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Fiscal Affairs Department

MONGOLIA

THE FISCAL REGIME FOR MINING—A WAY FORWARD

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ACRONYMS

AETR	Average Effective Tax Rate
APA	Advanced Pricing Agreement
CIT	Corporate income tax
DTA	Double Taxation Agreement
EITI	Extractive Industries Transparency Initiative
FAD	Fiscal Affairs Department
GDP	Gross Domestic Product
IRR	Internal rate of return
MEITI	Mongolia Extractive Industries Transparency Initiative
MMRE	Ministry of Mineral Resources and Energy
MOF	Ministry of Finance
NPV	Net present value
NPV10	Net present value at 10 percent discount rate
RRT	Resource rent tax
RSPT	Resource Super Profits Tax
VarCIT	Variable corporate income tax
VAT	Value-added tax
WEO	World Economic Outlook
WT	Windfall tax

PREFACE

In response to a request from Mr. S. Bayartsogt, Minister of Finance, an FAD technical assistance mission visited Ulaanbaatar from June 2–22, 2010, to provide advice on the design of fiscal regime for the mining sector and related matters.[1] The mission comprised Messrs. Emil M. Sunley (FAD expert and head) and Jan Gottschalk and Alistair Watson (both FAD). Mr. Graeme Hancock (World Bank senior mining specialist) was an integral part of the mission's team.

The mission met with Mr. D. Zorigt, Minister of Mineral Resources and Energy; and Mr. T. Ochirkhuu, Vice Finance Minister, Mr. B. Batjargal, Director General of the Fiscal Policy Department, Mr. J. Ganbat, Head of Revenue Division, Fiscal Policy Department, Mr. U. Munkhzul, Economist, Revenue Division, Mr. E. Batbayar Economist, Revenue Division, and Mr. G.Galbadrakh, Advisor to the Revenue Division (all MOF).

The mission also met with Mr. B. Enebish, Executive Director, and Ms. E. Undrakh, Economist, Erdenes; Mr. A. Munkhbat, Senior Vice President, Oyu Tolgoi LLC; Mr. G. Semenov, Deputy Chief of Ulaanbaatar Representative Office, and Mr. I. Idesh, Senior Manager, Erdenet Mining Corporation; Mr. J. Kazakoff, President, Mr. D. Krahn, Director of Finance, and Ms. O. Otgontogtokh, Finance and Accounting Manager, Boroo Gold; and Mr. N. Algaa, Executive Director, Mongolian National Mining Association; Ms. P. Erdenejargal, Executive Director, and Mr. N. Dorjdari, Manager, Open Society Forum.

The mission would like to express its gratitude for the assistance and collaboration provided by the authorities, especially Mr. Batjargal. The mission would also thank Mr. P. Ramlogan, the Fund's resident representative in Ulaanbaatar, and Ms. B. Khulan, Economist in the IMF's Ulaanbaatar office, who facilitated and supported the work of the mission.

[1] In 2007, the IMF reviewed Mongolia's fiscal regime for mining. See, Emil M. Sunley, Daehaeng Kim, and Mauricio Villafuerte, *Mongolia: The Fiscal Regime for the Mining Sector and the Development Fund,* (February 2007). A new review of the fiscal regime is timely as the government recently negotiated the investment agreement for the Oyu Tolgoi copper/gold deposit and is preparing to negotiate an investment agreement for the Tavan Tolgoi coal deposit.

EXECUTIVE SUMMARY

The mining sector's share of Mongolia's export earnings increased from approximately 55 percent in the early 2000s to 80 percent in 2009, and is projected to increase to over 90 percent by 2015 when the Oyu Tolgoi copper/gold mine becomes a major producer. The mining sector is an important source of fiscal revenue but also a source of revenue volatility caused by mineral price volatility amplified by the introduction of the windfall tax in mid-2006. With the repeal of this tax from the beginning of 2011, the mineral sector's share of government revenue will fall from a high of approximately 30 percent in 2007 to 11 percent in 2011, which was its level in 2005 before the sharp increase in copper and gold prices and the introduction of the windfall tax. Erdenet's dominance as the principal mineral revenue taxpayer is likely to be diminished by the development of large new mining projects, including the Oyu Tolgoi project being developed by Rio Tinto and Ivanhoe Mines, and the Tavan Tolgoi coal project, for which the government and Erdenes, the state-owned company that holds the mining licenses, will shortly seek a mining company investor through a tender process.

Royalties, Income Tax, VAT, and Fiscal Stability

Core elements of Mongolia's fiscal regime for the mining sector include the royalty, income tax, VAT, and fiscal stability. These elements should be fixed in law and not subject to negotiation.

Royalties. In Mongolia, the holder of a mineral license is required to pay royalties on the sales value of the minerals produced. The rates are 2.5 percent for domestically sold coal used for energy and for common minerals and at 5 percent for all other minerals. The determination of "sales value" remains controversial. The mission recommends that:

- The royalty article in the Minerals Law should be amended to provide that sales value of minerals shall be determined, in order of priority, by: (i) reference prices, (ii) the mineral contained in the concentrate, reference prices, and a standard recovery assumption when concentrate is sold or toll refined, (iii) actual sales value if reference prices are not available and the mineral is sold to a third party, (iv) the arm's length price if the mineral is sold to a related party, in which case an advanced pricing agreement could be used.

Income tax. The negotiation of the Oyu Tolgoi Investment Agreement was made more difficult because certain provisions in the corporate income tax (CIT) law did not work and other provisions were missing. The mission makes the following recommendations with respect to provisions of general applicability:

- With respect to transfer pricing, Mongolia should (i) adopt the OECD guidelines for transfer pricing; (ii) broaden the definition of related party to cover companies that are owned or controlled directly or indirectly by the same interests; (iii) require companies to disclose related party transactions on a schedule attached to their tax returns; (iv) require companies to contemporaneously document how they establish their transfer prices for transactions in excess of $1 million; and (v) amend the CIT law to allow the tax authority to enter into advanced pricing agreements.

- The 3:1 debt/equity limit on excessive use of debt should apply to all debt and not just to related-party debt or on an investor-by-investor basis.

- Mongolia should consider adopting a general rule for deductible expenses along the lines of "expenses wholly and exclusively incurred to produce income".

The CIT provisions relating to the mining sector should be gathered in a new chapter of the CIT law. The mission makes the following recommendations:

- The CIT rate for mining companies should be increased from 25 to 35 percent and the withholding tax rate on dividends paid to non-residents reduced to zero.

- The withholding tax on interest and management fees paid to nonresidents should be retained at 20 percent. Mining companies should be required to withhold 5 percent on payments to subcontractors. Resident subcontractors and permanent establishments would be allowed to credit the subcontractor withholding tax against the CIT. For other subcontractors, the withholding tax would be a final tax.

- Mining companies should be allowed to use dollar accounting for tax purposes.

- The depreciation of mining investment should be simplified by using four asset classes: (i) exploration and development expenditure incurred before commencement of production, (ii) development expenditure incurred after commencement of production, (iii) infrastructure not directly related to mining, and (iv) social infrastructure. There could be two additional classes for short-lived common assets; namely, computers and vehicles.

- The loss carryforward for mining should be 8 years for all mining companies.

- Mining companies should be allowed a tax deduction for funds set aside in an escrow account in Mongolia to pay for future mine closure costs provided that the mine closure plan is approved by MMRE.

- The fiscal regime for mining should be ring fenced project by project so that losses are not transferred among projects with the single exception—losses from unsuccessful exploration on relinquished areas should be allowed to offset income from successful projects.

VAT. In 2009, Mongolia adopted an amendment to the VAT law that limited the zero-rating of mining exports to "final mining products" and provided that exports of other mining products are exempt (that is, the exporter is not allowed a credit for VAT paid on inputs). This amendment was adopted to raise revenue from the mining sector and to provide an incentive to export final mining products (e.g., copper cathodes or refined gold). This amendment increases the cost of mining in Mongolia as the tax increase cannot be passed on to foreign buyers. The mission makes the following recommendation:

- All exports of the mining sector should be zero-rated. To reduce the need to pay refunds, Mongolia should exempt a positive list of imported goods and supplies directly related to mining.

Fiscal stability. In Mongolia a holder of a mining license who undertakes to invest at least US$50 million during the first five years of its mining project can enter into an investment agreement with the government to provide a stable operational environment, including a stable tax environment. With respect to fiscal stability, the mission makes the following recommendation:

- On a going forward basis, Mongolia's investment agreements should include a fiscal stability clause that would be limited to 15 or 20 years and cover only the capital recovery rules, the income and withholding tax rates, royalty rates, and a maximum rate on import duties. Any other tax law change that affects businesses generally and that does not discriminate against mining would apply.

Progressive Royalty

The government has submitted to Parliament an amendment to the Minerals Law that would impose a surtax royalty in addition to the flat-rate royalty. If the amendment is adopted, Mongolia would impose a progressive royalty with rates from zero to 5 percent that vary by the market price of the mineral. The price bands for each mineral would be expressed in nominal US dollars. The progressive royalty is intended as a partial replacement for the windfall tax. The mission concludes that there are better alternatives for increasing the progressivity of Mongolia's fiscal regime for mining and makes the following recommendations:

- If the progressive royalty is to be adopted, the price brackets should be indexed for inflation.

- If tax incentives are necessary to encourage domestic processing of minerals, instruments other than a differentiated progressive royalty should be considered, such as an investment tax credit for investment in smelters.

- If the opportunity arises to fundamentally revisit the proposed progressive royalty, the government should consider alternative tax or equity instruments that are profit-based, such as the variable income tax or the resource rent tax.

Economic Analysis of the Mongolian Fiscal Regime

The mission developed a comprehensive financial model to evaluate the fiscal regime for the Oyu Tolgoi project, the proposed fiscal arrangements for the Tavan Tolgoi project, and alternatives for the fiscal regime for future projects.

Oyu Tolgoi. Using the financial model, the mission concludes that the government obtained very favorable terms for the Oyu Tolgoi project, and the regime is likely to perform well under a wide range of perceivable prices and costs. However, the mission suggests that these terms may not be a sustainable regime for less profitable or similarly profitable but smaller projects.

Tavan Tolgoi. The government proposes that Tavan Tolgoi be divided into two blocks and that: (i) Block A is developed and operated by Erdenes, using a mining contractor and (ii) Block B is developed and operated by a mining company or consortium, selected by tender, under a 30 year investment agreement under which the Erdenes and the investor will share production. The government is seeking a very substantial advance payment from the Block B investor, possibly up to US$1 billion. Erdenes will not take an equity interest in the investor. With respect to Block B, the mission makes the following recommendations:

- Before going to tender, Erdenes should clarify the relationship between the investment and coal mining agreements, ensuring that these do not overlap.

- The investment agreement should incorporate fiscal terms only by reference to the law prevailing at the date of the agreement.

- Explicit consideration should be given to the tradeoff between advance payments and progressive production sharing schemes.

- Production sharing can work for Tavan Tolgoi but should not form part of the fiscal regime applied to future projects, unless securing a share of physical production is important.

- Erdenes should pass the production share on to the government and not retain it.

With respect to Block A, the mission makes the following recommendations:

- Mongolia should consider whether contract mining is the best approach for Block A compared to a profit sharing scheme.

- If contract mining is chosen, Erdenes should be given sufficient resources to fund necessary feasibility studies and consulting support to design the project and contract mining framework.

A future mineral regime. The Oyu Tolgoi investment agreement in many respects provides a sound basis for future agreements. However, as indicated above, the Oyu Tolgoi investment agreement pushes the limit on the government share and the government may need to lower its expectations for equity participation in the future. The mission makes the following recommendations:

- The government should give explicit consideration to the appropriate overall fiscal burden for the mineral sector and the level of state equity participation in future projects.

- The government should seek a maximum of 15 percent carried equity as part of the base regime, and consider an option to take a higher amount of equity on commercial terms that are set in the Minerals Law.

- In the medium term, when the opportunity for a more fundamental reform of the mineral fiscal regime arises, the introduction of a more progressive tax instrument, such as a vari**a**ble income tax, could replace the progressive royalty and increase the progressivity of the regime even when state equity participation is lower.

I. Background and Current Fiscal Arrangements

A. The Fiscal Situation

1. Mongolia is currently experiencing a robust recovery from a deep recession in 2009. Following strong growth in 2006-08, which was driven by a surge in copper and gold prices, the subsequent sharp fall in prices in late 2008 led to a contraction of real GDP in 2009. The rise in trade deficits forced a significant devaluation of the domestic currency, and stresses in the banking sector emerged as the non-performing loan ratio rose. A combination of support from the International Monetary Fund through a Stand-By-Arrangement and donors as well as a rebound in copper prices was effective in reversing the deterioration in the trade balance, stabilizing the currency, and providing much needed budget support. Inflation, which had topped 25 percent in 2008, declined to single digits in 2009. The economy staged a strong recovery in the first quarter of 2010, but inflationary pressures also reemerged.

2. Fiscal policy in past years has been characterized by a pro-cyclical stance with respect to mineral prices. On the revenue side, the effect of the sharp rise in copper and gold prices on mineral revenue collection was amplified by the introduction of the windfall tax[2] in mid-2006, which at its peak in 2007 yielded revenue close to 8 percent of GDP. Moreover, cuts in VAT, CIT, and PIT rates reduced non-mineral revenue collection. On the expenditure side, the inflow of mineral revenues was used to boost transfers, wages, and, to a lesser extent, capital expenditures. While in 2006 most of the mineral revenue inflows were initially saved, savings declined to near zero already in 2007; the resulting increase in spending led to a large deterioration in the non-mineral balance (Table 1). Fiscal policy loosened further in 2008 in anticipation of continued high mineral prices; however, when mineral prices fell steeply in the second half of the year, fiscal policy was unable to adjust, leading to a further increase in the non-mineral deficit as well as a sizeable overall deficit. Efforts in 2009 focused on reversing previous expenditure increases to contain the rise in the overall deficit as mineral revenues declined further. It proved difficult to reverse previous increases in transfers, with the result that most of the expenditure adjustment fell on capital expenditures. The remaining fiscal deficit of over 5 percent of GDP was financed primarily by donor support.

[2] The windfall tax, which is repealed from the beginning of 2011, was imposed on the sales of copper concentrate and gold at a rate of 68 percent. For copper concentrate, the base for the windfall tax was the difference between actual copper prices on the London Metal Exchange and the sum of a base price (set at US$2,600 a ton) and smelting costs. For gold, the base was the difference between the Bank of Mongolia's gold price and the base price (set initially at US$500 per ounce but increased in late-2008 to US$850 per ounce).

3. In order to moderate the pro-cyclicality of fiscal policy, the authorities developed a fiscal stability law that is currently under consideration in Parliament. One key feature of this law is the introduction of a structural deficit target that would smooth mineral revenues for budget purposes and thereby delink expenditures from mineral price fluctuations. The second key feature is an expenditure growth limit that becomes binding in case of a large surge in mineral revenues as large new mining projects enter into production. That is, the structural deficit target addresses volatility from mineral price fluctuations whereas the expenditure growth limit addresses the impact of volume increases. The prospect for large new projects entering into production is indeed bright as the government entered in late 2009 into an investment agreement for the development of the world-class Oyu Tolgoi copper mine which will begin production in 2013. Development of a large coal project appears likely as well.

Table 1. Mongolia: Consolidated Fiscal Balance, 2005-10

	2005	2006	2007	2008	2009 Est.	2010 Budget
	(In percent of GDP)					
Total revenue and grants	30.0	36.6	40.9	36.1	32.9	30.3
Mineral revenue	4.0	10.5	13.4	10.2	7.4	7.0
Nonmineral revenue	26.0	26.1	27.5	25.9	25.5	23.4
Total expenditure and net lending	27.5	28.4	38.0	41.0	38.3	34.8
Current expenditure	21.6	21.5	26.3	29.3	29.6	27.2
Capital expenditure and net lending	5.9	6.9	11.8	11.7	8.7	7.6
Overall balance (incl. grants)	2.6	8.2	2.8	-4.9	-5.4	-4.5
Nonmineral overall balance	-1.4	-2.3	-10.6	-15.1	-12.9	-11.4
Memorandum items:						
Nominal GDP (in billions of togrogs)	2,780	3,715	4,600	6,020	6,056	7,997
Copper price (US$ per ton)	3,676	6,731	7,132	6,963	5,165	5,800

Sources: Ministry of Finance; and Fund staff projections.

4. Fiscal policy challenges in the near term are quite different from those in the medium term. In the near term, mineral fiscal revenues are expected to remain relatively subdued, which necessitates considerable fiscal adjustment in order to reduce the overall deficit from its current elevated level. This is less a challenge for 2010, where recently buoyant copper and gold prices are likely to lead to a significant over-performance of mineral revenue compared to budget projections. For 2011, however, the fiscal adjustment task is daunting, because the expiration of the windfall tax effective from the beginning of 2011 will lead to revenue losses of about 4 percent of GDP compared to the 2010 budget.

5. In the medium term, Mongolia can expect significant mineral revenue inflows from large new mining projects such as the above-mentioned copper and coal projects. This prospect has already led to expectations for significantly higher expenditures both in the near and medium term, which will make it challenging to resist a return to the pro-cyclical fiscal

policies of 2006-09. Passage of the fiscal stability law would be an important bulwark against such pro-cyclical policies. However, the magnitude of the challenge is underscored by significant pressures to increase spending already in 2010, even though inflation is on the rise, and election promises that would imply expenditure increases in 2011 comparable to those that occurred in 2007, during the height of the previous boom. The desire to increase spending even before Oyu Tolgoi project begins production is likely to lead to a demand for large prepayments as part of any new investment agreements. In sum, the next few years will be a challenging period where significant spending pressures will complicate the fiscal consolidation path envisioned under the fiscal stability law.

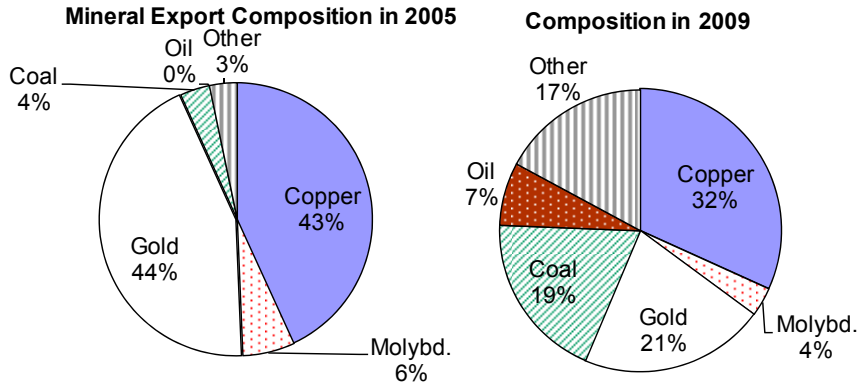
B. Mongolia's Mining Sector

6. As of June 2010, Mongolia has 1,104 mining licenses and another 3,561 exploration licenses. Historic output is largely copper, gold, coal, and fluorspar; a significant part of gold production comes from small-scale placer (alluvial) operations. Exploration activity had been increasing significantly since the early 2000s and hit a peak in 2005 when more than 4,000 applications for exploration licenses were filed. With the introduction of the windfall tax in 2006, however, exploration activity slowed and the number of applications for exploration licenses dropped below 1,000. Total valid exploration licenses have stabilized since 2007 at around 3,500.

7. The mining sector is Mongolia's most important export earner, and its importance has increased in recent years. Whereas the sector accounted for approximately 55 percent of export earnings in the early 2000s, the share increased to over 80 percent in 2009 and is projected to increase to over 90 percent in 2015 when the Oyu Tolgoi copper/gold mine becomes a major producer. The increase in the export share since the early 2000s reflects the sharp rise in mineral prices in this period and the expansion of mineral production beyond Mongolia's mainstay of copper and gold into other products, especially coal (Figure 1). However, the mining sector accounts for only 20 percent of GDP; agriculture is slightly larger than mining in GDP terms, with services accounting for the bulk of the remainder. With respect to employment, the mining sector is of secondary importance due to its high capital intensity, employing less than 5 percent of the active labor force in 2008.

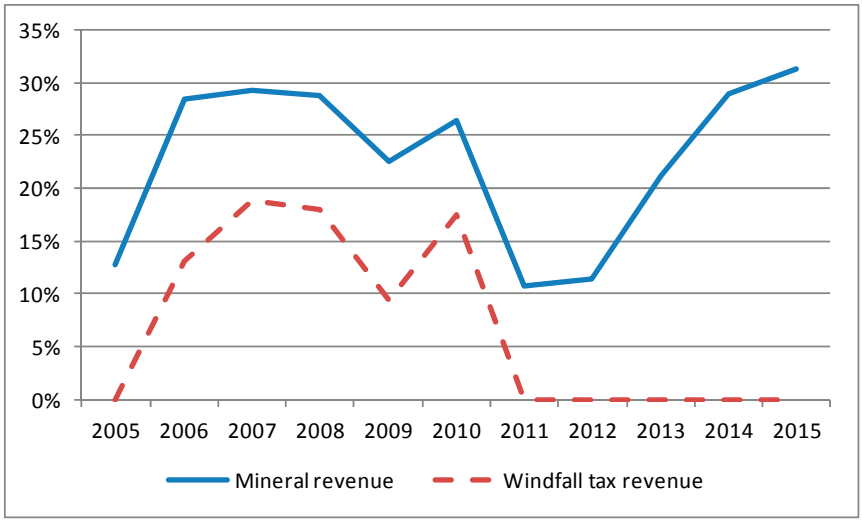
8. The mining sector is an important source of fiscal revenue, but it is also a source of revenue volatility. Considering the recent past, as discussed above, the large variation in mineral revenue as a share of total revenue was caused by mineral price volatility amplified by the introduction of the windfall tax (Figure 2). With the expiration of the windfall tax in 2011, the mineral revenue share returns approximately to its 2005 level. This relatively flat mineral revenue share absent the windfall tax may be surprising, given that copper prices in 2011 are expected to be at twice their level in 2005.

Figure 1. Mineral Export Composition



Sources: Bank of Mongolia; and Fund staff estimates

Figure 2. Mineral Revenue Share (in Percent of Total Revenue)



9. A key factor is that one company, Erdenet, currently pays the lion's share of all mineral revenue (Table 2). Erdenet, a long-established copper and gold mining company owned by the governments of Mongolia (51 percent) and Russia, has had a constant production level for many years. Its revenue contribution to the government increases only on account of the increase in copper and gold prices. Non-mineral revenue, on the other hand, is expected to expand by more than 50 percent in real terms between 2005 and 2011. Therefore, the strong increase in copper and gold prices in this period is just enough to keep Erdenet's revenue growth in line with that of non-mineral revenue, yielding a relatively constant mineral revenue share.

Table 2. Mongolia: Five Largest Mining Sector Taxpayers, 2008

Company	Products	Tax payments (millions of Togrogs)
Erdenet	copper, molybdenum	549,631
Boroo Gold	gold	29,694
Tsairt Mineral	zinc	19,530
Tavan Tolgoi	coal	18,551
Bold Tumur Eruu Gol	iron ore	6,808

Source: MEITI (2010)

10. Looking forward, Erdenet's dominance as the principal mineral revenue taxpayer is likely to be diminished by the development of large new mining projects. While a number of mining projects, especially related to coal, have already started up in recent years, the most significant project on the horizon is the Oyu Tolgoi copper mine, which is being developed by Rio Tinto and Ivanhoe Mines and is expected to begin production in 2013. This mine will be one of the largest copper mines in the world, with an annual peak production five times larger than that of Erdenet. Oyu Tolgoi will also be a significant gold producer. The revenue from this project alone accounts for the surge in the mineral revenue share after 2013 depicted in Figure 2.

11. Another major project that should be realized in the next few years is the exploitation of the Tavan Tolgoi high-quality coal deposit, which will be relatively inexpensive to mine. While no investor agreement for this project has been concluded, major international coal companies have expressed strong interest in the project.[3] There are a number of other projects on the horizon covering a wide range of minerals, including coal, uranium, iron ore, as well as oil. Some of these include downstream extensions such as liquefying coal or construction of major power stations for electricity export to China.

C. The Current Fiscal Regime for Mining

12. The current fiscal regime for the minerals sector is governed by the Minerals Law and various tax laws. The regime includes a royalty, an income tax, VAT exemption of most mining exports, and state participation.[4] The Minerals Law provides that a holder of a mining

[3] A small section of the deposit is currently being exploited by Tavan Tolgoi JSC, which accounts for the Tavan Tolgoi revenue in Table 2.

[4] There are also bonus payments and certain fees, but these are of lesser importance, but bonus or advance payments may be important in the investment agreement for the Tavan Tolgoi project, as discussed in Chapter IV.

license who undertakes to invest at least US$50 million during the first 5 years of its mining project can enter into an investment agreement with the government to provide a stable operational environment, including a stable tax environment (fiscal stability). The duration of the investment agreement depends on the amount of investment over the first 5 years of the project. For large mining projects—investment over US$30 million—the investment agreement is for 30 years.

Royalty

13. The Minerals Law sets the royalty rate for domestically sold coal used for energy and for common minerals at 2.5 percent and all other minerals at 5 percent of the sales value.[5] The government has submitted to Parliament a proposal for a progressive royalty with rates varying by the market price of the mineral. The price bands for each mineral would be expressed in nominal US dollars.[6]

Corporate income tax

14. The new corporate income tax (CIT), effective from January 1, 2007, reduced the standard tax rate from 30 to 25 percent. It also introduced a two-year loss carryforward provision. In 2009, the loss carryforward for infrastructure and mining was increased to 4 to 8 years depending on the amount invested. In determining taxable profits, an annual deduction is allowed for funds that are accumulated for rehabilitating the environment (i.e., mine reclamation). This provision does not cover mine closing costs. There is a 20 percent withholding tax on payments of dividends, interest, and management fees to nonresidents, unless the withholding tax rates are reduced by a double taxation agreement (DTA).

Indirect taxes

15. The customs law exempts mining companies from customs duties on a specific list of construction items. However, the new VAT law, adopted in 2006, removed the exemption for equipment and heavy machinery imported by companies with foreign investment in priority industries. A 2009 amendment to the VAT law zero-rates exports of final mining products (credit allowed for VAT paid on inputs) but only exempts exports of other mining products (no credit allowed for VAT paid on inputs).

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[5] Sales value is discussed in Chapter II in the section of royalties.

[6] This proposal and alternative ways of introducing a progressive element to Mongolia's mining fiscal regime are discussed in Chapter III.

State equity

16. The Minerals Law provides that the government may take up to a 34 percent equity interest in a project that was not identified through state funds, and up to 50 percent equity interest in a project that was identified through state funds. The legislation does not prescribe what form this equity interest might take (e.g., paid-up equity on commercial terms or some type of concessional interest).

17. In the Oyu Tolgoi copper project, Erdenes, a state-owned company, received 34 percent of the shares of Oyu Tolgoi LLC (formerly Ivanhoe Mines Mongolia) for free. The government, however, shares in the future costs to development this mine but is carried by the other investors until three years after the commencement of production.[7]

18. The government has submitted to Parliament an approach for developing the world-class Tavan Tolgoi coal deposit, which will be divided into two blocks. Erdenes will be the license holder for each block. For Block A, Erdenes will be the operator and hire a contractor to mine the coal. For Block B, the government, Erdenes, and a coal company (or a consortium of coal companies) will enter into an investment agreement under which the coal company would be the operator of the project. Erdenes and the coal company would share coal produced with Erdenes receiving a negotiated fixed percentage of the production. The government will not have an equity interest in the coal company, but is seeking a substantial upfront payment, in part, to help cover the projected 2011 budget deficit. This upfront payment could take the form of a prepayment of future production share or taxes.

Extractive industries transparency initiative (EITI)

19. The EITI supports improved governance in resource-rich countries through the full publication and verification of company payments and government revenues from oil, gas and mining. Studies have shown that when governance is good, countries rich in oil, gas, and minerals can generate large revenues to foster economic growth and reduce poverty. However when governance is weak, oil, gas, and mineral resources may instead cause poverty, corruption, and conflict – the so called "resource curse". The EITI aims to work gainst this "curse" by improving transparency and accountability. Mongolia has implemented EITI and has prepared three EITI reconciliation reports.

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[7] The private investors in the Oyu Tolgoi project agreed "to carry" Erdenes, which does not have to put up cash for its share of the cash calls. Erdenes will pay for its share of the costs (plus interest on the carry) out of its share of dividends. Until the carried interest is paid off; that is, crystallizes, the government does not receive its share of dividends. A carried interest is, therefore, equivalent to a non-recourse loan; if the project never pays sufficient dividends for the carry to be paid off, the private investors have no recourse to collect the debt from Erdenes.

II. Royalties, Income Tax, VAT, and Fiscal Stability

1. This chapter addresses royalties, income tax, and VAT. The next chapter addresses the progressive elements of the fiscal regime: government equity and an additional tax to replace the windfall tax.

A. Royalties

An overview

2. Royalties secure revenue for the government as soon as production commences, are considerably easier to administer than most other fiscal instruments, and ensure that companies make a minimum payment for the minerals they extract.

3. Royalties raise the marginal cost of extracting minerals, as they are based on the volume or value of production without deduction for cost. A royalty set too high may discourage development of marginal deposits and lead to high grading and early closure of productive mines, thus discouraging maximization of the value of the deposit. Nevertheless, a regular minimum payment is usually necessary to justify extraction of the resource in the public mind, to assure stability of the fiscal regime, and to broaden the tax base.

4. While most countries apply royalties in order to secure a stream of early revenue from a project, the actual rates (and the type of royalty) vary widely (Appendix 1). The rates chosen will reflect the interaction with other taxes imposed on the mining operation (e.g., a high royalty rate may be offset by a low income tax rate), and higher rates may be assessed on more valuable minerals such as diamonds. The base for value-based royalties also varies widely across countries, and there is no best international practice. Value-based royalties can be levied on: (i) the mineral contained or the ore at the mine mouth, (ii) the mineral contained in the first product sold (such as a concentrate), (iii) recoverable mineral, (iv) gross revenue derived from sales, (v) gross revenues derived from sales less certain allowable costs (such as transportation, insurance, and handling), and (vi) the net smelter return.[8]

Mongolia's current situation

5. In Mongolia, the holder of a mineral license is required to pay royalties on the sales value of the minerals produced. The rates are 2.5 percent for domestically sold coal used for energy and for common minerals (e.g., sand, gravel, and construction stone) and at 5 percent

[8] For an excellent discussion of mineral royalties, see James Otto, et. al., (2006), *Mining Royalties: A Global Study of Their Impact on Investors, Government and Civil Society*.

for all other minerals (article 47 of the Minerals Law). Royalty payments are a deductible expense for the CIT (article 12.1.14). The 2.5 and 5 percent royalty rates are reasonable.[9]

6. The Minerals Law provides that the sales value of exported products shall be determined by the average monthly prices of products, or similar products, based on regularly published international market or on recognized principles of international trade (article 47.2.1). For products sold or used on the domestic market, the sales value shall be based on the domestic market price for the particular or similar product (article 47.2.2). For products sold on international or domestic markets, where it is impossible to determine market prices, the sales value shall be based on the revenue derived from the sale of the products declared by the license holder (article 47.2.3). There is no provision in the Minerals Law that allows the tax authority to adjust the sales value when the product is sold to a related company and the transfer price does not reflect the fair market value.[10]

7. The mission understands that the determination of sales value remains controversial and has led to disputes between the tax authority and mining companies. Although as indicated above, there is no best international practice or even a most common practice, Mongolia should strive for simple, transparent rules for determining sales value for royalty purposes. First, and in order of priority, objective reference prices should be used wherever possible; Appendix 2 provides guidance on reference prices that could be used for the major minerals. Second, when a concentrate is sold or toll refined and a reference price is available for the final product, the royalty should be imposed on the sales value of the mineral contained in the concentrate, using the reference price for the final product and possibly a standard recovery assumption (e.g., 96.5 percent for copper) to reflect minerals lost during smelting and refining.[11] To determine the volume of mineral contained in the concentrate, each shipment of concentrate will need to be assayed by the mining company and samples provided to the government, which can also assay the sample.[12] Third, when reference prices

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[9] The government's proposal for a progressive royalty is discussed in Chapter III.

[10] The draft of the progressive royalty that the government has submitted to Parliament would give the government authority to approve methodologies to determine and impose royalty as defined in article 47.3.1-47.3.4 of the law. It is not clear whether this authority would be broad enough to promulgate a related party rule by regulation. The Minerals Law may need to be amended.

[11] The royalty imposed in Queensland, Australia has a "payable metal" calculation, using an assumed recovery rate.

[12] When concentrate is toll refined, a preliminary royalty could be assessed when the concentrate is shipped to the refinery using the reference price for the shipment date. The final royalty would be assessed (with a credit for the preliminary royalty payment) once the refinery outturn is known (i.e., the total amount of the final product is known). This approach could be manipulated. The refinery, for example, may take payment of refined mineral reducing the refinery outturn. Smelting may include price participation clauses, which may

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are not available and the minerals are sold to a third party, the sales value should be determined by the actual price of the mineral sold. Any hedging arrangements would not be taken into account, as they would be considered "financing". The reason for ignoring hedging arrangements is that they are often used to shift income. Forth, when there are no reference prices and the sale are to a related party, the tax authority should have power to adjust the sales value to reflect an arm's length price. To minimize disputes, the tax authority and the investor should be able to enter into advance pricing agreements, as discussed in the next section on the income tax, to agree on a methodology for establishing the arm's length price (or sales value) of the mineral.

Recommendation

- The royalty article in the Minerals Law should be amended to provide that sales value of minerals shall be determined, in order of priority, by: (i) reference prices, (ii) the mineral contained in the concentrate, reference prices, and a standard recovery assumption when concentrate is sold or toll refined, (iii) actual sales value if reference prices are not available and the mineral is sold to a third party, (iv) the arm's length price if the mineral is sold to a related party, in which case an advanced pricing agreement could be used.

B. Income Tax—Provisions of General Applicability

8. The negotiation of the Oyu Tolgoi Investment Agreement brought out clearly that certain provisions in the CIT law do not work and other provisions that a company might expect to find in an income tax law are missing. The Agreement, for example, contains extensive rules relating to transfer pricing and thin capitalization that usually would be in the income tax law. Moreover, before the Agreement was signed, Parliament extended and liberalized the loss carryforward for mining companies (article 20).[13] This section addresses reforms of the CIT law that should be adopted for all taxpayers and are critical if Mongolia is going to impose an income tax on international companies operating in Mongolia.

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further erode the royalty base and crease opportunities for tax planning. The mission therefore suggests that it would be more transparent to base the royalty on the mineral contained in the concentrate, based on an assay, whether the concentrate is sold or toll refined.

[13] The 10 percent tax credit for investment in priority sectors was also extended to mining, but this was later repealed.

Transfer pricing

9. Transfer pricing concerns the allocation of income between related parties across countries (or within a single country when tax rates differ across sectors or regions). Most countries, including Mongolia, have a provision in their tax laws enabling a price adjustment to be made where under- or over-pricing between related companies has resulted in a lowering of taxable profits. This general power needs to be fleshed out by regulations.

10. Mongolia's CIT law provides that if related parties have sold or transferred goods, works, or services at prices below or above fair market value, the tax authority can adjust the prices based on the prices of goods, works, or services sold or transferred between non-related parties (article 11). However, the related party definition (article 6) covers only transactions between a parent company and a subsidiary and not transactions between two companies controlled by a third company. The definition needs to be broadened to cover companies that are owned or controlled directly or indirectly by the same interests. If the definition is not broadened, companies can use transactions between "related parties" that are outside the CIT's restrictive definition of a related party to shift income and reduce tax paid in Mongolia.

11. Countries have found that it is difficult to make transfer pricing adjustments that will stand up through appeals, possible litigation, and competent authority discussions with tax treaty partners. There are, however, several steps that a country can take to provide greater certainty and to limit abusive transfer pricing. First, Mongolia should adopt and follow the OECD guidelines[14] for transfer pricing, which would provide taxpayers with more certainty. These guidelines could be adopted in regulations by reference. Second, companies should be required to disclose related party transactions on a schedule attached to their income tax returns. There should be an appropriate penalty for failure to disclose these transactions. Third, companies should be required to contemporaneously document how they establish their transfer prices for transactions in excess of $1 million. This documentation would be provided to the tax auditor on request.

12. To minimize protracted disputes on the fair market value Mongolia may want to enter into an advance pricing agreement (APA) (Box 1) with a company that would set out, in considerable detail, how the transfer price would be determined for a period of years. APAs are now used by many countries and have proved very useful in reducing transfer pricing disputes where products are sold to a related party and there are no international prices for the product. The transfer price provision in the CIT law should be amended to authorize the tax authority to enter into APAs.

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[14] OECD, *Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations*, loose leaf.

Box 1. An Advanced Pricing Agreement

- Designed to resolve actual and potential pricing disputes in a principled, cooperative manner;
- Binds the taxpayer and the country usually for a period of up to five years;
- Could be unilateral (between the taxpayer and the government of Mongolia) or multilateral (between the taxpayer, the government of Mongolia and the governments of one or more foreign countries, when the pricing rules are important for the taxpayer to obtain foreign tax credits);
- The government and the taxpayer will need to employ experts to develop an APA.

Thin Capitalization

13. Interest expense is generally deductible in determining taxable profits, but many countries have introduced provisions to protect their tax base from the deduction of excessive interest payments. If the investment is funded by equity, Mongolia collects a 25 percent tax on the profits and an additional 20 percent withholding tax on the dividend, unless the dividend withholding tax is limited by a DTA. If the investment is funded by debt, Mongolia only collects the 20 withholding tax on the interest payment, and this withholding tax may be reduced by a DTA. Thin capitalization rules are generally viewed as anti-avoidance measures that should be aimed only at the most abusive situations.

14. The Mongolian CIT law limits interest expense based on a 3:1 debt/equity ratio (article 14). However, the provision lacks clarity and is defective. It applies only on an investor-by-investor basis or lender-by-lender basis (article 14.3). Expenses disallowed are treated as a dividend.

15. There are various approaches to limiting excessive use of debt (that is, limiting thin capitalization). Mongolia's approach—placing a limit on the debt/equity ratio—is the most common. A 3:1 ratio is reasonable. Most developed countries apply a limit on excessive use of debt only in the case of debt supplied by a related party broadly defined. The mission would suggest that it would be better for the limit on excessive debt to apply to all loans, as it is sometimes difficult to know whether the debt is from a related party, particularly when back-to-back loans are used or the parent company guarantees a loan by a third party to the subsidiary.

16. To illustrate how the 3:1 limit would apply, assume a company has book equity of US$100 and book debt of US$350. With US$50 of excess debt, allowable interest expense would be reduced by the ratio of US$50 to US$350. Therefore, if interest expense before any disallowance is US$35, US$5 of interest expense would be disallowed (US$35 x US$50 / US$350). If the company has debt from more than one source, the disallowance of interest expense would apply proportionately to each loan's interest expense.

Deductible expenses

17. Article 12 of the CIT contains a long list of deductible expenses in determining taxable income but not a general rule.[15] Article 15 contains a shorter list of expenses that are not deductible. If an expense is clearly not included in either the list of deductible expenses or the list of nondeductible expenses, it is unclear whether the expense is deductible. For example, is a payment for a retained interest in a mining project (generally referred to as an overriding royalty) a deductible expense? It is not specifically mentioned in article 12 or in article 15. The overriding royalty, however, is a liability for the investor and it is incurred to earn income. First principles suggest that it should be a deductible expense.[16] A better drafting style would be to begin article 12 with a general rule. For example, article 12.1 could provide that expenses "wholly and exclusively incurred to produce income are deductible expenses from gross taxable income including:"[17] The final item in the list that would follow the general rule would be "Any other expense wholly and exclusively incurred to produce income not specifically excluded in article 15.

Recommendations

- With respect to transfer pricing, Mongolia should (i) adopt the OECD guidelines for transfer pricing; (ii) broaden the definition of related party to cover companies that are owned or controlled directly or indirectly by the same interests; (iii) require companies to disclose related party transactions on a schedule attached to their tax

[15] In contrast, article 7 begins with a general rule for what is gross taxable income.

[16] The recipient of the overriding royalty has Mongolian source income, which could be subject to a withholding tax. However, if a recipient of the overriding royalty is a resident of a country with a DTA with Mongolia that limits withholding taxes, Mongolia may not be able to withhold tax on the payment of the overriding royalty.

[17] The United Kingdom requires an expense to be "wholly, exclusively and necessarily incurred." The United States requires an expense to be "ordinary and necessary." "Necessary" or "necessarily" does not seem to add much as an expense would appear to be necessary if the taxpayer has a liability to pay.

returns; (iv) require companies to contemporaneously document how they establish their transfer prices for transactions in excess of $1 million; and (v) amend the CIT law to allow the tax authority to enter into advanced pricing agreements.

- The 3:1 debt/equity limit on excessive use of debt should apply to all debt and not just to related-party debt or on an investor-by-investor basis.

- Mongolia should consider adopting a general rule for deductible expenses along the lines of "expenses wholly and exclusively incurred to produce income".

C. Income Tax—Provisions for Mining Sector

18. Tax provisions relating to the mining sector should be gathered in a new chapter of the CIT law. The first article of the mining chapter would contain definitions that only apply to mining chapter, including the definition of a "qualified mining company" as a company holding a mining license or a company operating under an investment agreement with the government and a state-owned company that holds the mining license (to cover the Tavan Tolgoi project).[18] The second article would provide that mining chapter only applies to qualified mining companies. The third article would provide that the articles in the chapters of the CIT law apart from the mining chapter apply to qualified mining companies in the same manner they apply to a company that is not a qualified mining company unless they are changed by an article in the mining chapter (precedence of the mining chapter). This section outlines the mining related tax issues that should be addressed in the mining chapter of the CIT law.

Corporate income tax rate and dividend withholding tax rate

19. Under the CIT, the income tax rate is 10 percent on the first Tog 3 billion (US$2.17 million) of taxable income and 25 percent on the excess over Tog 3 billion. While most Mongolian companies are taxed at the 10 percent rate, large mining companies are in the 25 percent tax bracket. The 25 percent tax rate is competitive by international standards (Table 3). The withholding tax rate on dividends paid to non-residents is 20 percent, for a total tax burden of 40 percent, assuming all after-tax income is distributed and the withholding tax rate is not reduced by the Double Taxation Agreement (DTA).

20. Mongolia has entered into 30 DTAs, all of which reduce the withholding tax rate on dividends paid to non-residents. The withholding tax rate is most commonly reduced to 5 or 10 percent for non-residents of the treaty country though in many of the DTAs the 5 or

[18] Thus the mining section would not apply to subcontractors of qualified mining companies.

10 percent rate is limited to shareholders in the treaty country who have a substantial interest, generally 10 percent or more. In the case of the Netherlands DTA, the withholding tax rate for shareholders resident in the Netherlands with a 10 percent shareholding is zero. By setting up a Dutch holding company to hold the shares of the Mongolian mining company, the withholding tax can by eliminated altogether. In addition, the Dutch holding company will most likely not be taxed in the Netherlands (international participation exemption) and the holding company will be able to either redistribute the dividends to final shareholders at low tax costs (withholding taxes are low or even absent) or use them to refinance group companies by using special regimes (low tax again on interest receivables) in the Netherlands.

Table 3. Corporation Tax and Withholding Rates in Major Mining Countries

Country	Corporate Tax Rate	Dividend Withholding Tax Rate 1/	Country	Corporate Tax Rate	Dividend Withholding Tax Rate 1/
Australia	30	30	Papua New Guinea	30	17
Burkina Faso	25	12.5	Peru	30	4
Cong. Dem. Rep.	30	10	Sierra Leone	37.5	10
Ghana	25	8	South Africa	35 2/	0
Indonesia	28	20	Suriname	36	0
Liberia	30	5	Tanzania	30	10
Malawi	30	10	United States	40 3/	30
Mali	50	0	Zambia	35	0 4/
Mozambique	32	20	Zimbabwe	15	20

1/ Dividends paid to non-residents; rate may be reduced by DTAs.
2/ Formula-based variable rate for gold
3/ 35 percent at Federal level plus 5 percent average effective rate at state level
4/ 0 percent for copper; 15 percent for other
Source: FAD mining data base

21. The DTAs undermine Mongolia's fiscal regime for mining. One possible approach would be to renegotiate the DTAs, seeking a higher withholding rate on dividends or a limitation on benefits provision,[19] and terminating treaties which cannot be successfully renegotiated. Terminating DTAs could give Mongolia a bad reputation. A better alternative would be to work around the DTAs. Mongolia could increase the CIT rate for mining

[19] Tax treaties frequently contain a limitation on benefits provision, which generally prohibit third country residents from obtaining treaty benefits. For example, a foreign corporation in a treaty country where there is a limitation on benefits provision may not be entitled to a reduced rate of withholding unless a minimum percentage of its owners are citizens or residents of the treaty country. Countries with holding company regimes are likely to resist a limitation on benefits provision in their DTAs.

companies from 25 to 35 percent and reduce the withholding tax rate on dividends paid by mining companies to zero.[20] Mali, South Africa, Suriname, and Zambia follow this approach.[21] Ghana follows this approach for petroleum companies (50 percent income tax rate and zero withholding on dividends paid to nonresidents) but not for mining companies (25 percent income tax rate and 8 percent withholding tax on dividends paid to nonresidents).

Withholding on interest, management fees, payments to subcontractors

22. Countries impose withholding taxes on payments to nonresidents to ensure tax compliance. Under general international rules, income that is sourced in a country but paid to a nonresident—for example, dividends and interest—is subject to a final withholding tax. This allows the source country to effectively tax this income, as there is no practical way to force nonresidents (other than permanent establishments) to file returns and account for their incomes.[22] Final withholding on interest is the first line of defense against "profit stripping" (the shifting of profits to a foreign jurisdiction through inflated interest payments). The withholding tax that is collected on interest payments should reduce the incentive for extracting profits through deductible interest payments. Final withholding tax on management fees can reduce the pressure for companies to engage in abusive transfer pricing of these fees that are paid from a local company to a foreign parent company.

23. The Mongolian CIT imposes a 20 percent final withholding tax on certain payments to nonresidents: (i) dividends (discussed above), (ii) loan interest and guarantee payments, (iii) income from royalty, leasing interest, payment for administrative expenses, rent, management expenses, and income use of tangible and intangible assets, and (iv) income from goods sold, work performed and services provided in the territory of Mongolia (article 17.2.9).

24. The scope of withholding and the withholding tax rate may be reduced by treaty. For example, the Singapore DTA limits withholding tax on interest paid to a bank to 5 percent. Some DTAs allow management services to be subject to withholding under the royalty article or under a separate article covering technical fees;[23] many treat management services

[20] Erdenet, under its founding agreement, has a zero withholding tax rate on its dividends.

[21] Adopting a zero withholding tax rate on dividends will reduce Mongolia's leverage in negotiating tax treaties, but Mongolia may not need additional one-sided treaties.

[22] The residence country will usually also tax this income, and if it does so, it would normally give a credit to the tax paid to the source country.

[23] In the Mongolia-Netherlands DTA, the royalty article provides 5 percent withholding on "technical fees" which is defined as payments of any kind to any person, other than an employee of the person making the

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(and payments to subcontractors) under the business profits article. This article generally provides that income from goods sold, work performed and services provided in the territory of Mongolia by a resident of the treaty country would not be taxable in Mongolia. There is one exception to this rule. If the foreign company carries on business in Mongolia through a permanent establishment, then Mongolia can tax the income of the permanent establishment. That is usually not done through final withholding, as the permanent establishment is required to file an annual tax return and pay tax on its Mongolian source income.

25. Most major subcontractors of the mining companies will be either a resident Mongolian company or a permanent establishment of a foreign company subject to the CIT in Mongolia. Some contractors may be difficult to tax as they may provide services for only a few months and then disappear. A withholding tax on payments to subcontractors is an effective way of taxing the income earned by these companies. The rate should be relatively low, as it applies to gross income and not to taxable income. A 5 percent rate on gross income when the tax rate on taxable income is 25 percent (the standard CIT rate) would be reasonable if the profit margin on the subcontractor's contract is about 20 percent of gross income.[24] The 5 percent withholding tax on subcontractors would not be a final tax for subcontractors who are required to file returns an account for their income (resident subcontractors and permanent establishments of foreign companies). It would be a final tax for nonresident companies that do not carry on their business in Mongolia through a permanent establishment. The business profit article of DTAs will generally reduce the withholding tax on nonresidents without permanent establishments to zero. Thus if a company abroad performs business services for a Mongolian mining company, Mongolia will not be able to withhold on the payments to the foreign service providers under most treaties.

Functional currency

26. In many countries mining companies are allowed to keep their books of account in US dollars, or possibly another foreign currency. When dollar accounting is used, the tax return is first prepared in dollars and then each item in the return is translated into the local currency at the going exchange rate. With dollar accounting, the company may be required to

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payments, in consideration for any services of a technical, managerial or consultancy nature. Technical fees would include management fees paid to a parent company. The Mongolia-Canada DTA also provides for 5 percent withholding on technical fees, but this is in a separate article from the royalty article.

[24] A 5 percent tax on gross income would yield the same tax liability as a 25 percent tax on taxable income when taxable income is equal to 20 percent of gross income.

pay its tax in local currency. The Oyu Tolgoi investment agreement allows dollar accounting for tax reporting purposes (article 2.26).[25]

27. Dollar accounting recognizes that the dollar is the mining companies' functional currency. Imports are paid for in dollars and exports are sold for dollars. By using dollar accounting for tax purposes, the companies are protected from the risk of togrog depreciation, and this may be viewed as an incentive for investment in the mining industry.

Depreciation

28. Under the CIT, most assets that a taxpayer acquires as the result of incurring capital expenditure will be considered depreciable property. This includes both tangible and intangible property, but excludes land, inventory and materials. The cost of depreciable assets is recovered on the straight-line method over their useful lives, as follows:[26]

Number	Asset Class	Useful Life (in years)
1	Buildings and construction	40
2	Machinery and equipment	10
3	Computer, computer parts, and software	3
4	Intangible assets with indefinite useful life	10
5	Intangible assets with definite useful life (includes license for mining exploration and mining)	Valid period
6	Other depreciable assets	10

29. This categorization of depreciable assets does not work well for mining. In the Oyu Tolgoi Investment Agreement, the contractor and the government agreed that machinery and equipment fixed or attached to a building, construction, or underground infrastructure are in Asset Class 2. Capitalized pre-stripping and overburden removal, underground shafts, and roadways, drawpoints and ventilation shifts and other underground infrastructure are in Asset Class 6 (article 2.15 of the investment agreement). Thus most development expenditure for the Oyu Tolgoi mine will be depreciated over 10 years. The draft Tavan Tolgoi investment agreement also supplements the six asset classes contained in the CIT law.

[25] However, the company must also maintain accounting records in Mongolian togrogs in accordance with article 6.1 of the Accounting Law. Mongolia could consider allowing a mining company to maintain accounting records in dollars for both tax and financial accounting.

[26] The Minerals Law included its own tax depreciation rules for mining. Under these rules, all costs incurred for exploration and expenses incurred in preparing a mine site for production shall be amortized on a straight-line basis over 5 years beginning in the year production commences (article 61). This article was repealed in 2009.

30. Supplementing or refining the asset classes for depreciation is one way to go. As in the Oyu Tolgoi Investment Agreement, this approach can make clear that most development expenditure has a 10 year useful life and is not considered a construction with a 40 year useful life.

31. There is an alternative approach that would be simpler, easier to administer, and would likely involve fewer disputes over the classification of assets. This approach could have as few as four asset classes. First, all expenditure incurred in exploration and development of the mine before commencement of production would be placed in one asset class and depreciated, beginning the year production commences, on a straight-line basis over 10 years or 80 percent of the expected life of the mine,[27] whichever is shorter. Second, development expenditure incurred after commencement of production and directly related to the mine would be depreciated, from when the investment is placed in service, over 10 years or 80 percent of the remaining life of the mine, whichever is shorter. Third, infrastructure not directly related to the mine (e.g., buildings, roads, railroad, and power plants) would be depreciated under the regular CIT asset classes. Fourth, social infrastructure (e.g., hospitals, schools, housing for mine workers) would be depreciated over the life of the mine or a shorter period. This approach would need to carefully define development expenditure, but the definition in the tax law could tie to international accounting rules. The four-category scheme could be expanded to include separate categories for vehicles and computers, common assets that have a fairly short useful life.

Loss carryforward

32. In 2009, Mongolia amended the CIT law to provide a 4 to 8 year loss carryforward for the infrastructure and mining sector, depending on the amount of investment. The carryforward loss can offset 100 percent of the taxable income before the loss carryforward. For companies in other sectors, the carryforward period is only 2 years and the amount of loss that can be deducted against taxable income in each of the two succeeding years cannot exceed 50 percent of that year's taxable income.

33. Adoption of a longer loss carryforward for mining and allowing losses that are carried forward to offset 100 percent of a succeeding year's taxable income were important tax reforms for the mining sector, which often has significant tax losses in the early years. The loss carryforward period could be liberalized to 8 years for all mining companies.[28]

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[27] The 80 percent rule would provide a reasonable depreciation period for mines with a short expected life.

[28] The special loss carryforward provision for mining could be moved to the mining chapter or it could be retained in Chapter Six, as the liberalized carryforward provision applies to both infrastructure and mining.

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Environmental and mine-closing costs

34. Under the Minerals Law, a license holder—either exploration or mining—has obligations with regard to environmental protection. To ensure that the mining company performs, a license holder must deposit funds equal to 50 percent of its environmental protection budget for the particular year into a special bank account. The CIT allows a tax deduction for the funds accumulated for purposes of environmental rehabilitation (i.e., mine reclamation), as required under the Minerals Law (article 12.1.27). It is presumed that once environmental expenditures are made, funds would be released from the escrow account.[29] Any surplus accumulation would be returned to the company and taxable.

35. Mongolia's rule relating to environmental costs is too restrictive, as it seems to relate to only the budget for the current year's environmental costs. It would be better if the company were allowed to fund current and future environmental costs, including mine closing costs[30] through contributions to an escrow account in Mongolia. The CIT law could be amended to provide a tax deduction for funds accumulated in an interest-bearing escrow account for future mine closing costs, pursuant to a mine closing plan approved by the MMRE. The account should be jointly controlled by the government and the mining company and it would be nonrecourse in case of company liquidation.

36. In the Oyu Tolgoi Investment Agreement, the investor must develop a mine closure plan that complies with relevant laws and regulations, and can set aside funds commencing seven years prior to closure in a tax deductible escrow account (article 3.18 of the Agreement). This provision in the Investment Agreement overrides the CIT law, which does not allow a deduction for future mine closing costs. The mission agrees that a tax deduction should be allowed for contributions to an escrow account to pay for future mine closing costs but only if the mine closure plan is approved by MMRE.

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[29] In practice the funds are rolled over to meet next year's requirement to set funds aside for mine reclamation.

[30] Mining differs from oil and gas in that decommissioning takes place in phases during mine operation, and not only after the mine is closed. Decommissioning expenses should be allowed when incurred if prior to closure.

Ring fencing

37. Ring fencing means a limitation on consolidation of income and deductions for tax purposes across different activities, or different projects, undertaken by the same taxpayer. Some countries ring fence mining (and petroleum) activities, others ring fence individual license areas or projects.

38. Ring-fencing rules matter for two main reasons. First, absence of ring fencing can seriously postpone government tax revenue because an investor who undertakes a series of projects will be able to deduct exploration or development expenditures from each new project against the income of projects that are already generating taxable income. Second, as a mining (or petroleum) area matures, absence of ring fencing may discriminate against new investors who have no income against which to deduct exploration or development expenditures.

39. Despite these points, a very restrictive ring fence is not necessarily in the government's interest. More exploration and development may occur if taxpayers can obtain a deduction against current income, generating more government revenue over time by increasing the taxable base. The right choice is a matter of balance within the fiscal regime and the degree of government's preference for (modest) early revenues over (greater) revenues later on. Ring fencing—preventing losses from being transferred among projects—is particularly important if the government imposes a profit-based additional tax on highly profitable projects as a replacement for the windfall tax (see Chapter III).

40. The mission would recommend that the fiscal regime for mining should be ring fenced project by project with the single exception—losses from unsuccessful exploration on relinquished areas should be allowed to offset income from successful projects.

Recommendations

- The CIT rate for mining companies should be increased from 25 to 35 percent and the withholding tax rate on dividends paid to non-residents reduced to zero.

- The withholding tax on interest and management fees paid to nonresidents should be retained at 20 percent. Mining companies should be required to withhold 5 percent on payments to subcontractors. Resident subcontractors and permanent establishments would be allowed to credit the subcontractor withholding tax against the CIT. For other subcontractors, the withholding tax would be a final tax.

- Mining companies should be allowed to use dollar accounting for tax purposes.

- The depreciation of mining investment should be simplified by using four asset classes: (i) exploration and development expenditure incurred before commencement of production, (ii) development expenditure incurred after commencement of production, (iii) infrastructure not directly related to mining, and (iv) social infrastructure. There could be two additional classes for short-lived common assets; namely, computers and vehicles.

- The loss carryforward for mining should be 8 years for all mining companies.

- Mining companies should be allowed a tax deduction for funds set aside in an escrow account in Mongolia to pay for future mine closure costs provided that the mine closure plan is approved by MMRE.

- The fiscal regime for mining should be ring fenced project by project so that losses are not transferred among projects with the single exception—losses from unsuccessful exploration on relinquished areas should be allowed to offset income from successful projects.

D. VAT

41. Mongolia's 10 percent VAT should serve as an efficient, neutral tax that is collected at each stage of production and distribution. Properly designed, the base of the tax would be domestic consumption.

42. The basic characteristics of a VAT are that all persons or businesses, throughout the production and marketing chain that are engaged in the supply of taxable goods and services are required to register for the VAT and charge VAT on all taxable sales. Their actual liability, however, is only the net of the VAT charged on their sales (output tax), reduced by the VAT paid or payable by them (input tax) in respect to goods and services purchased for use in their taxable activities. The VAT on imported goods is collected at the time of importation along with any applicable import tariffs and excise taxes. Exports leave the country free of tax. To the extent that a VAT may be applied uniformly to all goods and to all business and consumer services, the credit mechanism—the crediting of input VAT against output VAT—has the potential to eliminate virtually all cascading (tax-on-tax) of the tax.

43. The international norm is for a country to impose VAT on imports and zero-rate exports (that is, apply a zero tax rate to exports and allow the exporter to claim input credit for VAT paid on inputs) to ensure that exports leave the country free of tax. In 2009, however, Mongolia limited the zero-rating of mining exports to "final mining products" and provided that exports of other mining products are exempt (that is, the exporter is not allowed a credit for VAT paid on inputs). This amendment was adopted to raise revenue from the mining sector and to provide an incentive to export final mining products (e.g., copper

cathodes or refined gold). The amendment does not apply to Boroo Gold, which is covered by a fiscal stability agreement. As the amendment was adopted just before the Ivanhoe investment agreement was signed, Ivanhoe negotiated a 10 percent income tax credit to offset its additional VAT cost.

44. Potential investors in Mongolia's mining sector will view the 2009 amendment to the VAT law as a cost increase, making Mongolia a less attractive place to invest. The amendment should be repealed.

45. VAT refunds should be paid promptly.[31] If they are not paid, excess VAT credits will be a mining cost, which cannot be passed on to international purchasers of the mine product. To reduce the need to pay VAT refunds to mining companies, particularly during the development stage, Mongolia could exempt a positive list of imported capital goods, raw materials and intermediate supplies directly related to mining.

Recommendation

- All exports of the mining sector should be zero-rated. To reduce the need to pay refunds, Mongolia should exempt a positive list of imported goods and supplies directly related to mining.

E. Fiscal Stability

General observations

46. Fiscal stability clauses are widespread in mining (and petroleum) contracts and are generally justified by: (i) the large size and the sunken nature of the initial investment, (ii) a long period required to recover investment and earn a reasonable return, and (iii) a lack of credibility on behalf of the host country to abstain from changing the fiscal rules—possibly singling out high rent petroleum or mining operations—once the investment is sunk.

47. It can be argued that the need for a fiscal stability clause is less compelling under certain conditions: a history of sound fiscal management, statutory and effective corporate tax rates in line with international rates, low tariff rates and non-imposition of taxes that distort investment and production decisions (e.g., asset taxes, excises on machinery), non-discrimination between domestic and foreign investors, a low level of corruption, a transparent tax policy process, and a reasonably efficient tax administration.

[31] The Brondolo tax administration mission will address the administration of VAT refunds. The recently enacted provision that limits VAT refunds to 15 percent of VAT collections should be reviewed.

48. There are, in general, two formulations of the fiscal stability clause: the frozen law formulation, and the agree-to-negotiate formulation. Under the frozen law formulation, the laws in force when the agreement is signed are frozen for the life of the contract or for a period of years. Under the agree-to-negotiate formulation, the parties to the contract agree to negotiate in good faith to maintain economic equilibrium if there are any adverse changes in the laws (or regulations). Agree-to-negotiate fiscal stability clauses are more common than frozen law clauses, particularly in recent years.[32]

49. Fiscal stability, by locking in domestic laws as of the date the mining agreement is signed, may provide contractors with unsustainable benefits, when there is significant favorable change in circumstances or when the frozen law is defective. The laws, of course, can be amended, but the amendments will not apply to existing contracts covered by the typical fiscal stability clause, unless the clauses are somehow rescinded, or there is voluntary agreement that amended arrangements will apply.

50. When a mining agreement contains a fiscal stability clause, problems may arise in determining just what the fiscal laws were when the agreement was signed. During the effective period of the stability clause, the laws will be amended, possibly several times a year. They may be totally redrafted. By the 20th year of the contract, there is likely to be no one in the tax administration who remembers the fine points of the tax laws that applied 20 years ago. If the tax administration is dealing with a number of resource contracts signed over a period of years, contracts signed at different times, even during the same year, will be administered under a different set of fiscal laws, complicating tax administration.

51. When a fiscal stability clause requires the parties to the natural resource agreement to negotiate terms so as to restore the economic position of the contractor, there may be troubles reaching an agreement. These agree-to-negotiate stability clauses presume that the effect of the change in the fiscal terms can be appraised and an offsetting change agreed to.

52. The fiscal stability clauses in many mining agreements are asymmetric: protecting the contractor from adverse changes to the fiscal terms but passing on benefits of reductions in tax rates or other changes beneficial to the contractor, such as more liberal rules for cost recovery. If fiscal stability is a one-way bet and the government later wants to reduce tax rates and broaden the tax base, the company protected by the stability agreement will be entitled to the reduced rates but may not be subject to the provisions that broaden the tax base. This can make future tax reform very difficult, especially if large contractors are protected by stability agreements that entitle them to all beneficial tax changes.

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[32] However, as most mining and petroleum agreements are confidential, it is not possible to quantify trends in the use of fiscal stability clauses.

The Mongolian situation

53. In Mongolia a holder of a mining license who undertakes to invest at least US$50 million during the first five years of its mining project can enter into an investment agreement with the government to provide a stable operational environment, including a stable tax environment (article 20.1.1).[33] The scope of fiscal stability is not specified in the Minerals Law.

54. The 1998 investment agreement that Mongolia negotiated with Boroo gold guarantees fiscal stability by reference to the laws in force on the effective date of the agreement, including an initial income tax holiday and a 2.5 percent royalty. The fiscal terms in the investment agreement were amended in 2000 and 2007. Boroo Gold now pays income in accordance with the CIT law as in force from 2007. The royalty rate is 5 percent.

55. The Oyu Tolgoi investment agreement provides stability with respect to certain taxes, including CIT, VAT, customs duty, and royalty (article 2.1 and 2.2). Nonstablized taxes shall apply to the investor on a non-discriminatory basis. The agreement also provides that if a law or regulation enters into force subsequent to the date of the agreement, or an international treaty becomes available to the investor, the investor can benefit from any reductions in tax provided by the law, regulation or international treaty—a one-way bet (article 2.24).

56. The government may want to narrow the scope of the fiscal stability provision contained in future investment agreements.

Recommendation

- On a going forward basis, Mongolia's investment agreements should include a fiscal stability clause that would be limited to 15 or 20 years and cover only the capital recovery rules, the income and withholding tax rates, royalty rates, and a maximum rate on import duties. Any other tax law change that affects businesses generally and that does not discriminate against mining would apply.

[33] Under the prior law—the Minerals Law of 1997, the Stability Agreement (now known as the Investment Agreement) could only provide for stability of rates for a definite time period.

III. PROGRESSIVE ROYALTY

57. This chapter addresses the government's proposal for a progressive royalty, provides recommendations for improving its design, and suggests alternatives should Parliament reject the government's proposal.

A. The Progressive Royalty Proposal

58. The government has submitted to Parliament an amendment to the Minerals Law that would impose a surtax royalty in addition to the flat-rate royalty discussed in Chapter II. If the amendment is adopted, Mongolia would impose a progressive royalty with rates from zero to 5 percent that vary by the market price of the mineral. The price bands for each mineral would be expressed in nominal US dollars. The new progressive royalty would cover twelve different minerals. For copper and gold, the two most important minerals from a revenue viewpoint, this amendment would impose a surcharge of 2 and 4 percent of sales value respectively at current prices.[34] The surcharge would not apply incrementally but to the entire sales value of the mineral.

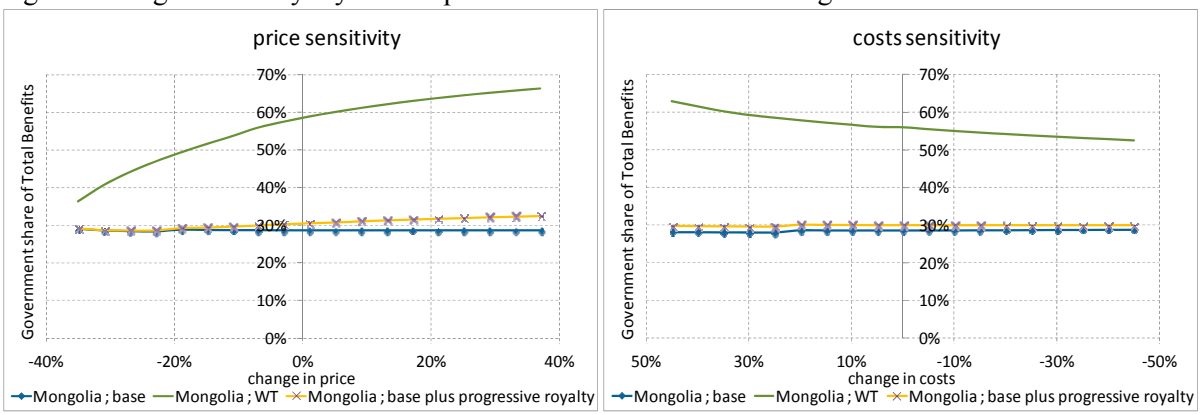
59. The mission understands the proposed progressive royalty is intended as a partial replacement for the windfall tax. To understand the properties of the progressive royalty, the mission has built an economic model for simulating different fiscal regimes, which is discussed further in Chapter IV. The progressive royalty regime combines the progressive royalty together with other key aspects of the current fiscal regime, such as the CIT and VAT. The current fiscal regime excluding the progressive royalty (the base regime) and the current fiscal regime with the windfall tax (WT regime) serve as alternative benchmark regimes. When these three fiscal regimes are applied to the Oyu Tolgoi copper project, the mission would make the following observations:

- The first panel in Figure 3 measures the degree of progressivity of the three regimes in response to price changes: a more progressive regime leads to a stronger increase in the government share of total benefits as prices increase; i.e., the gradient of the curve becomes steeper. The simulations show that the windfall tax was indeed very progressive with respect to prices, whereas the progressive royalty improves only marginally on the progressivity of the base regime.

[34] For Erdenet, which historically accounted for about 40 percent of all royalty payments, application of the progressive royalty would lead to additional payments of approximately 25 billion togrogs. Taking into account that these payments are CIT deductible, overall additional revenue collection would amount to just under 20 billion togrogs.

- The second panel shows the progressivity with respect to changes in costs. A key drawback of the windfall tax was that it did not take costs (or profitability) into account; the simulations show that the government share of total benefits increases as costs increase, making the regime less progressive with respect to profitability. The progressive royalty is also insensitive to costs. However, at the rates proposed, the addition of the progressive royalty to the base regime has a de minimis effect on the overall progressivity of the fiscal regime.

Figure 3. Progressive Royalty in Comparison to the Current Fiscal Regime and the Windfall Tax



60. In sum, the simulation results suggest the proposed royalty will not be very effective in enhancing the progressivity of the current fiscal regime with respect to price variations or capturing a significant share of the upside when prices increase. Its insensitivity to variations in costs is another drawback. Other "additional taxes" linked to profitability are much more effective in increasing the degree of progressivity over both costs and prices (this will be shown below), but introducing these would require fundamental changes to the government's proposal.

61. The mission understands that at this stage Parliament may consider only changes to the proposed progressive royalty regime and not fundamental alternatives. Given the Parliamentary situation, at a minimum, the price bands for the royalty surtax should be adjusted each year based on a cost or price index. To reflect that costs rise over time, the brackets could be adjusted by the US GDP deflator, which is used in some mineral contracts. Alternatively, to reflect price inflation, the brackets could be adjusted by the US CPI, which is used in the Oyu Tolgoi Investment Agreement to adjust nominal interest rates. Without the inflation indexation, it would become necessary to amend the Mineral Law on a regular basis to adjust the brackets.

Recommendation

- If the progressive royalty is to be adopted, the price brackets should be indexed for inflation.

B. Differentiated Rates

62. To provide an incentive for processing minerals in Mongolia, Parliament is considering differentiated rates, with lower rates for processed minerals (that is, final mineral products, for example, copper cathodes) and higher rates for unprocessed minerals (for example, copper concentrate). The differentiated rates could be limited to gold, copper, iron ore, coal, and possibly a few additional minerals.

63. With a low corporate tax rate, generous capital recovery rules, and a reasonable loss carryover, a subsidy for processing minerals in Mongolia is not needed. If, however, Parliament wants a subsidy for processing minerals, the amount of the subsidy should depend on the amount of investment made in Mongolia (for example, in building a copper refinery). Differentiation of the progressive royalty would instead link the size of the tax benefit to the level of future mineral prices. Hence, given the loose link between future mineral prices and the downstream investment decision, the proposed differentiation of the progressive royalty would not be an efficient tool to achieve its objective. Another obstacle is that the owners of mining operations and downstream processing such as a smelting plant are often different. Ensuring that the tax benefit of the differentiated royalty flows through to the owners of the downstream processing plants and not the mine operators would be administratively complex. These drawbacks are probably the main reason why the differentiated rates Parliament is considering are internationally not common, in spite of a wide variation in royalty regimes across countries (Table 4). Of the countries (and states) surveyed in Table 4, only West Australia differentiates rates by the degree of processing, but even here the differentiation is limited to copper and iron ore. Much more common tax instruments for providing the intended incentives are investment tax credits, which can be targeted much better towards the type of investment Parliament seeks and, as importantly, directly link the size of the tax benefit to the size of the investment.

Recommendation

- If tax incentives are necessary to encourage domestic processing of minerals, instruments other than a differentiated progressive royalty should be considered, such as an investment tax credit for investment in smelters.

C. Alternatives to the Proposed Progressive Royalty

64. If the progressive royalty proposal is not adopted by Parliament, a comprehensive reform package could include various alternatives for the government to collect a higher share of the economic rents of the most profitable projects. These options range from a higher corporate tax rate on mining companies, a variable rate income tax where the tax rate increases with the level of profitability, a resource rent tax, or the recent Australian proposal for an additional tax on profits earned above a threshold return. Another alternative is equity

participation, which is already envisioned under the state participation policy and has been implemented with the Oyu Tolgoi Investment Agreement. Appendix 3 contains a description of these different instruments.

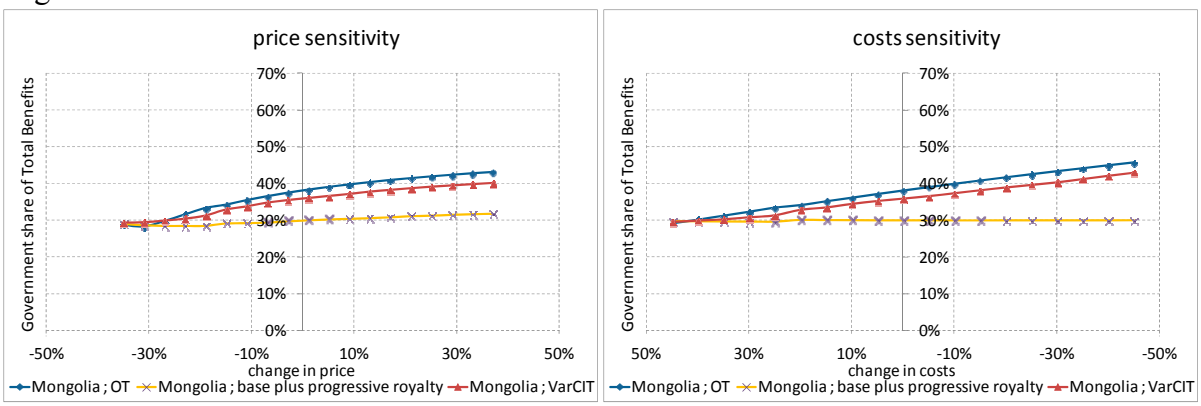
Table 4. Selected Examples of Royalties that Include a Progressive Mechanism or Differentiate by the Level of Processing

	Copper	Gold	Iron Ore	Coal
West Australia	Concentrate 5% metal value Metallic (cathode) 2.5%	2.5% gold value	Lump 7.5% Fine ore 5.625% Beneficiated ore 5% /1	Export 7.5% value Domestic $1.00 per tonne, indexed
Australia Queensland	Taxpayer elects either: Fixed rate 2.7% of value; or Variable rate 1.5% - 4.5% varying with price			7% of value up to $100 per tonne 10% of excess over $100 per tonne
Australia New South Wales	4% ex-mine value			8.2% open cut 7.2% underground 6.2% deep underground Ex-mine value
Australia Northern Territory	18% of net profit including a charge for capital			
China	Unit royalty (fee per unit of production) plus mineral resources compensation fee (1-4% of value); different parameters set for each mineral			
Ghana	3-12% ad-valorem, rate determined by operating ratio /2			
Bolivia	Royalties with rates varying with price with different parameters set for each mineral; domestic sales pay 60% of royalty			
Chile	4% of copper sales 3/			
Peru	1% < US$60mm gross value 2% >$60mm < $120mm 3% > 120mm			
USA				State of Wyoming: Surface mining 12.5% gross value underground mining 8% gross value
Canada	Generally, profit based royalties applied at provincial level; complex rules and adjustments for size of mine and other factors			

1/ much of Western Australia's large scale production pays lower royalties under stabilized agreements
2/ In practice companies are able to claim deductions such that royalty rarely exceeds 3%
3/ For 2010 and 2011 only, government has proposed 3.5%-9% voluntary royalty linked to earthquake recovery with rate varying by profit margins. Companies who agree to pay get extension on stability agreements

65. To illustrate the ability of these instruments to enhance the progressivity of the fiscal regime, Figure 4 shows simulation results for a variable income tax rate (VarCIT) as an example for a progressive tax instrument as well as a stylized representation of the Oyu Tolgoi Investment Agreement, which achieves a substantial degree of progressivity through the 34 percent equity participation of the state. In addition, the previous simulation results for the proposed progressive royalty are shown. The three fiscal regimes differ only in their choice of the progressive instrument; other aspects such as VAT rules are the same. The simulations show clearly that both the variable income tax rate and the equity participation are much more progressive over both price and cost variations than the progressive royalty. This would suggest that if the objective is to reintroduce progressivity into the mining fiscal regime that was lost with the elimination of the windfall tax, the variable income tax rate or equity participation are more effective instruments in this regard than the proposed progressive royalty.

Figure 4. Progressive Royalty in Comparison to Variable Income Tax and Oyu Tolgoi Regime



66. It should be noted that most of the instruments listed in the appendix are less complex in their administration than the current fiscal regime; for example, the variable income tax shown in Figure 4 does not require information beyond what is needed to administer the existing income tax. To the extent that there are weaknesses in income tax administration, these should be addressed through capacity building, a process that is currently under way with support by the Fund, World Bank, and other donors.

Recommendation

- If the opportunity arises to fundamentally revisit the proposed progressive royalty, the government should consider alternative tax or equity instruments that are profit-based, such as the variable income tax or the resource rent tax.

IV. Economic Analysis of Mongolian Fiscal Regimes

67. This chapter evaluates the fiscal regime for the Oyu Tolgoi project, provides comments on the proposed fiscal arrangements for the Tavan Tolgoi project, and concludes with suggestions for the fiscal regime for future projects. The mission developed a comprehensive financial model for this exercise that has been shared with the authorities.

A. The Oyu Tolgoi Project

Background

68. Oyu Tolgoi is one of the world's largest undeveloped copper and gold deposits. It is located in Mongolia's South Gobi desert, about 80 km from the Chinese border. Once production commences in 2013, China is expected to be the main customer for the copper produced. Oyu Tolgoi LLC, a Mongolian company that holds all the licenses to the deposit, and is ultimately controlled by Ivanhoe Mines Ltd., a Canadian company listed on the Toronto and New York stock exchanges. In 2006, Rio Tinto, one of the world's largest mining companies, agreed to purchase shares of Ivanhoe Mines in several tranches, and it can purchase additional shares on the open market to bring its holding in Ivanhoe Mines up to 44 percent. Rio Tinto's stake in Ivanhoe Mines is currently 22.4 percent. Rio Tinto and Ivanhoe Mines will jointly develop and operate the Oyu Tolgoi mine.

Table 5. Oyu Tolgoi: Production and Cost assumptions

Production		
Copper production over 80 years (million tons)		22.9
Gold production over 80 years (million ounces)		24.7
Silver production over 80 years (million ounces)		148.5
Copper price assumption (US$ per ton)		4,320
	NPV	Nominal
Sales revenue (billions of US$)	18.1	123.1
Copper	14.6	98.9
Gold	3.2	21.6
Silver	0.2	1.6
Other	0.0	1.1
Investment costs (billions of US$, 2009)		21.5
Mine development capital		18.8
Mine infrastructure capital		1.3
Recurring capital		1.4
Operating costs (US$ per ton, 2009)		
Treatment and refining (TC/RC) cost, incl. transport		570
Mining and processing costs		1,582

Source: Ministry of Finance and staff estimates

69. The key production features of the Oyu Tolgoi project are summarized in Table 5. The project is highly profitable: the pre-tax internal rate of return (pre-tax IRR) with a copper price of $4320 per ton and gold price of $850 per ounce is estimated at about 24 percent.[35] At current prices the return would be materially higher. The combination of high profitability with the large project size qualifies Oyu Tolgoi as a world class project.

[35] These prices are used in a model provided by Oyu Tolgoi LLC to the MOF, expressed as reflective of long term average prices.

Fiscal Regime

70. The Oyu Tolgoi Investment Agreement was concluded in late 2009. The principal challenge was that the Mongolian fiscal regime in effect during the time the agreement was negotiated included both the windfall tax and state equity participation of up to 34 percent; taken together, this made the project unviable from the investor's viewpoint. This impasse was overcome when the government decided to repeal the windfall tax effective 2011. As described earlier, the government did opt for an equity participation of 34 percent; in line with this equity share, the government will have to share in the future cost of developing this mine but is carried by the other investors.[36]

Table 6. Oyu Tolgoi: Fiscal Regime Assumptions

Principal fiscal terms	
Royalty	5%
CIT rate	25%
Depreciation rules (straight line depreciation over years):	
Development costs	10
Infrastructure costs	30
Recurring capital	4
Tax loss carry forward (years)	8
Dividend withholding tax rate	20%
effective under DTA:	0%
Interest withholding tax rate	20
assumed effective under DTA:	5%
VAT rate (assumption of no refund)	10%
Investment tax credit rate	10%
State equity participation (carried interest)	34%
Carry interest rate (assumes average US inflation	12%

Source: Ministry of Finance and staff estimates

71. The other key elements of the fiscal regime are summarized in Table 6. Some of these, such as the tax loss carry forward rules, were incorporated into Mongolia's general fiscal regime. Taking into account the discussion in Chapter II, a number of aspects of this agreement are noteworthy:[37]

- Whereas the agreement envisions a dividend withholding tax rate of 20 percent, Ivanhoe Mines has set up a Dutch holding company to hold the shares of Oyu Tolgoi LLC, and under the DTA with Holland no withholding tax can be charged. Hence, the government will receive less revenue than it originally anticipated. As recommended in Chapter II, this unintended benefit could be closed for future projects by raising the CIT rate for mining companies to 35 percent and reducing the dividend withholding tax rate to zero. The implications of such a policy measure will be explored in the final section of this chapter.

[36] For a discussion of different equity participation forms, including carried interest, see Appendix 3. A more detailed description of the equity participation under the Oyu Tolgoi Investment Agreement is provided in Chapter I.

[37] The mission's modeling of the agreement has simplified, aggregated project financing assumptions.

- The 2009 amendment to the VAT law zero-rates exports of final mining products but only exempts exports of other mining products.[38] This amendment effectively eliminates the possibility of VAT refunds for Oyu Tolgoi unless a domestic smelter is built, thereby raising the overall tax burden. As the VAT amendment became effective before the negotiations on the investment agreement were completed, the investors demanded (and received) an investment tax credit as an offset for this additional burden. Should the zero-rating of exports be restored for all products, the agreement provides that the investors lose the tax credit for investment made after the date of repeal.[39] The simulations in this section will assume that Oyu Tolgoi will not benefit from zero rating of exports and will therefore benefit from the investment tax credit; in the final section of this chapter the implications for restoring zero rating will be explored, which Chapter II strongly recommends.

- The investment agreement contains a number of provisions such as high management fees and the treatment of Ivanhoe's initial investment as a shareholder loan which should not form part of a generally applicable framework for future agreements. As will be shown below, the overall package is relatively favorable to the government, and these provisions could be seen as mechanisms to offset the effect of the government's 34 percent equity stake. The simulations that follow capture the material aspects of the agreement terms, but for practical reasons not all are modeled in full detail. A simplified financing structure is also assumed. The fiscal regime considered in the final section will abstract from these issues.

Economic Evaluation of the Oyu Tolgoi Investment Agreement

72. Simulating the fiscal regime as outlined above for the Oyu Tolgoi project assumptions shows that for a copper price of US$4,320 per ton and gold price of $850 per ounce, which is assumed to remain constant in real terms over the life of the project, the average effective tax rate (AETR) would amount to 55 percent. Using cashflows discounted at 10 percent, the AETR increases to 71 percent.[40] This effective tax rate is comparable to the

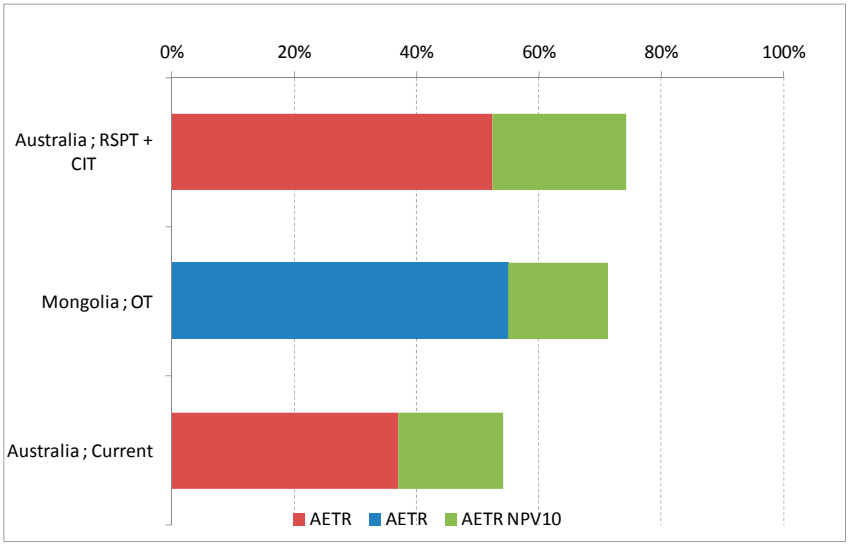
[38] See the discussion in Chapter II.

[39] If VAT zero rating is restored after significant investment has already been made, Oyu Tolgoi will benefit from the investment credit earned up to that point, and from VAT zero rating thereafter. For this reason the mission suggests the change should be made as soon as possible.

[40] The higher discounted AETR arises from the difference in the cash flow profile of government revenue and pre-tax cash flow of the project. Due to the upfront investment costs which the investor shoulders alone, the pre-tax cash flow in the early years of the project is negative, whereas government revenue in these years is merely zero. On a discounted basis, the early negative cash flow receives a larger weight, yielding a proportionally smaller NPV compared to government revenue. As a result, the government share of the project increases with the discount rate.

share the Australian government seeks under the proposed Resource Super Profits Tax (RSPT), which would apply in addition to its regular corporate income tax.[41] This proposal would significantly increase the Australian government share compared to its current regime, which has a share broadly consistent with results under a generic mining fiscal regime configured by the mission to be broadly representative of many mineral exporting countries.[42] If adopted as proposed, the RSPT proposal will make the Australian government share among the highest in the world. Seen in this context, the fact that the Oyu Tolgoi terms yield an AETR close to the Australian RSPT proposal is a considerable accomplishment of the Mongolian government (Figure 5). There is a question, though, whether it will be possible to repeat this for other (smaller) projects.

Figure 4. Oyu Tolgoi: Average Effective Tax Rates for Selected Regimes



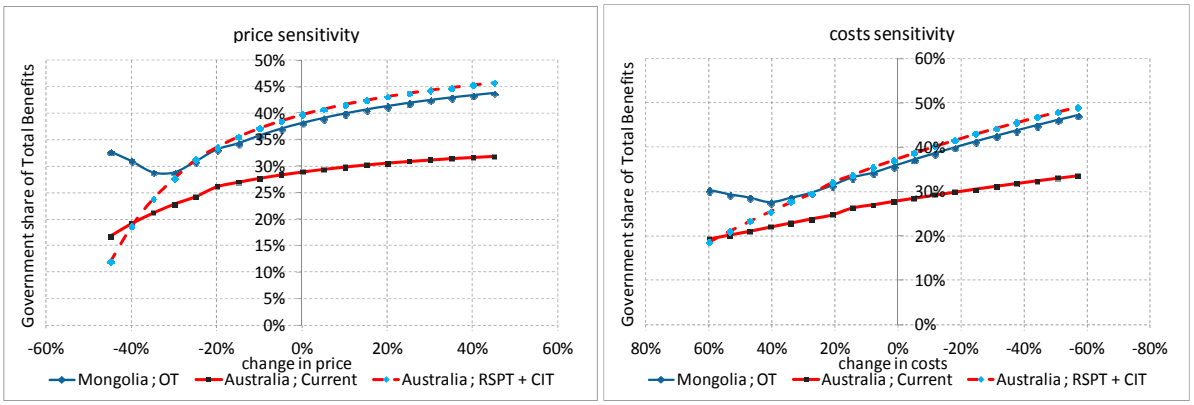
73. Another important aspect of the Oyu Tolgoi fiscal regime is its progressivity. Similar to the approach in Chapter III, Figure 6 measures the degree of progressivity by considering the change in the government share of total benefits as a function of variation in prices and costs. The steeper is the resulting curve the more progressive is the fiscal regime. The simulations show that the progressivity of the Oyu Tolgoi fiscal regime tracks closely the Australian RSPT proposal over a wide range of price and cost variations. The RSPT proposal

[41] See Appendix 3 for a description of this proposal. The authors of the Australian proposal would argue that the government share should only be discounted at the government bond rate rather than ten percent; this would show the RSPT government share as closer to 55 percent.

[42] The generic regime has royalty of 3 percent; income tax of 30 percent with capital depreciated over 10 years straight line; dividend and interest withholding tax of 5 percent each and assumed government free equity of ten percent.

was designed to minimize distortions, with the high progressivity resulting from this design. The fact that the Oyu Tolgoi regime has a consistent share of total benefits profile is encouraging. Exceptions are large decreases in prices or increases in assumed costs, where the Oyu Tolgoi regime becomes regressive. The reason is that with decreasing profitability the non-refunded VAT becomes a regressive tax, which dominates progressive elements in the Oyu Tolgoi regime, especially the equity participation.

Figure 5. Oyu Tolgoi: Progressivity of Fiscal Regime in Comparison to Australian Regimes

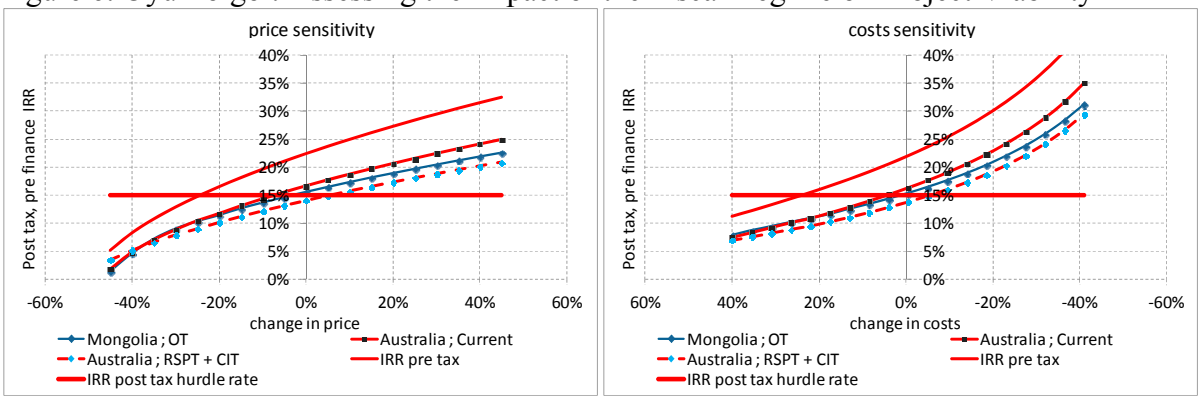


74. Another aspect is the impact of the fiscal regime on a project viability, which can be measured by comparing the post tax internal rate of return (post tax IRR) to a hurdle rate projects have to pass to be considered viable by investors. Typically, these hurdle rates range between 10 and 15 percent.[43] Assuming a 15 percent hurdle rate, the simulations show that the Oyu Tolgoi fiscal regime pushed the viability of the project to the limit: modest increases in costs or decreases in prices would push the post tax IRR below the hurdle (Figure 7). The investor may have been prepared to accept this arrangement because of potential reserves increase, expectations of consistently higher prices or other upside. Further, IRR is not the only criteria used by investors; the sheer size of the project means that even after the significant share taken by the government the investor is left with substantial net present value[44] and long term positive cashflows. However this serves to reinforce the point above that the Oyu Tolgoi fiscal regime may be too demanding for other, smaller projects.

[43] IRR of post tax, pre finance investor cashflow. This is the rate of return on the total investment required (debt plus equity), taking into account the effect of interest deductions on income tax. The return on equity will be higher after debt leverage is taken into account, but so will the required hurdle rate on that equity because of leverage. Measured this way, post tax pre finance hurdle rates for major mining companies are probably between 10 to 15 percent, depending on their risk perception.

[44] A recent Ivanhoe presentation uses an 8 percent discount rate to calculate net present values. A project that meets a 15 percent hurdle rate will therefore generate positive NPV at a lower discount rate.

Figure 6. Oyu Tolgoi: Assessing the Impact of the Fiscal Regime on Project Viability



75. In sum, the government obtained very favorable terms for the Oyu Tolgoi project, and the regime is likely to perform well under a wide range of perceivable prices and costs. However, the mission suggests that these terms may not be a sustainable regime for less profitable or similarly profitable but smaller projects. There are still a number of improvements the government could consider for future investment agreements, especially the VAT regime. This will be revisited in the final section of this chapter.

B. The Tavan Tolgoi Project

Background

76. Tavan Tolgoi is a world class coal deposit located in the in the Tsogttsetsii sum of Ömnögovi Province in southern Mongolia. Estimated reserves of coal range from 1 to 6 billion metric tons, much of which is high quality coking coal. Tavan Tolgoi has been classified as a strategically important deposit and licenses covering most of the deposit are held by Erdenes, a state-owned company.[45] Around half of the deposit, "Block A", will be directly operated by Erdenes using a mining contractor. The other half, "Block B", will be developed and operated by a mining company or consortium under a 30 year investment agreement with Erdenes. The investment agreement will govern the overall relationship between Erdenes and the investor and will establish and stabilize fiscal terms. A separate coal mining agreement will govern mining operations. The mining company investor will be selected by competitive tender, followed by direct negotiations to finalize the investment and coal mining agreements. To inform its thinking, Erdenes has had preliminary discussions with major international coal companies who have expressed strong interest in the project.

[45] Small scale mining has been done in the vicinity of Erdenes' license area for some time by Mongolian companies, with the coal being exported by truck to China.

Fiscal regime for Block B

77. Key elements of the fiscal arrangement reflected in the draft investment and coal mining agreements and related documents are: (i) the investor will meet all of the capital, operating and transportation costs and will take and sell the majority of production; (ii) the investor will pay to the government, via Erdenes, royalty and license fees, plus if adopted also the progressive royalty; (iii) Erdenes will receive a negotiated share of production that it may take in kind as physical coal or have marketed on its behalf by the investor; (iv) the investor will pay to the government a bonus on signing and on the effective date an advance payment against future production share or other taxes, (v) the investor will pay CIT on its profits plus VAT and customs duties, and (vi) Erdenes will not take an equity interest in the investor. The mission understands that the government is seeking a very substantial advance payment, possibly up to US$1billion, and that initial thinking is for the Erdenes production share to be a fixed percentage.

78. Such a production sharing scheme is relatively uncommon in mining, but is very familiar in the petroleum sector, where a wide range of production sharing mechanisms are encountered, usually with the objective that the government production share increases with profitability.

79. The investment agreement will stabilize certain taxes (yet to be specified) according to general tax laws in force on the date of the agreement and sets out asset useful lives for depreciation which mirror the CIT law,[46] specifies a VAT rate of 10 percent and that customs duties will be imposed under laws in effect as at the agreement date. The investor is to maintain its accounts in togrogs.

80. The investment and coal mining agreements are at an early stage of development, and will need to be substantially fleshed out in negotiation with the investor. Key issues include: (i) there is significant overlap between the investment agreement and the coal mining agreement[47] and the relationship between these two agreements needs to be clarified; (ii) the investment agreement should include fiscal terms only by reference to a the Minerals Law, various tax laws, and the customs law; (iii) terms for production sharing should be set out including the mechanism under which Erdenes could take production in kind; and (iv) terms governing the advance payment, such as which government revenues the advance payment is

[46] Useful lives are also stated for two additional asset classes related to a technological park which are not reflected in the CIT. The technological park is not otherwise addressed in the investment agreement.

[47] Both agreements set out overlapping rights and obligations, both address production sharing but in different ways; both include force majeure and dispute resolution provisions etc.

recovered from, whether any interest is added, and whether the advance payment is non-recourse.

81. The mission suggests that before proceeding to tender Erdenes should clarify these and other key matters in order to establish as clearly as possible the terms against which mining companies are being asked to bid. If too much is left open to negotiation, the government may not end up with the best bidder, or may be negotiated into terms worse for the government than another bidder may have been prepared to accept.

Economic evaluation of block B approach

82. The mission developed an economic model of the Tavan Tolgoi project and Table 7 shows the production and cost assumptions, and the fiscal terms initially assumed. With a constant real terms weighted average price for coal of US$100 per ton, the pre-tax internal rate of return of the project is around 55 percent and the net present value of the pre tax net cash flow at 10 percent discount rate (NPV10) is around US$4.8 billion; the project is very profitable, reflecting it is a low stripping ratio, open pit mine with much lower capital intensity than a copper mine such as Oyu Tolgoi.

Table 7. Tavan Tolgoi: Production, Cost and Fiscal Regime Assumptions

Production	
Coal production over 30 years (million tonnes)	410
Production plateau after 4th year (million tonnes per year)	14.4
Proportion coking coal (balance thermal)	72%
Investment costs (US$million, 2010)	
Mine Development capital	513
Mine infrastructure capital	238
Recurring capital	326
Operating costs (US$ per tonne, 2010)	
Mining and processing costs	13.5
Transportation costs	34.5
Mine closure costs - percent of initial capital	10%

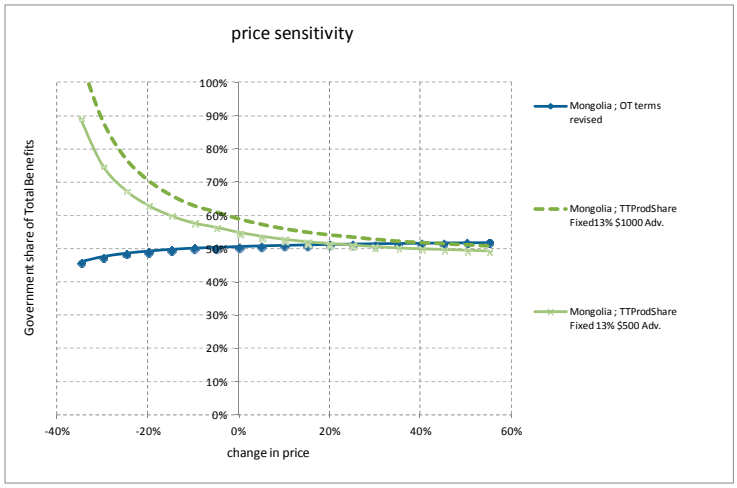
Source: ministry of finance and staff assumptions

Principal Fiscal Terms	
Royalty	5%
Progressive Royalty	as per draft law
Erdenes production share	13% fixed
Advance payment - repaid from Erdenes production share without interest	
CIT rate, depreciation rules as per OT agreement	25%
Dividend withholding tax, assume eliminated under DTA	0%
Interest withholding tax, reduced by DTA	5%

Source: current laws and staff assumptions

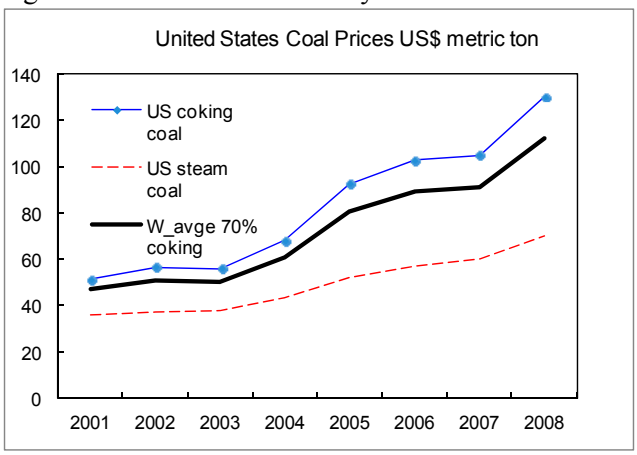
83. Figure 8 shows the government share of total benefits for the Tavan Tolgoi project under a range of price sensitivities, with the vertical axis showing results for US$100 weighted average coal price. Three fiscal regimes are shown; the Tavan Tolgoi production sharing regime described above with US$1 billion advance payment; the Tavan Tolgoi regime with US$500 million advance payment and the standardized Oyu Tolgoi regime including 34 percent carried equity. This shows that the advance payment makes the Tavan Tolgoi regime highly regressive because it is fixed and unrelated to coal production or prices. At higher coal prices, the Tavan Tolgoi regime captures around the same share as the Oyu Tolgoi regime. The Oyu Tolgoi regime applied to Tavan Tolgoi is less progressive than when applied to Oyu Tolgoi because of lower capital intensity.

Figure 7. Tavan Tolgoi: Government Share of Total Benefits

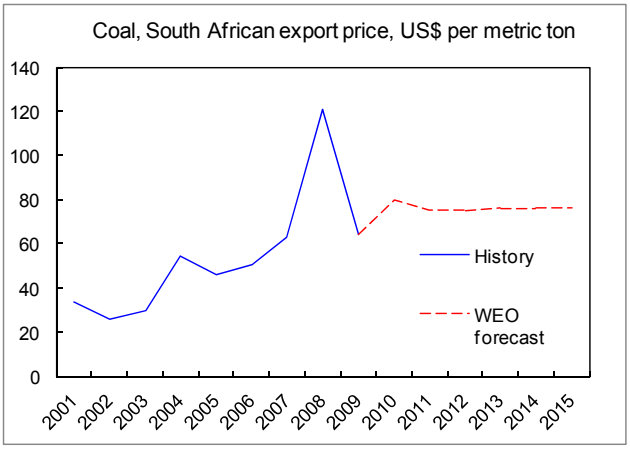


84. With a US$1 billion advance payment, the investor's after tax internal rate of return (IRR) would fall below 15 percent if average realized coal prices were to be below US$90 per tonne. With a US$500 million advance payment the investor IRR would drop below 15 percent with prices of US$80 or lower. This suggests that if the investor perceives a significant chance that coal prices will be much below US$100, then they are unlikely to be willing to pay an advance of that size. The left chart in Figure 9 shows relative coking and thermal coal prices in the US and the right chart the WEO history and forecast for South African thermal coal. Chinese coal price data were not available. These suggest generally rising coal prices, but significant uncertainty and recent volatility.

Figure 8. US Coal Price History and WEO Thermal Coal Price Forecast



Source: EIA



Source: WEO

Sharing of Risk and Reward

85. By seeking a large advance payment the government is trading off immediate, fixed revenue for possibly higher, but variable revenue. By way of contrast, the mission explored an alternative fiscal scheme without an advance payment, but with a progressive "R factor" production sharing regime.[48] All other parameters of the regime are unchanged.

86. This regime reduces the investor's up-front costs and allows quicker cost recovery, but in return captures a higher share of project upside for the government. The investor would likely perceive significantly lower risk from this scheme as government share is to a greater extent linked to achieved profitability—the coal price would have to fall to around US$70 before the investor IRR fell below 15 percent—and the investor would therefore likely accept a higher expected government

Table 8. Tavan Tolgoi: Parameters for R-Factor Production Sharing Scheme

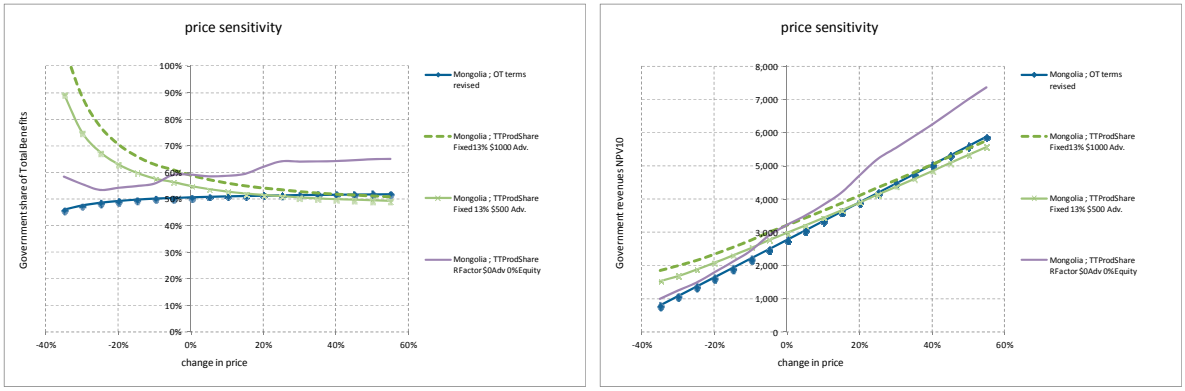
RFactor		Erdenes Prod. Share
>	<=	
0.00	1.20	6%
1.20	1.55	12%
1.55	1.70	18%
1.70	2.00	25%
>2.0		35%

[48]R-factor is the ratio of the investor's cumulative revenuers over cumulative costs plus tax. This production sharing scheme is relatively commonly in petroleum production sharing agreements. The mission also developed a scheme that uses the investor cumulative rate of return to set the production share; this has been shared with the ministry of finance.

share overall.

87. The left chart in Figure 10 shows how the R-Factor scheme is more progressive than the Oyu Tolgoi and advance payment/fixed production sharing regimes and has a higher share overall for coal prices over US$100. The right hand chart shows the NPV10 of the government revenues under each regime. At coal prices of US$120 the government would secure around US$1billion NPV10 more than the advance payment/fixed production share scheme. If coal prices average US$80, the $1billion advance payment scheme (assuming the investor is willing to pay it in the first place) secures around $1 billion NPV more than the R-factor scheme.

Figure 9. Tavan Tolgoi: R-Factor Scheme Share of Total Benefits (left) and Government Revenues NPV10 (right)



88. Whether the government should prefer one approach or the other depends on the government's desire for early revenues from the project, and its view on future coal prices and costs. The mission understands that advance payments are likely to take precedence given Mongolia's budget situation. However, a hybrid scheme could be developed that included both a smaller advance payment and progressive production sharing. Modest government equity in the investor company could also be considered, either in addition to or as an alternative to progressive production sharing. The mission does not endorse a specific production sharing scheme but rather suggests that the government should explicitly consider such risk and reward trade-offs when deciding which approach to take, and when negotiating terms with the selected investor. Capacity to undertake comprehensive economic modeling will be critical.

89. Because of the likely trade-offs against share of future upside, large advance payments should not form part of the Mongolian fiscal regime applied to future projects. The mission also suggests that conventional tax and royalty fiscal terms are a more appropriate fiscal framework for future projects than a production sharing scheme, except possibly for a commodity that Mongolia may have a direct use for. Physical production sharing introduces operational complications and fiscal risks so that full value may not be realized for the

production share. A share of product value can be secured through a royalty, and a share of profits through a tax.

90. A further issue to be decided is whether Erdenes will keep the production share, or pass it on to the government. National mining and petroleum companies usually seek to retain such production shares, arguing the need for investment in other projects or just to meet administration costs. Fiscal risks also arise if the national mining company markets the production share. The mission recommends that the share should be passed on to the government and funding for Erdenes be made through budget allocation in the normal way.

Observations on Block A contract mining approach

91. The contract mining approach intended for Block A is not as far advanced as the Block B framework and the mission has not evaluated it in detail. However, the following observations are offered regarding contracting challenges and risks that Erdenes will need to evaluate as it proceeds.

92. Normally, contract mining is employed in circumstances where the mining company resource owner evaluates the resource, develops the mine plans and then hires a contract mining company to implement those plans. The critical value capture that occurs during the mine planning stage is done by the resource owner and this has a material effect on long term profitability—it would be inappropriate to leave such decisions to a contract miner who does not share in the value created. In any case mining plans will need to be prepared in detail so that a tendering requirement and compensation framework can be developed for contract miners to bid against in the first place. For obvious reasons, it will not be ideal for the contract miner to be allowed to develop the mine plan and design the compensation scheme.

93. Where a contract miner is paid fees per unit of activity rather than a share in profits, the compensation framework needs to be carefully designed so that it includes proper incentives for cost-efficient operation—or at least does not creates incentives for inefficiency. Under conventional profit sharing schemes such incentives are inherent—the investor is motivated to maximize profits because they keep a share of it. This is particularly challenging if the contract miner is being asked to fund the capital investment; any kind of "cost plus" guaranteed profit margin scheme will create risk of "gold plating". Providing a contract mining equipment fleet in Mongolia is very different from doing so in Australia where equipment can be moved from mine to mine. Contract mining terms in Australia have therefore often been relatively short duration—3 to 5 years. A long-term contract for contract mining Mongolia is a different proposition.

94. Erdenes does not currently have in-house capacity to undertake project planning or contract design for a large mine and will need to hire consultants to do it in the lead up to

going to market for a contract miner who will actually do the work. This raises the question of how the consultants are incentivized to maximize the value for Erdenes. These challenges are in large part why profit sharing fiscal schemes are the norm around the world.

95. This is not to say that a contract mining approach is not feasible, just that it has special challenges that Erdenes needs to carefully consider. The risk is that in designing effective compensation terms such a contract will become very complicated, and in the end will become a de-facto profit sharing scheme, in which case Erdenes would be better using a profit sharing scheme from the start, achieving a high government share of profits through progressive production sharing as outlined above or by taking equity in the mining company.

96. Of course, if the Block A and Block B operations are sufficiently similar, then the contract miner in block A will be able to be benchmarked against the profit sharing miner in Block B. This may help design compensation terms, but not till Block B is developed.

Recommendations TT Block B

- Mongolia should consider whether contract mining is the best approach for Block A compared to a profit sharing scheme.
- Before going to tender, Erdenes should clarify the relationship between the investment and the coal mining agreements, ensuring that these do not overlap.
- The investment agreement should incorporate fiscal terms only by reference to the law prevailing at the date of the agreement.
- Explicit consideration should be given to the tradeoff between advance payments and progressive production sharing schemes.
- Production sharing can work for Tavan Tolgoi but should not form part of the fiscal regime applied to future projects, unless securing a share of physical production is important.
- Erdenes should pass the production share on to the government and not retain it.

Recommendations TT Block A

- Mongolia should consider whether contract mining is the best approach for Block A compared to a profit sharing scheme.
- If contract mining is chosen, Erdenes should be given sufficient resources to fund necessary feasibility studies and consulting support to design the project and contract mining framework.

C. A Future Mineral Regime

97. With the Oyu Tolgoi project the government has developed an investment agreement that in many respects could provide a sound basis for future agreements. However, with Tavan Tolgoi, the government has taken a different path by introducing production sharing, seeking large advance payments, and foregoing an equity stake in the operating company. As a basis for future agreements, the mission would suggest building on the principles underlying the Oyu Tolgoi agreement because of its higher degree of progressivity and because production sharing it not a suitable approach for all minerals.

98. However, before turning to some considerations for future agreements, it must be stressed that the actual Oyu Tolgoi negotiations revealed a number of weaknesses in the legislative framework that should be addressed ahead of any future negotiations. To this end, in Chapter II the mission set out a number of recommendations that should be implemented as quickly as possible, regardless of the overall fiscal framework the government takes forward. Once the legislative framework is in place, key considerations regarding future agreements are likely to revolve around the appropriate level of equity participation and the level of advance payments and in due course a more effective progressive mechanism as a replacement for the progressive royalty.

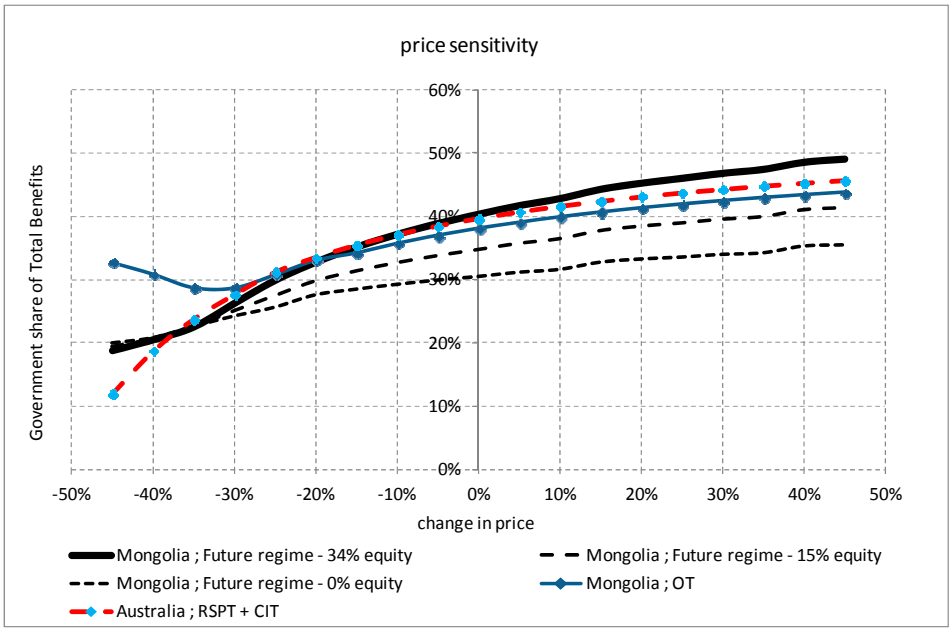
99. The simulations of the Oyu Tolgoi agreement show that it pushes the limit on the government share. To assess the impact of the recommendations in Chapter II as well as the progressive royalty, the mission simulated a possible future mineral fiscal regime in which (i) the CIT rate is set at 35 percent; (ii) the dividend withholding tax is set to zero; (iii) all mineral exports are zero rated for VAT purposes; (iv) no investment tax credits are granted.; and (v) the proposed progressive royalty is adopted (noting the mission does not believe it is the best choice of progressive mechanism).[49] Applying this regime to the Oyu Tolgoi project would lead to an increase in the AETR on a NPV basis from 71 percent under the Oyu Tolgoi agreement to 76 percent. The key factor for the higher AETR is the increase in the CIT rate to 35 percent, reflecting that the Oyu Tolgoi simulations in Section A of this chapter assumed a 25 percent tax rate and zero dividend withholding tax rate because of the DTA with the Netherlands. An AETR of 76 percent materially exceeds the government share implied by the Australian RSPT and far exceeds the share sought under most other countries mining regimes. This regime would likely be a significant deterrent to exploration investment, and would allow only the largest and most profitable projects to be viable. To lower the AETR, the government should consider lowering its expectations for equity participation in the

[49] Chapter II contains a range of detailed recommendations for the reform of the mineral fiscal regime; the simulations described here use simplified terms and should be seen as illustrative only. The simulated mineral fiscal regime also assumes that normal management fees are included in operating costs.

future, given that the other fiscal parameters would be fixed by law. The mission understands that the government and Parliament aspire to substantial equity participation, but the Mineral Law does provide some flexibility by specifying that the government will take "up to" the 34 percent limit for projects discovered without government funding. Also, the proposed Tavan Tolgoi regime breaks with past practice by foregoing any equity participation in the operating company.

100. A lower equity stake would slightly reduce the progressivity of the future mineral fiscal regime. This is illustrated in Figure 11, which plots the evolution of the government share in total benefits as a function of price variation. Besides the Oyu Tolgoi agreement and the Australian RSPT, it considers three different variants of the future mineral fiscal regime with 34, 15, and zero percent equity. With a 34 percent equity stake, the future regime is as progressive as the Australian RSPT and significantly reduces the regressivity of the Oyu Tolgoi agreement at low prices (and high costs) because it allows zero rating of mineral exports. Lowering the equity stake reduces the AETR—with a zero equity stake, the AETR declines from 76 percent to 57 percent, which is only slightly above the AETR under the current Australian regime of 54 percent—but the progressivity of the regime declines as well. In the short term, this may be unavoidable. In the longer term, the government could contemplate replacing the progressive royalty with an alternative instrument, such as a variable income tax rate, that would raise the progressivity of the tax regime considerably, and have general application.

Figure 10. Progressivity of Possible Future Mineral Fiscal Regime



101. A material advance payment is a key feature of the Tavan Tolgoi terms currently under discussion. Given that the Oyu Tolgoi project will generate substantial revenues only from 2013 onwards, the government and Parliament may have a strong preference for such advance payments for years to come. The simulations in the previous section showed that advance payments make the tax system highly regressive. They also raise the AETR. If the government were to seek advance payments as a feature of the generally applicable regime, this would lead to a tradeoff between higher advance payments and lower equity participation. Economically, this tradeoff is similar to the discussion in the previous section of trading off immediate, fixed revenue in form of an advance payment for possibly higher, but variable revenue in form of an R-factor or another progressive production sharing scheme.

102. The mission suggests that the government should view the amount of equity participation as a variable mechanism. The government should seek a base level of 15 percent equity, carried at a reasonable interest rate reflecting the investors required return on capital. The government could also retain an option to take an increased equity share, but to do so only on commercial terms, or at least on less concessional terms than a full carried interest. The government equity option and the terms on which it will be exercised and funded should be set at the time an investor takes up a license, so that fiscal terms are clear from the outset.

Recommendations

- The government should give explicit consideration to the appropriate overall fiscal burden for the mineral sector and the level of state equity participation in future projects.

- The government should seek a maximum of 15 percent carried equity as part of the base regime, and consider an option to take a higher amount of equity on commercial terms that are set in the Minerals Law.

- In the medium term, when the opportunity for a more fundamental reform of the mineral fiscal regime arises, the introduction of a more progressive tax instrument, such as a variable income tax, could replace the progressive royalty and increase the progressivity of the regime even when state equity participation is lower.

Appendix 1. Selected Mining Fiscal Regimes

Country	Regime	Royalty rate	Royalty base	Corporate Income Tax	Depreciation rule	VAT	Import duties	Export Tax	Loss carry forward	Resource Rent Tax	Dividend Withholding Tax	Interest Withholding Tax	Equity
Australia	Mining	Combination of specific, ad-valorem, and profit-based rates WA: 2.5% [gold]	varies WA: net revenues [gold]	30%	100% over effective asset life	10% [none for exported minerals]	Concessions apply	…	Indefinite	N/A	30% [unfranked dividends]	10%	0%
Botswana	Mining	10% [precious stones] 5% [precious metals] 3% [others]	Gross market value	Formula-based. Min[25%, 70-1500/profitability ratio]	100%	10% [none for exported minerals]	Exempt	…	Indefinite	N/A	7.5%	15%	….
Burkina Faso	Mining	7% [precious stones] 4% [base metals] 3% [precious metals]	FOB value	25%	variable	Exempt	0-7.5%	…	4 years	N/A	12.5% tax on income of movable capital	25%	
Congo, Dem. Rep.	Mining	0.5% [ferrous metals] 2% [non-ferrous metals] 2.5% [precious metals] 4% [precious stones]		30%	60% first year, declining balance depreciation in subsequent years.	Exempt	Exempt	Exempt	5 years	N/A	10%	20%	
Ghana	Mining	3-6% sliding scale	…	25%	80% year of investment, 5% uplift second year, 50% DB after.	Exempt	…	…	5 years	N/A	8%	8%	10% free
Guinea	Mining												
Indonesia	Mining	7.5% if from placer [gold] 2.5% otherwise [gold]	Gross revenue [gold]	28%	Variable [Mining assets: 6.25% SL on assets with usual life of 16 years.]	Exempt	Exempt	Exempt	5 years	N/A	20% [non-residents]	20% [non-residents]	
Liberia (2010)	Royalty + CIT + Surtax	5% [diamonds] 4.5% [iron ore] 3% [gold]	FOB Liberia; London pm gold fixing	30%	5 years straight line	Exempt	Exempt until production starts; max around 4% thereafter	…	7 years	20% Surtax when pre tax IRR > 22.5%; deductible for income tax	5%	10%	0%
Malawi	Mining	5%	Gross value minus transport	30%	20%	0%	0-15%	…	Indefinite	N/A	10%	15%	
Mali	Mining	Ad valorem		50%	Variable		Exempt	Exempt					
Mauritania	Mining												
Mozambique	Mining	10-12% [diamonds] 3-8% [other minerals] 10% [gold]	Gross revenue	32% [reductions apply]	SL 25%	Exempt	Exempt	Exempt	5 years	N/A	20%	20%	0%
Papua New Guinea	Mining	2%	Gross revenue	30%	SL 10%	…	…	…	Indefinite	N/A	17%	15%	
Peru	Mining	sliding scale	Gross revenue	30%	100% exploration; SL 20% development	…	…	…	Indefinite	N/A	4%	0%	
Sierra Leone	Mining	5% [precious stones] 4% [precious metals] 3% [others]	Net revenues	37.50%	SL 40%-20%	…	Exempt	…	Indefinite	N/A	10%	0%	0%
South Africa	Mining	Formula-based max 5% [refined minerals] max 7% [unrefined minerals]	Gross sales	Formula-based [gold] 35% [others]	Variable 100% [mining equipment, capex]	Exempt	…	…	…	N/A	0%	0%	0%
Suriname	Mining	3% fixed royalty 3-8% net margin	Net smelter returns [for fixed royalty]	36%	Variable	…	…	…	…	(see royalty provisions)	0%	0%	5% free
Tanzania 2004	Royalty + CIT	5% [diamonds] 3%[others]	Net revenues	30%	100%	Exempt	Variable	…	Indefinite	N/A	10%	0%	5% free
United States (Nevada)	Mining	sliding scale based on profitability; max 5%	Net Proceeds	15-35%	70% in first year, balance on SL over 5 years.	N/A	Variable	Exempt	…	(see royalty provisions)	0-30%	0-30%	
Zambia	Mining	3% [base metals] 5% [gemstones and precious metals] 2% [remaining minerals]	Gross value	35%	100%	17.50%	…	0%	10 to 20 years for base metal mining (copper and cobalt), 5 years for all other mining	N/A	0% [copper] 15% [others]	0% [copper] 15% [others]	
Zimbabwe	Royalty + CIT	10% [precious stones] 3% [precious metals] 2% [base metals and industrial minerals]	Gross Value	15%	100%	15%	Variable	…	Indefinite	None	20%	10%	

Source: FAD FARI database

Appendix 2. Reference Prices for Specific Minerals

1. *Gold.* The London afternoon gold price fixing (London PM fix) is used as a reference (spot) gold price around the world. There is also a morning fixing, but as the afternoon fixing takes place when both the US market and the European (e.g., Zurich), Middle Eastern and African markets are still trading, it tends to be the most liquid period during the day. Many long-term contracts will be priced on the basis of either the morning or afternoon London fix, and the market will usually refer to one or other of these prices when looking for a basis for valuations.

Despite its name, the fixing process closely resembles an open auction process, with offers and bids netted off throughout the market before the final bidding process is conducted during the fix itself, as described in detail below. The fix is executed on a single price. This price is quoted in US dollars. Where the gold price is presented in currencies other than the US dollar, it is converted into the local currency unit using the foreign exchange rate closing price on the same day. (World Gold Council, www.gold.org, London Bullion Market Association, www.lbma.org.uk).

2. *Copper.* World copper markets are London Metal Exchange (LME) and New York Merchantile Exchange (NYMEX). The more quoted spot reference price comes from LME: the cash seller and settlement spot price for copper grade A.

Copper Concentrate. The value of copper concentrate can be obtained by substracting the treatment and refining charges (TC and RC) from the (refined) copper price. There are spot and annual TC/RC markets in Japan and a spot market in Shanghai. The annual market includes a price participation (PP) element by which smelters share part of increases in copper prices. There can be sizable differences between the prices quoted in the annual and spot markets, which suggests that the impact of imposing a uniform reference tax price to all transactions would be significant. The equilibrium in the refined copper market is the one that drives both products. The netback from copper prices is traditionally determined in negotiations between copper concentrate producers and smelters. Transportation costs might also have to be deducted to get the price of copper concentrate. There seem to be several distortions in world markets to the advantage of Indian (high import tariffs on cathodes) and Chinese smelters. In China, there have been reports of collusive behavior by their smelters.

3. *Coal.* The majority of coal is either utilized in power generation (steam coal or lignite) or iron and steel production (coking coal). Coal is readily available from a wide variety of sources in a well-supplied worldwide market. Transportation costs account for a large share of the total delivered price of coal, therefore international trade in steam coal is effectively divided into two regional markets: (i) the Atlantic market, made up of importing countries in

Western Europe, notably the UK, Germany and Spain; and (ii) the Pacific market, which consists of developing and OECD Asian importers, notably Japan, Korea and Chinese Taipei.

The Pacific market currently accounts for about 60 pecent of world seaborne steam coal trade. By contrast, international coking coal trade is limited. Coking coal is more expensive than steam coal.

BP Statistical Review of the World Energy provides the following coal pricing information: (i) Northwest Europe marker price, (ii) US Central Appalachian coal spot price index (CAPP 12,500 BTU, 1.2 SO2 coal) from NYMEX, (iii) Japan coking coal import cif price, (iv) Japan steam coal import cif price. The Paris-based International Energy Agency (IEA) maintains annual and quarterly time series of steam and coking coal import prices. The mission was not able to find a source that price information on the Chinese market for coal, which is likely the most relevant market for Mongolia coal.

4. *Zinc Concentrate.* The main world reference spot price for zinc is the LME, high grade 98 percent pure zinc price, cif, UK ports. As in the case of copper, the spot cash seller and settlement price can be specifically used as the reference price of zinc. It is not easy to find references to markets for zinc TC/RC. A 2005 report on zinc markets in Asia-Pacific suggested that zinc smelters and zinc mines negotiate base TC/RC once a year, with actual TC/RC being determined by the base TC/RC plus/minus 15% of zinc-price changes from the base zinc price.

5. *Lead.* LME has a 99.97 percent minimum purity lead spot price, cif for European ports. Cash seller and settlement price.

6. *Tin.* LME, standard grade tin spot price. Cash seller and settlement price.

7.. *Nickel.* LME, primary nickel of 99.8 percent minimum purity, spot price. Cash seller and settlement price.

8. *Aluminum.* LME, standard grade aluminum, minimum 99.7 percent purity, spot price. Cash seller and settlement price.

9. *Iron ore.* Two iron ore price lists, one for prices of ore to Europe and the other for prices to Japan are widely published. These prices are usually set during lengthy negotiations between Brazilian iron ore producers and German steelmakers and between Australian producers and Japanese steelmakers. Until recently, iron ore prices have been negotiated annually, but pressure to change came after iron ore spot prices rose sharply in the second half of 2009, but mining companies were locked into price agreements negotiated earlier in the year. An agreement with Asian steel mills has changed the system to quarterly pricing. The unit

pricing system is used with iron ore to accommodate variations in iron content. Prices are quoted in U.S. cents per ton unit of iron. A unit is 1/100, or 1 percent, of the weight of a ton of iron so that 1 metric ton unit corresponds to 1/100th of a metric ton. This means that a steelmaker that buys 1 ton of ore that is about 65 percent iron is paying for 1 ton of iron contained in that ore and will receive about 1½ tons of ore. The IMF World Economic Outlook (WEO) reports the Brazilian iron ore's contract price to Europe, fob, 67.55 percent iron content.

Appendix 3. Alternative Equity and Additional Tax Arrangements

The government and popular consensus is that the government should take an equity interest in large mineral projects, as mandated under the Minerals Law. As discussed earlier in this Chapter, the government's equity interest in the Oyu Tolgoi project acts as a progressive mechanism. Only when the profitability of the project is sufficient to pay off the interest on the carried equity does the government receive any revenue from it. At the time the Oyu Tolgoi investment agreement was negotiated, the windfall tax, although flawed, had the potential of making the fiscal regime more progressive with respect to the project's profitability, at least with respect to profit increases resulting from copper and gold price increases. This tax was repealed and the government has submitted a progressive royalty to Parliament, as a partial replacement. The mission believes that there are better additional taxes that take both prices and costs into account and therefore are profit-based. As Parliament is likely to enact a modified version of the progressive royalty, the mission assumes that a progressive royalty will be part of Mongolia's fiscal regime for mining. This appendix outlines alternative forms of equity interests and alternative additional taxes that the government may want to consider in the medium term.

Forms of equity interests

Government equity participation can take many forms and the Minerals Law does not specify what form the equity interest should take.

Working interest (paid-up equity on commercial terms)

The government is said to have a "working interest" if it acquires its equity on commercial terms. A working interest puts the government on a par with private investors in the project. In some countries (e.g., Nigeria in the case of large petroleum project), the government takes a working interest from the inception of the project. If the government takes a 40 percent interest, it puts up 40 percent of the costs and receives 40 percent of the rewards from the project.

If the government buys in on commercial terms after a mineral deposit has been discovered, it would acquire its working interest based on the market value of the project. If the government purchases its equity on commercial terms, it can only expect a commercial return on its money. The purchase price should reflect the discounted present value of the expected future returns—in other words the value of the equity on the open market. Of course, the actual outcome could come out worse than expected, if copper prices are lower or the costs of mining are higher. Acquiring equity on commercial terms is the most risky type of equity participation, as the government would be taking on a risk of absolute loss.

Paid equity on concessional terms

In some countries; e.g., Papua New Guinea, the government has an option to acquire an equity interest in a mining project by paying only a share of the costs already incurred rather than market value. The government would exercise its option to invest only if the project is likely to be highly profitable. Of course, if the government takes paid equity on concessional terms, it affects the profitability of the project for the private investors. The investor meets 100 percent of the risky exploration capital, but can expect to receive less than 100 percent of the positive cash flows from a discovery.

Carried interest

When the government has a carried interest, the private partners agree to "carry" the government, which does not have to put up cash for its equity shares. The government pays for its equity (plus interest on the carry) out of its share of dividends. Until dividends are sufficient to pay off the carry and accumulated interest; that is, crystallizes, the government does not receive its share of dividends. If the project never earns sufficient profits for the government to pay for its carried interest, the government would not be liable for the unpaid debt. A carried interest is thus equivalent to a non-recourse loan.[50] It is also equivalent to a resource rent tax (RRT) described below: the interest rate on the carry is equivalent to the RRT's accumulation rate and the equity share is equivalent to the RRT's tax rate.

A carried interest is less risky than a working interest or a concessional interest, as the government does not have to put up cash. A carried interest gives the government an opportunity to share in the upside of a project without having to share in the downside risk.

Free equity

When the government receives free equity in a project, it receives a percentage of the dividends but assumes no financial obligations and it probably does not have management involvement in the project. If the project is sold, the government may or may not share in the proceeds of the sale, depending on how the free equity interest is drafted in the agreement between the government and the investor.

If the project is structured as a single purpose company, free equity is equivalent to a dividend withholding tax. That is, if the government has a 10 percent free equity interest, it

[50] A nonrecourse loan is a loan in which the lender's security, or collateral, is confined to the project's assets. If the borrower defaults, the lender can seize the collateral, but the lender has no "recourse" to the other assets of the borrower.

receives 10 percent of the dividends paid. A dividend withholding tax would also give the government 10 percent of dividends paid. Free equity is less risky than other types of government equity. Of course, if the government receives free equity, the profitability of the project for the private investors is reduced.

Additional taxes

Profit-based additional taxes can also take many forms.

Resource rent tax

The RRT is a proportional tax on discounted cash flow returns to total project outlays, in excess of a predetermined percentage rate. The predetermined rate is intended to represent a "minimum" required rate of return on a new project in the mining sector. For tax calculation purposes the rate is sometimes called an "accumulation rate." The RRT is designed as a way for the government to capture "resource rent," meaning the surplus over all necessary capital and current costs of production including a reasonable return to the capital invested in the project. The RRT can be applied after the CIT (in which case CIT paid is treated as a cash outflow) or before (in which case RRT paid is a deductible in calculating the CIT). A RRT was recently introduced in Liberia for mining, and is also used in petroleum elsewhere (e.g., Angola, Australia and other countries).

Some suggest that the RRT is difficult to administer. However, all the numbers required for the RRT are required for the regular CIT calculation. The RRT calculations are straight forward. A drawback of the RRT is that it does not produce revenue until the required rate of return has been earned and therefore may not produce revenue for the government if mineral prices spike and companies report high profits to their shareholders, but the project has not yet reached the threshold rate of return. However, such a price spike would bring forward the point at which the threshold would be reached and RRT would be paid.

Resource Super Profits Tax

Australia has recently proposed a RSPT for mining and petroleum.[51] The RSPT has some similarities to the RRT, but with important differences. Instead of cash flow accounting (i.e., expensing of capital), the base of the RSPT would be similar to the income tax base—capital assets would be depreciated. In addition to allowing a deduction for depreciation and other costs, there would be an allowance equal to the government bond

[51] See, Commonwealth of Australia, "The Resource Super Profits Tax: A Fair Return to the Nation, (2010). The report and other related information is available at www.futuretax.gov.au.

rate (around 6 percent) for undepreciated capital and any unutilized losses. Only the return in excess of the bond rate would be taxed under the RSPT. The RSPT is economically equivalent to the RRT, except it would be more likely to generate tax payments when a project earns a high rate of return in the current year even though the project has not earned the pre-determined internal rate of return.

An important additional feature of the Australian RSPT proposal is that the government would guarantee that the investor would receive the tax benefit (in effect a tax deduction) for all expenditure. This would mean for a project which failed to reach the bond rate of return, the government would make a payment to the investor equal to the accumulated balance of any losses plus bond rate interest. The government is therefore taking a significant amount of risk in the project alongside the investor, even though it does not pay its share up front. This approach, and the appropriateness of the bond rate as the accumulation rate, depends very much on the credibility of the government guarantee for the payout, and is unlikely to be workable in environments where investors perceive any material political risk; indeed it remains highly controversial in Australia and is by no means certain of being adopted without modification.

Excess profit tax based on Payback Ratio or "R Factor"

The tax base for an excess profit tax would be taxable income for purposes of the CIT less the income tax liability. The rate of the excess profit tax would depend on the R-Factor or Payback Ratio; namely the ratio of the company's cumulative gross receipts to the company's cumulative gross outlays, which will include payments of the CIT if the calculation is to be made on an after-tax basis. When the ratio is less than one, payback has not been reached; as it grows to a greater multiple of one, the excess profit tax rate increases.

The R Factor differs from the rate of return method in that it does not take explicit account of the time value of money. Whether the ratio increases quickly or slowly does not matter in the calculation, the same excess profit tax rate is still triggered.

Variable income tax

The gold mining tax regime in South Africa for many years incorporated a formula that determined the tax rate each year and was designed to impose a lower-than-average rate of tax in years of poor relative profitability offset by a higher-than-average rate of tax in years of high relative profitability. The variable income tax retains all the other features of the regular income tax, including the special capital recovery rules for investments in the mining sector; it only adjusts the tax rate. The South African system was also adapted for use in the mining tax legislation of Namibia for non-diamond mines. The variable rate in Namibia was repealed in 2002 and replaced with a flat rate of 37.5 percent (compared to the standard rate of 35 percent). A variable income tax was introduced in Botswana in 1998.

The variable income tax was initially designed to encourage the mining of low grade ores which would otherwise be uneconomic. It also has the property that a mine which proves to have a relatively low ratio of profit to revenue will bear a lower tax burden; for some investors this possibility could reduce perceived risk and thus encourage investment. If required, the formula can be designed so that, on average across the mining sector, the effect of the tax is the same as the standard rate of income tax.

Bougainville additional profit tax

The "Bougainville" additional profit tax is similar to a variable income tax, as the effective tax rate varies with the level of profitability. The level of profitability is a snap shot taken each year. Iit does not require measuring the internal rate of return earned on the project. Earnings up to a threshold value are taxed at the normal rate (t). Earnings in excess of the threshold are taxed at a higher rate (k). The threshold is determined by multiplying the unrecovered capital cost (C) by a required rate of return (x). As the required rate of return is assumed to be an after-tax rate of return, the threshold is grossed up by a factor $(1 - t)$.[52] The total tax comprises two pieces, assuming pre-tax income (P) exceeds the grossed up threshold, as follows:

Total tax = $tCx/(1-t) + k(P - Cx/(1-t))$.

Thus a portion of pre-tax income (P) is taxed at the rate t and a portion is taxed at the higher rate k. Once a company has recovered all its capital costs, all pre-tax profits would be taxed at the higher rate, k. The average tax rate would increase through the life of a project, or if commodity prices rose.

Concluding comment

These various approaches to an additional tax could contribute a progressive element to Mongolia's fiscal regime for mining. Unlike the repealed windfall tax and the proposed progressive royalty, these alternatives tax costs into account and therefore are profit-based. They are more complicated than the progressive royalty and there are details, including the treatment of debt finance, which would need to be worked out.

[52] To motivate the gross up, assume the company wants to earn Cx after tax. If the tax rate is t, the company must earn Cx/(1-t) before tax to be left with Cx after-tax. Thus the normal tax rate, t, applies to a base of Cx/(1-t). The excess tax base is taxed at the higher rate k.