The Mineral and Petroleum Royalty Bill—Report to National Treasury

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Executive Summary

This research report was produced in response to the release of the Mineral and Petroleum Royalty Bill. It involved a review of the mineral investment environments of selected countries in order to form an opinion on the appropriateness and competitiveness of the proposed royalty structure for South Africa.

Many emerging countries have recently attracted a significant share of foreign investment, as a direct result of changes in policy. These are, by implication, the least risky and most favourable destinations for the *'investment dollar'*. The five most competitive countries, namely Chile, Argentina, Peru, Mexico and Brazil have been identified as succeeding with their policy visions of creating favourable domestic investment environments. The investment rules of these countries served as a basis for the compilation of a Competitive Investment Framework (CIF). This is a template of best practice against which other investment environments, such as that of South Africa, can be measured. The framework indicates that mineral royalties should ideally be no more than three per cent, demonstrating that the regime proposed in the Royalty Bill is out of step with international best practice.

Mineral royalties can never be viewed in isolation and in the assessment of the rates proposed in the Royalty Bill, one must consider the total taxation package. Such assessment appears in Section 5 of this report, demonstrating that there is reason for concern if National Treasury were to impose the rates stipulated in the Royalty Bill. The alternatives, conclusion and recommendations of the review appear in Sections 9 and 10. These are the result of independent analysis and assessment of the fundamental principles. It is done through the application of a Competitive Investment Framework that avoids the highly subjective and emotional views that often accompany a process like this.

Section 1

An introduction to mineral royalties

Introduction

Since the late 1970s the multinational investor has shown renewed interest in developing the mineral resources of those countries whose mineral and fiscal policies promised significant returns in exchange for investment. This trend emerged because of a shortage of mining capital in the developing world. In return for capital, the investor is looking for a rewarding partnership. Motivated by the need to attract essential capital into their economies, between 1980 and 1995 approximately 90 developing countries revised their mining and fiscal policies, to attract foreign investment and promote their mineral industries (Otto, 1995). This trend in mineral policy reform has resulted in the fiscal regimes of many countries becoming more and more similar as policy-makers focused on maximizing competitiveness.

The design of mineral resource rent collection instruments requires a holistic approach. The ideal collection instrument must recognize the characteristics of non-renewable resources, adhere to sound economic principles, optimize wealth distribution patterns, recognize mineral rights and land ownership systems, and finally, attempt to realize the political ideologies of the ruling government. The exclusive characteristics of mineral resources usually determine the profitability of mineral projects and, consequently, the size of economic returns. Many potential benefits can accrue to nations that are richly endowed with minerals, in addition to a share of the rent. These include economic development, employment opportunities, establishment of associated industries and the creation of other linkages for the local economy. However, before these benefits can be realised, the host government must first attract the capital needed to *firstly*, convert mineral resources into reproducible capital and *secondly*, employ the wealth created in other sectors of the economy.

Before considering any fiscal instrument, one must first appreciate the meaning of economic rent and its application to the minerals industry. The generally accepted definition of economic rent is the financial return over and above that necessary for inducing the investment. For this reason, economic rents are also sometimes referred to as distributional surpluses. Alternatively, one can view rent from a tax perspective. For example, Cordes (1998) redefined economic rent as *'the magnitude of revenues that can be taxed without causing the pattern of resource use to be altered'*. If the definition of economic rent is applied to the minerals industry, the wording may change as follows: *'Mineral rent is the present value of the future stream of net revenues that mineral deposits can generate over time, where net revenues are the difference between total revenues and total costs and costs include a competitive return on investment'* (Cawood, 1999).

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 SA ISSN 0038–223X/3.00 + 0.00. Paper received Apr. 2003; revised paper received May 2003.

The Mineral Royalty: A major rent-capturing instrument

Mineral royalties were the most popular fiscal instruments used by governments to collect mineral rent prior to World War II. Since then governments changed their fiscal policies from being royalty-dominant to systems relying more on profit-related instruments, such as income tax and additional profits tax. Mineral royalties have the potential to impact significantly on mine profitability. Looking at it from a resource owner's perspective, royalties are very effective as a mineral rent collection instrument because they are simple and easy to administer. A further characteristic of a mineral royalty in the hands of government is its value as a policy instrument. For example, during the early days of mining in the western United States, the objective was to promote mineral exploration and to stimulate the establishment of new mines. The goal was achieved by the state forfeiting mineral royalty payments. In more recent times the environmental considerations became more important, leading to pressure on the government to impose a mineral royalty on federal land, which in turn will constrain future mine development.

The fundamentals of a mineral royalty

A mineral royalty, is by definition, payment to the holder of the mineral rights when minerals are extracted from the land and sold on the markets. If a country's legal system does not allow for private ownership of mineral rights, the mineral royalty will, by default, be payable to the state. Private sector royalties are almost always higher than public sector royalties because **government royalties must support the national objective and still compete with the policies of other countries seeking investment.**

Theory tells us that the value of the minerals in the ground should be equal to the net present value of the royalties received by the owner of the mineral rights over time. To determine this value is a matter of much debate and great controversy. The price for the mineral rights is always measured in net present value terms (equal to the value of the rights) regardless of whether it is determined by sales agreement or royalty instalments.

Mineral royalties are frequently charged as a percentage of gross revenue, or more recently, of net smelter returns, which means that they have a large impact on the size of the rent and represent a significant cost to mineral producers. Brower (1987) put the effect of royalties on profitability neatly in perspective by writing, **'they (royalties) serve to raise the cut-off grade in ore deposits and thereby lead to physical waste of resources'. Governments should therefore appreciate that unacceptably high mineral royalties reduce the wealth of the state.**

Selecting an appropriate mineral royalty

Before discussing the differences between royalty instruments, the findings of a World Bank (1990) study are worth noting. The World Bank concluded that, because the royalty is essentially a mechanism reflecting the trade-off position between the risk that the investor is prepared to accept against that of the resource owner, no single instrument is superior to another. Each country has different endowments, different policy objectives and face different risks.

The wide range of mineral royalties can be divided into four main categories, namely lump sum, production, net smelter return and profit royalties. Lump sum royalties represent an outright purchase of the mineral rights. The method works well when private ownership of mineral rights is allowed and there is an active market that trades the mineral rights. However, because the Royalty Bill does not consider this option, this report will focus on periodic mineral royalties only.

Production royalties

Production royalties are calculated in any of the following two ways depending on the structure of the agreement.

Unit-based royalty = production units x *rate per unit*

Revenue-based royalty = sales revenue x *royalty rate*

Table I

Different categories of periodic mineral royalties

Description	Production royalties	Net smelter return (NSR) type royalties	Profit royalties
Examples	1. Gross sales revenue 2. Unit royalties 3. Production costs 4. Unit-based sliding scale	1. Free on board 2. Free on rail 3. NSR 4. NSR sliding scale 5. Profit sliding-scale	1. Working profit 2. Taxable income 3. Additional profits 4. Resource rent
Exposure to risk *Resource owner* *Investor*	 Low risk High risk	 Medium risk Medium risk	 High risk Low risk
Advantages	1. Easy to calculate, collect and monitor 2. Inexpensive to administer 2. Policy tool—e.g. to encourage value adding by allowing deductions	1. Compromise between production and profit royalties	1. Neutral instrument
Disadvantages	1. Marginal producers may become uneconomic 2. Encourage over-mining of resource grades	1. Some revenue will be lost to the owner because of the effect of allowable deductions	1. Complex to calculate 2. Expensive to administer 3. Can be abused

Resource owners prefer production royalties for various reasons. The first is that there is virtually no risk of losing the asset without receiving adequate compensation. Second, the instrument provides for a stable income and because it is attached to production, the amount can be validated and is reasonably predictable. Finally, production royalties ensure a stable flow of revenues over the life of the mine even when company profits are low or non-existent. On the other hand, investors do not favour production royalties because they are not based on the *'ability to pay'* principle and therefore fail the economics tests of efficiency and neutrality. Marginal deposits may become uneconomic to develop because of the royalty burden.

Net smelter return royalties

There is growing confusion on the exact meaning of *net smelter return (NSR)* royalty. Harries (1994) ascribed this to the fact that the term is misleading and confusing because many mineral transactions do not involve *'smelter'* products. There is no one exact meaning for the term NSR, because it differs from country to country, changes over time and is influenced by government policy and objectives. In the analysis of mineral royalty structures one often finds the term gross value, just to find that it should be NSR. One pertinent example is found in Botswana. Official government documents refer to Botswana's royalty as being gross revenue. However, the Botswana Mining Act defines *gross market value* (revenue) as *'...the gross marketable value of the mineral or mineral products, **less** any costs incurred for transport of output prior to sale or disposal, for insurance **and other such costs as the Minister may allow**'*. The provision for deducting other allowable deductions provides Botswana with the opportunity to implement official government policy, such as for example, promoting beneficiation of minerals.

Over the years the dynamics in the bargaining process between the host government and the mineral investor has resulted in most countries now accepting NSR royalties, which are seen as a compromise between production and profit royalties. It has replaced old-fashioned definitions of income like *Free-on-board* and *Free-on-rail*. Generally speaking, **net smelter return value for *privately-owned* minerals means market price less transportation, handling and marketing costs.** However, this is rarely the case for government royalties because the royalty is a policy instrument promoting further downstream processing of mineral production. An example is the Western Australian system that allows for a decreasing royalty, depending on the increase in the degree of processing.

Profit royalties

Royalties may also be claimed on profits or net income, rather than on revenue or production. Profit-based or net income royalties are normally imposed on the difference between market price and average operating expenses. The method allows for profits participation because both the resource owner and the producer share in the upward and downward fluctuations of mine profitability. The biggest advantage of this type of royalty is that it is a neutral instrument as it does not influence resource allocation in any way. **Because it is based on realized net resource value, the method has the added advantage of using the value of the resource in the ground as the maximum royalty liability.** A third advantage is the smaller impact on marginal mines. In exchange, resource owners generally require a higher percentage rate of profits in order to receive the same income over the life of a mine as that from revenue-based royalties. **Although profit-based royalties are fair to the investor because of their '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 that the calculation of the profit on which the royalty must be based is done by the producer, making it subject to *'creative accounting'* practices aimed at reducing the royalty payment.

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 periodic permit fees, such as exploration and retention fees; indeed, to many for the purpose of this document.

The rates of *sliding scale royalties* may vary according to grade, price, production or profitability ratio. The sliding scale nature of the South African gold mining lease system had the advantage that marginal deposits could be worked because of a reduced payment to the government. However, unless there is a minimum royalty, the nature of the formula is such that the resource owner may not receive any consideration at all, making it an unattractive instrument for most resource owners.

Conclusions

After careful consideration of the different types of royalties, it is my view that the net smelter return royalty is the most sensible option. This view complies with the definition of the mineral royalty, which is compensation for the removal of the mineral in the ground, not after value has been added to it by subsequent beneficiation. It implies that all costs incurred after the minerals have been severed from the ground be deducted from the sales or gross revenue. The method is also in line with official government policy, which is aimed at providing incentives to increase beneficiation of locally produced minerals.

Section 2

Evolution of mineral royalties in South Africa

Introduction

Before analysing mineral royalties it is important to consider the mineral rights ownership system that was (and essentially still is) in place, before the enactment of the Mineral and Petroleum Resources Development Act of 2002. There were several categories of mineral rights ownership in South Africa. In its simplest form, the system of mineral rights ownership can be explained as a mixed system of private- and state-owned mineral rights. The number of

mineral right holders could range from a single person or company to a large number of individuals. When a mining company wanted to explore privately-owned mineral rights, it had the option to buy these rights as property and then register them at the South African Deeds Office as *immovable property*. In many cases mining companies bought these mineral rights outright, which resulted in them not having to pay royalties over the life of a mining project. When the mineral rights owner did not want to sell the mineral rights, the mining company had to negotiate a suitable royalty package directly with the owner. Apart from taxes, the state was not entitled to any form of compensation in these private agreements. The role of the state was to issue and administer licences in order to ensure that prospecting and mining activities were performed in an orderly manner and that the necessary health, safety and environmental regulations were adhered to. When the mineral rights were state-owned, permission to develop the minerals was obtainable from the state. Consequently the mineral royalty was then payable to the state.

Historical royalties over state-owned mineral rights in SA

Compensation for the development of the state's mineral resources entailed any one, or a combination, of a number of considerations. Unfortunately these were not well documented and the lack of a clear-cut policy meant that investors had to go through a lengthy process of negotiation before the type and rate of royalty payments were determined. The advantage of the system was that it gave investors the opportunity to negotiate tailor-made royalties for their particular circumstances. **Up to now, all categories of royalty instruments, as described in Section 1, were made available to investors. Those based on revenue ranged from one to five per cent, while profit-based royalties were usually charged at ten per cent.** In terms of Section 31(1)(c) and (3) of the Exchequer and Audit Act of 1975, the Minister of Minerals and Energy was empowered to determine standardized lease payments, royalties or any other consideration payable to the state in respect of state-owned mineral rights. Such standardized tariffs were only applicable to small-scale mining concerns. **The maximum royalty was levied on precious stones and was set at five per cent of the gross income.**

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. 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 whomever it pleased and 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 introduced the lease consideration system in 1910, was to receive some compensation for what was then considered the country's most valuable assets, namely diamonds at Kimberley and the Witwatersrand gold deposits. The consideration to the state was calculated as follows:

Lease consideration $y = a - ab/x$

Where

y = percentage of profits payable to the state

a = marginal rate of payment, **commonly ranging between 10 and 30%**

b = the portion of lease free revenue, **ranging from 6 to 8%**

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

The concept of the lease consideration system came from the German colonial 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:

$y = a - ab/x$, *if* $b = 6$, then $y = a - 6a/6$

$y = a - a$ $y = 0\%$

Table II

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) p. 17–5. 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) p. 17–5. 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) p. 17–5 for a comparison.
1994	Lease consideration abolished	Minerals Act 50 of 1991

It is clear from the above illustration that, when the profit-to-revenue ratio was less than the *b*-factor (i.e. 6%) 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.

The standard rate of income tax applicable to all mines in the Union 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 the lease consideration and the other for income tax) while others had one formula, but at a much higher marginal rate. **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 then had to reintroduce the lease formula on mines developing state-owned mineral rights—but this time it was called a royalty.

Conclusions

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. The Royalty Bill does not recognize the inherent constraints of changing the current mineral rights system, and makes no provision for the deduction of historic payments made to private holders when minerals were bought outright. The evolution of the lease consideration occurred in tandem with a growing and successful minerals industry. Much of this success can be ascribed to the state's willingness to base its royalty and taxation policies on the *'ability-to-pay'* principle.

Section 3

A competitive framework for mineral royalties

Introduction

The investment rules and economic characteristics of the preferred international investment destinations in the developing world were examined in detail with the view to compile a *'Competitive Investment Framework (CIF)'* that incorporates fiscal criteria that support the components of good mineral policy. Government regulations and taxation policies can be used or adjusted to significantly reduce the risk for investors. The opposite is also true; **the risk will increase if the investment environment is constrained by inadequate protection of property rights, excessive government intervention and inequitable distribution of mineral rents.**

Crowley (1994) summarized the need for a competitive investment framework as follows: **'The competition to attract investment in exploration and mine development is strong. Many economies in the region (Asian-Pacific) are well endowed with mineral resources, so investors have a wide range of options. Of at least equal importance to attracting investment are legal, regulatory and fiscal frameworks. Governments able to design such frameworks to meet the criteria of investors in exploration and mining companies will attract the majority of investment.'**

Only developing or emerging countries were considered in the analysis because they appear generally under-explored, have good geological potential and have risk profiles that are fairly similar to South Africa for the international investor.

Ranking of countries

The criteria for selecting developing countries in order to examine for *'best practice'* included the following:

- *Mineral exploration attractiveness*. Identification of the regions where exploration funds are currently spent, provides an indication of the economic regions favoured by international investors.
- Ranking of emerging countries, in order of investment attractiveness as published by *Mining Journal*.
- The *World Competitiveness Scoreboard* published by the Institute for Management Development (2000) is perhaps the most accurate way of ranking the *'investor friendliness'* of countries. The scoreboard ranks countries in terms of their ability to compete in the global economy. For the purpose of this study developing economies with insignificant mining potential have been omitted.

Selected countries

The results of a scorecard used for identifying low risk, emerging countries that attract a significant share of mineral investment, appear in Figure 1. The five most favoured countries in 2000 were Chile, Argentina, Peru, Mexico and Brazil. The results are specific at a given point in time and it is almost certain that the same exercise in five or ten years time will lead to a very different selection of countries. However, these five countries also appear among the ten most favoured countries identified in another study by Cawood (1999). The final proof that these five countries are doing something right, lies in the fact that Anglo American have actively explored investment opportunities in each of them in 2002.

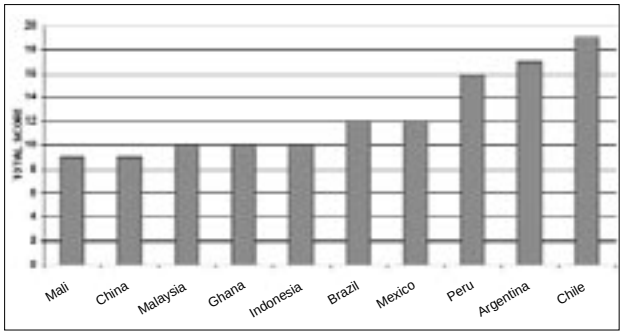

Figure 1—Final investment attractiveness of countries

The next step was to establish what these consistently good performers do right in terms of their fiscal policies.

Chile

The 1982 Mining Law No. 18 097 regulates mining properties and concessions. **Mining rights in Chile, once granted, are virtually inalienable** under the constitution and are freely transferable and mortgageable (Mining Journal, 1995). The mining rights system provides for concession licences to be guaranteed for an indefinite period subject to the payment of the prescribed annual licence fees.

No mineral royalties are currently payable in Chile. Several publications explicitly state that there is no mineral royalty at all. The International Mining Taxation Database is an exception, which mentions a *'royalty'* of between two and three per cent of net smelter return (Soja, 1995). I suspect that the royalty referred to is the natural resource tax, which is only applicable to artisanal mining operations.

Special legal provisions apply to the exploitation of oil and atomic materials, and the President of Chile decides on an *ad hoc* basis whether contractors in these areas are subject to a royalty payment or not (Valenzuela, 1995).

Argentina

Mineral rights administration is regulated by the Argentine Mining Code No. 22 259 of August 1980. The Mining Code distinguishes between first-ranked substances (e.g. gold, silver, platinum, mercury, copper, iron, etc.), second-ranked substances (e.g. metallic sands, salt, peat, etc.) and third-ranked substances (i.e. construction materials). Rights to first- and second-ranked substances are reserved to the state (national or provincial) while the ownership of industrial minerals is vested in the owner of the surface property (Mining Secretary, 1993). Oil and gas reserves belong to the state and the rights to prospect, drill and exploit these fields are reserved to the National Oil Authority. The state may grant prospecting rights to private concerns but the discovery of oil or gas does not automatically entitle them to any further operating rights.

Private property of mines is determined by legal concession in terms of Section 10 of the Mining Code. Should a prospector find a mineral deposit, the granting of a mining concession is guaranteed by the Code. The holder of the concession must then comply with three conditions, that is payment of an annual fee, minimum capital spending requirements and optimal exploitation criteria. Failure to meet any of these requirements, results in the concession being forfeited and the rights reverting to the state (Coopers & Lybrand, 1992).

Primary activities such as mining were, up to 1993, subject to a one to three per cent royalty (Mining Secretary, 1993), but **on 1 January 1994 exemption from gross revenue taxes was granted for the primary production, mining, manufacturing and construction industries** (Bellani and Macek, 1995). **This resolution effectively scrapped all royalties on mineral extraction.** However, the Province of Catamarca, which hosts the Bajo de la Alumbrera copper-gold project, recently was the scene of a bitter royalty dispute. The provincial government did not ratify the exemption granted by the federal government and is still demanding its three per cent royalty (Mining Journal, 1997).

Apart from the prescribed standard lease fees, an annual surface (or canon) tax is payable to the provinces as a type of surface rent. The rates are fixed periodically by national law. On discovery of a mineral, the discoverer is automatically exempt from the tax for a period of three years, whereafter payment will continue under a mining concession (Albarracin, 1997).

In the case of oil and gas resources, a twelve per cent royalty on the wellhead value is applicable. This royalty may be reduced, if the operation is not profitable at the twelve per cent level (Coopers and Lybrand, 1992).

Peru

All mineral resources belong to the state. In terms of the Mining Law, activities such as sampling and prospecting may be conducted freely anywhere within Peruvian territory and no concession is required for such activities. Mineral development is permitted through the concession system. A mining concession is a real property right over a defined area, separate and distinct from the surface estate. **No royalties are charged in Peru,** which, considering its mineral abundance, makes the country extremely attractive for potential investors. There is a *'mining rate'* or a land tax payable by mining companies. Article 29 of the Mining Act states that the amount will be the equivalent of US $2 per hectare per year.

Mexico

The Mexican law follows the Spanish legal tradition, which distinguishes between ownership of mineral rights and ownership of the surface as in South Africa. The Mexican Constitution reserves all mineral rights to the state which, in turn, grants concessions to explore or extract the mineral resources. The 1992 Mining Law introduced a number of important policy directives and actions providing incentives and guarantees. The Act allows for exploration and mining concessions over all national mineral reserves, excluding salt, construction materials, radioactive minerals and petroleum products.

The holder of an exploration concession has a clearly defined right to a mining concession subject to the condition that all the legal obligations have been adhered to. Furthermore, vast tracts of mineralized land, previously held by the government or by inactive private individuals, were opened to exploration and mining recently. Local companies who enter into joint venture agreements with the government must pay a consideration of between two-and-a-half and three per cent of the sales value of the minerals. **Owners of privatized corporations have to pay a 'finder's fee' of between one and three per cent of net smelter returns to the government as part of the agreement. Other mining enterprises do not pay any production taxes because mineral royalties were abolished in 1991.**

Brazil

The Constitution of Brazil states that the mineral resources belong to the Union (federal government), which has the authority to grant authorizations and concessions for mineral development. The National Department of Mineral Production (DNPM) is responsible for the administration of all mineral rights, management of mineral resources and supervision of

mining activities. Oil, gas, other fluid hydrocarbon and nuclear deposits belong to the state and the rights to prospect, drill, exploit and refine these fields are reserved to the federal government, whose National Oil Authority holds a monopoly over these sectors. However, private investment in these sectors may continue on a sub-contract basis.

Provision is made for the payment of an annual royalty on the net revenue from the sale of mineral products. This federal royalty, called Financial Compensation for Exploiting Mineral Resources (CFEM), is shared by all levels of government and the landowner. **The amount is determined by the national government and is subject to a maximum of three per cent of net revenue.**

Filho (1997) summarized mineral royalty rates as follows:

Mineral product	Royalty rate (%)
Bauxite, manganese, rock salt and potassium	3
Iron ore, fertilizers, coal and other mineral substances	2
Gold	1
Precious carbon, diamonds and other precious metals	0.2

Like the new South African Royalty Bill, this Table distinguishes between mineral commodities. However, when analysing the rates more carefully, it is clear that commodities that are usually associated with either high technology or expensive extraction methods, have lower royalties in Brazil. This situation is exactly opposite to the rates stipulated in the Royalty Bill, where there is a total disregard for the 'ability-to-pay' principle.

Mine development in the remote regions of the north-east and Amazon is encouraged by incentives such as exemption from income taxes (partial or full depending on the locality and type of investment). **These incentives include a tax holiday of ten years and a reduction of income tax of up to 75 per cent for 'modernization, expansion and diversification'.**

Comparison of selected countries

Finally, the information in this section is summarized in one comprehensive Table below that allows the reader to make quick comparisons on any particular parameter of interest. This information forms the basis of the competitive mineral investment framework developed later in this section.

Table III

Comparison of mineral investment environment

DESCRIPTION	CHILE	ARGENTINA	PERU	MEXICO	BRAZIL
Foreign ownership	100%	100%	100%	100%	83%
Government share	0%	0%	0%	0%	0%
Exchange controls	None	None	None	None	None
Tax stability	Yes	Yes	Yes	None	Yes
Corporate tax	15 - 35%	35%	30%	30-35%	15% +12%
Tax on oil and gas	30 - 55%	33 - 55%	N/A*	N/A*	N/A*
Minimum tax	0%	1%	0%	0%	0%
Additional profits tax	0%	0%	0%	10%	10%
Tax holidays (years)	0	0	0	0	0-10
Tax treaties	Yes	Yes	Yes	Yes	Yes
Exploration costs	Yes	Yes	Yes	Yes	Yes
Capital allowance	0%	0%	0%	0%	Formula
Ring fencing	None	None	None	None	None
Forward carry of losses	Yes	Yes	Yes	Yes	Yes
Backward	No	No	No	No	No
Depreciation	Yes	Yes	Yes	Yes	Yes
Capital gains tax	15%	35%	30%	35%	0%
Tax on assets	0%	0,5%	0,5 %	1.8%	0%
Value added tax	18%	21%	16%	15%	18%
Fuel tax	Yes	Yes	Yes	Yes	N/A
Withholding tax	15%	0%	10%	5%	15%
Import duties	11%	15 %	15%	11%	14%
Export duties	0%	0%	0%	0%	13%
Payroll tax	Yes	Yes	Yes	Yes	Yes
Land tax	Yes	1%	US$2	0,19%	No
Provincial taxes	None	Royalty	None	Possible	Yes
Municipal taxes	None	Services	2%	Land tax	Services
Mineral royalty	***0%***	***0 - 3%***	***0%***	***0 - 3%***	***0 – 3%***
Oil/gas royalty	***Ad hoc***	***12%***	***N/A****	***N/A****	***N/A****
Exploration fee	US$0,78	0	0	Negotiated	US$0,42-0.82
Surface rent	US$4,65	Land tax	Owner	Owner	Royalty
Mineral ownership	National	State	National	National	National
Environmental provision	None	5% costs	1% revenue	N/A	Yes

* State industry

The most significant finding from the analysis of Table III is that none of these five countries has a royalty rate in excess of three per cent. Therefore a sensible conclusion is that best practice mineral royalties have a ceiling of three per cent.

Establishing the competitive investment framework

The overall taxation regime of a country is probably the most important consideration for the multinational investor because of its influence on bottom-line returns. Host countries can apply a range of fiscal instruments to capture their share of the rents generated by the mining industry. These taxes are payable at different levels of income and on different items of production. The *corporate income tax* rate is probably the most important fiscal criterion on which to base an investment decision. This is because most other tax expenditures are deductible for the purpose of calculating taxable income, which means that their impact is less severe. **Investors pay close attention to the tax competitiveness of countries competing for foreign investment by examining the corporate income tax rate. This is perhaps the reason why these rates keep going down (the current range is 15 to 35 per cent).** An interesting observation on Brazil is their incentive to investors to develop mines in remote areas by reducing the tax rate for those investments.

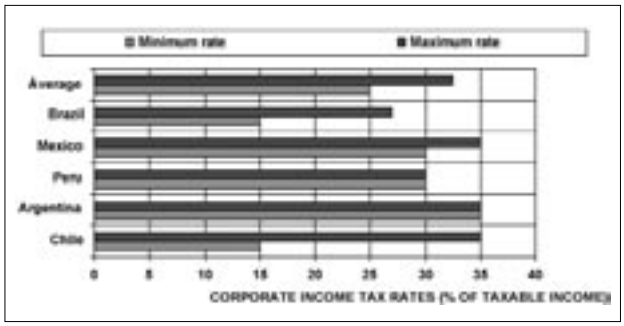

Figure 2—Comparison of corporate income tax rates

The tax regimes for oil and gas concessions are subject to significantly different rates to those of the minerals sector, mainly due to the exclusion of private participation in oil extraction by the national governments. Unlike corporate taxes, the rates for oil and gas vary widely from country to country. These taxes range form 30 to 55 per cent, which is significantly higher than the corporate income tax rates. It seems that for some unknown reason governments expect a higher share of the rents generated by oil and gas projects.

After corporate tax, the *mineral royalty* charged by the owner of a resource for depletion of the minerals that are mined and removed from the land, is the next most important form of mineral taxation if the mineral rights are state-owned. Royalties are normally levied on net smelter return and because they are payable regardless of mine profitability, they have the potential to impact severely on project feasibility if charged at rates higher than three per cent.

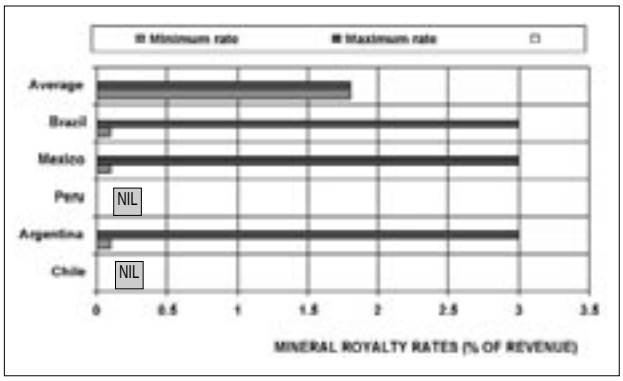

Figure 3—Comparison of mineral royalty rates

Mineral royalties in the selected countries range from zero to three per cent. Oil and gas royalties were, in most cases, not available. Governments tend to negotiate each oil or gas lease individually on an *ad hoc* basis if these resources are privately developed.

Table IV

Competitive Investment Framework

Criteria	Range	Average
Corporate tax (%)	30–37	32.5
Oil/gas tax rate (%)	30-55	43.3
Minimum tax (%)	0–0	0
APT (%)	0–0	0
Capital gains (%)	0–35	23.0
VAT/Sales tax	0–18	16.8
Fuel tax	Yes	Yes
Withholding (%)	0–15	9
Import duty (%)	11-15	13.2
Export duty (%)	0–0	0
Payroll tax (%)	Yes	Yes
Land tax	Yes	Yes
Mineral royalty (%)	**0–3**	**1.8**
Oil/gas royalty (%)	**12**	**12**

The Competitive Investment Framework above indicates that best practice mineral royalties should range from one to three per cent, with an average rate of 1.8%. Ideally, this rate should be applied to net smelter returns. This framework can be used as a direct comparison tool to evaluate one fiscal instrument in isolation. However, for a complete assessment one should assess the total fiscal 'package' before forming an opinion on competitiveness.

Determining competitiveness through cash flow analysis

Effective tax rates were calculated using country-specific information in a cash flow model for several mineral projects in seven developing countries (Cawood, 1999). The way in which mineral rents are distributed between recipients was then analysed with a view to establishing optimum sharing ratios amongst stakeholders. Five typical mineral projects were used in this analysis: a large South African Witwatersrand type gold mine; a greenstone type gold mine;

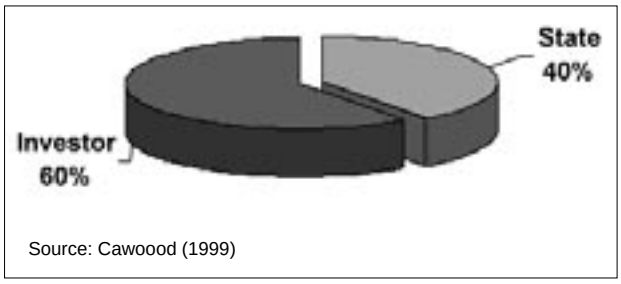

Figure 4—Best practice recipe for sharing rents

a large limestone project; a medium-sized underground coal mine and a copper mine. **The distribution of rent between the country hosting the mineral resource and the investor is of critical concern and a split of about 60:40 in favour of the investor was found to be the optimal distribution.**

An analysis of the government's share of rents using the cash flow results showed clearly that the corporate income tax is by far the most important contributor to state revenue. On average about eighty per cent of all the revenue received by the host government over the life of a mineral project comes from this source. **The second most important minerals tax instrument was found to be the mineral royalty.** The analysis of cash flows to governments indicated that the royalty portion had a range between zero and seventeen per cent, with an average of six per cent if best practice is used as the principal criterion. The remainder of the host country's share of mineral rent was made up of minor taxes that collectively have *'nuisance'* value and are a source of irritation to potential investors.

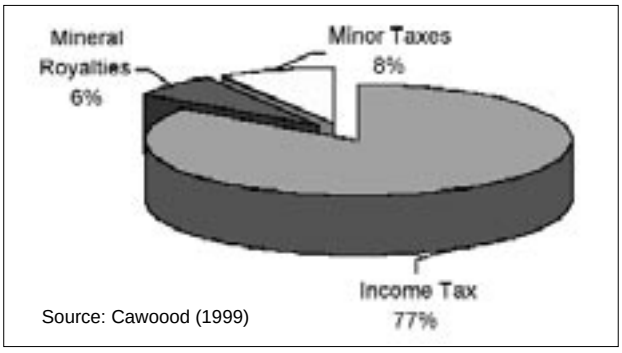

Figure 5—Best practice model showing state revenue collected from mining

Conclusions

In the global assessment of investment behaviour there is currently a strong relationship between the success in attracting investment, and the effectiveness and efficiency of a host country's investment code. Research into the mineral investment environments of investor-friendly, developing countries has led to the creation of a Competitive Investment Framework (CIF). The CIF was created to support the components of good mineral policy and was designed as a template of economic, fiscal and regulatory criteria against which policies in the developing world, and South Africa in particular, could be measured. **The CIF developed for mineral royalties in this section shows clearly that best practice countries have royalties of less than three per cent.** This level corresponds with a similar study done by the author in 1999, which analysis also indicated that **a competitive regime will limit its total (all inclusive) tax burden to 40% of the total wealth generated by mineral projects. Further analysis of the state's share revealed that the mineral royalty should be six per cent of the total tax collected from mineral projects.** The information developed in this section is used later in this report for a complete assessment of the Royalty Bill.

Section 4

The proposed framework in the Royalty Bill

Introduction

This section contains a review of the Mineral and Petroleum Royalty Bill (Royalty Bill, hereafter). Special reference is made to the Mineral and Petroleum Resources Development Act (new Mining Act, hereafter) in order to provide an overview on how mining investment is affected by government policies in South Africa.

Mineral and Petroleum Resources Development Act of 2002

This new Act paved the way for the introduction of mineral royalties in South Africa. It happened because the Act will transfer mineral right ownership from private owners to the state over the next five years. This will be done through a system that will convert so-called old-order rights to new-order rights. However, there is a constitutional constraint not considered in the Royalty Bill. At the time when the Constitution was negotiated, a mineral right was defined as *'immovable property'*. Ownership of a mineral right therefore has constitutional protection. Although both the Mining Act and the Constitution make provision for compensation should dispossessed owners prefer to take that route, the Royalty Bill does not consider this reality. An obvious solution is for the new Royalty Bill to make provision for the historic cost of mineral rights to be deducted from future royalties. The disadvantage for the state is that mineral royalties will be postponed until the initial expense of the mineral rights has been recovered. However, this disadvantage must be weighed against the benefits of the state not getting involved in long and expensive compensation litigation. **For currently active mineral properties situated on privately-owned mineral rights, the problem is not so much with the shift in ownership, but with the fact that the holder will have to pay a second time for the same mineral rights.** That is the outright sales price negotiated with the original owner and now the periodic instalment described in the Royalty Bill. Apart from being inequitable, it will raise the cost of doing business in South Africa and impose a barrier to new entrants into the sector. The Royalty Bill also does not stipulate what the situation is

with regard to royalties currently being payable to third parties, as is the case with the Bafokeng nation. This is an extremely complex situation, which could lead to litigation instituted by third party owners and beneficiaries of current agreements. It is my opinion that **it will not be necessary to claim compensation if the Royalty Bill allows for some relief in this regard.** For example, that historic expenses on the mineral rights be recovered from state royalties before making any royalty payments to the state under the new system. Over state-owned minerals there will be no such problem and the requirements of the Royalty Bill can be implemented upon conversion from old-order to new-order mining rights.

Discussion on the Royalty Bill

Press statement on the Royalty Bill dated 20 March 2003

The press statement creates the impression that all mineral projects produce bountiful resource rents and that mineral royalties could be introduced without impacting negatively on the economic viability of mineral projects. This is far from the truth, because rents are only created when all costs, including a competitive return on the investment, have been recovered.

The press release defends the range of royalties (one to eight per cent of gross value as stipulated in Schedule 1 of the Royalty Bill) as being *'competitive'*. This is a subjective statement because the motives for, and the criteria used in the selection of the particular countries listed are unknown. A table listing as many countries as possible does not prove *'competitiveness'*. In order to understand competitiveness, one must first appreciate how it differs from *'best practice'*. Best practice, as demonstrated by the ability to attract investors, certainly indicates that mineral royalties should not be higher than three per cent.

The press statement gives some justification for charging *ad valorem* or gross sales value royalties. The principles were discussed in Section 1 of this report, which discussion demonstrated that a Net Smelter Return royalty allowing for the deduction of beneficiation costs is more appropriate for South Africa than the regime proposed in the Royalty Bill. The presumption in the press release that most countries charge royalties on gross sales value is not accurate. There are almost always allowable deductions from the gross sales value. For example, Australia is listed as a country that charges royalties on gross sales value. However, in New South Wales there are three official definitions of income to which the royalty rate must be applied. These are *firstly*, production or unit-based royalties, *secondly*, *ad valorem-type* royalties and *thirdly*, profit-based royalties. In some Australian states no royalties are payable at all and in others the rates depend on the level of beneficiation (for example Western Australia). The method used depends on the objectives of the provincial state government. **In many cases these provinces actively compete with each other for the 'investment dollar' by giving generous incentives and allowances for mining investment.** Another interesting example is Canada, where the system is similar to Australia in that the provinces and not federal government own the mineral rights. As is the case with Australia, the rates differ substantially from province to province—from two per cent on working profit (British Columbia) to twenty per cent on taxable income (Ontario). In the tables provided by National Treasury the royalty rate for British Columbia is, for convenience, stated as fifteen per cent of taxable income. The reality is that the royalty rate is two per cent on working profit until all mine development costs and allowances have been recovered, whereafter an additional 13 per cent on taxable income is payable. In Ontario and Quebec the rates are 20 and 18 per cent on taxable income respectively. What National Treasury don't show in their tables is that both Canadian provinces allow for a resource allowance of 25 per cent of profits as an additional allowable deduction. In addition to this resource allowance, Ontario does not charge any royalties in the first three years of production on profits below CAN$ 10 million. As a further incentive for mineral investment, Quebec allows for an investment allowance of CAN$ 1 for every CAN$ 3 spent on investment.

There are other inconsistencies in the tables supplied in the press statement that can be pointed out. However, these are mainly because the information is incomplete and it is not the intention here to discredit the information in the tables. **Having said that, National Treasury must appreciate that it is misleading to make direct comparisons of mineral royalties without taking the total package into account.**

Comment on the Royalty Bill

The preamble identifies the need for an internationally competitive and efficient mineral royalty regime. This is good news for mineral investment in South Africa, provided we all have the same understanding of *'competitiveness'*. The Competitive Investment Framework in Section 3 demonstrated that governments wanting to attract investment into their mineral sectors, should not impose royalty rates higher than three per cent. Higher rates might motivate mine investors to move their capital to more attractive destinations.

Chapter One of the Royalty Bill provides basic information on the anticipated royalty regime. It proposes collection of royalties on a quarterly basis on the tradable value of the mineral resource. Although the amount on which future royalties would be calculated is referred to as *gross value*, it is in fact a modified *net smelter return-type* royalty, because its definition allows for the deduction of transport and insurance costs. The merits of introducing a net smelter return royalty have been discussed earlier in this report and it was concluded that:

- The definition of a mineral royalty requires that a sales price be determined at the point where the mineral leaves the mine operation
- Compensation is for the mineral resource before value is being added to it
- In order to provide for the national priority of encouraging downstream beneficiation, the following definition of income is appropriate in the South African context:

Net Smelter Return income = Gross value *minus* processing, refining, transport from the mine to the point of sale, handling fees, insurance, sampling and assaying during transport and marketing costs.

The rates that appear in Schedule 1 of the Royalty Bill are summarized in Table V for the reader's convenience.

Table V

Summary of royalty rates as stated in the Royalty Bill

Group	Mineral/petroleum commodity	Royalty rate (%)
1	Salt, sand, stone, sandstone, slate, gravel, clay and other construction materials that are not exempted under Section 12	1
2	Offshore oil and gas products produced beyond depths of 500 metres	1
3	Alumino-silicates, asbestos, sulphates, barites, kaolin, mineral pigment, dimension stone, sulphur, perlite and others	1
4	Anthracite and bituminous coal	2
5	Antimony, copper, iron, manganese and other base metals	2
6	Offshore oil and gas products not included in Group 2	3
7	Gold, silver, vanadium, chromite and titanium dioxide	3
8	Platinum group metals	4
9	Amethyst, quartz products, tiger's eye and other stones suitable for jewellery manufacturing	5
10	Unpolished natural diamonds	8

The rationale for grouping minerals in this manner is unclear. From an *'international competitiveness'* point of view it is certainly a peculiar classification and I have difficulty with seeing competitiveness in either the grouping of minerals or their royalty rates. To give just one example—internationally, oil and gas royalties are significantly higher than those for mineral commodities and in the unlikely cases where different commodities have different rates, one can explain the differences from policy statements. It is clear from the information in the table that some of the rates are in excess of the international best practice ceiling of three per cent. One may also question the reason for having different rates for different commodities because the *'uniqueness'* of each mineral is already reflected in the relationship between sales revenue and the total cost for producing it. **What matters is the level of profitability and not the mineral type.** Highly profitable ventures should pay at the maximum rate while others pay at lower rates. The best way to achieve this sliding scale effect is to link the mineral royalty to some measure of profitability. Such a method is proposed later in Section 9 of this report. **The principles that must be emphasized at this stage are firstly, mineral royalties should be linked at least in part, to profitability and secondly, best practice requires a total royalty of less than three per cent.**

The Royalty Bill makes provision for the Minister of Minerals and Energy to allow partial or whole exemption from royalties for low grade mines of *'questionable economic viability'*. Although it is desirable that provision is made for an alternative royalty structure for extraordinary projects, the mere inclusion of this provision suggests admission that there is something wrong with the structure and rates of the royalties proposed in the Bill. It also introduces the problems of subjectivity, ministerial discretion and at worst, biased treatment.

Chapter One of the Royalty Bill also deals with anti-avoidance mechanisms and a special regime for diamonds, where the purchaser takes some responsibility in the payment of the royalty. I do not foresee any problems with the administration or the compliance with these provisions.

The fiscal stabilization clause also deserves special mention. The Bill makes provision for a 50 per cent premium on the proposed rate, subject to a maximum of two percentage points. For example, the standard rate of 4% for platinum products, will be raised to 6% if this option is exercised. This six per cent royalty will be effective for a duration of thirty years from the election date. It suggests that National Treasury plans to adjust the proposed rates upwards in the future, which sends a negative message to the local and international investment community. This approach is questionable if compared to international practice. **Internationally, fiscal stabilization agreements have been implemented with great success when structured as an all-inclusive, maximum rate of tax, fixed for a long duration.** For example, in Chile foreign investors have the option of entering into a Foreign Investment Contract with the Chilean state, which provides for a fixed (all-inclusive) overall income tax rate of 42 per cent for a period of ten years. This period can be extended for up to twenty years, if the investment is more than US $ 50 million. The foreign investor's rights and guarantees are contained in a contract between the investor and the state of Chile. In Argentina it is done differently—a guarantee is given that the taxation rules will be kept the same for a period of 30 years from the date on which the feasibility study is submitted. In terms of the Argentinean Mining Investment Regulation Law No. 24 196, tax stability means no increase in the total tax charge for a mining operation and it includes municipal, provincial and national taxes. When stabilization agreements give guarantees such as those in Chile and Argentina it is beneficial to the investor. However, **the so-called stabilization mechanism provided for in the Royalty Bill could prove to be a burden for investors in the long run,** especially if the price for mineral production decreases in real terms with the passage of time.

The remaining sections of the Royalty Bill deal with administration issues, penalties, appeals, the collection of information and general governance issues. These provisions are what can be expected in such legislation.

An obvious omission is the fee structure for prospecting, retention and the other rights provided for in the New Mining Act. The Mineral Policy of 1998 gave the assurance that these fees will be pre-determined, standardized and internationally competitive.

Conclusions

From an administrative view the Royalty Bill provides for an improvement of the current system for collecting state mineral royalties. One can expect that South African Revenue Services will be more efficient in the collection of mineral royalties than the Department of Minerals and Energy. However, there is a concern that officials in the Department of Finance are not sympathetic to the technical and investment risks taken when converting natural resources into reproducible capital. The proof of this is visible in the following provisions of the Royalty Bill:

- The definition of the income to which the royalty rate must be applied;
- The high level of royalties themselves;
- The design of the stabilization agreement;
- The absence of the fundamental *'ability to pay'* principle; and

- The absence of a provision preventing double payment of royalties.

I believe that the currently unfavourable perception of the Royalty Bill could be turned around if National Treasury heeds the above issues.

Section 5

Assessment of the Royalty Bill

Introduction

The change in the total South African mining tax package as a consequence of the Royalty Bill is considered in this section. *Firstly*, the fiscal framework of South Africa is measured against that of the Competitive Investment Framework (CIF) compiled from the information in Section 3 of this report. The major differences between the South African regime and the CIF are outlined, with the view to identify areas that need adjustment in order to align South Africa with the components of *'best practice'* mineral policy. This comparison shows that royalty rates in excess of three per cent will be excessive. *Secondly*, the South African fiscal regime is compared on an effective tax rate basis, which analysis considers the impact of the Royalty Bill on the aggregate rate of tax. Interestingly, this analysis in a way contradicts the previous finding that royalties up to three per cent are tolerable, because it demonstrates that three per cent royalties are totally inappropriate for South African deep level gold mines. **The cash flow analysis of this section suggests lowering the ceiling of royalties to two per cent.**

Comparing the total taxation package against the CIF

Table VI compares South Africa's taxation regime with the CIF, as it will change with the introduction of the Royalty Bill. **The comparison in Table VI clearly shows that if it were not for the new royalty regime, the package of South African rates of taxation would compare favourably.**

Table VI

Comparing the South African regime with the CIF

Tax instrument	CIF range	CIF Average	South Africa
Corporate tax (%)	30–37	32.5	30–35
Oil/gas tax rate (%)	30–55	43.3	30–35
Capital gains (%)	0–35	23.3	15
VAT/Sales tax	0–18	16.8	14
Withholding (%)	0–15	9.0	12.5
Import duty (%)	11–15	13.2	1
Mineral royalty (%)	**0–3.0**	**1.8**	**1–8**

Measuring the impact of the Royalty Bill by means of a cash flow analysis

Although the Competitive Investment Framework approach yielded reliable results as far as *'best practice'* is concerned, such direct comparisons of mineral royalties can be misleading without considering the total tax package. The reason why comparison of effective rates are preferred above that of the CIF approach is because statutory nominal tax rates could differ substantially from effective tax rates. This is because allowances and other economic variables, such as depreciation, inflation, exchange rates and the definition of taxable income could significantly influence the size of the tax payment. This shortcoming was addressed by calculating effective tax rates and then analysing the ratios in which mineral rent is split between the state and the investor.

Mineral project details

Six mineral projects were used for the cash flow analysis: a large South African Witwatersrand type gold mine; a greenstone type gold mine; a large limestone project; a medium-sized underground coal mine, a platinum project and a copper mine taken from a study by the Colorado School of Mines. Apart from the copper mine, the information for the projects was obtained from a combination of the following sources: Mines' annual reports, South African mining houses, Chamber of Mines, Department of Minerals and Energy and Statistics South Africa. They are therefore accurate simulations of the real-life situation, despite the fact that certain assumptions had to be made in the cash flow calculations.

Analysis of mineral rent distribution

The objective of this analysis is to compare South Africa's rent-sharing pattern with the optimal pattern described in Section 3, using the royalty rates proposed in the Royalty Bill in combination with other taxes payable to the South African government. The outcome of the analysis is summarized in the Table VII.

Table VII

Evaluation of the true tax competitiveness of South Africa

Description	Best practice range	Best practice average	SA Platinum	SA Green	SA Wits	SA Coal	SA Copper	SA Lime
Royalty analysis								
Revenue (%)	0–3.0		4.0	3.0	3.0	2.0	2.0	1.0
Effective tax rate (%)	32–48	40	57	51	65	43	55	43
Distribution of taxes								
Income tax (%)	28–97	77	55	82	69	70	63	71
Royalty (%)	0–17	6	24	14	24	7	13	05
Minor taxes (%)	3–16	8	21	4	6	23	23	24
Wealth Distribution								
State's share (%)	32–43	40	61	45	69	42	46	41
Investor's share (%)	43–68	60	39	55	31	58	54	59
IRR for project (%)			6	29	2	47	4	52

South Africa's effective tax rates for all mineral types are consistently higher than the *'best practice'* average of 40 per cent. The average effective tax rate for the six mineral projects is 52 per cent, which is above the maximum rate of 48 per cent determined by Cawood (1999). The effect is clearly visible in the Figures 6 and 7 below. able 7 also demonstrates the impact of gross value royalties in excess of three per cent on the effective tax rate. This positive correlation is shown graphically in Figure 6.

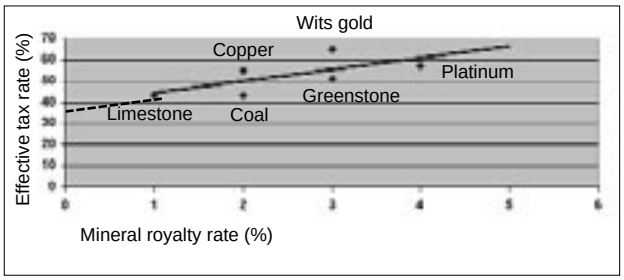

Figure 6—Correlation between mineral royalties and effective tax rates

The analysis in Figure 6 shows that any royalties above two per cent will raise the effective tax rate above the upper limit range of 48 per cent and suggests that best practice royalties should vary between one and two per cent. It also demonstrates why it is misleading to draw conclusions from a direct comparison of royalty rates as was done by National Treasury.

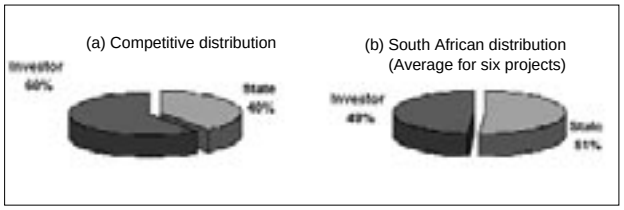

Figure 7—Modelled distribution of total rent

Conclusions

The cash flow analysis in this section illustrates that South Africa cannot be regarded as being competitive, let alone being considered 'best practice'. Although the Competitive Investment Framework regarded mineral royalties of three per cent as being competitive, Table VII shows emphatically that the three per cent is too high for a typical South African deep level gold mine, whose effective rate will become 65 per cent if National Treasury implements the proposed three per cent royalty on gold mines. Furthermore, the gold mine used in this study is an above-average profitable operation. The effects of the royalty would have been devastating had a marginal gold mine with a low profitability ratio been used in the analysis. This is despite the believed fairness of the sliding-scale tax formula for gold mines!

Section 6

The effect of the Royalty Bill on valuations

Valuations are used by many different people in the industry, from entrepreneurs to managers, from financiers to investors, from buyers to sellers, and from analysts to academics. These valuations are done either to assess the current and future performance of a mining asset, for the purpose of buying or selling it, or for assessing its competitiveness and viability for the potential investor. Globally, both as a result of unscrupulous practices and the knock-on effects of bad Corporate Governance, there are demands for the establishment of standards for the valuation of assets in general, and for those in the Minerals and Petroleum industries in particular. In this regard, the International Valuations Standards Committee (IVSC) is about to publish its 2003 edition of the International Valuation Standards (IVS), and is busy with the preparation of an Extractive Industries section. This work is being conducted to dovetail with work in the International Accounting Standards Board (IASB), where a new set of standards for financial reporting is being drafted (IFRS).

Key aspects of this work are that under IVS, Market Value is the standard of value, and under IFRS, there will be a move to report this Market Value in financial statements. It will be transparent and open to audit. Its definition is: *'The estimated amount for which a property should exchange on the date of valuation between a willing buyer and a willing seller in an arm's length transaction after proper marketing wherein the parties had each acted knowledgeably, prudently, and without compulsion.'* It goes on to stipulate that *'The concept of Market Value reflects the collective perceptions and actions of a market and is the basis for valuing most resources in market-based economies. The professionally derived Market Value is an objective valuation of identified ownership rights to specific property as of a given time.'*

How is this value to be assessed? Essentially, three approaches are stipulated in IVS: the Sales comparison approach, the Cost approach and the Income Capitalization approach. Sales comparison approaches are relevant to assets or projects such as exploration projects where the amount of information is limited, and where multiples are used based on comparable projects. These are multiples such as $/ha, or $/oz. The Cost approach relies on assessment of sunk cost, and the Income Capitalization approach relies on forward looking techniques such as Discounted Cash Flow (DCF) or Option Pricing. Clearly, a DCF valuation involves assessment of the fundamental value of the asset, but in terms of IVS, all three approaches must relate to the market, which will place appropriate premiums or discounts on the valuation at hand.

So, how does the Royalty affect all of this? It does so in three ways. Firstly, it diminishes the size of the asset (which of course is of a finite size, in terms of the Resource). It does this by elevating the cutoff grade directly in relation to the quantum of the royalty, and it then provides a multiplying effect onto the Resource above the cutoff grade, especially for marginal operations. (This is explained further in Section 7). Secondly, it reduces the fundamental value of the asset, because it applies a reduction in the revenue in the cash flow projection. This results in a far higher reduction in profit before tax, because costs remain static. When this is taken through to after tax profit, there is a higher reduction still in the case of marginal gold mines, because the tax benefit from the exemption of the royalty is simply multiplied by a very low tax rate. The result on Net Present Value (NPV) and Internal Rate of Return is extremely significant. On one gold operation, the 3% royalty had the effect of reducing NPV from R56 million to R12 million. The effect is certainly magnified in the case of more marginal operations, especially marginal diamond mines.

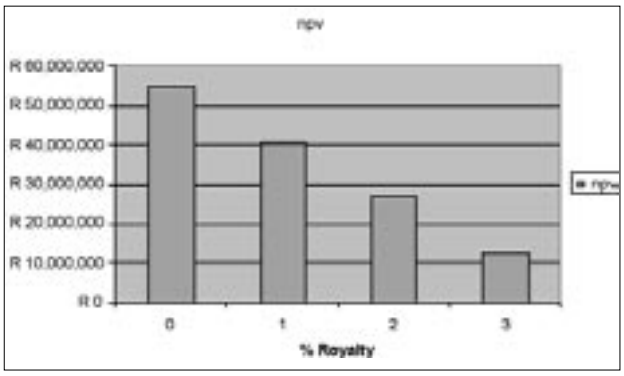

Figure 8—Effect of different Revenue based Royalties on NPV

The effect that is illustrated in Figure 8 arises because of the pure reduction in revenue, from the top line, but also because of the effect on the critical 'ramp-up' stage of the project. In order to illustrate this effect further, it is interesting to note that Harmony Gold Mining Company, recently published revised estimates of NPV and IRR for their major capital projects, all reduced as a result of the royalty inclusion. All mining projects have a cashflow profile which is similar to the one shown in Figure 9. This profile shows the ramp-up phase, which is the phase in the project where capital is being repaid from the start-up of production. Current taxation rules allow for the capital expenditure to be offset fully against operating income before tax in this period. The result of this method of appropriation of capital is to allow a tax shield for the early years of the mine life. Additionally, a capital allowance of 12% is also present during this period. These allowances were instituted specifically to encourage investment in the minerals industry, where projects are typically large, capital and risk intensive. These allowances result in the most significant effect on raising the NPV of the project, thus increasing its investor attractiveness.

The application of the Royalty in this period will have the effect of:

- Reducing the revenue in the ramp-up phase directly
- Reducing the profitability in this period
- The delay of positive cashflow
- Extending the length of the tax shield as a result.

These effects are in direct conflict with the intention of attracting investment. It is strongly recommended therefore that, similar to taxation, a Royalty 'holiday' is granted during this ramp-up phase.

Thirdly, there is the market effect. Remembering that we are in a global market, it is important to assess the market reaction to the fact that there is uncertainty relating to the future, long -term royalty rate, uncertainty in terms of security of tenure, and an overall increase in effective tax rate on mines, when one considers royalty as a tax.

The result of this is undoubtedly to add a discount to the value of South African stocks and investments, on top of that which already applies.

Let us for a moment consider the value of a stock. Its underlying or fundamental value is derived from its Net Asset Value (NPV less liabilities) divided by the number of

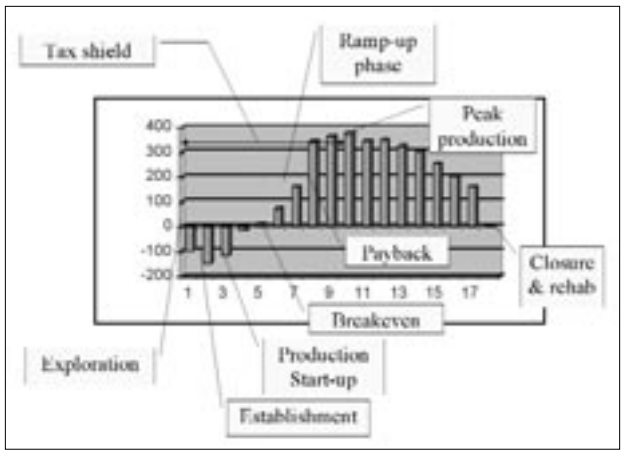

Figure 9—Typical cashflow pattern for a mining venture

shares in issue. This value will be assessed using a discount rate that the analysts apply according to the risks they perceive. Risks brought on by the Royalty, in terms of both fundamental value and the uncertainty of future Royalty rates, are amongst these. The market then reacts by applying further premiums and discounts, which may relate to anything from financial structure to public friendliness of the company. This effect has recently been seen, in the share prices of the more marginal producers, or those with large percentages of their portfolios in platinum and diamonds.

This effect is clearly demonstrated by the graph shown in Figure 10, which illustrates the decline in the value of the mining index of the Johannesburg Securities Exchange, over the period during which various aspects of Minerals and Petroleum legislation have been released. In particular, further decline has happened since the release of the draft Royalty Bill.

This latter period has seen severe decline in platinum and diamond stocks, in particular. These effects are shown in Figure 11, which shows three selected stocks for platinum, diamonds and gold.

Various ratios are applied to assess the performance and competitiveness of stocks, and companies, all based, fundamentally, on these analyses. The table below shows the effects of the Revenue based Royalty on these, some commonly used, ratios.

Figure 10—JSE Mining Index 2002/3

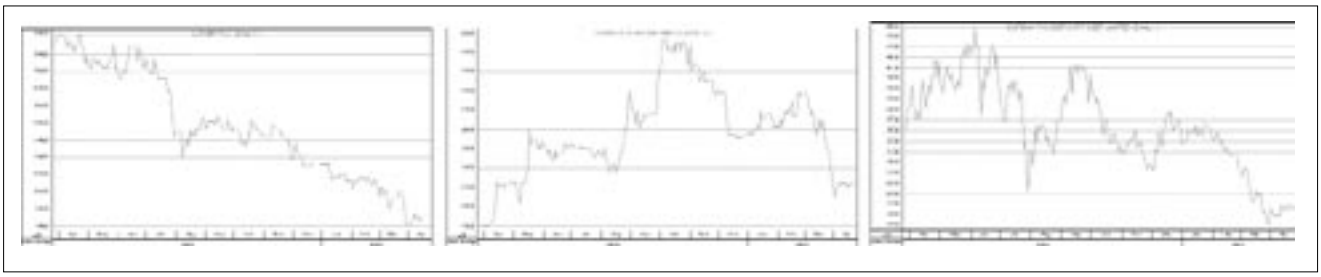

Figure 11—Stock prices for selected platinum, diamond and gold companies (left to right, respectively)

Figure XII

Commonly used ratios in financial analysis and valuation

Ratio	Measure of...	Effect of the Revenue based Royalty
P/E ratio	Future expected earnings	Reduction in P/E ratio
Debt:equity	Debt exposure	Decrease in asset value, therefore an increase in debt/equity
Net profit margin	Profitability	Reduction in ratio
Interest cover	Ability to repay debt from cashflow	Reduced capacity to service debt
Dividend yield	Shareholder's ROI	Reduced dividends, therefore lower ratio
Earnings yield	Income earning power per share	Reduced income, therefore lower ratio
Market cap/oz	Capitalization, per Resource ounce	Reduced ounces, and loss of equity value
RONA	Return on net assets	Reduced due to lower net profit

Conclusions

The effect of the current royalty structure on all of this is to:

- Reduce the NPVs by reducing the size of the asset as a result of the cutoff grade
- Reduce the remaining NPV by reducing the annual profitability
- This occurs especially in the build-up period of a project, which is critical for NPV
- Reduce the NPV further by increasing the cost of capital
- Require an asset write-down in the financial statements, under the current accounting scenario of IFRS
- Reduce the fundamental/book value of the stock
- Result in further market discounts in terms of share prices, asset values and ratios
- As a result of all of this, result in an unattractive investment destination, when compared to the rest of the world's mineral and petroleum industries.

It is clear that a royalty in one form or another will be levied. However, what should be reconsidered is the quantum (of the whole tax burden), and the point and method of application of the royalty. **Some form of sliding scale will be far more company and investor friendly, while still producing the state income and free cash flow necessary for the transformation of the industry. This, coupled with appropriate investment incentives (for exploration, beneficiation and social upliftment) would encourage rather than discourage investment, in a country that has vast mineral wealth that should be turned to account for the benefit of all members of our society.**

Recently, at the colloquium organized by the South African Institute of Mining and Metallurgy, several alternatives were suggested, such as:

- **A sliding scale royalty formula, based on after tax profits**
- **A combined tax and royalty formula**
- **A royalty-free holiday for operations in build-up phase**
- **Incentives or royalty reductions for measurable progress in Charter and Scorecard achievement**
- **An overall review of the tax structure**
- **Royalties based on NSR**
- **A phased-in approach to royalties, with incentive for conversion to new order mineral rights.**

All of these approaches would have a positive effect on market value. We are at a crossroads. One road leads to investment and economic prosperity in the context of sustainable development. The other leads to divestment and contraction of our industry, and short-term profit taking in the meantime. It is extremely unfortunate that the current format of the royalty affects the marginal end of the industry the most severely, hurting the very businesses which it was intended to stimulate. Instead, it should result in stimulation of new and emerging businesses, and a decrease in their cost of capital, as opposed to a resultant increase.

Section 7

The effect of pay limit

The definition of pay limit

Storrar (1981) defined a pay limit as **'that value at which it is estimated that ore can be mined without profit or loss'**. This is further explained by stating that it is the grade at which a unit should be mined to break even on its total input costs. This calculation is totally dependent on the total volume due to the fixed cost relationship, as well as the mining factors. Previously, application of pay limits was done

on the basis of average mining grades, with associated permissible ratios of pay and unpay mining. What is of importance in the description of the pay limit is that it includes the fixed costs. The imposition of a Revenue based Royalty is in itself a fixed cost, which therefore raises the pay limit. Recently, there has been a move to cutoff grade application, which relies on setting a lower limit of grade, whereby no blocks are mined which fall below the cutoff grade. As with pay limits, fixed costs raise the cutoff grade, with the result that ore below the cutoff grade is not mined. The effect that this has is best described by a simple grade/tonnage curve, as shown in Figure 13.

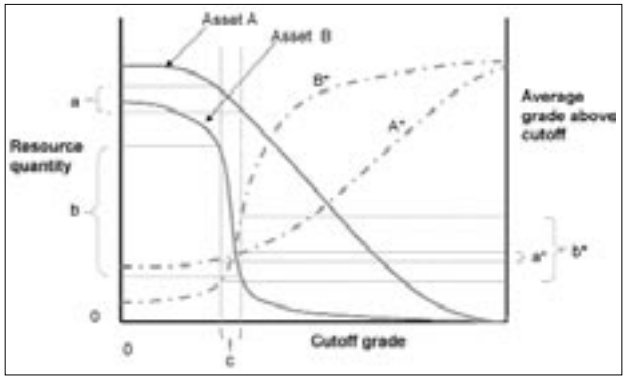

Figure 13—Grade/tonnage curves for assets A and B

Firstly. It is important to consider the derivation of the cutoff grade. Assuming that all costs (fixed and variable) are included in the calculation of the cutoff grade, the Royalty payment can be considered as a fixed cost. The cutoff grade is simply the fixed cost divided by the contribution margin (or revenue less variable costs). If a 3% Royalty on revenue is payable, the increase in cutoff grade is a straight 3%. In Figure 13, two assets' grade/tonnage curves are shown. Asset A has the curve of a typical, robust asset. B on the other hand is a typical marginal operation, with a much steeper curve characteristic. If 'c' represents the 3% increase in cutoff grade as a result of the Royalty, it can be seen that in the case of the marginal operation, B, the effect on the reduction of payable Resource, b, is geared up to be far more significant than in the case of A, which has a reduction of a. In looking at the average grade to be mined, it is also clear that the increase in cutoff grade results in a far higher mining grade requirement for the marginal operation, b*, than is the case for A, a*.

This illustrates how significant the effect is upon marginal operations:

- Payable Resource is severely diminished
- High grading as a planning strategy is forced
- Life of Mine is severely reduced.

That these effects are not significant is demonstrated by the observation of the Chamber of Mines that " 65% of South Africa's gold Resource is still in the ground, above the current cutoff grade. The application of the current Royalty structure will have the effect of sterilising R1.6 billion worth of Resource, by elevating the cutoff grade'.

Conclusions

The application of a Revenue based Royalty has the following effects:

- An elevation of the pay limit and the cutoff grades
- A reduction in available Resources for mining
- A reduction in the asset value for current cost financial reporting
- A reduction in market value
- A more significant effect on marginal operations
- An encouragement for high grading options
- A material effect on NPVs as a result of these effects
- A disincentive for exploration expenditure on projects that do not exhibit upper quartile values.

Entrants into the market often establish their businesses in marginal Resources. This has been the case with Harmony, ARMGold, AFL, NDC, SA Chrome and many others. These Resources have also provided the entrance to the business for many Black Empowerment partners, through various Joint Ventures, Equity Partnerships and other financial arrangements. Elevating the cutoff grade through the application of Revenue based Royalties is a direct disincentive to this activity. Royalties based on profit or NSRs do not have this effect, since Royalty effectively becomes a share of the spoils. Therefore, a Royalty system should be introduced that does not elevate cutoff grades at the start, but rather which collects income from net profit.

Section 8

The effect of the Royalty on the cost of capital

The cost of capital

This section is essentially about the attractiveness of the South African mining industry, to the investor, whether it be a local and large mining company, a foreign company, an entrepreneur or a speculative investor. Traditional theory establishes a balance between risk and reward, but for the investor in mining, the call is for maximum return for minimum risk. In order to assess the competitiveness of a South African opportunity to that of a comparable investment elsewhere, the investor will assess various measures such as:

- The size of the Resource
- The projected cashflow and its NPV and IRR
- Various ratios such as Net Asset Value, earnings per share and market capitalization per ounce
- Risk, both internal and external

Clearly, the first of these has already been discussed in terms of the Royalties, in the previous section, and results in a discount as a result of the Revenue based Royalty. The second measures (NPV and IRR) have also been discussed extensively in Section 6, showing the diminished returns that can now be expected.

In terms of the ratios, these are based on the projected cashflows, and expected dividend flows. Currently, it is a well documented fact that North American (indeed all) stocks trade at a premium to their South African counterparts. This is illustrated in Figure 14. The graph begs the question as to why such premiums exist for non-South African companies.

The answer has to do with:

- The home base of the company in terms of its economic stability
- The home base of the company in terms of its political stability
- Perceived residual external risks
- Internal technical risks
- Track records of success.

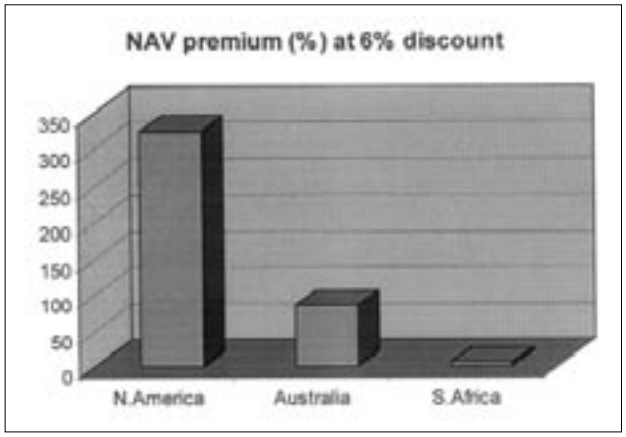

Figure 14—Net Asset Value premiums on mining stocks. (Smith, 2002)

Figure 14 illustrates the differential that already exists to deter the potential investor from investing in South African mining companies. One should now add the effects of uncertainty and risk in terms of the Royalty, and the fundamental reduction in NAV brought about by the Revenue based Royalty, to arrive at the real discount that will be applied by the market, in assessing Market Value (and hence investment attractiveness) of the share.

What is the result of this in terms of risk and reward for the investor? The answer is simple:

- The risk has been increased
- The reward has been decreased.

Clearly these effects have already been at play when one refers back to Figure 11. Financing of the venture takes account of the cost of capital, and this amount should be used as the discount rate for the mining venture. The cost of capital is a weighted average of:

- The cost of debt finance offered by the financial institutions
- The cost of equity, being the returns expected by the shareholders.

As each of these increases, so does the risk of the company not meeting its financial obligations, from its cashflow.

Effect of the Royalty on the cost of equity finance

Debt finance charges are determined from:

- US risk-free rates
- SA inflation premiums
- SA country risk premiums
- Banker's risk premiums.

The Banker or Financier, will incorporate a risk premium for the diminished margin, as a result of the Royalty, and the increased risk imposed by the increased likelihood of non-coverage of the debt repayment (which is a post-royalty event). The result will be a higher interest rate, or a change to the financing structure whereby the Financier takes part of the future cash flow as security against default. This increases the risk to the equity holder.

Effect of the Royalty on the cost of equity finance

The cost of equity is calculated from the Capital Asset Pricing Model (CAPM), which assesses the returns required by the investor, related to the historical returns expected by the market as a whole. It is therefore based on market returns, and the risks associated with the operation at hand. As a result of the application of the Royalty, in addition to the discounts already described above, the cost of equity can be expected to increase.

The overall effects

The combined effect of the Revenue based Royalty on debt and equity finance is an increase in the cost of capital. Assuming this premium to be 2% on a base of 12%, the result on NPV is as shown in Figure 15.

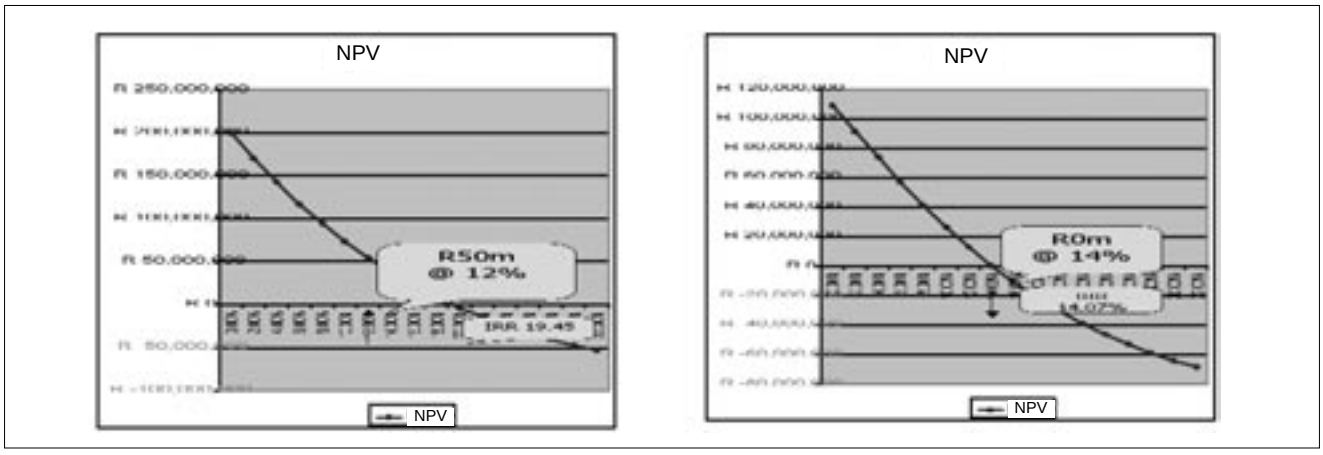

Figure 15—Cost of capital effect

Figure 15 shows the decrease in NPV (and hence NAV and share price) of our asset, as a result of the increased cost of capital.

Conclusions

The conclusions to be drawn from the effect of the Revenue based Royalty on the Cost of Capital are that:

- The Cost of Capital increases
- The result is to diminish the returns of the project
- It will become increasingly difficult for entrants to raise finance because of the increase in financing charges
- South African Cost of Capital will become out of step with other competing countries
- Projects will fail the hurdle rate test, and be rejected because of the higher discount rates applied
- As a result, new projects, organic growth projects, expansion projects and new investments will be curtailed
- Mining investment finance will be directed elsewhere, where finance is cheaper and risks are less.

It is thus strongly recommended that a Royalty system be introduced that does not bring risk upon a project, and which does not result in an increase in discounts and discount rates. The system should encourage investment rather than have the effect of discouraging it because of these effects. In particular, it should reward new entrants into the market and encourage exploration, especially from the BEE sector. Incentives to financing institutions and major companies should result in lower Royalty payments where material BEE progress is being made.

Section 9

Alternatives

It serves no purpose to demonstrate that the Royalties for some mineral commodities proposed in the Royalty Bill are out of step with international best practice without recommending alternatives that will meet the following official government criteria, as they appear in the White Paper of the Minerals and Mining Policy:

- *'Government will seek to create a macro and regulatory environment conducive to economic growth and development, in which the mining industry can make effective use of its human and capital resources'* (Section 1.1.4)
- *'In developing mining tax policy, Government is committed to ensuring that the tax regime will be consistent and stable and that the aggregate rate of tax will be internationally competitive'* (Section 1.2.4)
- *'...provision will be made for:*
  1) predetermined standard terms and conditions, for all prospecting and mining licences'
  (Section 1.3.6)

Alternative 1: Continuation of existing regime

The first alternative is to retain the current method of collecting royalties over state-owned minerals. This method is based on principles such as *'ability to pay'* and *'the need to negotiate tailor-made royalties for each mineral project'*. The disadvantage of this system is that, because each project is considered individually, there may be considerable delays in the application of rights. The method involves the following process:

1. An application is made to the Department of Minerals and Energy (DME), which application contains a proposal
2. The DME investigates the merits of the application and decides on a level of royalty that conforms to the pre-determined guidelines;
   a) If based on profits, the rates were usually fixed between 5 and 25%
   b) If based on revenue, the rates were usually fixed between 1 and 5%.

Alternative 2: Recent proposal by M. van Blerck

(Independent mining taxation consultant)

The second alternative, as published in *Business Day*, is a re-introduction of the defunct lease formula. The rate determined by the formula is applied to profits, which results in compliance with the *'ability to pay'* principle. The disadvantage of this system is that the state will not receive any royalties when the mine is not operating above a minimum profitability level. Van Blerck's formulae for the different commodities are:

Category 1: Applicable to gold, platinum, silver, vanadium, chromite, titanium oxide, oil and gas: $y = 6 - \frac{30}{x}$

Category 2: Applicable to diamonds: $y = 12 - \frac{60}{x}$

Category 3: Applicable to other minerals: $y = 2 - \frac{10}{x}$

Where y is the royalty rate and x the profitability ratio, both expressed as percentages.

Alternative 3: Ph.D. proposal by F.T. Cawood

The third alternative is a compromise between the need for the state to receive a stable inflow of mineral royalties, while at the same time satisfying the need for the *'ability to pay'* principle. It involves the following formula for all mineral and petroleum commodities, which rate is applied to net smelter return:

$y = 1 + \frac{x}{50}$

One could obtain various maximum rates of royalties using this format. For example, if the current maximum rate of five per cent for state-owned mineral rights were the aim, the structure of the formula changes to $y = 1 + \frac{x}{25}$. **However, the research in Section 5 demonstrates that a maximum of two per cent is more appropriate for deposits such as Witwatersrand gold mines, in which case the formula will change to** $y = 1 + \frac{x}{100}$

Section 10

Conclusions and recommendations

Conclusions

Mining companies today have a greater geographic choice of investment than ever before. The ease and pace of

investment funds flowing between financiers and investment targets have left host countries in the developing world with difficult challenges. Most notable amongst these is the balance between replacing the colonial legacies with nationalism while at the same time offering an investment environment that attracts scarce foreign direct investment that is desperately needed to develop the domestic mining industries.

Low mineral prices and increased risk in developing these minerals have combined to make mining investors highly selective when deciding on investment destinations. As a consequence, a comparative advantage in natural mineral wealth no longer necessarily secures prosperity for the host nation. There is a strong relationship between attracting investments and a country's investment rules. This is mainly because of the impact these rules have on the return on investment compared to the risk of investing capital.

The mineral investment environments of five investor-friendly, developing countries have been scrutinized with the objective of establishing a Competitive Investment Framework. The framework defines the most investor-friendly economic, fiscal and regulatory environment for minerals investment in the new millennium. The Royalty Bill has been measured against this framework of best practice with the view to recommending some issues that may be considered for inclusion into an alternative regime.

Recommendations

It is my considered opinion that if the following recommendations on the Royalty Bill were implemented, it will conform to the vision of *'international competitiveness'* as expressed in the Minerals and Mining Policy for South Africa:

Recommendations arising from this research analysis

- Apply royalty rates to *Net Smelter Returns* and not *Gross Values*
  - Definition Section 4 of this report;
- Limit the maximum royalty to three per cent
  - Motivation in Section 3 of this report;
- Allow deduction of historic costs on mineral rights acquisitions
  - Motivation in Section 4 of this report;
- Introduce a standard formula for collecting royalties
- Offer tax stability agreements to mineral investments above a minimum threshold
  - Examples in Sections 3 and 4 of this report.

Recommendations not arising from this research analysis but believed necessary

- Introduce standard fees for prospecting, retention and other rights provided for in the Minerals and Petroleum Resources Development Act.
- Simplify the small-scale mining taxation regime by introducing a standard tax based on a percentage of gross income, which rate includes all taxes, levies, mineral royalties and other payments to the state.
- Encourage investment in remote regions by giving special tax incentives for mineral development in rural areas. This initial sacrifice could stimulate local economies and give employment opportunities in rural areas.
- Allow ownership of, and control over, low value aggregates and construction materials by lower levels of government. These minerals are not of national importance but are of great importance to local government.
- Use mineral royalties for a Minerals Development Fund, which may include provision for social upliftment reparations as a consequence of mining.
- Provide a Royalty holiday for new projects, by creating a royalty appropriation system similar to that used in the case of taxation.
- Provide incentives for early conversion from old order to new order rights, by way of royalty-free period in the conversion deadline.
- Provide royalty reduction associated with BEE initiatives, in the form of a scorecard achievement checklist.
- Explore the total tax package, in order to bring global equity to the package, by applying appropriate reductions and incentives to compensate for the royalty, perhaps through the introduction of royalty allowances and depletion allowances. It may also be the appropriate time to incorporate into this review, the equalization of all mining taxes.

A final recommendation

This submission is critical of the proposed Royalty structure. However, it is clear and accepted that a Royalty system of one form or another will be necessary. What is up for debate as far as this submission is concerned, is the form of the Royalty. Several alternatives have been suggested, which would address the concerns expressed within this submission and by attendees at the SAIMM Colloquium. In addition, many other suggestions have been suggested which could enhance the holistic ambition of stimulating the development of the minerals and petroleum industry for the good of current and future generations of South Africans. The final solution is so critical in its importance that it cannot be approached without due process.

It is therefore strongly recommended that the formula and methodology for the implementation of the Royalty be worked through diligently, with due consideration of all alternatives suggested. This process must be given adequate time for due diligence and process.

It is also recommended that this process be enacted through the involvement of a team of experts in the field, who will represent the best interests of labour, industry and government.

The contributors to this submission, in particular, would be most eager to be part of such a due process.

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OBITUARY

		Date of Election	Date Deceased
C.M. Chatira	Member	31 October 1997	2003
R.A. Lee	Retired Fellow	12 October 1962	13 March 2003