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DETERMINING THE OPTIMAL RENT FOR SOUTH AFRICAN MINERAL RESOURCES

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**A thesis submitted to the Faculty of Engineering, University of the
Witwatersrand, Johannesburg, in fulfilment of the requirements for the degree
of Doctor of Philosophy.**

Johannesburg, 1999

DECLARATION

I declare that this thesis is my own, unaided work. It is being submitted for the degree of Doctor of Philosophy at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at any other University.



Frederick Thomas Cawood

This 30th day of August 1999.

“In this world nothing can be said to be certain, except death and taxes”

Benjamin Franklin

ABSTRACT

Globalisation has escalated dramatically since the end of the *Cold War*. Mining companies now have a greater geographical choice than ever before. This has resulted in them becoming more selective when directing investments. As a consequence, a comparative advantage in mineral wealth no longer necessarily secures prosperity for the host nation. There is a strong relationship between the success in attracting investment and the attractiveness of a country's investment rules. These investment rules impact on the returns investors will receive for risking their capital. An important characteristic of any commercial sector is the presence of economic rent. For the minerals sector a variety of rents must be shared among many stakeholders. The mineral investment environments of six investor-friendly, developing countries have been scrutinised with the objective of establishing optimal sharing ratios and applying these results to determine an internationally competitive mineral royalty formula for South Africa. There are a wide variety of royalty instruments to choose from, ranging from unit-based royalties to so-called resource rent taxes, each having unique advantages and disadvantages. One should appreciate that no single instrument is superior to another. However, the literature suggests that an appropriate instrument should include the properties of an *ad valorem* royalty while at the same time, being related to the value of the resource. The practical design of an appropriate royalty involves a trade-off between the aims of neutrality, efficiency, equity, stability and administrative simplicity. The formula derived in chapter eight is the product of the global pattern in the evolution of mineral royalties, the research described in this thesis and the unique characteristics of the South African minerals industry.

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South African model for limestone – 6.25 % STC

South African model for limestone – 0.00 % STC

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South African model for copper – 0.00 % STC

CHAPTER ONE

BACKGROUND, CONTEXT AND AIMS OF THE RESEARCH

1.1 INTRODUCTION

Foreign and local mining investors are faced with an investment environment of mixed opportunities and risks that include political, commercial, infrastructural and geological aspects. Many countries, particularly third world or developing countries, have made significant changes to their mineral policies over the past decade in an attempt to attract scarce investment capital into their economies. A possible reason for the lack of growth in the South African mining sector (discussed in chapter two) has been that other developing countries offer a more favourable investment environment. Table 1.1 clearly illustrates that South Africa has undergone significant changes in its mineral investment environment with each new political take-over. The recent political transformation ^{1.1} has provided a unique opportunity for research activities into mineral policy matters.

This research was prompted by the changing South African socio-political environment, the significant decline of the domestic mining industry's importance to the economy, the globalisation of mining finance, modern information and computer technologies and the experience base of the researcher in mineral royalty evaluation. The aim of this study was to investigate the impact of mineral royalties on the rent paid by investors when extracting South African mineral resources.

1.1 The latest political change occurred in April 1994 with the election of the African National Congress as the first democratically-elected political party in the history of South Africa.

Table 1.1 Relationship between political events and changes to the South African mineral investment environment

Year	Alterations to the investment environment	Political event
1652	Roman-Dutch legal system was introduced in the Cape. Principle rule of property based on Roman Common Law which recognised private ownership of property rights	Dutch colonised the Cape
1813	Cradoek Proclamation reserved the right to mine precious stones, gold and silver for the state	Cape fell under British rule in 1806
±1860	Various independent provincial states passed their own mineral statutes. The Transvaal government introduced a regime which later became known as the gold mining lease system	A consequence of the 1836 Great Trek into the interior
1912 onwards	Several statutes were passed which affected mineral ownership and the investment environment. Additional (Second World) war taxation applicable to all mines was introduced in 1939 which raised tax burdens significantly	Provincial states were unified into the Union of South Africa in 1910
1964 to 1992	New Acts on precious stones, mining rights and registration of mining titles were introduced	The Republic of South Africa was established in 1961
1996 onwards	New Mine Health and Safety Bill was promulgated in 1996. A new mineral policy for South Africa followed in 1998. Minerals Act No. 50 of 1991 reviewed	Election of the African National Congress into government in 1994

Sources: Cawood & Minnitt (1998)

Table 1.2

Stable political and legal frameworks, security of tenure, fair fiscal packages and liberal

exchange controls are considered the most important features, after mineral occurrence when investors decide on where to invest their capital. Research into these aspects of mineral policy and investment can contribute to South Africa's quest for a mineral policy framework that is acceptable to all the role-players in its minerals industry. It was the aim of this research to determine an equitable royalty payable by mining companies to the state for the depletion of South African mineral resources. Mineral royalties can have a significant impact on company returns and are therefore an essential component of any mineral policy framework.

Research of mineral policy and investment issues demand that the researcher maintains complete neutrality and objectivity during the discussion and assessment of highly controversial issues. The fact that the researcher was not directly associated with either government or mining finance, but had experience in both public and corporate environments, should enhance the credibility of the findings.

1.2 HISTORICAL BACKGROUND AND RELATED STUDIES INFLUENCING THE RESEARCH

Before discussing the organisation and aims of the research, previous studies that could shape the outcome of this thesis need to be analysed. These are categorised broadly under the following headings:

- Research into mineral policy and investment
- South African commissions of inquiry into mineral taxation and related issues
- Global comparison of mining taxes
- Research into South African mineral law

The list of research topics and investigations related to competitive mineral taxation issues is extensive. A literature survey revealed that the relationship between host government taxation and investor returns has been under continuous investigation for many years and it is

doubtful whether a practical, well-balanced solution will ever be reached.

From the volume of journal papers and number of books published recently, it is evident that there is a global sense of urgency to revise investment rules in order to attract the limited investment funds. Possible reasons for this urge to revise the investment rules of the developing world include the political and economic reforms in the former Soviet Union, the economic freedom and democratising of many developing countries and the mobility of world mining investment capital in a global economy.

1.2.1 Research into mineral policy and investment

The relationship and synergies between a country's mineral policy and the extent of foreign and domestic investment in mineral projects has been the subject of extensive research in the past decade. The findings have been remarkably similar in content as well as in the intensity of the message conveyed to investors and host governments. The most notable finding is the strong correlation between the extent of mining investment activities in a country and the attractiveness of its investment rules. Having established this relationship, the previous investigators found that the issue uppermost in the minds of the investor and host government was the way in which mineral rents were to be distributed between the two parties through taxation and royalty instruments. This issue became the focal point of this research. In South Africa, with its system that allows for both state and private ownership of mineral rights, the matter is more complicated. This complication arises because the mineral rent must sometimes be shared between various parties in order to accommodate the state, mineral rights owners and other holders of mineral interests.

The first recent study of note into mineral policy and investment issues was that of Otto (1992). The Centre for Petroleum and Mineral Law and Policy at the University of Dundee, under the guidance of Otto, had undertaken several studies in global mineral legislation patterns in recent years. In his 1992 survey he concentrated on countries in the Asian-Pacific region and questionnaires were sent to 100 companies world-wide, which gave the survey a global perspective. Otto's work indicated that the tax regime was one of the most important

factors contributing to country risk factors. He showed that a country's fiscal, political and legislative stability were the most important criteria for mine financiers when deciding on a destination for their exploration and mine development investment capital. The results of his study corresponded closely to that of Aylward, whose work is discussed later.

In a more recent conference paper on investment implications for Africa, Otto (1995) focused on the importance of sensible policies, mining codes and fiscal systems for attracting investment. He referred to "*a global mineral legislative and fiscal reformation*" that has been taking place since 1985. He observed a distinct policy shift from nationalisation to privatisation, reasonable tax terms and acceptable legislation in developing countries. These changes are a direct result of political stability in many of the ninety countries that have recently drafted new mining laws in order to attract investment. An interesting observation by Otto was the degree of competitiveness between developing countries in their efforts to attract mining risk capital. Governments have become increasingly aware of the investor's requirements when drafting their investment terms.

In his opening line of the foreword to *The taxation of mineral enterprises*, Otto (1995) referred to a "*quiet revolution taking place around the globe that is changing the ground rules for mineral investment worldwide*" (p. xiii). Many countries are in the process of drafting new or revised legislation in order to compete for scarce investment funds. The book provides information on issues, such as economic rent, the evolution of minerals taxation in a dynamic and continuously changing global environment and detailed discussions of the various tax instruments used by host governments in an attempt to share fairly in the rent generated by mineral resource development. A detailed discussion of these important issues appears in chapter three.

Although Otto's work on mineral policy issues presently enjoys wide recognition, other research efforts are also worth mentioning. A South African-based example is a recent dissertation by Aylward (1995). The following paragraph from the abstract neatly summarises the decision-making process for mineral investment: "*The decision-making process in international mining investment involves the collation and interpretation of an*

array of economic, technical and financial criteria. Furthermore, the conditions underlying these criteria are changing continuously and the potential impact on any mining investment decision has to be re-evaluated accordingly." The dissertation was based on a survey of opinion of mining finance executives, of which the results were used to chart the major changes in global investment patterns. Aylward emphasised the importance of attracting risk capital and influencing investment decisions in a globally competitive environment through host government policies. He concluded that the stability of political, legislative and administrative structures were the most important criteria for mining investment. In discussing these issues he showed that security of tenure, the ability to repatriate capital and the fiscal regime were the factors that contributed most to a country's risk from an investor's point of view. The responses Aylward received to his question about the relative importance of the factors contributing to country risk are worth noting. Fiscal and taxation issues received an average weighting of 2,9 out of a possible three during the exploration stage of a mine. It was second only to security of tenure, which had an average weighting of three. It had the same weighting during the production stage, but this time it was ranked first. Aylward's research proved the strong relationship between positive investor sentiment and the host country's ability to create a favourable investment environment in which both parties can prosper.

In a document describing a Strategy for African Mining, the World Bank (1992) focused on the reforms African governments should make to their mining codes in order to open their mineral sectors to private investors. The document serves as a guideline for African states on how to implement a regulatory and institutional framework that will ensure a healthy balance between mining investor returns and government share of wealth. It is no surprise that fiscal terms featured high on the agenda in the strategy to attract the multinational investor. In another World Bank publication by Strongman (1994), a stable legal framework, security of tenure, a fair fiscal package and liberal exchange controls were described as the most important features of a mineral policy that would attract new mineral investment. It goes without saying that mineral occurrence is the first requirement. In another World Bank (1990) investigation into the taxation of publicly-owned minerals, the spread of risk between the investor and host government was discussed in detail. After researching three typical

rent-capturing instruments, that is mineral royalties, income taxes and resource rent taxes, the investigators reached the following conclusion: *"No single instrument can be assumed to be superior for mineral-dependent developing countries. And more than one instrument may be needed to meet a government's multiple objectives"*. Cover page.

The report by Bradley (1986) into mineral revenues in Western Australia contained a comprehensive discussion on mineral royalty systems and how they related to the Western Australian regime. Bradley found that *"The different and sometimes conflicting criteria for royalties can best be satisfied by a system that incorporates more than one royalty instrument"*. p. 5. He admitted that the unique characteristics of mineral production such as cyclical markets, unpredictability of new discoveries, location in relation to the markets and the degree of required processing were all issues that warranted negotiation of royalties on a case-by-case basis. However, *ad hoc* negotiations also had disadvantages, namely inconsistency in administering policy by government officials and sometimes the presence of unrealistic expectations by both parties. This conflicting view of flexibility on the one hand and a standardised royalty system on the other, is highlighted in the following quotation: *"Standardization and consistency are interrelated, and both are desirable. If a single set of rules is to be generally applicable it must accommodate a diversity of situations. If it is to stand the test of time it must be flexible."* p. 173. He finally recommended that the preferred royalty instrument should be a combination of a basic *ad valorem* royalty (5 %) and a net value royalty (20 %). This two-fold royalty would allow the state to share in the net value of the minerals. Another significant recommendation was that the practice of treating gold differently (exempt from all royalties) should end. He stated that his two-part royalty system should apply to gold in the same manner as to other metallic minerals. His findings on the rationale to treat gold differently to other minerals, appear on page 240 of the report which reads as follows: *"The argument that is most emphasized in pleadings for continued exemption of gold from royalties is that imposition of royalties would damage the gold industry. This argument is misleading because it presumes that gross value royalties (GVRs) would be imposed. GVRs at high rates would indeed damage the industry by discouraging marginal investment. However, there is no evidence that a more suitable royalty system (such as the one recommended for general adoption) would cause damage of this sort."*

1.2.2 South African commissions of inquiry into mineral taxation and related issues

Before discussing the reports of the various commissions of inquiry instituted since the establishment of the Union of South Africa in 1910, it is necessary to review the work of Marius van Blerck, a local mining tax expert. Van Blerck (1990 and 1992) has published widely on mining taxation issues and his work is frequently used as a reference when explaining the South African gold mining tax and lease consideration systems. No other researcher has documented the complexities of the gold mining taxation and lease consideration systems as comprehensively as Van Blerck has.

Several commissions of inquiry related to mineral policy and mining investment matters have been undertaken in South Africa in the past. A catalogue of the reports produced by the various commissions of inquiry between 1910 and 1976 has been compiled by Scott (1979). The importance of mining in political and economic matters in the early days of the Union has been documented in the many investigations aimed at preventing the shut down of several of the Witwatersrand gold mines in the early nineteen twenties. Although there were several investigations into policy and tax matters over the years, no commission has ever been appointed to investigate mineral royalty matters.

This paragraph contains a brief discussion, in chronological order, of the inquiries that, in the researcher's opinion, relate to this study. This section should be read in conjunction with table 1.2, which indicates the changes made to the South African mining tax system as a consequence of the findings of the various commissions of inquiry over the years.

Table 1.2 The evolution of South African mining income taxes

YEAR	Gold mine income taxes (excluding lease consideration)	Income tax for other mines (%)
1910-1920	10% (standard tax)	Diamonds: 10% Other: 2,5 – 6% ^{1,2}
1920-1933	15% (standard) tax Gold standard abandoned in 1932	15%
1933 ^{1,3}	20% with a profit adjustment	15%
1935	As above, but maximum rate = 50%	20%
1936 ^{1,4}	20% with profit adjustment + 10% surtax or $y = 40 - 500/x$ (all inclusive)	15% + 10% surcharge = 30%
1939-45	Additional war-time (emergency) taxation applicable to all mines. The rates below must be added to the 1936 taxes 1939 = 9% 1940 = 11% 1941 = 16% 1942 = 20% 1943-45 = 22½%	
1946	$y = 70 - 420/x$	50%
1947	$y = 63 - 378/x$	50%
1948-50	$y = 60 - 360/x$	Diamonds: 40% Other: 27,5%
1951-55	$y = 63 - 378/x$	Diamonds: 40% Other: 27,5%
1956-84	Pre-1966 : $y = 60 - 360/x$ Post-1966: $y = 60 - 480/x$ Small mine: $y = 20 - 120/x$ Assisted mine: $y = 68 - 601/x$	Diamonds: 45 - 54% + 5% duty Other: 30 - 50% + 5 % duty
1989	Pre-1966 : $y = 75 - 450/x$ Post-1966: $y = 75 - 600/x$	Diamonds: 45% + 25% surcharge Other: 50 + 15% surcharge
1990	Pre-1966 : $y = 73 - 428/x$ Post-1966: $y = 73 - 558/x$	Diamonds and other 50 + 12 % duty
1991	Pre-1966 : $y = 71 - 409/x$ Post-1966: $y = 71 - 516/x$	50 + 9 % duty
1992	All mines: $y = 61 - 305/x$	48 + 6 % duty
1993	All mines: $y = 58 - 290/x$	48 + 3 % duty
1994	$y = 58 - 290/x$ or $y = 49 - 245/x + 25 \% \text{ STC}$	40 + 25 % STC
1995	$y = 58 - 290/x$ or $y = 43 - 215/x + 25 \% \text{ STC}$	35 + 25 % STC
1996	$y = 58 - 290/x$ or $y = 43 - 215/x + 12,5\% \text{ STC}$	35 + 12,5 % STC
1997	$y = 51 - 255/x$ or $y = 43 - 215/x + 12,5\% \text{ STC}$	35 + 12,5 % STC

Sources: Corbett (1936), Holloway (1946), Department of Mines (1976), Margo Commission (1987), Van Blerck (1990 and 1992), Department of Inland Revenue

- 1.2 Act No. 6 of 1910 (Mijnbelasting Wet) stipulated rates varying from 2,5% to 6% of profits depending on the profit to revenue ratio of the mines.
- 1.3 This adjustment was necessary because the gold standard was abandoned in 1932. The abolition resulted in excess profits for some of the gold mines. The government felt that it had a right to share in these excess profits and claimed additional tax by adjusting mining profits.
- 1.4 The 20 % standard tax was still applicable for most mines but some mines, e.g. Government Gold Mining Areas, paid taxes according to a higher sliding-scale type of formula which included the lease consideration, excess profits tax, corporate tax and tax surcharge.

The first inquiry was into state mining under the chairmanship of Frames (1917 and 1918). The mandate of this five-member Commission was to inquire into and report on the desirability of the state expanding its mining activities in the eastern Witwatersrand gold-fields. Most of the reports dealt with the pros and cons of state mining enterprises. The nature of the reports suggested that this was an emotional and controversial issue in South Africa's history, when some mines were under direct state control. The Commission was divided into two camps, the so-called majority (three members) and minority (two members) groups. The majority group, who were not in favour of state control, argued that the risk associated with developing mines was too high and that the state could not use public funds to operate mines. In their opinion the state would have fared better by collecting lease considerations and other tax revenues. The minority group wanted the state to own the mines, arguing that all profits would then find their way into state coffers. They considered the structure of the lease consideration formula unsatisfactory because it could result in the state receiving no revenue at all. The different points of view were defended energetically in two reports totalling 118 pages of information and international examples.

The members of the Frames Commission of Inquiry were so caught up in their personal beliefs that the real issue, of optimising and not maximising government revenue, was forgotten. In the researcher's opinion this Commission could have made a significant contribution to the way in which the state, as custodian of the national patrimony, was rewarded for its input to mining if they had taken note of the submission of a certain J Haarhoff. His contribution, on page twenty-five of the first report, addressed the real issue in a single paragraph that reads as follows: *"Mr J Haarhoff, a resident of Pretoria, objected to State mining on the ground that it would become a political engine, and suggested that the Government should claim a royalty on the output, irrespective of the profits, and this royalty should be based on a sliding scale, more or less on the yield per ton. It was pointed out to the witness that it would be unfair for the Government to exact a royalty on the gross production of gold from an unpayable mine, but the witness was not deterred by any consideration of this sort from pressing his scheme, and said he would leave the matter to the Government to arrange in the event of the property being unpayable"* (p. 25 par. 154). Other than this quotation, no further mention was made of Haarhoff's contribution. It appeared that,

when Haarhoff made his presentation, the members of the Commission were so engrossed in their power struggle that they failed to consider his objective, give-and-take proposal. Both majority and minority groups based their arguments on the perceived risk to the state, but failed to appreciate that a royalty on gross output reduced state risk regardless of who the mine owner was. The state could not lose revenue, which was the chief fear of both parties. The sliding-scale concept of royalties, implied in Haarhoff's suggestion, would reduce the mine risk and provide for an equitable payment to the government at all times. The argument that the Commission used for discrediting this proposal, was that a royalty system would place an unfair burden on unpayable mines. This was not valid because first, unpayable mines would cease operations if they were not competitive and second, it was the popular thing to say in a day of state-owned, loss-making mines. The impact that Haarhoff's contribution could have had on the flow of revenues to the state is further investigated in chapter eight.

The report of the Mining Industry Board chaired by Soloman (1922), investigated the affairs of the mining industry in the early days of the Union because the labour unrest in 1921 and 1922 had resulted in a strike by gold and coal mine workers in the Transvaal. Falling commodity prices marginalised profitability on many mines and led to the pay disputes (*pp. 1-2*). In its submission to the Commission, the Chamber of Mines (*p. 19*) pointed out that heavy customs duties on imported capital equipment, high railway tariffs and an unfair tax burden had contributed to the poor financial position of these mines. The board tactfully rejected the Chamber's findings by failing to consider their submission adequately and argued *"In our opinion, these are matters which fall outside of the terms of our reference"* (*p. 19*).

The report, *Taxation: Natal*, by Wadley (1928), dealt with the fairness of provincial taxes in Natal in the early days of the Union. Between 1910 and 1913, provincial governments had been financed by the Central Union Government. In 1913, new legislation required the provinces to raise half of their budget by introducing provincial taxes, while the remaining fifty per cent was to be provided by the Union government. The legislation of 1925 (Act No. 46 of 1925) further increased the taxing powers of the provinces. This was necessary because the fifty per cent Union funding was to be phased out and provincial governments had to

support themselves fully. Provincial governments henceforth had the right to impose taxes on companies, including mining operations. Companies already had to carry a significant tax burden imposed by the Union government and it was recommended this additional provincial tax revenue could not be squeezed out of the over-taxed companies. However, the mining industry did not escape provincial taxes entirely because transfer duties, collected when mineral rights were sold, were identified as an important source of revenue for the provinces (p. 11). The lesson for modern South Africa from this experience is that the creation of a multiplicity of authorities with taxing powers “... is the means of creating much irritation and resentment” (p. 4).

The findings of the Mining Taxation Commission, chaired by Corbett (1936) had more influence on shaping the style and future of gold mining taxation than any other commission of inquiry in the history of South Africa. An understanding of the historical context and the sequence of events that led to the inquiry, is essential. Until 1932 the corporate sector, including gold mines, paid a flat rate of fifteen per cent tax on all income, which rate was raised to twenty per cent in 1933. However, there was a provision in the tax laws of the day that exemption from the corporate tax could be granted under certain conditions. Gold mines were considered good candidates for tax exemption first because they already paid a lease consideration for the ‘right to operate a mine’, and second, there were still some state operated mines at the time.

The abolition of the Gold Standard (a fixed payment for gold) in 1932 meant a rise in the price mines received for their gold output. If the mines were to exploit a higher-grade reserve than before the gold standard was abolished, the leverage effect would result in excess profits for privately-owned mines. The Union government believed that it had a right to share in the excess profits and collected the additional tax revenue through a complex sliding-scale fiscal instrument. This allowed them to adjust (realised) profits in such a way that it could be increased if low grade ore was extracted. The formula worked as follows (Cloete and van Rensburg, 1984):

$$\text{Adjustment to profit} = \{(\text{normal profit} \div 400) \times [(x - y) \div 100]\}$$

$$\text{or,} \quad \text{Adjustment to profit} = \frac{\text{Standard profit} (x - y)}{40000}$$