opted for the growth of Codelco in 1982, by which time the MNCs had taken up expansion investment options valued at $5.2 billion, but they postponed project implementation. The decision to expand Codelco aroused protest by private copper MNCs which argued that falling world copper prices signalled excess global capacity. Chile countered that its large reserves and low production costs merited expansion.

Clearly, the swings in Codelco's output and investment strategy were politically determined. They were not in line with Codelco's designation as an autonomous profit-maximizing enterprise when its regulatory functions were spun off to the Comision Chilena del Cobre in 1976. The bottom part of Table 9.10 shows that Codelco's rate of investment, while adequate, was modest prior to the major expansion from the mid-1980s even though the firm remained relatively profitable throughout. In fact, the size of Codelco's

Table 9.11 Chile government revenue by source, 1970–88 ($ billion)

	1970	*1971*	*1972*	*1973*	*1974*	*1975*	*1976*	*1977*	*1978*	*1979*	*1980*	*1981*	*1982*	*1983*	*1984*	*1985*	*1986*	*1987*	*1988*
Direct taxes	0.506	0.684	0.486	0.566	0.623	0.674	0.515	0.564	0.604	0.752	0.842	0.915	0.809	0.559	0.560	0.563	0.572	0.554	0.482
Indirect taxes	1.132	1.358	1.280	1.172	1.243	1.388	1.384	1.252	1.682	1.713	1.963	2.291	1.926	2.070	2.345	2.598	2.795	30.24	2.939
Non-tax revenue	0.116	0.164	0.145	0.158	0.277	0.105	0.062	0.068	0.150	0.126	0.255	0.417	0.312	0.152	0.130	0.182	0.289	0.401	0.592
Copper	0.506	0.072	0.045	0.030	0.248	0.192	0.352	0.314	0.253	0.509	0.519	0.219	0.192	0.244	0.166	0.162	0.185	0.238	0.637
Customs duties	0.259	0.098	0.127	0.260	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Total	2.519	2.375	2.082	2.187	2.391	2.360	2.313	2.499	2.688	3.104	3.579	3.842	3.239	3.025	3.241	3.504	3.841	4.218	4.649
% copper	20.1	3.0	2.2	1.4	10.4	8.2	15.2	12.6	9.4	16.4	14.5	5.7	8.6	8.1	5.1	4.6	4.8	5.6	13.7

Source: Budget Office, Chile Ministry of Finance

investment budget (and other key policy variables) was determined by the Ministries of Finance and Mining.

Codelco's autonomy was again compromised when, having been initially refused permission to expand, it planned a 10 per cent expansion in 1982 with a further 25 per cent rise to follow over 1983–7. The Ministry of Finance unexpectedly demanded a 25 per cent cut in its $400 million annual investment rate over 1986–90 (*Financial Times* 1986b). The Finance Ministry suggested that Codelco should resort to loans or sell off indirect assets like power supplies and gold mines. Nor did the government favour Codelco's efforts to invest in forward integration into OECD fabrication.

Profit-related tax regime

Table 9.11 traces the revenues generated for the Chilean government by the copper sector: revenue surges accompanied the 1979–80 and late 1980s booms. The copper taxation regime, after having changed considerably through the early 1970s, stabilized and subsequent copper revenue fluctuations resulted largely from swings in copper prices (World Bank 1990b). Yet, although care was taken in determining taxes to ensure that Codelco retained sufficient revenues to cover essential operations, some interference in the profit-tax link was permitted. Thus, whereas Codelco's budget review by the government allowed for the capture of windfall profits when prices exceeded expectations, taxes were sustained during price shortfalls by recourse to external borrowing—subject to Ministry of Finance approval (Fortin 1984).

More positively, by the late 1980s the Pinochet government had established mechanisms with which to moderate the cyclical macroeconomic disruption of copper price swings. A mineral stabilization fund was established in 1985 which dampened the cyclical impact of copper on government revenues. Chile's official reserves were estimated at $2 billion in 1988, with one-quarter comprising copper windfall savings. By the end of 1989 the mineral stabilization fund (which was activated in 1987) had accumulated $1.725 billion. However, the Treasury modified the mineral stabilization fund rules in 1988 to permit usage of the funds to cancel long-term debt with the Central Bank. By the close of 1989, barely $25 million remained in the mineral stabilization fund. This move interferes with the automaticity of the fund inasmuch as the Treasury

will now need to borrow on the open market to compensate for any future copper revenue shortfalls instead of drawing from the Central Bank.

The change in the management of the mineral stabilization fund also confers a more crucial role on the Central Bank in economic stabilization. However, the Central Bank was also granted more autonomy in the closing months of the Pinochet regime. This represented another way of limiting the extent to which governments in the future can accentuate the damaging economic impact of mineral revenue fluctuations in pursuit of short-term political gain. Overall, although state ownership did result in the government overriding Codelco's commercial autonomy and depressing performance below that of a private firm, the damage was modest and in line with the Radetzki model.

CONCLUSION

There is no simple correlation between the economic trajectory of the four countries and the resilience of their mining sectors. Although Chile and Peru both expanded their global mineral market shares in the 1980s, the Chilean mining sector entered the 1990s much stronger than that of Peru. By the late 1980s, Chile alone of the developing American countries had a mining sector which was expanding rapidly within a high-growth, diversifying economy. By then the booming Chilean mining sector, with its revenues regulated by a mineral stabilization fund, did not corrode the competitiveness of the non-mining tradeables.

The three key policy requirements of a resilient mining sector are an economy-wide competitive exchange rate, a profit-related tax regime (including a windfall stabilization fund) and adequate autonomy for mining enterprises. The exchange rate reflects macroeconomic policy overall and can significantly enhance or reduce mining sector competitiveness. An overvalued exchange rate not only weakens the non-mining tradeables, it can seriously damage the mining sector itself, as Bolivia and Peru show.

The Bolivian mining sector experienced a dramatic loss in market share because the boom was used to extract resources from it, irrespective of the needs of the sector, in order to prop up an insulated and fossilized non-mining tradeables sector. More positively, Bolivia also shows how quickly sectoral reform can be pursued under crisis

conditions, although foreign investor confidence is harder to rebuild, as the aftermath of the Allende nationalization demonstrates.

A second way in which an overvalued exchange rate can make a weak non-mining tradeables sector prey upon mining is through the multiple exchange rate system favoured by the structuralists. The latter group assume that mining is less sensitive to exchange rate shifts because it faces more elastic demand. Multiple exchange rates, however, merely reinforce any trade and industry biases in favour of protected sectors and against competitive exports like mining, as is shown by the experience of Peru under Garcia.

The tax regime is the second key policy variable affecting mining as it determines the fraction of revenues available for mine exploration, maintenance and expansion. Jamaica shows that even with high autonomy MNC mining firms, a misjudged tax unrelated to profitability can severely damage mining sector performance. More ominously, Jamaica came to depend on the bauxite levy for current revenues to such an extent that it felt unable to repeal the tax despite its damaging impact on both mineral production and revenues. By the late 1980s, only Peru had not established a tax regime that maintained a link between taxation and profitability. But Chile alone had a mineral stabilization fund to smooth the injection of mineral revenues into the economy.

The third policy factor, enterprise autonomy, is closely related to the tax regime. The state enterprises of Peru and pre-1985 Bolivia conform to the Caribbean model of state enterprise performance: they were decapitalized because they were inadequately buffered against onerous tax demands. Peru owes its increased global copper market to the importance of an MNC subsidiary which proved more successful than the low-autonomy state mining firms in maintaining efficiency levels within a poorly managed economy. Yet Codelco and post-1985 YPFB show that, with sufficient autonomy, state enterprises may approximate Radetzki's model of post-nationalization performance.

Overall, Chile's improving macroeconomic performance was buttressed by an expanding competitive copper sector while the three other countries weakened the resilience of their mining sectors. This meant that the economic trajectory of the three underperformers depended on their non-mining tradeables sectors, to which attention turns in Chapter 10.

10

PROGRESS IN ECONOMIC DIVERSIFICATION, 1970–90

THE CASE FOR DIVERSIFICATION

The disappointing performance of the mining sectors in the four countries (worsened by sectoral policy errors in Bolivia, Peru and Jamaica) enhanced the need for competitive diversification of the non-mining tradeables. Doctrinaire orthodoxy would expect this to be achieved by markets: it assumes that the exchange rate adjusts output from the non-mining tradeables to compensate for any weakening (or strengthening) in the economic contribution of the mining sector. The experience of Chile under doctrinaire orthodoxy over 1978–82, however, suggests that such a policy may be damaging—even in an economy with several years of liberalization behind it. It is likely to be even more problematic in economies with less mature non-mining tradeable sectors like those of Peru, Jamaica and Bolivia.

It was argued in Chapter 2 that the capital-intensive production function of mining renders tax revenues the dominant form of economic linkage. That same production function makes for a rigidity in the response of mineral markets, giving rise to booms and downswings. This means that the fiscal linkage from mining is also cyclical, thereby amplifying the boom and bust cycle in the absence of corrective policies. Because the cycles are unpredictable they create a considerable misallocation of resources (Gelb 1988). As has been shown in Part II, the volatile stream of mineral revenues is quite capable of marginalizing much of the non-mining tradeables, including agriculture.

Chapter 3 showed how, even before the post-1960s heightened mineral price volatility, Dutch disease in the four developing American countries had shrunk their agricultural sectors (especially

severely in the case of the mid-income countries). At the same time the mineral bonus had permitted the construction of a manufacturing sector based on excessive infant industry protection. Lewis (1982) suggests that such inefficient manufacturing sectors might properly be regarded as non-tradeables. If this perspective was adopted for Allende's Chile, for example, the Dutch disease index would be in excess of 30 rather than the 5.7 shown in Table 3.3 which is based on the assumption of full non-mining tradeables competitiveness. This means that the scepticism of the structuralists towards reliance on exchange-rate-driven adjustments in mineral economies has merit.

The non-mining tradeables sector in economies at pre-newly industrializing country levels of development lacks the flexibility to compensate for mining sector fluctuations (Wheeler 1984; Faini and de Melo 1990). Krugman (1987) notes that relatively brief shifts in the real exchange rate can cause a significant loss of productive capacity even in mature economies. The liberalizers' assumption of a continuous curve of manufacturing contraction and expansion is false: one-way shifts out of manufacturing may occur.

Consideration of sustainable development strengthens the case for safeguarding and/or actively promoting competitive diversification in mineral economies. This is because the economic staple is a fund (non-renewable) resource, unlike most soft commodities which may be regarded as flow (renewable) resources. Sustainable development therefore requires that mineral economies should adopt safeguards to ensure that future generations are not disadvantaged by the present generation's depletion of the mineral asset.

This is interpreted as dictating a pattern of resource extraction which substitutes alternative wealth-creating assets for the depleting natural resource (Pearce *et al.* 1990). Countries like Zambia whose key mineral reserve is close to exhaustion have an obvious interest in diversification (although, as Chapter 12 shows, that was not achieved). Yet countries with larger reserves must also guard against the abrupt loss of their mineral revenue through new ore finds or successful materials substitution.

The liberalization advocated for mineral economies by doctrinaire orthodoxy may therefore initially work against the objective of economic diversification by rendering much existing protected activity uneconomic. Some means of muting the mineral price swings is required and Chapter 7 provides several lessons from

Chile's post-1982 pragmatic orthodoxy phase concerning how this might be done. These lessons include a mineral stabilization fund and an adjustment of import tariffs to compensate for exchange rate shifts. In fact, a slower pace of liberalization may be desirable, perhaps buttressed by a Korean-style competitive industrial policy (but only if the administrative skill which such a policy requires is available). Such a policy captures the dynamic scale advantages through a learning curve which Krugman sees as essential to the creation of an industrial base.

In the absence of a strong manufacturing sector, a large and resilient agricultural sector provides a buffer against mineral sector decline, as the oil-exporting countries show (Auty 1990a). But the agricultural sectors of all four developing American mineral economies were smaller than their respective Syrquin and Chenery norms by a margin which ranged from one-third smaller in the case of Peru to two-thirds smaller for Chile (Table 3.3). Unless such premature shrinkage of the agricultural sector can be reversed, the importance of manufacturing to long-term economic diversification is more critical.

This chapter examines progress in economic diversification in each of the four mineral economies over 1972–90. It begins with the two countries which experienced sustained upswings, starting with Chile's learning curve to best practice. Particular attention is paid to the consequences of the 1978–82 disadjustment for the non-mining tradeables before subsequent more pragmatic orthodox policies are explored. The reasons behind Jamaica's failure to trigger competitive manufacturing despite its lengthy adherence to orthodox policies are then analysed.

The next section turns to Peru in order to explain why the country's greater sympathy for structuralist perspectives, which stress intervention, failed to advance economic diversification. Finally, Bolivia remained the least diversified economy despite the corrosion of its fossilized mineral sector. It presents the greatest policy challenge because of its small and fragmented domestic market and its poor transport links to external markets.

CHILEAN ORTHODOXY'S LEARNING CURVE

From import substitution to resource-based activities

Prior to the Pinochet reforms, Chile's overly-protective import substitution policy had expanded the share of manufacturing in GDP

well beyond the Syrquin and Chenery norm for a country of its size and level of development (Table 4.8). Meanwhile, the less-protected agricultural sector became significantly smaller than the norm. The trade liberalization reforms reversed these trends, decentralized investment out of the Santiago-Valparaiso axis and generated a sustained expansion of non-mining exports. But bold intervention was required to repair the damage done by the doctrinaire macroeconomic disadjustment over 1978–82.

More specifically, during the 1960s manufacturing expanded its share of GDP by 3.3 per cent, to 26.4 per cent, compared with a Syrquin and Chenery norm of just under 20 per cent. Meanwhile, the share of agriculture shrank to only 6.2 per cent of GDP, barely one-third of the norm. The reforms abruptly reversed the trend in agriculture so that its share of GDP edged up to 7.2 per cent by 1980 while the share of manufacturing shrank to 21.4 per cent of GDP (Table 4.8). The post-1982 economic recovery saw agriculture further increase its share of GDP by a further 1 per cent (to 8.3 per cent in 1988) while the share of manufacturing in GDP remained steady.

Manufacturing: the shift to resource-based industry

Table 4.6 shows how liberalization caused a rapid decline in Chile's initially high rates of effective protection. Most of the reduction occurred in 1975–6 when domestic demand was flat, so that Chilean manufacturers had little alternative but to turn to overseas markets. In order to encourage foreign investment, Chile withdrew from the Andean Pact in 1977 and streamlined administrative procedures. This allowed investors to transfer profits immediately and to repatriate capital invested after three years.

Liberalization initially brought a marked decline in the output of highly protected industries, notably textiles, footwear, leather products and transport machinery—all of which saw their output halved over 1973–80. Smaller, but still significant, declines also took place in chemicals, rubber, electronics, electrical goods and machinery (Gwynne 1985). Real expansions of 40 per cent or more occurred, however, in resource-based industry like metals, refined products, timber-based products and construction goods. These changes in production were accompanied by sizeable productivity gains since total manufacturing output remained constant in real terms while employment declined by one-fifth.

Table 10.1 Chile, export trends, 1970–88 ($ million)

	%1970	*1970*	*1976*	*1982*	*1988P*	*%1988*
Minerals	85.6	954.0	1,417.6	2,123.7	3,848.3	54.6
Copper		839.8	1,233.2	1,684.6	3,416.2	
Non-mining primary	2.9	32.8	111.2	374.9	930.4	13.2
Agriculture		30.1	103.9	311.6	799.2	
Forestry		1.3	1.5	2.2	2.6	
Fishing		1.4	5.8	61.1	178.6	
Manufacturing	11.2	124.9	579.8	1,125.3	2,114.0	30.0
Foodstuffs		28.7	119.4	365.8	757.5	
Timber		8.9	37.3	122.3	310.8	
Paper		33.3	137.5	219.6	416.9	
Chemicals		7.8	67.1	87.5	186.3	
Basic metals		23.5	120.7	243.8	223.5	
Engineering		20.9	89.9	73.2	186.7	
Total	100.0	1,111.9	2,115.6	3,705.7	7,051.8	100.0

Source: Superintendencia de Aduanas 1989

Policy-makers persisted with liberalization even though the real exchange rate appreciated by one-third over 1979–81 and Chilean manufacturers were unable to compete. The export contribution of manufactured goods (mostly resource-based products), which had jumped from $102 million in 1973 to $1.70 billion in 1980, then declined to $1.13 billion by 1982 (Table 10.1). Many Chilean manufacturing firms had borrowed in foreign currency which they found increasingly difficult to service as their competitiveness waned. The Chilean banks came to own a large part of the manufacturing sector. This created a financial crisis when the expected mineral boom failed to materialize and the real exchange rate abruptly depreciated by 25 per cent in 1981–3. This increased the debt service costs in terms of the domestic currency while access to external credit tightened.

The government moved swiftly to assume the debt of five key banks and take over others. It also temporarily boosted tariffs to raise additional revenues, curb imports and reduce foreign competition for the weakened manufacturing sector. Chilean industry proved remarkably resilient to the disadjustment of the early 1980s. It benefited from the pre-1980 productivity gains and the relief from cheap export competition which had accompanied the real exchange

rate depreciation and temporary boost to tariffs. The post-1982 expansion initially used excess capacity and the cannibalized plant of failed enterprises in order to meet demand. After contracting by 21 per cent in 1982, manufacturing output averaged 4.7 per cent growth in 1983–5 and 7.4 per cent in 1986–8 on an accelerating trend.

New capital infusions became essential, however, and proved particularly onerous because Chile's competitive advantage lay in capital-intensive resource-based industry. In order to sustain GDP growth of 5 per cent annually and maintain debt service payments, the ratio of investment to GDP needed to rise from 15 per cent in 1986 to 19 per cent by 1990. Debt service alone through the early 1990s entailed annual repayments equivalent to one-third of exports or of gross domestic savings. The required rate of investment was achieved by 1989, however, when GDP growth reached almost 10 per cent. Yet active intervention was crucial to Chile's successful diversification from import substitution to export-oriented manufacturing.

Primary product diversification

The structural shift in the Chilean economy towards resource-based industry and primary products decentralized production from the large metropolitan Valparaiso-Santiago market and into the central farmland region and the southern forests. In the 1960s, the Santiago region had accounted for more than two-thirds of the country's industrial production (Gwynne 1985). However, Chile's geography sets limits to decentralization since barely 4 per cent of the country (2.6 million hectares) is classed as potentially cultivatable and, moreover, it is concentrated in the populous central region. Some 69 per cent of the land is classed as unproductive compared with 12 per cent classed as suited to forest and 17 per cent to grazing (Ministerio de Agricultura 1989).

When Allende redistributed land, agricultural output fell. The Pinochet government quickly established new ownership rights which sustained a substantial transfer of resources from the previous owners, despite the new regime's political stance (Larrain 1990). Liberalization initially brought a pronounced shift in agriculture away from traditional domestic food crops towards export crops, notably fresh fruits (Blakemore 1983).

The early years of readjustment saw a 20 per cent expansion in

the land under wheat while industrial cropland expanded almost threefold. The volume of agricultural production jumped by two-thirds and by 1985 Chile swung into surplus in its agricultural trade. Fruit exports rose tenfold in value over 1973–8 and expanded a further sixfold to 1988 when they comprised 80 per cent of agricultural exports and almost 8 per cent of total exports.

However, just as manufacturing output suffered through the 1979–82 period of exchange rate overvaluation, so the cultivated area contracted sharply, falling by 30 per cent. Government intervention was required in agriculture to restore producer confidence: this entailed a dramatic shift in policy involving the reintroduction of tariffs plus a system of price guarantees (linked to average prices over the preceding five years).

A rapid expansion in fisheries also occurred and by 1985 Chile replaced Peru as the largest fish producer in Latin America with a total catch exceeding 4 million tonnes. The country's long and indented coastline provides ideal environments for establishing salmon and other fish stocks. This, in combination with cheap labour, offset Chile's remoteness from northern hemisphere markets. Total fish exports in 1988 were one-tenth of all exports—at a time when a mineral boom inflated that total (Table 10.1). Salmon exports alone were forecast to jump tenfold over 1989–95 as Chilean producers undercut their northwest European rivals' costs by 40 per cent (*Financial Times* 1988e).

Along with fruit and fish, forestry was the third element in Chile's primary product diversification. Radiata pine takes fifteen to twenty years to mature in Chile while eucalyptus can mature in one decade compared with regeneration periods of fifty to a hundred years in northwest Europe and Canada. Such growth rates, when added to cheap labour, give Chile a strong competitive edge. In 1974 the Pinochet government, in its initial pragmatic mode, established incentives for tree planting which included subsidies and tax relief until 1994. Some two-thirds of Chile's 1.3 million hectares of forest were replanted during 1974–88 and the total area was expected to top 2 million hectares before the expiry of the incentives in 1994 (*Financial Times* 1989f). Exports of timber products reached 11 per cent of total exports.

The net effect of Chilean diversification, in line with its comparative advantage, was to move the country towards an export profile which strongly resembled that of Peru two decades earlier, but with one important difference. Chile in 1990 had a dynamic

manufacturing sector which increasingly viewed itself as a competitive part of the Pacific Rim. Non-forestry manufactures furnished one-fifth of all exports during the late 1980s mineral boom, with chemicals and engineering especially strong. High rates of investment promised continued export-led growth through the 1990s and were not threatened by the 1987–91 copper boom. Yet the relatively low average rate of economic growth in 1974–88 reflects the costs of the 1978–82 disadjustment: without deft intervention, the cost would have been higher still. Under a weaker government, it might have proved irredeemable.

JAMAICAN STRUCTURAL STAGNATION

Protracted economic recovery and structural change

Jamaica neglected competitive diversification through the 1970s and even when orthodox policies were firmly in place the Jamaican response was slow. By the late 1980s Jamaica's three 'traditional' sectors (agriculture, mining and tourism) were showing some signs of recovery but the manufacturing sector still faltered. There was even serious discussion within Jamaica as to whether the country needed a manufacturing sector at all.

Despite a fall in volume through the 1970s, the Jamaican mining sector was the only expanding sector in 1972–80. Mining actually increased its share of GDP from 10.8 to 14.2 per cent (Table 4.8). Measured in constant dollars, its output grew by 2.4 per cent annually over 1972–80. The collapse of the domestic economy caused manufacturing and agriculture to contract: non-mining tradeables output declined by one-quarter in real terms over 1972–80 with annual negative growth of 1.1 per cent in agriculture and 4.1 per cent in manufacturing. Construction, which had powered the pre-1970s Jamaican boom, experienced the sharpest contraction at –10.6 per cent per year.

Although, as noted in Chapter 8, the combination of orthodox economic policy and close political ties with the United States kept investment rates relatively high in Jamaica through the 1980s, the economy grew by barely 1 per cent annually in the period 1980–8. A sizeable decline in mining during that decade (which averaged negative growth of almost 5 per cent in 1980–8) was offset by modest annual growth in agriculture (0.9 per cent) and in manufacturing (2 per cent). The share of manufacturing in GDP was virtually

unchanged and agriculture increased its share slightly (Table 4.8). There are no comparable data for tourism but hotel occupancy rates recovered strongly from the late 1970s nadir.

Manufacturing vulnerability

The Syrquin and Chenery norms indicate that the manufacturing sector in a country of Jamaica's size and level of development should have been increasing its share of GDP by more than 0.2 per cent annually. But in Jamaica in 1972–80 manufacturing's share of non-mining output actually declined by 0.34 per cent per annum. Although output slumped by one-quarter, employment remained constant and labour increased its share of added value from 40 to 50 per cent. The corollary was a decline in profitability and a halving in the annual rate of investment (World Bank 1989b).

Jamaica's import substitution policy had created a strongly inward-oriented manufacturing sector for which protection increased through the 1970s as domestic demand collapsed and costs soared. The number of restricted imported items, which had more than doubled to 201 through the decade to 1973, almost doubled again by 1980. Yet domestic competition was largely confined to garments, footwear and furniture. The average effective rate of protection for Jamaican manufacturing in 1980 was 58 per cent, but it varied widely and was negative in the cases of two sub-sectors in which Jamaica had some comparative advantage, textiles and wood products.

The first Seaga government neglected manufacturing reform in 1980–3 and emphasized the fuller use of spare capacity in all sectors. Yet manufacturing continued to suffer from foreign exchange constraints: it was disadvantageously forced to use the official Bank of Jamaica exchange rate whereas traders used the discounted parallel market rate. Meanwhile, the real exchange rate appreciated by one-third in 1979–82 (Wood 1988) and Jamaican manufacturers wrongly assumed that they would retain protected access to the domestic market when it eventually revived.

Only after the sharp and unexpected collapse of the mining sector in 1983, and a decade after Chile, did Jamaica embark on a radical reform of its manufacturing. In fact, the second Seaga government belatedly espoused the industrial policy advocated for the Caribbean by W.A.Lewis in the late 1940s (Lewis 1950) with emphasis on agro-industry and wood products along with labour-intensive items such as garments, leather goods, electricals, electronics and

pharmaceuticals. Meanwhile, metal working, packaging and assembly for the domestic market, which relied heavily on imports and were often sub-optimal in scale, were to contract.

The real exchange rate was pushed below its late 1970s level by 1985 (to half its 1965 level). Import licensing was abolished on most goods in 1984–5 and most price controls were eliminated by 1987. Tariffs were to be streamlined to four bands ranging from 5 to 30 per cent by 1992 and export incentives were to replace import duty exemptions. The Jamaica Industrial Development Corporation was merged with two other parastatals to provide a more commercially oriented service to manufacturers, including the provision to firms of expertise on productivity enhancement. The government also committed itself to investment in improving the country's rundown infrastructure. Finally, two export processing zones were established in Montego Bay and Kingston to take advantage of the US-backed Caribbean Basin Initiative.

In response to these measures, manufacturing output (which had plateaued through the first half of the 1980s after the sharp contraction in 1976–80) made a brief recovery which was not sustained. The recovery was spearheaded by textiles, with food processing also prominent. Exports from the apparel sub-sector jumped tenfold over 1983–7 to around $180 million and manufacturing employment increased by two-thirds in 1981–7 to reach 131,000. The productivity of the workforce declined by more than one-third as capital-intensive import substitution gave way to more labour-intensive sub-sectors like textiles and garments. Yet, overall, manufacturing merely held its share of GDP constant at around 16.5 per cent.

More worrying was the fact that leading sub-sectors like food processing, which accounted for half Jamaican manufacturing value added, were characterized by obsolete plant, low capacity use and disappointing export competitiveness. Even in the dynamic apparel sub-sector domestic added value was only one-seventh of gross revenue in the late 1980s and even then domestic revenue retention was half this (*Financial Times* 1990b). This low figure reflected the enclave nature of the export processing zone in which cheap (mostly female) labour employed by mainly foreign firms earned around $20 per week assembling imported inputs. The investment in apparel factories was modest and, like the profits, highly mobile. The experience of nearby Puerto Rico suggests limited scope for productivity increases and a readiness on the

part of investors to resort to cheap-labour locations. A large domestic textile plant closed permanently in 1988, citing illegal imports as a key factor.

The uncertainty of the early 1980s perpetuated the neglect of plant maintenance and high debt ratios of the 1970s. Investment remained low through the late 1980s because the high real interest rates introduced to boost domestic savings and defend the exchange rate provided a further disincentive to the manufacturing sector. There was a risk that, in the absence of a more active industrial policy, established manufacturers would simply liquidate their investment and turn to the less risky business of importing finished goods. The conversion of Jamaican policy-makers to orthodoxy has certainly been too late: it has also been too extreme.

Uncertain agricultural recovery

Export crops such as sugar and bananas declined steadily through the 1970s as a consequence of inefficient state intervention, declining agronomic practices and the overvalued exchange rate. The policy deliberately discriminated against export crops and in favour of domestic self-sufficiency, irrespective of the country's comparative advantage. Export crop output contracted and the productivity of remaining acreages declined while food crops expanded, but at relatively high cost.

The nationalization of the leading sub-sector, sugar, led to the premature expansion of co-operatives ahead of the 1976 election. It brought mounting labour problems as the discipline of bankruptcy was seen to recede. Recovery proved difficult, however, and Jamaican sugar output reached a new low of 187,000 tonnes in 1987, scarcely one-third its 1965 peak level (*Financial Times* 1989g). The Jamaican decline was swifter than the general 40 per cent fall in sugar production throughout the Caribbean.

In the mid-1980s, three state sugar factories were closed and management of the two remaining state plants was contracted out to an MNC. A private company was formed (from the four private sugar factories, the cane farmers and the state firm) to market the sugar. An industry output target of 260,000 tonnes was established, based on the return to pre-1970s levels of factory efficiency and cane yields (*Financial Times* 1990b). But Jamaican sugar remained uncompetitive and relied on the protected EC market: its sugar production costs were around $430/tonne in the late 1980s compared

with world prices around $230/tonne and a target price in the country's protected markets of $290/tonne. Yet sugar remained Jamaica's third largest earner of foreign exchange (after tourism and bauxite) and employed 80,000 directly and indirectly.

Jamaica's second crop, bananas, suffered from poor administration by the state marketing board. The latter agency returned little to producers in relation to the revenues it absorbed. Reform left some twenty workers in place of the 10,000 strong Banana Marketing Board which had previously absorbed around half the f.o.b. price of the product. Like sugar, regeneration of banana production was undertaken with the assistance of a leading MNC and remained conditional on preferential access to the protected EC market. A target of 150,000 tonnes was set and small farmers were urged to leave the sector since they rarely met quality standards.

Despite the fundamental weakness of export agriculture, the reforms reversed the mid-1970s shift to domestic food production. This is because Jamaica, which grows less than 10 per cent of its basic foods (such as rice, corn and soya beans), has less comparative advantage in such crops than in export products. Some 80,000 hectares of land were earmarked by the JLP government for the intensive cultivation of high value food crops for the North American market, drawing on foreign management. However, lack of vertical integration brought severe marketing problems and a switch in emphasis towards niche crops such as mangoes, ethnic foods, aquaculture and flowers.

The agricultural sector was projected by the Jamaica Planning Institute to grow faster than the economy as a whole through the early 1990s. But the reorientation to estate crops threatened hardship for small farmers as protection for domestic crops was removed. Although rural people would benefit from lower food prices, many farmers occupied small hillside plots vulnerable to erosion. They needed to plant tree crops which take several years to mature. With the outlook for farm employment uncertain and in the absence of a dynamic manufacturing sector, tourism will need to sustain its rapid post-1970s expansion in order to avert high unemployment.

Tourism dependence

Tourism is highly sensitive to price swings and political unrest, however, as Jamaica's experience during the mid-1970s shows. Then, the appreciation of the real exchange rate and increasing

Table 10.2 Export trends, Jamaica, 1970–88 ($ million)

	%1970	*1970*	*1976*	*1986*	*1988*	*%1988*
Bauxite/alumina	65.0	218.6	425.1	513.8	417.2	51.4
Sugar	10.5	35.3	61.4	49.0	91.9	11.3
Bananas	4.2	14.2	13.2	4.7	15.7	1.9
Other primary products	4.9	16.5	30.3	33.8	45.6	5.6
Non-traditional	16.2	51.0	84.5	144.4	241.2	29.7
Clothing	2.1	7.2	9.1	17.4	106.0	13.1
Total	100.0	335.6	614.5	745.7	811.6	100.0

Tourism Trends

	1970	1976	1982	1988
Visitors (million)	0.414	0.471	0.670	1.020
Capacity (× 1,000 rooms)	7.026	12.066	10.327	14.029
Occupancy (%)	50.1	33.2	53.3	56.5
Length of stay (days)	8.5	8.6	9.7	10.3
Expenditure ($ million)	n.a.	105.9	337.8	514.6
Direct employment	n.a.	8.492	11.290	17.076

Source: 1970–82, World Bank 1990a; 1988, Bank of Jamaica 1990; Ministry of Tourism 1990
Note: n.a., not available.

visitor harassment caused the Jamaican share of Caribbean tourism almost to halve to 4.6 per cent in the decade to 1976. Hotel occupancy shrank from one-half to one-third in 1970–6 causing hotel closures, some of which were re-opened by government. Hotel capacity declined and the sector experienced negative growth over 1975–80.

Tourism did prove resilient through the 1980s and began to expand by 10 per cent per annum from 1982, a rate which had restored Jamaica's Caribbean tourist market share to 8 per cent by 1988. Hotel capacity expansion was at first discouraged by the 1979–82 appreciation of the exchange rate and the unfavourable treatment which the tourist sector received under the dual exchange rate. When room occupancy rates regained 1960s levels, investment commenced in refurbishment and new structures (Table 10.2).

Tourism became the largest foreign exchange earner in 1987 when foreign travel receipts were estimated to be twice those from the depressed bauxite sector (Ministry of Tourism 1990). It had increasingly used local inputs so that foreign exchange leakages were modest by Caribbean standards. The revenue retention coefficient was estimated at around 0.7 and the sector's contribution to GDP at between 20 per cent and 35 per cent (World Bank 1989b). Direct

employment reached 17,000 and, using a modest multiplier of 1.5 for indirect employment, the 5,500 new direct jobs projected for the 1987–91 expansion would push the industry's total employment to 55,000. Further expansion, however, may be constrained by congestion and infrastructure bottlenecks on the north coast.

In contrast to Chile, Jamaica achieved minimal structural change. This is in spite of higher investment levels and reflects the failure to make a commitment to the principal means of economic diversification: manufacturing. Consequently, although Jamaica commenced its structural adjustment only three years after Chile, the delayed reform left most factories domestically oriented and badly maintained. Growth in manufactured exports was briefly triggered in the mid-1980s, but it was narrowly based on low-productivity apparel which was cost sensitive and highly mobile. In the absence of a more active industrial policy, the limited prospects for agriculture leave resource-dependent tourism and bauxite the key growth motors—as they were two decades earlier.

PERU: STRUCTURAL REGRESSION

Contrasts with Chile

At first sight the pattern of structural change in Peru over 1970–88, summarized in Table 4.8, suggests that favourable trends emerged in the 1980s. As mining declined in relative importance, agriculture reversed the decline of the previous decade and increased its share of GDP by 3 per cent. Manufacturing output held steady. Peru shows little evidence, however, of Chile's solid progress in competitive diversification. Its success of the late 1970s was aborted first by the exchange rate appreciation and then by the disastrous Garcia populist boom in 1985–9.

Yet in the early 1970s Peru's economy rested on a relatively diversified primary product sector whereas that of Chile was precariously underpinned by a single primary product export (copper). Moreover, Peru's agricultural sector had been less adversely impacted by Dutch disease than that of Chile and so formed a potentially more robust cushion against mineral price downswing. The restoration of Peru's pre-shock strength in primary product exports has been hampered first by the institutional legacy of the leftist military government and then by the chronic financial problems under Garcia.

Agricultural regression

The land reforms under the military government in 1969–76 corroded the competitiveness of the Peruvian agricultural sector. This was in spite of precautions against the loss of output from large holdings. Although some 8 million hectares of land were expropriated in 1969–76 the land comprised mostly former pasture in the Sierras. It was transferred to 260,000 farm families in minimum sizes of 3 hectares. Doubts over the efficiency of small landholdings, however, caused most of the redistributed land to be given to co-operatives (in the case of large commercial estates) or to communes (where tenant farming previously prevailed) rather than to individuals.

Land reform initially raised rural incomes but it also increased management problems. Labour indiscipline plagued the former estates while small upland farmers proved reluctant to adopt communal methods. Output trends disappointed, partly as a result of these problems and partly as a result of other government policies. For example, efforts to decree the fraction of land devoted to food crops backfired since export crops (such as sugar cane and cotton) contracted as land was withdrawn for food, but food production did not increase. Or again, the bureaucratic control of crop prices and credit discriminated against small farmers and in favour of urban consumers, further reducing the sector's productivity (Nyrop 1981). Investment shortages also constrained agricultural expansion.

The cultivated area of Peru declined by a tenth in 1970–85 and the yield of leading crops like cotton also fell (*Financial Times* 1986a). These agricultural trends worsened the country's trade imbalance: crop exports fell while food imports rose. Table 10.3 traces the relative decline in agricultural exports from 15 per cent to 6 per cent of the total in 1970–88. This reflected the very sharp fall in the production of two key export crops, cotton and sugar. Meanwhile, population growth threatened to outstrip domestic food supply. Food imports accounted for one-seventh of total imports by the mid-1980s.

Sustained agricultural expansion faced numerous obstacles. First, Peru has a low ratio of cultivable land to population (at 0.15 hectares per capita it is scarcely one-quarter of the Latin American average). Consequently, although barely 2 per cent of Peru was cultivated, additional land resources could only be worked at great investment expense.

Table 10.3 Export trends, Peru, 1970–88 ($ billions)

	%1970	*1970*	*1976*	*1982*	*1988*	*%1988*
Total	100.0	1.034	1.341	3.293	2.694	100.0
Primary products	96.7	1.000	1.204	2.531	1.938	71.9
Minerals	45.0	0.465	0.684	1.312	1.192	44.2
Oil products	0.7	0.007	0.050	0.719	0.166	6.2
Agriculture	15.2	0.157	0.262	0.219	0.167	6.2
Fish	29.3	0.303	0.168	0.202	0.364	13.5
Other	6.6	0.068	0.040	0.079	0.049	1.8
Manufactured products	3.3	0.034	0.137	0.762	0.756	28.1
Textiles	0.1	0.001	0.031	0.281	0.258	9.6
Fish products	0.7	0.007	0.027	0.098	0.096	3.6
Food processing	0.8	0.008	0.017	0.070	0.097	3.6
Machinery	0.1	0.001	0.018	0.050	0.025	0.9
Chemicals	0.6	0.006	0.016	0.065	0.073	2.7
Metals	0.3	0.003	0.014	0.105	0.150	5.6
Other	0.8	0.008	0.014	0.093	0.057	2.1

Source: Banco Central 1989

Second, structural problems hamper expansion in the principal growing region of the Andes which accounts for almost two-thirds of Peru's cultivated area. The harsh Andean environment supported half the rural population in the 1980s and boasted the main concentrations of peasant poverty and of out-migration. Land pressure was most extreme in the northern and southern parts of the region: little new land could be cultivated so that erosion had increased and fertility declined. To raise productivity required expensive irrigation schemes and the adoption of modern techniques by small farmers who lacked access to credit and markets. Moreover, government policy and changes in urban tastes discriminated against the principal Andean products such as potatoes and corn and in favour of rice grown on the coast and imported wheat.

A third set of problems arose from the expense of expanding on irrigable land on the Peruvian coast. Historically, agricultural investment had neglected the Sierras in favour of long-gestation irrigation projects along the coast which produced two-fifths of farm output from one-quarter of the country's cultivated land. By the 1970s coastal farming was highly mechanized and high yielding. A $1.2 billion scheme was launched in the late 1980s 500 km north of Lima which aimed to emulate Chilean success in fruit exports. The four-stage Chavimochic project will irrigate 43,000 hectares of desert and

improve cultivation on another 100,000 hectares. Its successful completion could generate the equivalent of one-third of official exports but the financial resources were lacking (*Financial Times* 1990d).

Finally, expansion in the eastern Selvas, which contains one-quarter of the cultivated area, also requires expensive new infrastructure. With the exception of coffee and coca production, colonization generally disappointed. Yields tended to be low on both large-scale farms and spontaneous peasant settlements alike. In the late 1980s, the income from a hectare of coca production was estimated at more than three times that of coffee (*Economist* 1989b). Some 200,000 Peruvian hectares were estimated under coca production and unrecorded exports in 1988 were estimated at $800 million or one-third of official exports.

If agricultural growth was constrained by institutional factors and capital shortages, the recovery of fishing was also slow. Fish production peaked at 12 million tonnes in 1968 and fell to 2.25 million tonnes in 1970 (when fish still generated 30 per cent of the country's exports) and plunged to 706,000 tonnes in 1975. The decline resulted from both overfishing and the El Nino current which drove anchovy out of Peruvian waters in the 1970s. Private fishing firms accumulated large debts and the industry was nationalized in 1973. Conservation proved difficult to enforce and efforts to shift from capital-intensive fishmeal production to higher value, more labour-intensive fish canning proved uneconomic.

As with agriculture, the cumulative negative feedback loop caused the shortage of capital to prevent Peru from taking full advantage of reviving fish stocks in the 1980s. State-owned Pescaperu had accumulated large losses by 1984 and contributed a significant share of the overall deficits of state firms which approached 10 per cent of GNP in that year (*Financial Times* 1985c).

Arrested manufacturing diversification

As with pre-reform Chile, an excessively protected import substitution policy adversely impacted the spatial structure of the Peruvian economy. Each dollar of manufactured output generated 50 ¢ in imports and encouraged location at the principal market and port (Webb 1987). Some 90 per cent of manufacturing output and 60 per cent of GDP in the 1980s was produced by Lima-Callao alone in

Table 10.4 Trends in Peruvian effective rates of protection, 1973–88

	1973	*1979*	*1982*	*1985*	*1988*
Agriculture	−21.2	8.7	−17.6	24.5	−20.6
Mining	−40.7	−36.1	−33.6	−11.9	−34.7
Oil and refining	−40.5	−32.2	−31.7	−2.2	−24.1
Food processing, beverages, tobacco	17.0	142.5	50.5	83.7	−12.1
Textiles	−33.9	6.3	−6.4	33.3	6.9
Chemicals	−0.7	22.4	−3.0	63.0	4.5
Steel	22.2	27.1	−0.3	59.7	19.1
Capital goods	−3.8	33.3	4.8	83.5	155.0
Other manufacturing (33, 34, 36 + 39)	18.5	32.5	6.7	57.7	40.8
Average	−28.4	37.6	2.5	69.4	58.8
Coefficient of variation	−196.9	259.9	1,714.8	180.2	321.6

Source: Armas *et al.* 1989

the coastal region—although the conurbation held barely 30 per cent of the country's population.

Migration from the uplands into the Lima-Callao conurbation was rapid, despite urban poverty (Glewwe and de Tray 1991). By the 1980s the entire coastal region held half the population compared with two-fifths in the Sierras (70 per cent a century earlier) and one-tenth in the Selvas. The inherent diseconomies from this policy were rendered more acute in the case of Peru by the need to expend scarce capital to supply water, power and serviced land in the arid coastal lowlands.

The decline in non-mining primary product exports, coupled with disappointing results from oil exploration, left manufacturing as the key diversification option. A modest programme of export subsidies had expanded non-traditional industrial goods to 7 per cent of total exports by the mid-1970s, but import substitution industry remained more attractive. Yet although the Velasco government increased incentives and protection for intermediate and capital goods, private investors were discouraged by proposals to give workers 50 per cent of the equity and some managerial participation (a role denied to workers in state firms).

Table 10.4 shows trends in the effective protection rates by sector. The figures are adjusted for differentials in foreign exchange availability. In contrast to Chile, which liberalized early and persisted, Peru experienced sizeable fluctuations in the *overall* global rate of effective protection. There were also significant sectoral shifts as well as high coefficients of variation. A more persistent feature of the

effective protection regime has been discrimination against mining and other export-oriented sectors.

Such discrimination even extended at one point to textiles (Table 10.4) in which Peruvian comparative advantage should lie. Textiles nevertheless emerged as the principal manufactured export during the strong upsurge in such exports that took place during the late 1970s stabilization programme. The scheme to eliminate the anti-export bias (Schydlowsky 1986) helped manufactured exports to almost double each year during 1976–9 to reach $810 million. Yet, as in Chile, the rapid growth in manufactured exports was arrested by the combination of liberalization and exchange rate appreciation in 1978–82.

Whereas Peruvian manufacturing output recovered from that disadjustment, however, exports did not. The reversal of the liberalization process was completed by 1984 with the re-introduction of quota restrictions. The Garcia government continued this trend, albeit with greater emphasis on quota protection than tariffs (Paredes 1990b). Compared with Chile, Peru embarked on liberalization later and reacted earlier to disadjustment with measures which persisted and intensified.

Tourism and the underground economy

Tourism had the attraction of being employment intensive and amenable to growth in the remoter parts of the country away from congested Lima. While most sectors stagnated through the 1980s, tourism expanded at a rate which was especially rapid through the early 1980s, averaging a 16 per cent annual increase in 1980–6 (*Financial Times* 1986a). Tourism became the country's fifth largest earner of foreign exchange. One optimistic estimate suggested that vigorous government promotion could lift tourist receipts to $1 billion by 1990. This was not achieved because of the collapse of the Peruvian economy through the Garcia populist boom.

The informal sector (which included coca) provided a cushion. Unofficial estimates for the mid-1980s suggest that, as Peru's per capita income stagnated, the country's underground economy employed 48 per cent of the economically active population, accounted for 61 per cent of man-hours worked and generated 39 per cent of measured GDP. Because the participants paid no taxes they were ineligible for official loans (whose disbursement requires a tax certificate) and so had to pay up to four times official interest rates (*Economist* 1987).

Table 10.5 Export trends, Bolivia, 1970–88 ($ billion)

	%1970	*1970*	*1976*	*1982*	*1988*	*%1988*
Minerals	89.5	0.205	0.367	0.419	0.271	45.1
Hydrocarbons	5.7	0.013	0.168	0.398	0.219	36.4
Other	4.8	0.011	0.091	0.080	0.111	18.5
Soya				0.007	0.020	3.3
Coffee				0.016	0.012	2.8
Wood				0.012	0.025	4.2
Total	100.0	0.229	0.625	0.898	0.601	100.0

Source: Banco Central de Bolivia 1989

A reversion to more orthodox policy measures is required to achieve long-term economic diversification. Such a move would also be unlikely to worsen the plight of the poor because most poor people are concentrated in rural areas. A recent study (Glewwe and de Tray 1991) suggests that the Garcia boom's initial upswing failed to benefit the majority of poor people because they resided in the countryside where redistributive gains were negligible.

BOLIVIA

Persistent mineral dependence

Bolivia's mineral dependence increased through the two oil shocks. Yet Chapter 9 has shown that, even as the sustained and sizeable real appreciation of the Bolivian exchange rate prior to the 1985 tin crash brought increased protection for agriculture and manufacturing alike (which blunted competitive pressures for change), the mining sector was decapitalized.

The rate of effective protection for all sectors (excluding mining) was estimated at 44 per cent in 1982, averaging 17.5 per cent for forestry, 33 per cent for agriculture and 94 per cent for industry (Morales 1987). Such a situation could only exist as long as the mineral sector could transfer sufficient rents.

Hydrocarbon production, principally gas, was the dominant vehicle for Bolivian diversification away from hard minerals over the period 1970–88 (Table 10.5). The relative size of other legal exports is small compared with Chile, Peru and Jamaica. By the late 1980s, legal non-mineral exports were almost wholly made up of

primary products from the tropical lowlands such as soya, coffee and wood. Manufactured exports remained of negligible importance. Since the principal illegal export, coca, was grown in the subtropical valleys of the eastern Andes, this meant that the mining region of the Altiplano had failed to diversify away from mineral dependence. The Altiplano in 1970 accounted for 56 per cent of Bolivia's population, 43 per cent of its cultivated area but only one-third of the agricultural output.

Agricultural diversification

In contrast with Jamaica and Peru, the lack of cultivable acreage was not a problem for Bolivia. Although two-fifths of Bolivia is unfit for cultivation and an additional two-fifths is forested, some 20 million hectares remains as potentially cultivable (Weil 1973). This represents a sizeable resource for a country whose rural population was only 3.4 million in 1988 and growing at a modest 1.4 per cent (InterAmerican Development Bank 1989). The basic need is to ease pressure on farmland in the Altiplano through the expansion of opportunities in the mid-altitude and lowland regions further east.

The 1952 reforms transferred sizeable amounts of land from large estates to peasants on the Altiplano and upper valleys, and while this eased social tensions it did not promote productivity-enhancing farming. The initial units were small and were further subdivided through inheritance so that they became even less viable. Remedies such as the formation of co-operatives and increased resources proved deficient: agricultural growth occurred primarily through the extension of the cultivated area rather than through increased productivity. Agriculture still employed half the workforce when the tin price collapsed. The limited purchasing power from such low-productivity work combined with the country's small population to constrain opportunities for efficient industrial import substitution.

Incomes in the southeast lowlands increased faster than those on the Altiplano, creating a large and widening gap between the two regions. The expansion of high-productivity tropical agriculture afforded one diversification avenue while a second lay in resource-based industry, drawing inputs from farming and logging as well as mining and natural gas. Large commercialized holdings produced cotton and sugar cane under intensive conditions for local processing.

A particularly rapid expansion of extensive soya production occurred in the late 1980s: the harvest almost doubled to 150,000 tonnes in 1988–9 and was expected to reach 250,000 tonnes in 1990. Projections were made for 2 million tonnes of soya production by 1995 based on the clearing of 1 million hectares of extensive ranch land to soya. But although agriculture became more varied and commercialized in the eastern lowlands, physical conditions there were still difficult.

Coca and the informal economy

After the tin crash, small farmers were exposed to competition from cheaper imported foods such as Peruvian potatoes. For this reason, the drift off the land which had gathered pace as the economy collapsed through the early 1980s did not abate and the informal sector continued to play an important role. Within that sector coca production predominated and was especially suited to the sub-tropical valleys of the Yungas and Valles regions which contained 30 per cent of the population and accounted for more than two-fifths of agricultural production.

Production had long occurred for domestic use but until the late 1970s it did not exceed 15,000 tonnes and was less than one-tenth of total farm output (Blanes 1989). By the early 1980s high coca prices were yielding incomes of $15,000 and more for family farms with only 2 hectares under coca. A fivefold expansion in coca farms occurred in Chapare in 1980–5 taking the number to 75,000 and boosting output to 120,000 tonnes. An increase also occurred in the production of cocaine which had traditionally taken place in Colombia.

The total value of coca was conservatively estimated at $500 million in 1985 while cocaine was valued at $2 billion. When combined with traditional informal sector activity in commerce, mining and other activities, the informal output equalled the official GDP figure of $3 billion. However, capital flight meant that scarcely one-fifth of the coca revenues remained in the country. Coca revenues also promoted smuggling which contributed to the drastic shrinkage in state revenues from customs in 1978–85. They also spurred government corruption and threatened the termination of Western assistance (*Financial Times* 1988a).

The Paz government drew up plans to restrict coca production to 12,000 hectares (sufficient for legalized domestic consumption) and

to destroy 48,000 hectares. The destruction would occur in a controlled area and involve around 5,000 hectares in the first year, rising gradually to an 8,000 hectare per annum target. Elsewhere, coca production was immediately made illegal. The government proposed to compensate growers who lost coca lands at $2,000 per hectare. It hoped that the United States would respond by giving favourable consideration to IMF, World Bank and InterAmerican Development Bank loans to Bolivia (*Economist* 1988b). An expansion of industry as well as alternative high-productivity crops were required to achieve the diversification out of coca.

Manufacturing prospects

As with Jamaica, a crucial deficiency in the Bolivian economy is the weakness of its manufacturing sector. The import substitution drive had spawned three types of industry by the 1970s: food processing, basic consumer goods like clothes and shoes, and machinery and equipment for the mines. Exports were discouraged by the exchange rate appreciation and were negligible. Consequently, as the domestic economy began to contract from the late 1970s, manufacturing shrank also.

De-industrialization occurred rapidly: the manufacturing sector contracted at a rate of 7 per cent per annum in 1978–86 (Morales 1987) while the economy as a whole declined by 3 per cent annually. The share of manufacturing in GDP fell from 15.4 to 10.8 per cent. (Table 4.8). By 1985 the sector employed 8.7 per cent of the national workforce. One-third of its value added was generated in light industry, two-fifths in agro-industry and one-sixth in textiles and leather (Ministerio de Planeamiento y Coordinacion 1989). Three cities dominated production: La Paz (34 per cent), Santa Cruz (30 per cent) and Cochambamba (21 per cent).

Wide variations in the rate of sub-sectoral contraction occurred in manufacturing during 1978–86 which partly reflected the substantial dispersal of effective protection rates about the sectoral mean. The 1982 levels of effective protection for tobacco, textiles, leather goods and wood products were almost twice the average of 98 per cent. Yet these were precisely the products which might have been expected to require least protection because they were labour-intensive users of local raw materials targeted at a domestic market that was already insulated somewhat from imports by high transport costs.

Bolivian manufacturing recovered from the 1985 nadir faster than agriculture and averaged 4 per cent growth in 1986–8 on an accelerating trend. However, like Jamaica, the prolonged period of contracting demand had discouraged investment so that much equipment required replacement. Under such circumstances liberalization needed to proceed carefully. Morales (1987) argues against the application of uniform tariffs on the grounds that such a system takes little cognizance of the impact of differing ratios of value added to gross output on the effective rates of protection for differing sub-sectors of manufacturing.

Instead, a sector-neutral regime offering effective rates of protection of between 10 and 20 per cent was proposed. Bolivia's Plan 2000 emphasizes import substitution and visualizes resource-based industrial exports (mostly gas-based petrochemicals) comprising only 5.8 per cent of the total exports by the year 2000 compared with 24 per cent for agriculture, 8 per cent for electricity and 62 per cent for minerals and hydrocarbons. Bolivia is at least a generation behind Chile in its progress towards structural change and the Plan 2000 relies strongly on a recovery in mining to drive the economy through the 1990s.

CONCLUSION

Whatever the theoretical debate on the role of market-driven exchange rate shifts, the empirical evidence from both the oil-exporting and hard mineral economies suggests that prudent policy requires that the mining sector's volatility should be muted. The mining sector's contribution to economic growth in the mineral economies would have been less damaging not only if more caution had been used in anticipating mineral revenue streams (as advocated by doctrinaire orthodoxy), but also if the mining sector had been used to promote structural change rather than to become the backbone of the economy.

Consequently, contrary to the orthodox assumptions, policymakers should abandon their neutral attitude towards the mining sector. The latter should be regarded as a bonus with which to accelerate long-term economic diversification into competitive non-mining tradeables. Past experience suggests the resource bonus has all too often been used to evade the need to compete internationally in agriculture and manufacturing. This is one way in which the resource curse thesis works, by allowing a dependence to develop on the

resource-based sector whose volatility, however, makes such a dependence highly risky.

All four economies, especially that of Chile, exhibited strong evidence of Dutch disease in the early 1970s. The Chilean reforms of the mid-1970s laid the basis for rapid diversification which emphasized Chile's competitive advantage in primary product exports and resource-based industry. However, disadjustment under the doctrinaire orthodoxy of 1978–82 caused a disastrous neglect of the non-mining tradeables. Thereafter, Chile paid more attention to the long-term competitiveness of the non-mining tradeables sectors. It deftly intervened to preserve the long-term competitiveness of the non-mining sector and moderated mineral revenue swings through the operation of a stabilization fund.

Jamaican experience confirms that orthodox policies require bolstering to promote economic diversification. Despite more than a decade of orthodoxy and a relatively high rate of investment, Jamaica failed to revive either its agricultural or its manufacturing sectors. The absence of an early commitment to competitive manufacturing compounded the cumulative neglect of investment in that sector and left Jamaica heavily dependent on tourism and mining—as it had been in the early 1970s.

Peru, which had been the most diversified economy in the early 1970s (thanks to its varied primary product exports) rapidly expanded its manufactured exports through the late 1970s. As with Chile, doctrinaire orthodox policies led to macroeconomic disadjustment in 1978–82. But whereas Chile took pragmatic measures to restore the incentives for competitive diversification and to mute the disruptive impact of mining sector revenue fluctuations, Peru did not. The result was that Peruvian diversification was aborted, its exports were fossilized and its dependence was increased on a mining sector that was rapidly becoming decapitalized.

Finally, Bolivia confirms that economic diversification may not be helped by favourable external conditions since the windfalls are unlikely to be used effectively for that purpose. The sustained exchange rate appreciation associated with mineral booms is likely at best to undermine the agricultural and manufacturing sectors and at worst to fossilize them behind ever-rising protective barriers. After the mid-1980s price collapses Bolivia planned to emulate Chile and promote resource-based diversification, but it was at least a generation behind in that process and so still relied on its severely weakened mining sector to carry it through the 1990s.

The specification of the policy lessons from the four developing American economies is postponed until Chapter 13, after the experience of those countries has been compared with that of mineral economies in Asia (PNG) and Africa (Zambia) in Part IV.

Part IV

INTER-CULTURAL COMPARISON

11

PAPUA NEW GUINEA

A new entrant neglects structural change

RISKS OF MINERAL DEPENDENCE

Along with Chile, two other hard mineral economies also acquired reputations for effective management through the 1970s and 1980s. They are Botswana, which is examined by C.Harvey and Lewis (1990) and Papua New Guinea (PNG), which is analysed in this chapter. Like Chile, PNG gained a reputation for soundly orthodox macroeconomic policy, shrewd management of its mining sector and a minimalist industrial policy. Yet, although PNG avoided the very deep recessions which hit the Chilean economy in 1973, 1975 and 1982, its long-term growth was also disappointing. Measured in real terms, the per capita income of PNG in 1988 was no higher than in 1972. However, unlike Chile, PNG's non-mining tradeables grew slowly and its manufacturing sector remained extremely weak.

PNG is a relatively new entrant to copper production and first became an exporter in 1972. PNG also has a rich and diversified mineral resource base, with gold and hydrocarbons each expected to rival copper in importance during the 1990s. It could therefore be argued that PNG is at such an early stage of mineral-based development that the country need attach little importance to the competitive development of the non-mining tradeables.

During PNG's first two decades as a mineral economy, however, the impact of mineral revenue shocks (including the abrupt closure of the large Bougainville copper mine in 1989) have underlined the risks of mineral dependence. In addition, the deterioration of urban law and order has shown the need to rethink the country's post-independence encouragement of parasitic urban rent-seeking groups. PNG may need to establish a more direct link between welfare and

work done than it has experienced either as a colony or as a mineral economy.

This chapter analyses PNG's development over 1972–89 in order to test further the conclusions reached in this book on why even well-run mineral economies under-perform. In particular it examines the need to reinforce macroeconomic orthodoxy with pragmatic measures to foster competitive diversification of the non-mining tradeables sector. It follows the format adopted for the developing American countries and asks the questions: Is the problem rooted in the legacy of PNG's recent colonial past? Did it result from unusually severe external price shocks? Was PNG's macroeconomic policy deficient in some respect? Did PNG's microeconomic policies adversely affect its mining sector? Could more have been done to stimulate growth in the non-mining tradeables sector? Each question is dealt with in a separate section and the policy implications of the PNG experience are outlined in the conclusion.

THE COLONIAL LEGACY

PNG was evolving rapidly towards independence in the early 1970s. It became self-governing towards the end of 1973 and independent in 1975. Prior to the start-up of copper mining in 1972 state spending drove the economy and drew heavily on Australian aid which provided more than two-fifths of government revenue and almost half of PNG's foreign exchange. Australian aid amounted to around $80 per capita (or one-seventh of per capita GNP) and government spending was more than twice that of countries of similar size and level of development to PNG (Table 11.1). Public expenditure displayed a sizeable import component and reflected aspirations set when Australia controlled much commercial activity and it needed scaling down as the expatriates departed. The World Bank (1978a) estimated that it would take PNG a generation to eliminate its aid dependence.

Copper mining offered the most immediate prospect of reducing dependence on Australia. The construction and start-up of the first copper mine at Bougainville caused the PNG economy to grow rapidly in the early 1970s: GDP growth averaged more than 8 per cent per year in 1970–4. The associated investment contributed to a high rate of domestic absorption which, in 1972, was 117 per cent of GDP. This is more than 12 per cent higher than the Syrquin and

Table 11.1 Composition of absorption in Papua New Guinea (% GDP)

	Actual composition			*Syrquin and Chenery norms*		
	1972 *570*[a]	*1980* *760*[a]	*1988* *560*[a]	*560*[a]	*750*[a]	*1,000*[a]
Private consumption	58.9	60.9	58.3	69.7	68.3	66.4
Public consumption	30.3	24.1	21.1	13.5	13.6	13.7
Gross investment	27.8	25.2	25.6	21.2	22.3	23.8
Total absorption	117.0	110.2	105.0	104.4	104.2	102.4

Sources: World Bank 1990a; Syrquin and Chenery 1989
Note: [a] Per capita GNP (1980$).

Table 11.2 Structure of production in Papua New Guinea (% GDP)

	Actual production			*Syrquin and Chenery norms*		
	1972 *570*[a]	*1981* *740*[a]	*1988* *560*[a]	*560*[a]	*750*[a]	*1,000*
Mining	2.5	8.2	15.4	6.7	7.2	7.7
Non-mining	97.5	91.8	84.6	93.3	92.8	92.3
Agriculture	34.4	37.0	33.9	30.7	27.0	22.4
Manufacturing	6.0	10.7	8.8	15.2	16.6	18.3
Construction	14.7	4.9	5.0	5.0	5.2	5.5
Services	42.4	47.4	36.9	42.4	44.0	46.1
Dutch disease index	5.5	+4.1	3.2			

Sources: World Bank 1978a, 1990a; Syrquin and Chenery 1989
Note: [a] Per capita GNP (1980$).

Chenery (1989) norm for an economy of the size and level of development of PNG (Table 11.1).

The final construction stage of the Bougainville mine pushed the share of construction in GDP to 15 per cent in 1972, three times the Syrquin and Chenery norm (Table 11.2). The 1973–4 copper boom boosted the share of mining to 25 per cent of GDP, 50 per cent of export earnings and 25 per cent of revenues (World Bank 1978a). This yielded a moderately high mineral dependence index (the average of the three measures of mining's percentage share of GDP, export and taxes) of 33. That index compares with a range in other mid-income mineral economies in the early 1970s which extended from 21 for Peru through 33 for Chile and 47 for Bolivia.

The PNG copper mine employed only 10,500 workers when

its construction boom peaked in 1971–2. Employment fell to 3,500 when mining operations commenced and, in order to absorb an expanding fraction of PNG's growing labour force in competitive commercial activity, the agricultural and manufacturing sectors needed to grow rapidly. In the early 1970s more than two-thirds of PNG's population was employed in subsistence agriculture which accounted for just over one-fifth of GDP (World Bank 1978a).

In the modern sector, commercial farming provided 10 per cent of GDP and mining one-fifth. The remaining 47 per cent of GDP was split roughly evenly between the central government and manufacturing/services. Manufacturing was responsible for only 6 per cent of GDP, two-fifths of the Syrquin and Chenery norm (Table 11.2). The legacy from colonialism which threatened to impede the rapid growth in PNG of employment-intensive agriculture and manufacturing was the relatively high wage level and the disproportionate share of expatriate investment in agriculture and manufacturing.

The main alternative to mining was export agriculture but although crop-growing conditions were generally favourable, the high level of wages and over-rapid wage increases scuttled the government's 5 per cent annual growth target for the sector. A second constraint on commercial agriculture arose from the government's sensitivity to further foreign investment in the sector. Commercial agriculture was dominated by 500–600 mainly expatriate-owned plantations employing some 35,000 workers and exporting copra, coffee and cocoa. Although smallholders had begun to grow coffee, copra and palm oil for export the commercialization of the subsistence sector was expected to be slow. The PNG government viewed indigenously owned nucleus estates as the best way to continue the advance of smallholders and thereby raise rural incomes.

Outside mining and agriculture there were few significant growth options since poor communications and low demand limited import substitution manufacturing while remoteness from major markets and high wages constrained export industry and tourism. The main manufacturing sub-sectors were oriented to supplying what limited domestic demand there was and comprised tobacco, beverages and food processing (three-fifths manufacturing added value), engineering (one-fifth) and woodworking (one-tenth). The stunted growth of manufacturing combined with slow agricultural progress to limit wage employment opportunities outside government. Most new non-

mining projects were in fact capital-intensive projects such as canneries, pulp plants, hydro stations and plantations.

Labour-intensive investment was discouraged by the minimum wage for urban workers which, in PNG in the mid-1970s, was much higher than those elsewhere in Asia. Yet the higher wages were not offset by higher productivity. Such successful rent-seeking behaviour could, if continued, severely depress the overall efficiency of capital investment within a relatively short period of time (Gelb *et al.* 1986), as Chapter 12 on Zambia so clearly illustrates. Rural-urban migration was already causing concern in the early 1970s even though the cities accounted for less than one-tenth of the population. The two leading cities, the administrative city of Port Moresby (80,000 population) and the emerging manufacturing town of Lae (40,000), were growing especially rapidly.

IMPACT OF EXTERNAL SHOCKS

The impact of external shocks on the economy of PNG is compared with those for Chile in Table 11.3. Chile, which initially relied much more heavily than PNG on copper for its exports, experienced an especially adverse deterioration in its terms of trade. In fact, the more diversified composition of PNG exports led to a net gain in that country's terms of trade. Consequently, whereas Chile experienced an external deterioration equivalent to the loss of 10.6 per cent of its GDP in 1974–8, PNG experienced a positive shock equivalent to almost 6 per cent of GDP. The positions of the two countries were reversed during the early 1980s trade and interest rate shock. Then PNG experienced a severe deterioration

Table 11.3 External shocks, Papua New Guinea and Chile, 1974–87

Terms of trade	*1970–4*	*1975–9*	*1980–3*	*1984–7*
PNG	121.2	127.0	93.1	93.4
Chile	192.6	103.4	87.3	80.1

External shocks (%GDP)	*Trade shock 1974–8*	*Trade and interest shock 1979–83*
PNG	5.9	−14.9
Chile	−10.6	−3.2

Source: World Bank 1990a; methodology after Sachs 1985

equivalent to the loss of almost 15 per cent of GDP while, although the shock was also negative for Chile, it was a more modest 3.2 per cent of GDP on Sachs's index (Table 11.3).

The 1979–83 shock was the second and most serious of three mineral sector shocks which hit the PNG economy during the period 1972–89. The first shock occurred in 1974 when the 1973–4 boom which had coincided with the opening of the Bougainville mine abruptly collapsed. The second set-back resulted from the post-1981 fall in copper prices and rise in interest rates. It was further exacerbated for PNG by the fact that low prices postponed its second large copper mine at Ok Tedi. The third shock occurred in 1989 when secessionist violence shut the Bougainville mine.

The scope of the adjustment required to the shocks is shown by a comparison of the projected revenues with the actual out-turn. The 1973–4 copper boom yielded an unexpected windfall for the operators of the new Bougainville mine. Mikesell (1975) provides a boom-time estimate of the impact of the Bougainville mine on the PNG economy. Upon full completion of debt repayment in the early 1980s, annual export earnings would be $350 million (in constant US dollars) and pre-tax profits would total $227 million. Net foreign exchange earnings would be $215 million, giving a high revenue retention coefficient of 0.65. Fiscal linkage (taxes) would yield $160 million annually but productive linkages (through the local purchase of inputs and further processing) were expected to be small.

The out-turn fell far short of these expectations even though the Bougainville mine was among the most competitive world producers on a net cost basis (Table 11.4). Although the original mining agreement was renegotiated in favour of the PNG government (Daniel 1985), low copper prices reduced the actual revenue retention coefficient to between 0.2 and 0.3. This was less than half Mikesell's projection. Even in a fairly good year like 1981, the Bougainville mine provided only one-quarter of the tax revenues projected by Mikesell, around one-fifth of total government revenues. Even so, the copper mine generated around one-sixth of PNG's GDP, one-seventh of its revenues and almost half its exports in 1972–80. There were significant annual fluctuations in these ratios (Table 11.5), however, so that the uncertainty over the size of the contribution complicated macroeconomic management.

As copper prices improved through the 1979 oil shock, feasibility studies were executed for a second large PNG copper mine at Ok

Table 11.4 Competitiveness of Papua New Guinea copper mining, 1975–85 (¢/lb)

	Direct cost[a]	*Indirect cost*[b]	*Interest*[c]	*Gross cost*	*Co-/by-product credit*[d]	*Net cost*	*Percentage of global average*[e]
1975	46.4	0.8	1.1	48.3	24.5	23.8	46.3
1980	107.1	2.0	–	109.1	91.2	17.9	35.9
1984	86.2	1.5	1.2	88.9	56.5	32.4	57.1
1985	78.3	1.2	0.8	80.3	37.1	43.2	85.4

Source: Takeuchi *et al.* 1987:60, 77

Notes: [a] Direct cash operating cost, including mining, refining, freight and marketing.

[b] *Administrative and corporate overhead, royalties, research and exploration.*

[c] *All interest expenses.*

[d] *Revenues from by-products.*

[e] *Total representing 80% of global capacity.*

Table 11.5 Mining sector contribution to Papua New Guinea 1972–8

Year	*GDP (%)*	*Exports (%)*	*Revenues (%)*	*Investment (%)*	*Direct jobs (×1,000)*
1972–3	22.8	54.7	–	n.a.	n.a.
1973–4	30.6	64.5	20.4	n.a.	n.a.
1974–5	18.1	55.9	19.3	15.5	n.a.
1975–6	13.2	54.8	20.4	14.3	n.a.
1976–7	11.1	37.1	15.7	17.4	2.5
1977	10.2	33.4	16.1	16.2	2.5
1978	11.8	41.1	11.4	12.2	2.4
1979	17.2	47.3	13.6	9.4	2.4
1980	15.0	45.8	16.3	8.8	2.3
1981	10.6	53.1	23.5	17.9	3.1
1982	15.0	52.9	6.6	45.6	4.5
1983	20.4	54.2	5.7	47.4	4.9
1984	9.9	39.8	12.0	32.4	3.3
1985	10.9	52.9	4.3	18.1	3.0
1986	12.0	56.2	5.7	25.9	3.5
1987	n.a.	64.1	3.7	30.5	3.8
1988	n.a.	66.3	n.a.	n.a.	3.3

Sources: 1981–8, World Bank 1989a; 1972–80 GDP and exports, World Bank 1982; 1972–80 revenue, investment and employment, Daniel 1985

Note: n.a., not available.

Tedi. The studies assumed a gold price of $392 an ounce by 1985 and copper prices around $1.64/lb by 1987 (*Economist* 1985c). The total value of mineral output over the life of the mine (1986–2010) was estimated at $10 billion, of which some 40 per cent would cover the capital recovery and operating costs. Under these assumptions, government revenues would total around $4 billion or $160 million annually (Jackson 1984). The latter was equivalent to one-fifth of total PNG tax revenues and two-thirds of Australian aid at that time. Yet in 1985, far from receiving a large boost to revenue and foreign exchange earnings, the PNG government was negotiating hard to avert the indefinite postponement of Ok Tedi.

A third optimistic scenario for PNG was developed by the World Bank (1988) at the time of the 1987–9 copper boom. A rapid expansion of gold mining was expected to offset copper's flagging performance and propel economic growth at 5.4 per cent annually over 1988–95. The World Bank projected that PNG copper output would plateau at 380,000 tonnes in the late 1980s as Ok Tedi reached capacity. It expected copper prices to fall to 65 ¢/lb before recovering to 80 ¢/lb by 1995. Gold production was projected to triple by 1995 to 90 tpa, however, with most of the increase at planned new mines. With a gold price projected at $450 per ounce in 1988 dollars, the 1988–95 scenario would lift the mining sector's share of PNG exports from 55 to 72 per cent, of GDP from 15 to 18 per cent and of government revenues from 6 to 16 per cent.

The World Bank projection implied an increase in PNG's mineral dependence index from 25 to 35, a level not seen since the 1973–4 copper boom. However, the mining sector's share of direct employment would remain negligible. Care would be needed to avoid Dutch disease effects by ensuring the satisfactory growth in competitive non-mining tradeables that would safeguard against a collapse of the mineral boom. The Bougainville mine was expected to reinvest sufficient resources to sustain annual production of copper and gold until at least 2000 (World Bank 1988). In the event, Bougainville was abruptly closed by violence in May 1989, triggering PNG's third mineral shock. It had generated 45 per cent of PNG exports and 17 per cent of government revenues in 1988 (*Economist* 1989c).

MACROECONOMIC RESPONSE TO MINERAL SHOCKS

PNG continued to attract large investment inflows after the closure of Bougainville. This testifies to its successful macroeconomic response to the earlier shocks, including the severe 1979–83 one. PNG maintained a commitment to fiscal prudence and a readiness to adjust promptly to shifting export competitiveness via timely exchange rate adjustment. However, the initial exchange rate was set at a level which discouraged competitive diversification.

Prior to independence, PNG experienced chronic trade and fiscal deficits which were offset by Australian aid. PNG needed to compensate for the tapering off of Australian assistance through reduced levels of government spending, diversification of domestic tax revenues and higher export earnings. The sudden emergence and puncturing of the 1973–4 copper boom provided a timely reminder of the risks of substituting mineral dependence for Australian dependence.

PNG displayed fiscal caution but still failed to cut public expenditure in line with post-independence needs. Australian aid declined from two-fifths of total revenues in 1975 to one-fifth in 1987 (Thac and Lim 1984). Government expenditure increased its share of GDP from 33 per cent to almost 38 per cent over 1971–5 before it stabilized at that high level through the mid-1980s. Internal revenues were barely one-third of government expenditures in 1971 and, although they rose rapidly to almost half by 1975 (boosted by Bougainville taxes), they then grew more slowly to reach two-thirds by the late 1980s (Bird 1989).

Taxes on trade plateaued at around 30 per cent of the total, so that corporate and private income tax seemed the best sources of new revenues. The personal and excise taxes fell disproportionately on the shrinking band of expatriates so that a rapid expansion of the commercial economy was required to sustain further revenue growth. In this uncertain fiscal climate the potential destabilizing impact of copper revenue fluctuations was prudently mitigated by the establishment of a mineral stabilization fund.

The Bougainville revenues were placed in the fund. The lags in the flow of revenues into the fund meant that they did not impact public spending until 1976 by which time the need for restraint was clear. The new mine's share of all revenues collapsed from almost 40 per cent in 1973–4 to just over 11 per cent in the two succeeding

Table 11.6 Macroeconomic indicators, Papua New Guinea, 1970–88

	1970–4	*1975–9*	*1980–3*	*1984–7*
Fiscal balance (% GDP)	(4.3)	(3.1)	(5.3)	(2.3)
Current account (% GDP)	0.3	1.5	(15.9)	(8.0)
Real effective exchange rate	118.8	118.4	120.7	109.7
Debt-to-GNP ratio	0.50	0.31	0.49	0.92
GDP growth (% years)	*1967–73*	*1973–80*	*1981–8*	*1973–88*
PNG	6.5	2.2	2.0	2.1
Chile	2.2	2.4	2.2	2.3
Bolivia	4.7	3.3	(1.1)	2.2
All developing countries	6.5	5.1	3.9	4.5

Sources: World Bank 1982, 1988, 1990a; Wood 1988

years and fell thereafter. Australian aid and prudent foreign borrowing (World Bank 1978a) covered the budget deficit (Table 11.6). The stabilization fund played little role in mitigating the 1979–83 mineral shock because persistent low prices had depressed reserves. But, as shown below, it played a key role in PNG's adjustment to Bougainville's closure.

The second key element in macroeconomic policy concerns the trade gap. PNG's high propensity to consume imported goods reflected its initial neo-colonial status and was unsustainable. On reaching independence PNG sensibly adopted an outward-oriented trade policy and a commitment towards free currency convertibility. The initial expansion of copper exports, boosted by rising prices, turned the country's chronic visible trade imbalance positive in the 1970s (Table 11.6). It was also associated with a 20 per cent appreciation of the real exchange rate which threatened the competitiveness of non-mining tradeables.

As copper prices deteriorated through 1975 the real exchange rate was depreciated to its pre-boom level. It needed to fall further, however, in order to accelerate growth in agriculture but priority was given to inflation control and some modest appreciation occurred through the second oil boom. It will be recalled that similar policies were adopted at that time in Peru, Jamaica and Chile.

PNG's visible trade remained broadly in balance through the late 1970s but it slipped into deficit in 1980 under the combined effect of a sharp rise in the cost of imported oil and faltering copper earnings

(Segal 1981). Table 11.3 shows that the second oil shock triggered more serious balance of payments problems and the current account deficit ballooned to 20 per cent of GDP in 1982 (Table 11.6). PNG made three adjustments. First, the exchange rate resumed the real decline on which it had embarked after the 1974 copper fall (Daniel 1985:52). Second, fiscal policy was tightened since expenditures had outstripped revenues in 1977–82 and the budget deficit had increased from 1.3 to 6.2 per cent of GDP. Third, the twin deficits were financed by foreign commercial and concessional borrowing (Thac and Lim 1984).

PNG therefore had more scope for using foreign borrowing to adjust to the 1979–83 shock than the developing American countries. This is because PNG's debt to GDP ratio fell steeply through the 1970s from 63 per cent in 1973 to 26 per cent in 1979. Its debt-to-GDP ratio almost tripled to 1983 and continued to rise through 1987. PNG's debt service ratio reached an onerous 36 per cent of exports in 1984 (World Bank 1988). Adjustment to the 1979–83 shock was accompanied by a sharp deceleration in economic growth.

Under these difficult circumstances the prospect of indefinite postponement of the new Ok Tedi mine assumed crucial significance. The start-up of Ok Tedi had been expected to boost GDP by more than 6 per cent in 1985 and relieve PNG's fiscal problem (*Financial Times* 1985e). Worse, the Australian government decided to reduce the real value of its aid (worth almost $200 million in 1985) by 5 per cent annually over 1986–91.

The PNG government prudently opted to reduce expenditure further. It halved the planned annual withdrawals from the mineral stabilization fund for 1985–8 (*Far Eastern Economic Review* 1985a). The sale of government equity in Bougainville was also discussed but shelved when mineral prices began to firm with the 1987–9 copper boom and Ok Tedi started up (*Far Eastern Economic Review* 1985b). By 1988 the budget deficit was 0.5 per cent of GDP and the current account deficit under 5 per cent. Moreover, debt service had fallen to about one-fifth of export earnings and a third mineral boom beckoned for the early 1990s.

The closure of Bougainville in 1989 abruptly terminated the improving outlook for the fiscal and trade deficits. The mineral stabilization fund provided a vital breathing space during which to negotiate external loans. The PNG government planned to draw about $85 million (or 7 per cent of its revenue needs) from the fund. That was equivalent to just over half the revenue from

Bougainville in the boom year before it closed. The lagged inflow of those revenues caused the fund to end 1989 at $225 million, higher than the end of 1988. It could therefore sustain a similar level of drawdown until 1992, by which time taxes from the expanding Ok Tedi mine and new gold mines like Missima would start to flow. The fund therefore insulated the PNG government well from revenue fluctuations.

In January 1990 PNG devalued its currency by 10 per cent, cut government spending by 8 per cent and placed restrictions on both wage increases and credit. GDP, which had been growing at 4.5 per cent in 1985–8, fell by 3 per cent in 1989 and was expected to fall a further 4 per cent in 1990. This implied a 12 per cent decline in per capita GDP over the two years, given 2 per cent annual population growth. The government requested IMF and World Bank assistance (*Financial Times* 1990e).

Overall, PNG macroeconomic management responded fairly well to the mineral shocks. The principal error, the initial disadjustment through 1979–82, was common to most mineral economies and reflected an inaccurate consensus on the mineral economies' growth prospects. However, PNG's preoccupation with adjustment to medium-term price fluctuations diverted effort from the more fundamental task of long-term reform of public expenditure and diversification of the structure of the economy.

MINING SECTOR RESILIENCE

PNG dealt pragmatically with the periodic crises within the mining sector. It unflinchingly accepted confrontation with the MNCs but the more nationalistic (and invariably counter-productive) stance of many other mineral economies was wisely avoided. PNG's two large copper mines engendered disputes which prompted tough renegotiation of mining contracts. The Bougainville dispute was resolved by a mechanism to divert most windfall revenue to the government. The Ok Tedi dispute involved financial restructuring that required the MNC partners to liquidate debt from non-mine resources. These compromises allowed both mines to operate viably and sustained large foreign investment into the mining sector.

The original terms of the $500 million Bougainville mine were negotiated when PNG independence seemed well in the future. They were intended to run for more than forty years and included a three

year tax holiday followed by five year accelerated depreciation which was intended to pay off the loan and build the company's cash reserve. The MNCs regarded a 10 per cent discounted cash flow on total capital as an acceptable return for an 'Australian' investment but added 5 per cent for the additional political risk when PNG achieved independence (Mikesell 1975).

The Bougainville start-up coincided with high copper prices so that the initial returns were unexpectedly favourable: the mine reported a $220 million profit in 1973 and paid a dividend of $112 million after meeting debt service charges and allocations to reserves. This prompted renegotiation of the agreement, a move initially unwelcome to the MNCs. The new contract was retroactive to the beginning of 1974 and incorporated a rent retention tax. It assured the owners a minimum 15 per cent return on total investment and diverted most of any windfall above this level to PNG taxes.

The forceful Bougainville renegotiation did not deter other MNCs from appraising Ok Tedi. In 1981 three MNCs agreed terms which gave the PNG government one-fifth of the equity. The peculiar geology prompted a three-stage project based on the three different layers of ore. The top layer comprised a gold cap which overlay a layer of copper and gold beneath which lay low-grade copper with some gold. The receipts from the gold cap were intended to finance the less attractive copper mining stages.

Ok Tedi experienced a 50 per cent cost overrun on the first stage and there was no immediate price windfall to ease the burden. Gold extraction commenced in May 1984 but with almost $1 billion invested the partners let the deadline pass for construction of the second stage (intended to produce copper by 1986). Low gold prices prevented the first stage generating sufficient revenue to cover loan service while low copper prices deterred new investment.

The PNG government, beset with budget and current account deficits, bargained hard. It shut Ok Tedi in February 1985 and studied Chinese proposals for copper purchases. It won concessions from the MNCs who wrote off their equity investment and proceeded with the second stage (*Far Eastern Economic Review* 1985b). PNG's tough but pragmatic mineral policy assured continued investment streams even after Bougainville shut down in 1989. However, the strength of local discontent towards the central government's large share of mineral revenues was underestimated.

NON-MINING DIVERSIFICATION

PNG mineral economy policy was weak concerning diversification of the non-mining tradeables sector. The growth of non-mining tradeables was disappointing, especially the manufacturing sector which continued to lag the Syrquin and Chenery norms (Table 11.2). Three factors constrained the expansion of non-mining tradeables. They reflected the colonial legacy and were: relatively high wage rates, the high exchange rate policy and restrictions on overseas investment.

By the late 1970s the minimum daily wage in manufacturing was almost $7, significantly higher than in Malaysia and more than three times rates in Thailand or the Philippines (World Bank 1982). The high urban minimum wage cut employment in both manufacturing and agriculture since rural wages followed this trend (although actual rates were less than half those in the cities). Reform proved impossible and indexation continued so that by the late 1980s PNG wages were 50 per cent above those of Korea (which had five times PNG's per capita GDP) and five times those of Indonesia (which had a similar per capita income to PNG). Labour costs could be reduced either through productivity growth fast enough to outstrip wage rises or through exchange rate depreciation.

The abandonment of the hard currency strategy in 1983 was accompanied by measures for the promotion of the manufacturing sector which were downgraded two years later, however, after a change in government (Dahanayake and Mannur 1989). PNG therefore largely avoided the excessively protectionist industrial policies of many African and Latin American countries. It hoped to achieve industrialization through sound macroeconomic management and improvements in the quality of the domestic workforce. Import substitution remained constrained by the small domestic market which in the mid-1980s comprised only the 110,000 of the population in the middle-income group, of which 30,000 were expatriates. Given PNG's expensive low productivity urban workforce, resource-based export industry was more promising.

PNG's forest resources, which covered 87 per cent of the country (40 million hectares) offered one industrialization option. However, forestry employed only 4,000, fewer than in mining. Log exports and sawn products for the domestic market were both quite profitable, but sawn exports were less so. Official policy through the 1970s sought to increase the fraction of timber processed prior to

export. This triggered reluctant investment by log exporters which was both capital and energy intensive, yet unprofitable (Daniel and Sims 1986). Restrictions on domestic loggers were relaxed in 1979 but foreign firms were required to undertake developmental investments (e.g. road construction or 30 per cent processing) in return for export licences.

Such restrictions required a leading role of the PNG government which, however, because of financial and managerial constraints, curbed forestry expansion. The annual output was only one-quarter of PNG's estimated sustainable yield. Timber produced 7 per cent of total exports, around one-quarter of all rural exports (*Financial Times* 1989h). Efficient long-term production required a replanting scheme but forest mismanagement emerged as a problem in the late 1980s. Large areas were literally mined because of under-reporting of the harvest and exports.

Agriculture also disappointed: sectoral growth slowed through the 1980s (averaging only 2.3 per cent in 1980–7) and this owed much to policies designed to curb foreign ownership. The redistribution of plantation land from foreign firms to local people gave inadequate compensation and increased uncertainty, thereby discouraging estate replanting. A second problem was the restriction on land trading: some 97 per cent of PNG was communally owned and this tended to keep estates to a sub-optimal size for major tree crops (excluding coffee, oil palm and tea). Most small holdings lacked the land, finance and skills required for viable production while both import substitutes and export crops were most likely to be profitable on large holdings.

A further agricultural problem of the 1980s was depressed prices for coffee and cocoa. However, PNG's cash crop sector avoided the administrative problems experienced by many other Third World countries thanks, in part, to enlightened price stabilization schemes introduced in the late 1970s. PNG stopped using a guaranteed minimum price based on costs of production since this tended to depress returns to farmers *vis-à-vis* actual prices. The new target price was a ten year moving average of real world prices. Cocoa farmers then received a subsidy or paid a tax equal to half the difference between the target price and world price.

One advantage of the PNG scheme was that the Cocoa Board did not buy and sell the product nor did it need to hold stockpiles, while a second was the fact that the scheme was self-financing and did not interfere with the government budget. The Coffee Board did

accumulate stocks because of its role as guarantor of the 36,000 tonne PNG quota for the International Coffee Organization. Yet if the stock-building fund was low, no subsidy was paid no matter what the price (World Bank 1982).

Oil palm production, which in PNG gave some of the highest yields in the world, expanded rapidly but it was a relatively high-technology crop suited to plantation/outgrower production. The first of three nucleus plantations was established in 1967 and by 1988 the units covered 30,000 hectares. The opening of two new estates in 1990 was expected to contribute to a fourfold expansion by 1995 by which time palm oil would rival coffee as an export earner. In 1988 coffee generated 9 per cent of total exports while agriculture/forestry as a whole was only 28 per cent. This still left PNG excessively dependent on volatile mineral revenues.

The World Bank (1988) estimated that a reduction in agricultural regulation could stimulate $100 million per year of investment, working capital and technical assistance and boost agricultural growth to 6.5 per cent. Over a decade, such a growth rate would generate an additional 30,000 direct jobs to add to the 6,000–9,000 created by an adequate reafforestation policy. That policy offered PNG the best solution to the basic problem of mineral economy management, namely, confining the mineral sector to the role of economic bonus rather than economic backbone.

CONCLUSION: POLICY IMPLICATIONS

PNG's management of its mineral sector through the period studied compares well with that of other mineral economies. PNG exports remained more diversified than those of other longer-established small mineral exporters like Bolivia and Zambia. Moreover, in the late 1980s PNG still had a low Dutch disease index. It was only 3.5 compared with 12.1 for Chile and 15.5 for Bolivia. PNG retained a large agricultural sector (Table 11.2) which is an important cushion against mineral sector collapse.

PNG managed the mineral booms of 1973–4, 1979–82 and 1987–9 and their downswing shocks quite well. Orthodox macroeconomic policy provides one reason for this while the cushion afforded by the slow withdrawal of Australian aid furnishes another. Although the macro response to the severe 1979–83 shock was initially flawed, this was common to most mineral economies.

Micro policy towards the *mining* sector was bold and proved more

pragmatic than the more nationalistic policies favoured by many other mineral economies. The PNG government renegotiated MNC mining contracts in its favour without deterring foreign investment. It also used the mineral stabilization fund to ease adjustment to revenue swings, most notably when Bougainville closed. However, PNG was less successful in diffusing local mining tensions (*Financial Times* 1989i) and the closure of Bougainville forcefully underlined for the third time in fifteen years PNG's need to accelerate competitive diversification.

PNG confirms that even a well-managed mineral economy will under-perform if it neglects its non-mining tradeables. PNG's pre-occupation with medium-term economic problems and political fragmentation caused successive governments to neglect long-term structural deficiencies. The colonial legacy of a high exchange rate, high public spending and wage indexation needed reform in order to speed growth of non-mining tradeables and reduce the mineral sector's role to that of an economic bonus. Where such structural problems combined with poor macroeconomic management, then the outcome could be disastrous, as the experience of Zambia demonstrates in Chapter 12.

12

MISMANAGED MINERAL DEPLETION IN ZAMBIA, 1970–90

INTRODUCTION

Like PNG, Zambia made the transition to independence during a copper boom but Zambia had more difficulty than PNG in adjusting to the long-term copper price downswing. In fact, Zambia's economic trajectory over 1972–88 more closely resembles that of Peru. It will be recalled from Chapter 5 that Peru reluctantly espoused orthodox policies in the late 1970s only to retreat in the mid-1980s. Peru also transferred resources from efficient sectors like mining without sufficient safeguards for their productivity in their new applications. This is an important reason why Peruvian progress towards diversification into competitive non-mining tradeables was reversed. Meanwhile, Peru simultaneously decapitalized its state-owned mining enterprises. But for the presence of a large mining MNC, Peru's mining sector would have been even more severely damaged.

On all three counts (macro policy shifts, weak diversification and mineral sector damage) Zambia parallels Peru. Yet for Zambia, heightened reliance on mining was riskier because of the degree of depletion of its copper resource. Zambian copper reserves were estimated to be sufficient for twenty years of production in 1990, and even then on a declining trend. More than any of the countries studied, Zambia needed to achieve a rapid competitive diversification of the non-mining tradeables sector. Yet although the Zambian government was well aware of this situation and enjoyed an unbroken period in office, it spectacularly failed to achieve this task. In fact, the Zambian economy very clearly illustrates the remorselessly cumulative nature of a negative feedback loop (Table 3.1).

This chapter examines the Zambian negative feedback loop within

the framework adopted for the other mineral economies. It therefore begins with an examination of the pre-shock resilience of the Zambian political economy and then describes and evaluates the Zambian macroeconomic response to the 1974–8 price shock. It notes a reluctance, like that of Jamaica, to make structural adjustment. The fourth section repeats the exercise with respect to the 1979–83 shock when debt service reached onerous proportions. Attention then shifts to micro aspects and the marked deterioration in the viability of Zambia's copper mining sector is analysed. Finally, the reasons for Zambia's disappointing lack of competitive diversification in the non-mining tradeables sector are explored.

PRE-SHOCK DEVELOPMENT PROSPECTS

High initial copper dependence

Zambia had one of the highest per capita incomes in Black Africa on achieving independence in 1964 and it owed this distinction primarily to the mining sector. In the early years following independence, international copper prices were roughly twice Zambian production costs (Kydd 1988), yielding high rents which established patterns of investment and consumption which proved unsustainable. Zambia was also unusually dependent on its mineral sector. Its mineral dependence index was a remarkable 67 at independence. This compares with indices in the early 1970s ranging down from 47 for Bolivia through 33 for Chile and PNG to 21 for Peru.

Yet the political circumstances of Zambia appeared favourable for competitive diversification. The newly independent government commanded strong support and espoused policies for the promotion of long-term national welfare which it followed for almost two decades. Zambia was also aware at independence of the risks of over-reliance on copper. Copper yielded three-fifths of recurrent revenues in the mid-1960s and the government heeded a 1964 UN recommendation to diversify its revenue sources (Kaplan 1979).

The Zambian government prudently set up a mineral stabilization fund to accumulate revenues during booms and cushion the effect of downswings. It also had some initial success in revenue diversification. As mine revenues shrank below two-fifths of total revenues in 1966–74, income taxes expanded from 10 per cent to 18 per cent of recurrent revenues while sales/excise taxes rose from 12 per cent

Table 12.1 Economic performance, Zambia, 1970–88

	1970–4	*1975–9*	*1980–3*	*1984–7*
Fiscal balance (% GDP)	(5.2)	(15.0)	(14.0)	(12.1)
Current account (% GDP)	(2.6)	(10.6)	(14.5)	(10.6)
Debt-to-GNP ratio	0.39	0.81	0.96	2.50
Real effective exchange rate	115.3	82.7	82.3	46.6
GDP growth (%/years)	*1967–73*	*1973–80*	*1980–8*	*1973–88*
Zambia	2.4	1.2	0.9	1.1
Chile	2.2	2.4	2.2	2.3
PNG	6.5	2.2	2.0	2.1
Bolivia	4.7	3.5	(1.1)	2.2
All developing countries	6.5	5.1	3.9	4.5

Sources: World Bank 1990a; Wood 1988; Gulhati 1989

Table 12.2 Composition of absorption, Zambia (% GDP)

	Actual composition			*Syrquin and Chenery norms*		
	1972	*1980*	*1988*			
	770[a]	*600*[a]	*210*[a]	*770*[a]	*600*[a]	*210*[a]
Private consumption	39.8	55.2	69.0	68.1	69.4	77.6
Public consumption	23.4	25.5	17.1	13.6	13.5	12.4
Gross investment	35.3	23.3	11.4	22.4	21.4	15.1
Total absorption	98.5	104.0	97.5	104.1	104.3	105.1

Source: World Bank 1990a; Syrquin and Chenery 1989
Note: [a] Per capita GNP (1980 $).

to 23 per cent (Kaplan 1979). The tax reforms failed, however, to offset the deterioration in copper revenues completely. Zambia ran a budget deficit equivalent to 5.2 per cent of GDP in 1970–4 (Table 12.1) and imprudently abandoned the stabilization fund in 1972.

Table 12.2 shows that in the early 1970s the composition of Zambian absorption differed significantly from the Syrquin and Chenery (1989) norms for countries at a similar level of development. Gross investment was almost 50 per cent above the norm while government spending was nearly twice the norm. In fact, the Zambian pattern of absorption resembled that of PNG, another small mineral economy close to independence. But Zambia lacked the large inflow of aid which PNG received from Australia.

The high rate of Zambian investment did not herald rapid

Table 12.3 Structure of production, Zambia (% GDP)

	Actual structure			*Syrquin and Chenery norms*		
	1972	*1980*	*1988*			
	770[a]	*600*[a]	*210*[a]	*770*[a]	*600*[a]	*210*[a]
Mining	25.5	16.4	12.6	7.2	6.8	2.0
Non-mining	74.5	83.6	87.4	92.8	93.2	98.0
Agriculture	12.8	14.2	14.2	26.9	29.9	45.9
Manufacturing	13.5	18.5	24.8	17.1	15.5	10.5
Construction	7.0	4.5	4.5	5.2	5.0	4.1
Services	42.2	46.4	43.9	43.6	42.8	37.5
Dutch disease index	17.7	12.7	17.4			

Source: World Bank 1990a
Note: [a] Per capita GNP (1980 $)

economic growth. The rate of GDP growth over 1967–73 averaged only 2.4 per cent (Table 12.1) on a declining trend. This was around half the rate for the developing American mineral economies and one-third the rate for the developing countries as a whole. The waning stimulus from Zambia's import substitution industry could not offset the impact of declining copper prices. On the contrary, the loss of foreign exchange and domestic purchasing power which accompanied lower copper prices led to reduced domestic demand for manufactured goods. Yet the cossetted manufacturing sector could not turn to exports. It therefore amplified, rather than offset, the weakness of the copper sector.

Limited pre-shock diversification

The policies of the Zambian government reflected the prevailing optimism about socialist development. Consequently, like pre-shock Peru (but unlike PNG), the government transferred large sections of the economy into the public sector without adequate safeguards for the efficiency of resource use. The Zambian economy had already been significantly weakened by these policies when the 1974–8 mineral price shock struck.

Pre-shock progress in reducing the country's dependence on copper was minimal. Non-mining exports—almost all agricultural—accounted for less than 3 per cent of total exports in the early 1970s, with a declining trend. Although farming employed almost two-thirds

of the population, it generated less than 13 per cent of GDP in 1972—well below the Syrquin and Chenery norms for a country at a similar level of development (Table 12.3). Commercial farming was oriented to the domestic urban market in the Copper Belt and exports were negligible. The manufacturing sector was also smaller than the norm despite its initial rapid expansion. Not surprisingly, Zambia had a relatively high Dutch disease index of almost 18. This compares with indices in 1972 of 6 for Chile, 5.5 for PNG and 5 for Peru.

The remarkable shrinkage in the relative size of agriculture was a result of Dutch disease rather than, say, an unfavourable resource endowment. Dumont and Mottin (1983) suggest that during the 1970s Zambian agricultural production remained far below its potential. The fertile 12 per cent of the land area could have amply met all domestic agricultural needs. The fertile area, defined as that land capable of growing maize continuously, straddles the infertile rift valley. It accounted for most commercial farming at independence with about 1,000 large farms and 20,000 emerging mid-sized holdings. The moist northern zone was less fertile and best suited to root crops: it contained the majority of shifting peasant cultivators but little commercial production. The semi-arid western zone was suited to pastoralism (Levi and Mwanza 1987).

The consequences for Zambian agriculture of post-independence efforts to close the gap between indigenous and expatriate earnings in the modern sector were unfortunate. The real incomes of urban workers were rapidly raised while food prices were kept low. This discouraged commercial farming as the barter terms of trade between rural and urban areas declined by 20 per cent in 1964–73 (MacBean 1987). The reform of rural institutions exacerbated the problem. Co-operatives were initially favoured and established with copper revenues. They quickly failed but subsequent efforts to encourage family farming fared little better in the face of low domestic food prices. Fewer than 5 per cent of Zambia's farmers were enticed into commercial operation: most cultivated a few hectares by slash-and-burn. Agricultural production barely kept pace with the rate of population growth: rural incomes declined in real terms after independence and were only one-fifteenth of the urban average in 1970 (Dumont and Mottin 1983).

The urban bias in Zambian development policy would have mattered less if manufacturing had been efficient. Independence brought ample manufacturing opportunities because Zambian manufacturing had been stunted by direct competition from

Zimbabwe when the two colonies were part of the Central African Federation. Zambia produced only one-third of the manufactured goods which it consumed at independence (Kaplan 1979). Import substitution caused manufacturing to grow at an annual rate of 11 per cent over 1965–70, with chemicals and vehicles especially prominent. However, it was accompanied by an extension of state ownership that proved over-ambitious and outstripped Zambian administrative capacity. The quality of the civil servant factory managers declined with the steady politicization of appointments (Gulhati 1989).

Meanwhile, foreign-owned industry was discouraged by restrictions on profit repatriation which reflected criticism for putting profit ahead of national development. By the mid-1970s almost all the large industrial plants in Zambia had majority or total state ownership. Copper mining also fell under state control, despite initial government assurances to the contrary. The government acquired 51 per cent of Anglo-American and Roan Selection Trust in January 1970. It increased its stake in 1974 when the ten year sales and management contracts of the two MNCs were cancelled, and again in 1979 when the MNCs declined to expand their equity participation.

The net effect of Zambian government policy in the first decade after independence was to deploy the shrinking rents from copper to expand a powerful urban rent-seeking constituency whose income from mines, factories and offices outstripped productivity growth. This is an important reason why almost two-fifths of the Zambian population was urbanized by the mid-1970s, a much higher figure than for most African countries (World Bank 1978b). Zambia's urban constituency became a formidable constraint on policy reform which damaged the economy in three ways. First, it retarded competitive diversification. Second, it blunted the sensitivity of manufacturing and agriculture to market signals. Third, it represented a formidable obstacle to economic reform.

ADJUSTMENT TO EXTERNAL SHOCK, 1975–9

Zambia's terms of trade halved in 1975–9 compared with 1970–4, in contrast to the mild improvement experienced by PNG's less copper-dependent economy (Table 11.4). The Zambian deterioration was slightly steeper than that for Chile, but the consequences were much more severe because of the Zambian economy's smaller size.

The subsequent Zambian economic trajectory to 1990 was one of an accelerating weakening (like Peru) whereas Chile underwent a sustained recovery from the sharp recession of the early 1970s.

The terms of trade deterioration translated into a negative shock equivalent to the loss of more than 22 per cent of GDP for Zambia. This was twice as large as the shock for Chile. Zambia's brief relief from the chronic current account and fiscal deficits of 1974 quickly evaporated. In 1975 the current account deficit was equivalent to 27 per cent of GDP while the fiscal deficit was equivalent to almost 23 per cent of GDP. But whereas Chile promptly embarked on the radical restructuring of its economy under orthodox policies, Zambia paralleled Jamaica and opted to postpone structural adjustment.

The Zambian government interpreted the mid-1970s copper price fall as temporary and concentrated on stabilization rather than long-term economic restructuring. The consumption patterns adopted during the late 1960s boom, however, proved difficult to curb. The share of government consumption in GDP remained at 25 per cent which, although similar to that of PNG, was a very high level for a developing country and an impractical one in the absence of a positive contribution from the mining sector (Bell 1983). Yet the state sector grew to 30 per cent of GDP and 60 per cent of investment by 1980 (Gulhati 1989) and increasingly drained public revenues.

Government expenditure, which had decelerated through the early 1970s, fell in real terms over 1974–9 by 4.5 per cent annually. Revenues fell short of expenditures because non-mining taxes failed to offset the almost total loss of copper revenues (which had provided two-fifths of total revenues). Despite the cuts, Table 12.1 shows that the budget deficit averaged 15 per cent of GDP in 1975–9. Worse, the expenditure cuts not only lagged the fall in revenues, they also fell disproportionately on capital expenditure.

The rate of investment, which had averaged a rather high 34 per cent of GDP in 1972–4, declined through the late 1970s to just under 21 per cent. More ominously, the overall efficiency of investment declined from a disappointing incremental capital-to-output ratio of 7 in 1967–73 to 24 for 1973–9 (Gulhati 1989). Consequently, the GDP growth rate halved through the late 1970s to 1.2 per cent. This compares with 4 per cent for Peru, 2.4 per cent for Chile and 2.2 per cent for PNG. Despite the sharp economic slowdown and a depreciation in the real exchange rate of two-fifths in 1974–8 (Wood

1988), Zambia's current account deficit remained stubbornly high at 10 per cent of GDP in 1975–9. This is because the devaluation did not elicit the required supply-side expansion of non-mining exports. Rather, the higher import prices that resulted from the devaluation caused the volume of imports to halve in 1974–9. This cut output in import-dependent sectors such as manufacturing and mining.

Under these circumstances, foreign borrowing was the principal adjustment mechanism to external shock. The annual increments in foreign debt in 1975–9 exceeded $400 million, equivalent to 17 per cent of GDP each year in the mid-1970s. Zambia's total foreign debt tripled over 1974–9 to $3 billion, a level slightly above total GDP and more than twice the ratios for Chile, Peru and PNG. The fraction of short-term financing in government debt leapt from half to almost 90 per cent. Real interest rates turned negative and discouraged saving while credit was rationed and poorly allocated. Domestic public borrowing raised domestic inflation to nearly 17 per cent in the late 1970s. By then the Zambian economy, like that of Bolivia, was highly dependent on a weakening mining sector.

LAGGED ADJUSTMENT, 1980–8

The Zambian terms of trade improved somewhat through 1979, albeit to a level barely half that of the early 1970s. As the current account and budget deficits eased in 1979 expectations rose for brighter medium-term prospects. Zambia, like the other mineral economies, allowed the real exchange rate to strengthen. The increase was 13 per cent and plateaued in 1979–82. GDP grew vigorously through 1979–81 after three consecutive years of decline. Debt accumulation slowed, albeit to a rate that was still equivalent to an extra 10 per cent of GDP annually.

But, as elsewhere, the economic improvement proved a false dawn which postponed structural change and thereby made the subsequent adjustment even harsher and more unpalatable. The deterioration in the terms of trade inflicted a negative shock on the Zambian economy in 1979–83 of 13.6 per cent of GDP (Table 12.4). This was smaller than the mid-1970s shock or that experienced by PNG in 1979–83 but the adverse effect was magnified by the global debt crisis. By 1983 Zambian foreign debt amounted to $3.7 billion and debt service to a crippling 50 per cent of exports (Norton 1988).

Table 12.4 External shocks, Zambia, Chile and Papua New Guinea, 1970–87

Terms of trade	*1970–4*	*1975–9*	*1980–3*	*1984–7*
Zambia	216.5	101.3	82.2	73.2
PNG	121.2	127.0	93.1	93.4
Chile	192.6	103.4	87.3	80.1

External shocks (% GDP)	*Trade shock 1974–8*	*Trade and interest shock 1979–83*
Zambia	−22.6	−13.6
PNG	5.9	−14.9
Chile	−10.6	−3.2

Source: World Bank 1990a; methodology after Sachs 1985

Zambia could no longer adjust by borrowing abroad and it sought IMF assistance with structural change. As in Jamaica, the IMF-backed orthodox measures introduced at the beginning of 1983 required reinforcement when mineral prices were even lower than expected. They comprised devaluation, further public expenditure cuts and reduced central controls. The exchange rate adjustment was achieved through a crawling peg regime. Although the nominal exchange rate declined to barely one-third its 1980 value by 1985, the IMF still regarded this as too high for the scale of economic restructuring required (Ndulo and Norton 1987).

Quotas were removed from fifty items and tariffs were narrowed to a 15–100 per cent range, with most imports carrying a duty of 30–40 per cent (MacBean 1987). Exporters located in non-urban areas were granted maximum income tax relief and were allowed to retain half their foreign exchange. The copper industry was unwisely excluded from this and limited to only 35 per cent foreign exchange retention (Makgetla 1986). Sizeable trade surpluses emerged and the current account improved—but it remained in deficit to the equivalent of 6.5 per cent of GDP in 1983–5. But one result was recession: the real value of imports slumped to barely half the 1980 level and one-quarter that of 1974.

Zambia was now firmly enmeshed in a corroding negative feedback loop (Figure 3.1). Recession pushed the share of investment in Zambian GDP down to one-third of its 1972 level (Table 12.2), a figure well below the Syrquin and Chenery norm. GNP contracted each year during 1981–4 and scheduled external debt service approached 70 per cent of exports by mid-1985. The cost of

adjustment bore down on import-dependent activity and urban residents. In an economy like that of Zambia, an exchange rate depreciation shifts resources from urban to rural interests, as does the removal of price controls that have discriminated against small farmers (Zambian price controls in 1974–9 had turned the barter terms of trade 30 per cent against farmers).

The scale of the required change was especially painful for the urban poor. But their understandable resistance only served to exacerbate the root problem further. When the improvement in the fiscal deficit reversed, the IMF demanded stronger measures. All remaining controlled prices other than that for maize were abolished, but the key measure was a foreign exchange auction, introduced in 1985. It was badly implemented and the real exchange rate overshot, depreciating to half its early 1980s level. This stoked domestic inflation which neared 50 per cent in 1986 compared with historic levels of 12 per cent or less.

In order to achieve a strong real depreciation in the exchange rate, the government pursued wage restraint in both the public sector and private industry. As a budget deficit equivalent to 30 per cent of GDP loomed in 1986 (against the IMF target of 9 per cent by 1987), the government removed the $800 million subsidy on maize. Maize prices doubled and triggered urban riots which spread from the Copper Belt to Lusaka. The subsidy was restored and further cuts were sought in social and economic investment.

The government dropped its orthodox policies, unnerved by the large depreciation of the currency and threats of civil unrest. External debt, which had levelled off at around $3.7 billion in the early 1980s, jumped to $6.45 billion in 1987 and the debt-to-GDP ratio reached a staggering 370 per cent. The foreign exchange auctions were halted and the exchange rate was pegged but at too high a level to improve export prospects. Further intervention froze domestic prices, turned commercial interest rates negative and limited debt service to 10 per cent of exports.

Although the restoration of controls did dampen urban unrest, it did nothing to arrest the economic deterioration and IMF assistance was once more sought in 1989. Substantial debt relief seemed imperative, given the scale of debt service and the repeated failure of exchange rate shifts to trigger an adequate supply-side response. The reasons for this are now examined with particular attention to the long-term cumulative build-up of rigidities in both the mining and non-mining tradeables sectors.

THE COPPER SECTOR'S DECLINE

The efficiency of the Zambian mining sector was corroded during the country's protracted stabilization after the first price shock. The share of mining in Zambian GDP halved over 1972–88 (Table 12.3). This reflected not only the fall in real copper prices but also a one-third reduction in physical production. Zambia's share of the global copper market fell from 11 per cent over 1969–71 to 4.7 per cent over 1986–8, in contrast with Chile and Peru which both doubled their market share, to 21 per cent and 6 per cent, respectively.

Post-nationalization decline

Zambian copper output peaked at 720,000 tonnes in 1969, the year before majority state ownership was secured. Plans for expansion to 1.2 million tonnes proved unrealistic and output dropped to 592,000 tonnes in 1982 before falling again to 416,000 tonnes in 1989. Geological problems account for about half this decline: the industry experienced a 20 per cent reduction in ore quality during the 1970s which reduced effective capacity. By then the ore reserves were estimated to be sufficient to maintain existing production levels for only fifteen to twenty years. The decline was also partly due to mismanagement.

Consistent with the Caribbean model of nationalization outlined in Chapter 9, the corrosion of the commercial efficiency of the state mining firm was gradual rather than abrupt. In fact, the Zambian government was initially cautious, taking a 51 per cent equity stake in the MNC subsidiaries in 1970 but leaving its private partners with managerial responsibility. But in 1974 the government cancelled the MNC management contracts and directly appointed the executives. The state equity stake increased to 60 per cent in 1979 when the MNCs declined to invest further, and the two original mining companies were merged in 1982 to form Zambian Consolidated Copper Mines (ZCCM).

Unlike Codelco, ZCCM lacked adequate managerial autonomy. From 1974 the state was represented at board level by the Ministries of Mines, Finance and Development Planning who aimed to maximize profit subject to maintaining employment and the Zambianization of personnel (Radetzki 1985). The fraction of expatriates in the mine workforce declined from one-tenth to one-twentieth, partly on account of Zambianization but also because of deteriorating

conditions of service. There were not enough trained Zambians to take the expatriates' place and other firms poached workers trained by ZCCM so that the quality of ZCCM management weakened. Meanwhile, unemployment fears prevented ZCCM from shedding labour and overmanning grew worse: the 50,000 or so direct workforce was estimated to generate some 500,000 additional jobs. Consequently, although output declined through the 1970s, the number of copper industry workers actually rose from 48,470 to 57,750.

State ownership, in addition to constraining management, also weakens the ability to finance investment—whether for expansion or maintenance (Shafer 1983). From 1975, the Zambian mines began skimping on maintenance partly to contain losses (Table 12.5) and partly in response to inadequate foreign exchange allocations. These measures, in combination with the devaluation in the mid-1970s, maintained costs in current terms but costs jumped to 70 per cent above the global mean in 1980 when output fell and the exchange rate strengthened (Table 12.6). The 1983 devaluation restored cost competitiveness but the government persisted in under-funding

Table 12.5 ZCCM financial performance

Year	*Output (million tonnes)*	*Sales ($ billion)*	*Net profit ($ billion)*	*Net profit/ assets (%)*
1972	0.701	0.755	0.164	19
1973	0.683	0.936	0.204	19
1974	0.710	1.493	0.452	37
1975	0.648	1.161	0.141	9
1976	0.712	0.859	(0.006)	(0.31)
1977	0.659	1.028	0.029	2
1978	0.654	0.807	(0.026)	(2)
1979	0.584	1.116	0.113	7
1980	0.611	1.329	0.172	10
1981	0.568	1.312	0.068	4
1982	0.581	1.061	(0.189)	(11)
1983	0.563	0.866	(0.128)	(6)
1984	0.532	0.723	0.001	0
1985	0.544	0.760	0.001	0
1986	0.514	0.681	(0.008)	(0.2)
1987	0.523	0.850	(0.068)	
1988	0.473	1.439	0.045	
1989	0.416			

Sources: Radetzki 1985; 1972–82, Gulhati 1989; 1983–6, *Financial Times* 1988a, b, 1989

Table 12.6 Changing competitiveness of Zambian copper, 1975–85 (¢/lb)

Year	Direct cost[a]	Indirect cost[b]	Interest	Gross cost[c]	Co-/by-product credit[d]	Net cost	Percentage of industry average[e]
1975	52.6	7.9	2.7	63.2	1.6	61.6	126.0
1980	72.6	16.8	4.0	93.4	9.1	84.3	168.9
1984	53.3	13.0	7.5	74.8	7.8	67.0	118.2
1985	46.3	13.0	6.5	65.8	10.0	55.8	110.3

Source: Takeuchi *et al* 1987:60, 77

Notes: [a] *Direct cash operating costs, including mining, refining, freight and marketing*
[b] *Administrative and corporate overhead, royalties, research and exploration.*
[c] *All interest expenses.*
[d] *Revenue from by-products.*
[e] *Representing 80 per cent of global production.*

ZCCM. The under-funding resulted from a reform of mineral taxation which was meant to syphon off the 'windfall' revenues expected from the devaluation.

The state copper firm's product strategy further reduced its ability to adjust to deteriorating markets. Viterbo and Wallard (1984) compared the ZCCM strategy with that of Phelps-Dodge, the second largest US producer. Phelps-Dodge used its vertically integrated product strategy (controlling production from mine to fabrication) to maintain the output and profitability of its downstream operations. It closed its own least profitable mines when prices fell and substituted cheap ore from unintegrated firms. In those mines which it continued to operate, Phelps-Dodge used lay-offs and conservative rehiring to achieve rapid cost savings.

The successful Chilean state mining firm reacted to deterioration in its market by embarking on a rapid expansion of production to offset declining unit revenues. ZCCM pursued neither an expansion nor a planned retrenchment. One reason was that its marginal mines were labour-intensive underground ones with technical as well as socioeconomic obstacles to their temporary closure. Such mines are quickly inundated with water and may be impossible to re-open. Moreover, ZCCM was not vertically integrated so that mine closure would immediately result in the loss of downstream customers whereas Phelps-Dodge faced no such risk. Even so, Viterbo and Wallard estimate that tactical closure would have cut ZCCM's average costs by one-tenth.

Post-1983 rehabilitation efforts

Some degree of privatization might have provided the capital with which to reduce ZCCM debt and boost investment. However, the government rejected a $2 billion privatization scheme for fear of large-scale redundancies among the 60,000 workforce. Instead, it implemented a $300 million rehabilitation scheme, backed by the World Bank, the African Development Bank and the EC. Yet ZCCM's decapitalization continued during the rehabilitation drive because of the government's tax policy.

As noted earlier, the government introduced a new windfall tax to secure the extra revenues which were expected to follow the 1983 devaluation. The rate of 68 per cent netted very little new revenue because of accumulated allowances and so the government levied a mineral export tax at 8 per cent on total revenues in 1983, rising to 13 per cent in 1985. The tax resembled Jamaica's bauxite levy: it penalized ZCCM because it was unrelated to profitability and efficiency. But the government came to rely heavily on it (by 1986 the tax provided one-quarter of government revenues). Nor did foreign exchange rationing help ZCCM which received barely two-thirds of its needs (*Financial Times* 1986d, 1987). ZCCM allotted half of its foreign exchange to debt service, so that the shortage cut imports of trucks and refinery machinery (World Bank 1986).

ZCCM's five year plan (1983–8) called for the closure of the oldest mine along with four processing plants and for the moth-balling of three other mines. The workforce was to decline by 18 per cent by 1988, primarily through natural wastage and early retirement. Unrelated subsidiaries were sold off and some decentralization of decision-making was implemented. Finally, the startup of the third phase of the $260 million Nchanga tailings leach plant was expected to improve costs. It would add 50,000 tonnes per year of low-cost copper output, but unexpected technical problems caused delays (*Financial Times* 1987).

Although higher prices restored profitability through 1988 and 1989, the improvement did not match that of ZCCM's competitors. Moreover, production would fall further in the early 1990s when the Ndola deep mine closed. In fact, copper output was expected to drop by one-third through the 1990s. Yet diversification into competitive agriculture and manufacturing had barely begun, even though it had been targeted twenty-five years earlier.

UNHEALTHY STRUCTURAL CHANGE

The real decline in Zambian per capita income shown in Table 12.1 reflects slow GDP growth as well as the real depreciation of the exchange rate against the US dollar. Zambia, like Jamaica and Chile which also experienced a sharp fall in per capita GDP, had difficulty in achieving a compensatory re-expansion of its prematurely shrunken agriculture. Zambian agriculture increased its share of GDP by just 1.6 per cent in 1972–88, barely half that of Chile and well short of offsetting the 12.9 per cent contraction in the share of mining (Table 12.3). Moreover, in sharp contrast to Chile, Zambian agriculture failed to expand its exports significantly. Nor could the overly protected manufacturing sector provide much compensation.

Overprotected manufacturing

The expansion of manufacturing's share in GDP shown in Table 12.3 reflects price effects rather than sectoral dynamism. After growing strongly through the first decade of independence, real manufacturing output stagnated through the next decade and grew at a modest 3.4 per cent through the reform period 1984–8. The sector's high import dependence rendered it vulnerable to foreign exchange shortages. Capacity use fell to 30 per cent by the mid-1980s (*Financial Times* 1985f) when only textiles and clothing produced higher volumes than a decade earlier (Dewar and Seshamani 1987).

Like Jamaica, Zambia's weak manufacturing sector resulted from persistently high levels of protection and reluctance to reform. The effective rate of protection on manufactured goods in the mid-1970s averaged 150 per cent, a remarkably high level, with capital and intermediate goods generally below the average and consumer goods well above (Karmiloff 1990). Yet after the 1974 copper price shock, protection was actually increased and reform was postponed once more. By the 1980s only wood products and food products were potentially globally competitive (Ndulo and Norton 1987). Zambian consumer durable goods and heavy intermediates had domestic costs around three times world levels (Karmiloff 1990).

Manufacturing efficiency was also undermined by the expansion of low-autonomy state enterprises to account for 55 per cent of production. Price controls, investment licensing and negative real

interest rates favoured large capital-intensive production units. As the economy weakened the state firms faced low capacity utilization, overmanning, inefficient management, frozen prices and inadequate cash flow. The net claims on public finances of the state firms doubled to 10 per cent of GDP in the decade to 1979 (World Bank 1983).

The liberalization after 1982 cut state enterprise losses where capable managers were given free rein in setting prices and hiring workers (Dewar and Seshamani 1987). New investment was required, however, along with the more efficient use of existing plant but it was deterred by macroeconomic uncertainty. Foreign exchange shortages, rising inflation and difficult market access made for daunting prospects for export-oriented manufacturing.

Zambia is a land-locked country with deteriorating infrastructure but unlike Bolivia there are hopeful immediate manufacturing opportunities in greater participation in regional markets. The Zambian comparative advantage lies in the processing of non-metallic minerals, metals and food (Dewar and Seshamani 1987). Yet agriculture offered better growth prospects, in particular the peasant sub-sector which still employed the majority of the workforce in the 1980s.

Reversing agricultural neglect

Zambia's initial post-independence failure to stimulate peasant farming through co-operatives was followed by neglect. Instead, government attention shifted to mechanized settlement schemes in the fertile southwestern plateau even though returns were low or negative (Levi and Mwanza 1987). But dependence on imported food increased and, given the favourable natural resource base, this indicates that government policy was primarily responsible for the poor agricultural performance (Good 1986).

A wedge was driven by government subsidies between comparative advantage and the actual production. The government emphasized maize at the expense of other crops in a misguided effort to spread the green revolution. Yet the heavily leached acidic soils in the northern part of the country made maize unsuitable there. Millet, sorghum, cassava, sweet potato and beans were better adapted but neglected (Dumont and Mottin 1983). Meanwhile, the maize *pricing* policy absorbed large subsidies.

A second mistaken intervention concerned fertilizer pricing after

the sharp price rises associated with the oil shocks. Retail prices of fertilizer were heavily subsidized at one-third to two-thirds of border prices. This benefited the heaviest users who were the larger commercial farmers and imposed sizeable foreign exchange demands. Total agricultural subsidies accounted for around 10 per cent of recurrent expenditure through the 1970s and peaked at 19 per cent in 1980 before falling sharply back during the reforms.

A third policy deficiency arose from the state firms which distributed farm inputs and marketed produce. The parastatals lacked a clear commercial mandate—including the need to be profitable. The system was both technically and economically wasteful: it subsidized remote farmers by maintaining uniform prices irrespective of accessibility. This encouraged the transport of maize to milling centres and its return to production locations, even though the cost of doing this greatly exceeded that of more labour-intensive local milling (Kydd 1988).

The 1980s reforms encouraged the large commercial farmers to specialize more and more in export crops (tobacco production showed particularly good prospects) leaving food production to small farmers. The latter numbered some 620,000 (five-sixths subsistent) and supported half the population on only 30 per cent of the cultivated area. Their extensive production methods (shifting cultivation in the north and hoe/ox ploughs in the west) were facing land shortages (Kaplan 1979). More intensive cultivation methods were therefore required, such as leguminous crops, which did not rely on fertilizer inputs or damage the soils. Key constraints were shortages of finance, draft power and labour (World Bank 1986).

The periodic price rises of the 1980s did increase agricultural production. The agricultural growth rate rose to 2.4 per cent annually in 1980–4, half as fast again as during the 1970s. However, since population growth rose to more than 3 per cent per annum in the 1980s, agricultural output declined on a per capita basis. The reforms were a long way from achieving the rapid agricultural expansion required to alleviate food shortages and retard rural-urban drift. Yet agricultural growth would underpin competitive industry by boosting rural purchasing power and providing a growing domestic market.

Although by the late 1980s Thomas and Weidermann (1988) detected some improvement in agricultural production which benefited the (majority) rural poor, the short-term cost fell on the (minority) urban poor whose incomes had declined sharply from the mid-1970s but who resisted economic pressure to leave the city and

seek rural employment (Levi and Mwanza 1987). The conflict between these two interest groups became critical in the 1980s with the urban groups the strongest because of their greater ability to intimidate the government.

CONCLUSION

Zambia mismanaged its mineral dependence and triggered a strong negative feedback loop (Figure 3.1). This was in spite of the fact that Zambia had the potential advantage for coping with external shocks of a strong government which espoused long-term national welfare goals. Actual government behaviour conformed more closely to that of a weak regime which appeased rent-seeking urban groups. This situation had already weakened the economy before the first shock occurred. The subsequent reluctant adjustment via orthodox policies, like that of Jamaica and Peru, then lagged the pace required. Zambia also relied to a remarkable degree on foreign borrowing rather than economic restructuring.

The Zambian government was aware of the need for competitive diversification but made little progress during either boom or downswing. Zambian reliance on copper increased during the booming post-independence decade as diversification efforts were voided by excessively interventionist policies which entrenched an urban labour aristocracy. The peasant sector bore the brunt of this urban bias in terms of low and distorted farm prices, so that an important cushion against mineral revenue decline was lost.

In common with many African mineral economies (but Botswana is an exception), the Zambian government's optimistic expectations towards both structuralist policies and mineral rents masked the reality which was that of a transfer of resources to non-competitive sectors. The rigidity of the latter then meant that repeated exchange rate shifts failed to elicit the required supply-side response. Like Jamaica, Zambia shows that state intervention needs to be carefully targeted, consistent with administrative skills and mindful of rent-creating risks.

Meanwhile, consistent with the Caribbean nationalization model, efficiency and output in the copper sector declined and at a rate much faster than Zambia's dwindling ore reserves warranted. Yet so dire were the immediate pressures that the government further weakened ZCCM even though Zambia's mineral dependence remained high. The government gave insufficient autonomy to ZCCM

and imposed onerous taxes which neglected profitability and decapitalized the state enterprise.

Consequently, the Zambian mines remain the backbone of the economy as they approach the end of their life. Yet their resilience is corroded. It would certainly have been preferable to regard the mines as an economic bonus with which to accelerate the competitive diversification of the non-mining tradeables sector.

Part V

CONCLUSIONS AND POLICY IMPLICATIONS

13

MINING AND SUSTAINED DEVELOPMENT

THE NEGLECT OF COMPETITIVE DIVERSIFICATION

This study confirms the scepticism of Gelb (1988) concerning the advantages of a bountiful natural resource endowment and it also reinforces the resource curse thesis. It reveals a tendency for the mineral resource to engender an optimistic bias from the governments of mineral economies which leads to an imprudently high level of dependence on the mineral sector. A corollary of this bias is the neglect of the competitive diversification of the non-mining tradeables such as agriculture and manufacturing.

However, with the exceptions of Zambia and, perhaps, Bolivia among the six countries studied here, such neglect would be sanctioned by the theory of sustainable development. This is because the depletion periods for the mineral resource in the other four countries are projected to be lengthy and certainly more than a single generation. Depletion theory indicates that, using all but the very lowest discount rates, only when depletion is two or so decades away does the need to make provision to create an alternative income-generating stream to mining begin to loom large. More specifically, the fraction of net revenue which needs to be allocated to asset replacement (or to asset substitution) is less than one-third of the total net revenue when more than two decades of reserves are available and the fraction falls sharply as the longevity of the reserves increases.

Yet, the risks of mineral dependence do not come solely from reliance on a depleting asset. They also arise from two other sources, namely, the threat of mining sector marginalization by new mineral finds (or by synthetic substitutes) and—the critical factor identified

in the present study—the volatile nature of mineral sector revenues. That volatility arises from the capital-intensive production function of mining which leads to market rigidity (an inflexible response to price swings) which manifests itself in a series of booms and slumps. A second consequence of such a production function is that the predominant linkage from mining is fiscal, yielding alternative windfalls and shortfalls in government revenues which, unless very prudently managed, amplify the booms and slumps. Finally, the rents from minerals have been such that over several decades they give rise to the weak non-mining tradeables sectors which are a marked characteristic of such economies.

It is frequently argued that the mineral economies are not different from other primary product producers in regard to managing staple price volatility (Daniel 1990). Certainly, there are soft commodities such as sugar whose production function resembles that of mining (Auty 1985) and whose markets also exhibit marked price volatility (MacBean and Nguyen 1987). Yet there is little evidence to suggest that the soft mineral commodity price swings inflict such severe Dutch disease damage on the other tradeables sectors as does mining (Wheeler 1984; Faini and de Melo 1990). The reason for this appears to lie in the second and third factors cited above, namely government amplification of the volatility effects through imprudent fiscal linkage absorption and the presence of sufficiently large rents to render most of the non-staple tradeables uncompetitive. It may therefore be the case that the mineral economies are part of a continuum regarding negative spillover effects from staple price volatility, albeit at the more vulnerable end of the range.

Uncertainty over long-term price trends emerges from the present study as one important reason for the poor performance of the mineral economies. Macroeconomic projections were repeatedly upset by unexpectedly abrupt changes in mineral prices. The brief recovery in mineral price projections associated with the second oil shock proved especially damaging over 1978–82: all six countries studied here disadjusted in anticipation of higher mineral revenues which failed to materialize. The false boom triggered doctrinaire orthodox policies in Chile and Peru but encouraged the relaxation of orthodox stabilization measures elsewhere, as in Jamaica and Zambia. The net effect was an exchange rate strengthening which inflicted Dutch disease effects on even the most mature of non-mining tradeable sectors.

Such abrupt changes in mineral prices and revenues can cause sharp shifts in the exchange rates of individual mineral economies which are of sufficient magnitude to transform the competitiveness of the non-mining tradeable sectors dramatically. The view of the orthodox theorists that such exchange rate shifts smoothly regulate the relationship between the mining, non-mining and service sectors is not borne out by this or other research (Wheeler 1984; Krugman 1987; Gelb 1988; Faini and de Melo 1990). The manufacturing sectors of the mineral economies tend to be highly protected and to behave, in effect, like non-tradeables sectors (Lewis 1982).

The structuralists are therefore correct to argue that mineral-driven exchange rate shifts do not elicit a smooth adjustment from the non-mining tradeables sectors. Instead, exchange rate appreciation during mineral booms tends to weaken the non-mining tradeables through Dutch disease effects while the required compensating expansion of the non-mining tradeables sector during mineral downswings tends to be hesitant at best. In fact, this negative symbiosis between the volatile shifts of the mineral sector and the rest of the tradeables sector is the key impediment to sustainable development in hard mineral economies.

A significant finding of this study is that the damage inflicted on the non-mining tradeables sector may drain resources from the mining sector, thereby corroding the efficiency of what all too frequently becomes the sole internationally competitive sector. Under such circumstances, the two principal concerns of sustainable development, substitution for the depleting mineral asset and minimizing environmental degradation, are subverted to medium-term economic crisis management. It is the cumulative corrosion of the negative feedback loop which makes the containment of Dutch disease a prerequisite for the sustainable development of mineral economies.

The negative symbiosis is at the heart of the resource curse thesis. Even the best economic performance by the hard mineral economies was disappointing. Compared with the developing countries as a whole, the six mineral economies analysed here grew much more slowly. Yet the six encompass a wide range of responses to the price shocks during the post-1973 period of heightened uncertainty in the international economy. Such differences provide important clues concerning both the processes at work and the means of ameliorating the potentially harmful effects of mineral-driven development.

PRE-CONDITIONS AND EXTERNAL SHOCKS

The responses of the mineral economies to external shocks cannot be explained either by differences in the political economy pre-conditions between the countries or by variations in the size of the external shocks which they experienced. Rather, they reflect critical differences in the policies pursued. If anything, there is an inverse relationship between the actual resilience of the mineral economies and their potential resilience as indicated by either the pre-conditions or the severity of the subsequent shocks.

The early 1970s pre-conditions

The political economy of the four developing American countries before the first oil shock showed varying degrees of resilience. Peru enjoyed political stability throughout the early 1970s while a strong government also emerged in Jamaica after an election, leaving pre-Pinochet Chile and Bolivia with the weakest regimes. The economies of the four developing American countries were also at differing levels of equilibrium in the early 1970s. Chile experienced a rapid and severe economic deterioration in 1971–3. Economic growth faltered in both Jamaica and Bolivia but Peruvian economic growth accelerated.

The Peruvian economy had a second advantage (which in this case it shared with Bolivia), namely a sizeable agricultural sector with which to cushion against economic downswing. This was because pre-1970s Dutch disease effects had been less severe in Bolivia and Peru than in the two richest countries, Chile and Jamaica. This positive correlation between higher levels of per capita income and the severity of Dutch disease effects was also observed among the oil-exporting countries (Auty 1990a). In summary, Peru had the most favourable political economy in the early 1970s, followed by Jamaica and then Bolivia, with Chile in the weakest position.

External shocks and economic performance, 1970–90

The magnitude of the external shocks experienced by the four American countries varied considerably (Figure 13.1). Bolivia enjoyed positive shocks after both 1973 and 1979 while the first oil shock was also positive for Jamaica. Both shocks were negative for

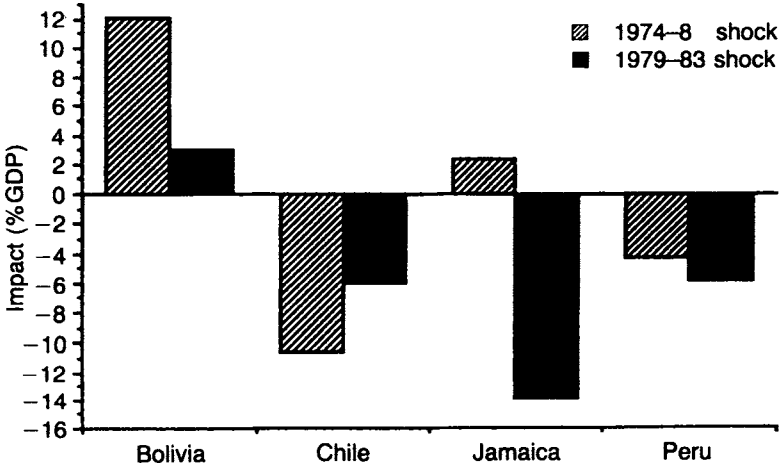

Figure 13.1 Impact of external shocks
Source: World Bank 1989a

Peru and Chile, and the latter experienced an especially large negative shock in 1973. Yet, if there is any relationship at all between external shocks and economic performance, it is that the economic trajectories traced by the four countries over 1972–88 are *inversely correlated* with both the scale of the shocks and the degree of favourableness of the pre-conditions.

The average GDP growth rate for the four developing American countries deteriorated after the second oil shock, with Peru and Bolivia exhibiting especially sharp declines (Figure 13.2). The trajectory of economic growth traced by both Peru and Bolivia over 1972–88 was one of an accelerating weakening. In contrast, the trajectory of Chile, the most vulnerable country in the early 1970s, was one of sustained strengthening which accelerated sharply through the late 1980s. That of Jamaica was one of abrupt decline followed by a hesitant recovery which lagged that of Chile by much more than might be expected. The average economic growth rates of Chile, Peru and Bolivia were better than that of Jamaica, but they were still barely half the mean for mid-income developing countries.

Chile had most success in reducing its mineral dependence (Figure 13.3) and yet its mining sector was also the strongest of the four developing American countries by the late 1980s. In contrast,

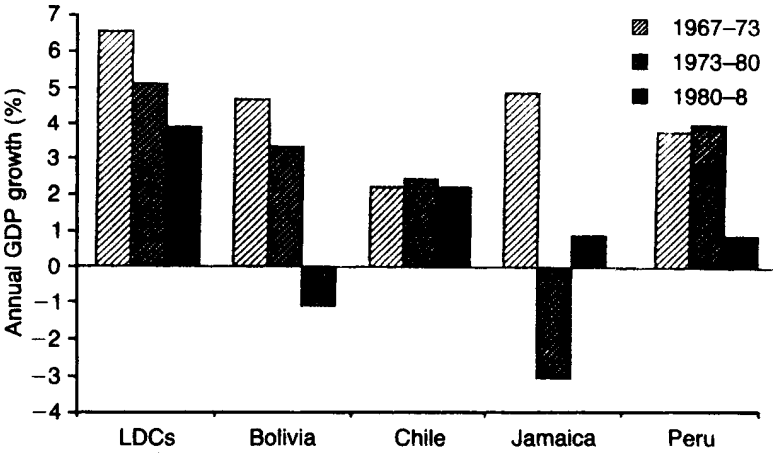

Figure 13.2 Economic growth trends
Source: World Bank 1989a

although Peru's mineral dependence changed little, its mining sector was weakened. Jamaica also weakened the competitiveness of its mineral sector. It did so at the same time as it perversely increased its dependence on mining. Bolivia's neglect of the competitiveness of its non-mining tradeables matched its neglect of its hard mineral sector and led indirectly to the latter's collapse in the mid-1980s. This left Bolivia uncomfortably dependent on hydrocarbons and foreign aid.

Chile emerged from the 1980s as the 'best practice' economy while Bolivia also made spectacular initial progress with its reforms in the late 1980s. In contrast, Jamaica's protracted recovery remained in doubt in the late 1980s, while the Peruvian economy weakened dramatically. The lack of a positive association between economic performance and either the early 1970s pre-conditions or the size of external shocks underlines the importance of the policy variables in determining the economic resilience of mineral economies.

MACROECONOMIC POLICY RESPONSES TO MINERAL PRICE VOLATILITY

Although the structuralists are correct to doubt the resilience of the non-mining tradeables sectors of economies at pre-newly

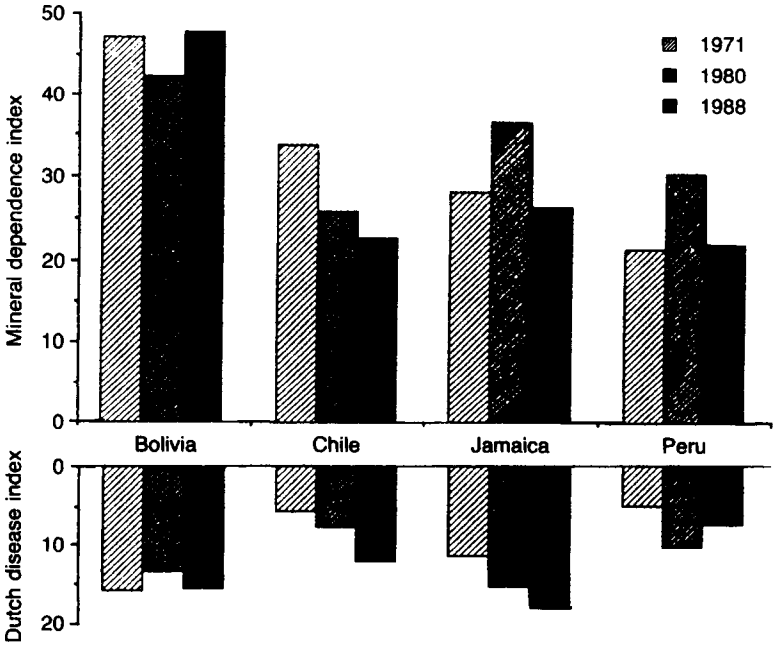

Figure 13.3 Trends in mineral dependence and Dutch disease
Source: CEPAL 1989

industrializing country levels of development, the policy conclusions which they draw are not. In seeking to build up domestic production, structuralists discriminate against competitive sectors such as mining and export agriculture through punitive tax and foreign exchange rate regimes. Meanwhile, the cossetted sectors which benefit from the resource transfers—typically import substitution manufacturing and domestic food production—acquire those resources with only limited incentives to make the most productive use of them. Such favoured sectors have been slow to mature out of their subsidized or protected status. This strengthens orthodox claims that the structuralist interventions are the root cause of the disappointing rigidity of the supply-side response.

In extremis, structuralist solutions have proved counter-productive since, although they have been espoused to shield the weakest social groups from hardship, their failure has invariably resulted in increased

poverty and suffering for just such vulnerable groups. A common feature of the disappointing economic trajectories of all four of the developing American countries examined here is a populist boom. In fact, the populist boom marks the economic nadir of those trajectories.

PNG alone among the countries studied here avoided the populist trap because of its more consistent adherence to prudent macroeconomic orthodoxy. Elsewhere, impatience with such policies during periods of external deterioration prompted the pursuit of 'growth-based' solutions that led to populist booms (Sachs 1989). In the four developing American mineral economies these occurred in Allende's Chile in 1971–3, Manley's Jamaica in 1974–6, Siles' Bolivia in 1982–5 and Garcia's Peru in 1985–8. That of Zambia occurred in the late 1960s during the immediate aftermath of independence.

Nor have such policies been confined to the mineral economies: populist reflationary responses to decelerating growth have also been tried in, for example, Echeverria's Mexico (1972–5), Portillo's Mexico (1979–82) and Sarney's Brazil (1985–8). The results were counter-productive in every case. The populist boom is riskier, however, for the mineral economies because of their heavy dependence on a single sector. Jamaica, Bolivia, Peru and Zambia provide ample evidence that the mining sector's resilience may be impaired during such booms, even as the inter-sectoral transfer of resources engineered by structuralist policies perversely heightens that mineral dependence.

This study, like that of Gelb (1988), finds orthodox economic policies desirable, but it adds an important qualification concerning their character. Chile and PNG both show that orthodox policies, with their emphasis on the prompt correction of fiscal and trade imbalances and their respect for the market-led allocation of investment, reduce the risk of cumulative damage associated with the negative feedback loop to which mineral economy management is prone.

But those countries also show that when orthodox policies become too doctrinaire they expose the economy to excessive mineral volatility. This is because the expansion and contraction of the non-mining tradeables is less smooth in these economies than in others, like the smaller newly industrializing countries, which have achieved higher levels of flexible diversification. To limit the potential damage to the sustainable development of mineral economies requires the abandonment of a central tenet of orthodox

policy, namely sectoral neutrality. This argument is supported below with reference to macroeconomic policy in the four developing American countries.

Misused boom: Bolivia

Unlike most hard mineral exporters Bolivia experienced strong positive shocks from the 1973–4 and 1979 oil price rises (Figure 13.1). However, consistent with Gelb's resource curse thesis, Bolivian windfall deployment was disappointing, like that of most oil-exporting countries. Bolivia used its mineral windfall to boost consumption rather than to increase productive investment. It aborted stabilization measures, lowered taxes and increased foreign debt. Far from promoting healthy structural change, the deployment of the first windfall reversed the progress which had been made under the 1972 stabilization package towards reducing the fiscal and current account deficits.

Bolivia's imprudent windfall deployment together with mounting political instability led to the cessation of foreign lending after 1980. The sudden withdrawal of funds set Bolivia on the road to hyperinflation as the gap left by the withdrawal of foreign funds was filled by recourse to printing money. The control of hyperinflation was hampered by the mineral price falls (tin in 1985 and gas in 1986). Yet, in an interesting corollary of the resource curse thesis, the shock of hyperinflation galvanized sufficient support to enable the Bolivian government to pursue a tough domestic orthodox policy, albeit with a strong pragmatic streak.

Bolivia took advantage of its small size and its status as a low-income country to combine within its recovery strategy an orthodox internal policy with a heterodox external stance. It declined to service its commercial debt and instead secured a significant debt reduction while still sustaining an inflow of multilateral funds. Modest economic growth resumed from 1987. The Bolivian success owed something to the boldness of its orthodox internal policies which evoked external sympathy and admiration. No such advantageous combination of internal and external policies appeared to have been available to Jamaica during its mid-1970s crisis, while Peru's *total* rejection of orthodox policies after 1985 led to international isolation and rapid economic deterioration.

Accelerated weakening: Peru

Peru experienced a less severe external price shock in the mid-1970s than Chile while its government and economy were both potentially stronger than those of Chile. Consistent with the resource curse thesis, however, the richly endowed Peruvian economy experienced accelerating weakness while the Chilean economy strengthened. Peru used part of its initial advantage *vis-à-vis* Chile to adjust more slowly and with less rigour to the first oil shock than Chile did. The delayed Peruvian response to stabilization in the mid-1970s reflected reduced urgency (arising from Peru's stronger position) compared with Chile.

In early 1978 Peru intensified the orthodox measures it had adopted in 1975 and by mid-1979 its stabilization and liberalization policies were showing clear evidence of success (as was also the case in Chile). However, Peru (like Chile) then disadjusted to the second oil shock. This was partly in response to an erroneous forecasting consensus on the growth prospects for the mineral economies and partly through adherence to more doctrinaire orthodox policies. The 1978–81 disadjustment in Peru and Chile resulted in serious Dutch disease effects and increased foreign debt. But, while Chile's military regime persisted with orthodox policies (albeit more flexibly employed than through 1978–82), Peru's new civilian government accepted IMF assistance more reluctantly. Peruvian experience in the early 1980s appeared to confirm the structuralists' views concerning sectoral rigidity.

Peru lost patience with orthodox prescriptions and abandoned them in 1985 in favour of a structuralist policy which incorporated strong redistribution measures. Peru's heterodox policy in 1985–9 resulted in a populist boom which led to steep economic decline (echoing Chile in 1971–3 and Jamaica in 1973–6) and exposed the economy's cumulative weakness. The outcome led Lago (1990) to suggest that the recurrence of populist booms in Latin America indicates an inability to learn. Consistent with his view, Paus (1991) has subsequently attributed Peru's structuralist failure to the way in which the policy was implemented rather than to any inherent flaws in the policy. Chile, however, presents a more optimistic view with very clear evidence of a learning curve.

Best practice: Chile

Chile was initially in the weakest position among the four developing American mineral economies. Yet its prompt adoption of orthodox

policies and its tenacious adherence to them brought a sustained economic strengthening which had established Chile as a model for Latin American political economy by the 1990s. While Peru and Jamaica were pursuing left-of-centre economic experiments, Chile adopted in 1975 an unfashionable orthodoxy which stressed fiscal balance and exchange rate flexibility. Yet the increasingly doctrinaire application of the new policy led to severe Dutch disease effects and inflicted an *internal* negative shock on a par with the external shock of the mid-1970s.

In the aftermath of that setback, Chile resumed its orthodox policies, but in a more pragmatic form. It established new institutions (notably, a mineral stabilization fund) to secure mineral benefits while insulating the rest of the economy from the over-rapid injection or withdrawal of mineral revenues. Chile resumed rapid economic growth and the non-mining tradeables sector continued to perform strongly even through the late 1980s copper boom. Much of the windfall from that boom went into accelerated debt retirement. But the thesis being presented is still incomplete: orthodox policies of a pragmatic nature failed to trigger a robust Jamaican recovery.

Protracted recovery: Jamaica

Consistent with Gelb's findings for the oil-exporting countries, even the relatively strong Jamaican government could not withstand political pressures to use the mineral 'bonus' created by the bauxite levy to boost immediate consumption. Manley engineered a populist boom which was underpinned by the OPEC-style bauxite levy. However, the levy overestimated the country's potential rents from bauxite and alumina exports and therefore accelerated Jamaica's loss of global market share in alumina. Meanwhile, after a brief consumption-led boom the Jamaican economy experienced a sustained and steep contraction.

Yet Jamaican conversion to orthodox policies did not bring Chilean-style success. External shocks certainly played a major role in retarding successful Jamaican recovery through the 1980s. The trade and interest rate shock in 1979–83 was unusually severe (Figure 13.1) while the hurricanes of 1985 and 1988 each reduced growth significantly in those years with knock-on effects through crop damage. One result was a marked contraction in Jamaica's ability to service its debt through the mid-1980s: increased lending combined

with diminished exports to boost the debt service ratio from 19 per cent to 50 per cent 1980–6.

Yet the Jamaican level of investment under the Seaga government remained unusually high relative to other American debtor countries, including Chile. Therefore, inefficient resource *use* was the most significant factor inhibiting economic recovery. In particular, the manufacturing sector failed to sustain an expansion of competitive exports. The important lesson from the Jamaican experience confirms that of Chile: economies at pre-newly industrializing country levels of development may not achieve competitive diversification through the pursuit of orthodox macro policy alone. This is because it neglects micro factors, notably the negative symbiosis between the staple and the rest of the tradeable subsectors.

MICRO POLICY: SECTORAL CHANGE

Differential progress in structural change

A principal reason for the disappointing response of the non-mining tradeables is that the mineral economies, rather like the large newly industrializing countries, have used their resource bonus to nurture slow-maturing manufacturing sectors. They thereby lost an important source of adjustment during mineral downswings. All too often, the failure of manufacturing to compete during mineral price downswings led to pressure for more resources to be transferred into that sector from mining. This further sapped the resilience of the mining sector.

Nor has the agricultural sector in such economies made much progress in reversing the shrinkage effects of Dutch disease. It will be recalled from Chapter 3 that in the early 1970s the agricultural sectors of the wealthier mineral economies (Jamaica and Chile) were already less than half the Syrquin and Chenery norms for countries of their size and level of development. The agricultural recovery which took place during the downswings was modest in relation to total GDP, even in Chile, while neither PNG nor Zambia achieved rates of agricultural growth on the scale they required, despite the large size of their agricultural sectors.

The Chilean reforms of the mid-1970s did, however, lay the basis for rapid structural change which emphasized the country's competitive advantage in primary product exports and resource-based

industry. But as liberalization proceeded, the exchange rate appreciation in 1978–82 severely weakened the non-mining tradeables sector and jeopardized the progress made hitherto. It required pragmatic intervention to protect it, including state assistance to the banking system and a temporary increase in tariff barriers. Once equilibrium had been restored, policy stressed the sustained competitiveness of manufacturing and agriculture, but switched emphasis to moderating mining sector revenue flows rather than to maintaining an industrial policy.

The three other countries made less progress with competitive economic diversification. Peru, which was the most diversified economy in the early 1970s (thanks to its varied primary product exports), rapidly expanded its manufactured exports under the IMF-backed orthodoxy of the late 1970s. However, unlike Chile, Peru's export diversification did not resume after it disadjusted in 1979–82. Rather, Peru's export structure fossilized in the 1980s with the return to import quotas and multiple exchange rates.

Meanwhile, Jamaican manufacturing was even slower to generate competitive exports than that of Peru and when the process did tardily begin in the mid-1980s it was narrowly based and not sustained. By postponing adjustment, Jamaica prolonged the under-investment of the 1970s so that its manufacturing sector seemed likely to be liquidated as liberalization progressed.

Under these circumstances there may well be a case for an industrial policy in Jamaica (and in Bolivia), subject to the country's ability to operate a Korean-style competitive industrial policy. For similar reasons, the immaturity of the Bolivian manufacturing sector (which developed no manufactured exports at all) may justify more active intervention. Again, such a policy would only be justified if political and administrative constraints do not prejudice its effective execution. The consequences arising from the degeneration of an industrial policy into a rent-dispensing system are amply demonstrated by this study. For the moment, however, Bolivia is belatedly following Chile and concentrating on resource-based industry, but it is at least a generation behind Chile in that process.

Mining sector resilience

The expected positive link between strengthening economic trajectory and mining sector resilience is not supported by the experience of the four developing American countries. Of the two strengthening

economies, Chile expanded its global market share while Jamaica lost share. Similarly, the weakening trajectory was associated with both increased market share (Peru) as well as decreased share (Bolivia).

The Chilean mining sector benefited from an early commitment to a competitive exchange rate (the loss of competitiveness during the 1978–82 disadjustment aside). The Chilean state mining firm Codelco achieved adequate autonomy, the mining tax regime was consistent and related to profitability while a mineral stabilization fund was belatedly established in 1985 to syphon off excess revenues during booms. The latter created a potential cushion for macroeconomic policy (and the non-mining tradeables) against mineral price downswing. By the late 1980s Chilean copper output was expanding rapidly and Chile's mining sector was well placed to function as a bonus with which to spur the competitive diversification of the Chilean economy.

In contrast to Codelco, the state mining firms of Bolivia and Peru lacked autonomy and were decapitalized by onerous government revenue demands. Peru also decapitalized its hydrocarbon state enterprise in pursuit of immediate revenues with negative consequences both for long-term tax receipts and energy supplies. More optimistically, Bolivia quickly reformed its hydrocarbon state enterprise in 1985 so that it played a critical role over 1985–8 in maximizing tax generation. It achieved this through its ability to attract overseas finance which allowed it to release the bulk of its revenues to the government.

Peru's increased copper market share reflected the presence of a large MNC mining subsidiary, SPCC, which was more successful in maintaining its efficiency than the state-owned mining firms. Yet, in an echo of the Jamaican government more than a decade earlier, Garcia pursued policies in Peru which discriminated against the mining sector and weakened it even as they increased the country's dependence on minerals and hydrocarbons. Garcia accelerated the decapitalization of the state mining enterprises and caused the MNCs to defer investment.

Jamaica did not nationalize the local subsidiaries of mining MNCs but it did confront them and imposed a tax in the mid-1970s which overestimated the country's mineral rent. The bauxite levy was unrelated to profitability and marginalized Jamaica's alumina so that the country's long-term loss of market share accelerated. Like Peru, a short-term increase in government revenues occurred at the cost of

long-term flows. The levy revenues permitted the postponement of economic restructuring which the first oil shock required Jamaica to make.

Jamaica came to depend on the shrinking levy for current revenues and could not reduce it even though it sapped the mining sector's resilience. Consequently, prior to the reform of the bauxite levy in 1987, even with orthodox macroeconomic policies and efficient MNC subsidiaries the taxation policy error was corroding Jamaican market share. Consequently, like Bolivia and Peru, Jamaica found itself increasingly dependent on a sector whose resilience was being sapped as a consequence of the lacklustre performance of the non-mining tradeables and the government's crisis-driven policies to prop up the latter (employment-intensive) sector. Such remorseless attrition by a negative feedback loop is most clearly illustrated by Zambia.

AFRICAN AND ASIAN EXPERIENCE

The performance of the African and Asian mineral economies studied here is broadly consistent with their continental trend. Certainly Zambia performed rather badly, as did many African mineral economies (Wheeler 1984), including Zaire and Nigeria. However, the success of Botswana cautions against drawing too sweeping a conclusion. Similarly, PNG's creditable performance is consistent with the generally superior economic growth of the Asian developing countries, including the Near East (Auty 1988).

PNG treads water

The late start of PNG with minerals production, like that of Botswana, appears to have been advantageous. PNG and Botswana managed their mineral booms well compared with most mineral economies elsewhere. One reason for PNG success is its consistent orthodox macroeconomic policies, while other factors include the cushioning effects of the large (mainly subsistent) agricultural sector and the slow withdrawal of Australian aid.

PNG also managed its mining sector well: it shrewdly operated a mineral stabilization fund from 1974 which, although initially relatively small, did help alleviate critical revenue shortfall problems—especially after the closure of Bougainville in 1989. PNG skilfully renegotiated MNC mining contracts in its favour without deterring

foreign investment. It retained profit-related taxes but ensured that windfall revenues accrued largely to the state and that the extraction of superior ores did not occur at the expense of other ores.

Because PNG is a relatively recent entrant into mining and has a large and diversified mineral resource base, it faces less pressure to diversify into non-mining tradeables than most mineral economies. However, the three shocks which the country faced in 1974–89 underline the prudence of competitive diversification. PNG's progress in this regard is disappointing and reflects the difficulties that successive governments experienced in managing the country's fragile political unity.

In particular, successful rent-seeking left wage indexation unreformed while secession closed down the Bougainville mine. Relatively high wages combined with exchange rate overvaluation and restrictions on foreign investment in non-mining sectors to retard economic diversification. An industrial policy is unlikely to be successful, given these constraints. Mineral dependence is therefore likely to remain uncomfortably high a generation after the start-up of the first copper mine—even in a well-managed mineral economy.

Zambia's accelerated weakening

There can be little doubt over the urgency for the competitive diversification of the Zambian economy. Zambia is a relatively high-cost copper producer with reserves that are not expected to last more than two decades. The country's increased dependence on copper through the early 1970s was therefore undesirable. Zambia, like most other copper producers, took the late 1960s high copper price as the norm and regarded the mid-1970s price fall as an aberration. More than most it adjusted by foreign borrowing and neglected economic restructuring.

Initial efforts to lift urban living standards towards those of the expatriate minority were inappropriate and proved detrimental to the rural sector. Other interventions to reduce copper reliance were voided by the country's inefficient pursuit of import substitution industrialization. Zambia's favourable mid-1960s prospects went unfulfilled and living standards regressed through the period of mineral price volatility.

Zambia clearly reveals the cumulative impact of policy errors. By the mid-1980s, the cumulative scale of the required adjustment impeded IMF-backed reforms and further delayed diversification into

farming, agro-industry and labour-intensive manufactures. Worse, the state-owned copper firm had insufficient commercial autonomy and, like its counterparts in Bolivia and Peru, was decapitalized. Its competitiveness was seriously eroded so that Zambia lost market share. Without debt relief, Zambia lacked the resources in the late 1980s for a fresh start at diversification which the other minimally diversified countries enjoyed.

POLICY SUMMARY

The experience of the six hard mineral economies confirms the lessons of the oil-exporting countries: mineral booms can corrode the competitiveness of non-mining tradeables and downswing adjustment tends to be lagged and inadequate, even with cautious economic policies. Orthodox macroeconomic policy does help to limit economic damage through its commitment to fiscal caution and a competitive exchange rate. But a central tenet of doctrinal orthodox policy, namely sectoral neutrality, should be rejected. Rather, the mineral sector should be regarded as a bonus. Such a perspective would have encouraged a more effective sterilization of the 1979–81 mineral windfall and dampened the exchange rate appreciation and its associated Dutch disease effects.

A striking feature of all six economies in the early 1970s was the lack of commitment to competitive economic diversification. It was assumed that the primary sector would generate sufficient foreign exchange and revenue bonuses indefinitely. The expansion of high-cost domestic manufacturing via overly-protective infant industry policies held priority, along with domestic food self-sufficiency. Such interventions, favoured by the structuralists, not only failed to redeploy the resources extracted from the competitive sectors effectively, they also threatened the long-term viability of the plundered primary sector itself.

Chile fared best in terms of overall economic growth and structural change, but it took longer than necessary to achieve its success because of a policy error in 1978–82. Contrary to Lago's fears, Chile did learn and put in place institutions with which to mute the gyrations of the mining sector as part of a pragmatic orthodox policy. Elsewhere, Peru's structuralist prescriptions failed spectacularly. Structuralist state intervention may well enhance the rigidity of the non-mining tradeables, but that does not preclude market-conforming

intervention along the lines of a Korean-style competitive industrial policy—provided the political and administrative capacity exist to prevent such a policy degenerating into a rent-dispensing system.

The basic lesson is not that an orthodox policy is superior to a structuralist policy, but rather that the imperfect response of the non-mining tradeables to exchange rate shifts driven by mineral price volatility makes mineral dependence high cost. The sustainable development of mineral economies lies in successful diversification into competitive non-mining tradeables. The mineral sector should not be regarded as the backbone of the economy; instead it should be viewed as a bonus with which to accelerate economic growth and healthy structural change. A pragmatic orthodox policy, preferably supported by effective market-conforming intervention, can achieve this.

REFERENCES

Ambursley, F. (1983) 'Jamaica: From Michael Manley to Edward Seaga', in F.Ambursley and R.Cohen (eds) *Crisis in the Caribbean*, Heinemann, London, 72–104.

Anglade, C. and Fortin, C. (1990) *The State and Capital Accumulation in Latin America,* vol. 2, Macmillan, London, 211–326.

Armas, A.A., Palacios, L.F. and Rossini, R.G. (1989) *El sesgo antiexportador de la politica commercial Peruana: un estudio de protecion effectiva a la mineria,* Mimeo, Lima.

Auty, R.M. (1983a) 'MNCs and regional revenue retention in a vertically integrated industry: bauxite/aluminium in the Caribbean', *Regional Studies* 17, 3–17.

——(1983b) 'MNC strategy and regional growth potential of mining: Caribbean bauxite's forward linkage', in J.B.Ooi (ed.) *Natural Resources in Tropical Countries,* National University of Singapore Press, Singapore, 73–116.

——(1985) 'Export base theory, staple flexibility and tropical regional growth', *Singapore Journal of Tropical Geography* 6, 13–22.

——(1986) 'Multinational resource corporations, nationalization and diminished viability: Caribbean plantations, mines and oilfields in the seventies', in C.Dixon, D.Drakakis-Smith and H.D.Watts (eds) *Multinational Corporations and the Third World,* Croom Helm, London, 160–87.

——(1987) 'Producer homogeneity, heightened uncertainty and mineral market rigidity', *Resources Policy* 13, 189–206.

——(1988) 'Oil-exporters' disappointing diversification into RBI: The external causes', *Energy Policy* 16, 230–3.

——(1990a) *Resource-based Industrialization: Sowing the Oil in Eight Developing Countries,* Clarendon, Oxford.

——(1990b) *Creating Comparative Advantage in HCI: Brazil, Korea and Mexico,* Report to Research Project RPO 675–41, IENIN, World Bank, Washington, DC.

——(1992) 'Industrial policy reform in large newly industrializing countries', Paper presented to DSA Annual Conference, Nottingham.

——and Warhurst, A. (1991) 'Sustainable development in mineral-driven economies', Working Paper, Lancaster.

Ayub, M.A. and Hashimoto, H. (1985) *The Economics of Tin Mining in Bolivia,* World Bank, Washington, DC.
Bailey, J.L. and Knutsen, T.L. (1987) 'Surgery without anaesthesia: Bolivia's response to economic chaos', *The World Today* March, 47–51.
Balassa, B. (1985) 'Adjusting to external shocks: the newly industrializing developing economies in 1974–76 and 1979–81', *Weltwirtschaftliches* 121, 116–41.
——and McCarty, F.D. (1984) 'Adjustment policies in developing countries 1979–83: an update', *World Bank Staff Working Paper 675,* World Bank, Washington, DC.
Baldwin, W.L. (1983) *The World Tin Industry,* Duke University Press, Durham, NC.
Banco Central de Bolivia (1989) *Memoria,* Bank Central de Bolivia, La Paz.
Banco Central de Reserva del Peru (1989) *Peru: Compendio Estadistico del Sector Publico no Financiero,* Sub Gerencia del Sector Publico, Lima.
Bande, J. and Ffrench-Davis, R. (1989) 'Copper prices and the Chilean Economy', *CIEPLAN Notas Tecnicas 132,* CIEPLAN, Santiago.
Bank of Jamaica (1982) *Annual Report,* Mimeo, Kingston.
——(1990) *Annual Report 1989*, Mimeo, Kingston.
Bates, R.H. (1988) *Toward a Political Economy of Development,* University of California Press, Berkeley, CA.
Bell, M.W. (1983) 'Government revenue stabilisation in primary-producing countries: a model for Zambia', *Journal of Modern African Studies* 21, 55–76.
Bird, R.M. (1989) 'Taxation in Papua New Guinea: backwards to the Future?', *World Development* 17, 1145–57.
Blakemore, H. (1983) 'Chile', in H.Blakemore and C.T.Smith (eds) *Latin America: Geographical Perspectives,* Methuen, London, 457–531.
Blanes, J. (1989) 'Cocoa, informality and the urban economy of La Paz, Bolivia', in E.Portes, M.Castells and L.A.Benton (eds) *The Informal Economy,*Johns Hopkins University Press, Baltimore, MD, 135–49.
Casanovas, W.M. (1990) 'Capital accumulation and evolutionary nationalism in Bolivia, 1952–85', in C.Anglade and C.Fortin (eds) *The State and Capital Accumulation in Latin America,* vol. 2, Macmillan, London, 32–53.
Central Bank (1989) *Statistics 1970–88,* Central Bank, Santiago.
Centromin (1987) *Plan de Racionalizacion y Optimizacion,* Mimeo, Lima.
CEPAL (1989) *The Tin Industry in Latin America,* Mimeo, Santiago.
Codelco (1988) *Reorganisation of Chile's Large-scale Copper Mining Sector,* Direccion de Planificacion, Codelco.
Comision Chilena del Cobre (1987) *Estadisticas del Cobre,* Mimeo, Santiago.
——(1989a) *Memoria Anual*, Santiago.
——(1989b) *Estadisticas del Cobre*, Comision del Cobre Chilena, Santiago.
Corbo, V. and de Melo, J. (1987) 'Lessons from the southern cone policy reforms', *World Bank Research Observer 2,* 111–42.
Corden, M. and Neary, J.P. (1982) 'Booming sector and Dutch disease economics: a survey', *Economic Journal* 92, 826–44.
Dahanayake, P.A.S. and Mannur, H.G. (1989) 'Prospects for industrialization

as a strategy for economic development in Papua New Guinea', *NRI Discussion Paper 59,* National Research Institute, Port Moresby.
Daniel, P. (1985) 'Minerals in independent Papua New Guinea: Policy and performance in the large-scale mining sector', *Working Paper 85/10,* National Centre For Development Studies, Australian National University, Canberra.
——(1990) 'Economic policy in mineral exporting countries: What have we learned?', *IDS Discussion Paper 279,* IDS, Sussex.
——and Sims, R. (1986) 'Foreign investment in Papua New Guinea: policies and practices', *Pacific Research Monograph 12,* National Centre for Development Studies, Australian National University, Canberra.
Davis, C.E. (1982) 'Energy and the Jamaican bauxite/alumina industry', *JBI Journal* 2, 33–47.
Dewar, S. and Seshamani, V. (1987) 'Industrial policy issues', in H.O'Neill (ed.) *Transforming a Single Product Economy: Examination of the First Stage of Zambia's Reform Program 1982–86*, Economic Development Institute, World Bank, Washington, DC, 106–60.
Dipchand, C.R. (1983) 'Flow of funds in Jamaica', CSO *Research Papers* 12, 14–33.
Dumont, R. and Mottin, M.-F, (1983) *Stranglehold on Africa,* André Deutsch, London, 31–73.
ECLAC (1989) *The Tin Industry in Latin America: Technological Options and Opportunities for Growth,* ECLAC, Santiago.
Economist (1983) 'Royal hunt of the sol', 26 November, 77–8.
——(1985a) 'Bolivia: Beat inflation—become a peasant', 15 June, 54.
——(1985b) 'Chile's economy', 10 August, 64–6.
——(1985c) 'Tedi not OK', 26 January, 78.
——(1987) 'Peruvian economy: the other path', 19 December, 64–5.
——(1988a) 'Bolivia: doing it by the book', 28 May, 96–101.
——(1988b) 'Now let's slay the other dragon', 30 July, 55.
——(1988c) 'Hype on inflation', 16 July, 73.
——(1989a) 'Garcia's new friends', 1 April, 72.
——(1989b) 'Peru: The general and the cocaleros', 9 December, 74–7.
——(1989c) 'PNG', 19 December, 90–2.
El Serafy, S. (1981) 'Absorptive capacity, the demand for revenues and the supply of petroleum', *Journal of Energy and Development 7,* 73–88.
Enders, T.O. and Mattione, R.P. (1984) *Latin America: The Crisis of Debt and Growth,* Brookings Institution, Washington, DC.
Escobar, J.K. (1982) 'Comparing state enterprises across international boundaries: the Corpoacion Venazolana de Guayana and the Companhia Vale do Rio Doce', in L.P.Jones (ed.) *Public Enterprise in Less Developed Countries,* Cambridge University Press, Cambridge, 103–27.
Evans, P. (1975) *Dependent Development: The Alliance of Multinational, State and Local Capital in Brazil,* Princeton University Press, Princeton, NJ.
Faini, R. and de Melo, J. (1990) 'Adjustment, investment and the real exchange rate in developing countries', *Working Paper Series* 473, Country Economics Department, World Bank, Washington, DC.

Far Eastern Economic Review (1985a) 'Tarnished rainbow', 13 June, 104–7.
(1985b) 'Almost-ready OK Tedi', 15 August, 52–3.
Financial Times (1985a) 'Bolivia teeters on the brink of anarchy', 13 September.
——(1985b) 'Export earning falls worsen Chile debt crisis', 1 February.
——(1985c) 'Hopes and fears of Peru's oil industry', 16 January.
——(1985d) 'Cut urged in tin support price', 13 September.
——(1985e) 'Unhappy mine lessons for New Guinea's villagers', 6 February.
——(1985f) 'Zambia faces economic crunch', 2 December.
——(1986a) 'Peru: a survey', 26 September.
——(1986b) 'Chile's low-cost copper puts the squeeze on competitors', 22 January.
——(1986c) 'Bolivia's own tin crisis', 20 March.
——(1986d) 'Zambia tightening its belt', 10 April.
——(1987) 'Zambia's copperbelt on last notch', 30 April.
——(1988a) 'The cocaine business', 28 November.
——(1988b) 'Bolivians count the cost of their fight against inflation', 10 June.
——(1988c) 'Peru to introduce tough new economic policy', 8 March.
——(1988d) 'The Pinochet recipe for growth', 5 July.
——(1988e) 'Chile: a survey', 28 September.
——(1988f) 'Escondida sells 70 per cent of proposed copper output', 17 February.
——(1988g) 'Peru set to become net oil importer', 23 March.
——(1988h) 'Peru set to step up jungle oil production', 3 March.
——(1989a) 'Bolivia shows how austerity wins votes', 18 May.
——(1989b) 'Peruvian unrest boosts zinc and copper', 3 March.
——(1989c) 'Chile prepares to crack economic mould', 26 January.
——(1989d) 'Election lays siege to Chile's swap programme', 31 August.
——(1989e) 'Tin price may rise to L8,000', 3 May.
——(1989f) 'Ex-King Sugar causes Caribbean dilemma', 17 February.
——(1989g) 'PNG: A Survey', 3 April.
——(1989h) 'PNG outlines royalty and equity sharing formula', 5 May.
——(1990a) 'Chile agrees tax reform package', 28 March.
——(1990b) 'Jamaica: a survey', 12 February.
——(1990c) 'Peruvian mines hungry for foreign capital', 21 September.
——(1990d) 'Peru changes desert into farmland', 22 February.
——(1990e) 'Catalogue of woes for PNG', 20 February.
Fortin, C. (1984) 'Copper investment policy in Chile 1973–84', *Natural Resources Forum* 8, 315–25.
——(1985) 'The political economy of repressive monetarism: the state and capital accumulation in post-1973 Chile', in C.Anglade and C.Fortin (eds) *The State and Capital Accumulation in Latin America,* vol. 1, Macmillan, London, 139–209.
Frischtak, C. (1989) *Competition Policies for Industrializing Countries,* Industry and Energy Department, Policy and Research Series, World Bank, Washington, DC.

Gelb, A.H. (1988) *Oil Windfalls: Blessing or Curse?,* Oxford University Press, New York.

——, Knight, J.B. and Sabot, R.H. (1986) 'Lewis through the looking-glass: public sector employment, rent-seeking and economic growth', Mimeo, Employment and Enterprise Policy Analysis Project, Harvard Institute for International Development, Cambridge, MA.

Ginsburg, N.S. (1957) 'Natural resources and economic development', *Annals of the Association of American Geographers* 47, 197–212.

Girvan, N. (1971) *Foreign Capital and Economic Under development in Jamaica*, Institute of Social and Economic Research, University of the West Indies, Kingston.

Glewwe, P. and de Tray, D. (1991) 'The poor in Latin America during adjustment: case study of Peru', *Economic Development and Cultural Change* 40, 27–54.

Good, K. (1986) 'Systemic agricultural mismanagement: the 1985 'bumper' harvest in Zambia', *Journal of Modern African Studies* 24, 257–84.

Griffith-Jones, S. and Sunkel, O. (1989) *Debt and Development Crises in Latin America,* Clarendon Press, Oxford.

Gulhati, R. (1989) 'Impasse in Zambia: economics and politics of reform', *EDI Development Policy Case Series* 2, World Bank, Washington, DC.

Gwynne, R.N. (1985) *Industrialization and Urbanization in Latin America,* Croom Helm, London.

Haggard, S. (1990) *Pathways From the Periphery,* Cornell University Press, New York.

Harvey, C. (1987) 'Successful macroeconomic adjustment in three developing countries: Botswana, Malawi and Papua New Guinea', *Report,* Economic Development Institute, World Bank, Washington, DC.

——and Lewis, S.R. (1990) *Policy Choice and Development Performance in Botswana,* Macmillan, London.

Harvey, R. (1980) 'Chile's counter-revolution: a survey', *The Economist,* Centre Supplement, 2 February.

Hashimoto, H. (1983) 'The economics of the locational pattern of bauxite processing', in *Case Studies on Industrial Processing of Primary Products,* World Bank, Washington, DC.

Hennert, J.-F. (1986) 'The tin industry', in M.Casson (ed.) *Multinationals and World Trade: Vertical Integration and the Division of Labour in World Industries,* Allen & Unwin, London, 225–73.

Hirschman, A.O. (1977) 'A generalized linkage approach to development, with special reference to staples', in M.Nash (ed.) *Essays on Economic Development and Cultural Change in Honor of Bert F.Hoselitz*, University of Chicago Press, Chicago, IL, 67–98.

Hughes, H. (1988) *Achieving Industrialization in East Asia,* Cambridge University Press, Cambridge.

Idem (1991) 'La importancia economica de la mineria en el Peru', *Institute de Estudios Economics Mineros 5,* Ausonia SA, Lima.

Inter American Development Bank (1990) *Economic and Social Progress in Latin America: 1990 Report,* IADB, Washington, DC.

Jackson, R.T. (1984) 'OK Tedi: lessons hardly learnt', in C.C.Kissling (ed.)

(1984) *Regional Impacts of Resource Development,* Croom Helm, London, 117–33.
Jamaican Ministry of Mines (1973) *Annual Review of the Bauxite/Alumina Industry,* Government Printer, Kingston.
Kaplan, I. (1979) *Zambia: A Country Study,* American University, Washington, DC.
Karmiloff, I. (1990) 'Zambia', in R.C.Riddell (ed.) *Manufacturing Africa,* James Currey, London, 297–336.
Kessel, N. (1977) 'Financial aspects of the mining industry in Zambia', in W.T.Newlyn (ed.) *The Financing of Economic Development*, Clarendon Press, Oxford.
Kincaid, O.K. (1981) 'Conditionality and the use of fund resources', *Finance and Development* June, 26–9.
Krugman, P.R. (1987) 'The narrow band, the Dutch disease and the competitive consequences of Mrs Thatcher', *Journal of Development Economics* 27, 41–55.
Kydd, J. (1988) 'Coffee after copper? Structural adjustment, liberalization and agriculture in Zambia', *Journal of Modern African Studies* 26, 227–51.
Lago, R. (1989) 'The recent jump in copper prices and its effects on the Peruvian economy', Mimeo, World Bank, Washington, DC.
——(1990) 'The illusion of pursuing redistribution through macropolicy: Peru's heterodox experience (1985–90)', Mimeo, World Bank, Washington, DC.
Lal, D. (1983) *The Poverty of Development Economics,* Hobart Paperback 16, IEA, London.
Larrain, F. (1990) 'Public sector behaviour in a highly indebted country: the contrasting Chilean experience 1970–85', Mimeo, World Bank, Washington, DC.
Latin America Bureau (1987) *The Great Tin Crash: Bolovia and the World Tin Market,* Third World Publications, London.
Levi, J. and Mwanza, A. (1987) 'Agricultural policy issues', in H.O'Neill (ed.) *Transforming a Single Product Economy: Examination of the First Stage of Zambia's Reform Program 1982–86*, Economic Development Institute, World Bank, Washington, DC, 161–226.
Lewis, S. (1982) 'Development problems of the mineral-rich countries', *Research Memo 74,* Centre for Development Economics, Williams College, Williamstown, MA.
Lewis, W.A. (1950) 'The industrial development of the British West Indies', *Caribbean Economic Review 2,* 1–61.
Loser, C. (1987) 'Trade liberalization in Chile', *Finance and Development* 24 (3), 16–19.
MacBean, A. (1987) 'Structural adjustment in Zambia', *Working Paper,* World Bank, Washington, DC.
——and Nguyen, T. (1987) *Commodity Policies: Problems and Prospects*, Croom Helm, London.
Maddison, A. (1991) *Dynamic Forces in Capitalist Development,* Oxford University Press, Oxford.
Makgetla, N.S. (1986) 'Theoretical and practical implications of IMF

conditionality in Zambia', *Journal of Modern African Studies* 24, 395–422.
Mikesell, R.F. (1975) *Foreign Investment in Copper Mining,* Resources for the Future, Washington, DC.
Ministerio de Agricultura (1989) *The Chilean Agrarian Sector: Policies and Results,* Kartel Publicidad, Santiago.
Ministerio de Energia y Minas (1989) *Estadisticas,* Mimeo, Lima.
Ministerio de Industria (1989) *Exportaciones de Bienes FOB,* Ministerio, Santiago.
Ministerio de Planeamento y Coordinacion (1989) *Estrategia de Desarrollo Economic y Social,* Mimeo, La Paz.
Ministry of Finance (1989) *Gastos, Ingresos Y Deficit Fiscal 1970–88*, Budget Office, Ministry of Finance, Santiago.
Ministry of Tourism (1990) *Jamaica: Annual Travel Statistics 1988,* Mimeo, Kingston.
Morales, J.A. (1987) *Estudio Integral Del Arancel de Importaciones: Implicaciones Para La Estructura De Proteccion a Aa Industria Manufacturia Nacional,* Mimeo, La Paz.
——(1988) 'Inflation stabilization in Bolivia', in M.Bruno, G.Di Telia, R.Dornbusch and S.Fischer (eds) *Inflation Stabilization*, MIT Press, Cambridge, MA, 307–57.
——and Sachs, J.D. (1988) *Bolivia: 1952–86,* ICS Press, San Francisco, CA.
Moran, C. (1987) 'Economic stabilization and structural transformation: lessons from the Chilean experience 1973–87', *World Development* 17, 491–502.
Nankani, G. (1979) 'Development problems of mineral exporting countries', *World Bank Staff Working Paper 354,* Washington DC.
National Westminster (1987) 'Peru; Economic Brief', National Westminster Bank, London.
Ndulo, M. and Norton, D. (1987) 'Macroeconomic policy issues', in H.O'Neill (ed.) *Transforming A Single Product Economy: Examination of the First Stage of Zambia's Reform Program 1982–86,* Economic Development Institute, World Bank, Washington, DC.
Nelson, J.M. (1990) 'The politics of adjustment in small democracies: Costa Rica, the Dominican Republic, Jamaica', in J.M.Nelson (ed.) *Economic Crisis and Policy Choice,* Princeton University Press, Princeton, NJ, 169–213.
Norton, D.A.G. (1988) 'Resource depletion and terms of trade collapse: the Zambian disease', *Working Paper 88/2,* Centre For Economic Research, University College Dublin.
Nyrop, R. (1981) *Peru: A Country Study,* American University, Washington.
Paredes, C.E. (1990a) The behavior of the public sector in Peru 1970–85: A macroeconomic approach', Mimeo, Brookings Institution, Washington, DC.
——(1990b) 'Trade policy and industrialization in Peru', Mimeo, Brookings Institution, Washington, DC.
Pastor, M. (1991) 'Bolivia: hyperinflation, stabilisation, and beyond', *Journal of Development Studies 27,* 211–37.

Paus, E.A. (1991) 'Adjustment and development in Latin America: failure of Peruvian heterodoxy 1985–90', *World Development* 19, 411–34.
Pearce, D.W., Barbier, E. and Markandya, A. (1990) *Sustainable Development,* Earthscan Publications, London.
Perkins, D.H. and Syrquin, M. (1989) 'Large countries: The influence of size', in H.Chenery and T.N.Srinivasan (eds) *Handbook of Development Economics,* North-Holland, Amsterdam, 1691–753.
Pinto, B. (1987) 'Nigeria during and after the oil boom: a policy comparison with Indonesia', *World Bank Economic Review,* vol. 1, 419–25.
Radetzki, M. (1985) *State Mineral Enterprises: An Investigation into Their Impact on International Mineral Markets,* Resources For the Future, Washington, DC.
Reid, S. (1978) 'Strategy of resource bargaining', *ISER Working Paper 20,* Mona, Kingston.
Robinson, R.J. and Schmitz, L. (1989) 'Jamaica: navigating through a troubled decade', *Finance and Development* 26 (4), 30–3.
Sachs, J.D. (1985) 'External debt and macroeconomic performance in Latin America and East Asia', *Brookings Papers on Economic Activity 2,* 529–73.
——(1987) 'The Bolivian hyperinflation and stabilization', *American Economic Association Papers and Proceedings* 77 (2), 279–83.
——(1988) 'Comprehensive debt retirement: the Bolivian example', *Brookings Papers on Economic Activity 2,* 705–15.
——(1989) 'Social conflict and populist policies in Latin America', *NBER Working Paper 2897,* National Bureau of Economic Research, Cambridge, MA.
Schydlowsky, D.M. (1986) 'The tragedy of lost opportunity in Peru', in J.Hartlyn and S.A.Morley (eds) *Latin American Political Economy; Financial Crisis and Political Change,* Westview Press, Boulder, CO, 217–42.
Scott, C.D. (1990) 'Cycles, crisis and classes: the state and capital accumulation in Peru 1963–84', in C.Anglade and C.Fortin (eds) *The State and Capital Accumulation in Latin America,* vol. 2, Macmillan, London, 106–48.
Scott Palmer, D. (1984) 'Peru: military and civilian political economy', in R.Wesson (ed.) *Politics, Policies and Economic Development in Latin America,* Hoover Institution, Stanford University, Stanford, CA.
Seers, D. (1964) 'The mechanism of an open petroleum economy', *Social and Economic Studies* 13, 233–42.
Segal, J. (1981) 'Steering away from oil', *Petroleum Economist June,* 233–5.
Shafer, M. (1983) 'Capturing mineral multinationals: advantage or disadvantage?', *International Organization 22,* 93–119.
Sharply, J. (1983) 'Economic management and IMF conditionality in Jamaica', in J.Williamson (ed.) *IMF Conditionality*, Institute For International Economics/MIT Press, Cambridge, MA, 233–62.
Sigmund, P.E. (1980) *Multinationals in Latin America: The Politics of Nationalization,* University of Wisconsin Press, Madison, WI.
Smith, C.T. (1983) 'The central Andes', in H.C.Balkemore and C.T.Smith

(eds) *Latin America: Geographical Perspectives,* Methuen, London, 295–311.
SPCC (1979–88) *Reporte Anual,* SPCC, Lima.
Stallings, B. (1990) 'Politics and economic crisis: a comparative study of Chile, Peru and Colombia', in J.Nelson (ed.) *Economic Crisis and Policy Choice,* Princeton University Press, Princeton, NJ, 13–67.
Sub-Gerencia del Sector External (1989) *Peru: Exportaciones FOB,* Lima.
Suttill, K.R. (1988) 'Bolivia's silver lining', *Engineering and Mining Journal,* March, 44–8.
Syrquin, M. and Chenery, H.B. (1989) 'Patterns of development 1950 to 1983', *World Bank Discussion Paper 41*, World Bank, Washington, DC.
Takeuchi, K., Strongman, J.E., Maeda, S. and Ten, C.S. (1987) 'The world copper industry: its changing structure and future prospects', *World Bank Commodity Working Papers 15,* World Bank, Washington, DC.
Thac, C.D. and Lim, D. (1984) 'Papua New Guinea's tax performance 1965–77', *World Development* 12, 451–9.
Thoburn, J.T. (1977) *Primary Commodity Exports and Economic Development,* Wiley, London.
Thomas, S. and Weidermann, W. (1988) 'The impact of Zambia's economic policy reform programme in the agricultural sector', *Development Policy Review* 6, 51–73.
Thorp, R. (1987) 'Trends and cycles in the Peruvian economy', *Journal of Development Economics 27,* 355–74.
UN (various years) *Statistical Yearbook,* UN, New York.
Vernon, R. (1971) *Sovereignty at Bay: The Multinational Spread of US Enterprises,* Basic Books, New York.
Viterbo, P. and Wallard, H. (1984) 'Crisis in the commodities market: are LDCs to blame?' *Natural Resources Forum* 8, 307–13.
Webb, R. (1987) 'Internal debt and financial adjustment in Peru', *Cepal Review* 32, 55–74.
Weil, T.E. (1973) *Area Handbook for Bolivia,* American University, Washington, DC.
——(1982) *Chile: A Country Study*, American University, Washington, DC.
Wheeler, D. (1984) 'Sources of stagnation in sub-Saharan Africa', *World Development* 12, 1–23.
Wood, A. (1988) 'Global trends in real exchange rates, 1960 to 1984', *World Bank Discussion Paper 35,* World Bank, Washington, DC.
World Bank (1978a) *Papua New Guinea: Its Economic Situation and Prospects For Development,* World Bank, Washington, DC.
——(1978b) *World Development Report 1978*, World Bank, Washington, DC.
——(1982) *Papua New Guinea: Selected Development Issues*, World Bank, Washington, DC.
——(1983) *World Development Report 1983*, World Bank, Washington, DC, 75.
——(1986) *Zambia Country Economic Memorandum: Economic Reforms and Development Prospects*, *Report 6355–ZA*, World Bank, Washington, DC.

——(1988) *Papua New Guinea: Policies and Prospects For Sustained and Broad-Based Growth,* vols 1 and 2, World Bank, Washington, DC.
——(1989a) *World Bank Tables 1988–89*, World Bank, Washington, DC.
——(1989b) *Jamaica: Adjustment Under Changing Economic Conditions*, *Report 7753–JM*, Latin America and Caribbean Regional Office, World Bank, Washington, DC.
——(1989c) *Peru: Policies to Stop Hyperinflation and Initiate Economic Recovery,* World Bank, Washington, DC.
World Bank (1989d) *Bolivia: Country Economic Memorandum, Report 7645–BO*, World Bank, Washington, DC.
World Bank (1990a) *World Tables: 1989–90 Edition,* Johns Hopkins University Press, Baltimore, MD.
——(1990b) *Chile: Consolidating Economic Growth*, *Report 8549–CH*, World Bank, Washington, DC.

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