

**Competitive Position of Mongolia's  
Mineral Sector Fiscal System:  
the Case of a Model Copper Mine**

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## About the Author

*Professor James Otto* has worked in the mineral law and taxation field for many years advising both governments and companies. He is co-author of Mining Royalties: A Global Study of Their Impact on Investors, Government and Civil Society, editor of The Taxation of Mineral Enterprises (Graham and Trotman/Kluwer, London 1995) and co-author of Global Mining Taxation Comparative Study (Colorado School of Mines 2000) which are widely regarded as among the definitive volumes on the mining taxation. He has published widely on mining law and tax issues both through the academic press as well as in United Nations publications. He has previously led mining taxation seminars and studies for the United Nations, World Bank, private mining companies and governments. He has had a direct role in the review and amendment of national mineral fiscal systems for governments and has been involved in large mining project fiscal negotiations. He holds degrees in law, economics and engineering. Over the past decade, often in conjunction with the United Nations and World Bank, he has worked to educate senior government officials from over 75 nations in mining taxation matters. He was formerly a Professor at the Colorado School of Mines where he headed the Institute for Global Resources Policy and Management and is currently Director of Natural Resources and Environmental Law Graduate Studies at the University of Denver College of Law.

## **Competitive Position of Mongolia's Mineral Sector Fiscal System: the Case of a Model Copper Mine**

### **1. Executive Summary**

This report investigates the Mongolian mining taxation regime taking into account major government taxes, fees and similar imposts. It compares each major type of tax levied on the mining industry with similar types of taxes in other selected countries. In addition, it uses a model copper mine to compare the overall effect of taxes in Mongolia as compared to the overall tax regimes in other nations. This study updates an earlier study completed and circulated in July 2003.

The purpose of this report is to provide a neutral-party examination of the Mongolian mining tax system. The report specifically looks at whether the existing Mongolian taxation system imposes a higher or lower overall tax-take on new investment than is imposed generally on copper mines in other nations, to conclude whether the system is internationally competitive, and to make recommendations for specific matters that concern fiscal reform. The recommendations are those of the Author and do not necessarily reflect the views of any other party.

The report contains the following:--

- description of how tax fits in with company investment decision-making.
- description of the standard Colorado School of Mines copper mine tax assessment model used in the comparative analysis.
- tables showing the relative position of the Mongolian tax system applied to the model mines as compared to taxation systems in selected other countries.
- summary of whether the Mongolian tax regime imposes a higher or lower overall tax take than is imposed generally on copper mines elsewhere.
- sensitivity analysis of the tax system to price and cost changes.
- summaries indicating the relative position of Mongolian tax types versus their counterparts in other selected nations.
- analysis of possible tax changes and recommendations.

The effective tax rate comparative analysis utilizes a standard base metal mine model (copper) developed by the Author. The model is described in detail in a March 2000 comparison of mining taxes worldwide. The study, *Global Mining Taxation Comparative Study 2<sup>nd</sup> Edition*, has been distributed worldwide by the United Nations, World Bank and the Colorado School of Mines. At the present time, the model is widely used in the comparative analysis of mining fiscal systems, and the aforementioned study is a standard reference found on the shelves of most ministers of mines. The Mongolian ministry for mines received copies of this study in 2000.

#### **The key findings of this report are as follows:**

- Taxation is an important criteria that foreign investors analyze when deciding where to invest, but it is not the only criteria.

- This study has analyzed the competitive position of the Mongolian mineral sector tax system to determine if it is internationally competitive. The tax systems of over twenty nations, including Mongolia's, were assessed using a copper mine model. Based on well accepted measures of comparison, internal rate of return (IRR) and overall effective tax rates (ETR), it was determined that the current Mongolian mineral sector tax system is not internationally competitive.
- Most companies would hesitate to invest in any project not yielding an internal rate of return of at least 12%. The mine model analysis indicated that under the current Mongolian system the IRR for the model mine would be about 8.6%, thus not meeting the financial investment profitability criteria of almost all companies. Companies' minimum rates of return might be appreciably higher for high-risk or high-cost countries than for low risk, low cost countries. Many mining companies consider Mongolia a high risk country.
- The fiscal needs and administrative capabilities of individual nations vary and tax systems thus evolve differently in different nations. However, as the world moves forward into the new century it is clear that mining fiscal systems are becoming increasingly similar. Nations whose mining fiscal systems impose non-competitive levels of overall taxation can expect to see lower levels of investor interest than nations with systems that approach the "global" norm.
- **Most international base-metals exploration/mining companies will find the current Mongolian mining tax system unacceptable. Mining companies have many alternative nations to invest in, and nations with favorable geology and lower tax impositions have an advantage over higher taxing nations. Under the current system it is doubtful that any new major base metals mine could achieve a level of profitability that would be sufficient to meet the requirements of those lenders that finance mining projects.**
- A tax system cannot be looked at in isolation from other investment decision-making factors. The cost of building a mine in Mongolia is greater than in many other nations. In addition, companies may perceive that a combination of geological, operating, infrastructure, regulatory and other types of risks are higher in Mongolia than in other nations where they operate. This may result in investors requiring higher rates of return.
- Those elements of the current tax system that most heavily negatively impact the system's competitiveness are:--
  - royalty (5%)
  - import duty (5%)
  - high withholding tax (20%),
  - and especially, excess profits tax (68%).
- If the following fiscal attributes were changed, to reflect the systems in other mining countries more closely, the system would be more competitive (see table)

- royalty (2%)
- import duty (exempt)
- withholding tax (15%)
- no excess profits tax.

**Executive Summary Table. Effect of Recommended Changes to Four Tax Items on Competitiveness**

<b>Country</b>	<b>Foreign Investor's Internal Rate of Return (%)</b>	<b>Total Effective Tax Rate (%)</b>
Lowest taxing quartile		
Sweden	15.7	28.6
W. Australia	12.7	36.4
Chile	15.0	36.6
Zimbabwe	13.5	39.8
Argentina	13.9	40.0
China	12.7	41.7
Second lowest taxing quartile		
PNG (2002)	13.3	42.7
Bolivia	12.7	42.8
Mongolia (with changes)	12.8	44.8
South Africa	13.5	45.0
Philippines	13.5	45.3
Indonesia (7 <sup>th</sup> , COW)	12.5	46.1
Kazakhstan	12.9	46.1
Second highest taxing quartile		
Peru (2003)	11.7	46.5
Tanzania	12.4	47.8
Poland	11.0	49.6
USA (Arizona)	12.6	49.9
Mexico	11.3	49.9
Greenland	13.0	50.2
Guinea (2005)	11.7	51.3
Highest taxing quartile		
Indonesia (non-COW)	11.2	52.2
Ghana	11.9	54.4
Uzbekistan	9.3	62.9
Ivory Coast	8.9	62.4
Ontario Canada	10.1	63.8
<b>Mongolia</b>	8.6	67.9

Table Note. Values in the table for all jurisdictions except Bolivia (2005) Guinea (2005), Mongolia (2004), Papua New Guinea (2002), Peru (2003) and Indonesia (2003) are extracted from: J. Otto, J. Cordes and M. Batarseh, *Global Mining Taxation Comparative Study*, second edition, IGRPM Colorado School of Mines, March 2000.

Detailed recommendations are provided in the report regarding each major tax type. The individual recommendations include the following:

## **Recommendation on Tax Stabilization**

Companies and their lenders find tax stabilization very attractive, and Mongolia's Stabilization Agreement option will be viewed as an incentive by most investors. It is recommended that the disadvantages of such stabilization, sector discrimination and administrative burden, is minor compared to its positive effect in attracting investment. Consideration could be given, within the agreements, to providing the taxpayer with a one-time election to cancel the Stabilization Agreement at any time within the stabilization period and to thereafter be taxed under the normal unstabilized system.

## **Recommendation on Income Tax**

Mongolia imposes a reasonable level of income tax.

## **Recommendation on Depreciation**

The concept of depreciation is that a taxpayer should be able to over the life of a piece of physical plant (equipment or building) deduct the full cost of that plant. Governments in almost all major mining countries provide an acceleration of depreciation deductions for mine equipment as a tax incentive. Mongolia has a relatively long time period. In Mongolia, accelerated depreciation acts as a disincentive because of another feature of the tax system—loss-carry forward. With a carry forward period of only 2 years, the full benefit of depreciation cannot be realized in the early years of the project. To overcome this problem, which does not occur in almost any other nation, the loss carry forward time limit could be extended.

## **Recommendation on Loss Carry Forward Time Limit**

The loss carry forward time limit in Mongolia is 2 years and annual carried loss deductions are capped at 50% of taxable income. Mining investors will view this short period and cap as a disincentive. Some nations have moved to eliminate any maximum time period. Because of other features in the tax system, loss carry forward limits have little impact on revenue generation. Thus, the short period has little effect other than discouraging new investment. It is recommended that losses be allowed to be carried forward without limit. If a limit is imposed, it should not be less than 5 years.

## **Recommendation on Reclamation/Closure Costs**

During the last year(s) of a mine substantial closure and reclamation costs will be incurred. Because production revenues will have ceased or been reduced, the company may receive no useable tax deduction for these important and essential costs of business. The Mongolian tax system should allow that money set aside in a non-revocable way for this purpose in advance (there are a number of ways to do this) may be deducted as a cost at the time the funds are set-aside. A mere financial provision should not be treated as an allowed deduction.

At closure, certain assets, such as fire trucks, ambulances, water purification infrastructure and so forth suitable for transfer to public entities and communities will be available. It is not known whether such transfers under current tax law would be considered a taxable transaction. If such a transfer is considered taxable, thought should be given to providing tax relief to such transfers.

### **Recommendation on Pre-production Exploration Costs**

Most mining tax systems allow pre-production exploration costs to be expensed or amortized. Under the current Mongolia system, such costs are amortized over 5 years. By changing to a system that allows an earlier recovery of these costs, Mongolia could better promote itself as a nation that welcomes and supports exploration. It is recommended that Mongolia modify its current system to allow a 200% allowance for exploration. This can take the form of allowing 100% of the cost to be expensed as incurred (with carry forward), and 100% to be amortized using the existing 5 year straight-line method. In order to allow the current or proposed system to work effectively, the loss carry forward period could be extended to at least 5 year (no limit would be preferable).

### **Recommendation on Deductibility of Investment in Communities and Infrastructure**

The current tax law allows a deduction for investment in public-accessible infrastructure. Mining companies will view this allowance as an investment incentive. To further encourage investment in such infrastructure investment, the government should consider allowing a defined percentage (up to 0.75%) of its taxable revenue spent on government approved public infrastructure to be allowed as a tax credit.

### **Recommendation on Ring-Fencing**

Mongolia should ring fence each mine that is subject to a stability agreement. However, in order to encourage exploration, exploration expenditures outside the lease area by a special mining lease holder should be expensable. In the event that the special mining holder discovers a deposit and applies for a mining lease, any exploration expenditure previously claimed for tax purposes should not be applied to the new operations.

### **Recommendation on Royalties**

The current levels of royalty rates in Mongolia are not internationally competitive and should be reduced to 2 to 3 percent of sales revenues.

### **Recommendation on Import Duty**

Import duty is mainly paid during the construction of a mine when there are no cash inflows. Thus, companies view such an input tax very negatively. Most nations have freed mines from import duty during construction or zero-rated most mine type equipment. Consideration could be given to exempting or zero rating

mining equipment from import duty.

### **Recommendation on VAT**

Currently, Mongolia imposes a VAT of 10% on the purchase of project input goods and services, but zero-rates or exempts mining sector exports. There is a system to recover VAT collected on project inputs. To simplify the system and reduce administrative burdens on the government and company, mining inputs could be exempt from VAT.

### **Recommendation on Dividend Withholding and Loan Interest Withholding**

Currently Mongolia imposes a dividend withholding tax of 20%. This rate is high for a developing nation. Consideration could be given to lowering the rate to between 5 and 15%.

### **Recommendation on Tax Distribution**

In Mongolia royalty and mining licence fees are destined for soum, aimag and central government according to percentages set out in the mining law. This system reflects international best practice.

### **Recommendation on Equity Participation**

Unlike almost all other mining nations, the current Mongolian mining regulatory system provides the government with an option to take an equity share. From a purely financial perspective, taking such a stake is quite risky. It opens up the potential for stakeholder's liability to both meet project cash needs and arising from potential law suits from lenders, landowners and users, environmental NGOs and so forth. The imposition of two profit based taxes--income tax and withholding tax--tend to capture resource rents in the same way that dividend participation would. While in high commodity price years the government might benefit more from dividend participation than from taxation alone, given the risk involved, Mongolia should forego the equity option.

### **Recommendation on Excess Profits Tax**

Very few nations impose excess profits on mines. Mongolia imposes an ill designed excess profits tax. It has a low trigger threshold that is not indexed for inflation. Thus, in a few years time, even marginal and no profit mines will pay substantial amounts of excess profits tax. This tax is the main reason that the Mongolian tax system is not internationally competitive. Thought could be given to repealing this tax or to increasing the trigger threshold and indexing the threshold amount to take inflation into account.

The above recommendations are summarized in the following table where the priority level is also given. A high priority should be given to the following five reforms:

- Exempting mining equipment from import duty during construction phase;
- Reducing the level of withholding tax;
- Extending the period for loss carry forward;
- Lowering royalty;
- Eliminating the excess profits tax, or raising the excess profits “base cost” trigger and indexing the trigger base cost for inflation.

### Priority for Mining Sector Tax Reform

Tax Type / Incentive	Priority for Reform	Comment on Current System or Recommended Reform
Import duties	Medium	exempt mining equipment
Export duties	Low	none
Royalties	High	reduce rate
Application fees	Low	reasonable
Surface rentals		
• Exploration	Low	reasonable
• Mining	Low	reasonable
Dividend W/H tax	High	reduce rate
Loan Interest W/H tax	High	reduce rate
Income tax	Low	reasonable
Depreciation	Low	reasonable
Ring-fencing	Low	fence stabilized projects, but exempt exploration from the fence
Tax stabilization	Medium	theoretically reasonable, but not implemented
Exploration costs	Low	reasonable
Development costs	Low	reasonable
Tax holidays	Low	none, reasonable
Loss carry forward	High	extend limit to at least 5 years
Value added tax	Low	exempt mining inputs
Excess profits tax	High	eliminate or raise cap & inflation index

## 2. Factors Affecting Investment Decision Making By International Mining Companies

Companies have many countries to choose from when deciding where to expend their exploration and development budgets. Those nations with prospective geology, reasonable tax terms, acceptable legislation and political stability have brighter prospects for long term mineral sector development than where one or more of these are absent. In analysing investment conditions a company will apply key criteria, including tax criteria, and see how well these are met; the types of decision criteria and the weight placed on each varies from company to company.

There have been several studies published by multi-lateral institutions to assist nations and companies to better understand foreign direct exploration and mining investment decision-making. At least two of these studies include comprehensive surveys investigating the investment patterns, objectives and decision criteria of major mining companies. The first, by Johnson at the East West Center, Honolulu (Johnson, 1990) revealed a short list of key decision criteria that later surveys have confirmed. When asked to list the investment factors which they considered critical, over 50 percent of the Johnson survey respondents indicated that in addition to geology, security of tenure, the right to repatriate profits, management control, equity control, and fixed tax terms were a precondition for a positive investment decision.

Subsequent to the Johnson survey, the Author implemented a major United Nations mineral sector foreign investment study<sup>1</sup>. In addition to the development of a standardised methodology by which governments could undertake a self-assessment of their mineral sector investment competitiveness<sup>2</sup>, the study also produced a comprehensive global survey of international mining companies to establish better information on what factors are taken into account in their investment decision-making process (Otto, 1992b). From out of a list of over 60 investment decision criteria evaluated in the survey, the criteria in Table 1 were ranked as "very important" by over half the survey respondents. Among the 10 top priority factors, all but one, geological potential, are in some way related to or affected by the regulatory system. Of the top 20 factors, 4 are related to taxation: measure of profitability, ability to predetermine tax liability, stability of fiscal regime, and method and level of tax levies. Governments have become increasingly aware of investors' requirements and this growing awareness is often reflected in investment-oriented policy and legislation.

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<sup>1</sup>Economic Restructuring and International Trade in the Mineral Commodities Project, RAS/89/027, ESCAP/UNDP.

<sup>2</sup>A comprehensive methodology for assessing a nation's mineral sector investment climate was devised (Otto, 1992a) and then used to evaluate the investment climate in 10 Asia-Pacific nations. The standard methodology and model studies are now available as a framework which can be used by governments and companies in undertaking evaluations of the mineral sector investment environment including the regulatory system.

**Table 1. Ranking of Investment Criteria at the Exploration and Mining Investment Stage (out of a choice of 60 possible criteria)**

Ranking		
Exploration Stage	Mining Stage	Decision Criteria Based on:
1	na	geological potential for target mineral
<b>na</b>	<b>3</b>	<b>measure of profitability</b>
2	1	security of tenure
3	2	ability to repatriate profits
4	9	consistency and constancy of mineral policies
5	7	company has management control
6	11	mineral ownership
7	6	realistic foreign exchange regulations
8	4	stability of exploration/mining terms
<b>9</b>	<b>5</b>	<b>ability to predetermine tax liability</b>
10	8	ability to predetermine environmental obligations
<b>11</b>	<b>10</b>	<b>stability of fiscal regime</b>
12	12	ability to raise external financing
13	16	long-term national stability
14	17	established mineral titles system
15	na	ability to apply geological assessment techniques
<b>16</b>	<b>13</b>	<b>method and level of tax levies</b>
17	15	import-export policies
18	18	majority equity ownership held by company
19	21	right to transfer ownership
20	20	internal (armed) conflicts
21	14	permitted external accounts
22	19	modern mineral legislation

na - not applicable  
source: (Otto, 1992b)

In looking at the mining phase investment factors listed in the table, the factor "measure of profitability" is ranked third by companies. In this study, the Author has in the mine tax system assessment models calculated a measure of profitability often used by companies, internal rate of return (IRR), to aid in understanding the fiscal system from an investor's point of view. Governments are of course interested in their "take" and in addition to IRR, the effective tax rate and estimated dollar inflows are also calculated. The other three key investor criteria--ability to predetermine tax liability, stability of fiscal regime, and method and level of tax levies--are also addressed in this report.

It is beyond the scope of this report to undertake a thorough analysis of the Mongolian mineral sector investment climate, the emphasis of this report is just the tax system. However, analysts at the Behre Dolbear have undertaken a comparative study and the results are shown in the following table. Mongolia ranks very well in the study in most factors with the exception of the political system, corruption and taxation. The analysis was done in 2006 before changes were made to the current tax regime and before implementation of changes to the mining law (including state participation options). It is anticipated that the next version of the annual study will

show a significant deterioration in the investment environment. This has significant tax implications. If investors perceive the investment environment as hostile or the tax system too onerous they will choose to invest elsewhere reducing the future size of the tax base

**Table 2. Overall Ranking of Countries for Mining Investment - Behre Dolbear (2006)**

Rank	Country	Socio Political System			Permitting Delays	Corruption	Currency Stability	Tax Regime	Total Points
		Economic	Political	Social					
1	Australia	9	9	8	8	10	8	<b>7</b>	59
2	Canada	10	10	6	5	10	9	<b>7</b>	57
3	USA	10	9	4	3	10	8	<b>7</b>	51
4	Chile	9	8	7	7	8	7	<b>4</b>	50
4	Mexico	8	8	5	8	7	6	<b>8</b>	50
6	Greece	8	8	3	3	5	8	<b>6</b>	42
7	Brazil	6	7	6	5	4	6	<b>6</b>	40
8	Ghana	6	5	5	7	4	5	<b>6</b>	38
9	Mongolia	6	4	6	6	3	6	<b>5</b>	36
10	Argentina	6	6	6	6	4	5	<b>5</b>	38
10	China	8	2	4	5	2	9	<b>5</b>	35
12	Namibia	5	6	3	5	4	5	<b>6</b>	34
13	Tanzania	5	5	3	7	3	4	<b>5</b>	32
14	Peru	6	3	1	3	4	7	<b>5</b>	29
15	India	6	6	2	3	3	5	<b>3</b>	28
16	Bolivia	5	1	1	5	3	4	<b>6</b>	25
17	South Africa	3	4	1	5	2	8	<b>2</b>	25
18	Kazakhstan	4	3	4	3	1	4	<b>4</b>	23
19	Papua NG	4	4	1	2	2	4	<b>5</b>	22
19	Russia	2	3	3	3	1	4	<b>6</b>	22
21	Zambia	3	3	2	5	3	2	<b>4</b>	22
22	Indonesia	3	5	1	3	1	1	<b>3</b>	17
23	Venezuela	1	1	1	4	1	2	<b>4</b>	14
24	DR Congo	1	2	1	3	1	1	<b>4</b>	13
25	Zimbabwe	1	1	1	1	1	1	<b>2</b>	10

Note: A perfect score would be 70 total points, and within any criterion a perfect (risk free) score is 10.  
Source: [www.dolbear.com](http://www.dolbear.com), accessed on 21 December 2006.

### **3. The Taxation Dilemma Faced by All Governments: Fiscal diversity or uniformity?**

The task of devising a mineral sector fiscal system is not easy. There are many types of minerals and a system that is optimal for one mineral such as gold, may be less ideal for another, such as common sand. However, the most difficult policy issues are not what tax mechanisms, rates and incentives to implement, but rather, to what extent should mining be treated differently than other income generating activities, such as oil & gas, agriculture, and light and heavy manufacturing. Each type of income generating activity can claim some element of uniqueness laying the groundwork for some sort of special tax treatment. If policy-makers chose the path of accommodation of special sector needs, tax legislation will grow more complicated and the burden on government regulatory taxation departments will increase. It is argued by some proponents that by providing “incentives” to one sector, other sectors, or the public as a whole, will suffer. It is often said that preferential tax treatment causes distortions between sectors, and harms the overall economy. Others argue that because each sector is unique, each sector should be taxed in a manner that takes that uniqueness into account. Thus, governments are faced with a dilemma--a fairly uniform tax system applicable to all sectors, or a more complicated system that accounts for uniqueness in each economic sector.

#### **3.1 Unique nature of the mining industry and the tax policy response**

Most countries tax mineral enterprises somewhat differently than other industries, and tax policy makers often consider two concepts that will, in part, determine the extent to which mine taxation differs from taxes levied on other types of private enterprises. These two concepts are “uniqueness” and “patrimony”.

It is argued that the minerals industry is fundamentally different from most other types of business and because of its unique nature, it should be accorded special, preferential treatment. Nations accord preferential treatment in many ways but most approaches derive from government recognition of the following mineral industry attributes:

- A lengthy and costly exploration program will precede the start-up of a mine. Exploration expenses are incurred before taxable income is available and thus governments provide special provision for how pre-production (pre-income) exploration expenses are handled for future income tax purposes.
- Mine development is exceptionally capital intensive and an operation will initially need to import large quantities of diverse equipment from specialized suppliers. Many governments recognize the capital intensity of the industry and provide various means to accelerate recovery of capital costs once production commences.
- With regard to equipment import dependency, governments often provide a mechanism where equipment imported during mine construction is effectively free of duty (zero-rated or exempt). Likewise, most countries provide some or complete relief from value added tax on equipment purchases, particularly if the mine product is destined for export.
- Mine products are often destined for highly competitive export markets. Most

governments effectively impose no export duties on minerals and provide a means whereby VAT on export sales is either not applied or applied in a way that allows for a refund or tax credit.

- Mines produce raw materials that are prone to substantial price changes on a periodic, business cycle related basis. Thus, many countries allow certain types of taxes, usually royalties, to be waived from time-to-time, by a designated government officer, for projects experiencing short-term financial duress. In addition, provision is provided to allow a project to carry forward losses from unprofitable years to reduce taxes in profitable years.
- After mining ceases and there is no income, a mine will incur significant costs relating to closure and reclamation of the site. There is a trend for governments to require a set-aside of funds for closure and reclamation in advance of closure and to provide some sort of deduction for this set-aside against current income tax liability.
- Many mining projects will have a long life span, and companies will attempt to minimize their tax risk exposure by stabilizing some or all of the relevant taxes for at least part of that lifespan. Governments provide tax stability through a number of different legislated and negotiated approaches.
- Where the level of investment is particularly large, a government may enter into a negotiated agreement, including special tax provisions, with the mine that has the effect of supplanting general laws, including laws that address tax matters.
- In instances where negotiated agreements are in force, income from an operation governed by an agreement may be “ring fenced” even though the general tax law does not impose ring-fencing restrictions.

Recent trends to harmonize fiscal systems across economic sectors have been the subject of debate in many countries, but as this new century commences, almost all nations with a substantial mining sector still provide some sort of preferential tax treatment to the mining sector. While this preferential treatment tends to lower some sorts of taxes in comparison with other sectors, this is balanced by the imposition of special taxes arising from another aspect of the mineral endowment--national patrimony.

In most nations, minerals belong to the state or to the people of the state as a common good. When a company extracts a mineral, ownership of that mineral will transfer from the state, or its people, to the extracting company. In most nations, a transfer of minerals from the public to the private sector is politically sensitive. Tax policy makers generally provide that a payment must be made for the transfer regardless of whether any profit is generated. The most common form of a tax that seeks to compensate for the loss of national patrimony is a form of unit- or value-based royalty. The concept of a royalty type tax, a “public to private sector property transfer tax” not based on income or profit, is, generally speaking, unique to the natural resources sectors. While many nations impose a royalty “type” tax on mineral producers, the trend has been to move toward lower royalty taxes and to rely increasingly on income-based type taxes.

### 3.2 Discrimination Within the Sector

Within the sector, there is always pressure brought to bear on tax authorities to

provide special treatment of certain classifications of mines. For example, some would argue that mines producing industrial building minerals should receive preferential treatment over export-oriented mines because they contribute more directly to national development. Others would argue that because large mines employ more than a certain number of workers, they should receive special treatment because their positive impact on the local economy is large. Still others would argue that small mines should receive special treatment because it encourages a higher level of entrepreneurial exploration.

Mongolia, in practice, distinguishes between small and large mines through the use of a Stability Agreement for large mines. Such agreements can stabilize taxes and tax levels as they exist at an agreed point in time and may be essential to attract large-scale investment.

#### **4. Description of the Existing Mongolian Mining Fiscal System**

The mining fiscal system in Mongolia has been modified from time-to-time in order to meet the evolving needs of its society. Today, the world is becoming ever more economically linked and a nation that desires to attract foreign investment must increasingly take into account both the needs of the nation and the needs of investors in order to compete in the international marketplace. In such an environment it is useful to understand whether the current fiscal system is meeting the needs of society efficiently and whether the system is viewed as competitive by private sector investors.

In this section, the existing Mongolia tax system that is applied to mining is described based on an examination of current statutory law. It should be noted that some elements of these laws are vague or can be interpreted in different ways. Additionally, there is some discrepancy between tax features in different laws and which takes precedence is not clear. The Author reports here what a foreign investor could perceive the fiscal system to be based on a reasonable reading of the laws. The term "tax" here, and throughout this study, is used in its broadest sense.

**In this study "tax" is defined as any tax, fee, impost or other payment that is paid by a taxpayer to the government or to another non-employee party because the taxpayer is required to do so by government.**

Table 3 contains a list of tax types that are sometimes used by governments to tax the mineral sector and indicates whether each tax type is imposed in Mongolia. As can be seen in the table, many of the major tax types are imposed. Detailed comparisons of tax rates are provided in subsequent tables.

**Table 3. Taxes Sometimes Applied to Mines in Other Countries and Whether they are Applied by Mongolia**

Tax type	Tax levied?		Level of Government		
	Yes	No	Central Government	Provincial Government	Local government
Income tax	X		X		
Royalties	X		X		X
Excess profits tax	X		X		
Withholding tax on remitted dividends	X		X		
Withholding tax on remitted loan interest	X		X		
Import duties on equipment	X		X		
Export duties on minerals	X		X		
Excise/sales tax on purchased equipment	X		X		
Excise/sales tax on minerals paid by mine		X			
Value added tax on services	X		X		
Value added tax on equipment	X		X		
Value added tax on mineral sales	X		X		
Property tax/fee	X				X
Education tax/fee		X			
Local development tax/fee		X			
Fees based on Land Area	X				X
Stamp tax	X				X
Payroll tax	X				X
Environmental protection deposit	X				X
Transport facilities and vehicles tax	X				X

The current Mongolian mining fiscal system is described generally in Table 4 and details regarding various deductions for computing taxable income are given in Table 5.

**Table 4. Description of the Existing Mongolian Mining Fiscal System**

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- Income tax
  - 10% on first 3,000,000,000 then 25% on taxable income above 3,000,000,000 (EEIT 17.1).
- deductions for computing taxable income:
  - feasibility studies: amortized SL over 5 years beginning in the first year of sales (ML 68.1)
  - pre-production exploration costs: amortized SL over 5 years beginning in the first year of sales (ML 68.1)
  - mine-site development costs: amortized SL over 5 years beginning in the first year of sales (ML 68.1)
  - equipment costs: depreciated SL over 10 years (EEIT 13.2)
  - costs qualifying for depreciation or amortization may not be adjusted for inflation
  - no depletion allowance
  - the following types of costs may be deducted for calculating net taxable income: pre-production exploration expenses, mine-site development costs, feasibility study cost, annual operating costs, capital cost of equipment and plant, loan interest, royalty tax, excess profits tax, import duty, excise tax, property tax, fees based on land area, and others
- royalties: 5% (ML 43.3.1) for most minerals but 2.5% for domestically sold coal and common minerals, deductible for income tax purposes
- excess profits: 68% based on quantity sold times the quantity consisting of the LME price less 2600 less TCs and RCs, deductible (EEIT 12.1.14)
- withholding tax on interest: the general non-treaty rate is 20% (EEIT 17.2.9), not deductible for income tax purposes (EEIT 17.2.9)
- withholding tax on dividends remitted abroad: the general non-treaty rate is 20% (EEIT 17.2.9), not deductible for income tax purposes
- withholding tax on salaries and fees paid to foreign consultants: the general non-treaty rate is 20%; not deductible for income tax purposes
- import duty on foreign equipment: for typical mining equipment - 5%, deductible for income tax purposes (EEIT 12.1.14)
- export duties on minerals: none
- excise tax: these are applied to some items such as fuel
- value added tax: 10% (VAT 14.6.1 & 14.6.2)
- value added tax on export sales: zero rated or exempt
- value added tax input/output offset system: since output VAT is nil, VAT on inputs may be reclaimed as follows - (a) credit the amount of VAT paid against next value-added tax payments that are due on the succeeding month, quarter or year, (b) offset the excess against other forms of taxes that are due; (c) receive a refund from the government treasury budget;
- Property tax on immovable assets: 0.6%, deductible (EEIT 12.1.14)
- mining license land use fees during exploration: assessed annually per hectare; US\$0.10 for the first year, US\$0.20 for the second year, \$US0.30 for the third year, a\$US1.00 fourth through sixth year, and \$US1.50 for the seventh to ninth year (ML 28.2)
- mining license fee: \$15 per hectare (ML 28.3), deductible (EEIT 12.1.14)
- land use fee: 0.01% to 1% of "land base rate" per hectare
- water use fees: approximately 6 TG/ cubic meter
- stamp tax: a variety of stamp taxes may apply
- payroll taxes paid by employer: a variety of payroll taxes apply
- tax incentives
  - loss carry-forward: 2 years, not to exceed 50% of taxable income

- loss carry-back: none
- Investment Tax Credit: 10% of depreciable items, unused can be carried 3 years, (EIT 19.2, 19.3, 19.5)
- tax stabilization: may be provided in a stability agreement, but in practice this may be difficult
- local equity requirement: 10% of shares must be offered on the Mongolian stock exchange
- government equity requirement: up to 50% for strategic deposits which were the result of government exploration; up to 34% of other strategic deposits

**Table 5. Mongolia: Identification of items that may be deducted for calculating net income subject to income tax**

	Deductible	Not Deductible	No Such Cost/Tax
Pre-production exploration expenses	X		
Mine site development costs	X		
Feasibility study cost	X		
Annual operating costs	X		
Capital cost of equipment and plant	X		
Loan interest	X		
Royalty tax	X		
Excess profits tax	X		
Withholding tax on interest		X	
Withholding tax on dividends		X	
Import duties on equipment	X		
Value added tax on equipment and services		X	
Property tax	X		
Fee based on land area (such as rent)	X		
Stamp taxes	X		
Payroll taxes		X	
Mining license land fee	X		
Land use fee	X		

The mine model used in the comparative analysis was developed at a level of detail similar to the level used for pre-feasibility studies. Thus, some simplifications have been employed to allow estimations to be calculated where detailed information is lacking. The simplified tax assumptions for the mine modeled in this analysis are summarized in Table 6. Minor taxes and fees, generally those that would annually be less than \$20,000/year, are not included in the analytical model (in order to maintain comparability with the Colorado School of Mines IGRPM copper mine model).

**Table 6. Summary of Mongolia's Mining Fiscal System as Reproduced in the Computer Analysis Copper Mine Model**

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simplified modeled tax features in the "base case" include:

- Income tax rate: 10% on first 3,000,000,000 then 25% on taxable income above 3,000,000,000 ((EIT 17.1)
    - feasibility studies: amortized SL over 5 years beginning in the first year of sales (ML 68.1)
    - pre-production exploration costs: amortized SL over 5 years beginning in the first year of sales(ML 68.1)
    - mine-site development costs: amortized SL over 5 years beginning in the first year of sales (ML 68.1)
    - equipment costs: depreciated SL over 10 years (EIT 13.2)
    - Interest is deductible (EIT 12.1.7)
  - Royalty: Royalty: 5% (ML 43.3.1), deductible for income tax purposes
  - Withholding tax on interest: 20% (EIT 17.2.9), not deductible for income tax purposes (EIT 17.2.9)
  - Withholding tax on dividends: 20% (EIT 17.2.9),not deductible for income tax purposes
  - Import duties: Import Duty: 5%, deductible (EIT 12.1.14)
  - Value added tax: 10%; VAT credits toward the next VAT payment, offsets against income tax and dividend withholding tax, and if any left it is refunded; otherwise not deductible for income tax purposes, (VAT 14.6.1 & 14.6.2)
  - Loss carry forward: 2 years, not to exceed 50% of taxable income
  - Mining License Fee: \$15 per hectare (ML 28.3), deductible (EIT 12.1.14)
  - Land use fees: 5,000 Tg/hectare (Resolution 152 - 1997.06.25, maximum rate), deductible (EIT 12.1.4)
  - Water Use Fees: 6 TG/ cubic meter
  - Property tax on immovable assets: 0.6%, deductible (EIT 12.1.14)
  - Investment Tax Credit: 10% of depreciable items, unused can be carried 3 years, (EIT 19.2, 19.3, 19.5)
  - Excess Profits: 68% based on quantity sold times the quantity consisting of the LME price less 2600 less TCs and RCs, deductible (EIT 12.1.14)
  - Government equity: none
  - Imposts that may be payable but that are not included in the model: stamp taxes, payroll type taxes, excise taxes, and miscellaneous minor taxes (these are assumed to be included in general operating costs)
- 

## **5. Description of the IGRPM/Colorado School of Mines Standard Mine Model**

In order to assess the Mongolian tax system as compared to fiscal regimes in a cross-section of countries, a pre-feasibility type mine model was developed. The model is based on the standard base metal (copper) mine model used for mining tax studies at the Institute for Global Resources Policy and Management at the Colorado School of Mines.

### **5.1 Methodology and Limitations Inherent in IGRPM/Colorado School of Mines Standard Mine Model**

There are a number of ways to assess a mineral sector taxation system. The method used in this study is to create a financial model of a typical mine and then to calculate a number of quantifiable economic measures based on that model. These measures include an investor's measure of profit (the investor's Internal Rate of Return), the total effective tax rate (ETR), and the distribution of sales revenues to each party.

When building a mine model that incorporates various tax and impost features it is necessary to determine the depth to which the model will attempt to mirror the fiscal system. In theory, a very detailed model could accurately account for every "tax" type. However, many types of taxes are calculated based on a level of information available only where a detailed feasibility study is available. The level of detail in the CSM standard base metal model is similar to that found in many mine pre-feasibility studies. Some of the simplifying assumptions and limitations that may impact the tax analysis are described below.

Depreciation. In many countries, the costs of acquiring equipment and plant may be used to reduce the income or profits tax liability through the means of depreciation or amortization deductions. In many countries, different classes of assets are depreciated using different calculation methods or different rates or different economic "lives". To accurately model a mine one would therefore need to identify every building and piece of equipment (and its price) qualifying as being depreciable. The model simplifies the depreciation calculation by assuming only one representative class of depreciable capital and one method of calculation.

Payroll taxes. The group of taxes commonly referred to as "payroll taxes" are not directly included in the model. The payroll taxes paid by the mining company can include a wide variety of government levies tied to the activity and salary level of each employee. Examples include government mandated company contributions to social security, pension or national retirement schemes, and to national or other health care programs. The base annual operating costs are assumed to include these types of taxes.

Excise taxes. These are assumed to be included in operating costs.

Tax minimization methods. One of the limitations of any tax study is the degree to which the study should incorporate legal tax minimization methods. The most "transparent" system was used as the basis of the model.

## **5.2 IGRPM/Colorado School of Mines Standard Mine Model - Basic Attributes**

Many factors can be taken into consideration when selecting the parameters and values to define a mine model, and the selection of many key project attributes can influence taxation system analysis. For example, some tax systems may be more favorable to shorter-lived mines than longer-lived mines. The approach chosen by the IGRPM/CSM when creating the year 2000 standard mine model was not to determine the optimal configuration of a mining project given the tax system, but instead to define a set mine model, and determine the taxes it would pay in any selected country. To insure the

reasonableness of the IGRPM/CSM base metal mine model, feedback and comment was sought from a number of major private sector copper producers prior to settling on the final project parameters. The CSM base metal model used in this report was constructed in 2000. Key parameters and values are shown in Table 7. Since the model was first developed, costs and prices have risen. This impact is analyzed later in this study.

**Table 7. IGRPM/CSM Base Metal Mine Model Assumptions**

<u>Copper mine</u>	
Total reserve base:	2,360,000,000lbs cu
Average annual metal sold:	124,200,000lbs cu
Development period:	2 years
Production period:	19 years
Debt to equity	60:40%
Loan life:	5yrs
Loan interest rate:	8%
Mine cost:	US\$690,000,000
Pre-production exploration US\$	5,000,000
Feasibility	US\$ 20,000,000
Development	US\$ 55,000,000
Equipment/plant	US\$610,000,000
Working capital	US\$ 25,000,000
Reclamation	US\$ 25,000,000
Base annual operating costs:	US\$0.45/lb cu
Sales price	US\$1.10/lb cu
Type of analysis:	escalated (nominal)
Escalation of costs:	3% per year
Escalation of metal price:	2.5% per year

Deposit size, capacity and mine life. The size of a deposit will lend some guidance to defining the size (annual capacity) and life of a project. However, given the same deposit, different companies would view the optimal extraction rate and mine life differently. Should the firm build a large capacity project and mine a deposit quickly, or a small capacity plant and mine it over many years? Taxation policies can influence such decisions. In the development of the model, a reasonably large capacity mine was assumed.

Financing. The extent to which a mine is financed through debt rather than equity capital can have a measurable impact on the amount of taxes it pays. This is largely attributable to the fact that in many jurisdictions, some or all interest payments on loans may be used as a deduction when calculating the amount of income subject to a profits or income tax. Most large scale mines use a combination of debt and equity capital financing. Debt financing can reach up to 100% and for many mines a 60 to 40% debt to equity balance is common. A ratio based on 60% debt to 40% equity has been assumed. The amount to be borrowed is based on 60% of the capital costs incurred during the two-year mine development period and the first year of production. It is

assumed that the borrowed amount is in the form of three separate loans, each made one year apart, commencing in the first year of project development. It is assumed that subsequent mine expenditures are paid from funds generated by sales revenues. An annual percentage rate of 8% compound interest has been assumed for all three loans and the repayment period for each loan is 5 years. Loan repayment is calculated assuming simple compound interest with annual equal end of year payments.

Costs. The costs associated with a mine will have an effect on that mine's tax liability. In most tax jurisdictions, some taxes (such as those based on profits or income) will be directly affected by certain costs, i.e., costs may be allowable as expensable or deductible for computing the amount of taxable income. Costs for any one activity will vary considerably from country to country. For example, mine capital equipment costs are lower in Canada than in Zambia but labor costs in Zambia are lower than in Canada. To provide comparability with the IGRPM/CSM global mining tax study, the base capital cost and operating cost are the same as used in the IGRPM/CSM model. The IGRPM/CSM base case costs were established using input from several multinational mining companies who were asked to submit their best estimates of what it would cost to establish and run a "typical international" large scale operation and from annual surveys of costs reported in *Mining Journal*. All remaining tax benefits from any write-offs at the end of the project have been neglected.

Prices. Most mineral commodities are subject to substantial price variations over even a short time horizon. The base-case model uses the standard IGRPM/CSM adopted long-term price assumptions for copper, i.e., the 10 year average LME price from 1989-1998. Sensitivity of the tax system to price changes is also provided.

Escalation adjustments. Costs and prices in every country are subject to escalation/de-escalation factors, such as inflation/deflation and technological progress, and costs and prices relating to the mineral sector are no exception. In the mine models, capital costs, operating costs (recurring costs) and working capital are escalated at 3 percent per year and prices at 2.5 percent per year.

Since no adjustments have been provided for costs and operating efficiencies in the various countries, the model mine before-tax rate of return is identical in each country. For the model copper mine it is 18.8% (NPV at 12% discount rate before tax = 144million). All cash flows represent escalated (nominal) dollars.

### **5.3 Economic Measures and Profiles**

Based on the estimated cashflows resulting from the model base metal mine, a number of economic measures and profiles were calculated.

Internal Rate of Return. The investor's discounted internal rate of return (IRR) is a commonly used measure of profitability. Given a model mine, a fiscal system yielding a higher IRR is preferred by an investor over a fiscal system yielding a lower IRR. IRR is defined as that interest rate which equates the sum of the present value<sup>3</sup> of cash inflows

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<sup>3</sup> The term "present value" is used in its classical accounting meaning to indicate that the calculation has taken into account the time value of money. The time value of money is simply a recognition that given a set amount of money, one would prefer to have that sum earlier rather than later. The

with the sum of the present value of cash out-flows for a project.<sup>4</sup> An alternative, but numerically identical definition, is that the IRR is the interest rate at which the net present value of a project is equal to zero. A company can compare a project's IRR to the company's hurdle rate (the minimum IRR) that every project must meet. If a project's IRR is equal to or exceeds the hurdle rate, the project meets the company's minimum profitability requirements. While IRR is useful to determine the effect of a fiscal system on profitability, it does not directly measure taxation levels, nor does it provide governments with a measure of their fiscal take. However, by looking at both the before-tax and after-tax IRRs, an investor can compare how the various methods of taxation can impact this economic measure of profitability.

Effective tax rate. The effective tax rate (ETR) is a measure, expressed as a percentage of the effective net cash flow, of all amounts payable by the company to the government. ETR is calculated by summing the value of all taxes and other payments to the government paid in each year, then dividing that sum of the total effective annual cash flow.

$$\text{Effective Tax Rate} = \frac{\text{value of all amounts paid to government}}{\text{value of project before-tax cash flow}}$$

## 6. Comparison of Mongolia's System to Minerals Tax Systems in Selected Countries

### 6.1 Mine Model Comparative Results

Comparisons of mine taxation in different taxing jurisdictions is not straightforward. A comparison of any one type of taxing mechanism (such as a royalty tax or income tax rate) may lead to certain insights, but taken alone may not provide a useful indication of how mine taxation in one jurisdiction compares to that in another. To gain a broader understanding of how the overall system works and compares, it is necessary to analyze the fiscal system as a whole. To facilitate such an analysis, it is a common practice to define a hypothetical model mine and then apply different taxation systems to that mine. In this study, a model mine was defined and various measures of taxation and profitability calculated to allow comparison (see descriptions provided above) with results reported by the Colorado School of Mines for other nations. **Table 8 summarizes measures of profitability (IRR) and overall effective tax rates (ETR) for the copper mine model applying the fiscal systems in over twenty jurisdictions. The results clearly show that compared to other nations, the overall current mining tax system in Mongolia imposes a very high tax burden. The overall level of tax would be viewed very negatively by almost all mining**

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standard way in which to account for the time value of money is to adjust future earnings and costs to a base year by discounting those amounts to the base year at a given discount rate. For the purposes of this study, all present value calculations were based on a discount rate of 12 percent.

<sup>4</sup> Donald Gentry and Thomas O'Neil, Mine Investment Analysis, American Institute of Mining, Metallurgical and Petroleum Engineers, New York 1984, p.267.

**investors.**

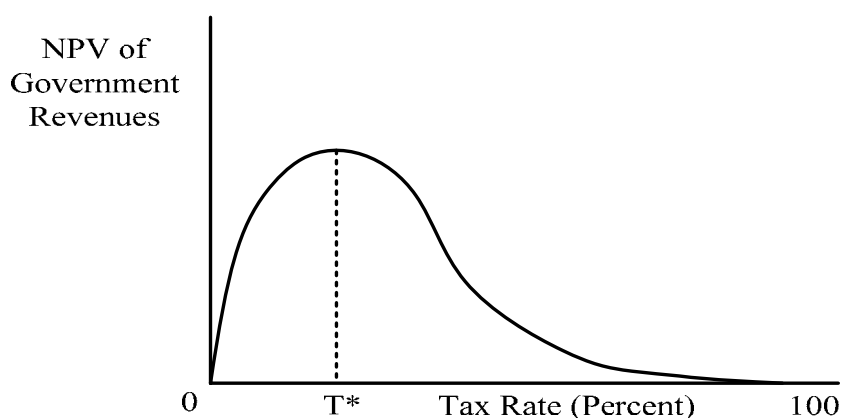
**Table 8. Comparative Economic Measures for a Model Copper Mine in Selected Jurisdictions**

Country	Foreign Investor's Internal Rate of Return (%)	Total Effective Tax Rate (%)
Lowest taxing quartile		
Sweden	15.7	28.6
W. Australia	12.7	36.4
Chile	15.0	36.6
Zimbabwe	13.5	39.8
Argentina	13.9	40.0
China	12.7	41.7
Second lowest taxing quartile		
PNG (2002)	13.3	42.7
Bolivia	12.7	42.8
South Africa	13.5	45.0
Philippines	13.5	45.3
Indonesia (7 <sup>th</sup> , COW)	12.5	46.1
Kazakhstan	12.9	46.1
Second highest taxing quartile		
Peru (2003)	11.7	46.5
Tanzania	12.4	47.8
Poland	11.0	49.6
USA (Arizona)	12.6	49.9
Mexico	11.3	49.9
Greenland	13.0	50.2
Guinea (2005)	11.7	51.3
Highest taxing quartile		
Indonesia (non-COW)	11.2	52.2
Ghana	11.9	54.4
Mongolia (2003)	10.6	55.0
Uzbekistan	9.3	62.9
Ivory Coast	8.9	62.4
Ontario Canada	10.1	63.8
<b>Mongolia (2007)</b>	8.6	67.9

Table Note. Values in the table for all jurisdictions except Bolivia (2005), Guinea (2005), Mongolia (2004), Papua New Guinea (2002), Peru (2003) and Indonesia (2003) are extracted from: J. Otto, J. Cordes and M. Batarseh, *Global Mining Taxation Comparative Study*, second edition, IGRPM Colorado School of Mines, March 2000. Taxation systems change frequently and the table should be used with caution. The table values, while thought to be accurate in the year computed are offered here to illustrate the methodology and should not be used for investment decision-making purposes.

An important part of mineral sector fiscal policy is to decide whether the primary tax objective is to maximize the fiscal take in the short term, or in the long term. If the goal is short-term maximization, the system needs to impose a high effective tax rate (ETR) – the combined rate that takes into account the value of all the tax and fee types paid by the mine. If the ETR is too high, individual mines will pay more, but in the long run there will be fewer mines, thus fewer taxpayers, a smaller tax base, and a smaller contribution to the treasury. If the effective tax rate is too low, the government will needlessly forgo fiscal revenues. If the ETR is too high, the tax base will not grow over time and revenues will be foregone (companies will not come, explore, and discover more mines). Good tax policy will strive to set the effective tax rate at  $T^*$ , where an optimal balance is found. For most nations, the optimal ETR is between 40 and 50 percent.

**Figure 1. The Optimal Effective Tax Rate**



NPV – net present value (the amount of all taxes and fees paid by mines to the government as adjusted for the time value of money)

*Source: Mining Royalties: A Global Study of their Impact on Investors, Government and Civil Society, World Bank Press, 2006.*

It is probable that the high ETR in Mongolia will lead to lower tax revenues in the future as the rate is most likely on the right side of the effective tax rate curve.

## 7. Tax System Sensitivity to Prices and Costs

The impact of a tax system on a mine can vary according to its profitability. If the overall effective tax rate (ETR) goes up as profitability goes up, the system is said to be progressive. If the ETR decreases as profitability goes up, it is said to be regressive. In a progressive tax system, mines that are marginally economic are subject to a lower overall effective tax rate than are mines that are highly profitable. In other words, progressive tax systems tax more profitable mines at a higher effective rate than lower profit mines. Most economists agree that neutral or slightly progressive tax systems are better than regressive systems.

Using the standard CSM copper mine model that incorporates the Mongolian mining tax system, the effective tax rate (ETR) was assessed in three ways to determine if the system was progressive, neutral or regressive. Base case parameters were held constant except for the parameter being tested, i.e., only one parameter was varied at a time. First, for the copper mine model, prices were varied assuming copper prices of US\$0.80, US\$1.10 (base case), US\$1.50 and US\$3.00 per lb copper. Second, operating costs were varied assuming costs of US\$0.40, US\$45 (base case), and US\$0.50 per lb cu. Finally, capital costs were varied assuming total development period equipment costs of US\$550,000,000, US\$610,000,000 (base case) and US\$650,000,000. Table 9 indicates the results.

The Mongolian tax system as applied to the model mine is progressive with regard to price, and this is mainly attributable to the excess profits tax. It is regressive with regard to costs reflecting the high level of taxes not related to profits (royalty, import duty, VAT, property tax, land fees as so forth). As can be seen in the table, a typical copper mine would be under economic duress during periods of low prices.

**Table 9. Copper Model: Tax System Sensitivity to Price and Cost Changes**

	Effective Tax Rate (%)	System Effect
<b>Price Sensitivity:</b>		
US\$0.80/lb	150.2*	Progressive
US\$1.10/lb (basecase)	67.9	
US\$1.50/lb	73.4	
US\$3.00/lb	79.4	
<b>Operating Cost Sensitivity:</b>		
US\$0.40/lb	63.4	Regressive
US\$0.45/lb (basecase)	67.9	
US\$0.50/lb	74.1	
<b>Capital Cost Sensitivity:</b>		
US\$550,000,000	64.5	Regressive
US\$610,000,000 (basecase)	67.9	
US\$650,000,000	71.3	

\*taxes exceed before tax cashflow

## **8. Comparisons of Approaches and Rates in a Cross-Section of Countries for a Selection of Different Tax Types**

With the exception of Mongolia, and such as other data as is specially noted, the tax information reported in the following tables was gathered via a questionnaire distributed by the Author in 1999/2000 and reported in the aforementioned Global Mining Taxation Comparative Study. The information on taxes in Mongolia are taken from laws in force as of January 2007.

### **8.1 Tax Stabilization**

In an earlier part of this report 20 key investor decision criteria were listed in priority order. In a global survey of mining companies over 50% of the respondents listed tax stability as a "very important" factor in investment decision making. Out of list of 60 investor criteria, tax system stability ranked 10<sup>th</sup> in importance.

Many mines are long-lived and companies are reassured by systems that reduce their fiscal vulnerability, particularly during the loan and project payback periods.

However, while stabilization is attractive to companies many governments are hesitant to use them. There is a basic tenet of state sovereignty that one generation of lawmakers should not be able to bind the hands of future lawmakers. Additionally, tax stabilization is sought by all sectors as it reduces fiscal uncertainty. If stabilization is offered to one sector, other sectors will also seek it. Table 10 shows for selected countries whether they allow mineral sector tax stabilization or not.

In Mongolia, fiscal system stabilization is theoretically available in the form of a Stabilization Agreement between the government and the mining company. In practice some companies have not been able to obtain such an agreement but others have.

If taxes are stabilized for various mines, then an administrative challenge can arise over time. As the underlying tax laws change, each stabilized mine will have a tax regime dating to the time the stabilization arrangement was entered into. This means that over time there will be many tax regimes, and the government agency charged with tax administration will increasingly face a more complicated situation monitoring and enforcing each. This entails costs.

The government has a dilemma. On the one hand, stabilization agreements enhance the potential for mineral sector investment, and on the other, they complicate the tax system and raise administrative challenges. Stability is important to investors and to their lenders, and nations that have been successful in maintaining substantial mining sector foreign investment, such as Argentina, Chile, Indonesia, Papua New Guinea, Peru, and Zambia offer stabilization options.

**Table 10. Availability of Tax Stabilization in Selected Jurisdictions**

Country	Stabilization available?	Comments
Argentina	Yes	30 yrs, provincial and municipal taxes, import duties, exchange rules
Bolivia	No	
Burkina Faso	Yes	For term of the contract except for mining tax & fees
Canada (Ontario)	No	-
Chile	Yes	10 yrs, if mine elects a higher tax of 42%
China	No	
Ghana	No	
Greenland	No	
Guinea	Yes	10 yrs for operating permits and 25 years for concessions
Indonesia	Yes	Tax stabilized for life of contract of work
Ivory Coast	No	
Kazakhstan	Yes	Taxes stabilized for life of mining agreement
Madagascar	Yes	15 to 30 years
Mexico	No	
Mongolia	Yes	Company may negotiate a stability agreement
Mozambique	Yes	
Papua New Guinea	Yes	Twenty years from the authorization to mine or for the period of finance, whichever is shorter
Peru	Yes	Either mining contracts system is 10-15 yrs; or Legal Stability Agreements systems is 10 yrs
Philippines	No	-
Poland	No	-
South Africa	No	-
Sweden	No	-
Tanzania	No	-
USA	No	-
Uzbekistan	Yes	Major taxes may be frozen for 10 yrs from date of establishment; may be difficult to implement
W. Australia	No	-
Zambia	Yes	Negotiable, 10 to 15 years
Zimbabwe	No	-

<sup>1</sup> Information conveyed in this table may become out of date and should be viewed with caution. Check local statutes for the current treatment.

Source: James M. Otto, John Cordes & Maria L. Batarseh, *Global Mining Taxation Comparative Study* (2<sup>nd</sup> ed. 2000) except for Bolivia, Guinea, Madagascar, Mongolia, Mozambique, Papua New Guinea, Peru and Zambia.

### Recommendation on Tax Stabilization

Companies and their lenders find tax stabilization very attractive, and Mongolia's Stabilization Agreement option will be viewed as an incentive by most investors. It is recommended that the disadvantages of such stabilization, sector discrimination and administrative burden, is minor compared to its positive effect in attracting investment. Consideration should be given, within the agreements, to providing the taxpayer with a one-time election to cancel the Stabilization Agreement at any time within the stabilization period and to thereafter be taxed under the normal un-stabilized system.

## 8.2 Income Tax

At the beginning of the 20<sup>th</sup> century, the main way governments taxed mines was by imposing some type of royalty tax on production. Today however almost all nations rely primarily on profit (income) based taxes. When designing an income tax system there are two key elements—the income tax rate, and the tax base that the rate is applied to. In this section, income tax level is first examined followed by an examination of the tax basis.

Over the past two decades there has been a general lowering of income tax rates, and it is now uncommon to see a corporate income tax rate higher than 35%. Many nations have a rate between 25 and 35%. Table 11 lists corporate tax rates for a cross-section of nations surveyed in 2000 or more recently as noted.

**Table 11. Income Tax Rates Applied to Mining Projects in Selected Jurisdictions**

Country	Corporate Income Tax Rate (%)	Comment
Argentina	35%	
Bolivia	25%	A 25% surtax may also apply in some years
Burkina Faso	35%	
Canada	28%	29.12% including 4% surtax (provincial income tax also applies)
Chile	15%	two elective regimes are available
China	33%	30% to central government, 3% to provincial govt.
Ghana	35%	
Greenland	35%	
Guinea	35%	
Indonesia	30%	7 <sup>th</sup> generation COW (previous COWS range from 22.5 to 48%)
Ivory Coast	35%	
Kazakhstan	30%	Excess profits tax may also apply
Madagascar	25%; if IRR >20%, 35%; if IRR >25%, 40%	These rates are for large scale mines qualifying for LGIM status
Mexico	34%	
Mongolia	30%	
Mozambique	32%	
Papua New Guinea	30%	32% if option to stabilize taxes is selected
Peru	27%	29% if operating under a tax stabilization agreement
Philippines	32%	
Poland	22%	
South Africa	30%	Special rates apply to gold mines
Sweden	28%	
Tanzania	30%	
USA	Progressive to 35%	
Uzbekistan	33%	
W. Australia	30%	
Zambia	25%	For copper mines with agreements
Zimbabwe	35%	

Caution: Information conveyed in this in this table was current as of 2000, some changes may have occurred.

Source: James M. Otto, John Cordes & Maria L. Batarseh, *Global Mining Taxation Comparative Study* (2<sup>nd</sup> ed. 2000, p.49) except for more recent tax rates for Bolivia, Guinea, Madagascar, Mongolia, Mozambique, Papua New Guinea, Peru and Zambia.

Table 12 shows the impact of a variety of income tax rates and income tax exemptions based on the copper mine model. The model assumes a rate of 10% on the first 3,000,000,000 TG and the rate shown in the table on amounts above 3,000,000,000 TG.

**Table 12. Effect of Income Tax & Income Tax Exemptions**

<b>Income Tax</b>	<b>Effective Tax Rate</b>	<b>Investor IRR</b>	<b>Government Revenue: All Taxes &amp; Fees (million USD)</b>
15%	62.7	9.6	702
20%	65.3	9.1	731
25% (base case)	67.9	8.6	760
30%	70.4	8.2	789
35%	73.0	7.7	818

### **Recommendation on Income Tax**

Mongolia imposes a reasonable level of income tax.

#### **8.2.1 Depreciation**

In most of the surveyed nations, tax policy is mainly implemented through manipulation of the tax base rather than through the tax rate. The tax rate is commonly uniform for all tax-payers, or for all tax payers at a given level of profit. The most common form of tax-base incentive for mining is accelerated depreciation. Most nations provide the mining industry with some sort of accelerated depreciation (see Table 13).

Mongolia provides a long depreciation period as compared to that in most mining nations (ten years for most equipment).

**Table 13. Depreciation Applied to Typical Mining Equipment in Selected Jurisdictions**

Country	Accelerated depreciation?	Depreciation method for typical large equipment
Argentina	Yes	3 yr straight-line
Bolivia	Yes	8 yr straight-line
Burkina Faso	No	Useful life minus one year
Canada (Ontario)	Yes	Up to 100% in yr incurred for new mine or 25% declining pool balance
Chile	Yes	3 yr straight-line
China	Yes	10 years
Ghana	Yes	75% in 1 <sup>st</sup> yr, then 50% declining balance
Greenland	Yes	the company may decide the rate and period
Guinea	Yes	Declining balance at a factor of 2.5
Indonesia	Limited	12.5 % declining balance or 6.25% straight-line
Ivory Coast	Yes	Method of acceleration depends on life of equipment
Kazakhstan	Yes	25% declining balance method
Madagascar	Yes	Straight-line at 10% rate or if eligible, at 2.5 times normal rate
Mexico	No	-
Mongolia	Yes	5 year straight-line (20%)
Mozambique	Yes	Depends on the type of development; under FBC, special accelerated depreciation at double the normal straight-line rate; mine life, or 25% straight-line
Papua New Guinea	Yes	Depreciated straight line over 10 years. Mobile plant may be depreciated using a 25% declining balance pool
Peru	Yes	Can select the rate of straight line dep. up to the allowed max; most mining, processing and power equipment has a max of 20% pa; roads and buildings have a max of 3% unless a stabilization agreement (15 yrs) is in effect in which case a 5% max applies; costs for govt. approved infrastructure such as a school, hospital or recreational facility can be expensed as incurred.
Philippines	Yes	Twice the normal straight-line rate
Poland	Yes	5 yrs straight-line (20%)
South Africa	Yes	Expensed in 1 <sup>st</sup> year of production
Sweden	Yes	5 yrs straight-line (20%)
Tanzania	Yes	12.5% straight-line
USA	No	-
Uzbekistan	Limited	8% straight-line
W. Australia	Yes	Prime cost or diminishing value methods, (usually less than effective life)
Zambia	Yes	Expensed as incurred
Zimbabwe	Yes	Expensed in year incurred or 1 <sup>st</sup> year of product

<sup>1/</sup> Information conveyed in this table may become out of date and should be viewed with caution. Check

local statutes for the current treatment.

Source: James M. Otto, John Cordes & Maria L. Batarseh, *Global Mining Taxation Comparative Study* (2<sup>nd</sup> ed. 2000, p.51) except for Bolivia, Guinea, Madagascar, Mongolia, Mozambique, Papua New Guinea, Peru and Zambia.

In order to illustrate the impact of alternative approaches to depreciation, the copper mine model was used to look at alternatives to the existing system. A variety of shorter time periods were modeled employing the straight-line method. The results are shown in Table 14. The table indicates clearly that the tax system is sensitive to changes in depreciation treatment.

**Table 14. Tax System Sensitivity to Alternative Depreciation Methods**

Treatment	Effective Tax Rate	Investor IRR	Government Revenue: All Taxes & Fees (million USD)
10 yr SL (base case)	67.9	8.6	760
5 year SL	69.6	8.2	780
3 yr SL	70.9	7.8	794
1 yr SL	71.5	7.7	801

## Recommendation on Depreciation

The concept of depreciation is that a taxpayer should be able to over the life of a piece of physical plant (equipment or building) deduct the full cost of that plant. Governments in almost all major mining countries provide an acceleration of depreciation deductions for mine equipment as a tax incentive. Mongolia has a relatively long time period. In Mongolia, accelerated depreciation acts as a disincentive because of another feature of the tax system—loss-carry forward. With a carry forward period of only 2 years, the full benefit of depreciation cannot be realized in the early years of the project. To overcome this problem, which does not occur in almost any other nation, the loss carry forward time limit can be extended.

### 8.2.2 Loss Carry Forward

One of the most common tax incentives offered by governments is to allow taxpayers the ability to carry forward losses from one year to offset taxable income in future years. For capital-intensive industries, like mining, and for industries exceptionally prone to commodity price fluctuation, like mining, loss carry forward is an important issue.

Mongolia limits loss carry forward to 2 years, and caps annual loss deductions at 50% of taxable income. Table 15 shows loss carry forward time limits for a selection of nations and Table 16, the impact of various loss carry forward time limits on the Mongolian tax model. As can be seen in the later table, the difference between a 0 and 2 year period is negligible mainly because of the impact of the investment tax credit during this period. The impact of moving to a longer period is also small.

**Table 15. Loss Carry Forward/Back Policy in Selected Jurisdictions**

Country	Loss Carry Forward		Loss Carry Back	
	Available?	Time limit (years)	Available?	Time limit (years)
Argentina	Yes	5	No	-
Bolivia	Yes	None	No	-
Burkina Faso	Yes	5	No	-
Canada (Ontario)	Yes	7	Yes	3
Chile	Yes	None	No	-
China	Yes	5	No	-
Ghana	Yes	None	No	-
Greenland	Yes	None	Yes	5
Guinea	Yes	3	No	-
Indonesia	Yes	8 or 5 <sup>1/</sup>	No	-
Ivory Coast	Yes	5	No	-
Kazakhstan	Yes	7	No	-
Mexico	Yes	10	Yes	None
Madagascar	Yes	5	No	-
Mongolia	Yes	2	No	-
Mozambique	Yes	10	No	-
Papua New Guinea	Yes	None	No	-
Peru	Yes	4	No	-
Philippines	Yes	5	No	-
Poland	Yes	5	No	-
South Africa	Yes	None	No	-
Sweden	Yes	None	No	-
Tanzania	Yes	None	No	-
USA	Yes	15	Yes	3
Uzbekistan	No	-	No	-
W. Australia	Yes	None	No	-
Zambia	Yes	10		
Zimbabwe	Yes	None	No	-

<sup>1/</sup> Eight years under a generation 7 contract of work, five years under the general tax law. Some information conveyed in this table may become out of date and should be treated with caution. Check local statutes for the current treatment.

Source: Derived from James M. Otto, John Cordes & Maria L. Batarseh, *Global Mining Taxation Comparative Study* (2<sup>nd</sup> ed. 2000, p.60) except for Bolivia, Guinea, Madagascar, Mongolia, Mozambique, Papua New Guinea, Peru and Zambia.

**Table 16. Tax System Sensitivity to Loss Carry Forward Time Limits**

Loss Carry Forward Limit (years)	Effective Tax Rate	Investor IRR	Government Revenue: All Taxes & Fees (million USD)
0	67.9	8.6	760
2 (base case)	67.9	8.6	760
5	67.4	8.8	755
No limit	67.4	8.8	755

## **Recommendation on Loss Carry Forward Time Limit**

The loss carry forward time limit in Mongolia is 2 years and annual carried loss deductions are capped at 50% of taxable income. Mining investors will view this short period and cap as a disincentive. Some nations have moved to eliminate any maximum time period. Because of other features in the tax system, loss carry forward limits have little impact on fiscal revenue generation. Thus, the short period has little effect other than discouraging new investment. It is recommended that losses be allowed to be carried forward without limit. If a limit is imposed, it should not be less than 5 years.

### **8.2.3 Deductibility of Reclamation and Closure Costs**

Of increasing concern to governments is the issue of mine reclamation and closure. These costs are primarily incurred by the miner late in the project at a time when production is falling off or nil. Thus, companies cannot recover the costs involved with closure unless the tax system is adjusted to take these into account while cash flows are still being generated. It is in the government's interest to see that the company does plan and set aside funds for this activity, for at the end of the mine life, funds will not be generated and a failed company could result in the need for the government to pay for reclamation. One way to encourage companies to fund closure is to allow funds irrevocably set-aside for reclamation to be allowed as a cost at the time the funds were irrevocably set aside.

#### **Recommendation on Reclamation/Closure Costs**

During the last year(s) of a mine substantial closure and reclamation costs will be incurred. Because production revenues will have ceased or been reduced, the company may receive no useable tax deduction for these important and essential costs of business. The Mongolian tax system should allow that money set aside in a non-revocable way for this purpose in advance (there are a number of ways to do this) may be deducted as a cost at the time the funds are set-aside. A mere financial provision should not be treated as an allowed deduction.

At closure, certain assets, such as fire trucks, ambulances, water purification infrastructure and so forth suitable for transfer to public entities and communities will be available. It is not known whether such transfers under current tax law would be considered a taxable transaction. If such a transfer is considered taxable, thought should be given to providing tax relief to such transfers.

### **8.2.4 Deductibility of Pre-production Exploration Expenses**

Exploration expenditures will be incurred prior to the commencement of commercial production. Tax treatment of such expenditures by other nations varies widely and descriptions are provided in Table 17.

Mongolia currently allows pre-production exploration costs to be amortized over a 5 year period. As can be seen in the table, many nations allow such expenditure to be expensed as incurred or expensed in the first year of production. Other nations, such as Argentina, Papua New Guinea and Peru, allow a "double deduction" by allowing this type of cost to be both 100% expensed and 100% amortized. Because exploration costs are often a very small part of a project's lifetime costs, tax features such as the double deduction or immediate expensing often have little effect on government's long-term take, but may play a role in promoting a nation's tax system as investor friendly.

## Recommendation on Pre-production Exploration Costs

Most mining tax systems allow pre-production exploration costs to be expensed or amortized. Under the current Mongolia system, such costs are amortized over 5 years. By changing to a system that allows an earlier recovery of these costs, Mongolia could better promote itself as a nation that welcomes and supports exploration. It is recommended that Mongolia modify its current system to allow a 200% allowance for exploration. This can take the form of allowing 100% of the cost to be expensed as incurred (with carry forward), and 100% to be amortized using the existing 5 year straight-line method. In order to allow the current or proposed system to work effectively, the loss carry forward period should be extended to at least 5 years (no limit would be preferable).

Table 17. Deductibility of Pre-Production Exploration Costs

Country	Comments
Argentina	200% deduction; 100% expensed and 100% depleted
Bolivia	expensed in year incurred
Burkina Faso	amortized straight-line over 3 years
Chile	deducted in 1 <sup>st</sup> year of production
China	amortize over at least one year in 1 <sup>st</sup> year of production
Ghana	75% 1 <sup>st</sup> year of production, declining balance subsequently
Greenland	may be carried forward for future deduction
Indonesia	amortize straight-line over 10 years
Ivory Coast	amortize over 5 years starting the 1 <sup>st</sup> year of production
Kazakhstan	15% declining balance
Mexico	expensed fully as incurred or may elect to amortize straight-line at 10%/yr
<b>Mongolia</b>	<b>amortize over 5 yrs, commencing in first year of production</b>
Papua N.G.	200%, 100% expensed as incurred, 100% amortized at 25% declining balance from start of production
Peru	expensed in year incurred or amortized over the life of the mine
Philippines	amortized at twice the normal straight-line rate
Poland	amortized straight-line over 5 years
South Africa	expensed fully in 1 <sup>st</sup> year of production
Sweden	expensed in year incurred
Tanzania	expensed in 1 <sup>st</sup> year of production
USA-Arizona	depleted over life of mine
Uzbekistan	amortized straight-line over 10 years
W. Australia	deductible in year incurred
Zimbabwe	expensed in year incurred or 1 <sup>st</sup> year of production

### 8.2.5 Deductibility of Investment in Communities and Infrastructure

There is intense interest by many mining companies in furthering the development of communities and peoples affected by a mine. One way to foster development is to invest in communities impacted by mining so that when the mine closes, the affected communities will be able to carry-on with social and alternative economic activities. Thus, infrastructure and investments made in the community during the mine life can be important.

The current Mongolian system has partially addressed this issue. In Mongolia, investment in road infrastructure and maintenance outside the mining area is deductible. In addition, all costs incurred in developing social infrastructure can be depreciated on a straight-line basis over the useful lives of the facilities constructed, and costs of maintaining and operating such infrastructure facilities may be expensed in the year in which incurred.

While the current tax system recognizes such costs and allows a depreciation deduction or expense, it does not provide the same sort of incentive that a tax credit would. Take for example the tax system in Papua New Guinea (a major copper and gold producer). PNG currently allows a taxpayer who incurs expenditures in a given year in relation to a government approved infrastructure development to take a tax credit of the lesser of 0.75% of his assessable income in that year or the amount of tax payable. If the full tax credit cannot be used in that year, it can be carried forward for the next two years. This type of tax credit scheme acts a motivational factor to encourage private sector investment in public-accessible infrastructure.

### **Recommendation on Deductibility of Investment in Communities and Infrastructure**

The current tax law allows a deduction for investment in public-accessible infrastructure. Mining companies will view this allowance as an investment incentive. To further encourage investment in such infrastructure investment, the government should consider allowing a defined percentage (up to 0.75%) of its taxable revenue spent on government approved public infrastructure to be allowed as a tax credit.

#### **8.2.6 Ring Fencing**

Ring fencing (where an accounting wall is imposed on a discrete mine as opposed to allowing all activities in the country to be combined in a single accounting) is a concept that is applied by some nations to mines that are subject to different taxation systems. Most nations do not ring fence mining unless individual mines are subject to one of the three following situations: (1) a mine is subject to a distinct and unique negotiated tax system; (2) the tax system or some part of the tax system to which a mine is subject is stabilized for a term of years; or (3) the tax system is subject to a resource rent type of tax. If any one of these three situations apply, most nations would ring fence that mine. See Table 18.

The rationale for ring fencing is obvious in the above cases where combining the books of two or more mines that have different tax systems would be an administrative challenge.

However, there may certain types of activities where it makes sense to modify a ring fencing scheme. For example, take the situation of exploration. The reserves at any one mine are finite, and unless further exploration takes place, the mine will eventually close and the contribution to government revenue will be lost. By allowing exploration expenditures in areas off the mining lease to be deductible, a mining

company is encouraged to undertake such exploration.

## Recommendation on Ring-Fencing

Mongolia should ring fence each mine that is subject to a stability agreement. However, in order to encourage exploration, exploration expenditures outside the lease area by a special mining lease holder should be expensible. In the event that the special mining holder discovers a deposit and applies for a mining lease, any exploration expenditure previously claimed for tax purposes should not be applied to the new operations.

**Table 18. Ring Fencing Policy in Selected Jurisdictions**

Country	Some mines are ring fenced? (Yes or No?)	Comments
Argentina	No	
Bolivia	No	
Burkina Faso	Yes	
Canada (Ontario)	No	
Chile	No	
China	Yes	
Ghana	No	
Greenland	No	
Indonesia	Sometimes	contract of work mines are ring-fenced
Ivory Coast	No	
Kazakhstan	Yes	
Madagascar	No	
Mexico	No	
Mongolia	No	
Mozambique	Sometimes	
Papua New Guinea	Sometimes	mines operating under negotiated special mining leases are ring fenced; other mines are not
Peru	Sometimes	there is no ring fencing unless the tax entity has entered into differing tax stabilization agreements for different mines
Philippines	No	
Poland	No	
South Africa	Yes	
Sweden	No	
Tanzania	No	
USA	No	
Uzbekistan	No	
W. Australia	No	
Zimbabwe	No	may consolidate books if mines are not registered as Ltd.

Caution: Information in this table may be out of date. Check local statutes for the current treatment.

Source: James M. Otto, John Cordes & Maria L. Batarseh, *Global Mining Taxation Comparative Study 53* (2d ed. 2000) (except for Bolivia, Madagascar, Mongolia, Mozambique, Papua New Guinea, and Peru).

### 8.3 Royalties

Over the past century, there has been a trend to de-emphasize tax systems based on royalties and to instead implement systems that rely on tax mechanisms that are based on “ability to pay”, i.e., profit-based taxes. Some nations have eliminated mineral royalties entirely, while others have reduced their importance. Table 19 provides a list of nations surveyed and whether or not they use mineral royalties as a form of raising mineral sector fiscal revenues. Most impose an ad valorem royalty based on gross sales value or net smelter return, generally do so at a rate less than 3%. The use of a royalty insures that regardless of profitability, the nation will receive at least a minimum payment for the sale of its non-renewable resource.

Mongolia imposes a royalty type tax (5%) which is one of the highest rates in the world. Table 20 indicates the effect on revenues, effective tax rate and IRR of different levels of royalty.

**Table 19. Presence of Mineral Royalty Tax Systems in Selected Jurisdictions**

Country	Royalty Imposed?	Comment
Argentina	No/Yes	Set by each state; some have royalties others don't.
Bolivia	Yes	
Burkina Faso	Yes	
Canada (Ontario)	No	No royalty in most provinces, some exceptions.
Chile	Yes	
China	Yes	
Ghana	Yes	
Greenland	No	
Guinea	Yes	
Indonesia	Yes	
Ivory Coast	Yes	
Kazakhstan	Yes	
Madagascar	Yes	
Mexico	No	
Mongolia	Yes	
Mozambique	Yes	
PNG	Yes	
Peru	Yes	
Philippines	Yes	
Poland	Yes	
South Africa	No	Except on certain lands. Under consideration in 2007.
Sweden	No	
Tanzania	Yes	
USA	No	No federal tax, some states impose severance tax
Uzbekistan	Yes	
W. Australia	Yes	
Zambia	Yes	
Zimbabwe	No	Under consideration.

<sup>1/</sup> Caution: Some information conveyed in this in this table may be out of date. Check local statutes for the current treatment.

Source: James M. Otto, John Cordes & Maria L. Batarseh, *Global Mining Taxation Comparative Study* (2<sup>nd</sup> ed. 2000, p.60) except for Bolivia, Guinea, Madagascar, Mongolia, Mozambique, Papua New Guinea, Peru and Zambia.

**Table 20. Tax System Sensitivity to a Royalty Tax**

<b>Royalty Tax on Gross Sales Revenue</b>	<b>Effective Tax Rate</b>	<b>Investor IRR</b>	<b>Government Revenue: All Major Taxes &amp; Fees (million USD)</b>
0%	57.7	11.0	646
2%	61.7	10.1	691
3%	63.8	9.6	714
5% (base case)	67.9	8.6	760

As can be clearly seen, royalty has a very large fiscal impact.

Companies in any sector, including mining, prefer taxes based on profits rather than taxes charged irrespective of the taxpayer's profit or loss. Governments often like to impose a balance of profit-based taxes with some that are not based on profits. Purely profit based fiscal systems are more sensitive to rises and falls in commodity prices and thus, taxes on inputs and outputs can lessen government revenue fluctuation, or at least provide a minimum tax revenue in years when a mine does not produce a profit.

Table 21 shows the impact that a change in royalty rate would have on the global ranking.

### **Recommendation on Royalties**

The current levels of royalty rates in Mongolia are not internationally competitive and should be reduced to 2 to 3 of sales revenues.

**Table 21. Comparative Economic Measures for a Model Copper Mine in Selected Jurisdictions: Royalty options**

Country	Foreign Investor's Internal Rate of Return (%)	Total Effective Tax Rate (%)
Lowest taxing quartile		
Sweden	15.7	28.6
W. Australia	12.7	36.4
Chile	15.0	36.6
Zimbabwe	13.5	39.8
Argentina	13.9	40.0
China	12.7	41.7
Second lowest taxing quartile		
PNG (2002)	13.3	42.7
Bolivia	12.7	42.8
South Africa	13.5	45.0
Philippines	13.5	45.3
Indonesia (7 <sup>th</sup> , COW)	12.5	46.1
Kazakhstan	12.9	46.1
Second highest taxing quartile		
Peru (2003)	11.7	46.5
Tanzania	12.4	47.8
Poland	11.0	49.6
USA (Arizona)	12.6	49.9
Mexico	11.3	49.9
Greenland	13.0	50.2
Guinea (2005)	11.7	51.3
Highest taxing quartile		
Indonesia (non-COW)	11.2	52.2
Ghana	11.9	54.4
Mongolia (2% royalty)	10.1	61.7
Uzbekistan	9.3	62.9
Ivory Coast	8.9	62.4
Ontario Canada	10.1	63.8
Mongolia (5 % royalty)	8.6	67.9

Table Note. Values in the table for all jurisdictions except Bolivia (2205), Guinea (2005), Mongolia (2004), Papua New Guinea (2002), Peru (2003) and Indonesia (2003) are extracted from: J. Otto, J. Cordes and M. Batarseh, *Global Mining Taxation Comparative Study*, second edition, IGRPM Colorado School of Mines, March 2000.

## 8.4 Import and Export Duties

Mining is capital intensive and utilizes specialized equipment that is usually imported. This means that an import duty on equipment has a direct impact on project economics in the project's early years. Project feasibility studies calculate various projections of profitability, such as internal rate of return, and such measures are very sensitive to large costs in the early years of a project. Even modest levels of equipment import duties can sink a marginal project. Competition for mineral sector investment worldwide is fierce, and most countries have either eliminated import duties on mine equipment or have found ways to exempt projects or their equipment from such duties.

Table 22 lists typical import and export duties in a cross-section of mining nations around the world. As can be seen in the table, most of the sample nations impose no or low duty, and those with higher duty usually have some means of exempting mines.

**Table 22. Typical Import Duties on Mine Equipment**

Country	Typical import duty on large equipment	Comments
Argentina	None	1% "control fee" applies to most imports
Bolivia	5%	Refundable
Burkina Faso	11%	only applicable at exploitation
Canada (Ontario)	0.5%	may be less if from within NAFTA
Chile	10%	may be added to depreciable costs
China	None	
Ghana	Exempt	imports for commencement of mining are exempt, later imported equipment is exempt if it appears on the "Mining List"
Greenland	None	
Guinea	Partially exempt	Exempt during construction then 5.6%; 0.5% registration tax regardless of phase
Indonesia	None	7 <sup>th</sup> generation contract of work
Ivory Coast	0.75%	exemptions can be negotiated on an individual mine basis
Kazakhstan	None	
Madagascar	None*	*for qualifying large-scale mines--during exploration: exempt; during construction: exempt; during mining: combined import duty rate is 5% paid at time of import but then deductible as depreciation
Mexico	35%	exemptions available to some types of mines, may less if from NAFTA region
Mongolia	5%	
Mozambique	Exempt	
Papua New Guinea	None	
Peru	5 to 7%	rates vary widely
Philippines	3%	may be exempt if application is approved under either the Investment Act or the Mining Act
Poland	9%	

South Africa	None	import duty may apply to spares and parts
Sweden	None	zero-rated if from within the EU, otherwise 0.6% unless it is not available in the EU, then 0%
Tanzania	None	
USA	rates vary	
Uzbekistan	None	normal rate is 3 to 6%, but can be exempted
W. Australia	5%	
Zimbabwe	5%	

Caution: Information conveyed in this table may become out of date. Check local statutes for the current treatment.

Source: derived from James M. Otto, John Cordes & Maria L. Batarseh, *Global Mining Taxation Comparative Study* (2<sup>nd</sup> ed. 2000, p.32) except for Guinea, Madagascar, Mongolia, Mozambique, Papua New Guinea and Peru.

The imposition of customs duty carries with it substantial burdens and costs for government in terms of the manpower and time required for tax collection. Most countries are in the process of reducing import duties to values of zero or close thereto. Many nations find that over time, corrupt practices can creep into customs services, particularly where import duties are levied. Mongolia imposes an import duty of 5% on most mining related items. Table 23 shows the impact of reducing the level of import duty.

**Table 23. Tax System Sensitivity to Import Duty on Mining Equipment**

<b>Import Duty Rate on Typical Mining Equipment</b>	<b>Effective Tax Rate</b>	<b>Investor IRR</b>	<b>Government Revenue: All Major Taxes &amp; Fees (million USD)</b>
0%	65.5	9.7	733
5% (base case)	67.8	8.6	760
10%	70.2	7.7	787

### **Recommendation on Import Duty**

Import duty is mainly paid during the construction of a mine when there are no cash inflows. Thus, companies view such an input tax very negatively. Most nations have freed mines from import duty during construction or zero-rated most mine type equipment. Consideration should be given to exempting or zero rating mining equipment from import duty.

### **8.5 Value Added (Goods and Services) Tax - VAT**

This type of tax, called a goods and services tax in some jurisdictions, is becoming more common worldwide. In nations where such a tax is in use, it is commonly applied to most purchases, both in terms of capital goods as well as services. Because it is a “consumer” tax and export minerals must compete globally, almost all mineral exporting nations have chosen to eliminate the impact of the tax in one way or another on both export mineral sales and equipment purchases. The means to achieve this negation vary widely and involve varying degrees of complexity and

government administration. The simplest form of negation is freeing VAT on all mining inputs and outputs for qualifying projects. More complex schemes involve rebates, crediting, refunds, deferrals, and a host of other mechanisms. While many nations negate the effect of VAT on exported products, many do apply VAT to mining products that serve domestic markets. Table 24 lists for selected tax jurisdictions whether or not they assess VAT. It also indicates whether relief from VAT is available to mines for purchased equipment.

Mongolia levies a VAT on goods and services purchased. Mineral export sales are generally zero-rated. Since sales are not subject to VAT, Mongolia allows VAT paid on imported goods and services to be recovered by 3 methods: a) credit the excess amount against value-added tax payments that are due on the succeeding month, quarter or year, b) credit the excess against other forms of taxes that are due; c) refund the excess from the government treasury budget; in practice, refunds under c may be delayed.

**Table 24. VAT on Imported Goods and Services in Selected Jurisdictions**

Country	VAT is payable on purchase of goods and services	If the product is exported, means are available to negate the VAT effect on goods and services purchased by a mine (exempt, zero-rated, credits, deferral, refund, etc.)
Argentina	Yes	Yes
Bolivia	Yes	Yes
Burkina Faso	Yes	Yes
Canada (Ontario)	Yes	Yes
Chile	Yes	Yes
China	Exempt	-
Ghana	Exempt	-
Greenland	None	-
Guinea	Exempt	-
Indonesia	Yes	Yes
Ivory Coast	Yes	None
Kazakhstan	Yes	Yes
Madagascar	Yes	Yes
Mexico	Yes	Yes
Mongolia	Yes	Yes
Mozambique	Yes	Yes
Papua New Guinea	Yes	Yes
Peru	Yes	Yes
Philippines	Yes	Yes
Poland	Yes	Yes
South Africa	Yes	Yes
Sweden	Yes	Yes
Tanzania	Exempt	-
USA	None	-
Uzbekistan	Exempt	-
W. Australia	Yes	Yes
Zimbabwe	None	-

Caution: Information conveyed in this table may become out of date. Check local statutes for the current treatment.

Source: derived from James M. Otto, John Cordes & Maria L. Batarseh, *Global Mining Taxation Comparative Study* (2<sup>nd</sup> ed. 2000, p.48) except for Guinea, Madagascar, Mongolia, Mozambique, Papua New Guinea and Peru.

## **Recommendation on VAT**

Currently, Mongolia imposes a VAT of 10% on the purchase of project input goods and services, but zero-rates or exempts mining sector exports. There is a complex and administratively complex system to recover VAT collected on project inputs. To simplify the system and reduce administrative burdens on the government and company, mining inputs could be exempt from VAT.

### **8.6 Dividend and Loan Interest Withholding Tax**

Many nations impose a dividend withholding tax and a loan interest withholding tax. These taxes can be appreciable. Table 25 lists dividend withholding tax rates for a number of countries. The general rates described in the table must be used with some caution. Although many governments define a high dividend withholding tax rate, perhaps with the objective of promoting reinvestment or providing national mining companies with an advantage over foreign firms, they often enter into bilateral investment treaties (or dual tax treaties) that lower or eliminate such taxes for companies headquartered in key trading partner countries.

Mongolia imposes a dividend and loan interest withholding tax at a rate of 20% on non-resident legal entities. Table 26 shows the impact of different withholding tax rates on the model copper mine.

### **Recommendation on Dividend Withholding and Loan Interest Withholding**

Currently Mongolia imposes a dividend withholding tax of 20%. This rate is quite high for a developing nation. Consideration could be given to lowering the rate to between 5 and 15%.

**Table 25. Dividend Withholding and Similar Taxes in Selected Jurisdictions**

Country	Dividend Withholding Tax rate (%)	Comment
Argentina	0	35% on the excess of the accumulated taxable net income
Bolivia	12.5	
Burkina Faso	12.5	
Canada (Ontario)	25	
Chile	35	15% income tax is credited against the withholding tax
China	None	
Ghana	10	most mines negotiate an exemption
Greenland	35	
Guinea	15	
Indonesia	20	7 <sup>th</sup> generation COW
Ivory Coast	12	
Kazakhstan	15	
Madagascar	10	
Mexico	35	
Mongolia	20	
Mozambique	10	
PNG	10	
Peru	0	An additional rate of 4.1% on income tax applies when dividends are distributed.
Philippines	15	
Poland	20	
South Africa	12.5	Secondary Tax on companies is levied on dividend basis
Sweden	None	
Tanzania	10	
USA	30	
Uzbekistan	15	
W. Australia	30	0% if dividend is fully franked
Zambia	none	
Zimbabwe	20%	Credited against income tax

<sup>1/</sup> Some information conveyed in this in this table may be out of date. Check local statutes for the current treatment.

Source: James M. Otto, John Cordes & Maria L. Batarseh, *Global Mining Taxation Comparative Study* (2<sup>nd</sup> ed. 2000, p.45) except for Bolivia, Guinea, Madagascar, Mongolia, Mozambique, Papua New Guinea, Peru and Zambia.

**Table 26. Tax System Sensitivity to Withholding Tax**

<b>Withholding Tax (on dividends and loan interest)</b>	<b>Effective Tax Rate</b>	<b>Investor IRR</b>	<b>Government Revenue: All Major Taxes &amp; Fees (millions USD)</b>
5%	59.6	10.3	668
10%	62.6	9.7	701
15%	65.3	9.2	732
20% (base case)	67.9	8.6	760

### **8.7 Tax Collection and Distribution**

There is no function of government more controversial than tax collection and distribution. It is a key way in which power is allocated in a regulated society.

Governments have many options regarding the distribution of taxes. Traditionally, the option chosen by many developing nations is that most tax revenues flowed to central government and then were distributed according to the budgeting process. The area or region in which a mine was located did not receive any particular preference except as resulted from budget decisions. However, there has been a recent move to provide a greater level of tax participation at provincial and local levels.

There are a variety of policy options. One option is to distribute revenue collections by allocating taxing power--some taxes to be collected by central government, some by local government. In allocating tax collection power, care must be taken to take into account two main factors: (1) limitations should be imposed to constrain too high a level of tax and fees (i.e., the need for a closed list of local taxes and taxes that are capped), and (2) the capability of local government to effectively collect the tax.

Another option is for taxes to be collected by central government but then, as required by statutory allocation, to remit the required portion to local government. Central government is often better equipped for the tax collection (and auditing) function than is local government. However, there is a danger that irrespective of what the statute says, local government will not receive its due. For this reason, mining companies almost always prefer to pay the intended level of government directly rather than rely on an internal remittance system. Local governments prefer to receive taxes directly from the taxpayer rather than relying on remittance from central government.

In Mongolia royalties are disbursed 10% to the soum, 20% to the aimag, and 70% to the central government, and mining licence fees are 25% to the soum, 25% to the aimag, and 50% to the central government.

### **Recommendation on Tax Distribution**

In Mongolia royalty and mining licence fees are destined for soum, aimag and central government according to percentages set out in the mining law. This system reflects international best practice.

## **8.8 Government Equity**

Today, very few governments are interested in taking up an equity interest in mining. In a 1999 poll of over 20 nations by the Author only a very few reported having government equity requirements (see Table 27). In the past, the rationale behind the government taking an equity role was based mainly on two perceptions: (1) the government needed to exert a greater level of control over its natural resources, and (2) the government would benefit financially from an equity stake. However, with improvements in mining laws and tax laws, and with a greater appreciation of the risks involved with mining, most nations have now rejected taking an equity stake and exert the desired level of control through laws. Improvements in mining tax systems have prompted governments to focus on risk-free tax measures rather than on risk-prone equity as the primary means by which to reap financial benefits.

In Mongolia, the state has an option to take up to a 50% equity stake in strategic deposits it helped explore and up to 34% in other strategic deposits. The mining law is not clear as to the form of this equity (free, carried or paid). It can be stated with certainty that private sector mining companies will find large state participation percentages a major disincentive.

### **Recommendation on Equity Participation**

Unlike almost all other mining nations, the current Mongolian mining regulatory system provides the government with an option to take an equity share. From a purely financial perspective, taking such a stake is quite risky. It opens up the potential for stakeholder's liability to both meet project cash needs and arising from potential law suits from lenders, landowners and users, environmental NGOs and so forth. The imposition of two profit based taxes--income tax and withholding tax--tend to capture resource rents in the same way that dividend participation would. While in high commodity price years the government might benefit more from dividend participation than from taxation alone, given the risk involved, Mongolia should forego the equity option.

**Table 27 Equity Requirements in Selected Jurisdictions**

Country	Mandatory Local Private Equity Interest required by Law or Policy?	Mandatory State Free Equity Interest required by Law or Policy?
Argentina	No	No
Bolivia	No	No
Burkina Faso	No	Yes 10% free equity
Canada (Ont)	No	No
Chile	No	No
China	No	No
Ghana	No	Yes 10% free equity
Greenland	No	No
Guinea	No	No (recent agreements do not include gov't equity)
Indonesia	No/Yes	No
Ivory Coast	No	Yes 10% free equity <sup>1/</sup>
Kazakhstan	No	No
Mali	No	Yes
Mongolia	Yes	No (at the option of the state)
Mexico	No	No
Mozambique	No	No
P.N.G.	No	No <sup>2/</sup> (paid equity option)
Peru	No	No
Poland	No	No
South Africa	No	No
Sweden	No	No
Tanzania	Yes <sup>1/</sup>	No
USA-Arizona	No	No
Uzbekistan	No	No
W. Australia	No	No
Zimbabwe	No	No

<sup>1/</sup> Carried interest features apply;

<sup>2/</sup> Country may opt for a paid equity interest.

Source: except for Bolivia, Indonesia, Mozambique, Papua New Guinea and Peru, derived from Global Mining Taxation Comparative Study, 2<sup>nd</sup> edition 2000.

## 8.9 Excess Profits Tax

Commodity prices fluctuate greatly reflecting supply and demand in the world economy. There a variety of fiscal methods available to governments which can be used to collect additional revenues in times of high prices. However, it is important for tax policy makers to plan for both periods of high prices and low prices (note: loss carry forward tends to smooth out and reduce the impact of low price periods but Mongolia has an extremely limited loss carry forward provision). Profit based taxes such as income tax and dividend withholding track profitability in times of high prices. Some, but very few governments, levy a special form of excess profits tax.

Mongolia levies a substantial excess profits tax that is 68% of a value determined, for copper, by taking the LME price per ton and subtracting from it a statutory base cost of 2600 per ton and treatment charges. The base cost is not indexed for inflation and this

results in a very large impact on mine profitability, even when a conservative copper price is assumed.

Table 28 shows the impact of the excess profits tax on the model mine. As can be seen, this tax is the major reason that the Mongolian system compares so poorly with that in other nations. Because the base cost is set so low and is not indexed, even given a low price scenario, a typical mine could not meet the minimum investment IRR requirements used by most companies. The tax is ill designed. If used at all, an excess profits tax should seek to capture rent in highly profitable years, not from marginal or unprofitable mines.

**Table 28. Tax System Sensitivity to Excess Profits Tax**

<b>Excess Profits Tax</b>	<b>Effective Tax Rate</b>	<b>Investor IRR</b>	<b>Government Revenue: All Major Taxes &amp; Fees (million USD)</b>
none	54.5	10.4	610
68%, 2600 base cost (base case)	67.8	8.6	760
68%, 5200 base cost	54.5	10.4	610

### **Recommendation on Excess Profits Tax**

Very few nations impose excess profits on mines. Mongolia imposes an ill designed excess profits tax. It has a low trigger threshold that is not indexed for inflation. Thus, in a few years time, even marginal and no profit mines will pay substantial amounts of excess profits tax. This tax is the main reason that the Mongolian tax system is not internationally competitive. Thought could be given to repealing this tax, or to increasing the trigger threshold and indexing the threshold amount to take into account inflation.

## **9. Summary and Recommendations**

This study has analyzed the competitive position of the Mongolian mineral sector tax system to determine if it is internationally competitive. The tax systems of over twenty nations, including Mongolia's, were assessed using a copper mine model. Based on well accepted measures of comparison, internal rate of return (IRR) and overall effective tax rates (ETR), it was determined that the current Mongolian mineral sector tax system is not internationally competitive. Given the current system, it is doubtful that an average profitability copper mine could be justified without significant alterations to the tax system.

In addition, a tax system cannot be looked at in isolation from other investment decision-making factors. The cost of building a mine in Mongolia is greater than in many other nations. Companies may also perceive that a combination of geological, operating, infrastructure, regulatory and other types of risks are higher in Mongolia than in other nations where they operate. This may result in investors requiring a

higher rate of return. Thus, investors may require a better than average tax system to offset negative perceptions.

Those elements of the current tax system that most heavily impact on the system's competitiveness are:--

- royalty (5%)
- import duty (5%)
- high withholding tax (20%)
- excess profits tax (68%).

If the following fiscal attributes were changed, to reflect the systems in other mining countries more closely, the system would be more competitive (see Table 29):

- royalty (2%)
- import duty (exempt)
- withholding tax (15%)
- no excess profits tax.

**Table 29. Effect of Recommended Changes to Four Tax Items on Competitiveness**

Country	Foreign Investor's Internal Rate of Return (%)	Total Effective Tax Rate (%)
Lowest taxing quartile		
Sweden	15.7	28.6
W. Australia	12.7	36.4
Chile	15.0	36.6
Zimbabwe	13.5	39.8
Argentina	13.9	40.0
China	12.7	41.7
Second lowest taxing quartile		
PNG (2002)	13.3	42.7
Bolivia	12.7	42.8
<b>Mongolia (with changes)</b>	12.8	44.8
South Africa	13.5	45.0
Philippines	13.5	45.3
Indonesia (7 <sup>th</sup> , COW)	12.5	46.1
Kazakhstan	12.9	46.1
Second highest taxing quartile		
Peru (2003)	11.7	46.5
Tanzania	12.4	47.8
Poland	11.0	49.6
USA (Arizona)	12.6	49.9
Mexico	11.3	49.9
Greenland	13.0	50.2
Guinea (2005)	11.7	51.3
Highest taxing quartile		
Indonesia (non-COW)	11.2	52.2
Ghana	11.9	54.4
Uzbekistan	9.3	62.9
Ivory Coast	8.9	62.4
Ontario Canada	10.1	63.8
Mongolia (5 % royalty)	8.6	67.9

Table Note. Values in the table for all jurisdictions except Bolivia (2005), Guinea (2005), Mongolia (2004), Papua New Guinea (2002), Peru (2003) and Indonesia (2003) are extracted from: J. Otto, J. Cordes and M. Batarseh, *Global Mining Taxation Comparative Study*, second edition, IGRPM Colorado School of Mines, March 2000.