Mining Taxation in Developing Countries

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Abstract

This paper presents information on the taxation of mines with a special emphasis on taxation policy in developing economies. It discusses the objectives of mining taxation and how tradeoffs may be made between different objectives such as the desire to attract investment, maximize government revenues, and enhance the developmental impact of mining. The major types of mining taxes are described from a policy perspective, and the timing of taxes and tax incentives is analyzed to illustrate their effect on government revenues and return on investment. Differences in tax treatment between foreign and domestic mining enterprises and between large and small-scale mining are examined. Major tax trends are identified, as is the relationship between taxes on mining and taxes on other economic sectors. The study draws, in part, upon a more extensive study undertaken by the author that was distributed globally by UNCTAD in 2000.[2]

1. Introduction

Taxation of mining is not a new phenomenon. Minerals have been mined for thousands of years and rulers and governments throughout history have taxed mines to share in the created wealth. This paper provides a description of mining taxation as it is applied today with a special emphasis on taxation policy in developing economies. It has been said that "there is nothing new under the sun" but in today's global economy, tax policy is increasingly taking into account factors that historically did not play a large role.

The paper is divided into seven sections addressing topics such as the objectives of mine taxation, the relationship between taxes on mining and those on other sectors, mining taxation practices, how the incidence of taxation over time can affect returns on investment and government revenues, and tax discrimination.

2. Objectives of mine taxation

Governments use taxation to meet two primary objectives: to raise revenues, and to guide taxpayer behavior.

2.1 Raising Revenues

The key tax policy question in terms of meeting the objective of raising revenues is, how great a tax burden should be placed on a mine? Given that a high tax burden means lower investor profit, governments are placed in a position of balancing their fiscal take with a firm's willingness to invest. If taxes are too high, investors may invest elsewhere, but if taxes are too low, government may needlessly forgo fiscal revenue. There is also the issue of the tax base. Is it preferable for the government to have only a few mines that are heavily taxed, or many mines

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[2] James Otto, Maria Luisa Batarseh, & John Cordes, Global Mining Taxation Study Comparative Study (2nd Edition), Colorado School of Mines, Golden: 2000. Distributed to all developing economy governments by UNCTAD, July 2000.

that are minimally taxed? The profile of this later issue has been highlighted recently with the emergence of resource conservation as a focus of sustainable development discussions. On one hand, some may argue that slower development of natural resources helps to preserve resources for future generations (thus tax mines heavily to discourage rapid development), while others may argue that currently maximizing mining provides the infrastructure and related development that can lead to broader sustainable development goals (thus minimally tax mines).

Most governments try to strike a balance between government and investor revenue needs by implementing a "fair and equitable" system. Unfortunately, no one has yet been able to determine what an ideal fair and equitable system is. Another approach is to look to see if the fiscal system is competitive, i.e. using the market as a proxy to determine whether a system is "fair." In today's global economy, multinational companies have many countries to choose from, and a low tax country is generally preferred by an investor to a high tax country. One way of comparing fiscal systems is to calculate the total effect of all tax types on a typical mine in a selection of countries that compete for mining investment. Table 1 indicates the reported total effective tax rate and the internal rate of return for two model mines. The table clearly indicates that the tax total burden differs widely from country to country, but that many developing nations impose an effective total tax rate of between 40 to 60%.

A key policy decision that is related to the revenue-raising objective, is whether some mines should be taxed more heavily than others. Should the tax system be uniform, or should a separate tax system be designed for each mine or class of mine? This issue is investigated in more detail in the section of this paper dealing with discrimination.

Table 1. Profit and Tax Measures in Selected Developing Economies

	Model Gold Mine		Model Copper Mine	
	IRR (%)	Effective tax rate (%)	IRR (%)	Effective tax rate (%)
Burkina Faso	-1.6	106.0	3.3	83.9
Poland	3.0	90.2	12.2	37.1
China	7.1	73.9	12.7	41.7
Pap.New Guinea	8.7	72.3	10.8	57.8
Ivory Coast	9.1	69.1	8.9	62.4
Mexico	10.4	62.9	11.3	49.9
Uzbekistan	11.2	62.0	9.3	62.9
Indonesia	11.4	60.4	12.2	48.6
Bolivia	12.2	52.4	11.4	43.1
Tanzania	12.7	57.9	12.4	47.8
Kazakstan	13.5	54.4	12.9	46.1
Ghana	13.6	56.7	11.9	54.4
Greenland	14.7	54.9	13.0	50.2
Peru	14.9	45.5	12.3	42.8
Zimbabwe	15.7	45.9	13.5	39.8
Argentina	16.6	42.5	13.9	40.0
Chile	18.3	36.8	15.0	36.6
Philippines	18.4	38.2	13.5	45.3
South Africa	18.8	32.6	13.5	45.0
Average		*58.7*		*49.2*

Source: derived from J. Otto et al, Global Mining Taxation Comparative Study (2nd edition), Colorado School of Mines, Golden: 2000.

2.2 Guiding Taxpayer Behavior

Governments have many ways to influence the behavior of firms. The most direct way is through "command and control" mechanisms such as an obligation to undertake a certain action required by law, to meet a mandated standard, or to refrain from a prescribed activity. Another way to influence behavior is to use tax tools as an incentive to behave in a manner preferred by government. For example, to encourage investors to run a more environmentally friendly mine, a tax credit may be granted by the government for the installation of pollution control devices, or a high tax may be imposed on the discharge of harmful effluents. Examples of tax methods that assist in guiding taxpayer behavior are provided throughout the remainder of this paper.

3. Relationship Between Taxes on Mining and Those on Other Sectors

While some countries have chosen to treat the mineral sector identically with other sectors, most nations provide the mining sector with some sort of special treatment. In some instances, this in the form of a special type of tax unique to the sector, such as a royalty; in other cases, it is through the offering of special incentives. It is often argued that the mining industry should be treated differently than other economic sectors because it is inherently quite risky, capital intensive, prone to wide commodity price fluctuations, and in nations where mineral ownership resides with the state, exploits a part of the national patrimony. Table 2 lists typical mining sector incentives and reasons why governments offer them.

Table 2. Tax Incentives and Reasoning

Special tax incentives for the mining industry:

- *Exploration expenses*. A lengthy and costly exploration program will proceed 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*. Mine development is 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.
- *Equipment imports*. With regard to equipment import dependency, governments often provide a mechanism where equipment imported during mine construction is effectively free of duty (zero-rated, exempted, refundable, …). Likewise, most countries provide some sort of relief from value added tax on equipment purchases, particularly if the mine product is destined for export.
- *Export sales.* Mine products are often destined for highly competitive export markets. Most countries effectively impose no or low 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 credit.
- *Commodity price cycles.* 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 and provide for the carrying forward of losses.
- *Post production expenses*. 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.

Table 2. Tax Incentives and Reasoning (continued)

- *Stabilization.* 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 life-span. Governments provide tax stability through a number of different legislated and negotiated approaches.
- *Negotiated agreements.* When 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.
- *Ring fencing.* Most countries allow a company to consolidate books from all operations for determining income tax liability. 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.

Source: derived from J. Otto et al, Global Mining Taxation Comparative Study (2nd edition), Colorado School of Mines, Golden: 2000.

4. Mining Taxation Practices and How Different Types of Taxes and Tax Incentives Meet Government Objectives [3]

There are many types of taxes and tax incentives that governments can impose or offer, and each type is useful for achieving different objectives. The mix of tax types can be important because investors have strong preferences for some versus others.[4] Section 4.1 briefly introduces the major types of taxes and section 4.2, incentives.

Governments have many choices in selecting the types of taxes and incentives they include in their fiscal system. Table 3 lists the main types of taxes/incentives that governments have historically levied on the mining industry.

[3] This section has been adopted from J. Otto et al, Global Mining Taxation Study (2nd Edition), Colorado School of Mines, Golden: 2000.

[4] Investors generally prefer taxes based on profits and dislike those based on inputs or outputs.

Table 3. Fiscal Methods and Incentives Used by Governments

Tax type:
• income or profits based tax (common) • import duty (rare: exemptions often available) • export duty (rare: exemptions often available) • royalty tax (common: unit type, *ad valorem* type, profit type) • application/issuing/registration fees (common: usually minor) • surface rentals (common: usually minor) • withholding tax (common: loan interest, dividends, services) • VAT (common: exemptions or credits usually available) • stamp duty (common: usually minor) • sales tax (rare: exemptions usually available) • local government taxes (common: usually a property tax based on book or assessed value) • mandatory "payroll" based taxes paid by company: (common) • government equity (very rare: except in West Africa region)
Incentive type:
• accelerated depreciation (common) • depletion allowance (rare) • ring-fencing (common) • tax stabilization (used in some large producer developing countries) • exploration expense carry-forward (common) • deductible environmental, reclamation, closure costs (common) • tax holidays • loss carry forward (common) • loss carry back (rare)

4.1 Tax Types and Reasoning

4.1.1 Income Tax

In the early part of the 20th century, the main way governments taxed mines was to impose some type of royalty tax on production. Today almost all nations instead rely primarily on profit (income) based taxes. When designing an income tax system there are two key elements—the tax rate, and the tax base that the rate is applied to.

In most 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. Many nations impose a flat rate on all commercial taxpayers, a few have a progressive tax scheme that imposes higher tax rates on taxpayers with higher levels of profit. 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%. Table 4 lists corporate tax rates for a cross-section of developing economies.

When governments desire to provide incentives or to achieve objectives that can be achieved through fiscal measures, this is usually accomplished by the imposition of special non-income based taxes and through manipulation of the income tax base (incentives, credits, etc).

Table 4. Income Tax Rates Applied to Mining Projects in Selected Jurisdictions

Country	Corporate income tax rate
Argentina	35%
Bolivia	25% (a surtax may also apply in some cases)
Burkina Faso	35% (0.5% of previous year turnover is the minimum tax)
Chile	15% (two elective regimes are available)
China	33% (30% to central gov't., 3% to provincial gov't.)
Ghana	35%
Greenland	35%
Indonesia	30% (previous generation COWS range from 22 ½ 48%)
Ivory Coast	35%
Kazakhstan	30% (excess profits tax may apply if IRR on net income>20%)
Mexico	35%
P.N.G.	35% for large (SML) mines, 25% for most other mines
Peru	30%
Philippines	32%
Poland	2000, 30%; 2001&2002, 28%; 2003, 24%; 2004+, 22%
South Africa	30% for other than gold; formula > 30% for gold mines
Tanzania	30%
Uzbekistan	33%
Zimbabwe	35%

Source: derived from J. Otto et al, Global Mining Taxation Comparative Study (2nd edition), Colorado School of Mines, Golden: 2000.

4.1.2 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 5 provides a list of nations and whether or not they use mineral royalties as a means of raising mineral sector fiscal revenues.

While the trend has been to move toward profit-based taxes, many nations still retain royalty taxes. There are many reasons for this but the most important one is probably the issue of patrimony. In most nations minerals belong to the state. If a company extracts the state's resources, the state may deem it necessary to demonstrate that it has received something in return for its lost minerals. Mining companies do not always generate taxable profits, and thus there is no guarantee that the state will receive any income-based taxes for its lost resources. There are many examples of mines that operate at a loss. The policy question then is, should a miner be allowed to extract the state's resources, sell them, and pay the state nothing if the mine is operating at a loss? Some nations have answered this affirmatively but many developing economies impose a royalty thus insuring that anytime a mine extracts the state's minerals, the state receives at least a nominal payment.

If the state decides to impose royalty taxes, it is faced with many tax options. There are a wide variety of tax mechanisms available to chose from. In setting a royalty rate, it is important to keep in mind whether or not the rate will have a significant effect on investment. Investment can be further distinguished as being locally sourced and internationally sourced. When setting royalty rates for minerals that are apt to be developed mainly by foreign investors and given the global possibilities of those investors to invest elsewhere, to be competitive these minerals must be taxed at an internationally competitive rate. For minerals that will be mined by mainly local entrepreneurs and where the product will be marketed locally, international comparisons are less useful. Thus for commodities such as precious and base metals, rates need to take into account

global “best practice” while rates for construction materials can be influenced more by local economics.

Table 5. Presence of Mineral Royalty Tax Systems in Selected Jurisdictions

Country	Mineral royalty type tax on most minerals?	
Argentina	Yes	
Bolivia	Yes	
Burkina Faso	Yes	
Chile	No	
China	Yes	
Ghana	Yes	
Greenland	No	
Indonesia	Yes	
Ivory Coast	Yes	
Kazakhstan	Yes	
Mexico	No	
P.N.G.	Yes	
Philippines	Yes	
Peru	No	
Poland	Yes	
South Africa	No	(may be payable to the mineral owner)
Tanzania	Yes	
Uzbekistan	Yes	
Zimbabwe	No	

Source: derived from J. Otto et al, Global Mining Taxation Comparative Study (2nd edition), Colorado School of Mines, Golden: 2000.

4.1.3 Import and Export Duties

Historically, governments used import and export duties to achieve a broad range of policy and fiscal objectives. In some instances, the funds raised were set aside for improvement of port facilities and transportation infrastructure, used to provide protection for locally produced goods against cheaper imported goods, used as means to restrict or penalize goods not arriving from a colony's “mother” country, etc. Almost all countries have some sort of trade duty system but in the past decade, import and export duties have had a decreased role as a fiscal tool. This is related to several factors. One reason is that because of the nature of administering such duties, lower-level government officers are often empowered to “classify” the good, or delay its processing, and corruption and bad practices became chronic. A more important factor has been a realization by governments that such taxes directly and negatively impact the competitiveness of their mining industries in the global marketplace. Participation in international/regional trade agreements increasingly mandate tariff reduction.

Mining is capital intensive and utilizes specialized equipment that is usually imported. This means that an import duty on equipment has a direct negative 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 early project years. Even modest levels of equipment import duties can sink a marginal project. Competition for mineral sector investment worldwide is fierce, and most of the countries have either eliminated import duties on mine equipment or have found ways to exempt projects or their equipment from such duties.

To reduce or exempt a single project from import duties is an administrative challenge. Much of the equipment imported to build and operate a mine can be used for other purposes. For

example, a mini-bus can be used to transport mineworkers around a site, but can be used outside a mine. Most nations use some sort of duty system based on the United Nations originated system for commodity trade classification. These detailed tables list thousands of items, but most are not strictly related to exploration/mining. Thus, to change the import tariff rate on equipment that will be used in mining may impact equipment for many other sectors where government may have strong policy reasons to maintain the tariff. One way to avoid this problem is to implement a blanket exemption to a project for a given time period. Thus, containers arriving at the port destined solely for the project can be passed through customs duty-free. The potential for abuse of this exemption by the importer can be a problem, and one way to avoid it is to arrange a mechanism where items are identified by the company in advance of arrival and agreed by the government. Items arriving that aren't on the "list" are subject to normal duty.

In the past, governments commonly imposed export duties on raw minerals. In addition to acting as a general revenue-raising device, duty was used as a means to encourage value-adding to the raw material. For example, ores and concentrates might be subject to a high tariff, while metals and metal fabrications subject to a low or zero-rate duty. With increased global competition, most of the nations have eliminated or zero-rated export duties on minerals regardless of the degree of processing.

Table 6 lists typical import and export duties in a cross-section of mining nations. As can be seen from the table, most of the sample nations impose no or low duties and those with higher duties usually have some means of exempting mines. Other nations have moved to a system of Value Added Taxes that to some extent replaces traditional import/export tariff schemes. Most developing economies have adopted some means to effectively negate VAT on imported mine equipment and exported mineral sales.

Table 6. Typical Import Duties on Equipment for A Mine and Typical Export Duties on Minerals

Country	Typical import duty	Typical export duty
Argentina	none*	none
Bolivia	5%	none
Burkina Faso	11%*	none
Chile	10%*	none
China	none	none*
Ghana	exempt*	none
Greenland	none	none
Indonesia	none	none*
Ivory Coast	0.75%*	none*
Kazakhstan	none	none
Mexico	35%*	none
Philippines	3%*	none
P.N.G.	none*	none
Peru	12%	none
Poland	9%	none
South Africa	none*	none
Tanzania	none	none
Uzbekistan	none*	none
Zimbabwe	5%	none

Notes:
"none" means that there is no export duty on most minerals, or that most minerals are zero-rated, or that most minerals exports are exempt from duty.
*typical for a large mine, there may be exceptions
Source: derived from J. Otto et al, Global Mining Taxation Comparative Study (2nd edition), Colorado School of Mines, Golden: 2000.

4.1.4 Application/Issuing/Registration Fees

Most developing economies impose nominal fees for the application and issuance of documents relating to exploration and mining. In most cases, these fees are small and are designated to generate revenue for the administrative agency. Where fees are more than nominal they may be purposefully high to discourage speculators.

4.1.5 Surface Rentals

Many nations levy a fee on economic activities that use land in some way, and in many instances this includes mineral sector activities. The fee's name varies from place to place and common names include: rent, land-use fee, surface rental, occupation fee, etc. Such fees are usually based on land area and are calculated by multiplying some standard rate for that type of activity times the land area being used for that activity. Several issues arise in respect of tax policy.

- First, what designations of land should rentals apply to? Public lands? Private lands? Offshore areas? Nations differ widely here but most levy a land-use fee for activities on public lands where some sort of approval, such as a lease, has been issued. The rationale is that since the land belongs to the state, then the state should be compensated when its land is used by someone other than the public at large. Where land ownership is in private hands, governments less frequently impose a land area based fee.
- Second, which mineral activities should be charged a surface rental? Here, the main issue is mining phase related. Reconnaissance, exploration and prospecting are terms all used to describe the process of searching for ore. Such activities do not in themselves constitute a land-use (they do not substantially interfere with existing land-uses). Mine development, mining, and processing do constitute a land-use. When mining companies undertake exploration, the project is allocated a sum of funds by the investor. The larger the proportion of those funds that go toward the actual investigation searching for ore, the better the chances that an ore body, and a taxable mine, will be located.
- Thirdly, what rate should be charged? Generally, nations that assess a surface rental do so at a relatively low rate. There are two main reasons for this: inflation, and tax policy. Rates often seem low below because inflation has reduced their impact in relation to the current economy. Because surface rentals are usually based on a set amount per unit area, the amount becomes increasingly small with each passing year that sees any inflation. In practice, rates are not updated on a regular basis, although they can be. Secondly, most governments realize that a surface rental should be small in comparison to the take derived from profit or income based taxes. A large surface rental fee that is paid irrespective of profit-level, will tend to harm mines subject to cyclical price fluctuations.

Many nations impose a nominal annual fee per unit area on holders of both exploration and mining rights areas. Although the amount of revenue that will be raised is relatively small, the imposition of the fee will dissuade speculators from taking up ground and blocking out legitimate exploration/mining companies. It also is a good mechanism to generate the grounds for canceling inactive exploration/mining licenses.

4.1.6 Withholding Taxes

4.1.6.1 Withholding tax on remitted dividends

Many nations impose a dividend withholding tax. The tax can be appreciable with rates up to and exceeding 30 percent (see Table 7). The rates described in the table must be used with caution. Although many governments define a high dividend withholding tax rate, perhaps with the objective of promoting reinvestment, they often enter into bilateral investment treaties (or dual tax

treaties) or special agreements that lower or eliminate such taxes for companies headquartered in key trading partner countries.

Table 7. Dividend Withholding and Similar Taxes in Selected Jurisdictions

Country	Non-Treaty Dividend Withholding Tax Rate*
Argentina	0% (35% on the excess of the accumulated taxable net income)
Bolivia	12.5%
Burkina Faso	12.5%
Chile	35% (but 15% income tax is credited against the W/H tax)
China	none
Ghana	10% (mines usually exempt by negotiated agreement)
Greenland	35%
Indonesia	20%
Ivory Coast	12%
Kazakhstan	15%
Mexico	35%
P.N.G.	17%
Peru	none
Philippines	15%
Poland	20%
South Africa	12.5% (Secondary Tax on Companies is levied on dividend basis)
Tanzania	10%
Uzbekistan	15%
Zimbabwe	20% (credited against the income tax; 15% for companies registered on the stock exchange)

Note: the rate given in the table is the non-treaty general rate. Many nations have bilateral investment or tax treaties that may reduce this rate for investors who are headquartered in countries that have entered into such a treaty with the host state.
Source: derived from J. Otto et al, Global Mining Taxation Comparative Study (2nd edition), Colorado School of Mines, Golden: 2000.

4.1.6.2 Withholding tax on foreign loan interest

Many nations levy a withholding tax on interest payments made by mines to foreign lenders. Table 8 provides information on loan interest in selected countries. While governments often choose to levy a foreign interest payment withholding tax, perhaps to encourage and strengthen local lending, the effect of this tax is lessened somewhat by the common practice of allowing interest payments to be deducted for the purposes of determining income subject to the income tax.

4.1.6.3 Withholding tax on foreign services

Mineral operations contract the services of specialists to undertake a wide variety of tasks ranging from assaying, to feasibility analysis, to marketing. Governments may seek to protect and promote local service providers by assessing a withholding tax on services provided by foreign contractors (see Table 9).

Table 8. Loan Interest Withholding Tax in Selected Jurisdictions

Country	Non-treaty loan interest withholding tax rate*
Argentina	15.05% (35% on intercompany loans)
Bolivia	12.5%
Burkina Faso	12.5%
Chile	4% when loan is granted by foreign bank; 35% otherwise
China	none
Ghana	10% (may be exempted by negotiated agreement)
Greenland	none
Indonesia	20%
Ivory Coast	18%
Kazakhstan	15%
Mexico	15%
P.N.G.	none
Peru	1% for qualified loans; otherwise 30%
Philippines	15%
Poland	20%
South Africa	none
Tanzania	none
Uzbekistan	15%
Zimbabwe	10% (may be used as an income tax credit)

*where rates are given they refer to the general rate. Many nations have bilateral investment treaties that greatly lower the rate or eliminate it for loans originating in the treaty country.

Table 9. Withholding Tax on Foreign Services

Country	Non treaty withholding tax rate on foreign services*
Argentina	31.5% for services (24.5% for salaries)
Bolivia	12.5%
Chile	20% (technical services)
China	none
Ghana	5% (may be exempted by negotiated agreement)
Greenland	none
Indonesia	20%
Ivory Coast	20%
Kazakhstan	20%
Mexico	35%
P.N.G.	15%
Peru	30%
Philippines	10%
Poland	22%
South Africa	none
Tanzania	3%
Uzbekistan	20%
Zimbabwe	20% (may be used as income tax credit)

*where rates are given they refer to the general rate. Many nations have bilateral investment treaties that greatly lower the rate or eliminate it for loans originating in the treaty country.

Source for Tables 8 and 9: derived from J. Otto et al, Global Mining Taxation Comparative Study (2nd edition), Colorado School of Mines, Golden: 2000.

4.1.7 Value Added Tax

Value Added Tax (VAT) is becoming common worldwide, but some nations have chosen not to adopt this taxation tool because of the high level of paperwork required by both the taxpayer and the government. In nations where VAT is imposed, 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 negate the impact of the tax on export mineral sales. The means to achieve this negation vary widely and involve varying degrees of complexity and government administration. The simplest form of negation is an outright exemption for qualifying projects or products.

VAT applied to imported equipment and services can be a heavy burden on a capital-intensive mining project. Because export sales may be free of VAT the ability to offset is thus brought into question. Most countries negate VAT on imported goods and services through schemes involving exemption, rebates, crediting, refunds, or deferrals. While many nations exempt or negate the effect of VAT on projects that export, many do apply VAT to mining projects that serve domestic markets-a form of selective discrimination. Table 10 lists a selection of tax jurisdictions and whether they assess VAT. It also indicates whether some sort of relief from VAT is available to mines.

Table 10. VAT on Imported Goods and Services in Selected Jurisdictions

Country	VAT on goods and services are paid for by a mineral enterprise	Mechanism to "negate" VAT if mine production is exported
Argentina	yes	yes
Bolivia	yes	yes
Burkina Faso	yes	yes
Chile	yes	yes
China	exempt	-
Ghana	exempt	-
Greenland	no VAT	-
Indonesia	yes	yes
Ivory Coast	yes	no
Kazakhstan	yes	yes
Mexico	yes	yes
P.N.G.	yes	yes
Peru	yes	yes
Philippines	yes	yes
Poland	yes	yes
South Africa	yes	yes
Tanzania	exempt	-
Uzbekistan	exempt	-
Zimbabwe	no VAT	-

*credits, refunds, exemptions, drawback or deferral available to at least some types of mines for at least some types of purchases

Source: derived from J. Otto et al, Global Mining Taxation Comparative Study (2nd edition), Colorado School of Mines, Golden: 2000.

4.1.8 Local Taxes

Distribution of taxes is another important element of tax policy. Should the central government collect all taxes and then distribute this largess through the general budgeting process, or should some taxes be collected by the political district or community in which a mine is located? There has been a growing call for a wider distribution of taxing authority and some developing economies, such as the Philippines and Indonesia, have either written new "local" taxes into their mining laws or have granted local authorities increased or new taxing powers. The most prevalent means of imposing a local tax is through the imposition of a "property tax" based on a book or assessed mine value. Another distribution means, used primarily in federal systems, is for the royalty taxes to be paid directly to the provincial government

4.2 Tax Incentives

While some countries have chosen to treat the mining sector identically to how they treat other economic sectors, most nations still opt to provide some sort of mining tax incentives. Table 2 above lists typical incentives and offers a reason why governments offer them. This section describes three types of tax incentives and includes tables indicating how prevalent each incentive is within a cross-section of developing economies

4.2.1 Accelerated Depreciation

Most nations allow a mine to claim a tax deduction based on the concept of capital asset depreciation. The policy intent is to allow the taxpayer to recoup a portion of the equipment cost through tax reduction in order that the taxpayer can buy replacement equipment. There are many calculation methods that governments can adopt to calculate the amount of an annual deduction. Common methods are based on the expected life of the equipment, the expected life of the mine, on a straight-line (equal annual deductions) basis, percentage basis, declining balance basis, etc. Mines are capital intensive and large equipment expenditures in early years have a large impact on measures of project profitability. Many governments recognize this capital intensity by allowing the taxpayer to claim large depreciation deductions in the early years of the project, i.e., accelerated depreciation. Table 11 lists some developing economy jurisdictions and whether they allow some sort of capital equipment accelerated depreciation.

4.2.2 Tax holidays

For the purposes of this paper, the term tax holiday is defined to be a limited period of time during which a generally applicable tax need not be paid. Some developing nations provide a mine with a special tax holiday from one or more forms of taxation. This treatment is most often accorded to provide a special incentive for investment into the sector. Most investors do not regard such a tax holiday as a prerequisite for investment, especially at the exploration stage, but it can be critical at the development decision stage, particularly where the project is marginally economic or where the general tax system is too burdensome. The trend globally is for governments to move toward more uniform systems of taxation that are competitive and to reduce dependence on special tax holidays and similar incentives. When considering the introduction of tax holidays, lawmakers should keep in mind that in many cases, the tax holiday will need to be specially tracked for each qualifying tax entity and this will create an administrative burden on the Ministry of Finance or its equivalent.

Table 12 shows that few nations offer tax holidays on a regular basis to mines and when they do, it is usually to further two objectives. The most common form of holiday is where a country seeks to aid development of a particularly poor area of the country and provides a tax holiday for operations located there. The second objective is that in some nations it is clear that the overall tax system imposes too high a burden to be competitive and through a tax holiday the overall burden can be reduced.

Table 11. Depreciation Applied to Typical Mining Equipment in Selected Countries

Country	Accelerated method available for some capital equipment (Yes or No)	Example
Argentina	Yes	3 yr straight-line
Bolivia	Yes	8 yr straight-line
Burkina Faso	Yes	useful life minus one year
Chile	Yes	3 yr straight-line
China	Yes	10 years
Ghana	Yes	75% in yr of expenditure, 50% declining balance thereafter
Greenland	Yes	the company may decide the pattern of rate and period
Indonesia	Yes	10 yr straight-line or 20% declining balance
Ivory Coast	Yes	method of acceleration depends on life of equipment
Kazakhstan	Yes	25% declining balance method
Mexico	No	
P.N.G.	Yes	150% declining balance over 7 years
Peru	Yes	5 yrs straight-line
Philippines	Yes	twice the normal straight-line rate
Poland	Yes	5 yrs straight-line
South Africa	Yes	expensed in 1st year of production
Tanzania	Yes	12.5% straight-line
Uzbekistan	No	8% straight-line
Zimbabwe	Yes	expensed in year incurred or 1st year of production

Source: derived from J. Otto et al, Global Mining Taxation Comparative Study (2nd edition), Colorado School of Mines, Golden: 2000.

Table 12. Tax Holiday Policies in Selected Developing Economies

Country	Tax holiday available? (Yes or No)	Description
Argentina	Yes?	An operation may be exempt from most taxes except land area rent for 5 years from the time of discovery – however, for most mines, the exemption is not realized
Bolivia	No	-
Burkina Faso	Yes	exploration phase. The holiday includes: tax on commercial and industrial profits and the minimum lump sum tax, VAT, business license tax, payroll and apprenticeship tax
Chile	No	-
China	Yes	for other than precious or rare earth mines with foreign investment scheduled to operate for at least 10 yrs: exempt from income tax in yrs 1 and 2, 50% reduction yrs 3-5.
Ghana	No	-
Greenland	No	-
Indonesia	No	-
Ivory Coast	Yes	mines have 5 yr income tax holiday from commencement of exploitation
Kazakhstan	No	-
Mexico	No	-
P.N.G.	No	-
Peru	Yes	no asset tax is applied to pre-operational mines until the 2nd subsequent year after the one in which the first sale takes place
Philippines	Yes	FTAA mines may be exempt from most federal taxes for up to 5 years
Poland	No	-
South Africa	No	-
Tanzania	No	-
Uzbekistan	Yes	2-7 years. Holiday includes profits tax, property tax, land tax
Zimbabwe	No	-

Source: derived from J. Otto et al, Global Mining Taxation Comparative Study (2nd edition), Colorado School of Mines, Golden: 2000.

4.2.3 Ring Fencing

"Ring-fencing" is the term used when various taxable projects of a company are separated with regard to the calculation of tax liability. For example, if a company operates two mines in the country and the tax code imposes ring-fencing principles, the costs and income from one mine may not be combined with those at the other mine to determine the company's tax liability. Each mine would be taxed as an individual operation.

Many nations do not impose ring-fencing restrictions, i.e. they allow all costs and income to be combined from all of a company's operations in the country, whether or not related to mining. Those countries that do impose ring fencing mainly do so when the tax regime applied to one mine is different than tax regime that is applied to another. This usually arises from the situation

where a unique tax regime is negotiated for each large project. For instance take the situation in Indonesia. A mine operating under a first generation Contract of Work (COW) is taxed differently than a mine operating under a seventh generation COW. “Combining the books” from the two mines to determine the overall tax liability, or the effort by the government’s tax compliance office to understand that combination, is an administrative challenge.

A second case where ring fencing makes sense is where a nation imposes some type of tax stabilization policy. In this type of system, the investor has locked in some sort of tax rate or incentive and it is not affected by a subsequent change in the law governing that rate or incentive. To allow the investor to combine costs and income from operations subject to different rates and incentives can become an administrative headache for government.

A third case is where the national tax system attempts to apply some type of resource rent (RRT) or excess profits tax. These types of taxes are based on recovering "economic rent" (economic surplus) that is generated by each operation due to the operation’s inherent qualities and are based on a calculated rate of return. To combine the “books” from two operations would negate the basic premise underlying a resource rent or excess profits tax approach. Table 13 lists the ring fencing tax policy for selected jurisdictions.

Table 13. Ring Fencing Policy in Selected Jurisdictions

Country	Mines are ring fenced?	Comment
Argentina	No	
Bolivia	No	
Burkina Faso	Yes	
Chile	No	
China	Yes	
Ghana	No	
Greenland	No	
Indonesia	Yes	
Ivory Coast	No	
Kazakhstan	Yes	
Mexico	No	
P.N.G.	No, Yes	mines operating under negotiated Special Mining Leases are ring fenced, other mines are not
Peru	No, Yes	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	
Tanzania	No	
Uzbekistan	No	
Zimbabwe	No	may consolidate books if mines are not registered as Ltd.

Source: derived from J. Otto et al, Global Mining Taxation Comparative Study (2nd edition), Colorado School of Mines, Golden: 2000.

5 How the Incidence of Taxation Over Time can Affect Returns on Investment and Government Revenues

If given a choice to receive a tasty bird today or to receive one 20 years from now, which would you choose? The common sense "a bird in hand is worth two in the bush" principle tells us that you would prefer to receive your bird now. A "bird in hand" means firstly that you already have the bird and do not need to risk the chance that the bird may not be catchable at a future date, and secondly, a bird in hand can lay eggs that will create more birds. These two principles (risk reduction and reinvestment) are also applicable to money, and the preference to receive money sooner rather than later is often referred to as the "time value of money." Simply stated, a sum of money received today has more value to its holder than a like sum received in the future.

The time value of money plays a key role in the way that most companies assess a mine's economic potential. Profit potential is quantified using a calculated measure such as Internal Rate of Return (IRR), and a measure of time-dependent risk can also be calculated (such as Discounted Break Even Year). These measures can be greatly influenced by the timing of tax events since they are calculated to take into account the time value of money by discounting future revenues and costs to a reduced present value. For instance, assume a company will receive a $10,000,000 tax credit. If received today, the value of the tax credit to the company is $10,000,000. If the company will receive the $10,000,000 tax credit ten years from now and the company has set its time value of money at 15% per year (the discount rate), the present value of the tax credit is:

$$\$10{,}000{,}000 \times \frac{1}{(1 + .15)^{10}} = \$2{,}471{,}847$$

Obviously, the company would like to receive the tax credit sooner rather than later. Government tax policy often takes the time value of money preference into account in the design of tax "incentives". The two most common ways governments provide time-sensitive tax incentives is through the mechanism of accelerated depreciation (allowing capital costs to be deducted sooner), or a tax holiday granted in the early years of a project that may not apply in later years.

6 Tax Discrimination

Tax discrimination is a key part of tax policy. For the purposes of this paper, tax discrimination is defined as the tax treatment of one class of mineral enterprises differently than that of another class of mineral enterprises. The concept that all mines should be taxed in the same way is not practiced by most nations. While some countries, Greenland for instance, do not discriminate between mines, most countries do. There are many forms of discrimination but mainly they relate to three concepts: the type of mineral being mined, the scale of the operation, and the "nationality" of the miner.

6.1 Tax discrimination by type of mineral

Many developing country mineral tax systems discriminate between various types of minerals. In some countries, each mineral type will be taxed at a different rate (such as in the application of a royalty assigned to each mineral type) or minerals will grouped and the group will be uniformly taxed (typical groupings include: industrial and construction materials; fertilizer minerals; precious metals; precious stones; base metals; non-petroleum energy minerals; and so forth). To some extent, the level of discrimination may depend on whether the mineral is destined for a globally competitive market or for a local market. For example, base metals are often taxed at a lower rate than low-value bulk commodities like sand and gravel reflecting the fact the tax system for

base metals is highly dependent on foreign investors, who have many countries to choose from when making their investment decision, compared to sand and gravel, where many local investors can be active.

Governments may also adjust their tax systems in an attempt to impose higher tax taxes on mines that produce a mineral that is perceived to generate higher profit levels than another type of mineral. For example, mines that produce diamonds often pay a higher royalty than mines that produce zinc concentrate.

6.2 Tax Systems that Discriminate by Size of Operation

Joel Simosa runs a mine. His equipment consists of a shovel, a bucket, and a pan. Mega-Minerals runs two mines that produce 20 million tons of coal a year. Should Joel and Mega-Minerals be taxed identically? This is an extreme example, but it does illustrate that the scale of operation can be an important determinant of tax policy.

Regardless of tax policy and law, few miners like Joel pay mining taxes in practice. Most governments have been unable to effectively tax artisanal miners directly. Attempts to instead tax the buyers of their production through various gold-buyers and precious stones licensing arrangements work well in some countries (such as Malaysian tin buying) but more often lead to rampant smuggling and tax evasion.

For very large mines, it has been the practice of many developing nations to enter into a negotiated agreement with the investor that addresses a host of issues including taxation. In some instances, the agreement creates a unique tax system for that mine that takes into account the perceived profit-potential of the operation. Other agreements, simply provide exemptions from certain taxes, such as import duty, or stabilize certain tax levels for a period of time. When a government enters into an agreement that in is conflict with the existing tax law, it is usually brought into force by being passed as law by the appropriate law-making body.

6.3 Tax Systems that Discriminate by "Nationality"

Should a "national" mining company be taxed the same as an international mining company? Should a company within a regional trading bloc be treated differently than a company from outside the bloc? Should a mining company from a nation that has special ties to the host country be given special tax treatment? While in principle most government fiscal experts express an objective of nondiscriminatory taxation, it is common for developing economies to discriminate between these types of investors with respect to some types of taxes.

International mining companies are often treated differently than local companies through the provision of special tax terms provided in a foreign investment act or under a specially negotiated agreement. Companies that come from within a regional trading bloc often enjoy lower tariff rates or accelerated customs treatment (APEC, NAFTA, SADC) that are not available to investors outside the bloc. Countries that have special relationships often negotiate bilateral double taxation agreements, bilateral investment agreements and bilateral trade agreements that may reduce the level of withholding taxes and tariff rates.

7 Summary

There is no ideal tax system. When developing a national tax policy for the mineral sector it is necessary to look at the unique factors that shape that nation. However, while every tax system must accommodate unique needs and capacities many of the approaches to realize taxation objectives are well known, tested and in widespread use. The basic tools of taxation are becoming increasingly similar over time as nations look beyond their borders to harmonize their industrial sectors with the global economy.