A new royalty for South African mineral resources

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Synopsis

The new South African Mineral Policy has major implications on the way mineral rent will be collected and shared between the stakeholders in future. Although the policy does not supply details on how this will be done, drastic departures from practices under the previous dispensation require a new approach. For example, the reintroduction of the 'right to mine' principle implies that the repealed lease consideration concept will be expanded to all minerals. The new policy also makes provision for predetermined standard terms and conditions for all prospecting and mining permissions. It also states that, regardless of whether the mineral rights are state or privately-owned, all prospecting fees and mineral royalties will be determined by state officials after consultation with the registered holder of the mineral rights. This paper proposes a standard mineral royalty formula that complies with the principles mentioned in the White Paper and has been shown to be internationally competitive.

Introduction

The Department of Minerals and Energy released the new Mineral Policy in October 1998[1]. Although the policy does not supply details on how royalties will be collected or which mineral rent capturing instruments are to be employed, a long-term view on mineral rights holding and administration can be established from the 'body language' of the White Paper. It is the intention of the government to vest all mineral rights in the state 'for the benefit of all the people of South Africa' by applying the 'use-it or lose-it or use-it and keep-it' principle. Mineral rights in South Africa constitute rights in land and are therefore a protected property right in terms of the country's Constitution[2]. Two main categories of mineral rights ownership exist in South Africa, namely state- and privately-owned mineral rights. These two categories are further mixed and sub-divided resulting in complex combinations of state, private and trust land[3]. The Restitution of Land Rights Act No. 22 of 1994 adds another dimension of complexity to property holding by its appropriate recognition of the rights of indigenous peoples. Against this background it is no surprise that the new policy calls for a simplified system of mineral rights holding in which the state's authority as custodian of the nation's mineral wealth is amplified.

The competitive investment framework

The international political and economic environments relating to the development of mineral resources have changed substantially over the years[4]. The colonial system of minerals administration at the turn of the previous century allowed easy and cheap access to mineral rights for investors from the colonial power. This was followed by an era of extreme nationalism, which resulted in the nationalization of some mining projects in an attempt by the host country to capture all rents. In the era of nationalism, the bargaining power shifted in favour of the host country, resulting in less than satisfactory terms and conditions for mineral investors. Increasing risk because of a spate of nationalization of mineral projects during the 1960s and early 1970s led to a dearth of capital investment in these states. Continuous deterioration of mineral projects because of poor public administration and a lack of investment in exploration, led to the failure of nationalized industries. Host governments recognised this as a serious problem and opted for a more balanced distribution of rents in an attempt to rejuvenate their mining industries. There is now a strong relationship between the success in attracting investment and the efficiency and effectiveness of a host country's investment code. Research into the mineral investment environments of investor-friendly, developing countries lead to the creation of a Competitive Investment Framework (CIF)[5]. The CIF was

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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. Some of the fiscal aspects of the framework are indicated in Table I below.

In terms of fiscal policy, the CIF indicated that a typical developing country seeking foreign investment should set corporate tax rates between 30 and 35 per cent. In 1999, the South African government recognized the need for tax reform and reduced its corporate tax rate by five per cent from 35 to 30 per cent. However, the very high 12,5 per cent tax on distributable earnings (or secondary tax on companies) indicates that South Africa is certainly not following the trends elsewhere in the developing world. Effective tax rates were calculated using country-specific information in a cash-flow model for several mineral projects in seven developing countries. 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; a large limestone project; a medium-sized underground coal mine and a copper mine.

Wealth creation is the principal reason for capital investment in mineral projects. The distribution of rent between the country hosting the mineral resource and the investor is therefore of critical concern and a split of about 60:40 in favour of the investor was found to be the optimal distribution[5]. In South Africa however, the distribution of rents was found to be 53:47 in favour of the government.

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 the royalty. The remainder of the host country's share of mineral rent was made up of minor taxes that have 'nuisance' value.

Table I

Fiscal criteria in the Competitive Investment Framework (1996)

Criteria	Range (1996)	Average	South Africa
Corporate tax (%)	30–35	33,1	35–40
Withholding tax (%)	0–7,5	1.25	12.5
Mineral royalty (%) (Revenue-based)	0–3,0	1,3	2,5–5,0 (Sometimes 1%)

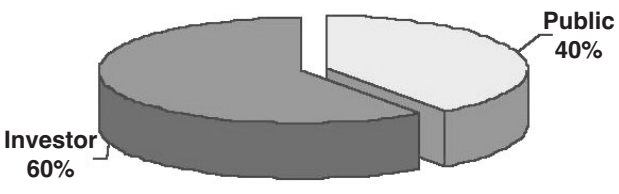

Figure 1—Proposed distribution of rents

The mineral royalty: A major international rent instrument

A mineral royalty is by definition, payment to the holder of the mineral rights for minerals that are extracted from the land and sold on the markets. Mineral royalties were the most popular fiscal instruments used by governments to collect mineral rent prior to World War II[6]. Since then, governments have changed their fiscal policies from revenue-based (mineral royalties) to systems that rely on profit-related instruments, such as income tax. One should be aware of the significant differences in attitudes between private owners of mineral rights and state officials, who administer the rights on behalf of the public. As a consequence, there may be significant differences in the expected royalty for comparable mineral resources based purely on ownership.

The wide range of mineral royalties found internationally can be divided into three main categories, namely lump sum, production and profit royalties, of which production and profit royalties are periodic. Lump sum royalties represent an outright purchase of the mineral rights at a fair market value. This method is a proven means of capturing mineral rents when private ownership of mineral rights is allowed and there is an active market that trades the mineral rights. There is always a possibility that the resource owner may lose a significant portion of rent if the venture yields bonanza returns after the sale. If the resource owner is a government, it can be open to severe criticism from its constituency for allowing national wealth to be dissipated. Periodic royalties, as shown in Table II, are paid in installments over the life of the mineral resource and have historically been levied on either production or profits. Ironically, both methods have the same shortcoming; production royalties shift the risk to the investor while profit-based royalties result in the risk being transferred to the resource owner. The net smelter return royalty has emerged as a popular alternative to either one of the two extremes.

At present there are a number of royalty options available to investors in the minerals sector of South Africa when mines are established over state-owned mineral rights. The advantage of the current system of determining royalty payments is that it gives investors the opportunity to negotiate tailor-made royalties for their particular circumstances. Royalties based on revenue or costs plus a premium normally range from one per cent, but more often 2,5 to 5 per cent while profit-based royalties are usually charged at ten per cent. The 2,5 per cent royalty had its origin in Law 14 of 1878 of the old Transvaal Republic. This mineral royalty was applicable to gold until 1910, when the lease consideration concept was introduced. By then the mineral laws distin-

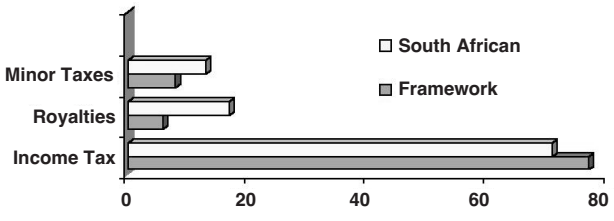

Figure 2—Distribution of public rents

Table II

Different categories of periodic mineral royalties

Description	Production royalties	Net smelter return type royalties	Profit royalties
Examples	Unit royalties Unit-based sliding scale Gross sales revenue Production costs	Net smelter returns Free on rail Free on board	Working profit Taxable income Additional profits Resource rent
Exposure to risk: Resource owner Investor	Low risk High risk	Medium risk Medium risk	High risk Low risk
Advantages	Easy to calculate, collect and monitor Inexpensive to administer	Compromise between production and profit royalties	Neutral instrument
Disadvantages	Marginal producers may become uneconomic Encourage overmining of resource grades		Complex to calculate Expensive to administer

guished between mineral types and stipulated a rate of one per cent of the value of the minerals mined for base metals, *regardless of mineral rights ownership*.

An equitable royalty formula for South African mineral resources

Several factors must be taken into consideration when designing a royalty, namely:

- The legal system (Civil or common law—with common law, as is the case for South Africa, the decisions of an administration under one government are not binding on the next)
- The political will as expressed in the national interest, mineral policy and mining agreements
- The identity and expectations of the resource owner
- The bargaining strength of the investor
- The unique properties of minerals (location, grade, size, etc)
- Resource economics (variation in price and cost for mineral production)
- Whether the minerals are main-, co- or by-products
- Marketing requirements (including the degree and method of processing required)
- Socio-economic factors (local community expectations, employment opportunities, etc.).

When looking at a new formula for capturing mineral royalties in South Africa, one should first consider historic events. The Union of South Africa issued the first mining lease in 1910 to Government Gold Mining Areas. The lease contained two separate formulae depending on profitability. However, both formulae were subject to a minimum lease rate (y) of 10.75% and they had the following structure:

$y = 5.467 + 1.06487x - 53.66/x$ when x was less than 36.1702, or

$y = 82.5 - 1446.81/x$ when x was greater than 36.1702

Where y is the lease rate and x the profit-to-revenue ratio expressed as a percentage.

An examination of the two formulae revealed the following three important issues:

- One, an appreciation of the 'ability to pay' principle by basing the lease consideration on profits, rather than on revenue. The structure of the two formulae ensured that highly profitable ventures paid a higher consideration than other operations
- Two, the importance of connecting a minimum rate to a profit-based sliding scale formula to guarantee some payment to the state when profits are not realized
- Three, there was no provision for any lease-free revenue as is the case today. Currently the sliding-scale format of the tax formula exempts the first five per cent of profits from being taxed.

Mr I.J. Haarhoff proposed a wise scheme for collecting royalties for all mineral types in his submission to the Frames Commission of Inquiry in 1917[7]. The Commission investigated the desirability of increased state involvement in the Witwatersrand gold mining industry. Although Haarhoff did not supply the Commission with a formula, the key words of his submission contained the following important issues:

- The state must impose a royalty, rather than looking at increased state involvement
- The royalty must be levied on revenue, but at the same time recognize profitability
- The government must exercise some discretion when revenue-based royalties result in a mine becoming unprofitable.

Over the years, the state has made several attempts to adopt formulae that would provide for minimum payments, but none could be sustained for a significant duration. As discussed earlier, internationally competitive mineral royalties should not be more than three per cent. Taking cognisance of this maximum rate, Mr Haarhoff's scheme would probably have taken on the following format if it were to be expressed in a formula:

Y = minimum royalty levied on revenue + allowance for higher royalties in times of high profitability, or simply

$Y = a + b$, subject to a provision for a special royalty for extraordinary mineral projects.

An examination of the a-factor in the above equation revealed that there is a case to be made for the minimum royalty to be implemented as one per cent for the following reasons:

- Recently, some precedent has been set for one per cent revenue-based royalties at capital intensive mineral projects such as gold and platinum
- The one per cent royalty on the value of the minerals mined dates back to 1897 and was applicable to base metals on both crown and private land in South Africa
- Revenue-based royalties are encountered in most mineral lease agreements over both private and state-owned mineral rights, starting at a minimum of one per cent
- The one per cent minimum royalty also complies with

the recent agreement between Impala Platinum Mines and the Bafokeng Tribe, which is a transaction over privately-owned mineral rights.

The second part or *b*-factor of the formula was more difficult to determine, as the many past experiments by government clearly indicate. Previous attempts could not stand the test of time when thresholds were linked to mineral grades or some arbitrary profit level. The only variable that proved its usefulness over the years is the *x*-ratio, which is defined as the profit-to-revenue ratio in a given tax year. Perhaps the most important characteristic of this ratio is that, because it is a measure of profitability, its principle applies to all mineral types, ranging from a sand mine that requires a relatively small capital outlay to a large mine that requires substantial capital investment. In order to achieve Haarhoff's proposed royalty where highly profitable mines must pay a higher royalty and vice versa, the second part of the formula must then be expressed as follows[5]:

$$b = \frac{X - \text{Ratio in current year}}{\text{Standard } X - \text{Ratio}}$$

The maximum royalty determines the standard *x*-ratio, which has been shown should not be more than three per cent (See Table I). In order to achieve a *b*-value of 2 per cent, the profitability ratio must be at a maximum, i.e. a standard *x*-ratio of 100%. Hence the standard *x*-ratio was calculated as 50 per cent. If this ratio is incorporated in the structure of the original formula, it would have had the following appearance:

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

Subject to a provision that the formula must be negotiable when the total royalty results in a mine becoming uneconomic.

Table III below shows how the royalty rate varies according to mine profitability. Note the sliding nature of the rate between one and three per cent depending on profitability.

Although the proposed royalty is revenue-based, the sales revenue in the formula allows for certain allowable deductions from the gross sales revenue before the royalty rate is applied to it. These deductions are the cost of transport to the point of sale, handling fees during transportation, processing and marketing costs, which makes it a 'net smelter return' type periodic royalty as explained in Table II.

Table III

Varying royalty rates according to mine profitability

Profit to revenue or *x*-ratio (%)	Royalty rate *y* % = 1 + x/50	Remarks
0	1.0	Minimum royalty
5	1.1	Royalty applicable to a marginal mine
10	1.2	
20	1.4	
40	1.8	
80	2.6	
100	3.0	Maximum royalty

Evaluating the royalty formula

International criteria

The principles of a good minerals taxation regime apply equally to mineral royalties. Ideally, the royalty should be neutral, efficient, fair, clear and non-disruptive to both government and industry. A tax conforming to these criteria should not affect mineral supply in a negative way. Table IV summarizes the results of an exercise to measure the integrity of the formula against these criteria.

Special attention was paid to the clarity standard, which relates to the ease of administering the royalty and the transparency of the entire royalty regime. For any new royalty to be acceptable, it must be easy to understand and cheap to administer. The simple structure of the proposed formula means that administration should be easy because sales records are readily available, the allowable deductions are already reported for income tax purposes and the *x*-ratio has been used by the mining industry for nearly a century.

Mineral policy criteria

The proposed mineral rights system described in the White Paper, through the reservation of the state's 'right to mine' principle, suggests two layers of compensation. The formula provides for sharing the benefits between the owner of the mineral resource and the state, who has the right to mine these minerals. Through the implementation of the minimum royalty (resource owner's compensation) and surplus compensation depending on the profitability of the project (state's compensation) a split of revenues will result. The sharing concept is successfully applied in many countries, such as Australia, Indonesia and Ghana.

The split of royalties as proposed for South Africa may be unacceptable to private holders of mineral rights, who will expect a higher compensation than the formula prescribes if the state grants a prospecting or a mining authorization over his or her rights. This obstacle may be overcome by linking the formula to a once off 'intervening compensation' payable in advance to the loser of the right, by the party who benefits by such state intervention. This effectively means that the mineral rights must be valued after which the net present value of the royalty is subtracted from the discounted value of the mineral rights in order to obtain the possible loss by the holder of the mineral rights. This 'loss' may then be for the account of the party who benefits by the state's intervention. This way the state will not have to pay compensation and the mineral rights tax mentioned in the White

Table IV

Integrity of the proposed formula

Criterion	Finding	Remarks
Neutrality	×	This standard prefers taxes levied on economic rent, rather than on taxable income or revenue
Efficiency	✓	Risk is shared by both parties because of net smelter return definition
Equity	✓	Equitable allocation of royalty burden among all mineral types
Clarity	✓	Structure of formula is clear to both government and taxpayer
Stability	×	Although the formula contains elements of the current regime, it is nevertheless a departure from the previous administration

Paper will be redundant. It should be remembered that the goal of a tax on mineral rights should not be to nationalize mineral rights, but to encourage sound mineral resource management.

Beneficiation criteria

As mentioned earlier, any appropriate royalty formula must consider the unique characteristics of the mineral resource. This uniqueness is normally reflected in the sales price and cost of delivery. The amount of processing required should also affect the royalty rate. The formula, through its definition of revenue and separate mechanism that acknowledges profitability, automatically recognises downstream beneficiation of mineral products. In addition, the state may forfeit its share (*b*-factor in the formula) in order to promote downstream beneficiation of mineral production. This will result in a fixed royalty of one per cent to the holder of the rights and none to the state except when the mineral rights are owned by it.

Y% = 1% for beneficiated minerals derived from state-owned mineral rights.

To successfully introduce this strategy to promote beneficiation, a clear definition explaining the subtle differences between the levels of downstream production, is required. A clear definition of terminology relating to downstream processing is required in order to determine at which point the benefit of the reduced royalty is passed on to the producer. The following terms are suggested as points of departure for further research into this field:

- On-mine processing to increase grade (blending, crushing, flotation and concentration)
- Refining concentrates to high purity metal
- Beneficiation through metallurgical and manufacturing process
- Value added through production of consumer goods.

Competitiveness

The competitive mineral investment framework regards a royalty regime that ranges from zero to three per cent as competitive and investor-friendly[5]. The formula makes provision for varying minimum and maximum royalty rates depending on profitability. Using the CIF as a guide, the South African government should avoid any royalty above the three per cent threshold.

Conclusion

The recent global trend towards revising mining codes, has inadvertently led to an attempt to universally standardize mineral royalties by those developing countries who are relying on their mineral resources for economic growth. Royalty instruments have the potential to severely impact bottom-line profits. The formula proposed in this paper is the product of research in 'engineering' the optimal distribution between public and investor rent, both internationally and in South Africa. By incorporating the mineral royalty formula discussed earlier into the current administration, South Africa's royalty policy can be regarded as competitive and fair to both investor and government.

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SA holds world's first conference on new industrial uses for gold*

The first conference ever to focus on new industrial uses for gold—including its application in the remediation of environmental pollution—will be held in Cape Town from 2 to 5 April this year.

Organized by the World Gold Council, AngloGold, the Catalysis Society of South Africa and Mintek, the International Catalytic Gold Conference will bring together the world's leading researchers in what is a relatively new field of study.

Gold is not traditionally known for having catalytic properties. That it has such properties at all is still news to many. However, what is really interesting is not that gold can be prepared in catalytically-active forms, but that such materials have unique and commercially attractive properties. In some instances catalytic gold seems to offer activity at unprecedented low temperatures, in others it offers the promise of greater selectivity.

And it is these new insights that are attracting the attention of scientists and technologists worldwide. Not only are gold catalysts being investigated for possible use in heavy industrial processes, they are also being tested for application in the area of environmental control.

The conference will be attended by representatives of major research initiatives in Europe, Japan, North America and southern Africa as well as by delegates from the laboratories of many of the world's larger chemical industries, who are expected to take careful note of the utility of the findings presented. ◆

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LEICA wins order for GPS-based machine guidance system at South African coal mine*

LEICA Geosystems has received an order from Anglo American Coal Corporation Ltd (Anglo Coal) to supply a Dozer 2000 GPS machine guidance system for the Kriel Colliery in South Africa..

The Dozer 2000 installation at the Kriel mine will consist of a fixed reference station, a bulldozer-mounted mobile GPS receiver and computer, and a local radio network for transmitting data between the reference station and the mobile unit. LEICA will be responsible for all aspects of equipment supply, installation, commissioning, testing and training.

The Dozer 2000 is a satellite-based machine guidance system that permits a bulldozer operator to control the vehicle and blade precisely without the need for survey stakes. The system uses signals from GPS satellites, with error corrections from the local reference station, to measure the position of the vehicle with centimeter-level accuracy in real time. Position data is fed to an AutoCAD-based engineering software package running on a ruggedized touch-screen computer in the vehicle's cab. The computer clearly displays the vehicle's position and movement in relation to a predetermined design surface and guides the operator with graphic instructions for left/right steering and cut-and-fill values.

The Leica system at Kriel will be used for support of strip mining site rehabilitation and other earth moving activities. The order for the Kriel mine followed on a successful demonstration of the Dozer 2000 system at the New Vaal Colliery, another Anglo Coal mine, earlier this year.

Anglo Coal is a wholly owned subsidiary of Anglo American Plc and is one of South Africa's largest coal producers. Anglo Coal produces coal for the local power generation circuit as well as export markets. Collieries are mostly located in Mpumalanga and Kwazulu-Natal, The Kriel Colliery produces No. 4 seam bituminous coal by strip mining and underground.

Based in Torrance, California, the GPS Business Area of Leica Geosystems Inc. designs, manufactures and markets professional products using the Global Positioning System (GPS) for a broad range of survey, mapping, navigation, positioning, machine control and other applications.

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