

'ability to pay' principle, the disadvantage from a resource owner's point of view is that there are no royalties when a mine runs at a loss. Although it is true that the resource owner will benefit if profits rise above the inflation rate, the opposite is also true in that the owner will lose out when profits decline. A major disadvantage of the method is the complex calculations in determining the amount on which the royalty must be based, making it subject to '*creative accounting*' practices aimed at reducing the royalty payment. Profit-based royalties are also expensive to administer, and if profits rise at rates less than the rate of interest, the present value of the royalty will fall, providing mineral producers with an incentive to postpone production (Dasgupta et al, 1980).

There are also other variations of mineral royalties worth noting. These include sliding scale or formula-type royalties, additional mining royalties, linking royalties to net resource value, initial payments for permits and/or licences, *de facto* royalties, joint ventures, minimum royalties and retention fees. The rates of *sliding scale royalties* may vary according to grade, price, production or profitability ratios. The sliding scale nature of the South African gold mining lease system (now abandoned) had the advantage that marginal deposits could be worked because of a reduced payment to the government. However, unless the royalty is attached to a minimum, the nature of the formula is such that the resource owner may not receive any consideration at all, making it an unattractive instrument for private resource owners. *Additional mining royalties* are aimed at windfall profits and are frequently used in petroleum agreements. *Linking mineral royalties to the net resource value* provides for an equitable method of collecting them. However, the method relies heavily on the availability of quality information about the resource, mineral prices and costs. Bradley (1986) suggested that governments who do not have access to this type of information should not impose royalties on the resource value because a large gap between realised and net resource values may discredit the method. Net resource value means revenue *less* total overhead costs, total investment costs and operating costs. The South African government sometimes links its royalty to the net resource value by making the royalty equivalent to twenty-five per cent of the net resource value. Sometimes governments require an *initial payment* up front before the necessary permit or licence is issued. The initial payment is a permit fee and must not be

confused with the sales price for the mineral rights. The payment normally depends on the lease or prospecting area but may also be a fixed fee or sometimes determined by sealed tender or auction. A *de facto royalty* is described by Bradley (1986) as those benefits host governments receive when “one of its agencies supplies services to a developer at inflated costs” p. 149 – 150. An example of a *de facto* royalty is when the state negotiates an agreement whereby a developer is committed to install infrastructure, such as roads, railways or port facilities. The developer can either pay for the construction of the infrastructure in exchange for a lower royalty, or the state will pay for it but then charge a higher fee for the service when the developer makes use of it. *Service-, work- and technical assistance agreements* also fall into the *de facto* category. *Minimum royalties* are also frequently encountered in agreements because they guarantee owners a minimum return on resource depletion. This instrument allows for a stable source of income and if it accumulates as credits in the taxable income calculation, it effectively reduces the future tax burden. Related to a mineral royalty is a *retention or holding fee*. Retention fees are normally based on area and are meant to discourage drawn out exploration programmes when mining does not directly follow exploration for economic reasons.

Other revenue collection instruments, namely production sharing agreements, service/management contracts and joint venture agreements are also used. These are not royalties *per se* but they do have the potential to generate substantial income to resource owners. A production sharing agreement is essentially an arrangement in which the investor and the resource owner share the output of the operation in predetermined proportions. When the resource owner wants to retain formal control over the operations, it hires a mining concern to perform technical services on its behalf in terms of a service contract. Good examples of production sharing agreements and service contracts are encountered in Indonesia with their coal co-operation agreements and contract of work systems. A further example is the management contract that the South African government recently granted to a private mining company to operate its Alexcor diamond mine near the Namibian border. Resource owner participation in mineral rent may also occur through a joint venture agreement, which is essentially an association of private and resource owner interests. The

spread of shareholding between the resource owner and the investor depends on the agreement and the royalty is paid in dividends.

In conclusion, as stated already, there is no one correct or best royalty method for collecting mineral rent. Several factors must be taken into consideration when designing a royalty, namely:

- the identity and expectations of the resource owner
- the bargaining strength of the investor
- the unique properties of minerals
- whether the minerals are main-, co- or by-products
- the degree and method of processing required
- the variation in price for mineral production
- the vastly different cost structures of mineral producers

Otto (1995) observed that many developing countries, where mineral rights were state-owned, were open to negotiating special terms and conditions for large mineral projects while royalties for other mining operations were determined either by law or through a mining agreement. However, standard royalties fixed by regulation and updated through announcements in government gazettes, meet the clarity standard for evaluating taxation instruments better than government officials negotiating each case individually on an *ad hoc* basis.

### **3.4 MINERAL ROYALTIES IN SOUTH AFRICA**

#### **3.4.1 Different categories of ownership in South Africa**

There are several categories of land and mineral rights ownership in South Africa. A brief explanation of their influence on royalty entitlement, is necessary. *Private land* is land of

which both the surface and mineral rights are owned privately. Ownership of the land and the minerals may not necessarily be vested in the same person or company. The number of mineral right holders can range from a single person or company to a large number of individuals. When a mining company wants to explore the land, a surface rental fee is payable to the owner of the land and a prospecting fee is payable to the mineral rights owner. Both the land and mineral rights owners have the option to sell their property rights to potential investors. When the mineral rights owner does not want to sell the mineral rights, the mining company must negotiate a suitable royalty package directly with the owner. Apart from taxes, the state is not entitled to any form of compensation in private deals. The role of the state is to issue and administer licences to ensure that prospecting and mining activities are performed in an orderly manner and that the necessary health, safety and environmental regulations are adhered to.

*State land* is land of which both the surface and minerals are owned by the state. This is the simplest type of ownership and permission to utilise land and minerals is obtainable from the state. The way in which the Department of Minerals and Energy presently determines the consideration for the state is explained in detail in paragraph 3.4.2.

*Alienated state land* is land of which the surface is owned privately, while all or some of the mineral rights are owned by the state. After obtaining a nomination agreement and permission to use the surface from the landowner, mining companies need to obtain permission from the state in order to extract its minerals.

*Formerly proclaimed land* was land held under claims where the surface rights were owned either by the state or by private individuals. Where the surface was privately owned, the state could issue surface right permits to the mining companies, which were a stronger right than that of the freehold owner. Although entitlements to this category of land are no longer accessible, there remain areas that are still affected by surface right permits and claims. These rights are still recognised and add to the confusion of the current system because, in addition to negotiating with the land and mineral rights owners, potential investors must satisfy the demands and requirements of claim holders, who are frequently speculators.

*Trust land or tribal land* is land where the land and, in most instances, the rights to the minerals were set aside for certain communities in the former homelands and self-governing territories. Past laws prevented black communities from negotiating directly with mining companies and the community had to operate through a trustee. This is a very complex form of ownership because the people on the land owned the mineral rights, but had no rights to enter into mineral lease agreements.

The complex South African system of mineral rights allows for many recipients to share in the rent. The demands and expectations of the many recipients of rent, especially where mineral rights are held in undivided shares, sometimes result in potentially economic mineral deposits becoming sterilised. This is clearly an unfavourable situation and one has comprehension for the view that all mineral rights should be returned to the state.

### **3.4.2 Mining taxes applicable to state-owned mineral rights in South Africa**

Compensation for the utilisation of the state's mineral resources entails any, or a combination, of a number of considerations. The first is the outright selling of mineral rights in terms of section 64 of the Minerals Act No. 50 of 1991. According to the Act, it is necessary first to obtain cabinet approval before the mineral rights can be alienated. However, the Minerals Act is being rewritten and there is no doubt that it will no longer be possible to purchase state-owned mineral rights once the new Act is promulgated. The newly released Mineral Policy (1998) intends to vest all mineral rights in the state, rather than disposing of its remaining rights. The next and favoured option is to pay the state a mineral royalty. At present there are a number of royalty options available to investors. Unfortunately, these are not generally available and the lack of a clear-cut policy means investors must go through a lengthy process of negotiation before the type and rate of royalty payments are determined. The advantage of the system is that it gives investors the opportunity to negotiate tailor-made royalties for their particular circumstances. Generally speaking, all categories of royalty instruments, as described earlier, are available to investors.

Those based on revenue or costs plus a premium normally range from one, but more often 2,5 to five per cent while profit-based royalties are usually charged at ten per cent. The 2,5 per cent royalty had its origin in Law 14 of 1878 of the old Transvaal Republic, which allowed for a state royalty of 2,5 per cent on gross returns. This mineral royalty applied to all categories of land and remained in force until 1910, when the lease consideration concept was introduced. By then Act 14 of 1987 distinguished between mineral types and stipulated a rate of one per cent of the value of the minerals mined for base metals, regardless of mineral rights ownership (Nathan, 1944). Sliding scale royalties are also an option and are discussed later in this chapter. Regardless of the method for determining the royalties, a minimum royalty of approximately ten per cent of the expected annual royalty is payable in advance on an annual basis. The minimum royalty is usually indexed for inflation rates allowing for periodic adjustments. In terms of section 31(1)(c) and (3) of the Exchequer and Audit Act of 1975, the Minister of Minerals and Energy may determine standardised lease payments, royalties or any other consideration payable to the state in respect of state-owned mineral rights. Such standardised tariffs currently only apply to small scale mining concerns. Sand, clay, stone and gravel attract a royalty of 55 cents per cubic metre of mineral sold while the royalty on precious stone mines is five per cent of the gross income. The rights to all the minerals in the sea are held by the state and the royalties on sea minerals correspond to those on the land. In order to allow for easy comparisons with the information in chapter five, the rates given in this paragraph are those for the 1996/97 financial year.

Other rent capturing instruments directly related to the compensation of the state as mineral rights holder are retention fees, surface rental fees and prospecting fees. Mineral lease agreements for large-scale mining concerns, where exploitation does not directly follow exploration for economic reasons, enter a retention phase. During the retention phase the mining company is required to pay an escalating retention or holding fee for the right to temporarily sterilise the state's mineral resource. Surface rental fees correspond (within reason) with the local market rental value for the area under application and must be approved by the Department of Land Affairs. These are payable when mine infrastructures are located



on state land and the investor has no intention of buying the land from the state. The compensation and conditions for surface use on alienated state land must be negotiated with the surface owner and not the state.

### 3.4.3 The South African lease consideration system

After the 1836 Great Trek into the interior of South Africa, the independent provincial government of the Transvaal followed the example of the Cape Cradock proclamation of 1813 and reserved the right to mine for gold, silver and precious stones to itself in terms of Law 1 of 1871. It is important to distinguish between the '*right to mine*' and the '*ownership of mineral rights*'. Having acquired the right to mine, the state was able to lease these rights to whom ever it pleased and to introduce a lease consideration in terms of section 26 of the Gold Law (Act No. 35 of 1908) as compensation for this right. The ownership of the mineral rights was still vested in the person in whose name the property was registered and the right to mine concept was a separate layer of ownership with which mining companies had to contend. The reason that the state of the day introduced the lease consideration system was to receive some compensation for what was then considered the country's most valuable asset, namely the Witwatersrand gold deposits. The consideration to the state was calculated as follows:

$$\text{Lease consideration } y = a - ab/x$$

Where

y = percentage of profits payable to the state

a = marginal rate of payment, commonly ranging between ten and thirty per cent

b = the portion of lease free revenue, ranging from six to eight per cent

x = profit (after capital redeemed) to mining revenue ratio, expressed as a percentage

The concept of the lease consideration system came from the German taxation of the diamond industry in South West Africa (now Namibia). It was regarded as a fair instrument and extremely powerful policy measure in prolonging the lives of marginal mines. The South

African guideline for establishing the status of a marginal mine suggests that a marginal mine is a mine whose profit to revenue ratio ( $x$  in the formula) is less than six per cent. The reason why the  $b$ -factor of the lease consideration was usually fixed at six per cent, is because it had the following impact on the lease consideration rate ( $y$ ) for marginal mines:

$$y = a - ab/x, \quad \text{if } b = 6, \text{ then } y = a - 6a/6 \quad y = a - a \quad y = 0\%$$

It is clear from the above illustration that, when the profit to revenue ratio was less than the  $b$ -factor in the formula, the lease consideration became zero, hence the name lease-free revenue portion. The lease consideration concept had also an impact on the royalty policy on state land. No additional royalties were charged and the lease formulae, by default, also became the mineral royalty for gold and uranium mines on state land. Because the right to mine minerals other than gold, silver and precious stones was not vested in the state, the lease consideration did not apply to those minerals. However, if the mineral rights were state-owned, a royalty of ten per cent of the profits before tax was usually payable to the state for other mines.

The researcher spent some time in the offices of the Department of Minerals and Energy to research the earliest Registrar of Mining 'Titles' files in order to establish the details of the first mining lease agreements after the lease consideration was introduced. The events that had a distinct impact on the evolution of the South African mineral royalty regime, were noted as follows:

#### *Government Gold Mining Areas mining lease of 1910*

- Two sliding scale formulae were included in this lease and both included the standard income tax rate of fifteen per cent. These were as follows:

$$\begin{aligned} y &= 5,467 + 1,06487x - 53.66/x && \text{when } x \text{ was less than } 36.1702, \text{ and} \\ y &= 82.5 - 1446.81/x && \text{when } x \text{ was greater than } 36.1702 \end{aligned}$$

- A minimum rate of 10.75 per cent was payable on the net income. This is very interesting because for some unknown reason the minimum disappeared over the



years.

- The maximum rate was fixed at 61.25 per cent

#### *Craigie Mines Limited mining lease of 1918*

- One sliding scale formula was included in the lease and the consideration excluded the standard income tax rate of fifteen per cent. The lease consideration formula was  $y = 46 - 960/x$
- The minimum rate was 12.5 per cent of net income.
- No maximum rate was applicable which meant that the marginal rate (46 per cent) became the maximum rate for the lease consideration.
- A surface rent was payable to the state.

#### *Village Deep Limited mining lease of 1919*

- A 1¼ per cent 'rent' was included in addition to the lease consideration formula.
- No minimum royalty was stipulated in the agreement.

#### *Durban Roodepoort Deep mining lease of 1919*

- A fixed amount of money (1 715 pound sterling) was introduced as the lease consideration instead of a formula.

#### *Simmer & Jack mining lease of 1924*

- A consideration of five per cent of profits plus a royalty per ton of ore extracted, replaced the lease consideration formula.

The large variations in the 'a' and 'b' factors of the different lease consideration formulae and the vastly different methods of determining the consideration payable to the state, suggest that the state had experimented significantly with the structure of the original formula when the system was first introduced. The lease consideration for state mines was higher than that for private mines because state mines did not have to pay the fifteen per cent standard income tax applicable to other mines.

**Table 3.2 Evolution of the lease formula in South Africa**

Date	Format of formulae	Source/Remarks
1910 – 1920 (state mines)	a-factor: 80 - 85 b-factor: 9 to 20	Source: Van Blerck (1992) <i>p. 17-5</i> . A low formula applied when the x-factor was below certain levels.
1911 – 1952 (other mines)	a-factor: 9 - 65 b-factor: 6 to 30	Source: Van Blerck (1992) <i>p. 17-5</i> . State experimented with the formula
1952 - 1994	a-factor: 10 to 30 b-factor: 6 to 8	Source: File no. GME 17/1/1/2: Department of Minerals and Energy. The formula for gold mines was site specific and determined on a case-by-case basis. See also Van Blerck (1992) <i>p. 17-5</i> for a comparison.
1994	Lease consideration abolished	Minerals Act 50 of 1991

The standard rate of income tax was replaced by a formula very similar to the lease consideration following the findings of the Corbett Commission in 1936. This resulted in some of the mines having two sliding scale type formulae on top of each other (one for income tax and the other for the lease consideration) while others had one formula, but at a much higher marginal rate. The experimentation with the lease formula continued until the early 1950s whereafter the factors in the formulae were kept in a narrow margin.

The Minerals Act No. 50 of 1991 put a sudden end to the lease consideration when it abolished the '*right to mine*' principle on 1 January 1994. Since then, gold, silver and precious stone mines no longer had an obligation to pay a share of their profits to the state. However, this created a new problem for those mines situated on land where the mineral rights belonged to the state. With the lease consideration no longer payable to the state and no alternative royalty instrument in place, the minerals on state land were free. The Department of Minerals and Energy quickly reintroduced the lease consideration concept on these mines, but this time as a royalty applicable only to mines exploiting state mineral rights.

### **3.5 IMPACT OF THE WHITE PAPER ON RENT DISTRIBUTION**

The Department of Minerals and Energy released its new Mineral Policy (1998) in October 1998. The new policy has major implications on the way future mineral rent will be shared in South Africa. Although the policy does not supply details on how rent will be collected or which rent capturing instruments will be employed, certain statements in the White Paper require new thinking as they are a drastic departure from how things were done under the previous dispensation. These will receive attention in this final section of this chapter.

#### **3.5.1 The future of mineral rights ownership in South Africa**

Mineral rights in South Africa constitute rights in land and are therefore a protected property right in terms of the country's Bill of Rights. When mining of a mineral resource, the holder of the mineral rights receives a royalty as compensation for the loss of its non-renewable asset. There are presently two main categories of mineral rights ownership in South Africa, that is state- and privately-owned mineral rights. These two categories are further divided resulting in complex combinations of state, private and trust land. The Restitution of Land Rights Act No. 22 of 1994 further complicates matters by its recognition of the rights of indigenous people who may lay claim to properties (including mineral rights) taken from by previously discriminatory laws. Against this background it is no surprise that the new policy calls for a simplified system in which the state's authority as custodian of the nation's mineral wealth is entrenched. The new mineral policy recognises the inherent constraints of changing the current mineral rights system, but calls on the government's right in terms of the United Nations Charter of Economic Rights to take full and permanent sovereignty over all its natural resources. It is therefore the intention of the government to vest all mineral rights in the state *"for the benefit of all the people of South Africa"* by applying a *"use-it or lose-it/use-it and keep-it"* principle p .16. The government intends to introduce the following measures in order to reach the goal of all mineral rights belonging to the state:

*First:* The state will no longer allow alienation of state-owned mineral rights.

*Second:* The state will take control of mineral rights where the owners cannot be traced.

*Third:* The state will take over mineral rights registered in a deceased name and where the heirs have not registered ownership in their names.

*Fourth:* The immediate vesting of the right to mine and prospect for all minerals in the state as was the case for precious stones, precious metals and natural oil prior to the promulgation of the Minerals Act of 1991.

*Fifth:* Implement administrative procedures supporting the 'use-it or lose-it' principle.

*Sixth:* Land owners or their nominees who, in terms of a provisional arrangement under section 43 of the Minerals Act No. 50 of 1991 had the first right to prospect for minerals on alienated state land, will lose this right in favour of the state.

*Finally:* Investigate the feasibility of imposing financial disincentives, such as a mineral rights tax to discourage the non-utilisation of privately owned mineral rights.

### **3.5.2 Mineral rent collection in the new South Africa**

The new policy directions will have a major impact on the future of mineral rent collection in South Africa. For example, the policy statement of the right to prospect or to mine for all minerals will vest in the state implies a reintroduction of the lease consideration concept. Since the Cradock proclamation of 1813 up to the promulgation of the Minerals Act No. 50 of 1991, South African laws reserved the right to mine and prospect for certain minerals to the state. As stated previously in this chapter, the '*right to mine or prospect*' constitutes a separate layer of mineral rights ownership providing for two layers of compensation. The owner of the mineral rights is still entitled to a mineral royalty while the state, as holder of the right to mine, traditionally collected a lease consideration as compensation. The reintroduction of the right to mine principle, this time on all minerals and not only selected minerals, implies that the lease consideration concept discussed earlier will again become a

major rent collection instrument for the South African government.

The concept of paying a retention fee for the right to secure tenure over explored mineral resources in South Africa, was first introduced by Act No. 31 of 1898, which penalised mining companies who did not actively mine their lease areas. The author could find no form of retention fee in the mining lease agreements that were scrutinised and it appears that the penalty measures, introduced in 1898, were abandoned as early as 1910. The minimum lease consideration instead of a retention fee, was considered more appropriate to motivate lease holders to exploit their areas optimally. Penalty measures did not appear in agreements until the 1990 when a retention fee was included in agreements if mining did not directly follow exploration for economic reasons. Depending on the rates of payment, retention licences can be very effective as a policy tool to discourage hoarding of mineral rights. State officials presently use an amount five times the prospecting fees as a rule of thumb when negotiating the retention fees.

The new policy also makes provision for predetermined standard terms and conditions for all prospecting and mining licenses. This is a just proposal because each mining and prospecting license over state-owned mineral rights is presently negotiated individually resulting in long and unnecessary delays. If a model mining agreement and standard royalty tariffs are available, investors only need to negotiate the site-specific aspects of the agreements with government officials. The findings of this thesis could prove very useful in the quest for standardised mineral royalties in South Africa.

An extremely controversial statement appears on page 17 of the new mineral policy. It states that, regardless of whether the mineral rights are state or privately owned, all prospecting fees and mineral royalties will be determined by the state after consultation with the registered holder of the mineral rights. The state will also determine an appropriate surface rental fee after consultation with the landowner. These provisions represent a significant departure from the way in which things were done in the past, when private mineral right and landowners determined their own rates.

The proposed tax or financial disincentive on privately-owned mineral rights could impact on the size of the rent. According to the new minerals policy, the tax would not be payable by operating mines on land over which a retention license has been issued or where active exploration is taking place. If the owner of the mineral rights is unable or unwilling to pay the tax, the rights may either be sold to someone who is willing to pay the tax or transferred to the state without compensation. No attempt has yet been made to define the details of the proposed mineral rights tax. Presumably the rate of taxation would be based either on the area of land (per hectare) or on a percentage of the value of the mineral rights – both which are fraught with problems (Minnitt and Cawood, 1999). Taxation based on the area covered by the rights disregards the variability in the quality or grade of the mineral resource, while the difficulty of assigning a market value also presents a serious impediment. The rate of taxation will determine the response of owners. Too low a rate will be viewed as an inconvenience, while a too high rate will imply nationalisation.

### **3.6 CONCLUSION**

This chapter discussed the theory of economic rent and its application to the minerals sector. It was found that the term mineral rent encompasses for a large number of rent capturing instruments, not only the mineral royalty as some mineral economic literature suggest. The different types of royalty instruments normally employed by governments and private resource owners were discussed in some detail. These issues were then extrapolated to the present South African system. The evolution of the lease consideration in South Africa received special attention in view of the statements in the new mineral policy. Finally, the impact of the new mineral policy on future rent collection was discussed briefly. The aim of this research is to determine an internationally competitive mineral royalty for South Africa by using a recipe for sharing rent. Before that can be done, it is necessary to identify competitive regimes (chapter four) and then to analyse them in order to determine why they are attractive to the international investor (chapters six and seven).

## **CHAPTER FOUR**

### **SELECTION OF INVESTMENT ATTRACTIVE COUNTRIES**

This chapter describes the method by which countries were selected for comparative purposes. The purpose for selecting the countries was to establish a competitive mineral investment framework and to calculate the ratios in which mineral rents were distributed among recipients in each of the selected countries. The choice of countries was perhaps one of the most important stages of this study. Not only would the rules of the selected states influence the investment framework in chapter six, but they would also ultimately effect the royalty proposed in this thesis.

The basic requirement for any country to be included in the study was that the country had to be a developing nation similar to South Africa. Only developing or emerging countries were selected for scrutiny because they are under-explored, are generally perceived by mining companies to be highly prospective and have similar risk profiles for the international investor. Investors normally consider developing countries attractive investments if their policies are aimed at attracting foreign investment and allow for an adequate return on investment.

The negligible risk in first world countries means that they can afford to levy higher taxes for mining their minerals. This is not the case for most emerging countries, where a higher discount rate is applied to project cash flows in order to accommodate the higher risk factor. Developing countries have comparable risk profiles and because the basis for comparison in this thesis included a discount cash-flow analysis, it was necessary to determine an appropriate discount rate for this purpose.

By avoiding the industrialised nations whose country risk component of the discount rate was significantly lower than developing countries, it was not necessary to use subjective country risk factors in the discount cash-flow analysis in chapter seven. This decision should add to



the credibility of the findings of the research. Assigning country risk factors inevitably led to some degree of experimentation with discount rates and consequently manipulation of results.

The mining and investment codes of the selected countries acted as the basis for what the investment environment of a typical developing country should be, if foreign investment is a priority to the host nation. By compiling the best of these rules an investment scenario that optimised the balance between government's share of mineral rent and company returns was formulated.

Five principal criteria were used in the selection process to identify such countries that were considered to be investor friendly.

- The *first* criterion was mineral exploration attractiveness. Identifying the regions where funds were being spent, provided an idea about which economic regions being favoured by the international investor.
- The *second* criterion was the destination of exploration funds spent by the South African mining houses. These mining houses were reducing local spending in favour of other similar, but more favourable and more prospective investment targets.
- The *third* selection criterion was based on the Mining Journal's Emerging Country Ranking (Mining Journal, 1996) of forty-six emerging countries in order of investment attractiveness.
- Because gold has been the most sought after commodity since the beginning of time and because of its importance to the South African economy, recent trends in gold mining output were used as a *fourth* selection criterion.
- *Finally*, perhaps the most accurate way to rank investor friendliness of any country was to look at the prestigious World Competitiveness Scoreboard published by the Institute for Management Development (1997). The study ranks forty-six countries in terms of their ability to compete in the global economy. However, the published results could not be used without some adjustments, i.e. the removal of industrialised nations and developing economies with insignificant mining potential, in order for it to be appropriate for this study. The list of emerging markets as they appeared in the London-based journal of *The Economist* was used to separate the developing countries from the first world nations. The Economist provides weekly updates of market indicators for emerging countries.

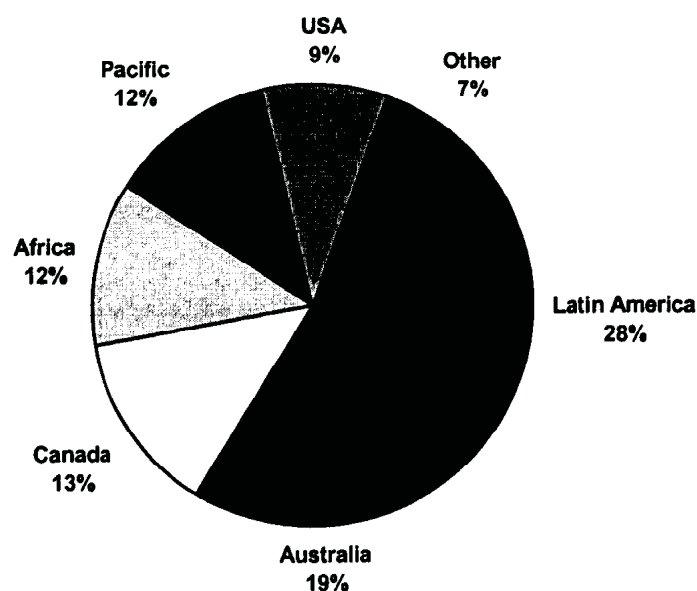
#### 4.1 WORLD EXPLORATION SPENDING PATTERNS

The purpose of the typical multinational mining company is to maximise shareholder wealth.

Direct foreign mining investment follows once an economically-viable mineral resource is proved. The decision to invest is based on a wide range of variables, one of which is the risk associated with a developing country. If potential investors feel comfortable because the risk has been mitigated by government policy, investment in mineral exploration is likely to follow. Consequently, host governments must ensure that political and economic policies combine to create an environment that is conducive to mining and exploration activities.

Economic blocks that are presently attracting significant levels of exploration funds are the primary indicator of countries which the international investor considers attractive. It is fair to assume that countries that compete successfully for exploration funds provide a mineral economic environment that is attractive to mining companies. Figure 4.1 gives an indication of where exploration investment funds are currently being spent (Mining Journal, 1997).

**Figure 4.1**     **Distribution of exploration investment funds, 1996**



Source: Mining Journal (1997)

Although the information in figure 4.1 does not point to specific countries, it identifies target areas of investment. If one considers developing nations only, it seems that states in Latin America, Africa and Southeast Asia form the core of the selection.

In terms of identifying specific countries for the purpose of this study, the research of Aylward (1995) provided a ranking of countries that offered the most attractive exploration environments. These are listed in table 4.1.

**Table 4.1      Country ranking of exploration attractiveness**

COUNTRY	RANKING
Chile	1
Mexico	2
Argentina	3
Indonesia	4
U.S.A.	5
CIS	6
Peru	7
Australia	8
Malaysia	9
Ghana	10
Vietnam	11
Canada	12
South Africa	13
China	14
Zimbabwe	15
Zambia	16
Papua New Guinea	17
Brazil	18
Philippines	19

Source:            Aylward (1995)

## **4.2 EXPLORATION INVESTMENT PATTERNS OF THE SOUTH AFRICAN MINING HOUSES**

The urgency of South African mining houses to invest offshore has led inevitably to a withdrawal of investment capital from South Africa. The 1996 annual reports from six major mining houses were examined to determine where capital investment is currently being directed and the information is presented in table 4.2. Investments in South Africa and first world countries were excluded for the purpose of this exercise. Although there is no reference to the level of the investment, the information in table 4.2 is evidence that African countries are attractive to South African investors. Ghana is the host to four of the selected exploration companies while Angola, Tanzania, Brazil and Zaire (now the Democratic Republic of the Congo or DRC) each host three. The investments in Angola and DRC are a reflection of the huge mineral potential in the two countries rather than any confidence in their political stability. Despite their political uncertainty and occurrence of civil wars, the two countries were actively explored by three of the mining houses. Another fifteen countries (Argentina to Zimbabwe) scored two points each in the table. The reasons South African exploration companies chose to spend venture capital in Africa were twofold. First, the South African government grants generous tax concessions for capital commitments within the Southern African Development Community (SADC) region. Second, South Africans are probably more able to cope with the cultural, social and geological aspects of Africa than their offshore counterparts.

**Table 4.2** Table illustrating where some of the South African mining houses are currently investing

COUNTRY	AAC	GENCOR	JCI	GFSA	DE BEERS	ISCOR	TOTAL
Ghana	1	1	1	1			4
Angola	1		1 <sup>#</sup>		1		3
Brazil		1		1	1		3
Tanzania	1		1			1	3
Zaire (DRC)			1		1	1	3
Argentina		1		1			2
Burkina Faso	1		1 <sup>#</sup>				2
Côte d' Ivoire	1		1				2
Equador		1		1			2
Ethiopia			1			1	2
India		1			1		2
Indonesia		1	1				2
Mali	1		1				2
Mexico		1		1			2
Mozambique	1	1					2
Peru		1		1			2
Russia			1				2
Uganda			1			1	2
Zambia		1	1				2
Zimbabwe			1 <sup>#</sup>		1		2
Bolivia				1			1
Botswana	1						1
Chile		1					1
China					1		1
CIS		1					1
Eritrea			1				1
French Guyana				1			1
Guinea					1		1
Namibia				1			1
Sadiola	1						1
Swaziland			1				1
Tajikistan			1				1
Venezuela				1			1

Source: Annual company reports

<sup>#</sup> JCI Internet home page

### 4.3 EMERGING COUNTRY RATINGS

In an attempt to identify the best emerging countries offering good opportunities for the

development of mines, the Mining Journal obtained information from the chairmen of 100 mining companies (Mining Journal, 1996). Not surprisingly, the results of this exercise, shown in table 4.3, demonstrate the predominance of Latin American and African countries. This list suggests that the geological potential of all these countries is favourable, but that South America is probably more stable and the preferred option for investors. American investors probably feel a closer link to South America than Africa, as is the relationship between the South African mining houses and Africa.

**Table 4.3      Emerging country ranking**

COUNTRY	RANKING
Argentina	1
Chile	2
Peru	3
Brazil	4
Indonesia	5
Mexico	6
Ghana	7
Bolivia	8
Philippines	9
Venezuela	10
Zimbabwe	11
Namibia	12
Kazakhstan	13
Papua New Guinea	14
South Africa	15

Source:            Mining Journal (1996)

#### **4.4      GOLD PRODUCTION TRENDS**

The top twenty gold producing countries in 1995 are shown in table 4.4. Although South Africa is ranked first in the world in terms of gold output, gold production has declined every year over the past few years. Using gold production in 1990 as a base, countries have been ranked in terms of changing production from 1990 to 1995 in figure 4.2.

Referring to figure 4.2, the smaller producers (Indonesia to Venezuela) rather than the large producers (USA to South Africa) have experienced growth during this period. Output from Indonesia rose by 321 per cent over the six-year period while Peru, Ghana, and Mexico more than doubled their production. A country where production has increased significantly is probably a reflection of increased exploration investment. It would appear that the investors in Mexico, Ghana, Peru and Indonesia had made the right choice. The static or negative growth in production among the larger, established producers was a reflection of problems, such as rising costs, declining reserves, environmental constraints and pressure on profitability.

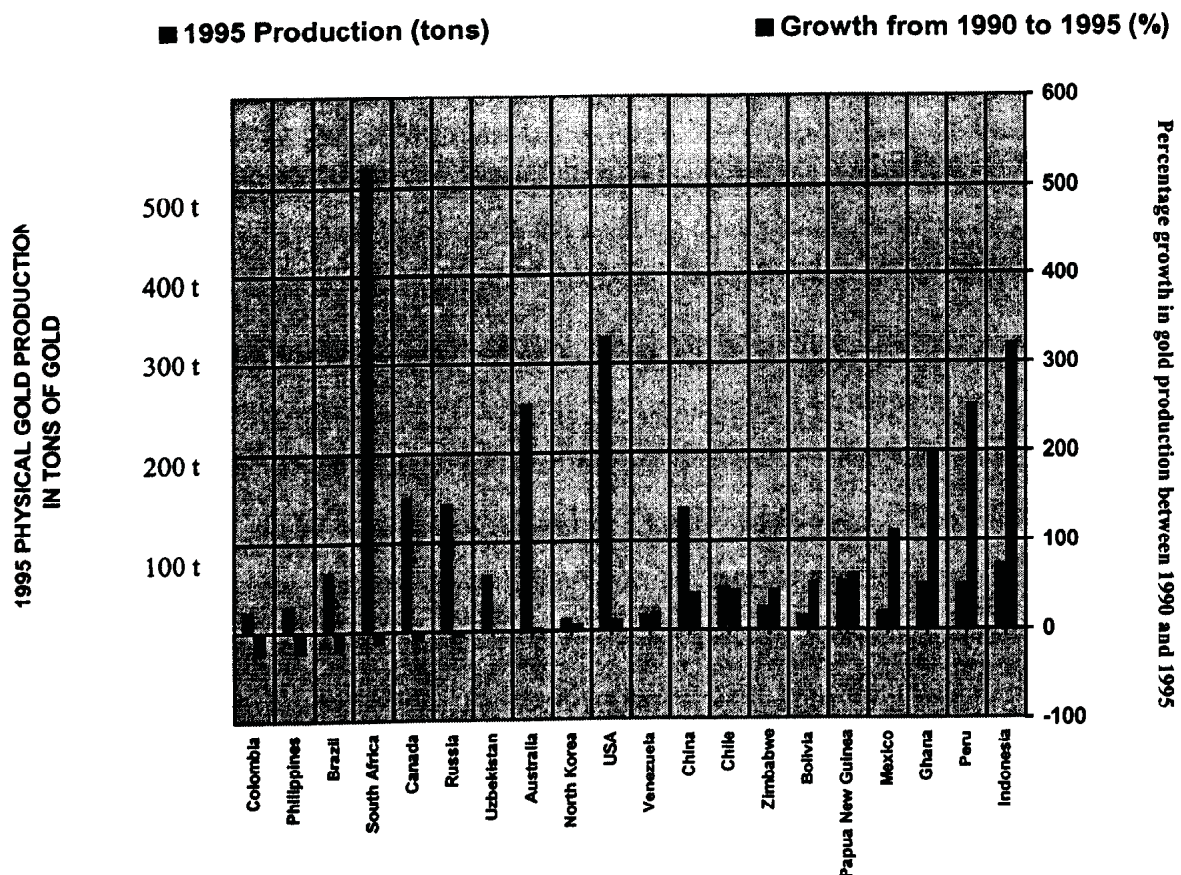
**Table 4.4      Annual world gold production by country**

<b>Country</b>	<b>1995 output (tons)</b>	<b>1990 output (tons)</b>	<b>Growth (%)</b>
South Africa	522.4	605.1	-13.7
USA	329.3	294.2	11.9
Australia	253.5	244.2	3.8
Canada	150.3	167.4	-10.2
Russia	142.1	151.7 <sup>#</sup>	-6.3
China	136.4	95.7	42.5
Indonesia	74.1	17.6	321.0
Brazil	67.4	84.1	-19.9
Uzbekistan	63.6	64.5 <sup>#</sup>	-1.4
Papua New Guinea	54.8	33.6	63.1
Ghana	52.2	17.3	201.7
Peru	51.5	14.6	252.7
Chile	48.5	33.3	45.6
Philippines	28.4	37.2	-23.7
Zimbabwe	26.1	17.9	45.8
Colombia	24.1	32.5	-25.8
Mexico	20.3	9.6	111.5
Venezuela	17.1	14.2	20.4
Bolivia	16.0	10.4	53.8
North Korea	14.0	13.0	7.7

Source      Chamber of Mines, 1996  
#      1992 figures



**Figure 4.2 Gold production (1995) and growth in production (1990 – 1995)**



Source: Table 4.4

#### 4.5 THE WORLD COMPETITIVENESS YEARBOOK

The annual '*world competitiveness scoreboard*' by the International Institute for Management Development (1997) gives a profile of country competitiveness. Each of the forty-six countries in the survey is defined on the basis of 250 criteria grouped under the headings, such as domestic economy, internationalisation, government, finance, infrastructure, management, people and finally, science and technology.

The 1997 yearbook ranked South Africa 45<sup>th</sup>, second to last and just ahead of Russia. The country fared badly in three of the eight headings, namely internationalisation (balance of

payments, trade, exchange rate, foreign direct investments, national protectionism and openness), management (productivity, labour costs, corporate performance and management efficiency) and people (population characteristics, employment statistics, educational structures, quality of life, attitudes and values).

Although the value of the scoreboard is limited in that it makes no distinction on the basis of mineral potential of the countries it surveyed, the ranking does provide a thorough description of the environment in which any business, including mining operations, will have to be conducted. By excluding industrialised nations, using the Metallica 2000 database (Mining Magazine, 1997) to identify countries with a significant mineral endowment and to eliminate countries, such as China, which does not allow foreign ownership of mines, a ranking which is more relevant to this study was compiled and is shown in table 4.5. The Metallica 2000 database was used to identify countries with large mines (producing more than 150 000 tons per annum). China was excluded because wholly-owned foreign ownership is not permitted. According to the Mining Journal (1997), no foreign investment in mining was permitted at all until 1994 because of the principal role state mining enterprises enjoyed and are still enjoying. However, it is now (1999) possible for a foreign investor to enter into a joint venture partnership with a Chinese resident.

**Table 4.5      Ranking of mineralised emerging markets that allow foreign ownership**

<b>Emerging country</b>	<b>World ranking (Scoreboard)</b>	<b>Revised emerging market ranking</b>
Malaysia	16	1
Chile	22	2
Thailand	28	3
Argentina	29	4
Philippines	30	5
Portugal	32	6
Brazil	33	7
Turkey	34	8
Greece	38	9
Indonesia	39	10
Mexico	40	11
India	41	12
Colombia	42	13
Venezuela	43	14
South Africa	45	15

Source:            International Institute for Management Development:  
                         World Competitiveness Yearbook

#### **4.6                      FINAL SELECTION OF COUNTRIES**

A summary of the criteria used for identifying the least risky, emerging countries that have attracted a significant share of investment, appear in table 4.6. On the basis of the work undertaken by Aylward (1995), a score of one to ten was allocated to the top ten developing countries, excluding South Africa. Chile, the most favoured country in terms of exploration attractiveness received ten points in the summary of the selection criteria shown in table 4.6. The frequencies in table 4.2 have demanded a different approach because they range from one to four for the thirty-three countries. These values were weighted so that Ghana received a score of nine (frequency of four), four others received a score of six (frequency of three) while fifteen achieved a score of three (frequency of three). The results are shown in table 4.6.

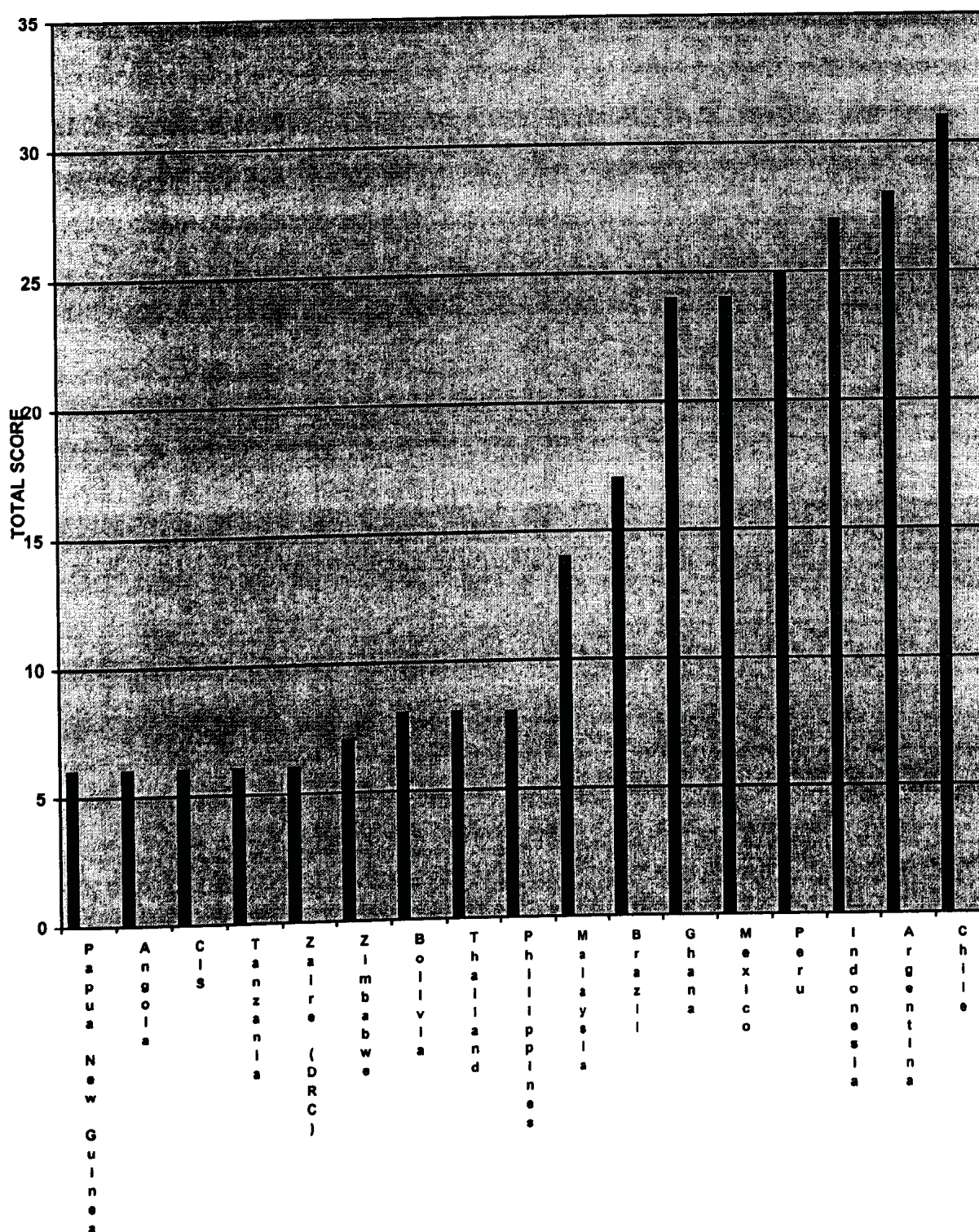
**Table 4.6 Summary of selection criteria**

Country	Exploration (Aylward) Score	SA Mining houses Score	Country ratings Score	Gold growth score	Competitive yearbook score	TOTAL SCORE
Chile	10		9	3	9	31
Argentina	8	3	10		7	28
Indonesia	7	3	6	10	1	27
Peru	5	3	8	9		25
Ghana	3	9	4	8		24
Mexico	9	3	5	7		24
Brazil		6	7		4	17
Malaysia	4				10	14
Bolivia			3	5		8
Philippines			2		6	8
Thailand					8	8
Zimbabwe		3		4		7
Angola		6				6
CIS	6					6
Papua New Guinea				6		6
Tanzania		6				6
Zaire (DRC)		6				6
Portugal					5	5
Burkina Faso		3				3
Côte d' Ivoire		3				3
China	1			2		3
Equador		3				3
Ethiopia		3				3
India		3				3
Mali		3				3
Mozambique		3				3
Russia		3				3
Turkey					3	3
Uganda		3				3
Zambia		3				3
Greece					2	2
Venezuela			1	1		2
Vietnam	2					2

The total score in the final column of table 4.6 is the sum of the scores obtained from applying each criterion with the most favoured country being the one with the highest score. According to this ranking, the most favoured countries in 1996 were Chile, Argentina, Indonesia, Peru, Mexico, and Ghana. Brazil and Malaysia were also highly rated but their scores were significantly below that of the first six countries.



**Figure 4.3**      **Final investment attractiveness of countries**



Source: Table 4.6

The results are specific to a given point in time and it is most probable that a similar exercise five or ten years from now will result in a totally different selection of countries. The six countries selected for analysis in this study compare very well with the results obtained by Aylward (1995). Chile, Argentina, Indonesia, Peru, Mexico, and Ghana appear among the top ten in Aylward's list. The investment environments of these countries are discussed in some detail in chapter five.

## **CHAPTER FIVE**

### **MINERAL INVESTMENT ENVIRONMENTS**

This chapter describes the mineral investment environments of the six most-favoured developing countries identified in chapter four as well as that of South Africa. It details the information most critical to the international investor, that is economic policy, taxation regime, mineral rights administration and mineral royalty policy of each country. The economic, taxation and royalty information is summarised in table format at the start of each section and a summary of the minerals administration rules for each country appears at the end of its description. Finally, the information in this chapter is summarised in one comprehensive table that allows the reader to make quick comparisons. This information forms the basis of the competitive mineral investment framework developed in chapter six.

The information in this chapter is purely descriptive and is a summary of the status of each country as it was for the 1996/97 financial year. The comparisons and analysis are discussed in detail in chapters six and seven. Chapter eight applies the results by means of a formula, aimed at equitably collecting mineral royalties in South Africa.



## 5.1 CHILE

**Table 5.1 Summary of Chile's investment environment**

DESCRIPTION	RATE / REMARKS
Inflation (1996)	7,3%
Exchange rate (1996)	412,27 Peso = US\$1
Nominal treasury (risk-free) rate(1996)	13,5%
Interest rate (1996)	17,4%
Foreign ownership	100%
Compulsory government share	0%
Foreign exchange controls	None, see par. 5.1.1
Tax stability agreements	Yes, 10 -20 years @ 42%, see par. 5.1.1
Corporate tax rate (national)	15 - 35%, see par. 5.1.1
Corporate tax on oil and gas	30 - 55%
Minimum corporate tax	0%
Additional profits tax	0%
Tax holidays (years)	0
Tax treaties	Yes
Deduct exploration/development costs	Yes, 100% over 5-6 years, par. 5.1.1
Capital/depletion allowance	0%
Ring fencing	None
Forward carry of losses	Yes, indefinitely
Backward carry of losses	Not permitted
Depreciation	Straight line/accelerated see par 5.1.1
Capital gains tax	15% First category tax see par. 5.1.1
Tax on assets	0%
Value added tax	18% Capital goods and exports exempt
Fuel tax	Yes
Repatriation/dividend/withholding tax	Included in corp. tax, see par. 5.1.1
Import duties	Average 11%, mining exempt, par 5.1.1
Export duties	0%
Payroll tax	Yes
Land tax	Yes
Provincial taxes	None
Municipal taxes	None
Mineral royalty	0%
Oil/gas royalty	<i>Ad hoc</i> investigation
Exploration fee	US\$0,96/ha/an
Surface rent	US\$5,74/ha/an
Mineral ownership	State (National)
Compulsory environmental provision	None
Allowable deductions for calculating taxable income: Feasibility study, pre-production exploration, development, capital equipment, royalties and fees based on land areas, operating costs, loan interest, post-production exploration and capital, withholding taxes, stamp taxes and payroll taxes.	

### 5.1.1 Economic and taxation policies

Chile has undergone major political and economic reforms in recent years. Its active programme of privatising state enterprises is proof thereof. Foreign investment in Chile is